



Topic: Socio-economic: Wildlife Management and Monitoring Plan implementation hiring (DAR section 11.4.2.2.1, Table 11.18 (p558))

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The Developer's Assessment Report states that "The GNWT will establish two positions dedicated to assisting with the implementation of the WMMP [Wildlife Management and Monitoring Plan]" (p.11-94). More information is required about how these positions will be created, who will be recruited for these positions, and what they entail.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

Please provide more details about the positions dedicated to assisting with the implementation of the Wildlife Management and Monitoring Plan. For example, will the GNWT prioritize hiring within communities? Will the GNWT use existing Sahtú and Dehcho Guardian programs?



Response from the Government of the Northwest Territories:

The roles and responsibilities for implementing the Wildlife Management and Monitoring Plan (WMMP) will be determined following input from Indigenous Governments, Indigenous Organizations and other affected parties during the overall development of the WMMP, building on the draft WMMP Version 1.0 that was provided in Volume 5 of the Developer's Assessment Report (DAR). Roles dedicated to assisting with the implementation of the WMMP are likely to be related to some of the specific monitoring activities described in Section 5 of the WMMP, for example, related to effects monitoring. The GNWT anticipates Indigenous government and Indigenous organization involvement in monitoring, which may include participation of Indigenous Guardians. The Government of the Northwest Territories (GNWT) is open to discussing with Indigenous Governments, Indigenous Organizations, and specific other affected parties, options for local involvement in implementing monitoring programs for the Project as part of the ongoing development of the WMMP. For any new GNWT positions associated with implementing the WMMP, the GNWT must follow its HR Policies which includes its affirmative action hiring policy which gives priority to Indigenous candidates.

The response to this Information Request has been prepared in accordance with the GNWT's Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



Topic: MVEIRB 32 - Socio-economic: Implications of the short construction schedule on impacts and plans (DAR chapter 9)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

“In the DAR, impacts on human health and community wellness have been predicted for a 20-year construction timeline. This approach allowed for benefits and impacts to be spread over 20 years.

With a 3–4-year construction timeline, impacts may be felt at a much greater magnitude. GNWT’s answer to the Review Board’s overarching IR#1 states that “work is underway to define an optimized schedule and potential implications for environmental and socio-economic impacts” (p.3).

The Review Board would like more information on impacts and plans under this short construction schedule.

In responding to this IR, the Review Board requires analysis from HSS and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer’s response.”

Request from the Review Board:

“A. How would a 3-4-year construction schedule change the predictions related to human health and community wellness during construction, and specifically impacts on social ties, social pressures, and public safety?

B. How would the preparation of the many management and monitoring and adaptive management plans that the GNWT committed to in the DAR be managed to achieve the GNWT’s optimal schedule?”



Response from the Government of the Northwest Territories:

The 'optimal timeline' of 3-4 years referenced in the response to MVEIRB IR#1 does not replace the GNWT's proposed project and project construction schedule of 10 years of construction over a 20-year period, that is described in the Developer's Assessment Report (DAR). Rather, the GNWT considers the 3-4-year construction timeline an alternative method to construction.

The GNWT is submitting a supplemental filing (Supplement to the Developer's Assessment Report Chapter 7: Assessment of Alternatives) to be posted on the public registry, which will provide a qualitative assessment of the accelerated construction timeline.

Request A.

The Project (whether the 20-year schedule or the accelerated 3-4 year schedule) is expected to affect Human Health and Community Wellness during both the construction and operations phases. The Project is expected to lead to adverse effects primarily as a result of the presence of non-resident workers and worker camps (during construction) and due to the increased presence of non-residents generally (during operations and maintenance). Historically, worker camps have been linked to adverse health and social impacts such as increased substance use (drugs and alcohol), increased demand for sex work and higher risks of sexual exploitation, increased food insecurity, and decreased ability to carry out traditional practices such as hunting, fishing, berry picking, etc. (Gibson et al., 2017). The Project is also anticipated to lead to positive effects provided that measures are put in place to maximize benefits and assist in community readiness. The majority of positive effects are expected to occur during the operations phase of the Project.

With respect specifically to community/family and social ties, social pressures, and public safety, it is anticipated that the accelerated construction schedule may increase adverse effects on some effects pathways. It is possible that the accelerated schedule will result in some positive effects occurring sooner. It is also possible that the accelerated schedule will result in an increase in the number of non-resident workers present during the construction phase (i.e., from 200-300 for the 20-year schedule to 450-750 for the 3-4 year schedule) which in turn may increase the intensity of some adverse effects and result in some adverse effects occurring sooner.

An overview of potential Project effects associated with the accelerated construction alternative is contained below. Refer to the Supplemental Filing for additional information on the potential Project effects for the accelerated construction schedule alternative on the Human Health and Community Wellness VC as well as on the other socio-economic VCs.

Social Ties

There is one community/family and social ties effect pathway related to construction of the project that was assessed to be adverse in the 2023 DAR. The magnitude, likelihood and frequency of adverse effects associated with reduced 'sense of community'/community cohesion during construction may increase as a result of the increased number of construction workers in or near communities during the accelerated construction schedule. This increased number of non-resident workers required to complete the project



in 3-4 years may also result in an increase in the number of residents reporting a reduced sense of community belonging.

There is one community/family and social ties effect pathway related to operations of the Project that was assessed to be adverse in the 2023 DAR. The accelerated construction schedule is not expected to change the adverse effect of reduced sense of community and community cohesion but it may lead to the effect happening sooner.

There are two community/family and social ties effects pathways related to operations of the Project that were assessed to be positive in the 2023 DAR. It is anticipated that the accelerated construction schedule might result in positive effects related to community participation and sense of connectedness, occurring sooner.

Social Pressures

There were six social pressure effects pathways related to construction and operations of the Project that were assessed to be adverse in the 2023 DAR.

For the three social pressures effect pathways related to construction of the Project - drug and alcohol use, rates of STIs, and crimes rates - it is anticipated that the magnitude of the adverse effects may increase as a result of the increased number of non-resident construction workers in or near communities during the accelerated construction schedule.

The three social pressures effect pathways related to operations of the Project – drug and alcohol use, rates of STIs, and crime rates - are not expected to see changes in the adverse effects as a result of the accelerated construction schedule since the operational nature of the Project remains the same. However, the accelerated construction schedule is expected to result in the anticipated adverse effects happening sooner as operations of the Project will start approximately 15 years earlier than projected under the current project schedule.

Public Safety

There are three public safety effect pathways related to construction and operations of the Project that were assessed to be adverse in the 2023 DAR.

For the one public safety effect pathway related to construction of the Project having an effect on personal safety and security, it is anticipated that the magnitude, likelihood and frequency of the adverse effects – reduced feeling of personal safety and security - may increase as a result of the increased number of non-resident workers in or near communities which may expose residents to situations that make them feel unsafe.

While the magnitude of two of the public safety effects anticipated to occur during operations – personal safety and security and risk of traffic accidents - is not expected to change, it is anticipated that the adverse effects may begin sooner.

Request B.



As outlined in section 3.2.7 of the supplemental filing, the comparison of the accelerated construction alternative to the Project construction approach is based on applying the same mitigation measures to the same potential effects as assessed in the DAR. The anticipated residual effects for the accelerated alternative were then compared to and described, as being more than, less than or the same as those in the DAR. Therefore, additional details on or commitments related to mitigations associated with the accelerated construction schedule are not available. Notwithstanding this, the Community Readiness Strategy was proposed to include an adaptive management and monitoring approach that would be developed and implemented collaboratively with communities. This approach to mitigation for socio-economic effects would remain in place regardless of the construction schedule that is selected for the Project, where mitigations will be developed, implemented, and monitored collaboratively with local communities to ensure that plans and measures are responsive to the local needs of communities.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories' Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Environment and Climate Change
- Department of Health and Social Services
- Department of Infrastructure

Reference

Gibson, G., K. Yung, L. Chisholm, and H. Quinn with Lake Babine Nation and Nak'azdli Whut'en. (2017). *Indigenous communities and industrial camps: promoting healthy communities in settings of industrial change*. Victoria, B.C.: The Firelight Group.



Topic: Culture, Traditional Land Use, and Harvesting: Missing measurable parameter (DAR Table 11.1)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The effects pathway has identified indirect effects on the experience of Indigenous peoples, which adversely alter the perceived value of availability of traditional resources for cultural use. No measurable parameter is identified in table 11.1. It is unclear how the GNWT plans to measure this indirect effect.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

Please describe how the developer will measure changes to the perceived value of availability of traditional resources for cultural use (for example, provide the measurable parameter).

Please provide a measurable parameter or unit of measure to qualify or quantify this indirect effect of availability of traditional resources for cultural use.



Response from the Government of the Northwest Territories:

Potential effects on experiential values, including perceived effects on the quality and quantity of traditionally harvested resources, cannot be empirically measured or assessed using conventional environmental assessment methodologies, but can be meaningfully evaluated by individuals and Indigenous Governments and Indigenous Organizations experiencing these values in their cultural context. The Developer's Assessment Report (DAR) acknowledges that appropriate conditions for cultural use entail more than the availability of traditional resources, and that Indigenous Governments and Indigenous Organizations may choose not to pursue cultural use activities near the Project for a variety of personal, practical, aesthetic, and spiritual reasons (Volume 3, Section 11.4.1 and Section 11.4.2).

As the developer, the Government of the Northwest Territories (GNWT) can measure change to the distribution and abundance of traditionally harvested species but cannot presume whether the experience by Indigenous land users and harvesters has changed or whether perceptions about the quantity and quality of harvested resources have been altered. For instance, while the DAR may conclude that the construction and operation of the Project will have negligible effects on the quality or quantity of harvested resources, harvesters may nevertheless believe or experience that plants and animals harvested near the Project appear or taste different. Therefore, perceived effects are best considered through ongoing consultation and engagement with Indigenous Governments and Indigenous Organizations. An appropriate forum for such engagement could be associated with the ongoing development of the Wildlife Management and Monitoring Plan.

Consequently, for the Effect Pathway defined in Table 11.1 of the DAR as:

Indirect effects on the experience of Indigenous peoples, which adversely alter the perceived value of availability of traditional resources for cultural use.

The GNWT has defined the following measurable parameter:

Identification of change in quality or quantity of resources from participating Indigenous Governments and Indigenous Organizations.

In order to demonstrate this connection more clearly, the GNWT proposes revising the Effect Pathway in Table 11.1 to read:

Indirect effects on the experience of Indigenous peoples, which adversely alter the perceived quality and quantity of traditional resources for cultural use.

And proposes revising the measurable parameter to read:

Observation of change or decline in quality or quantity of traditional resources by participating Indigenous Governments and Indigenous Organizations.

The response to this Information Request has been prepared in accordance with the GNWT's Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of



this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Education, Culture, and Employment
- Department of Environment and Climate Change



Topic: Culture, Traditional Land Use, and Harvesting: Potential effects and mitigation measure (DAR Table 11.1, Table 17, Table 22, Table 24)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The mitigation as presented in Table 22 lacks organization against the proposed effects pathways and is not easily relatable to the measurable parameters presented in Table 11.1. For example, it is not clear how water withdrawal for dust suppression relates to change in access to resources or areas. The organization of the information lacks transparency.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

Please describe how the pathways in Tables 17, 22 and 24, align with which mitigation(s). Please describe mitigations for wildlife health and for indirect effect related to Indigenous peoples' experience.



Response from the Government of the Northwest Territories:

Tables 11.17, 11.22, and 11.24 have been revised as follows to more clearly link Effects Pathways to Mitigation measures:

Table 11.17 Potential Effects and Mitigation Measures for Culture and Traditional Land Use – Change in availability

Effect Name	Effect Pathway	Mitigation Measures
Change in availability of traditional resources for cultural use	<ul style="list-style-type: none"> Vegetation clearing associated with construction could result in a loss of habitat for species of traditional importance, including plants and animals relied on for traditional hunting, trapping, or plant harvesting 	<ul style="list-style-type: none"> The (Government of Northwest Territories) GNWT will notify communities of Project activities and schedules, including provision of Project maps and design components, and discuss key traditional harvesting periods. Removal of vegetation will be limited to the width of the right-of-way (ROW) and workspaces. Known areas of collection of plants of interest to Indigenous Governments, Indigenous Organizations, and other affected parties will be avoided where possible. Clearing schedules will be communicated in advance of clearing to provide an opportunity to collect plant material from the Project development area. Construction on cleared ground will be conducted during dry or frozen conditions, or use rig matting to reduce soil compaction, rutting, and erosion. A Project-specific Erosion and Sediment Control Plan will be developed and implemented. The Project will follow measures in the Permafrost Protection Plan (PPP) to reduce ponding, erosion, and damage to permafrost. Abandoned sections of Mackenzie Valley Winter Road (MVWR) ROW and access roads will be closed and reclaimed. A Spill Contingency Plan (SCP) will be developed and implemented. Spill contingency measures will be implemented in accordance with the SCP. The SCP will include procedures to prevent and respond to spills. A Waste Management Plan (WMP) will be developed and implemented. An Explosives Management Plan (ExMP) will be developed and implemented.



		<ul style="list-style-type: none"> • Equipment originating outside of the NWT will be cleaned prior to mobilization to avoid introduction of invasive species. • Vehicles parked for more than 2 hours will use drip trays. • A Project-specific PPP will be developed and implemented. • Where applicable, dust suppression will follow the GNWT Guideline for Dust Suppression (GNWT, 2013). • A dust control program using water will be implemented during construction and operations and maintenance.
	<ul style="list-style-type: none"> • Potential effects on wildlife health, which could affect the availability of traditional resources 	<ul style="list-style-type: none"> • The GNWT will notify communities of project activities and schedules, including provision of project maps and design components, and discuss key traditional harvesting periods. • A Wildlife Management and Monitoring Plan (WMMP) will be developed and implemented. The WMMP will contain detailed monitoring and mitigation measures to be implemented for the duration of the construction and operations and maintenance of the Project. • Incinerators, if intended to be used by the contractor, will be operated in accordance with manufacturer’s specifications and emissions will meet Canadian Council of Ministers of the Environment Canada Wide Standards for Dioxins & Furans and Mercury (ECCC, 2017). • Construction and quarry development activities will be reduced, where possible and where spatial overlap is expected, during sensitive periods for wildlife, in accordance with the WMMP. • Personnel will undergo a wildlife awareness program, which will include prevention measures for wildlife mortality (e.g., bear safety), reporting procedures for wildlife-related incidents, and protocols to follow when a nest, den, or wildlife species of management concern is observed. This includes completing wildlife sighting and wildlife incident report forms included in the WMMP. • Caribou and moose will have the right of



		<p>way on all project infrastructure during construction as detailed in the WMMP.</p> <ul style="list-style-type: none"> • The WMMP will outline how risks to migratory birds will be managed in accordance with Environment and Climate Change Canada’s (ECCC)’s Guidelines to Reduce Risk to Migratory Birds (ECCC, 2021) if activities that could result in risk of harm cannot be avoided (e.g., pre-clearing nest surveys). • Vegetation clearing will be completed outside the migratory bird nesting period of May 4 to August 22 (Zone B8; ECCC, 2018) and will consider the Critical Breeding Periods for Raptor Species of the Northwest Territories (Shank and Poole, 2016) to avoid disturbing species that breed prior to the migratory bird nesting periods. • Abandoned sections of MVWR ROW and access roads will be closed and reclaimed. • A Project-specific PPP will be developed and implemented. An Explosives Management Plan (ExMP) will be developed and implemented. • Where applicable, dust suppression will follow the GNWT Guideline for Dust Suppression (GNWT, 2013). • A dust control program using water will be implemented during construction and operations and maintenance. • Spill prevention and response measures will be implemented, in accordance with the SCP. • A project-specific WMP will be developed and implemented. • Equipment, wastes, and contaminated soils will be removed once construction is completed.
	<ul style="list-style-type: none"> • Loss or alteration of fish habitat resulting from disturbance to watercourses • Potential effects on fish health, which could affect the availability of traditional resources 	<ul style="list-style-type: none"> • The GNWT will notify communities of Project activities and schedules, including provision of Project maps and design components, and discuss key traditional harvesting periods. • Water withdrawal will be in accordance with Fisheries and Oceans Canada measures to protect fish and fish habitat and the Interim code of practice: end-of-pipe fish protection screens for small water intakes in freshwater.



		<ul style="list-style-type: none"> • Water withdrawal for dust suppression will be completed from candidate sources identified in Chapter 5, and extraction volumes will be limited to amounts that will not affect the ecological function of the waterbody. • Water flow and fish passage will be maintained during construction. • Culverts will be designed and constructed to maintain water flow and fish passage. • Drainage culverts will be constructed along the roadway to facilitate water movement and maintain drainage patterns. • Rip rap repair and culvert construction will be timed to avoid restricted activity periods for fish, as applicable to the watercourse. • A SCP will be developed and Implemented Spill contingency measures will be implemented in accordance with the SCP. • The SCP will include procedures to prevent and respond to spills. • A WMP will be developed and implemented. • An ExMP will be developed and implemented. • Washing, refueling, and servicing machinery and storage of fuel and other materials for machinery will be conducted a minimum of 100 metres (m) from the high-water mark and in a manner to prevent any deleterious substances from entering the water. • Machinery will not be left in any waterbody.
	<ul style="list-style-type: none"> • Sensory disturbance has the potential to affect the availability of habitat or distribution of species of traditional importance 	<ul style="list-style-type: none"> • A WMMP will be developed and implemented. The WMMP will contain detailed monitoring and mitigation measures to be implemented for the duration of the construction and operations and maintenance of the Project. • Construction and quarry development activities will be reduced, where possible and where spatial overlap is expected, during sensitive periods for wildlife, in accordance with the WMMP. • Construction and quarry development activities will be reduced, where possible and where spatial overlap is expected, during sensitive periods for wildlife, in accordance with the WMMP. • Personnel will undergo a wildlife awareness



		<p>program, which will include prevention measures for wildlife mortality (e.g., bear safety), reporting procedures for wildlife-related incidents, and protocols to follow when a nest, den, or wildlife species of management concern is observed. This includes completing wildlife sighting and wildlife incident report forms included in the WMMP.</p> <ul style="list-style-type: none">• Blasting activities will be limited to daytime hours to the extent practical.• The use of modified blasting techniques will be considered to reduce blasting effects, including use of electronic detonation instead of explosive detonation cord; use of air decking, which involves the use of an inverted cone in the blasthole to constrain energy within the rock mass; timing sequence to develop an echelon effect; and coordinating blast patterns towards a partially open face.• Blast mats will be used when blasting near receptors sensitive to blasting effects (Valued Component chapter), including residences within 5 kilometres (km).• Communities will be informed of time periods and characteristics of noise that may exceed the recommended noise threshold.• Transportation of construction materials and equipment via barge will be used to reduce the number of trucks for construction resupply along the Mackenzie Highway (Highway #1).• The GNWT will engage with communities to inform them of the activities and the noise sources that will occur prior to construction.• The GNWT will develop a system to track complaints and responses to manage and mitigate feedback from the public regarding noise concerns.• A dust control program using water will be implemented during construction and operations and maintenance.• Where applicable, dust suppression will follow the GNWT Guideline for Dust Suppression (GNWT, 2013).• Incinerators, if intended to be used by the
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		<p>contractor, will be operated in accordance with manufacturer’s specifications and emissions will meet Canadian Council of Ministers of the Environment Canada Wide Standards for Dioxins & Furans and Mercury (ECCC, 2017).</p> <ul style="list-style-type: none"> • Vehicles and equipment will be maintained regularly. • Equipment idling will be discouraged or limited. • Vehicle speeds will be limited to 50 km/h on unfinished Project road surfaces. • Efficient Project planning will be used to reduce haul distances and the number of trips required to move road construction materials. • The contractor will be encouraged to use passenger vehicles (e.g., passenger van or bus) to move crews.
	<ul style="list-style-type: none"> • Indirect effects on the experience of Indigenous peoples, which adversely alter the perceived quality and quantity of traditional resources for cultural use. 	<ul style="list-style-type: none"> • Relevant mitigation measures that are proposed to: avoid or reduce effects on species of traditional importance, including plants and animals relied on for traditional hunting, trapping, or plant harvesting; on loss or alteration of habitat; and on sensory disturbance, may also serve to avoid or reduce indirect effects on the experience of Indigenous peoples, and perceived value of traditional resources for cultural use. • The effectiveness of mitigation for indirect effects on the experience of Indigenous peoples, and perceived value of traditional resources for cultural use can only be evaluated by Indigenous Governments and Indigenous Organizations. • GNWT is committed to ongoing engagement with Indigenous Governments and Indigenous Organizations to review the effectiveness of mitigation for effects on the experience of Indigenous peoples and to determine whether additional mitigation measures are necessary.



Table 11.22 Potential Effects and Mitigation Measures for Culture and Traditional Land Use – Change in Access to Resources and Areas for Cultural Use

Effect Name	Effect Pathway	Mitigation Measures
<p>Change in access to traditional resources or areas for cultural use</p>	<ul style="list-style-type: none"> Construction and operations and maintenance could result in the restriction or alteration of access (including trails and travelways) to lands and resources used for traditional and cultural purposes 	<ul style="list-style-type: none"> Access to borrow sources when active extraction and hauling is occurring will be limited to authorized personnel only. Quarry design, development, and closure will take into account public safety. Signage and physical barriers will be used to identify areas of active construction and to provide separation between workspaces and the MVWR for public safety and security. Access to identified current use sites (located outside of the designated construction and Project site limits) will be maintained during construction and operations and maintenance. The area of direct ground disturbance will be limited by following the pre-existing winter road alignment to the extent possible. Construction and quarry development activities will be reduced, where possible and where spatial overlap is expected, during sensitive periods for wildlife, in accordance with the WMMP. Personnel will undergo a wildlife awareness program, which will include prevention measures for wildlife mortality (e.g., bear safety), reporting procedures for wildlife-related incidents, and protocols to follow when a nest, den, or wildlife species of management concern is observed. This includes completing wildlife sighting and wildlife incident report forms included in the WMMP. Caribou and moose will have the right of way on all project infrastructure. Undisturbed areas will be avoided until they are scheduled for clearing/stripping to limit unnecessary soil degradation and compaction. Abandoned sections of MVWR ROW and access roads will be closed and reclaimed. The GNWT will notify communities of project activities and schedules, including



		<p>provision of project maps and design components, and discuss key traditional harvesting periods.</p> <ul style="list-style-type: none"> • Where applicable, dust suppression will follow the GNWT Guideline for Dust Suppression (GNWT, 2013). • Water withdrawal for dust suppression will be completed from candidate sources identified in Chapter 5, and extraction volumes will be limited to amounts that will not affect the ecological function of the waterbody, which may be used as travel routes. • Project personnel will be prohibited from hunting and fishing while housed in work camps for the job. • Pullouts will not be located near watercourses with sport fish.
	<ul style="list-style-type: none"> • Indirect effects on the experience of Indigenous peoples, which adversely alter the perceived value of availability of traditional resources for cultural use 	<ul style="list-style-type: none"> • Relevant mitigation measures predicted to avoid or reduce effects on restriction or alteration of access (including trails and travelways) to lands and resources used for traditional and cultural purposes may also serve to avoid or reduce indirect effects on the experience of Indigenous peoples, and perceived value access to traditional resources for current use or current use sites and area. • The effectiveness of mitigation for indirect effects on the experience of Indigenous peoples, and perceived value access to traditional resources for current use or current use sites and area can only be evaluated by Indigenous Governments and Indigenous Organizations. • GNWT is committed to ongoing engagement with Indigenous Governments and Indigenous Organizations to review the effectiveness of mitigation for effects on the experience of Indigenous peoples and to determine whether additional mitigation measures are necessary.



Table 11.24 Potential Effects and Mitigation Measures for Culture and Traditional Land Use - Change in Sites or Areas for Cultural Use

Effect Name	Effect Pathway	Mitigation Measures
Change in sites or areas for cultural use	<ul style="list-style-type: none"> Construction could result in a loss or alteration of identified cultural use harvesting sites, habitation areas, and cultural and sacred sites 	<ul style="list-style-type: none"> An Archaeological Impact Assessment (AIA) will be completed prior to construction in areas with known or suspected high archaeological potential. Requirements for protection of heritage resources, such as additional AIA, avoidance of known sites through project redesign or fencing during construction, mitigative archaeological excavation, surface collection of artifacts, historic structure recording, archival/documentary research, construction monitoring, will be implemented. To the extent possible, the project highway alignment will be designed to avoid the base of Bear Rock (Petinīzah). A Historical Site Protection Plan will be developed and implemented. A 30 m avoidance/setback from known archaeological resources will be implemented. Site-specific mitigations required by the Prince of Wales Northern Heritage Centre as based on AIAs will be implemented.
	<ul style="list-style-type: none"> Indirect effects on the experience of Indigenous peoples, which adversely alter the perceived value of current use of current use sites and areas 	<ul style="list-style-type: none"> Relevant mitigation measures predicted to avoid or reduce effects loss or alteration of identified cultural use harvesting sites, habitation areas, and cultural and sacred sites serve to avoid or reduce indirect effects on the experience of Indigenous peoples, and perceived value of current use or current use sites and area. The effectiveness of mitigation



		<p>for indirect effects on the experience of Indigenous peoples, and perceived value of current use or current use sites and area can only be evaluated by Indigenous Governments and Indigenous Organizations.</p> <ul style="list-style-type: none">• GNWT is committed to ongoing engagement with Indigenous Governments and Indigenous Organizations to review the effectiveness of mitigation for effects on the experience of Indigenous peoples and to determine whether additional mitigation measures are necessary.

The response to this Information Request has been prepared in accordance with the GNWT’s Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



Topic: Culture, Traditional Land Use, and Harvesting: Supplementary recommendations (DAR Table 11.18, Table 11.19, Table 11.20, Table 11.21)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The Developer's Assessment Report features mitigation measures that are not linked to a particular effects pathway. These can be found in Tables 11.18 through 11.21. The recommendations have corresponding commitments. A review of the recommendations and commitments suggest that the supplemental recommendations could have been organized against the identified effects pathways.

One of the sources referenced in the commitments column, Dehcho First Nations, 2011 - Traditional Knowledge Assessment of Boreal Caribou (Mbedzhi) in the Dehcho region seems to be inaccurately referenced in a number of cases. A review of the report recommendations does not match the recommendations attributed to it.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

Please provide the document referenced *Dehcho First Nations, 2011 - Traditional Knowledge Assessment of Boreal Caribou (Mbedzhi)*. Please rework or combine the supplementary recommendations and commitments to correspond with a particular identified effect and effect pathway, so it is clear specifically what and how the developer plans to mitigate. Once that is completed, revise the residual effects and significance determination.



Response from the Government of the Northwest Territories:

The recommendations provided by Indigenous Governments and Indigenous Organizations that appear in Tables 11.18 through 11.21 of the Developer’s Assessment Report (DAR) were obtained through engagement conducted for the Project, including meetings, workshops, reports and project-specific traditional land and resource use studies dating between 2010 and 2023. The information provided by Indigenous Governments and Indigenous Organizations is often general, expansive, and does not necessarily correspond to specific project activities or particular effects pathways. Consequently, recommendations made by Indigenous Governments and Indigenous Organizations may align with several project activities and effects pathways, or conversely, may not definitively correspond to any.

With respect to the specific recommendations that appear in Tables 11.18 to 11.21, these were not developed in response to specific project effects, rather they were developed more generally and relative to availability of wildlife and wildlife harvesting (11.18), availability of plants (11.19), availability of fish and fish harvesting (11.20), and water quality and quantity (11.21). Therefore, revising Tables 11.18 through 11.21 as requested, will not provide value or further clarity with respect to the assessment of project effects or proposed mitigation measures.

Reorganization of Tables 11.18 through 11.21 as requested would also not introduce new information or new project effects nor identify new effects pathways or mitigation measures. Therefore, the conclusions in the DAR regarding residual effects or significance of effects to Culture and Traditional Land Use would remain unchanged, irrespective of any reorganization of Tables 11.18 through 11.21.

The report *Traditional Knowledge Assessment of Boreal Caribou (Mbedzih) in the Dehcho Region* (Dehcho First Nations, 2011) is provided as an attachment to this response.

On review, a number of recommendations in Table 11.18 were inadvertently attributed to the source Dehcho First Nations, 2011. The correct references are provided in Table 35-1:

Table 35-1

Recommendation in Table 11.18 (changes underlined)	Updated Reference
Project personnel will be prohibited from hunting wildlife while working on the Project (Dehcho First Nations, 2011).	Not located. This is similar to a Government of the Northwest Territories (GNWT) commitment.
Installation of wildlife cameras between Wrigley and Norman Wells to monitor potential effects of project construction (land disturbance, i.e., clearing) on wildlife migration (Dehcho First Nations, 2011).	November 2022 to February 2023 Engagement (GNWT, 2023a)
With support from the GNWT Department of Infrastructure (INF) and the GNWT Department of Environment and Climate Change (ECC), Dehcho First Nations (2011) , and NWRRRC (2023) request that harvesting uncertainties should be addressed in relation to increased harvesting pressure, including: <ul style="list-style-type: none">• Mandatory hunting monitors or guardians for all non-resident hunters	NWRRRC (2023)



<ul style="list-style-type: none">• Game wardens to monitor hunting game for non-resident hunters• Regulations and restrictions for non-resident hunters (i.e., hunting locations and allowances)	
Implement a 5 to 10-year moratorium on hunting to protect and monitor the baseline of caribou and moose, and to protect large ungulates (more targeted) (Dehcho First Nations, 2011).	November 2022 to February 2023 Engagement (GNWT, 2023a)
Avoid or reroute around moose pastures and habitats and maintain moose pastures (Dehcho First Nations, 2011).	April to July 2022 Engagement (GNWT, 2023b)
Monitor potential effects of vibration from project construction and operation on wildlife (Dehcho First Nations, 2011).	November to December 2022 Engagement (GNWT, 2023c)

The response to this Information Request has been prepared in accordance with the GNWT's Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



References

- Dehcho First Nations. 2011. Traditional Knowledge Assessment of Boreal Caribou (Mbedzih) in the Dehcho Region. Prepared by Dehcho First Nations for the Canadian Wildlife Service. Published by the Dehcho First Nations Fort Simpson, Northwest Territories.
- GNWT. 2023a. What We Heard Report - Mackenzie Valley Highway Engagement Summary - Project Mitigation and Monitoring. Mackenzie Valley Highway Project – Developer's Assessment Report (Volume 1, Appendix 2C). Northwest Territories.
- GNWT. 2023b. What We Heard Report - Mackenzie Valley Highway Engagement Summary - Project Description and Construction Activities. Mackenzie Valley Highway Project – Developer's Assessment Report (Volume 1, Appendix 2C). Northwest Territories.
- GNWT. 2023c. What We Heard Report - Mackenzie Valley Highway Engagement Summary – Assessment Findings and Project Effects. Mackenzie Valley Highway Project – Developer's Assessment Report (Volume 1, Appendix 2C). Northwest Territories.
- Norman Wells Renewable Resources Council (NWRRC). 2023. *Traditional Land and Resource Use Study for the Mackenzie Valley Highway Project*. Prepared for Norman Wells Renewable Resources Council by K'alo-Stantec Limited.



Topic: Culture, Traditional Land Use, and Harvesting: Measurable parameters and Units of measure lack specificity as defined in Methodology in Section 4.5.2. (DAR section 11.1.3, Table 11.1)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

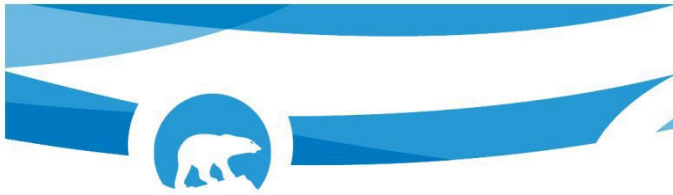
Several of the measurable parameters and units of measurement in Table 11.1 lack specificity that allows for an evaluation of the level of change. A measurable parameter needs to provide a way to determine the level or amount of change. Change as a "potential effect" (column 1) and a measurable parameter that refers to "change" (column 3) does not allow for the evaluation of a change.

For example, the identification of change in quality and quantity is not a measurable parameter. Additional specificity is needed to confirm significance and to support any proposed monitoring programs. For example, if the intent is to confirm post-highway construction availability of resources for cultural and traditional land use, a more specific measurable parameter might be reduction of fish numbers or size as a way of measuring overfishing pressures. Or, since this proposed project may introduce additional harvesting days (because access is not limited seasonally by the winter road), a measurable parameter might be time needed for a successful harvest, or catch per unit of effort.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

Please review and revise the measurable parameters (what you are observing) and units of measurement against them and provide more specific measures or qualitative explanations. Without these details, it will not be possible to confirm the accuracy and significance of residual effects, especially when the residual effects characterizations are specific. Better measures will also support the focus of the monitoring programs.



Response from the Government of the Northwest Territories:

Measurable Parameters in Table 11.1 of the Developer’s Assessment Report (DAR) have been revised using tracked changes:

Table 11.1 Potential Effects, Effects Pathways and Measurable Parameters for Culture and Traditional Land Use, Including Harvesting

Potential Effect	Effect Pathway	Measurable Parameter(s) and Units of Measurement
Change in availability of resources for cultural and traditional land use	<ul style="list-style-type: none"> Vegetation clearing associated with construction could result in a direct loss or loss of habitat for species of traditional importance, including plants and animals relied on for traditional hunting, trapping, or plant harvesting Sensory disturbance has the potential to affect the availability of habitat or distribution of species of traditional importance Loss or alteration of habitat resulting from disturbance to watercourses Change to the distribution, diversity, and abundance of traditionally harvested species Indirect effects on the experience of Indigenous peoples, which adversely alter the perceived quality and quantity of traditional resources for cultural use 	<ul style="list-style-type: none"> Change in availability of hHabitat (hectares [ha]) <u>lost or altered</u> for traditionally used plant or animal species Change in availably of habitat for harvested fish species <u>Area (ha) of riparian habitat lost or altered</u> <u>Area (ha) of fish habitat below the ordinary high-water mark altered or lost</u> Qualitative evaluation of change, <u>or increase in</u> hunting and fishing pressure <u>due to improved access for recreational hunters and fishers</u> as a result of the Project Identification <u>Observation</u> of change <u>or decline in</u> quality and quantity of <u>traditional resources</u> from by participating Indigenous Governments and Indigenous Organizations Change in availability of harvested resources <u>Change or decline in the abundance and distribution of wildlife species relied upon for cultural and traditional use</u> <u>Area (ha) of loss or alteration to native plant communities or landcover types from clearing and ground disturbance</u>
Change in access to resources or areas for cultural and traditional land use	<ul style="list-style-type: none"> Project activities could result in the restriction or alteration of access (including trails and travelways) to lands and resources used for traditional and cultural purposes. 	<ul style="list-style-type: none"> Disruption <u>Estimated number of</u> trails and travelways <u>disrupted or blocked</u>



	<ul style="list-style-type: none"> • Indirect effects on the experience of Indigenous peoples, which adversely alter the perceived value of access to traditional resources for current use or current use sites and areas. 	<ul style="list-style-type: none"> • Number of areas subject to permanent or temporary access restrictions • Area (ha) of altered land use management • Time required to access different traditional and cultural use locations <u>as reported by Indigenous Governments and Organizations</u>
<p>Change in access to resources or areas for cultural and traditional land use (cont'd)</p>	<ul style="list-style-type: none"> • Indirect effects of highways and access roads increasing access to harvesting areas 	<ul style="list-style-type: none"> • Identification <u>Observation of change-increase or decrease in access or avoidance behaviors from participating Indigenous Governments and Indigenous Organizations</u> • Quality of access roads, and harvesting locations <u>Number of new access points to waterbodies provided by the Project, including parking/staging areas.</u>
<p>Change in sites or areas for cultural and traditional land use</p>	<ul style="list-style-type: none"> • Construction works and activities could result in a loss or alteration of identified harvesting sites, habitation areas, and cultural and sacred sites. • Indirect effects on the experience of Indigenous peoples, which adversely alter the perceived value of current use sites or areas • Indirect effects of highways and access roads increasing access to harvesting areas 	<ul style="list-style-type: none"> • Number of or area (ha) of identified sites and areas affected • Identification <u>Observation of change, damage, or decrease in perceived value of in sites or areas for cultural and traditional land use</u> from participating Indigenous Governments and Indigenous Organizations • Identification <u>Observation of change or decline in use of sites or areas from-by</u> participating Indigenous Governments and Indigenous Organizations

The response to this Information Request has been prepared in accordance with the GNWT's Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure



Government of Northwest Territories
Gouvernement des Territoires du Nord-Ouest

- Department of Environment and Climate Change
- Department of Executive and Indigenous Affairs



Topic: Caribou and moose: Harvesting: Caribou and moose, harvest pressure, management actions (DAR Chapter 5, WMMP, 10.7.2)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

Section 10.7.2 notes that there are gaps in current harvest knowledge and in potential increases in harvest, and that Indigenous harvest information for caribou and moose was not available and not considered in the DAR.

It will be important to develop and implement adaptive co-management regimes for boreal caribou and moose with Indigenous Governments and organizations in the Dehcho and Sahtú regions (such as the Sahtú Renewable Resource Board).

Future wildlife management processes and decisions will need to include regular population and harvest monitoring to ensure sustainable use of caribou and moose.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

- A. Please provide examples of harvest monitoring (such as guardian programs or Traditional Knowledge-based monitoring) that have been tried on other highways (such as the Inuvik-Tuktoyaktuk Highway, Tẖcẖo Highway) or other regions, that may be applicable along the Mackenzie Valley Highway.
- B. Please describe any engagement with Indigenous Governments or co-management Boards on potential monitoring programs.



Response from the Government of the Northwest Territories:

- A. The Government of Northwest Territories (GNWT) wishes to make clear that it respects the authority and rights of Indigenous governments, that it has no authority to require Indigenous harvest monitoring, and that the provision of such information if it exists, is voluntary.

The GNWT has committed to working with the Sahtú Renewable Resources Board (SRRB) and other resource managers to address uncertainty regarding the effects of increased access created by the Project on harvested resources in the study areas, and these discussions are ongoing. This would include non-mandatory harvest monitoring that can be used to identify the need for management actions to be taken by the appropriate resource management organization.

There are two examples of harvest monitoring on other highways and regions that might be applicable along the Mackenzie Valley Highway. They include harvest monitoring identified in the Tẖcẖ Highway Wildlife Management and Monitoring Plan (GNWT, 2023) and harvest monitoring by the Kát'odeeche First Nation as part of the NWT Cumulative Impact Monitoring Program ([NWT CIMP] GNWT, 2024a).

Harvest monitoring is a component of the Tẖcẖ Highway Wildlife Management and Monitoring Plan (GNWT, 2023). In Section 5.2.2, Part iv), and Appendix I (Tẖcẖ Government Proposal for TASR Caribou Monitoring Program), a non-mandatory community-based monitoring program for caribou and moose is described. The Tẖcẖ All-Season Road (TASR) Caribou Monitoring Program includes measures to evaluate sustainable harvest levels for boreal caribou in the North Slave portion of the NT1 range (Measure 6-2). Measure 9-1 required that the GNWT – Environment and Natural Resources (hereafter Environment and Climate Change [ECC]) work with the Tẖcẖ Government and Wek'èezhì Renewable Resources Board to develop and implement a non-mandatory Aboriginal harvest monitoring and reporting program. The harvest monitoring and reporting program was to:

- a) focus on boreal caribou, barren-ground caribou and moose population trends in areas accessed by winter roads and trails from the Project
- b) be community-based and involve collaboration between Tẖcẖ Government and the developer;
- c) involve Traditional Knowledge holders and harvesters in monitoring wildlife harvesting trends; and,
- d) report on wildlife harvesting numbers and trends from monitoring checkpoints and/or other harvest monitoring methods annually to the Tẖcẖ Government, Wek'èezhì Renewable Resources Board, ECC and other wildlife co-management partners.

The 2023 Annual Report for the Tẖcẖ Highway (GNWT, 2024b), Section 5.9 (pp. 32–33) summarizes the monitoring completed in response to the TASR Caribou Monitoring Program noted above. It describes how Traditional Knowledge is being incorporated into the monitoring program, describes how the Tẖcẖ Government is working on developing and implementing a comprehensive harvesting program that is interview-based to understand how harvest has changed over time, and addresses whether the Tẖcẖ Highway has impacted harvesting activities for community members.

In the draft Wildlife Management and Monitoring Plan (WMMP) for the Project, Section 5.2.8, proposes a harvest monitoring program like that of the Tẖcẖ Highway Wildlife Management and



Monitoring Plan.

The Kát'odeeche First Nation *Watching the Land: Knowing the Impacts of Climate Change* Project began in 2016 and includes moose harvest, overall health and abundance monitoring during the rut at Buffalo Lake, and boreal caribou overall health and abundance monitoring in early December to mid-January at Swan Lake (GNWT, 2024b). The reports include a summary of moose and caribou harvested and an assessment of their health from a Traditional Knowledge perspective. This monitoring is not project-specific. The GNWT Department of Environment and Climate Change (ECC) has also been directly supporting the Kát'odeeche Harvest Reporting Program since 2017 through annual contribution agreements (separate from the CIMP-funded program mentioned above). The program includes voluntary reporting of harvest of moose, boreal and barren-ground caribou, bear, wolf, bison and deer, and annual summaries of harvest information are shared with ECC on a confidential basis.

- B.** The engagement and Consultation program for the Project is described in Volume 1, Chapter 2 of the Developer's Assessment Report (DAR). Project engagement activities have been documented since 1998 and are intended for Indigenous Governments, Indigenous Organizations and other affected parties to express their concerns and provide feedback on the Project. This includes community governments or designated authorities, land corporations, renewable resource boards and councils, and co-management boards.

The GNWT has funded the Tulita Renewable Resources Council (TRRC) and the Norman Wells Renewable Resources Council (NWRRC) to complete Project-specific Traditional Land and Resource Use studies. Both TRRC and NWRRC recommended that monitoring be conducted before, after, and during project construction and operation; that Traditional Knowledge (TK) be integrated into monitoring plans; and that community members be involved in Traditional Knowledge-based monitoring programs (NWRRC, 2023; TRRC, 2023). The GNWT's engagement with Indigenous Governments, Indigenous organizations and specific other affected parties on project-specific monitoring programs, including harvest monitoring, is ongoing, and will continue until, throughout, and after construction, as committed to in the WMMP.

The GNWT has provided support to Pehdzéh Kì First Nation and Łíídlıı Kúé First Nation for Traditional Land and Resource Use studies. Once received, the GNWT will review the information and consider it in the context of the Project in supplemental plans and reports.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories' Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



References

- GNWT. 2023. Wildlife Management and Monitoring Plan for the Tłı̨ch̨ Highway Project Ver 6.2. Prepared for the Wek'èezhì Land and Water Board and Environment and Climate Change, Government of Northwest Territories. (https://www.gov.nt.ca/ecc/sites/ecc/files/resources/w2016e0004_tasr_wildlife_management_and_monitoring_plan_version_6.2_jun_12_23.pdf)
- GNWT. 2024a. NWT Cumulative Impact Monitoring Program (NWT CIMP) Kátł'odeeche First Nation CIMP-191 Final Report 2021-2024. Government of Northwest Territories, Yellowknife, Northwest Territories, Canada. 18 pp.
- GNWT. 2024b. Water Licence (W2020L8-0001) Annual Report 2023 for the Tłı̨ch̨ Highway (Tłı̨ch̨ All-Season Road). Prepared for the Government of the Northwest Territories Department of Infrastructure (GNWT-INF) by NorthStar Infrastructure, GNWT-INF and GNWT Environment and Climate Change. 54 + app. pp.
(https://www.gov.nt.ca/ecc/sites/ecc/files/resources/tlichho_highway_water_licence_w2020l8-0001_annual_report_2023_may_31_2024.pdf)
- Norman Wells Renewable Resources Council (NWRRC). 2023. *Traditional Land and Resource Use Study for the Mackenzie Valley Highway Project*. Prepared for Norman Wells Renewable Resources Council by K'alo-Stantec Limited.
- Tulita Renewable Resources Council (TRRC). 2023. *Traditional Land and Resource Use Study for Tulita District Mackenzie Highway Project*. Prepared for Tulita Renewable Resources Council by K'alo-Stantec Limited.



Topic: MVEIRB IR 38 - Caribou and moose: Harvesting: potential increase in harvest, monitoring, construction schedule (DAR section 10.2.2)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The DAR states that the MVH will increase access to resident hunting and Indigenous harvest and will increase hunting and harvesting pressure. The DAR states that GNWT management of harvest, along with management by co-management boards, will suffice to mitigate these effects and therefore changes to mortality risk will not alter the population viability or persistence in the Local Assessment Area. However, caribou appear to be extremely sensitive to human pressures, including harvesting.

Page 10-17 states that "it is not possible to determine absolute sustainable harvest levels for caribou". It is not clear how the caribou population in the Local Assessment Area can remain viable and persistent without knowing sustainable harvest levels, or whether an increase in harvest is affecting a local population.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

- A. Please describe how monitoring of harvest and harvest success rates could identify the need for management actions to avoid overharvesting of moose and caribou. Given available information on moose and caribou densities, what would be an expected upper range in annual sustainable harvest levels for a local population of moose and caribou that may become accessible because of the MVH Project?
- B. Please describe how the GNWT will assess whether monitored/reported levels of moose and caribou harvest and hunting along the highway are increasing towards or exceeding sustainable levels, including monitoring methods and intervals to estimate distribution, abundance and trend of local populations of moose and boreal caribou.
- C. Under GNWT's conceptual construction schedule in the DAR, the highway will be built in 3 segments over 20 years, likely starting from the South. Please explain how monitoring non-Indigenous hunting and resulting mitigation and management actions to prevent overharvesting of moose and caribou after construction of the first segment (Wrigley to Dehcho border) could inform monitoring management actions to prevent overharvesting for the following two highway segments.
- D. How would non-Indigenous hunting monitoring and management occur if segments were built in a different sequence or simultaneously, such as under GNWT's optimal schedule described in response to Review Board overarching IR #1?
- E. Please provide quantitative and/or qualitative estimates of non-Indigenous hunting of moose and caribou along the Tłı̄chų Highway since it has been opened to the public. Considering the proximity of the non-Indigenous population in Yellowknife to that highway, please compare and contrast predicted levels of non-Indigenous hunting of wildlife along the MVH segments as they are constructed.



Response from the Government of the Northwest Territories:

- A. GNWT uses results from boreal caribou and moose monitoring programs to indicate the need for management actions to avoid overharvesting. For example, if there were a declining trend in either species the results would be brought to our co-management partners to discuss possible actions to take, if any. The GNWT released the results¹ of harvest modeling for boreal caribou in 2021 which could inform sustainable harvest levels in the MVH assessment area. However, the analysis was completed for Wildlife Management Zone D as a whole, and sustainable harvest levels for boreal caribou in the Sahtu region have not been estimated due to lack of demographic data in that region. Boreal caribou collars have recently been added along the MVH alignment up to Norman Wells to provide an understanding of the boreal caribou population trend along the MVH alignment before construction begins, and eventually there may be sufficient demographic data from this monitoring conducted as part of the WMMP to estimate sustainable harvest levels for boreal caribou specific to the MVH Local Assessment Area (LAA). GNWT does not have estimates for sustainable harvest levels of moose at the scale of the MVH RAA, Zone D or Zone S.
- B. Currently the GNWT annually monitors boreal caribou populations with collars. Monitoring of these collars provides information on distribution and population trend, but not abundance. Moose surveys provide estimates of the density of moose and have been completed in the Sahtú and Dehcho regions. These moose surveys would provide evidence of changes in distribution and abundance. The annual NWT Resident Hunter Harvest survey program will continue, and may provide some information about NWT Resident hunting effort and success for boreal caribou and moose along the MVH, but participation in the survey is voluntary, and voluntary reporting on location of successful harvest has traditionally been sparse and challenging to map out. The GNWT would need to rely on Indigenous Governments and Indigenous Organizations to collect voluntary harvest data (including location of harvest) from their members. A draft WMMP for the MVH was submitted with the DAR (see Volume 5) and includes an ongoing collar-based monitoring program for boreal caribou to detect changes in population trend and distribution, periodic aerial moose abundance surveys, establishment of a new GNWT-ECC Renewable Resource Officer position to increase patrols and enforcement of wildlife harvest regulations along the MVH, ongoing collection of the annual NWT Resident hunter survey program data, and working with co-management partners to establish a voluntary Indigenous harvest monitoring and reporting program for the highway corridor.
- C. If the highway is constructed in 3 segments over 20 years it would allow for the results of monitoring programs from the first segment to inform decisions about whether additional measures to manage harvest on the other two segments might be needed before they are constructed and opened for public use.
- D. Monitoring and management would proceed as described in the response to 'B' if all segments were constructed and opened simultaneously.

¹ https://reviewboard.ca/upload/project_document/PR173%20Boreal_caribou_population_model_report_2020.pdf



E. GNWT has not yet evaluated NWT Resident hunter survey data to assess whether there have been qualitative or quantitative changes in boreal caribou and moose harvest specifically along the Tłı̄ch̄o Highway since it opened in November 2021. However, at a regional scale it doesn't appear as though the number of moose and woodland caribou (boreal and mountain ecotypes) tags issued in the Yellowknife region has increased since the Tłı̄ch̄o Highway opened, nor has the number of reported successful hunts for either species. The following tables (based on NWT resident hunter survey data) were presented to the Tłı̄ch̄o Highway corridor working group in January 2024:

Moose									
Region	2019/20			2020/21			2021/22		
	Tags	Hunts undertaken	Successful hunts	Tags	Hunts undertaken	Successful hunts	Tags	Hunts undertaken	Successful hunts
Fort Smith	173	66	11	80	52	11	80	50	12
Inuvik	83	25	10	44	19	6	44	12	2
Yellowknife	629	185	46	255	117	22	255	132	23

Woodland Caribou (includes both boreal and mountain ecotypes)									
Region	2019/20			2020/21			2021/22		
	Tags	Hunts undertaken	Successful hunts	Tags	Hunts undertaken	Successful hunts	Tags	Hunts undertaken	Successful hunts
Fort Smith	59	17	2	80	8	0	80	15	1
Inuvik	39	6	1	44	3	0	44	2	1
Yellowknife	187	48	13	254	18	2	254	30	1

It is not possible to provide quantitative predictions about the extent to which levels of NWT Resident (non-Indigenous) harvest may or may not increase along different segments of the MVH as they open; however, the number of NWT Resident harvesters residing in communities along the MVH from Fort Simpson to Norman Wells is likely to be much lower than the number of NWT Resident harvesters residing in Yellowknife, so it is possible that the potential increased harvest pressure from NWT Resident hunters along the MVH would be much lower than the potential increase along the Tłı̄ch̄o Highway.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories' Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:



- Environment and Climate Change
- Infrastructure

Government of Northwest Territories
Gouvernement des Territoires du Nord-Ouest



Topic: MVEIRB IR 39 - Culture, Traditional Land Use, and Harvesting: harvest pressure and mitigation (DAR Chapter 11, 11.1.2, 11.4.2.2.1, table 11.18)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

Section 11.1.2 describes the influence that project engagement had on the chapter on impacts to culture, traditional land use and harvesting and non-Indigenous hunting. One concern raised is about a potential increase in non-resident hunters' access to wildlife within the Regional Assessment Area.

Table 11.18 lists mitigation recommendations by Indigenous organizations. One recommendation (p11-94) to mitigate impacts on overharvesting is to "Implement a 5-10-year moratorium on hunting to protect and monitor the baseline of caribou and moose and to protect large ungulates (more targeted) (Dehcho First Nations) 2011)." The GNWT commitment for this recommendation (11-94) was that "The WMMP [Wildlife Management and Monitoring Plan] will be designed to determine if the highway is resulting in a pattern or level of harvest mortality for moose and caribou that would suggest a conservation concern or need for additional harvest management actions.

Boreal caribou are a species at risk. Eliminating resident (non-Indigenous) hunting of boreal caribou along the new all-season highway corridor is one way to mitigate the impacts of direct mortality from the Mackenzie Valley Highway to boreal caribou.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

A. Please describe strategies and options for managing harvesting and hunting for sustainability during road operations, with consideration for a short-term moratorium (5-10 year) on resident (non-Indigenous) hunting after completion of each of the three highway segments to allow time to better understand caribou and moose populations along the road corridor, to ensure mortality is sustainable and that overharvesting does not occur.

B. Considering the GNWT's optimal schedule described in response to Review Board overarching IR #1, please describe strategies and options for managing sustainable harvesting and hunting during road operations, with consideration for a short-term moratorium (5-10 year) on resident (non-Indigenous) hunting after completion of the highway to allow time to better understand caribou and moose populations along the road corridor, to ensure harvesting and hunting is sustainable and that both overharvesting and overhunting does not occur.

C. Based on lessons learned from the Tłı̄chų Highway, describe how the WMMP will determine if the highway is resulting in a level of harvest that would suggest a conservation concern. Describe the section of the WMMP for the Tłı̄chų Highway dealing with determining where harvest was nearing a conservation concern and report on implementation and effectiveness of any management action in the Tłı̄chų



Highway WMMP. Describe why the GNWT expects the WMMP to be sensitive and efficient enough to detect, evaluate and mitigate impacts from harvest along the MVH that is nearing a conservation concern, in a timely manner.

Response from the Government of the Northwest Territories:

- A. NWT Resident harvesting of boreal caribou is limited to 1 bull per hunter with a season from 15 July-15 December each year. For clarity on terms pertaining to hunter residency and licensing requirements, see the preamble to GNWT's response to IR DRRC 04. The results from the Northwest Territories boreal caribou population and harvest models report¹ (2021) suggested that a total harvest of 39 boreal caribou (24 cows/15 bulls) would be sustainable within Zone D (Dehcho region) at an assumed density of 2 boreal caribou / 100 km². Resident harvest levels for boreal caribou were estimated at an average of 19 per year for the NWT as a whole (NWT SARC 2022), which is less than the estimated sustainable harvest level just for Zone D. This suggests that further actions to limit NWT Resident harvest along the MVH (and within Zone D more broadly) may not be necessary at this time. Boreal caribou population trend has been monitored in the Dehcho North study area since 2005, and more recently collars have been added along the MVH alignment up to Norman Wells. This monitoring should provide an understanding of the boreal caribou population trend along the MVH alignment before construction begins. NWT Resident moose harvest is currently limited to one per hunter per year, with a season from 1 Sept – 31 Jan (islands in the Mackenzie River are closed to moose hunting from 01 Dec- 31 Jan). Appendix 10A of the DAR (page 49-50) describes available information about harvest of moose in the Mackenzie Valley area of the Sahtu and Dehcho regions, and the past studies cited in that section concluded that harvest levels were mainly between 4-8% of the moose population in that area and appeared to be sustainable. Larter (2018) concluded that the best estimates of adult moose density in the Dehcho Mackenzie Valley study area showed little or no trend from 2003-2018, appearing relatively stable over that period. This suggests that there is no need to introduce new harvest management measures for NWT Resident moose harvest. Periodic moose abundance surveys along the MVH corridor should continue, along with the annual NWT Resident Hunter Harvest Survey, to determine whether the opening of the first segment of the MVH results in any decrease in moose abundance that would trigger the need for additional management action. A short-term moratorium in NWT Resident moose harvest along the MVH does not appear to be warranted at this time. If the highway is constructed in 3 segments over 20 years it would allow for the results of monitoring programs from the first segment to inform decisions about whether additional measures to manage harvest on the other two segments might be needed before they are constructed and opened for public use
- B. Given the response to A (above), the GNWT is proposing to maintain the seasons and bag limits for NWT Resident harvest of boreal caribou and moose described in the current big game hunting regulations². As per the draft WMMP for the MVH (DAR Volume 5), the GNWT will continue annual collar-based monitoring of boreal caribou and repeat moose surveys (e.g. every 5 years)

¹ https://www.gov.nt.ca/sites/ecc/files/resources/gnwt_boreal_caribou_population_model_report_final_bil_1.pdf

² https://www.gov.nt.ca/ecc/sites/ecc/files/resources/2024_ecc_hunting_and_trapping_summary_en_web.pdf



within the MVH RAA during construction and operation of the MVH to assess the moose population. The results of any monitoring would be discussed with co-management partners to determine any possible management actions, if any.

- C. Similar to the WMMP for the Tłı̨chų Highway, the draft WMMP for the MVH includes an ongoing collar-based monitoring program for boreal caribou to detect changes in population trend and distribution, periodic aerial moose abundance surveys, establishment of a new GNWT-ECC Renewable Resource Officer position to increase patrols and enforcement of wildlife harvest regulations along the MVH, ongoing collection of the annual Resident hunter survey program data, and working with co-management partners to establish a voluntary Indigenous harvest monitoring and reporting program for the highway corridor. All these programs would contribute information to help assess whether harvest of boreal caribou and moose might be approaching unsustainable levels. Sections 5.2.2, 5.2.3, and 5.2.5 of version 6.2 of the WMMP for the Tłı̨chų Highway describe such similar programs for that project. Section 5.2.2 of the WMMP deals specifically with determining if harvest is nearing a conservation concern; however, GNWT acknowledges that some programs have either not been successfully initiated (e.g. a non-mandatory Aboriginal harvest monitoring and reporting program), or comprehensive analysis of harvest information collected to date has not yet taken place (e.g. NWT Resident hunter survey data and ECC's North Slave moose jaw collection program data). GNWT notes however that bi-annual Tłı̨chų Highway corridor working group meetings to date have not flagged any concerns about over-harvesting of either boreal caribou or moose, and the boreal caribou population monitoring program for the Tłı̨chų Highway area has consistently observed a stable or increasing population trend since the program began in 2017 (GNWT 2024³). A similar population monitoring program for boreal caribou along the MVH should provide a sensitive indicator to detect a negative boreal caribou population trend but will not necessarily be able to determine whether such a trend is due to harvest or to other factors. Moose surveys would not be able to detect a declining trend in moose as quickly, and similar to boreal caribou, surveys would not be able to determine if a declining trend was due to harvest.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories' Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- The Department of Environment and Climate Change
- The Department of Infrastructure

³ https://www.gov.nt.ca/ecc/sites/ecc/files/resources/tlichu_highway_water_licence_w202018-0001_annual_report_2023_may_31_2024.pdf



Topic: Culture, Traditional Land Use, and Harvesting: Interim Dehcho Land Use Plan (DAR section 11.1.1)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The Developer's Assessment Report does not mention whether the Interim Dehcho Land Use Plan was considered in Mackenzie Valley Highway planning and routing. However, the Interim Dehcho Land Use Plan will likely be implemented as a Land Use Plan during the Mackenzie Valley Highway construction, so it should be considered in the design and routing of Mackenzie Valley Highway.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

Please describe if and how the draft Interim Dehcho Land Use Plan was considered in the routing and design of the Mackenzie Valley Highway with respect to impacts on culture, traditional land use and harvesting.



Response from the Government of the Northwest Territories:

The 2006 Final Draft Dehcho Land Use Plan (dDLUP) was not formally approved by the Government of Northwest Territories (GNWT), and the Government of Canada and therefore, implementation of the dDLUP has not been initiated. The Dehcho Land Use Planning Committee (the Committee) is revising the Draft Interim Plan based on reviews by the parties to the Committee, and ongoing engagement with other organizations (see [Status of Plan | Dehcho Ndene Tahagotilgha Saahnogizah-ke \(dehcholands.org\)](https://dehcholands.org/status-of-plan/)). Respecting the ongoing revision of the dDLUP, and the lack of an approved document at the time of filing of the Developer’s Assessment Report (DAR), the management direction provided by the dDLUP, and the Conservation Zones and Special Management Zones described in the dDLUP were not applied to the Mackenzie Valley Highway Project (the Project).

Other information contained in the dDLUP was considered in the DAR. The dDLUP describes the cultural importance of traditional lands and resources to Dehcho First Nations and Sahtu Dene and Métis peoples; refers to important cultural areas and harvesting locations; lists culturally important plants, animals, and fish; and stresses the importance of traditional values and principles in land use planning. This information was incorporated into Chapter 11 of the DAR where appropriate.

Project engagement activities have been documented since 1998 and allow affected parties to express their concerns and provide feedback on the Project. Additionally, the GNWT initiated Consultation in the summer of 2023. The GNWT has a duty to consult with Indigenous Governments and Indigenous Organizations whenever it considers carrying out a government action that has the potential to adversely affect asserted or established Aboriginal and/or treaty rights. As noted in Volume 1, Chapter 2 Commitments (Table 2.7), the GNWT will continue to engage with Indigenous Governments, Indigenous Organizations, and other affected parties, in accordance with the Engagement and Consultation Plan, through the life of the Project.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories’ Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change
- Department of Executive and Indigenous Affairs



References

dLUPC (Dehcho Land Use Planning Committee). 2006. Dehcho Land Use Plan Final Draft. Available at: http://www.dehcholands.org/docs/dehcho_final_draft_june_02_06/Final%20Draft%20Dehcho%20Land%20Use%20Plan_June%202-06.pdf. Accessed November 2022.



Topic: Culture, Traditional Land Use, and Harvesting: Statistics from the Dehcho (DAR section 11.2.3.6.1)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The Developer's Assessment Report provides detailed information regarding the Sahtú region, but not the Dehcho region.

For instance, the Developer's Assessment Report states that "Within the Sahtu Region, 34% of the general population reported gathering berries (NWT Bureau of Statistics, 2019e), with 28% of the Indigenous population of Tulita and 32% of the Indigenous population of Norman Wells reporting engaging in berry gathering (NWT Bureau of Statistics, 2019b, 2019c)" and that "Within the Sahtu Region, wood is used for house heating in 274 (34%) households with 109 (13%) homes reporting wood as their main heat source (NWT Bureau of Statistics, 2018)."

Similar information regarding the Dehcho region seems to be lacking. Of note, the data presented under the Dehcho region, while referencing DPRA 2022 is data from Statistics Canada/NWT Bureau of Statistics and should have been referenced as such.

In responding to this IR, the Review Board requires analysis from Finance (Bureau of Statistics), ECC, and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

Please provide any similar, recent (within the last 5 years) statistics about the Dehcho region.



Response from the Government of the Northwest Territories:

According to data gathered by the Northwest Territories (NWT) Bureau of Statistics, within the Dehcho Region, 37.9% of the general population reported gathering berries in 2019, which is the last year for which data was available (NWT Bureau of Statistics 2023). For the community of Wrigley, 50% of the Indigenous population were engaged in berry gathering (NWT Bureau of Statistics 2019). No other secondary source information is available.

Within the Dehcho Region, wood is used by 388 (35.7%) households, with 265 (24.3%) of households reporting wood as their main heat source (NWT Bureau of Statistics 2018).

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories' Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change
- Department of Finance



References

NWT Bureau of Statistics. 2023. Summary of Community Statistics 2023. Available at:

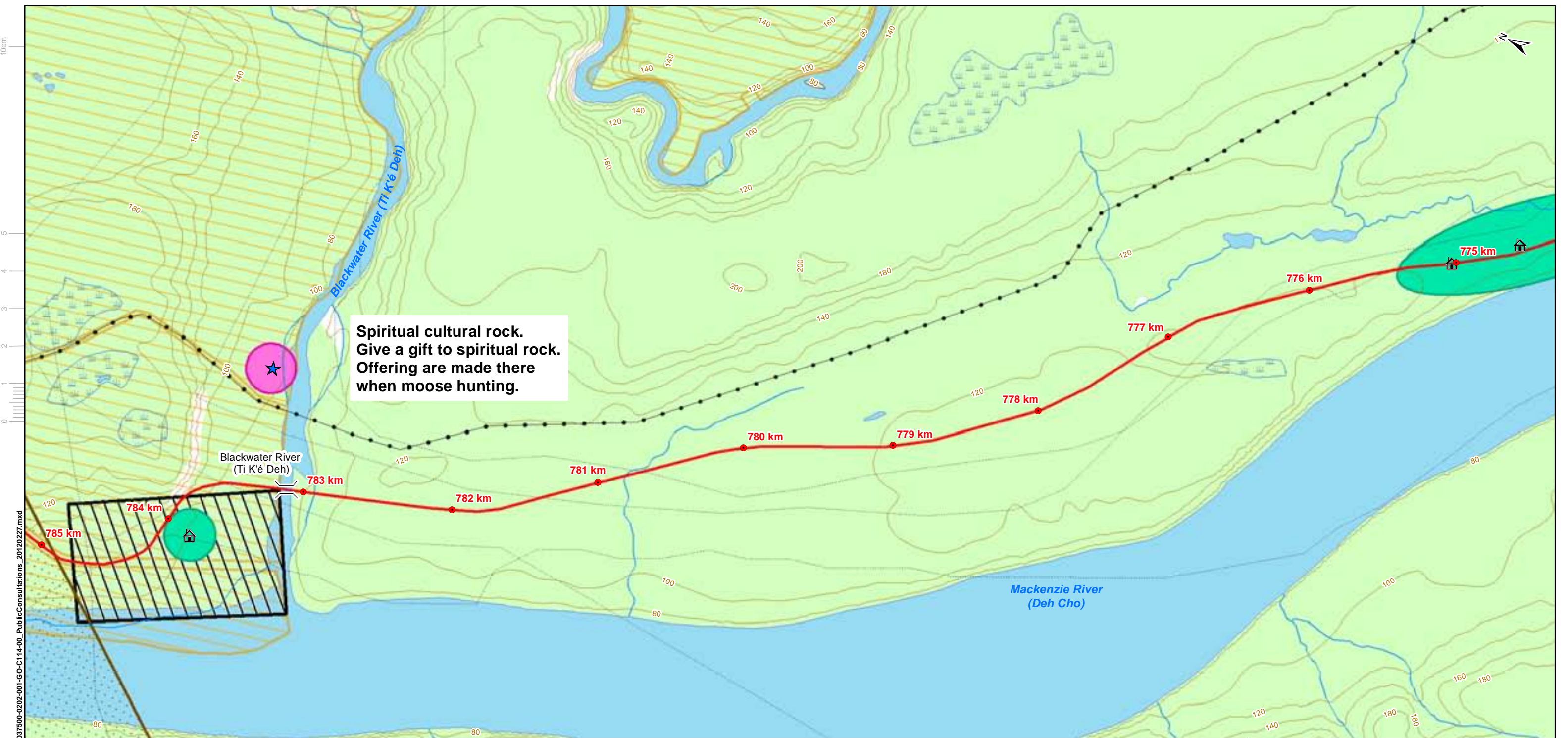
https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.statsnwt.ca%2Fcommunity-data%2FProfile-Excel%2FSummary%2520of%2520Community%2520Statistics_2023.xlsb&wdOrigin=BROWSELINK

NWT Bureau of Statistics. 2019. Wrigley 2019 Community Survey. Government of Northwest Territories.

Available at: <https://www.statsnwt.ca/community-data/CommunityInfographics/community%20-%20Wrigley.pdf>

NWT Bureau of Statistics. 2018. Wood pellet and Wood Use, 2019 Community Survey. Government of Northwest Territories. Available at:

https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.statsnwt.ca%2Frecent_surveys%2F2019NWTCommSurvey%2F2018%2520Wood%2520Pellet%2520and%2520Wood%2520Use.xlsx&wdOrigin=BROWSELINK



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|----------------------------------|----------------------------|--|
| ● Winter Road - KM Marker | — Contour line (in meters) | PKFN Main Traditional Activity Site |
| — Winter Road | - - - Trail | 🏠 Burial Area |
| — Other Road | ⋯ PKFN trails | 🏠 Hunting Cabins and Traps |
| — PKFN Realignment Proposals | 🟡 Sand | 🐻 Moose Pasture Area |
| ● Gas Pipeline | 🌊 Wetland | ★ Spiritual and Cultural Sites |
| /// Settlement Boundary | 🌊 River | 🏠 Water Proximity Concern |
| — Existing bridge | 🌊 Waterbody | 🏠 Traditional Hunting Ground |
| — Bridge to be built or re-built | 🌲 Wooded Area | |
| 🏠 Sahtu Private Lands | 🟡 Island | |

Moose sensitive area Comments expressed during public consultation

Sources :
 - CanVec, Canada Government.
 - LiDAR EBA.
 - Northwest Territories, Centre for Geomatics
 - PKFN, 2011
 - © Deh Cho First Nations, 2004
 - © Bing Maps, 2006-2009
 - Dessau, 2011.



Project Mackenzie Valley Highway Extension Project Description Report Pehdzeh Ki Ndeh - Dehcho Region	
Title PKFN Public Consultation Inputs (July 7th, 2011) Sheet 9	
Prepared : C. Abdel-Malek Drawn : G. Lemay Checked : D. Aubin	No : 068-P0037500-202-001-GO-C114-00 Scale : 1:25 000 Date : February 27, 2012
Projection UTM zone 10N, WGS84	



Topic: Culture, Traditional Land Use, and Harvesting: Protection of culturally important sites (DAR sections 22.1.1, 11.2.5.1.1)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

Conformity requirements from the GNWT and the Sahtú Land Use Plan have been included in the Developer's Assessment Report. However, the draft Interim Dehcho Land Use Plan has not been considered in the Developer's Assessment Report.

It was noted in Chapter 11 (11.2.5.1.1) that there were sites of cultural importance in the Dehcho; for example, "a burial area that exists on both sides of the existing winter road north of Blackwater River, east of the Mackenzie River between Mackenzie Valley Winter Road KM 783 and KM 785" (p.11-74), and that "Pehdzéh Kì First Nation and Dehcho First Nations noted that Blackwater River is a special traditional area that is home to a sacred old grave, and Willow Lake River (outside of the Regional Assessment Area) is where there is a burial ground (Dessau, 2012 [PR#13])." (p.11-77). It is unclear how close the project comes to these sites and what mitigation might be in place to avoid impacts.

In responding to this IR, the Review Board requires analysis from ECE and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

Please clarify the distance from known sites and identify mitigation measures that will be implemented to prevent adverse impacts on known sites of cultural importance, such as the sites near Blackwater River and Willow Lake.



Response from the Government of the Northwest Territories:

As stated in Volume 2, Section 11.4.4.1 of the Developer’s Assessment Report (DAR), sites of cultural importance have been identified by participating Indigenous Governments, Indigenous Organizations, and other affected parties, such as renewable resources councils and include sites and areas of historical interest or use, hunting areas, fishing areas, medicinal plant locations, trapping areas, ceremonial sites, areas of cultural or spiritual importance, habitation sites, and current use areas. Sites of cultural importance may also be valued for the conditions of use, such as seasonal cycles, inter-generational knowledge transmission, landforms and named places, and other factors that provide context, setting, or understanding for the practice of cultural use activities.

Through the Project-specific engagement program, a review of publicly available literature, and project-specific traditional land and resource use studies, 44 known sites of cultural importance were identified within the Regional Assessment Area (RAA). These sites and their occurrence within the Local Assessment Area (LAA) and RAA are listed in Volume 2, Chapter 11, Table 11.13, Table 11.14, Table 11.15. The general location of sites of cultural importance is also depicted in Volume 2, Chapter 11, Figure 11.6¹. Known sites of cultural importance are also described in Volume 2, Chapter 11, Appendix 11A, including location of the individual sites in relation to the Project LAA and RAA. With respect specifically to the the location of known sites of cultural importance near Blackwater River or Willow Lake River, there is no additional information available about the location of these sites beyond what appears in the DAR.

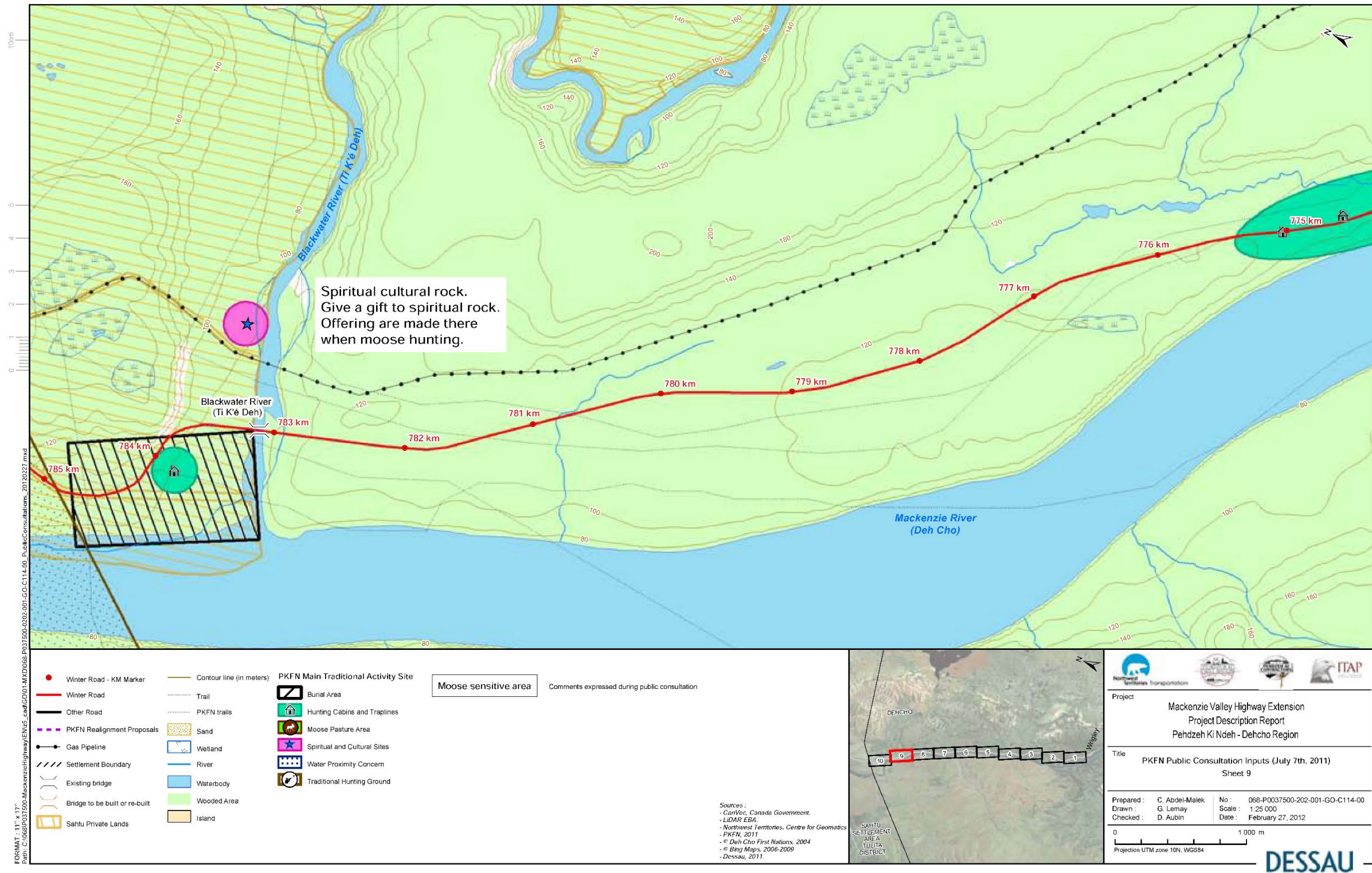
Reference to both the burial area north of Blackwater River, east of the Mackenzie River between Mackenzie Valley Winter Road (MVWR) kilometre (KM) 783 and KM 785 and the burial ground at Willow Lake River were obtained from the following source:

Dessau. 2012. Mackenzie Valley Highway Extension Pehdzeh Ki Ndeh – Dehcho Region. Project Description Report. Prepared for Government of the Northwest Territories, Department of Transport. PR#13.

In Dessau (2012), Appendix 4 – PKFN Public Consultation Inputs (July 7, 2011) includes a figure titled “PKFN Public Consultation Inputs (July 7, 2011) Sheet 9” (inserted here as Figure 42-1). This figure illustrates a polygon labelled “Burial Area” that appears between KM 783 and KM 785. No individual burial sites are recorded within this polygon, rather it appears to indicate an area within which burials may occur.

¹ To protect the confidentiality of sites of cultural importance, the scale and resolution of Figure 11.6 does not allow the specific location of individual sites to be determined.

Figure 42-1 Pehdzeh Ki First Nation Public Consultation Inputs (July 7, 2011)





There are two sites within the Northwest Territories Archaeological Sites Database that are noted to include burials; both of these are outside the burial area described in Figure 42-1 above. One site (KIRm-12) is north of the Blackwater River and within the Local Study Area, approximately 134 m from the analysed alignment; the second site (KIRm-16) is on the west (opposite) side of the Mackenzie River/Deh Cho and within the RSA, approximately 1339 m from the analysed alignment. As noted within the Technical Data Report – Heritage Resources, the known site data will require review once the Project has been fully designed and a final refined Project Development Area (PDA) has been established, to determine if any of the sites currently on record will intersect with the Project.

Cultural sites that are also protected and regulated heritage resources under the Northwest Territories Archaeological Sites Regulations pursuant to the *Archaeological Sites Act* (S.N.W.T., 2014, c.9) are addressed in Chapter 22 of the DAR, the associated Technical Data Report – Heritage Resources, and the Draft Heritage and Sites Protection Plan. Archaeological site data requested under license from the Government of Northwest Territories - Education, Culture and Employment (GNWT-ECE) indicate that the Blackwater River area, at its confluence with the Mackenzie River/Deh Cho, is noted as an area of particularly high site density relative to recorded sites and an area of high archaeological site potential relative to unrecorded sites.

A desktop Archaeological Overview Assessment (AOA) of a preliminary alignment of the Mackenzie Valley Highway identified the Blackwater River area as having high archaeological site potential; the AOA included a recommendation for regulatory consideration by GNWT-ECE for completion of a field-based Archaeological Impact Assessment (AIA) in this area before any ground-altering activities associated with the Highway construction. The regulatory response (March 30, 2020) agreed with this recommendation, including requirements that previously recorded archaeological sites in the high potential area be revisited to inspect site conditions and revise site locations and boundaries as needed.

In Dessau 2012, the burial ground at Willow Lake River is mentioned in “Table 11: Wrigley Community Consultation Summary (July 7, 2011)” (PDF page 134), in which the following comment was attributed to Jean Marie River First Nation:

“There is an important burial ground close to Willowlake River. The Mackenzie Valley Highway up to Wrigley already had some negative impacts on that sacred ground. The extension to the north would result in more people passing through this burial ground. Restrictions or compensation should be considered.”

No more detail about specific locations of burials was provided by Jean Marie River First Nation; however, Willow Lake River is a tributary of the Mackenzie River south of Wrigley and outside the Regional Assessment Area, approximately 53 km from the PDA. Therefore, the Project is not expected to interact directly or indirectly with burial sites at Willow Lake River.

With respect to mitigation measures to avoid or reduce adverse effects on known sites of cultural importance, Project routing and design have integrated the existing MVWR to the extent practicable, which is anticipated to reduce effects on sites of cultural importance.

Further, heritage resources recorded with Prince of Wales Northern Heritage Centre (PWNHC) will be subject to a Heritage and Sites Protection Plan and site-specific mitigations required by the PWNHC. Mitigation measures are described in the DAR (Chapter 22) and are initiated by review of the Technical Data Report-Heritage Resources and the DAR by the Culture and Heritage Division, GNWT-ECE. The Territorial heritage regulators will review the Project information and issue requirements intended to



initiate a staged process to mitigate Project effects. These are expected to include completion of a desktop AOA to identify assessment gaps relative to the final design PDA and an AIA before construction in areas of known or suspected high archaeological potential (including Blackwater River). Additional requirements may be issued by the Territorial regulators for heritage resources identified during the AIA completion to avoid impacts or otherwise mitigate Project effects on significant heritage resources². Mitigation measures will be developed in cooperation between the ECE regulators, Indigenous Governments and Indigenous Organizations, and/or families (in the case of known or suspected burials). The preferred measures, as noted in the Developer's Assessment Report Chapter 22, are avoidance of effects, with buffers of 500 metres (m) for burial sites and 150 m for archaeological sites. Not all burial sites may be considered as archaeological sites to be protected and regulated under the *Northwest Territories Archaeological Sites Regulations* pursuant to the *Archaeological Sites Act* (S.N.W.T., 2014, c.9).

The mitigation measures detailed above rely heavily on available information provided by the GNWT-ECE and/or Indigenous participants in Project engagement; if locations are not provided, it may not be possible to develop effective avoidance and mitigation. Mitigation measures described in the DAR Chapter 22 also include the development and application of a chance find protocol for cultural materials, features, and sites during the Project construction.

For known sites of cultural importance, including culturally important harvesting areas, that are not listed as historical resources with the PWNHC, the GNWT will investigate and/or mitigate 'known and suspected sites' as identified by Indigenous Governments and Organizations during consultation and engagement or through traditional land and resource use studies. Additional proposed mitigation measures include:

- Known areas of collection of plants of interest to Indigenous Governments, Indigenous Organizations, and other affected parties will be avoided where possible. Clearing schedules will be communicated in advance of clearing to provide an opportunity to collect plant material from the PDA. Clearing will be limited to areas required for construction and safe operations.
- Abandoned sections of MVWR right of way and access roads will be allowed to revegetate naturally.
- Construction equipment will travel on designated winter roads or constructed embankment only.
- Travel of vehicles will be confined to existing infrastructure roads and trails as much as possible to avoid disturbing vegetated areas.
- The GNWT will notify communities of Project activities and schedules, including provision of Project maps and design components, and discuss key traditional harvesting periods.
- The GNWT is committed to ongoing engagement with Indigenous Governments, Indigenous Organizations, and other affected parties, such as renewable resources councils, during advancement of Project design and planning.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories' Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line

² The *Mackenzie Valley Resources Management Act*, 1998, defines historical resources as: "archaeological or historic sites, burial sites, artifacts and other objects of historical, cultural or religious significance, and historical or cultural records." The Northwest Territories *Archaeological Sites Act*, 2014, directs that Class 2 Archaeological assessments shall include "interpretation of the significance of the site based on a summary examination of the findings resulting from the work."



departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Education, Culture, and Employment
- Department of Environment and Climate Change
- Department of Executive and Indigenous Affairs



References

Archaeological Sites Act – Archaeological Sites Regulations, 2014. R-024-2014

Mackenzie Valley Resource Management Act, S.C 1998. C. 25



Preamble

A few hyperlinks in the developer's response to Review Board questions are missing or broken. This includes:

- In the developer's response to the Review Boards Comment and Response #22, an attachment was provided for all non-functioning hyperlinks.
- In the developers overarching response #3, a few links are not provided or broken too.

Reviewer Request

Provide a copy of the following documents:

1. GNWT's Official Languages of the Northwest Territories document
2. List of GNWT's programs and services (Footnote 2 overarching response #3)
3. World Health Organisation Europe. Alcohol and COVID-19: what you need to know. WHO 2020.
4. British Academy. The COVID Decade: Understanding the long-term societal impacts of COVID-19. 2021
5. Doerr, S.H.; Santín, C. Global trends in wildfire and its impacts: Perceptions versus realities in a changing world. Philos

Response

Please find attached the requested documents.

The list of GNWT's programs and services can be found here:

<https://www.gov.nt.ca/en/services/funding-programs>

Alcohol and COVID-19: what you need to know



Facing the COVID-19 (new coronavirus disease) pandemic, the countries of the world must take decisive action to stop the spread of the virus. In these critical circumstances, it is essential that everyone is informed about other health risks and hazards so that they can stay safe and healthy.

The following factsheet provides important information that you should know about alcohol consumption and COVID-19. It addresses, among other things, the misinformation that is being spread through social media and other communication channels about alcohol and COVID-19.

The most important point to remember:

**In no way will consumption of alcohol protect you from COVID-19
or prevent you from being infected by it**

General facts about alcohol and your body



Ethyl alcohol (ethanol) is the substance in alcoholic beverages that is responsible for most of the harms that arise from their consumption, irrespective of whether it is consumed in the form of wine, beer, spirits or anything else.

Unfortunately, other toxic substances that may smell like ethanol can be added in adulterated beverages that are produced informally or illegally; or they may be present in alcoholic products that are not intended for human consumption, such as hand disinfectant. Added substances such as methanol can be fatal even in small amounts or may lead to blindness and kidney disease, among other problems. According to media reports and anecdotal sources, deaths related to the ingestion of such alcoholic products, based on the mistaken belief that they will somehow offer protection against the virus, have already occurred in some countries during the COVID-19 outbreak.

These are the general facts you should know about the consumption of alcohol and health:

- Alcohol has effects, both short-term and long-term, on **almost every single organ of your body**. Overall, the evidence suggests that there is **no “safe limit”** – in fact, the risk of damage to your health increases with each drink of alcohol consumed.
- Alcohol use, especially heavy use, **weakens the immune system** and thus reduces the ability to cope with infectious diseases.
- Alcohol, even in very small quantities, is known to **cause certain types of cancer**.
- Alcohol **alters your thoughts, judgement, decision-making and behaviour**.

- Alcohol, even in small amounts, is a **risk to the unborn child** at any time during pregnancy.
- Alcohol increases the risk, frequency and severity of **perpetration of interpersonal violence** such as intimate partner violence, sexual violence, youth violence, elder abuse, and violence against children.
- Alcohol increases the risk of death and injury from **road traffic injuries, drowning and falls.**
- Heavy use of alcohol **increases the risk of acute respiratory distress syndrome (ARDS)**, one of the most severe complications of COVID-19.

General myths about alcohol and COVID-19



- | | |
|-------------|--|
| <i>Myth</i> | <i>Consuming alcohol destroys the virus that causes COVID-19.</i> |
| Fact | Consuming alcohol will not destroy the virus , and its consumption is likely to increase the health risks if a person becomes infected with the virus. Alcohol (at a concentration of at least 60% by volume) works as a disinfectant on your skin, but it has no such effect within your system when ingested. |
| <i>Myth</i> | <i>Drinking strong alcohol kills the virus in the inhaled air.</i> |
| Fact | Consumption of alcohol will not kill the virus in the inhaled air ; it will not disinfect your mouth and throat; and it will not give you any kind of protection against COVID-19. |
| <i>Myth</i> | <i>Alcohol (beer, wine, distilled spirits or herbal alcohol) stimulates immunity and resistance to the virus.</i> |
| Fact | Alcohol has a deleterious effect on your immune system and will not stimulate immunity and virus resistance. |

Alcohol: what to do, and what not to do, during the COVID-19 pandemic



- Avoid alcohol altogether so that you do not undermine your own immune system and health and do not risk the health of others.
- Stay sober so that you can remain vigilant, act quickly and make decisions with a clear head, for yourself and others in your family and community.
- If you drink, keep your drinking to a minimum and avoid getting intoxicated.
- Avoid alcohol as a social cue for smoking, and vice versa: people tend to smoke, or smoke more, if they drink alcohol, and smoking is associated with more complicated and dangerous progression of COVID-19. Remember, too, that indoor smoking is harmful to others in your household and should be avoided.
- Make sure that children and young people do not have access to alcohol and do not let them see you consume alcohol – be a role model.

- Discuss with children and young people the problems associated with drinking and COVID-19, such as violations of quarantine and physical distancing, which can make the pandemic worse.
- Monitor the screen time of your children (including TV), as such media are flooded with alcohol advertising and promotion; they also spread harmful misinformation that may stimulate early initiation and increased consumption of alcohol.
- Never mix alcohol with medications, even herbal or over-the-counter remedies, as this could make them less effective, or it might increase their potency to a level where they become toxic and dangerous.
- Do not consume alcohol if you take any medication acting on the central nervous system (e.g. pain killers, sleeping tablets, anti-depressants, etc), as alcohol might interfere with your liver function and cause liver failure or other serious problems.

Alcohol and physical distancing during the COVID-19 pandemic



To slow down the spread of the virus, the World Health Organization (WHO) recommends physical distancing of at least one meter from sick people as a protective measure. Bars, casinos, night clubs, restaurants and other places where people gather to consume alcohol (including in the home) increase the risk of transmission of the virus.

Physical distancing therefore reduces the availability of alcohol, so it presents a great opportunity to reduce your drinking and become healthier.

Alcohol and home isolation or quarantine



To limit the spread of COVID-19, countries have progressively introduced community-wide lockdowns and periods of quarantine for those who are suspected of having contracted the virus or have been in contact with someone infected by the virus. This means that an unprecedented number of people are now staying in their homes.

It is important to understand that alcohol poses risks to your health and safety and should therefore be avoided during periods of home isolation or quarantine.

- When working from home, adhere to your usual workplace rules and do not drink. Remember that after a lunch break you should still be in a fit state to work – and that is not possible if you are under the influence of alcohol.
- Alcohol is not a necessary part of your diet and should not be a priority on your shopping list. Avoid stockpiling alcohol at home, as this will potentially increase your alcohol consumption and the consumption of others in your household.
- Your time, money and other resources are better invested in buying healthy and nutritious food that will maintain good health and enhance your immune system response. For further ideas, take a look at the food and nutrition tips during self-quarantine issued by WHO.¹

- You might think that alcohol helps you to cope with stress, but it is not in fact a good coping mechanism, as it is known to increase the symptoms of panic and anxiety disorders, depression and other mental disorders, and the risk of family and domestic violence.
- Instead of consuming alcohol to pass your time at home, try an indoor workout. Physical activity strengthens the immune system and overall – from both a short-term and a long-term perspective – is a highly beneficial way of spending a period of quarantine.²
- Do not introduce your children or other young people to drinking and do not get intoxicated in front of them. Child abuse and neglect can be aggravated by alcohol consumption, especially in crowded housing situations where isolation from the drinker is not possible.
- Disinfectant alcohol can easily become accessible for consumption purposes in home isolation. It is important, therefore, to keep such products out of the reach of children and underage drinkers and others who may misuse them.
- Alcohol use can increase during self-isolation and both, isolation and drinking, may also increase the risk of suicide, so reducing your alcohol consumption is very important. If you have suicidal thoughts, you should call your local or national health hotlines
- Alcohol is closely associated with violence, including intimate partner violence. Men perpetrate most of the violence against women, which is worsened by their alcohol consumption, while women experiencing violence are likely to increase their alcohol use as a coping mechanism. If you are a victim of violence and are confined with the perpetrator in home isolation, you need a safety plan in case the situation escalates. This includes having a neighbour, friend, relative or shelter to go to in the event that you need to leave the house immediately. Try to reach out to supportive family members and/or friends and seek support from a hotline or local services for survivors. If you are under quarantine and need to leave the house immediately, call a local support hotline and reach out to someone you trust.

Alcohol use disorders and COVID-19



Alcohol use disorders are characterized by heavy alcohol use and loss of control over alcohol intake. Although they are among the most prevalent mental disorders globally, they are also among the most stigmatized.

People with an alcohol use disorder are at greater risk of COVID-19 not only because of the impact of alcohol on their health but also because they are more likely to experience homelessness or incarceration than other members of the population. It is therefore essential, under the current conditions, that people who need help because of their alcohol use get all the support they need.

¹ Food and nutrition tips during self-quarantine. Copenhagen: WHO Regional Office for Europe; 2020 (http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov-technical-guidance/food-and-nutrition-tips-during-self-quarantine/_recache).

² How to stay physically active during COVID-19 self-quarantine. Copenhagen: WHO Regional Office for Europe; 2020 (<http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov-technical-guidance/stay-physically-active-during-self-quarantine>).

If you, or a person close to you, have problems in relation to alcohol use, please consider the following:

- The present situation is a unique opportunity to quit drinking, or at least to cut down considerably, as various social cues and peer pressure situations, such as parties, friends' gatherings, restaurants and clubs, are (by necessity) avoidable.
- Online interventions for alcohol use disorders by professionals and mutual help groups can be less stigmatizing as they offer greater anonymity and privacy, so check out what help you can get online.
- Create a buddy and self-support system with someone you trust and reach out for extra help if needed, such as online counselling, interventions and support groups.
- Practise physical distancing, but do not socially isolate: call, text and/or write to your friends, colleagues, neighbours and relatives. Use new and creative ways of connecting to others without actual physical contact.
- Avoid alcohol cues and triggers on TV and media where there is pervasive marketing and promotion of alcohol; be careful to avoid links to social media that are sponsored by the alcohol industry.
- Try to maintain your daily routine as much as you can, focus on things that you can control and try to keep grounded – for instance, through a daily workout, hobbies or mind relaxation techniques.
- If you become infected, discuss with health personnel your alcohol consumption so that they can make the most appropriate decisions with respect to your overall health condition.

How to find reliable information and how to spot misinformation



- Seek trusted sources of information, such as WHO, national health authorities and your health professional. For updated information on COVID-19, check the WHO website³
- Always double-check the information you receive. Beware of websites and texts that use the same messages and have the same writing and overall style, as these are likely to be viral messages produced for mass distribution that are intended to mislead.
- Beware of false and misleading claims, particularly in relation to the effects of alcohol on health and immunity. Such claims should be categorically discounted as a source of health information as there is no evidence that drinking alcohol offers any protection against COVID-19 or has a positive effect on the course and outcomes of any infectious disease.
- Beware of claims made online that alcohol offers any essential benefits that you really need to have during your period of home isolation or quarantine. Alcohol is in no way a necessary component of your diet and lifestyle.

³ Coronavirus disease (COVID-19) outbreak [online information portal]. Copenhagen: WHO Regional Office for Europe; 2020. (<http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19>).

- Be aware that websites and social media posts offering online sale and home delivery of alcoholic beverages can lead to increased alcohol consumption and may easily target children.
- If you do not drink, do not let any supposed health reason or claim persuade you to start.

Finally, the key point to remember:

Under no circumstances should you drink any type of alcoholic product as a means of preventing or treating COVID-19 infection.

Acknowledgements

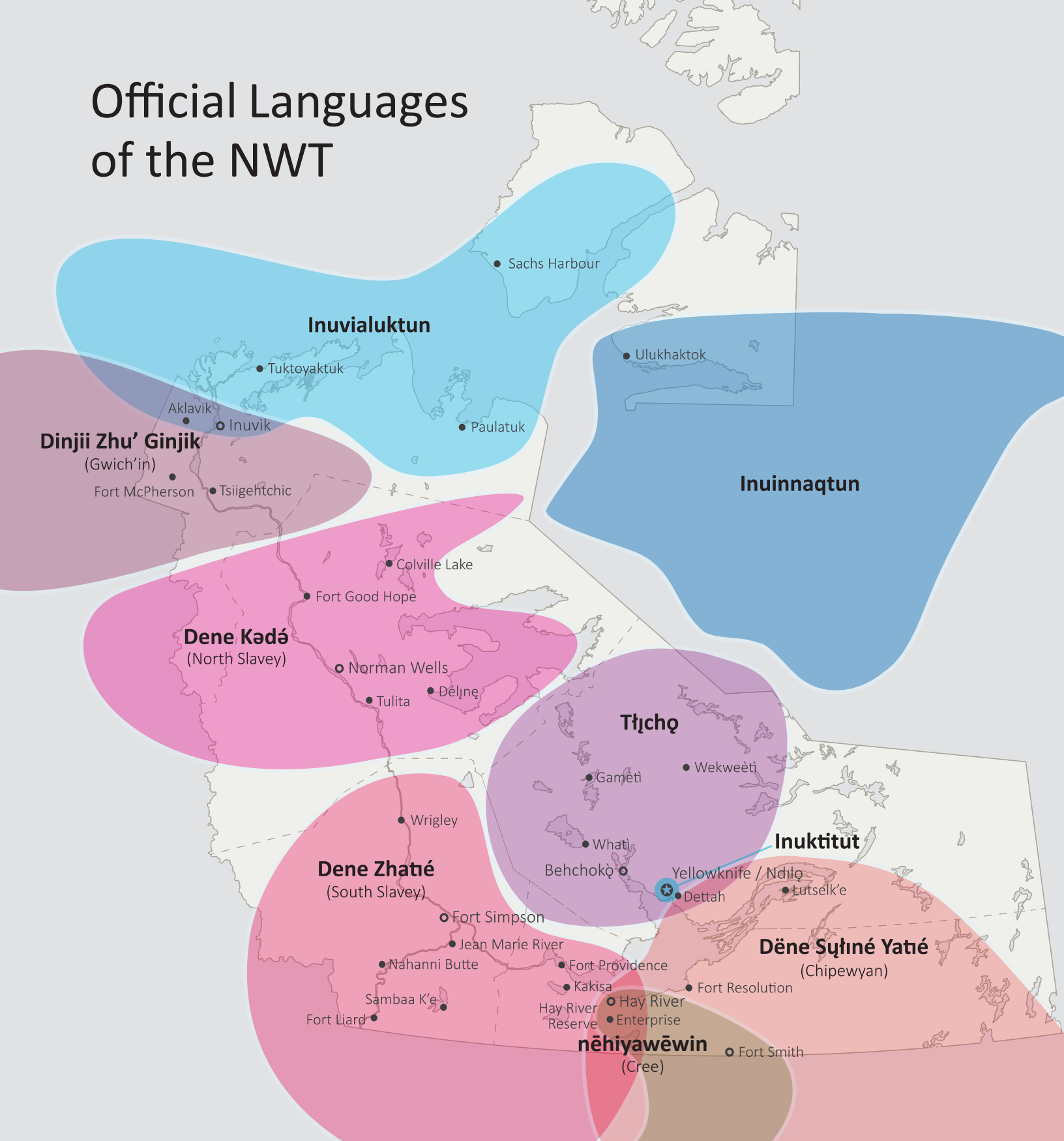
This document was coordinated by Carina Ferreira-Borges, Programme Manager, Alcohol, Illicit Drugs and Prison Health, under the leadership of Dr João Breda, Head of the WHO European Office for the Prevention and Control of Noncommunicable Diseases, and in consultation with the Incident Management Team of the WHO Health Emergencies Programme, WHO Regional Office for Europe, and WHO headquarters, Geneva, Switzerland.

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Official Languages of the NWT



This map shows the approximate geographic areas where the NWT's various Indigenous languages have historically been spoken. Although the names of languages and dialects vary from community to community, the language regions outlined in the map represent widely used and agreed upon designations.

French is mostly spoken in Hay River, Fort Smith, Inuvik and Yellowknife. English is spoken throughout the NWT.

THE COVID DECADE

Understanding the long-term societal impacts of COVID-19



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Foreword

The wisdom of the humanities and the perspectives of the social sciences provide powerful insights into the challenges we shall face during the remainder of the COVID Decade

One year ago, when the United Kingdom entered its first lockdown, little was known about the COVID-19 virus, but suddenly the nation was facing a pandemic that has taken thousands of lives and threatened to overwhelm the National Health Service. The past twelve months have been a period of extraordinary uncertainty, searing anxiety and emotional trauma, and we have only just begun to grapple with the economic, social and psychological consequences of COVID-19, which will remain with us long after the virus will, we hope, have been brought under control.

Historians rightly debate the varied societal impacts of past pandemics – from the Plague of Justinian and the Black Death to the Spanish Flu – but no one doubts they were significant and profound. Potent narratives have always emerged to shape our understanding of the national past, especially at a time of crisis. In the 20th century, those who were killed on the Western Front or who died of the Spanish Flu became the “Lost Generation”, and amid the Luftwaffe’s devastating air raids during the Second World War, many Britons summoned the “Blitz Spirit”.

No doubt the COVID-19 pandemic will prove to be fertile ground for new foundation myths. Among the archives, oral histories and Mass Observation records amassed during this past year, certain phrases and expressions seem sure to stand out, such as the exhortation to “build back better” or laying the groundwork for a “Great Reset” – echoing William Beveridge’s 1942 report on the “five giants on the road to post-war reconstruction”. These tales of hope amidst despair and triumph over tribulation are not merely a human response to disaster; they also exhort us to try to construct a better, safer and fairer society.

But in seeking to move from exhortation to action, we must also engage with the weight of evidence. As this British Academy report on the broader societal impacts of COVID-19 makes plain, this is no ordinary crisis that we can overcome simply by providing stronger safety nets for those left behind. The pandemic affected everyone and everything at once: our relationships with each other and with the people of other countries; our economic organisation and our social interactions; our understanding of the value of life and health, of our intrinsic interconnectedness, and of the fragility of our natural world.

In the United Kingdom as around the globe, this pandemic is not just a health crisis that may one day end, but a social, economic and cultural crisis that will last much longer. The report shows how COVID-19 thrived and spread alongside pre-existing social deprivations and economic inequalities. Too many people have experienced the pandemic in ill-suited housing, poorly equipped for working or home-schooling, suffering from damaged mental health, exposed to an avalanche of aggressive misinformation, negotiating the complexities of the social security and criminal justice systems, and balancing new risks while shielding or caring for vulnerable relatives. And, regardless of geography, race or class, the life-chances and employment opportunities of young people have been especially badly affected.

Doctors, scientists and epidemiologists provided us with vital knowledge and essential expertise during the deadliest phases of the pandemic. But to understand what awaits us during the remainder of what will be the continuing Covid Decade,

we also need the wisdom, insights and perspectives of historians, geographers, philosophers, psychologists and experts from a wide variety of other disciplines. Through its COVID-19 – Shape the Future programme, the British Academy brought together scholars from around the world to help us see our way forward in these dark and difficult and demanding times. In order to build back better after Covid, we need to know where we have been, where we are, and what we need to do, going forward. This report, by turns deeply evidenced, profoundly humane and full of practical hope, does precisely that. I commend it wholeheartedly to what I trust and believe will be a very wide audience.

A handwritten signature in black ink, appearing to read 'David Cannadine', with a horizontal line underneath.

Professor Sir David Cannadine
President of the British Academy

Executive summary

The British Academy was asked by the Government Office for Science to produce an independent review on the long-term societal impacts of COVID-19. This report outlines the evidence across a range of areas, building upon a series of expert reviews, engagement, synthesis and analysis across the research community in the Social Sciences, Humanities and the Arts (SHAPE). It is accompanied by a separate report, *Shaping the COVID decade*, which considers how policymakers might respond. History shows that pandemics and other crises can be catalysts to rebuild society in new ways, but that this requires vision and interconnectivity between policymakers at local, regional and national levels.

With the advent of vaccines and the imminent ending of lockdowns, we might think that the impact of COVID-19 is coming to an end. This would be wrong. We are in a COVID decade: the social, economic and cultural effects of the pandemic will cast a long shadow into the future – perhaps longer than a decade – and the sooner we begin to understand, the better placed we will be to address them.

There are of course many impacts which flowed from lockdowns, including not being able to see family and friends, travel or take part in leisure activities. These should ease quickly as lockdown comes to an end. But there are a set of deeper impacts on health and wellbeing, communities and cohesion, and skills, employment and the economy which will have profound effects upon the UK for many years to come. In sum, the pandemic has exacerbated existing inequalities and differences and created new ones, as well as exposing critical societal needs and strengths. These can emerge differently across places, and along different time courses, for individuals, communities, regions, nations and the UK as a whole.

We organised the evidence into three areas of societal effect. As we gathered evidence in these three areas, we continually assessed it according to five cross-cutting themes – governance, inequalities, cohesion, trust and sustainability – which the reader will find reflected across the chapters. Throughout the process of collating and assessing the evidence, the dimensions of place (physical and social context, locality), scale (individual, community, regional, national) and time (past, present, future; short, medium and longer term) played a significant role in assessing the nature of the societal impacts and how they might play out, altering their long-term effects. The three societal areas we chose to help structure our evidence collection and, ultimately, this report were:

- **Health and wellbeing** – covering physical and mental health (including young people and work), wellbeing, and the environment we live in
- **Communities, culture and belonging** – covering communities and civil society, cities and towns, family and kinship, and arts, media, culture, heritage and sport
- **Knowledge, employment and skills** – covering education (compulsory and tertiary), skills, knowledge and research, and work and employment

Below we provide a high-level summary across the three areas, but we encourage readers to dip into the detailed sections of the report, which contain a vast array of data not reproduced here.

Health and wellbeing

The impacts of COVID-19 on health and wellbeing have not been felt uniformly across society. COVID-19 has exacerbated existing structural and social inequalities, with particularly negative health outcomes for those already disadvantaged in society. In this chapter we identify seven areas where we expect there to be continuing challenges and opportunities: pre-existing health inequalities; mental health; social care; pandemic duration and ‘long COVID’; information and communication; data gathering and new health technologies; and environmental conditions, health and wellbeing.

Communities, culture and belonging

A central theme across the evidence is the vital importance of community-led responses that draw upon local knowledge and resources, and build capacity and channels of interconnectedness between government, community organisations and the public. The evidence clearly shows that those communities that entered the pandemic with such infrastructure have been best placed to respond. In this chapter we examine six areas where we expect there to be continued challenges and opportunities: community-level responses, volunteering and mutual aid; cohesion and solidarity; trust in government and media; place, cities and housing; race, ethnicity, immigration and prejudice; and arts, culture and sport.

Knowledge, employment and skills

COVID-19 has had significant and unequal effects depending on where in the UK people live, their level of education, socioeconomic and health status. Wider issues around the national economy, educational infrastructure and the social security system have compounded these impacts. In this chapter we examine five areas where we consider the challenges and opportunities of the pandemic on the experience of education and training; the sustainability of further and higher education; the stability of the economy; employment; and incomes.

Nine areas of long-term societal impact

Throughout this review, we have tried to retain a strict focus on the impacts caused by COVID-19 – but as we discovered, many impacts of the pandemic are an acceleration of existing trends. The evidence of impact pointed strongly to factors that preceded and will outlast the pandemic. This is to be expected, as it is also the pattern that pandemics and major crises throughout history have exhibited: pandemics are as much social and economic problems as medical and health ones. We conclude this review with a set of nine areas of long-term societal impact, which result from a synthesis and analysis of the effects, risks, challenges and opportunities outlined above. These nine areas of long-term impact are not exhaustive, but they will be significant, and we hope they provide a useful starting point for further engagement and understanding of how we will work together to address them.

1. Increased importance of local communities

Local communities have become more important than ever during the pandemic. Local and hyper-local charitable and voluntary organisations have been crucial to the response to COVID-19, but there are inequalities between communities based on the strength of community infrastructures. National capacity to respond to changing circumstances and challenges requires effort to sustain a strong web of communities and community engagement at local levels.

2. Low and unstable levels of trust in governance

Following a brief initial increase, trust in the UK Government and feelings of national unity are in decline. Trust in local government and feelings of local unity have been higher and steadier. Declining trust is a major challenge that needs to be addressed because it undermines the ability to mobilise public behaviour for wider social and health benefits.

3. Widening geographic inequalities

Geographic and spatial inequalities have widened. Health and wellbeing, local economic risk and resilience, poverty and deprivation, and response planning all have an important place dimension that has shaped the impact of the crisis. Attending to these inequalities is important because they expose ways in which the combination of geographical location, physical infrastructure and social conditions implies that different priorities may be needed in different places.

4. Exacerbated structural inequalities

COVID-19 and the government response to it have impacted different people in different ways, often amplifying existing structural inequalities in income and poverty, socioeconomic inequalities in education and skills, and intergenerational inequalities – with particular effects on children (including vulnerable children), families with children and young people. There are differential effects within these along dimensions of gender, race and ethnicity and social deprivation which have been both exposed and exacerbated, as well as effects related to social development, relationships and mental health which are all variably affected and interlinked. The evidence highlights that addressing the underlying interconnected propellants of inequality is a key challenge ahead.

5. Worsened health outcomes and growing health inequalities

Like structural inequalities, health outcomes for COVID-19 have followed patterns of existing health inequalities. There are ongoing health impacts from 'long COVID' as well as from delays in care seeking and reprioritisation of resources. Deficiencies in home and community care infection prevention and control measures, and inequalities in the structure and funding of social care provision, have been laid bare. These are all areas that need significant attention to avoid critical gaps in the health system going forward.

6. *Greater awareness of the importance of mental health*

The pandemic and various measures taken to address it have resulted in differential mental health outcomes. Access to support for new cases and for those with pre-existing conditions has also been disrupted, in addition to services for children and young people. Both have the potential to result in long-term mental health impacts for particular groups if there is not a renewed focus on the causes and solutions for sustaining mental health across society, including by tackling the structural and root causes of inequality.

7. *Pressure on revenue streams across the economy*

Although detailed economic analyses were outside the scope of the report, there are likely to be additional pressures on government spending in the medium to long term, as a result of increasing levels of debt and possible falling tax revenues due to risks around unemployment, failing businesses, decreased consumption and significant shifts in the structure of the economy. It will be increasingly important to address the balance of revenue generation and weigh up expenditure against non-economic impacts, considering a diversity of mechanisms and actors to meet societal goals.

8. *Rising unemployment and changing labour markets*

Employment and household income levels have fallen and will likely worsen for the foreseeable future. This will lead to an increased dependency on social security, which the current system may be ill equipped to deal with effectively. This will matter not only for those who are (or will become) dependent on state social security support, but also because it may require significant adjustments to the social security system in order for it to keep pace with demand.

9. *Renewed awareness of education and skills*

The consequences of lost access to education at all levels, coupled with changes to assessments, will be felt for years to come, and wholly recovering lost education is unfeasible. This has exacerbated existing socioeconomic inequalities in attainment and highlighted digital inequality. Because a high-skill economy will be essential for future prosperity and for society to thrive, it will be vital to consider whether lifelong educational opportunities are sufficiently comprehensive, diverse and flexible.

Conclusion

This report draws together evidence across a wide range of areas on the societal impact of the pandemic. It shows that COVID-19 has generated a series of social, economic and cultural effects which will have long-term impacts. In particular, the pandemic has exposed, exacerbated and solidified existing inequalities in society. It has also made some individuals and groups living in particular places and communities even more vulnerable than before.

However, it is not just a case of the pandemic making existing problems worse. It has also exposed areas of strength, resilience, creativity and innovation. We hope this rich evidence base will prove a useful resource for policymakers, civil society, media and others who are trying to make sense of the changing landscape.

This evidence review is accompanied by a separate report, *Shaping the COVID decade*, outlining some potential options for policymakers to respond to the trends outlined in this review. History indicates that times of upheaval – such as the pandemic – can be opportunities to reshape society, but that this requires vision and for key decision-makers to work together in concert.

The British Academy has begun the substantial task of exploring the long-term societal effects of COVID-19. Of course, the situation continues to evolve, and new evidence will help us to build a richer picture of the pandemic's effects and how we might respond. What we offer here is a conceptual framework, a methodology and some core evidence that will allow both the British Academy and others to make progress on this urgent challenge. We look forward to opportunities to develop this programme in partnership with actors across all levels of government, with civil society and business sector leaders, and within communities.



1.0 Understanding the long-term societal impacts of COVID-19

1.1 Introduction and overview

The British Academy was asked by the Government Office for Science in September 2020 to produce an independent review on the long-term societal impacts of COVID-19. This short but substantial question led us to integrate and synthesise a range of evidence and conduct an extensive engagement process. This document summarises our findings about what the areas of impact are likely to be, and how the impacts might play out if no active measures are taken to mitigate them.

In the six months prior to this review, the Academy had engaged in a wide-ranging consultation entitled *Shape the Future*, involving a large number of leading scholars across the humanities and social sciences. That initiative culminated in a detailed summary of over 20 workshops which brought the insights from the social sciences, humanities and the arts together to understand how we can shape a positive post-pandemic future.¹ The initiative sought to ensure that we are ready and able to translate and synthesise these insights to help society and government recover and rebuild, and to encourage interdisciplinary learning which incorporates the long view and the global view.

¹ The British Academy's *Shape the Future* programme explores how to create a positive, post-pandemic future for people, the economy and the environment. See, Morgan Jones, M., Abrams, D. and Lahiri, A. (2020), 'Shape the Future: how the social sciences, arts and the humanities can shape a positive, post-pandemic future', *The Journal of the British Academy*, 8, pp.167-266.

The current review builds on all this work, but examines it more specifically through the lens of our experience of the pandemic. We consulted across the SHAPE² research community, engaging not only our fellowship and early career researcher community, but also a range of external stakeholders, putting out a wide-ranging call for evidence. We actively scanned and reviewed existing research (published or underway) as well as the available 'grey literature' from a variety of sources. We received a series of deep-dive evidence reviews on specific areas identified through our scoping work. We then integrated and synthesised all this evidence, continually testing, elaborating and refining it through consultation and discussion with our expert advisors from academia, civil service, the voluntary sector and practitioner sources.

The review has led to two major reports. This report summarises the evidence we integrated and concludes with our assessment of nine areas of long-term impact of COVID-19. These areas of impact are certainly not exhaustive, but they all require significant attention.

The accompanying report, *Shaping the COVID decade*, takes the analysis one step further, and asks: what are the challenges and opportunities which COVID-19 has unearthed in different policy areas, and what does this tell us about the policy framework and wider policy landscape that might underpin progress towards shaping a positive post-pandemic future? In that document, we identify a set of interconnected policy goals that could help address the areas of long-term impact.

Before turning to the focus of this report and the assessment of the areas of long-term impact, it is important to be clear what this report covers, and what it does not. This report is a considered reflection on the long-term societal impacts of COVID-19. It starts by looking across a range of evidence sources and assessing the impacts in three broad areas. It provides an integrated starting point for future reflection and analysis. Although there is considerable detail in the pages of the report, the nature of the question means that we were deliberately broad in scope. The report does not cover every sector of society, nor all the topics that might be researched. It does not go into the depth in which many researchers and research institutions across the country are already investigating specific facets. We have signposted to much of this work throughout and hope this report serves as a starting point to create further spaces and mechanisms for considering the long-term impacts of COVID-19, and synthesising what these mean for future actions to address them.

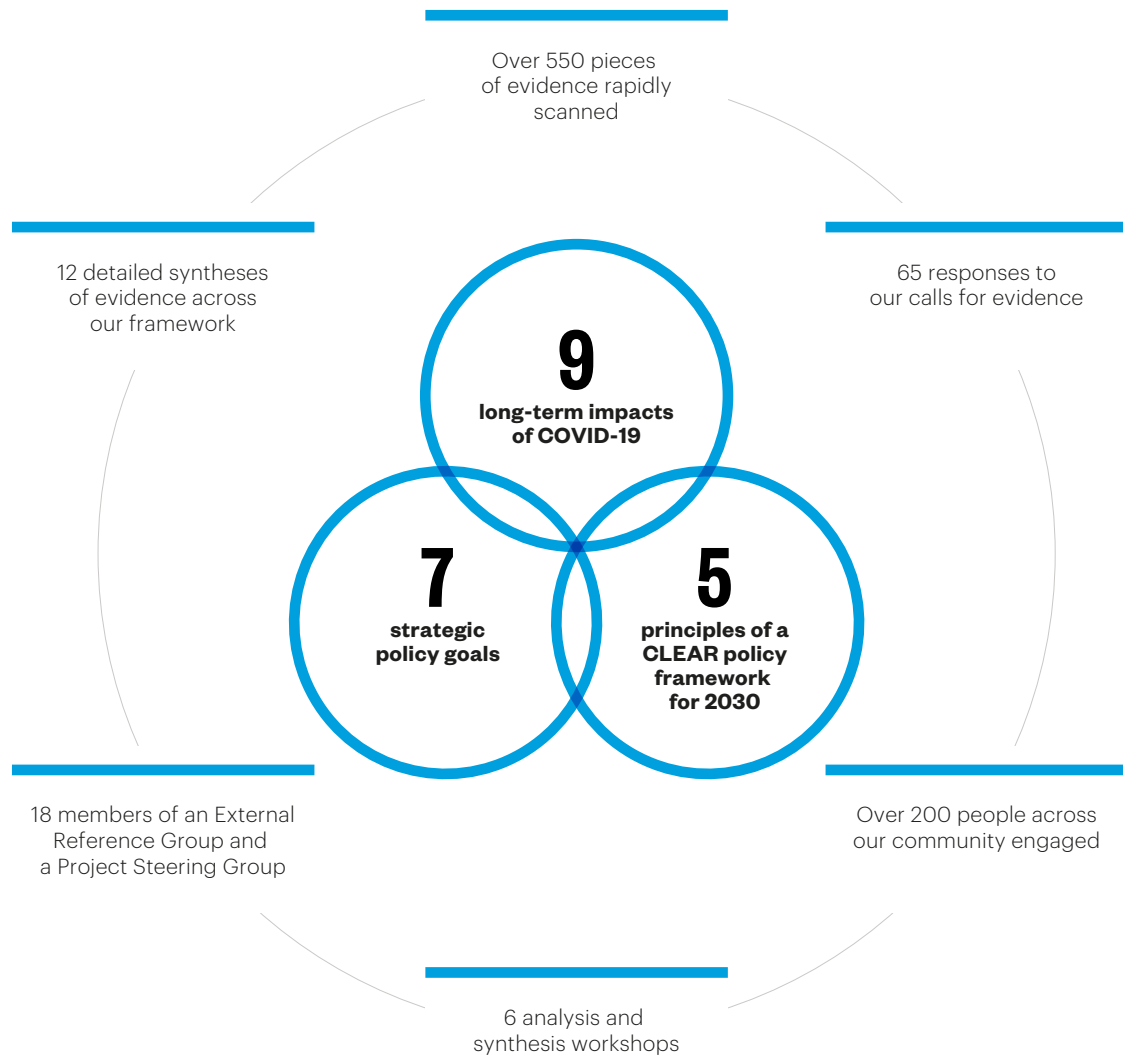
Finally, throughout this review, we have tried to retain a strict focus on the impacts caused by COVID-19 – but as we discovered over the course of the work, many impacts are themselves an acceleration of existing trends. Despite our starting point, the evidence pointed strongly to factors that preceded and will outlast the pandemic. This is to be expected, as it is also the pattern that pandemics and major crises throughout history have exhibited: pandemics are as much about their social and economic implications as they are about their medical and health ones. Regardless of whether the impacts involve modulations of prior trajectories or are unique products of this pandemic, this review leaves us in a better position to understand what societal impacts we want to cement, which we want to reverse, and what the likely trade-offs among priorities and outcomes might be.

2 SHAPE is an acronym for our disciplines, the Social sciences, Humanities and the Arts for People and the Economy. For more information, see This is SHAPE, (2021), *What is SHAPE*, [accessed 9 March 2021].

1.2 Developing the evidence base

This review involved extensive scoping, evidence gathering, consultation and synthesis phases.³ In summary, we:

- solicited views from across our fellowship of 1400 of the world's leading academics in the humanities and social sciences, and gained insight from our funded researcher community – particularly our early career researcher community – asking for views on the broad topic, what the key long-term impacts would be and, importantly, what the evidence was;
- thematically mapped over 550 relevant research projects, programmes and associated publications – from think tanks, research agencies, civil society and other relevant policy, societal and research organisations;
- engaged with key research funders to map their funding priorities and programmes;
- discussed the project with individual learned societies, the other four national academies and those of the devolved administrations;
- factored in government priorities as indicated by their areas of research interest;
- convened a project steering group of Fellows and an external project reference group of leaders from across the policy, civil society and research communities;
- put out an open call for evidence to research, policy and civil society organisations;
- received detailed evidence syntheses from 12 research groups and individual researchers;
- continued to engage in iterative and reflective stakeholder engagement;
- conducted six analysis and scenarios synthesis workshops with over 40 individuals involved in supporting the review; and
- analysed the findings to articulate a set of nine long-term societal impacts, seven strategic policy goals and five tenets of the policy ecosystem which could underpin a successful recovery.

Figure 1: Our methodology

We also actively built on a number of other initiatives across the sector which collectively are working to ensure that research and evidence from across disciplines is informing policy decisions and promoted shared learning across these to the greatest extent possible. There are too many to name all of them here, but the following initiatives all contributed enormous depth and breadth to our analysis and assessment of the evidence: the Government Office for Science’s Rebuilding Resilient Britain project;⁴ the ESRC-funded Economics Observatory⁵; the ongoing synthesis across the UKRI COVID-19 funding streams, particularly those with the lead funding councils the Arts and Humanities Research Council and the Economic and Social Research Council; the syntheses provided by numerous learned societies, from the British Sociological Association to the Academy of Social Sciences to the British Philosophical Association; and numerous other efforts at national, regional, local and community levels.

4 Government Office for Science, (2021), *Areas of Research Interest and the Rebuilding a Resilient Britain project*, Universities Policy Engagement Network.

5 Economics Observatory, (2021), *Economics and the Coronavirus crisis*, Economic and Social Research Council.

1.2.1 Our evidence framework

A key part of our review was the framework we developed to synthesise and make sense of the evidence base and help us arrive at our final assessment of the long-term impacts of COVID-19. The three societal areas we used to help structure our evidence collection and, ultimately, this report, were:

- **Health and wellbeing** – covering physical and mental health (including young people and work), wellbeing and the environment we live in
- **Communities, culture and belonging** – covering communities and civil society, cities and towns, family and kinship, and arts, media, culture, heritage and sport
- **Knowledge, employment and skills** – covering education (compulsory and post-16), skills, knowledge and research, and work and employment

As we gathered and synthesised evidence within these areas, we continually explored them in relation to five cross-cutting themes which the reader will find reflected within and across the chapters of this report. These were:

- **Governance** – including how COVID-19 has affected relationships between national and local actors, accountability for decisions and freedom of the individual (eg responsibilities for regional welfare, use of devolved powers, politicians versus experts, individual citizens' voices)
- **Trust** – including how COVID-19 has affected society's relationship with information, data, media and the role of experts (eg trust in government, institutions, technology, information and research)
- **Cohesion** – exploring the effect of COVID-19 on relationships within and between communities of people and ideas (eg cohesion when facing change, in making decisions, as a day-to-day practice versus a societal 'glue')
- **Inequalities** – understanding the role of COVID-19 in highlighting, ameliorating, causing or exacerbating inequalities (eg inequalities in place, religion and belief, sex and gender, economics and class, race and ethnicity, health and disability)
- **Sustainability** – including how COVID-19 has affected the way we think about, and the importance we attribute to, issues of sustainability (eg the long-term health of the environment, value of green spaces, impact of political decisions, institutions and practices)

Together, this matrix of the three societal areas and five cross-cutting themes provided the organising framework for our collection and analysis of the evidence.

Finally, it is worth noting that much of the evidence was collected and synthesised in the autumn of 2020. Even since our final synthesis workshops we have witnessed a third national lockdown, including the closure of schools, a more infectious variant of the virus, rising case numbers and deaths, and continued disruption to our economic and social life – as well as a successful start to a national vaccination campaign. The data and evidence in this report are as up to date as possible given the challenges of capturing a snapshot against a rapidly shifting backdrop. This does not undermine the evidence collected, which is based on what has been observed and experienced – rather, it reinforces the effect of rapidly changing circumstances and societal impacts that will continue to be felt for a decade or more. No matter how quickly we emerge from the pandemic, the evidence still points to significant impacts that have accrued from the prolonged disruption to lives and livelihoods over the past year.

1.2.2 The cross-cutting lens of place, scale and time

Throughout the process of collating and assessing the evidence, the dimensions of place (physical and social context, locality), scale (individual, community, regional, national) and time (past, present, future; short, medium and longer term) played a significant role in assessing the nature of the societal impacts and how they might play out, altering their long-term impact. The British Academy's prior work on the impact of COVID-19 in our *Shape the Future* initiative highlighted the importance of accounting for the temporal and scalar dimensions of policymaking, as well as deploying knowledge of local and historical contexts in response to crises.⁶ That conclusion seems all the more salient when we examine the long-term effects of the current pandemic, and it is worth noting what this means in practice and how it affects our findings here.

The dimensions of place, scale and time help us to understand and respond to the fact that while we may all be in this crisis, we are not 'all in this together', and that some people – on account of who they are, where they live, how visible they are to decision-makers, and how long they will encounter the effects – are much more deeply affected than others. In this review and the accompanying policy report, our findings and recommendations make frequent reference to these three critical dimensions that contextualise our conclusions:

- **Place** is essential in grounding our understanding of the effects of COVID-19 in crucial knowledge from citizens, communities and cultures, to improve the sensitivity of decision-making to the distinct challenges and opportunities for different places.
- **Scale** features in our assessment of the complex interconnections between the different types of evidence across policy areas, from individual behaviour right up to international relations, and the relations of power and influences within and between them.
- **Time** is embedded in our understanding of how long it has taken for effects to arise, and which ones may be grounded in longer-term trends or trajectories.

1.3 Structure of this report

The following chapters present the evidence we collected and synthesised against the wider background questions and framing of this report. Despite the underlying complexity of how we approached the review, the evidence in the following pages is simply presented:

- **Chapter 2** outlines evidence in the area of health and wellbeing – covering health inequalities; mental health impacts; implications for social care; 'long COVID'; health information and data; and data and new health technologies.
- **Chapter 3** presents evidence in the area of communities, cohesion and belonging – covering community-level responses, volunteering and mutual aid; cohesion and solidarity; trust in government and media; place, cities and housing; race, ethnicity, immigration and prejudice; and arts, culture and sport.
- **Chapter 4** summarises evidence in the area of knowledge, employment and skills – highlighting the effects of COVID-19 on education; higher education; economic uncertainty; employment and skills; and income inequality.

Grouping the evidence in this way made our task more manageable, but it should not be assumed that these three chapters are substantively discrete. Indeed, an overriding theme is that the evidence is often deeply interconnected. We capture this interconnection in Chapter 5 by concluding with a synthesis identifying nine areas of long-term impact that emerged from our analysis – all of which link to the evidence presented in each of Chapters 2, 3 and 4. A visual depiction of these linkages for each area of long-term impact is provided to help guide the reader. The description of each of the long-term impacts provides a brief summary of how we might expect each to play out over the coming COVID decade.

Our analysis does not conclude there, however, and the reader is encouraged to consider this evidence report alongside the accompanying policy report, *Shaping the COVID decade*. There, we set out the policy goals to which we might aspire in order to address the areas of long-term societal impact developing out of the COVID-19 pandemic. Unabated, the long-term impacts of COVID-19 on our society could be severe, and many of the chances we have for tackling existing societal problems could become more constrained or disappear.

Taken together, the two reports allow us to consider the breadth and depth of the evidence, as well as how we contemplate the policy opportunities strategically. By bringing together the evidence of what the focus should be and how different actors can work together to bring about positive outcomes, we hope the review provides the beginnings of a strategic agenda for mitigating the most harmful societal impacts of COVID-19 while taking forward new opportunities for the UK to thrive.



2.0 Health and wellbeing

2.1 Introduction

In this chapter we present a synthesised summary of the evidence in the area of health and wellbeing, drawing on a range of sources. As noted in relation to the report as a whole, this summary is not intended to be exhaustive. Rather, we hope that it offers a starting point for further discussion and understanding. The research provided in response to our open call for evidence, in our engagement with researchers and other stakeholders and in the detailed evidence analyses for specific issues within this theme has all informed the integrated summary below.

The initial scope for this theme was broad, including areas such as physical and mental health, impacts on young people and various forms of employment, as well as aspects of wellbeing and the environment. Many of the studies to date, cited below, use information and data from the first wave of the pandemic and initial periods of lockdown in the UK. There are therefore limits to what we can say about the impacts of more recent waves and lockdowns, where research is ongoing. On the basis of the evidence relating to this area, we identified seven specific issues where we expect there to be continuing effects on society.

2.2 Pre-existing health inequalities

COVID-19 is not a socially neutral disease.⁷ While the virus may potentially affect anyone, with age and biological sex the biggest risk factors, infection and mortality figures throughout the pandemic have followed existing patterns of structural

inequality familiar to both social and health scientists.⁸ The pattern of health inequalities in England and their relation to social inequalities were clearly set out in the 2010 report published as a result of an independent review chaired by Sir Michael Marmot.⁹ Ten years later, shortly before the COVID-19 pandemic took hold in the UK, the Marmot report and its recommendations were revisited – showing that little improvement had been made and that life expectancy had, at best, stagnated and, for those most affected by inequalities, fallen.¹⁰ A further report, written in response to the pandemic, highlighted the influence of these inequalities on the unequal effects of COVID-19.¹¹ Those already affected by existing structural inequalities have been exposed to greater numbers of intersecting stressors during the pandemic, as well as having fewer resources to be able to cope with them.¹²

As set out below, evidence is showing different groups in society will require different support for both mental and physical health during the remainder of the COVID-19 crisis and throughout recovery from the pandemic. Pre-existing inequalities, which intersect with each other in many cases, will complicate this response – but understanding these complexities is essential if we are to avoid a persistent widening of health inequalities.

Those living in more deprived areas of the UK, the economically disadvantaged, and minority ethnic groups all experience greater prevalence of non-communicable diseases and conditions given as underlying clinical risk factors for COVID-19.¹³ There are also longer-term health implications of the increased stresses and strains caused by restrictions on movement and work, compounded by the economic downturn, which will have the greatest effect on those already most impacted by inequalities in society.¹⁴

Information from the Intensive Care National Audit and Research Centre shows that, while individuals from Black, Asian and minority ethnic backgrounds make up 14% of the population, they accounted for 34.5% of 4873 critically ill COVID-19 patients in England and Wales in the early stages of the first wave.¹⁵ This is a pattern of inequality which has played out globally. In the case of minority ethnic groups, the risk comes not from their group membership so much as demographic and socioeconomic factors, including occupation.¹⁶ Those from Black African backgrounds, for example, make up a greater proportion of key workers than those from other backgrounds.¹⁷ In the following sections we examine the nature of these pre-existing inequalities and how their effects are influencing health outcomes from COVID-19. We focus on the impacts of regional deprivation; effects of socioeconomic inequality on health; narratives about minority ethnic groups; and the importance of continuing positive interventions.

8 Dowd, J.B., Ding, X., Akimova, E.T. and Mills, M. (2020), *Health and Inequality: The implications of the COVID-19 pandemic*, Leverhulme Centre for Demographic Science, University of Oxford.

9 Marmot, M., Allen, J., Goldblatt, P., Boyce, T., McNeish, D., Grady, M. and Geddes, I. (2010), *Fair Society, Healthy Lives. The Marmot Review, Strategic Review of Health Inequalities in England post-2010*. Institute of Health Equity.

10 Marmot, M., Allen, J., Boyce, T., Goldblatt, P. and Morrison, J. (2020), *Health Equity in England: The Marmot Review 10 Years On*, The Health Foundation and Institute of Health Equity.

11 Marmot, M., Allen, J., Goldblatt, P., Herd, E. and Morrison, J. (2020), *Build Back Fairer: The COVID-19 Marmot Review. The Pandemic, Socioeconomic and Health Inequalities in England*, Institute of Health Inequality and The Health Foundation.

12 Abrams, D., Hand, D.J., Heath, A., Nazroo, J., Richards, L., Karlsen, S., Mills, M., Roberts, C. and the Centre for Homelessness Impact (2020), *What Factors make a community more vulnerable to COVID-19? A summary of a British Academy Workshop*, The British Academy.

13 Bambra et al. (2020), 'The COVID-19 pandemic and health inequalities'.

14 McEwen, B.S. and Steller, E. (1993), 'Stress and the individual. Mechanisms leading to disease', *Archives of International Medicine*, 153(18), pp. 2093-2101; Hu, Y. (2020), 'Intersecting ethnic and native-migrant inequalities in the economic impact of the COVID-19 pandemic in the UK', *Research in Social Stratification and Mobility*, 68:100528; Antonova, L., Bucher-Koenen, T. and Mazzonna, F. (2017), 'Long-term health consequences of recessions during working years', *Social Science & Medicine*, 187, pp. 134-143.

15 Bambra et al. (2020), 'The COVID-19 pandemic and health inequalities', citing: Intensive Care National Audit and Research Centre (2020), *Report on COVID-19 in critical care 17 April 2020*. London: Intensive Care National Audit and Research Centre.

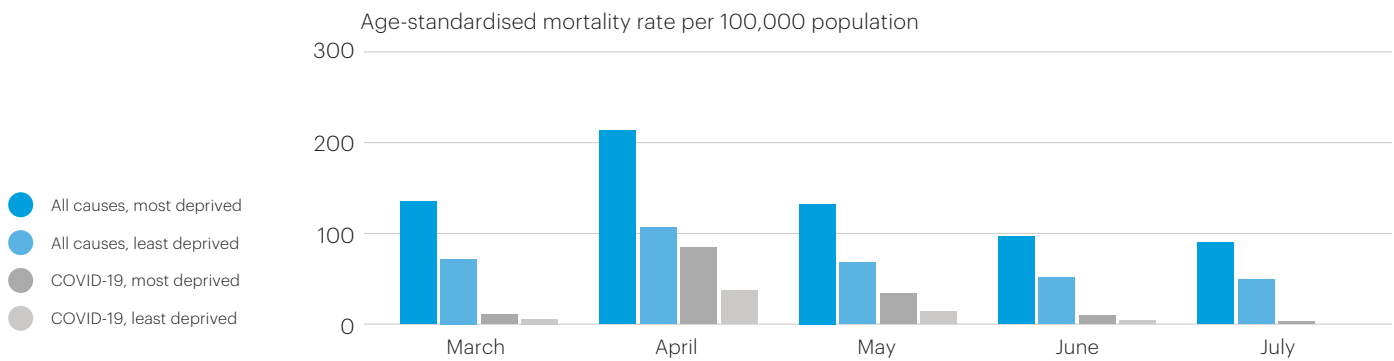
16 Dowd et al. (2020), *Health and Inequality*. See also Chapter 4 Section 4.5.3 for occupational risks based on ethnicity.

17 Platt, L., and Warwick, R. (2020), *Are some ethnic groups more vulnerable to COVID-19 than others?*, Institute for Fiscal Studies, The IFS Deaton Review; See also Chapter 3 section 3.4.2.

2.2.1 Regional deprivation

Mortality rates from COVID-19 in the most deprived areas, as measured by the Index of Multiple Deprivation, have been more than double those for the least deprived areas, according to data from the Office for National Statistics.¹⁸ Higher levels of deprivation are amplifying the age profile of mortality rates, with those of working age both more likely to be infected and almost twice as likely to die.¹⁹ These differences from data throughout the first wave of the pandemic are illustrated in the graphs below.

Figure 2: Age-standardised mortality rates, all deaths and deaths involving COVID-19, Index of Multiple Deprivation, England, deaths occurring between 1 March and 31 July 2020



Source: Office for National Statistics, *Deaths involving COVID-19 by local area and socioeconomic deprivation: deaths occurring between 1 March and 31 July 2020*, Release date: 28 August 2020.

Prior to COVID-19, the most deprived towns already had worse health outcomes in terms of life expectancy, self-reported health and higher relative incidence of several illnesses, resulting in lower overall wellbeing.²⁰ This has been exacerbated by regional gaps in educational attainment, with a greater proportion of those with qualifications at level four, such as a certificate of higher education (CertHE) or higher apprenticeship qualification, or above concentrated in some areas of London and in and around Cambridge.²¹ There is a correlation between educational attainment and socioeconomic status, and individuals in the lower bracket have been shown to have both greater exposure and higher rates of susceptibility to infections.²²

18 Office for National Statistics, *Deaths involving COVID-19 by local area and socioeconomic deprivation: deaths occurring between 1 March and 31 July 2020*, Release date: 28 August 2020; Dowd et al. (2020), *Health and Inequality*.

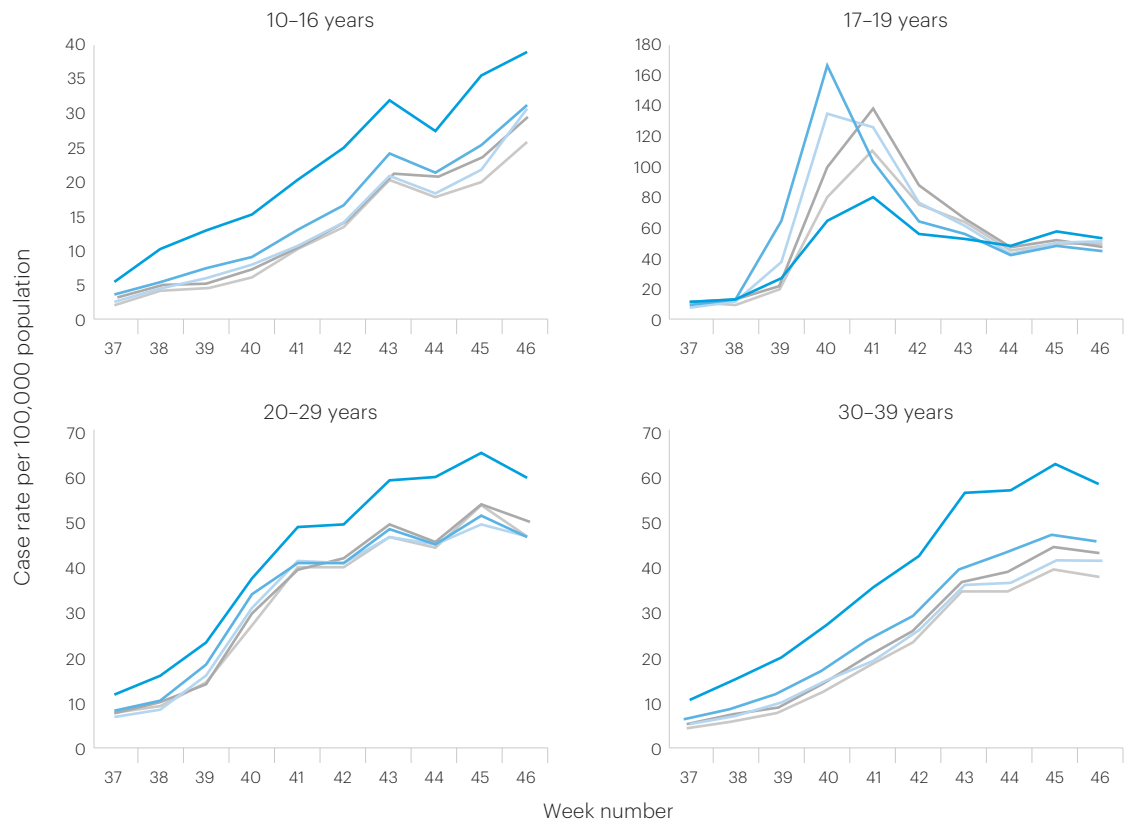
19 Dowd et al. (2020), *Health and Inequality*.

20 Goodair, B., Kenny, M., and Marteau, T. (2020), *Townscapes 4. England's Health Inequalities*, Bennett Institute for Public Policy.

21 Blundell, R., Costa Dias, M., Joyce, R., and Xu, X. (2020), *COVID-19 and inequalities*, The Institute for Fiscal Studies, The IFS Deaton Review. See Chapter 4 subsection 4.5.5 on regional education and employment.

22 Dowd et al. (2020), *Health and Inequality*.

Figure 3: Weekly COVID-19 rate per 100,000 population by IMD quintile (1 = most deprived), weeks 37–46



Source: Public Health England (2020), *National flu and COVID-19 surveillance graph: 19 November 2020 (week 47)*, slide 5.

Birmingham and London have both been ‘hot spots’ for COVID-19 transmission and infection, with London accounting for 20% of cases in England and Wales by May 2020.²³ These are also urban areas with higher ethnic minority populations, with 60% of the overall Black population and 50% of the Bangladeshi population living in London and 13% of the total Pakistani population living in Birmingham.²⁴ Rather than being related to urban density, however, studies have shown that higher rates of infection and mortality are more likely to be influenced by other factors such as existing structural inequalities and the specifics of measures taken in response to COVID-19.²⁵ This is evidenced in the stubborn hot spots which exist in much more localised towns and places, and the fact that the spread of the disease has patterns that look ‘all too familiar to social and health scientists’ based on levels of poverty.²⁶ There is a risk that these places will also be hit twice due to low vaccine uptake, as likelihood to have the vaccine decreases for those living in areas with high levels of deprivation.²⁷

23 Platt and Warwick (2020), *Are some ethnic groups more vulnerable*.

24 *Ibid*.

25 Sharifi, A., and Khavarian-Garmsir, A.R. (2020), ‘The COVID-19 pandemic: Impacts on cities and major lessons for urban planning, design, and management’, *Science of the Total Environment*, 749:142391, pp. 2-14; Carozzi, F., Provenzano, S., and Roth, S. (2020), ‘Urban Density and Covid-19’, London School of Economics and Political Science Centre for Economic Performance, Discussion Paper No 1711; Connolly, C., Keil, R., and Harris Ali, S. (2020), ‘Extended urbanisation and the spatialities of infectious disease: Demographic change, infrastructure and governance’, *Urban Studies*, 58(2), pp. 245-263; Dowd et al. (2020), *Health and inequality*.

26 Dowd et al. (2020), *Health and Inequality*, p. 4.

27 The OpenSAFELY Collaborative, MacKenna, B, Curtis, H.J., Morton, C.E., Inglesby, P., Walker, A.J., Morley, J., Mehrkar, A., Bacon, S., Hickman, G., Bates, C., Crocker, R. Evans, D., Ward, T., Cockburn, J., Davy, S., Bhaskaran, K., Schultze, A., Rentsch, C.T., Williamson, E., Hulme, W., McDonald, W.I., Tomlinson, L., Mathur, R., Drysdale, H., Eggo, R.M., Wing, K., Wong, A.Y.S., Forbes, H., Parry, J., Hester, F., Harper, S., Douglas, I.J., Evans, S.J.W., Smeeth, L. and Goldacre, B. (2021), ‘Trends, regional variation, and clinical characteristics of COVID-19 vaccine recipients: a retrospective cohort study in 23.4 million patients using OpenSAFELY’, *medRxiv preprint*.

2.2.2 Socioeconomic inequalities and health

Health outcomes of the pandemic in the immediate term have been worse for those from lower socioeconomic backgrounds or who have been most adversely impacted by economic shocks. Individuals in these circumstances have greater exposure to societal stressors which in turn may adversely affect immunity,²⁸ accelerate immune system ageing,²⁹ and increase susceptibility to infection – increasing their risk from COVID-19 and potential future health crises.³⁰

Job loss is a known significant social stressor and the economic impacts of lockdowns have been significant, as evidenced in Chapter 4 of this report. Exacerbated by income loss and consequent financial strain, job loss or a reduction in hours has knock-on effects for living standards, access to good health services and advanced health technologies, which impact not only individuals but also their families.³¹ Job losses also have a direct impact on mortality rates, with a study of workers in Pennsylvania who experienced job loss showing a mortality rate 10-15% higher than other workers 20 years on.³²

In a real-time survey conducted between March and April 2020, 15% of individuals reported having lost their job as a result of the pandemic, and 43% of employees reported having been furloughed.³³ Younger age groups were more likely to have lost their job, be furloughed or have their hours reduced as a result of the pandemic and restrictions, with a particular impact on Black, Pakistani and Bangladeshi communities.³⁴ This was especially the case for those with lower levels of education.³⁵

Stressors have also increased for those in more precarious forms of employment, such as gig economy workers and those on zero-hours contracts – the latter making up 3.2% of the population by April-June 2020 – who were left out of the Government's Job Retention (or 'furlough') Scheme or Self-Employment Income Support Scheme.³⁶ The unemployment rate and number of redundancies continued to grow between September and November 2020, with 418,000 more people unemployed than in the same period in 2019, and up by 202,000 on the previous quarter.³⁷ The health and wellbeing consequences of economic impacts are therefore likely to persist and worsen as the economic crisis continues.

Negative health impacts were not restricted to those who had lost work or were in increasingly precarious forms of employment. For those who retained their jobs, data from the Office for National Statistics shows that mortality rates in the early

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- 28 Cohen, J.M., Wildon, M.L. and Aiello, A.E. (2007), 'Analysis of social epidemiology research on infectious diseases: historical patterns and future opportunities', *Journal of epidemiology and community health*, 61(12), pp. 1021-1027; Steptoe, A., Shamaei-Tousi, A., Gylfe, Å., Henderson, B., Bergström, S. and Marmot, M. (2006), 'Socioeconomic status, pathogen burden and cardiovascular disease risk', *Heart*, 92(12), pp. 1567-1570; Colugnati, F.A., Staras, S.A., Dollard, S.C. and Cannon, M.J. (2007), 'Incidence of cytomegalovirus infection among the general population and pregnant women in the United States', *BMC Infectious Diseases*, 7(71).
- 29 Pawelec, G., Derhovanessian, E., Larbi, A., Strindhall, J. and Wikby, A. (2009), 'Cytomegalovirus and human immunosenescence', *Reviews in Medical Virology*, 19(1), pp. 47-56; Aiello, A.E., Feinstein, L., Dowd, J.B., Pawelec, G., Derhovanessian, E., Galea, S., Uddin, M., Wildman, D.E. and Simanek, A.M. (2016), 'Income and markers of immunological cellular aging', *Psychosomatic Medicine*, 78(6), pp. 657-666; Sommershof, A., Aichinger, H., Engler, H., Adenauer, H., Catani, C., Boneberg, E-M., Elbert, T., Groettrup, M. and Kolassa, I-T. (2009), 'Substantial reduction of Naïve and regulatory T cells following traumatic stress', *Brain, Behaviour, and Immunity*, 23(8), 1117-1124; Napoli, C., Tritto, I., Mansueto, G., Coscioni, E. and Ambrosio, G. (2020), 'Immunosenescence exacerbates the COVID-19', *Archives of gerontology and geriatrics*, 90.104174.
- 30 Dowd, et al. (2020), *Health and Inequality*.
- 31 *Ibid.*
- 32 Sullivan, D. and Wachter, T. von. (2009), 'Job Displacement and Mortality: An analysis Using Administrative Data', *The Quarterly Journal of Economics*, 124(3), pp. 1265-1306.
- 33 Adams-Prassl, A., Boneva, T., Golin, M. and Rau, C. (2020), 'Inequality in the Impact of the Coronavirus Shock: Evidence from Real Time Surveys', *Journal of Public Economics*, 189.
- 34 Dowd et al. (2020), *Health and Inequality*; Blundell et al. (2020), *COVID-19 and Inequalities*; See Chapter 4 section 4.5 on employment.
- 35 Blundell et al. (2020), *Covid-19 and Inequalities*.
- 36 Dowd et al. (2020), *Health and Inequality*; Office for National Statistics, *EMP17: People in employment on zero hours contracts. Labour Force Survey estimates of people in work on zero hours contracts*, Release date: 10 August 2020.
- 37 Office for National Statistics, *Employment in the UK: January 2021. Estimates of unemployment and economic inactivity for the UK*, Release date: 26 January 2021.

part of the pandemic were higher for those in occupations where they were less likely to be able to work from home or socially distance in the workplace.³⁸ Those who were able to work from home, giving them lower exposure risk from COVID-19, were predominantly in higher-earning professional-level roles.³⁹

While the risk of serious illness from COVID-19 is greater for men and older people, the greater long-term socioeconomic impacts and resulting long-term negative health impacts may disproportionately affect women and young people. The mental health impacts on these groups are discussed in more detail later in this chapter. Closures of schools and childcare facilities as a result of the pandemic have removed a form of provision which had enabled many more women to be in employment, exacerbating gender inequalities.⁴⁰ Economic impacts on parents and families will inevitably also impact children. Studies have shown that greater exposure to socioeconomic disadvantage in early life can influence poorer immune function and increased susceptibility to respiratory infection in adulthood.⁴¹

In sum, evidence suggests that the groups most affected by the socioeconomic impacts of the pandemic are those who were already experiencing negative effects of structural inequalities.⁴² A deepening economic crisis resulting from the pandemic and repeated lockdowns may have longer-term negative health impacts for these groups, with increasing pressures on the NHS and health and social care, as well as disadvantages for future pandemic resilience.

38 Office for National Statistics, *Coronavirus (COVID-19) related deaths by occupation, England and Wales: deaths registered up to and including 20 April 2020*, Release date: 11 May 2020; Dowd et al. (2020), *Health and Inequality*; Bamba et al. (2020), 'The COVID-19 pandemic and health inequalities'.

39 Office for National Statistics, *Coronavirus (COVID-19) related deaths by occupation, England and Wales: deaths registered up to and including 20 April 2020*, Release date: 11 May 2020; Dowd et al. (2020), *Health and Inequality*; Blundell et al. (2020), *COVID-19 and Inequalities*; See also Chapter 3 section 3.5.1.

40 Blundell et al. (2020), *COVID-19 and Inequalities*; the unequal mental health impacts on women are discussed below in section 2.3.4 'Gender inequalities' and the wider impacts of the employment of women is discussed in Chapter 4 subsection 4.5.1.

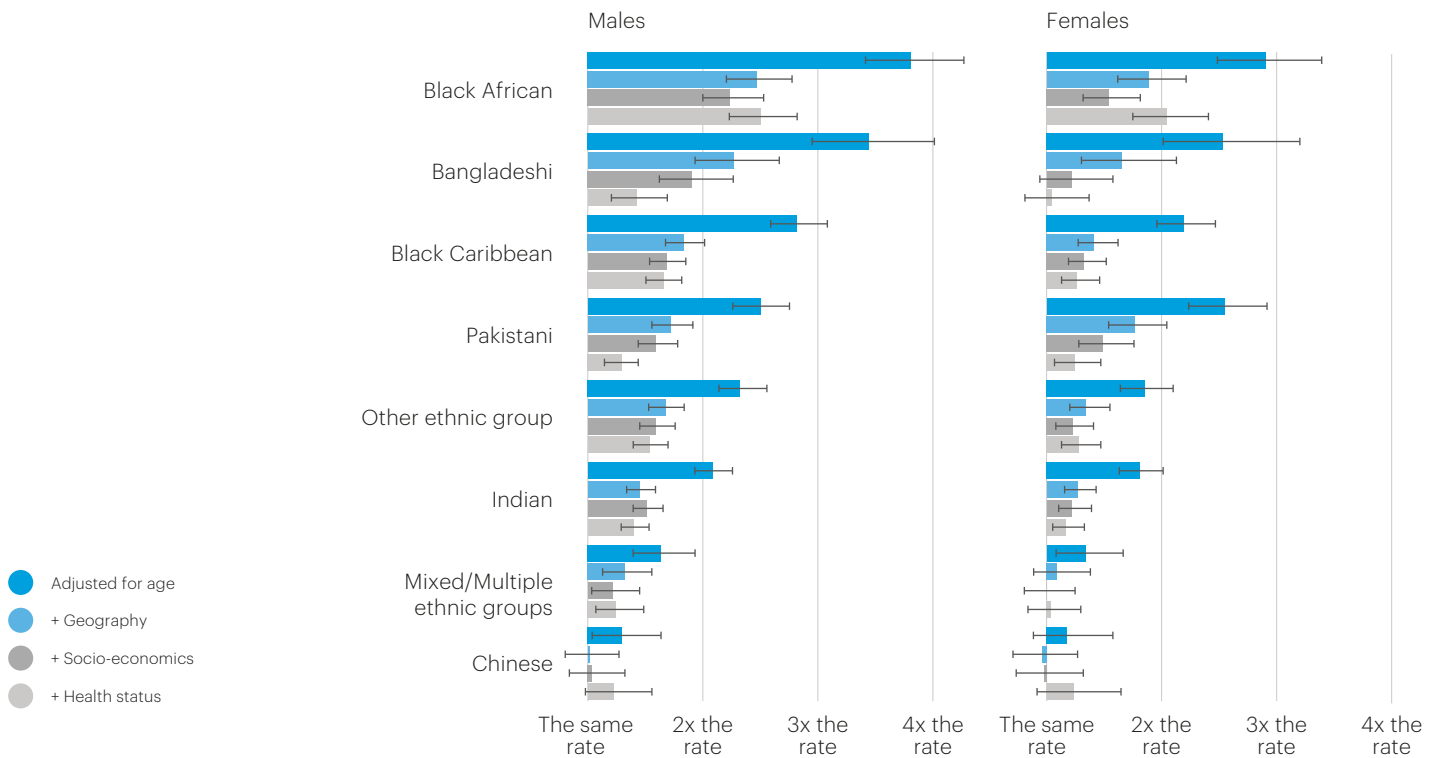
41 Cohen, S., Doyle, W.J., Turner, R.B., Alper, C.M., and Skoner, D.P. (2004), 'Childhood Socioeconomic Status and Host Resistance to Infectious Illness in Adulthood', *Psychosomatic Medicine*, 66(4), pp. 553-558; Slopen, N., Loucks, E.B., Appleton, A.A., Kawachi, I., and Kubzansky, L.D. No, L.N., Buka, S. and Gilman, S.E. (2015), 'Early origins of inflammation: an examination of prenatal and childhood social adversity in a prospective cohort study', *Psychoneuroendocrinology*, 51, pp. 403-413; Miller, G. and Chen, E. (2007), 'Unfavourable Socioeconomic Conditions in Early Life Presage Expression of Proinflammatory Phenotype in Adolescence', *Psychosomatic Medicine*, 69(5), pp. 402-409.

42 See also Chapter 3 section 3.2.3.

2.2.3 Disaggregating the impacts on minority groups

Aggregating the experiences of ethnic minority groups through use of the label ‘BAME’ (Black, Asian and minority ethnic) obscures the important differences in experience and health outcomes for these groups during the pandemic.⁴³

Figure 4: Rate of death involving COVID-19 by ethnic group and sex relative to the White population, England, 2 March to 28 July 2020



Source: Office for National Statistics, *Updating ethnic contrasts in deaths involving the coronavirus (COVID-19), England and Wales: deaths occurring 2 March to 28 July 2020*, Release date: 16 October 2020.

As depicted above, evidence shows that ethnic minority groups have been adversely impacted by COVID-19, but the experience has not been the same across all groups. During the first wave and initial lockdowns, Black males had a mortality rate 2.7 times higher than white males, while for Black females the rate was 2 times higher.⁴⁴ Indian, Pakistani, and Bangladeshi groups also experienced higher rates of mortality.⁴⁵ A study of 100,000 adults in the UK suggests that people from Black backgrounds also exhibited higher seroprevalence for COVID-19 in the early stages of the pandemic, at 15% of the population, followed by people from Asian backgrounds at 10.1%, compared with a 5.2% seroprevalence for White groups.⁴⁶

43 Morgan Jones, M., Abrams, D., and Lahiri, A. (2020), 'Appendix 16: Words, stigma and the coronavirus: implications of COVID-19 for holistic approaches to infectious diseases', in 'Shape the Future: how the social sciences, humanities and the arts can SHAPE a positive, post-pandemic future for peoples, economies and environments', *Journal of The British Academy*, 8, pp.167-266, at pp. 240-244; Baroness Doreen Lawrence Review (2020), *An Avoidable Crisis: The disproportionate impact of Covid-19 on Black, Asian and minority ethnic communities*.

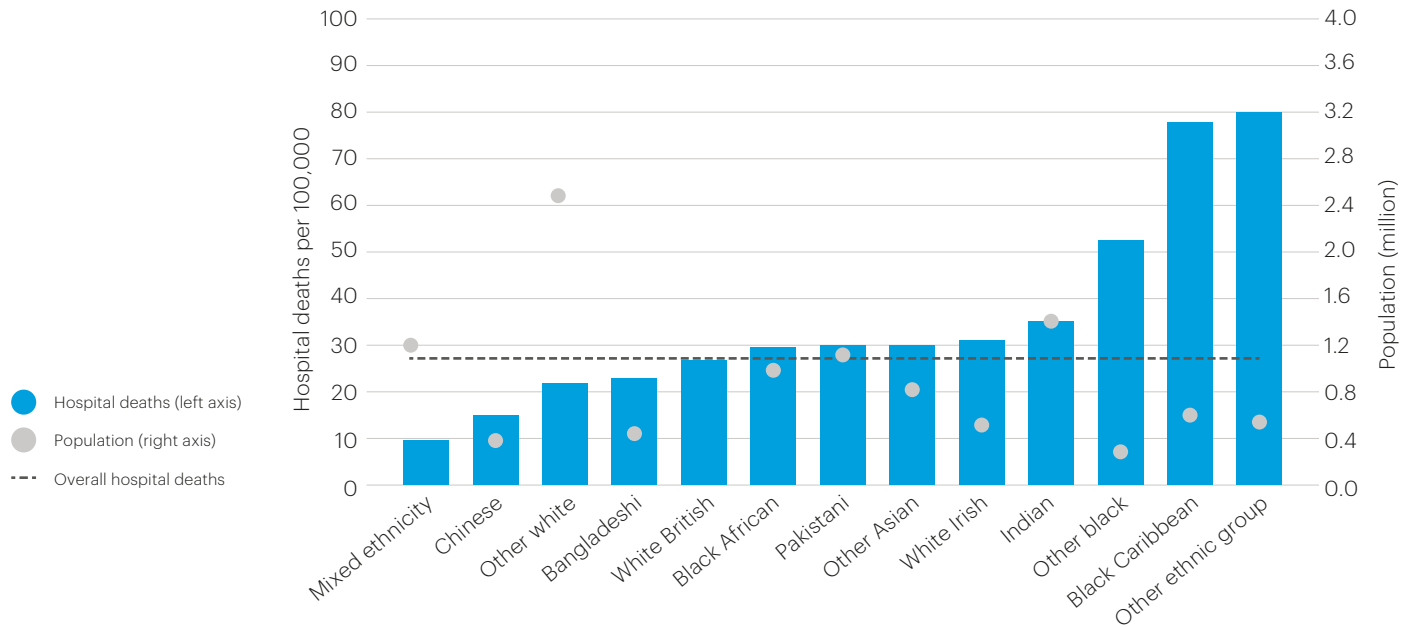
44 Dowd et al. (2020), *Health and Inequality*.

45 Office for National Statistics, *Updating ethnic contrasts in deaths involving the coronavirus (COVID-19), England and Wales: deaths occurring 2 March to 28 July 2020*, Release date: 16 October 2020.

46 Ward, H., Atchison, C., Whitaker, M., Ainslie, K.C.E., Elliott, J., Okell, L., Redd, R., Ashby, D., Donnelly, C.A., Barclay, W., Darzi, A., Cooke, G., Riley, S. and Elliott, P. (2020), 'Antibody prevalence for SARS-CoV-2 following the peak of the pandemic in England: REACT2 study in 100,000 adults', *medRxiv preprint*.

Figure 5: Total registered hospital deaths from COVID-19 per 100,000 in England by ethnic group

White British population = 42.3m



Source: Platt and Warwick (2020), *Are some ethnic groups more vulnerable*, p. 5. Where ethnic group could not be identified, these are excluded. 'Other white' population includes Gypsy and Irish Traveller group. 'Other ethnic group' includes the Arab group.

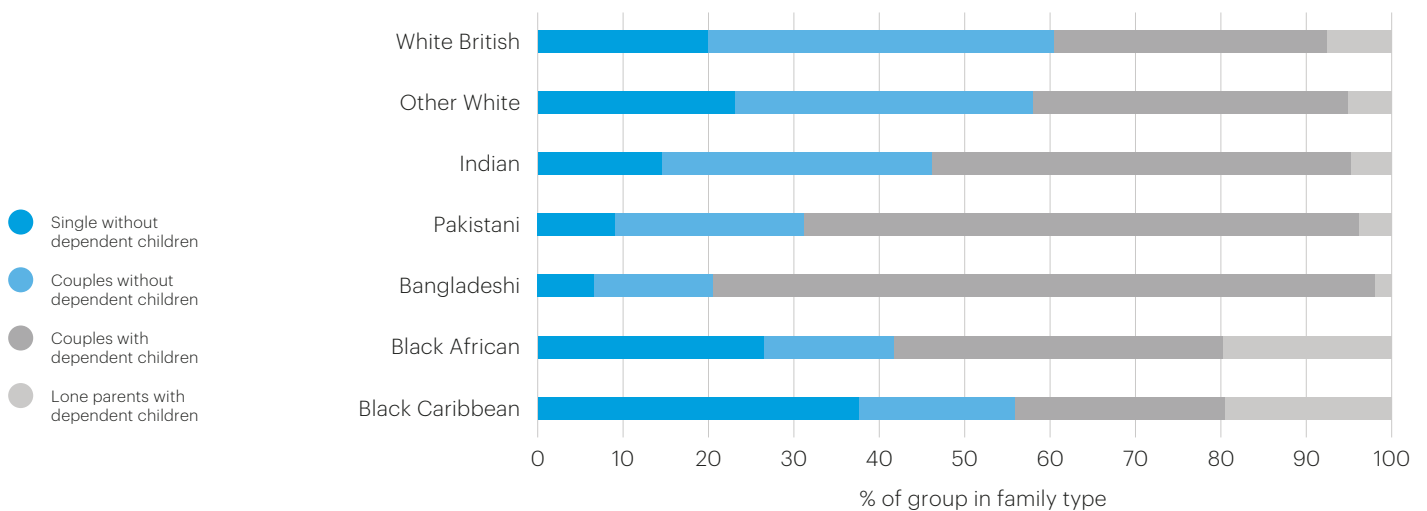
While minority groups tend to suffer from a greater prevalence of COVID-19 comorbidities such as cardiovascular and metabolic conditions, these alone do not account for the differences highlighted above.⁴⁷ Were these underlying conditions the driving factor, we would not expect to see greater mortality figures for younger age groups from Black, Asian and minority ethnic backgrounds, compared with the UK average.⁴⁸ As discussed in Chapter 4, people from these backgrounds also make up a disproportionate number of staff in frontline health and social care roles, as well as other key worker roles, increasing their risk of infection and negative mental health impacts.⁴⁹ While people of Indian ethnicity make up just 3.2% of the overall UK working-age population, for example, they account for over 14% of doctors.⁵⁰ In key sectors such as transport, men from Bangladeshi backgrounds, while forming 3.1% of the male working-age population, make up 33% of cab and taxi drivers and chauffeurs.⁵¹

Exposure to the negative consequences of other social determinants of health is also not evenly distributed across these communities. While ethnic minority groups, as a whole, are more likely to live in overcrowded accommodation than their white counterparts, Bangladeshi, Indian and Pakistani households in London, for example,

47 Dowd et al. (2020), *Health and Inequality*; Platt and Warwick (2020), *Are some ethnic groups more vulnerable*.
 48 Platt and Warwick (2020), *Are some ethnic groups more vulnerable*.
 49 Murphy, J., Spikol, E., McBride, O., Shevlin, M., Bennett, K., Hartman, TK., Hyland, P., Karatzias, T., Levita, L., Martinez, A.P., Mason, L., McKay, R., Gibson-Miller, J., Stocks, T.V.A., Vallières, F., and Bentall, R.P. (2020), 'The psychological wellbeing of frontline workers in the United Kingdom during the COVID-19 pandemic: First and second wave findings from the COVID-19 Psychological Research Consortium (C19PRC) Study', *PsyArXiv Preprints*, pp. 1-27.
 50 Platt and Warwick (2020), *Are some ethnic groups more vulnerable*.
 51 Office for National Statistics, *Coronavirus (COVID-19) related deaths by occupation, England and Wales: deaths registered between 9 March and 25 May 2020*, Release date: 26 June 2020.

are more likely to be multi-person households.⁵² Black African and Black Caribbean families are more likely to consist of lone parents with dependent children, while Bangladeshi and Pakistani families are proportionally more likely to have dependent children.⁵³ Continued economic shocks and lockdowns resulting in job losses, furloughs and disruption in school and childcare will therefore disproportionately impact families in these groups.

Figure 6: Family status of those of working age employed in shut-down sectors in England and Wales, by ethnic group

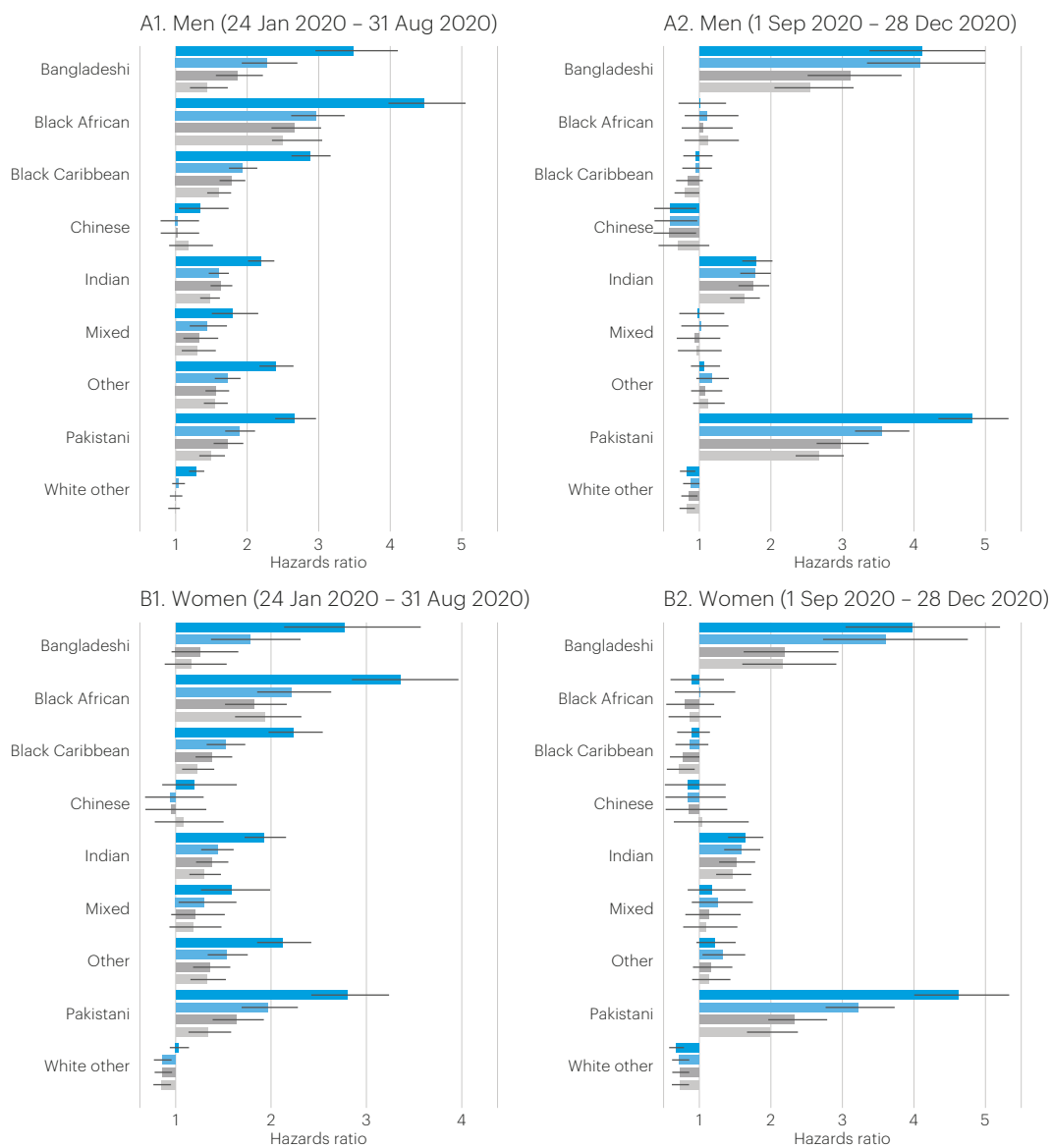


Source: Platt and Warwick (2020), *Are some ethnic groups more vulnerable*, p. 21, citing data from Office For National Statistics, Quarterly Labour Force Survey, 2016 Q1 to 2019 Q4.

Early data from the second wave suggest a significant improvement in health outcomes for men and women from Black African and Black Caribbean backgrounds.⁵⁴ Mortality rates for men and women from Pakistani and Bangladeshi backgrounds, however, remained high and even increased during the second wave.⁵⁵ The scale of these changes is set out in the graph on the following page.

52 Platt and Warwick (2020), *Are some ethnic groups more vulnerable*; See also Chapter 3 section 3.5.2.
 53 *Ibid.*
 54 Nafilyan, V., Islam, N., Mathur, R., Ayoubkhani, D., Banerjee, A., Glickman, M., Humberstone, B., Diamond, I., and Khunti, K. (2021), 'Ethnic differences in COVID-19 mortality during the first two waves of the Coronavirus Pandemic: a nationwide cohort study of 29 million adults in England', Office for National Statistics, *medRxiv preprint*.
 55 Nafilyan et al. (2021), 'Ethnic differences in COVID-19 mortality'.

Figure 7: Hazard ratios for COVID-19 related death for ethnic-minority groups compared with the White British population, stratified by sex and pandemic waves



Source: Nafilyan et al. (2021), 'Ethnic differences in COVID-19 mortality', p. 10. Results obtained from Cox-regression models. For more information on geographical factors, socio-demographic characteristics, pre-pandemic health data used and numeric results.

Data adjustment by socio-demographic factors reduced hazard ratios for all ethnic minority groups in the first wave and also had an effect on these ratios for individuals from Pakistani and Bangladeshi backgrounds in the second wave.⁵⁶ Adjusting for pre-existing conditions, for both waves, had less of an effect than adjusting for socio-demographic or geographical factors, suggesting that these inequalities have primarily been driven by other forces such as exposure to infection through employment type, living in multi-generational households or other factors.⁵⁷

56 Nafilyan et al. (2021), 'Ethnic differences in COVID-19 mortality'.
57 'Ibid'.

Analyses are emerging about the causal factors for the significant reduction in mortality rates for people from Black ethnic backgrounds in the second wave. Some authors suggest that '[f]ocused public health policy as well as community mobilisation and participatory public health campaign[s] involving community leaders may help reduce the existing and widening inequalities in COVID-19 mortality'.⁵⁸ However, they go on to point out that the continued high mortality rates for people from Pakistani and Bangladeshi backgrounds suggest that efforts are not yet reaching all groups. Approaches which fail to take into account the cultural and contextual differences between minority ethnic groups are unlikely to benefit all these groups. While underlying conditions are an important risk factor for COVID-19, an intersectional approach to a broader range of risk factors, including structural factors, may result in better overall outcomes.⁵⁹

There are also minority groups for whom we will not be able to appreciate fully the health impacts of COVID-19 and what the longer-term impacts may be. Many data sources, for example, do not include Gypsy, Roma, and Traveller ethnicity and these groups tend to be classified under 'White other'.⁶⁰ Often considered 'hard to reach' and without the same level of access to healthcare as other groups in society, many in these communities were particularly susceptible to fake information and misinformation circulating on social media in the earlier stages of the crisis.⁶¹

While disability is not listed on death certificates, those with disabilities or longstanding illnesses have also been disproportionately impacted. This has been linked to poorer living circumstances, lower socioeconomic status, likelihood of long-term conditions recognised as comorbidities for COVID-19, and additional risk for those in residential facilities.⁶²

It is currently estimated that there are 11 million disabled people in the UK, for whom diabetes and hypertension are common comorbidities, as well as being risk factors for COVID-19.⁶³ Daily life and mobility for these groups has also been impacted. Devices needed to support disabled people's mobility – including walking sticks, wheelchairs, crutches and communication aids – need to be handled regularly, and surfaces may therefore be more easily contaminated and require regular cleaning.⁶⁴ People with certain disabilities may also require more support in order to follow basic hygiene and hand-washing measures that are crucial to preventing the spread of COVID-19.⁶⁵

Local Disabled Organisations (DPOs) and Disability Service Providers have been crucial in identifying and engaging with these at-risk individuals and accounting for their specific circumstances, as the needs of these individuals are not homogenous.⁶⁶

58 'Ibid'.

59 'Ibid'.

60 Nazroo, J., Murray, K., Taylor, H., Bécarea, L., Field, Y., Kapadia, D., and Rolston, Y. (2020), *Rapid Evidence Review: Inequalities in relation to COVID-19 and their effects on London*, Centre on Dynamics of Ethnicity, University of Manchester.

61 House of Commons Women and Equalities Committee (April 2019), *Tackling inequalities faced by Gypsy, Roma and Traveller Communities. Seventh Report of Session 2017-19. Report together with formal minutes relating to the report*; Armitage, R. and Nellums, L.B. (2020), 'COVID-19 and the Gypsy, Roma and Traveller population', *Public Health*, 185(48); Friends, Families and Travellers, 'COVID-19 Resources for Supporting Gypsy, Traveller and Boater Communities', Gypsy, Roma and Traveller support group, cited in Nazroo et al. (2020), *Inequalities in relation to Covid-19*; See also section 2.6 below, 'Information and communication'.

62 Nazroo et al. (2020), *Inequalities in relation to Covid-19*; Kuper, H., Morgon Banks, L., Bright, T., Davey, C., and Shakespeare, T. (2020), 'Disability-inclusive COVID-19 response: What it is, why it is important and what we can learn from the United Kingdom's response', *Wellcome open research*, 5(79), pp. 1-8; Mactaggart, I. and Kuper, H. (2020), 'Evidence Brief: How can we measure disability in research related to the COVID-19 response?', Disability Evidence Portal, [accessed 10/02/2021]; Office for National Statistics, *Updated estimates of coronavirus (COVID-19) related deaths by disability status, England: 24 January to 20 November 2020*, Release date: 11 February 2021.

63 Kuper et al. (2020), 'Disability-inclusive COVID-19 response', also citing Department for Work & Pensions and Office for Disability Issues (2014), 'Disability facts and figures'.

64 Wilbur, J., and Hunt, X. (2020), 'What are the key considerations for including people with disabilities in COVID-19 hygiene promotion programmes?', Disability Inclusive Development Observatory [accessed 10/02/2021].

65 Wilbur and Hunt (2020), 'What are the key considerations'.

66 'Ibid'.

Larger-scale qualitative studies on the impacts for disabled people, which take account of different impairment types, ages, and genders, will provide information and insight to help improve policy and practice and may also have benefit for future pandemic preparedness.⁶⁷

The white male body is often the assumed norm for disease and treatment, but the differences in health outcomes represented here for COVID-19 demonstrate the inherent unsuitability and danger of such an approach.⁶⁸ There is also concern that minority groups have been underrepresented in vaccine trials, despite having higher hospitalisation and mortality rates.⁶⁹

Some researchers have noted that the proportion of individuals from different Black and minority ethnic groups responding to their surveys or studies has been too small to enable robust or more granular analysis of their experiences.⁷⁰ The history of health surveys also highlights how easily trust can be lost through use of outdated language or assumptions.⁷¹ Some more specific studies are currently in progress, looking at the experiences of particular communities and ethnic groups, such as UK urban-dwelling Bangladeshis.⁷² Given the scale of the toll taken by COVID-19 on different minority groups, however, there is a need for better data and more sympathetic and culturally sensitive data collection for these different groups to help make regional, ethnic and social inequalities in health more visible.⁷³

2.2.4 Learning from and building on positive interventions

There have been positive interventions for some groups, such as moving those sleeping rough from overcrowded temporary accommodation into hotels during the first national lockdown. Rough sleepers face greater exposure to COVID-19 through multiple factors, such as not having appropriate conditions to self-isolate, existing comorbidities and, where they are in employment, low-paying jobs.⁷⁴ Efforts made to relocate rough sleepers reduced the numbers of infections and deaths, despite the greater risks for this group.⁷⁵ Returning rough sleepers to their previous situation may risk new infection clusters and will also perpetuate the precarious living arrangements which put them at a disadvantage in the first place.⁷⁶ Research by the Centre for Homelessness Impact has suggested that comparing expenditures and outcomes for those placed in non-traditional or 'new' forms of temporary accommodation, such as repurposed shipping containers or 'pop-up' modular homes, may help identify suitable solutions.⁷⁷

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- 67 Kuper et al. (2020), 'Disability-inclusive COVID-19 response'. See also Shakespeare, T., Watson, N., Brunner, R., Cullingworth, J., Hameed, S., Scherer, N., Pearson, C. and Reichenberger, V. (2021), 'Disabled People in Britain and the Impact of the COVID-19 Pandemic', *Preprints* 2021, 2021010563.
- 68 Morgan Jones et al. (2020), 'Words, stigma and the coronavirus'.
- 69 Mills, M. (2020), *COVID-19 vaccine deployment: Behaviour, ethics, misinformation and policy strategies*, The Royal Society and The British Academy.
- 70 For example, Fletcher, R., Kalogeropoulos, A., Simon, F., and Nielsen, R.K. (July 2020), *Information inequality in the UK coronavirus communications crisis*, Reuters Institute for the Study of Journalism, Oxford University.
- 71 Mold, A., Berridge, V., and Taylor, S. (2020), *British Academy Commission: COVID and Society. The History of Public Health Crises, Governance and Trust*, Centre for History in Public Health, London School of Hygiene & Tropical Medicine.
- 72 Tang, C. and Rundblad, G. (2020), 'Social learning about COVID-19 vulnerability and social distancing in high density populations: the case of UK urban dwelling Bangladeshis', Ongoing project, King's College London [accessed 18/01/2021].
- 73 Abrams et al. (2020), *What factors make a community more vulnerable*.
- 74 Centre for Homelessness Impact (2020), 'People Experiencing Homelessness and Covid-19: New trends and key recommendations for a programme of work', in Abrams, D., Hand, D.J., Heath, A., Nazroo, J., Richards, L., Karlsen, S., Mills, M., Roberts, C. and the Centre for Homelessness Impact (2020), *What factors make a community more vulnerable to COVID-19? A summary of a British Academy Workshop*, pp. 37-40.
- 75 Centre for Homelessness Impact (2020), 'People Experiencing Homelessness'.
- 76 Abrams et al. (2020), *What factors make a community more vulnerable*.
- 77 Centre for Homelessness Impact (2020), 'People Experiencing Homelessness'.

COVID-19 has exacerbated this pre-existing problem and such positive interventions will require longer-term solutions. Any increase in homelessness as a result of the economic shock of the pandemic means that these interventions will have long-term significance.⁷⁸ Those more recently made homeless and living on the streets will also have different support needs, and perhaps lower-level ones, than those who have been homeless for a long period.⁷⁹

For those with problem substance abuse, an issue which may intersect with a number of other inequalities, the way in which interventions or treatments are delivered may be more important in the long term than the type of intervention or treatment given.⁸⁰ A focus on compassionate, non-judgemental support, with attention given to the environment in which services are offered, is seen as key, giving individuals time to address their addictions and to (re)learn how to live without dependency.⁸¹

Evidence does not suggest that single centralised solutions are likely to be able truly to address the needs of vulnerable groups and communities such as rough sleepers or those with problem substance abuse. However, there is evidence that a place-based and contextualised approach, which better integrates health and wellbeing services, may have more impact. A report published by The King's Fund in February 2020 presented the strategies adopted in four different local areas and highlighted the value of tailored local responses and the importance of local leadership.⁸² Voluntary, community and social enterprise organisations have been shown to be vital in providing evidence about the experiences of different marginalised groups or those facing inequalities, and filling gaps in service provision.⁸³ For individuals and groups affected by intersecting inequalities, as one report put it: 'Simply providing an array of separate services that take no account of clustering or the wider context of people's lives is unlikely to be effective.'⁸⁴

2.3 Mental health

Throughout the pandemic, and particularly during periods of lockdown, people's mental health has been impacted to varying degrees. Access to mental health support services has been affected by lockdown measures and this has had a corresponding impact on incidence and persistence of pre-existing conditions and the ability to treat new cases resulting from lockdowns.

Those who have reported worse or worsening mental health during the pandemic are often the same groups who have been most impacted by both the virus itself and measures taken in response to it. Individuals from some Black, Asian and minority ethnic backgrounds, care givers, lower-income households, and children and young people have been particularly affected. Frontline health staff have also reported heightened levels of stress and anxiety. In this section we examine the varied mental health impacts on children, young people and families; older people; ethnic and minority groups; frontline workers; and existing mental health service users.

78 'Ibid'.

79 'Ibid'.

80 Carver, H., Ring, N., Miler, J. and Parkes, T. (2020), 'What constitutes effective problematic substance use treatment from the perspective of people who are homeless? A systematic review and meta-ethnography', *Harm Reduction Journal*, 17(10), pp. 1-22.

81 Carver et al. (2020), 'What constitutes effective problematic substance use treatments'.

82 Cream, J., Fenney, D., Williams, E., Baylis, A., Dahir, S. and Wyatt, H. (2020), *Delivering health and care for people who sleep rough. Going above and beyond*, The King's Fund.

83 Nazroo et al. (2020), *Inequalities in relation to Covid-19*; See also Chapter 3 section 3.2.

84 Buck, D. (2020), *The English local government public health reforms. An independent assessment*, The King's Fund, p. 35.

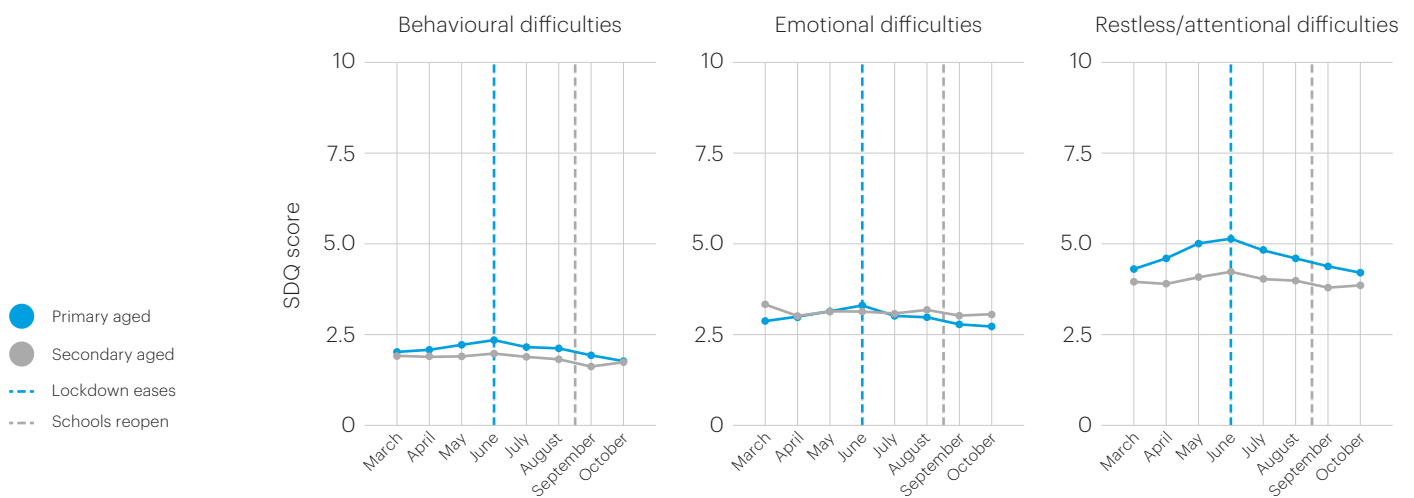
2.3.1 Children, young people and families

While the direct morbidity and mortality risk from COVID-19 is much less for children and young people, the measures taken in response to the pandemic have substantially impacted this group in other ways. School closures and lack of interaction with their peers, disruption to daily routine and educational goals, reduced physical activity in some cases, uncertainty about the future and the impact on careers or job prospects, as well as increased exposure to familial stressors within the household, all constitute risk factors for poor mental health.⁸⁵

For younger children, the evidence to date largely draws upon reporting by their parents or carers, rather than reflecting the voices of children themselves. This has been through smaller sample surveys conducted as part of studies such as Co-SPACE, where responses to recruitment are to an extent self-selecting. While not representative of the population as a whole, such studies nevertheless reveal the complex impact of the pandemic on the mental health of children and young people.

Between March and October 2020, a study of over 7000 parent/carer respondents indicated that behavioural difficulties and restless or attentional behaviours had increased over the course of the first national lockdown, particularly in the case of primary school aged children.⁸⁶ This first period of lockdown also had an effect on the severity of these reported conditions for this group, and the proportion of children likely to have significant difficulties, meeting the threshold of criteria for clinical diagnosis, increased by up to 35%.⁸⁷

Figure 8: Means and 95% confidence intervals of parents/carers reported SDQ scores per month and age



Source: Skripkauskaitė et al. (2020), *Changes in children and young people’s mental health symptoms*, p. 11, based on responses from 7192 participants.

85 Bemme, D., Gayer-Anderson, C., Irvine, A., Strang, L. and Rose, N. (2020), *Long term societal implications of COVID-19. Mental Health*, Centre for Society and Mental Health, King’s College London; see also Chapter 4 subsection 4.2 ‘Education and Skills’.

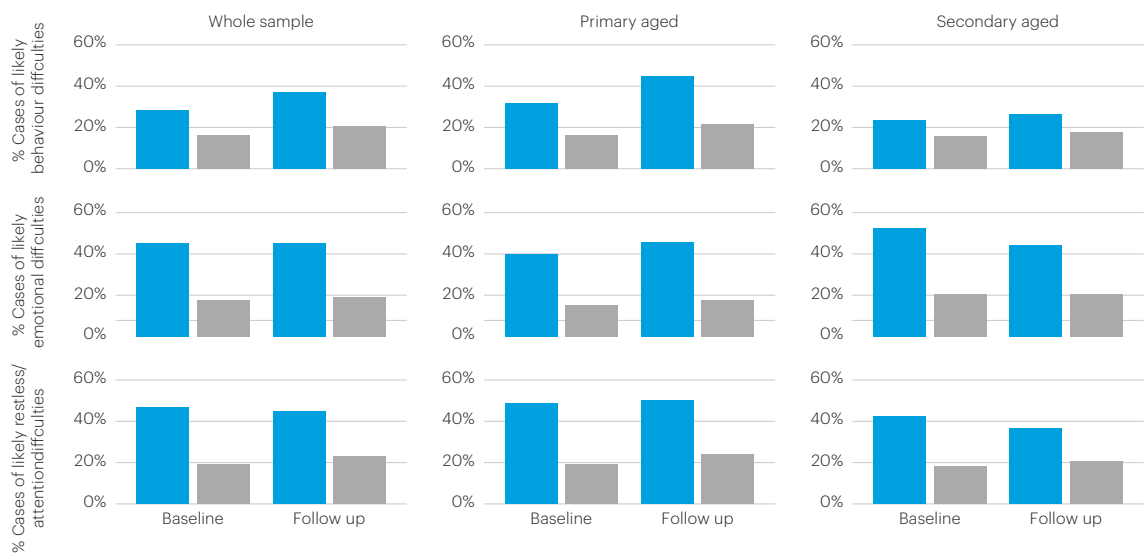
86 Skripkauskaitė, S., Pearcey, S., Raw, J., Shum, A., Waite, P. and Creswell, C. (2020), *Report 06: Changes in children and young people’s mental health symptoms from March to October 2020*, Co-SPACE.

87 Pearcey, S., Shum, A., Waite, P., Patalay, P. and Creswell, C. (2020), *Report 05: Changes in children and young people’s mental health symptoms and ‘caseness’ during lockdown and patterns associated with key demographic factors*, Co-SPACE.

Early findings from the Co-SPACE study, based on a sub-sample of 2673 parents and carers of children and adolescents aged 4 to 16, who completed the survey between March and April 2020, suggest that there were marked impacts on children identified as having special educational needs (SEN) or other neurodevelopmental disorders (ND).⁸⁸ The study showed elevated scores across time points for emotion, conduct, and hyperactivity or inattention when compared to children without SEN/ND, though scores for both conduct and hyperactivity or inattention did decrease over time for this group.⁸⁹ A Department for Education survey of 1000 parents of primary school aged children noted slight increases in levels of anxiety for children with SEN⁹⁰ These findings are borne out in other studies, which have also noted increased emotional, behavioural and restlessness or attention difficulties for this group and for children with disabilities.⁹¹

There is also evidence that increased socioeconomic pressures on lower-income families have also had an impact on the mental health and wellbeing of children in those families. A separate Co-SPACE report noted that, compared with higher-income households, levels of emotional and restless or attentional difficulties (as well as behaviour difficulties for primary age children) were consistently elevated for all age groups in lower-income families across the sample.⁹² Children from lower-income households were also around two-and-a-half times more likely to experience significant difficulties which may meet the threshold for clinical diagnosis.⁹³

Figure 9: Percentage of parents/carers reporting SDQ emotion, behaviour and restlessness/attention 'caseness' for households with a regular income of <£16,000, overall and stratified by age group



Source: Pearcy et al. (2020), *Changes in children and young people's mental health and 'caseness'*, p. 11.

88 Waite, P., Pearcy, S., Shum, A., Raw, J.A.L., Patalay, P. and Creswell, C. (December 2020), 'How did the mental health of children and adolescents change during early lockdown during the COVID-19 pandemic in the UK?', *PsyArXiv Preprint*.
 89 Waite et al. (2020), 'How did the mental health of children and adolescents change during early lockdown'.
 90 Department for Education (October 2020), *State of the nation 2020: children and young people's wellbeing. Research report*.
 91 ImpactED, (February 2021), *Lockdown Lessons: Pupil learning and wellbeing during the Covid-19 pandemic. Final report from ImpactEd's longitudinal study of over 60,000 pupils in England*; Pearcy, S., Shum, A., Waite, P., Patalay, P. and Creswell, C. (2020), *Report 04: Changes in children and young people's emotional and behavioural difficulties through lockdown*, Co-SPACE; see also Raw, J., Waite, P., Pearcy, S., Shum, A., Patalay, P. and Creswell, C. (2021), 'Examining changes in parent-reported child and adolescent mental health throughout the first COVID-19 national lockdown', *PsyArXiv Preprint*.
 92 Pearcy et al. (2020), *Changes in children and young people's mental health and 'caseness'*.
 93 *Ibid.*

Some regional disparity in impact is also becoming evident, through data from surveys such as the Mental Health of Children and Young People in England (MHCYPE) survey, conducted in July 2020 with a group previously assessed in 2017. The survey revealed a slight increase in children and young people aged 5 to 16 identified as having a probable mental health disorder, up from 11% in 2017 to 16% in 2020.⁹⁴ Higher rates of mental health problems were noted for young people in this group in the West and East Midlands – areas which have experienced high rates of COVID-19 infection.⁹⁵ A smaller group study looking at 13- to 14-year-olds in the South West of England noted a more positive effect, however, with a slight decrease in rates of self-reported anxiety between October 2019 and May 2020.⁹⁶

Children with pre-existing mental health conditions were also noted to have more difficulties with emotion, behaviour and restlessness or attention by their parents than children and young people with no pre-existing mental health conditions.⁹⁷ This suggests that the impact of lockdown has been hardest on the mental health of those children and young people who were already suffering with some form of mental ill-health.⁹⁸ There is some evidence, however, that a return to school in the autumn had a positive impact in terms of seeing friends and returning to a routine; other associated pressures had a more negative impact.⁹⁹

There is also some evidence of an increase in children and young people seeking informal help for thoughts about suicide and self-harm through online platforms, but with NHS data showing a dramatic decline in the number of young people presenting at A&E for self-harm.¹⁰⁰ Given the evidence for an increase in suicidal thoughts, we cannot therefore assume that the decline in presentation at A&E departments indicates a decline in incidents of self-harm. Rather this suggests that these children and young people are not accessing the medical help that they need in the same way, perhaps through concerns about infection or overburdening the NHS. This also removes an opportunity to make important interventions to help these young people receive the mental health support that they need.

Some evidence points to less decline and some small improvement for adolescents. A Co-SPACE study of a sub-sample of parents/carers who completed the baseline survey between 30 March and 30 April 2020, with a follow up survey one month later, found that smaller changes in mental health symptoms were reported for adolescents (11-16 years old) when compared to pre-adolescent children, as well as a small reduction in emotional symptoms.¹⁰¹ It has been suggested that possible greater independence during lockdown and being able to maintain peer relationships online and through social media may have mitigated the impacts for this group, when compared with younger children who were more reliant on parents for support.¹⁰²

94 Vizard, T., Sadler, K., Ford, T., Newlove-Delgado, T., McManus, S., Marcheselli, F., Davis, J., Williams, T., Leach, C., Mandalia, D., and Cartwright, C. (October 2020), *Mental Health of Children and Young People in England, 2020: Wave 1 follow up to the 2017 survey*, NHS Digital.

95 Vizard et al. (October 2020), *Mental Health of Children and Young People in England, 2020*.

96 Widnall, E., Winstone, L., Mars, B., Haworth, C. and Kidger, J. (2020), *Young People's Mental Health during the COVID-19 Pandemic: Initial findings from a secondary school survey study in South West England*, National Institute for Health Research School for Public Health Research.

97 ImpactED (February 2021), *Lockdown Lessons*; Pearcey et al. (2020), *Changes in children and young people's emotional and behavioural difficulties through lockdown*.

98 YoungMinds (2020), *Coronavirus: Impact on young people with mental health needs Survey 1: March 2020*; YoungMinds (2020), *Coronavirus: Impact on young people with mental health needs Survey 2: Summer 2020*.

99 YoungMinds (2020), *Coronavirus: Impact on young people with mental health needs. Survey 3: Autumn 2020 – return to school*.

100 Ougrin, D. (2020), 'Debate: Emergency mental health presentations of young people during the COVID-19 lockdown', *Child and Adolescent Mental Health*, 25(3), pp. 171-172; and data from Kooth online mental wellbeing community (2020), 'Week 16: How Covid-19 is Affecting the Mental Health of Children and Young People', cited in Bemme et al. (2020), *Long-term societal implications of COVID-19*.

101 Waite et al. (2020), 'How did the mental health of children and adolescents change during early lockdown'.

102 *Ibid*.

There was also some evidence of a lessening of anxiety and depression for those young people who did not feel well connected to their peers and/or school prior to the pandemic.¹⁰³ Some children of secondary school age also reported a slight decrease in emotional difficulties between March and April 2020.¹⁰⁴ It is likely that the overall levels of these impacts conceal substantial variability, with a proportion of children and young people in situations where they are well supported, but others much more vulnerable to isolation, loss of sustaining relationships, lack of adequate nutrition and educational support.¹⁰⁵

Family support in the home may also have been impacted by the pandemic. The increased pressure on parents and carers resulting from the need for home-schooling, working from home and the continued economic and emotional pressures of lockdown may leave them with less capacity to support their children's anxieties and concerns, which are likely to have been directly impacted by parental stress.¹⁰⁶ There is some anecdotal evidence that this has been the case for parents or carers of disabled children: 'It was as though the moment schools closed there was a notion that I would be able to deliver to my child mental health support, counselling, therapies, education, social care. No responses when contacting local authority'.¹⁰⁷

There were an estimated 2.3 million children living in vulnerable family backgrounds in 2020 (the 'toxic trio' of domestic abuse, parental drug or alcohol dependency and severe parental mental health issues), and 4 million living in poverty.¹⁰⁸ These are children who were less likely to seek and receive appropriate care and support even before the pandemic.¹⁰⁹ NHS survey data has found, for example, that children with a probable mental health disorder have been 'more than twice as likely' than those without a mental disorder to live in a household which had fallen behind with payments during the pandemic.¹¹⁰ These children were also more likely to live in a household which had experienced reduced access to medication.¹¹¹ There is still poor data for the specific mental health effects of such circumstances on children and young people.¹¹² Where negative socioeconomic and health impacts from the pandemic exacerbate existing inequalities and vulnerabilities, however, there may be longer-lasting implications for mental health.¹¹³

It is not just the immediate mental health impacts on children and young people that should be of concern, but the problems that are being stored up for their future wellbeing. Gaps in educational achievement for children and young people, exacerbated by school closures and varied access to online education tools, have been shown to heighten risk of abuse and neglect as well as exposure to domestic violence, and increased stresses, such as those seen during the current pandemic and

103 Widnall et al. (2020), *Young People's Mental Health during the COVID-19 Pandemic*.
 104 Skripkauskaitė et al. (2020), *Changes in children and young people's mental health*.
 105 Longfield, A. (2020), *Childhood in the time of Covid*, Children's Commissioner.
 106 Griffith, A.K. (2020), 'Parental Burnout and Child Maltreatment During the COVID-19 Pandemic', *Journal of Family Violence*, pp. 1-7; Conger, R.D., Conger, K.J. and Martin, M.J. (2010), 'Socioeconomic Status, Family Processes, and Individual Development', *J Marriage Fam*, 72(3), pp. 685-704.
 107 Inclusion London (March 2020), 'Coronavirus Bill could leave thousands of Disabled people without support' [accessed 09/02/2021].
 108 Longfield (2020), *Childhood in the time of Covid*; Bemme et al. (2020), *Long term societal implications of COVID-19*.
 109 Longfield (2020), *Childhood in the time of Covid*; Barry, A., Bennett, S., Collingwood, A., Drake, B., Easton, S., Goulden, C., Innes, D., Leese, D., Matejoc, P., Schwendel, G. and Wenham, A. (2020), *UK Poverty 2019/20. The leading independent report*, Joseph Rowntree Foundation.
 110 Vizard et al. (October 2020), *Mental Health of Children and Young People in England, 2020. Wave 1 follow up to the 2017 survey*, p. 11.
 111 *Ibid.*
 112 Norris, J., Layard, R. and Cornaglia, F. (2020), 'How is coronavirus affecting the mental health of adolescents?', Economics Observatory [accessed 04/02/2021].
 113 Norris et al. (2020), 'How is coronavirus affecting the mental health of adolescents?'.

lockdowns, have all been associated with later onset of mental health problems.¹¹⁴

Data from before and during the first lockdown, analysed by the Institute for Fiscal Studies, suggests that mental wellbeing had deteriorated more for those aged between 16 and 24 than for any other age group.¹¹⁵ Hit hard by the economic impact of the pandemic and lockdowns, unemployment in young people has been shown to have long-term negative consequences for anxiety, depression and suicidal thoughts, which persist into middle age.¹¹⁶

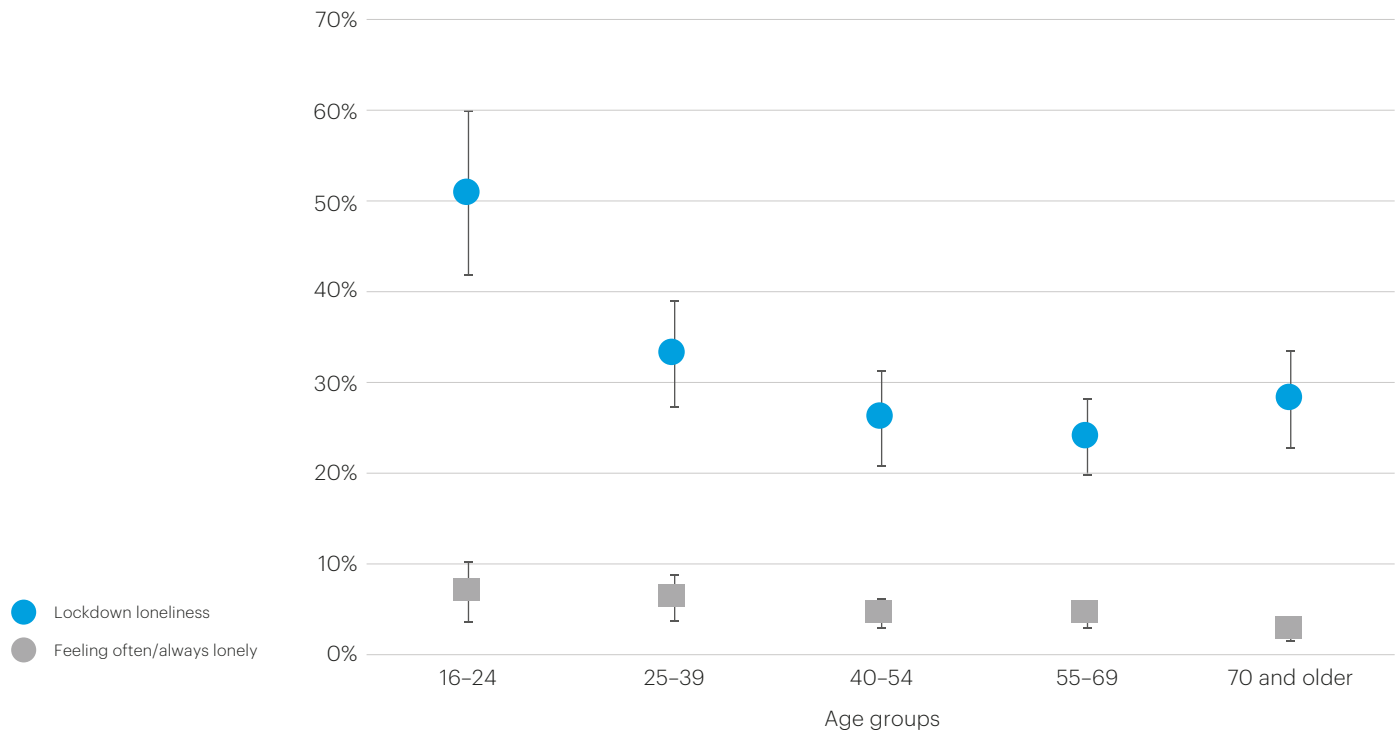
2.3.2 Older people

There were concerns that older people, especially those aged over 70, and the clinically vulnerable would be most negatively affected by loneliness and isolation.¹¹⁷ This prediction has not been borne out by evidence collected during and after the first period of national lockdown, with the greatest deterioration in mental health seen in those aged 18 to 49.¹¹⁸

Feelings of loneliness have been reported less for older age groups than for younger age groups, as set out in the graph below. A COVID-19 Psychological Wellbeing study run between March and April 2020, found that, of the 530 respondents who reported experiencing loneliness during this period, only 3.3% were aged 65 or over.¹¹⁹ This compared with the 41% who were young adults aged 18 to 24 – the highest for any age group in the study.¹²⁰ A larger study, conducted in April 2020, recorded similar findings, with older people reporting significantly lower psychiatric disorder scores against the General Health Questionnaire, as well as a lower incidence of case numbers.¹²¹

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- 114 Nada, Y., Spilsbury, J.C. and Korbin, J.E. (2015), 'Culture and context in understanding child maltreatment: Contributions of intersectionality and neighbourhood-based research', *Child Abuse & Neglect*, 41, pp. 40-48; Walker, S.P., Wachs, T.D., Grantham-McGregor, S., Black, M.M., Nelson, C.A. Huffman, S.L., Baker-Henningham, H., Chang, S.M., Hamadani, J.D., Lozoff, B., Meeks Gardner, J., Powell, C.A., Rahman, A. and Richter, L. (2011), 'Inequality in early childhood: risk and protective factors for early child development', *The Lancet. Child Development*, 378(9799), pp. 1325-1338; Read, J. and Bentall, R.P. (2012), 'Negative childhood experiences and mental health: theoretical, clinical and primary prevention implications', *British Journal of Psychiatry*, 200(2), pp. 89-91; Hughes, K., Lowey, H., Quigg, Z. and Bellis, M.A. (2016), 'Relationships between adverse childhood experiences and adult mental well-being: results from an English national household survey', *BMC Public Health*, 16(1), p. 222.
- 115 Banks, J. and Xu, X. (2020), 'The mental health effects of the first two months of lockdown and social distancing measures during the COVID-19 pandemic in the UK', *Fiscal Studies*, 41(3), pp. 685-708.
- 116 Banks and Xu (2020), 'The mental health effects of the first two months of lockdown'; Virtanen, P., Hammarström, A. and Janlert, U. (2016), 'Children of boom and recession and the scars to the mental health – a comparative study on the long term effects of youth unemployment', *International Journal for Equity in Health*, 15(14), pp. 2-6.
- 117 Bemme et al. (2020), *Long term societal implications of COVID-19*.
- 118 Gardiner, K., Gustafsson, M., Brewer, M., Handscomb, K., Henehan, K., Judge, L. and Rahman, F. (2020), *An intergenerational audit for the UK*, Resolution Foundation.
- 119 Groarke, J.M., Berry, E., Graham-Wisener, L., McKenna-Plumley, P.E., McGlinchey, E., and Armour, C. (2020), 'Loneliness in the UK during the COVID-19 pandemic: Cross-sectional results from the COVID-19 Psychological Wellbeing Study', *PLOS ONE*, 15(9), pp. 1-18.
- 120 Groarke et al. (2020), 'Loneliness in the UK during the COVID-19 pandemic'.
- 121 Li, L. and Wang, S. (2020), 'Prevalence and predictors of general psychiatric disorders and loneliness during COVID-19 in the United Kingdom', *Psychiatry Research*, 291, pp. 1-6.

Figure 10: Proportion of people who feel lonely by age, during the period 3 April to 3 May 2020



Source: Dowd et al. (2020), *Health and Inequality*, p. 26. Produced using data from Office for National Statistics, Opinions and Lifestyle Survey. Lockdown loneliness is an indicator that loneliness affected wellbeing in the past 7 days. Feeling often/always lonely is an indicator in response to the question ‘How often do you feel lonely?’ and the percentage of those reporting often/always is reflected.

A longitudinal study of 36,520 adults in England found that the increased availability of virtual communications and online activities, in addition to being permitted some outdoor activity even during strict lockdowns, has helped to mitigate the psychological impact for many groups.¹²² Programmes which help older people with digital literacy and access to online technologies and resources may help this group even more, as it was estimated before the pandemic that 29% of people aged 65 and over had never used the internet.¹²³

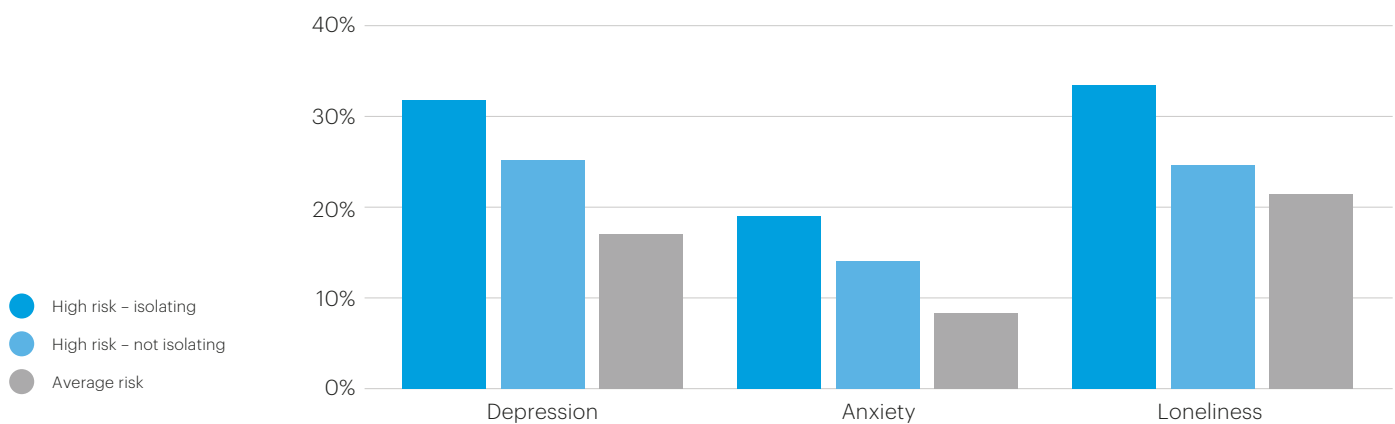
While older people have experienced fewer negative impacts on their mental health from loneliness overall, those in this group classed as having multimorbidities (multiple long-term health conditions such as coronary heart disease, high blood pressure, diabetes, dementia, cancer etc) reported greater levels of depression and loneliness.¹²⁴ Other stressors which can impact on mental wellbeing, such as concerns about finances or not having enough food or other essentials,¹²⁵ were also greater for this group in the period during and after the first lockdown.

Although not all classed as clinically vulnerable with respect to COVID-19, 35% of older individuals with multimorbidity were instructed to shield or isolate during

122 Fancourt, D., Steptoe, A., and Bu, F. (2020), ‘Trajectories of anxiety and depressive symptoms during enforced isolation due to COVID-19: longitudinal analyses of 36,520 adults in England’, *medRxiv preprint*.
 123 Office for National Statistics, *Internet users, UK: 2019*, Release date: 24 May 2019.
 124 Zaninotto, P., Di Gessa, G., and Steel, N. (2020), *The experience of older people with multimorbidity during the COVID-19 pandemic*, ELSA COVID-19 Substudy.
 125 Zaninotto et al. (2020), *The experience of older people with multimorbidity*.

the first period of lockdown.¹²⁶ Advice for this group was to stay at home at all times, avoid face-to-face contact with others and, within the home, minimise contact with other members of their household.¹²⁷ It is perhaps then not surprising that older people who were isolating reported higher levels of loneliness, anxiety and depression symptoms, according to the English Longitudinal Study of Ageing COVID-19 Substudy.¹²⁸ There were also negative impacts reported in relation to overall levels of happiness, life satisfaction and purpose in life.¹²⁹ However, these negative impacts do not appear to be the result of lower overall levels of remote social contact (such as through phone calls), as levels of such contact remained high during lockdown for older people in both high- and low-risk groups.¹³⁰

Figure 11: Mental health, shielding and self-isolation, June/July 2020



Source: Steptoe and Steel (2020), *The experience of older people instructed to shield*, p. 5.

What is not yet known for this group is whether there has been any longer-term psychological impact resulting from the numbers of deaths occurring in care homes and the fact that most COVID-19 deaths have been in older age groups. The duration of the pandemic may also have a greater impact on the mental health of older people, as one study has shown that those aged 60 or over were the only age group to report a greater increase in poor mental health during the second period of lockdown (towards the end of 2020), when compared with the first period of lockdown.¹³¹

2.3.3 Impact on Black, Asian and minority ethnic groups

As discussed above, the negative impacts of the pandemic in terms of health and wellbeing have particularly affected people from Black, Asian and minority ethnic backgrounds, to different degrees. However, evidence on mental health impacts experienced by individuals in these groups is limited. This is due to smaller sample sizes for these groups in many existing studies, including population level and longitudinal household surveys, and where there is data it is often aggregated under

126 *Ibid.*
 127 Steptoe, A. and Steel, N. (2020), *The experience of older people instructed to shield or self-isolate during the COVID-19 pandemic*, ELSA COVID-19 Substudy.
 128 Steptoe and Steel (2020), *The experience of older people instructed to shield*.
 129 *Ibid.*
 130 *Ibid.*
 131 Fancourt, D., Bu, F., Mak, H.W. and Steptoe, A. (December 2020), *Covid-19 Social Study. Results Release 26*, Department of Behavioural Science & Health, University College London.

the label ‘BAME’.¹³² The Office for National Statistics does not currently collect ethnicity or asylum status in its data for incidence of suicide in the UK.¹³³

Where data is available, however, it is clear that those from Black, Asian and minority ethnic backgrounds, as well as migrants, experienced higher prevalence of severe mental illness before the pandemic.¹³⁴ These groups were also less likely to be engaging with mental health services and support.¹³⁵ This inequality will be exaggerated by COVID-19, as access to traditional and non-traditional mental health services is restricted as part of measures to limit the spread of the virus.¹³⁶

A large-scale longitudinal study tracing the psychological and social experiences of adults in the UK during the pandemic has found that those from Black, Asian and minority ethnic backgrounds experienced higher levels of anxiety and depression, as well as lower levels of life satisfaction and happiness, during the first 14 weeks of the pandemic.¹³⁷ The study also indicated higher reported instances of self-harming or thinking about death for participants from ethnic minority backgrounds, as well as greater likelihood of having experienced psychological bullying or abuse during the first period of lockdown.¹³⁸ There is some evidence that Black, Asian and minority ethnic men experienced a greater average decline in their mental health compared to their White male counterparts, but Black Africans did not see a general decline in mental health during the initial period of lockdown.¹³⁹ Data from Understanding Society, the UK Household Longitudinal Study, suggests that those from Indian and Pakistani or Bangladeshi backgrounds saw the greatest level of decline in mental health when compared with White groups.¹⁴⁰

Ethnicity was not the primary influencing factor in these differences. Studies which adjusted results for age, sex, education, marital status, income and medical vulnerability show no statistical difference in mental health deterioration across White and non-White groups in the UK.¹⁴¹ Studies of reported incidence of abuse, self-harm and thoughts about suicide or self-harm among Black, Asian and minority ethnic respondents up to September 2020 also found that increased risk was associated with factors other than ethnicity.¹⁴² Those living in overcrowded households, for example, also reported worse mental health during the first two months of lockdown in 2020.¹⁴³ There were some distinctions by gender, however, as men from Black, Asian and minority ethnic backgrounds experienced a similar level of deterioration in their mental health as White British women.¹⁴⁴

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- 132 Bemme et al. (2020), *Long term societal implications of COVID-19*.
- 133 Cohen, J., Katona, C. and Bhugra, D. (2020), 'National data on suicide must include ethnicity', *British Medical Journal*, 371.m4105.
- 134 Bourque, F., van der Van, E. and Malla, A. (2010), 'A meta-analysis on the risk for psychotic disorders among first- and second-generation immigrants', *Psychological Medicine*, 41(5), pp. 897-910.
- 135 Pierce, M., Hope, H., Ford, T., Hatch, S., Hotopf, M., John, A., Kontopantelis, E., Webb, R., Wessely, S., McManus, S. and Abel, K.M. (2020), 'Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population', *The Lancet Psychiatry*, 7(10), pp. 883-892; Smith, K., Bhui, K. and Cipriani, A. (2020), 'COVID-19, mental health and ethnic minorities', *Evidence Based Mental Health*, 23(3), pp. 89-90.
- 136 Smith et al. (2020) 'COVID-19, mental health and ethnic minorities'.
- 137 Fancourt, D., Bu, F., Mak, H.W. and Steptoe, A. (July 2020), *Covid-19 Social Study. Results Release 15*, COVID-19 Social Study, University College London.
- 138 Fancourt et al. (2020), *Covid-19 Social Study. Results Release 15*.
- 139 Proto, E. and Quintana-Domeque, C. (2021), 'COVID-19 and mental health deterioration by ethnicity and gender in the UK', *PLOS ONE*, 16(1), E0244419.
- 140 Nandi, A., and Platt, L. (2020), 'Understanding Society COVID-19 Survey Briefing Note: Ethnic differences in effects of COVID-19: household and local context', *Understanding Society Working Paper No 14/2020*, ISER, University of Essex.
- 141 Routen, A. Darko, N., Willis, A., Miksza, J. and Khunti, K. (2020), 'The impact of Covid-19 and lockdown measures on self-reported life satisfaction and social relationships does not differ by ethnicity', *Journal of Public Health*, fdaa160, pp. 1-3; Public Health England (2020), 'Ethnicity Spotlight', *Research and Analysis. COVID-19 mental health and wellbeing surveillance: Spotlights*.
- 142 Frank, P., Iob, E., Steptoe, A. and Fancourt, D. (2020), 'Trajectories of depressive symptoms among vulnerable groups in the UK during the COVID-19 pandemic', *medRxiv preprint*; Iob, E., Steptoe, A. and Fancourt, D. (2020), 'Abuse, self-harm and suicidal ideation in the UK during the COVID-19 pandemic', *The British Journal of Psychiatry*, 217(4), pp. 543-546.
- 143 Fancourt, D., Bu, F., Mak, H.W. and Steptoe, A. (May 2020), *Covid-19 Social Study, Results Release 9*, COVID-19 Social Study, University of London.
- 144 Proto and Quintana-Domeque (2020), 'COVID-19 and mental health deterioration by ethnicity and gender in the UK'.

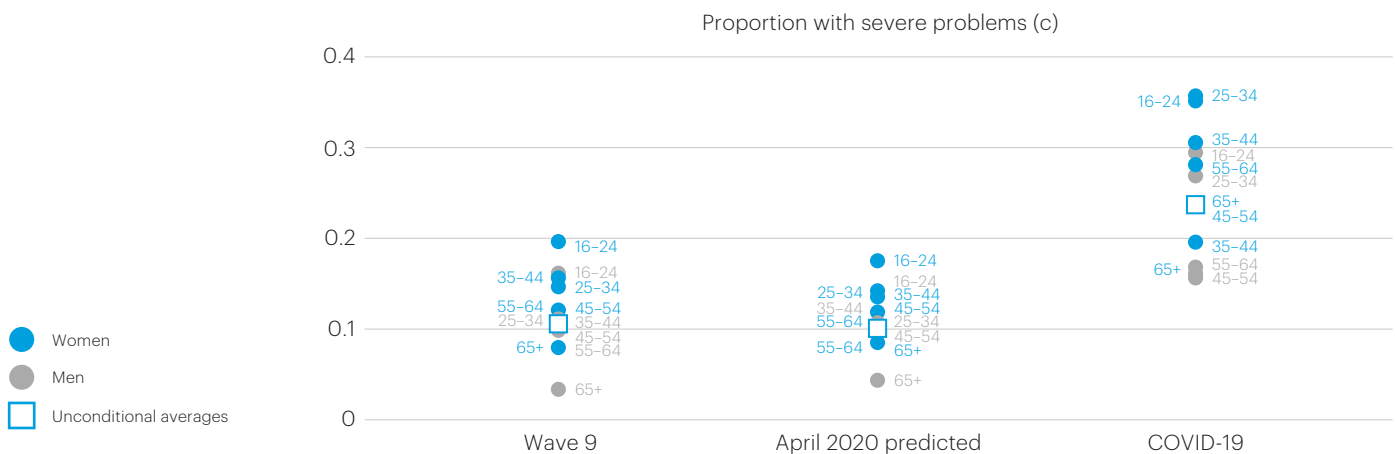
Ethnicity is not, therefore, an independent factor in the increase in mental health issues experienced by Black, Asian and minority ethnic groups during the first period of lockdown in the UK. These changes are instead associated with intersecting social, economic and health inequalities, many of them pre-dating the pandemic and linked to structural racism.¹⁴⁵ Public Health England reached a similar conclusion in a mental health surveillance report.¹⁴⁶

2.3.4 Gender inequalities

COVID-19 has also exacerbated inequalities in mental health by gender. Women were among those groups already experiencing lower levels of mental health before the pandemic and they have continued to be disproportionately affected compared to men.¹⁴⁷ Social studies, such as the study conducted by researchers at University College London, have demonstrated correlation between lower levels of mental health in women and the periods of lockdown, with a further decline seen during a return to greater restrictions between September and November 2020.¹⁴⁸ Where studies have focused on gender differences, greater proportions of women have reported feeling lonely sometimes or often compared with men, suggesting an adverse impact for this group from social distancing measures and their impacts on relationships.¹⁴⁹ Women have also reported a decline in the number of friends and a higher level of loneliness over time.¹⁵⁰

Data for the first two months of lockdown show that, while women were more negatively impacted in terms of their mental health than men, when compared across age groups, those in the 16-24 and 25-34 age groups suffered the most severe impacts.¹⁵¹ The graph below illustrates the difference that COVID-19 has made, compared with the predicted impacts for this group based on previous data and reporting.

Figure 12: Mental health by gender and age group, proportion with severe problems



Source: Banks and Xu (2020), 'The Mental Health Effects of the First Two Months of Lockdown', p. 696. Wave 9 refers to January 2017 to May 2019.

145 Bemme et al. (2020), *Long term societal implications of COVID-19*.
 146 Public Health England (2020), *Beyond the data: Understanding the impact of COVID-19 on BAME groups*.
 147 Banks and Xu (2020), 'The Mental Health Effects of the First Two Months of Lockdown'; Etheridge, B. and Spantig, L. (2020), 'The gender gap in mental well-being during the Covid-19 outbreak: Evidence from the UK', *Covid Economics*, 33, pp. 46-72.
 148 Fancourt et al. (December 2020), *Covid-19 Social Study. Results Release 26*.
 149 Etheridge and Spantig (2020), 'The gender gap in mental well-being'; Fancourt, D., Bu, F., Mak, H.W. and Steptoe, A. (May 2020), *Covid-19 Social Study. Results Release 8*, Department of Behavioural Science & Health, University College London.
 150 Etheridge and Spantig (2020), 'The gender gap in mental well-being'.
 151 Banks and Xu (2020), 'The Mental Health Effects of the First Two Months of Lockdown'.

Not being able to eat healthy meals during lockdown was also associated with notable declines in wellbeing for women, while exercising, conversely, does not appear to have had a significant effect on wellbeing.¹⁵²

There have also been negative impacts on women associated with gender gaps in caring responsibilities and roles in the home. Although most adults do not have young children, those with childcare responsibilities have experienced impacts to their mental health as a result of the first phase of lockdown, with women with substantial childcare responsibilities being adversely affected.¹⁵³ Women were more likely to have reported spending 16 or more hours a week on home-schooling and childcare during the pandemic, compared with men.¹⁵⁴

There is some evidence that the age of the child or children is an important additional factor. Those with very young children, aged 0-4, saw an increase in overall (though not severe) mental health problems, with twice the number of problems reported for women, while a more statistically significant increase in mental health problems affected those with school aged children.¹⁵⁵ There is some evidence, however, that these increases declined by May, as lockdown conditions continued.¹⁵⁶

2.3.5 Frontline health and care workers

The main impact of COVID-19 has been felt by the NHS and the social care sector, and there are concerns about the impact this has had on the mental health of their staff in terms of stress and burnout, depression, anxiety and even post-traumatic stress disorder (PTSD).¹⁵⁷ In the longer-term, there is the potential for any adverse effects to impact recruitment and retention of staff and thus the level of care that can be offered to the public.¹⁵⁸

Some disruption and impact have resulted from the nature of the virus itself. COVID-19 is a novel disease and its rapid evolution and spread in the early phase of the pandemic in the UK cut through core values and paradigms of care, with staff having to remain distant and protected from patients.¹⁵⁹ This enormous and swift increase in pressure also took place at a time when the NHS was already experiencing workforce shortages, with staff reporting heightened levels of stress which the pandemic exacerbated.¹⁶⁰

The first wave in particular saw concerns from staff about shortages of personal protective equipment (PPE), and personal testimonies indicate that distress was increased by mistrust in government advice about the levels of protection that it offered and what was needed in different clinical situations.¹⁶¹ This particularly impacted those from Black, Asian and minority ethnic backgrounds, who make up

152 Etheridge and Spantig (2020), 'The gender gap in mental well-being'.

153 Etheridge and Spantig (2020), 'The gender gap in mental well-being'; Chandola, T., Kumari, M., Booker, C.L. and Benzeval, M. (2020), 'The mental health impact of COVID-19 and lockdown-related stressors among adults in the UK', *Psychological Medicine*, pp. 1-10.

154 Chandola et al. (2020), 'The mental health impact of COVID-19 and lockdown-related stressors'. See Chapter 4 subsection 4.5.1 on Employment Inequality.

155 Banks and Xu (2020), 'The Mental Health Effects of the First Two Months of Lockdown'.

156 Chandola et al. (2020), 'The mental health impact of COVID-19 and lockdown-related stressors'.

157 Bermingham, R. (2020), 'Health and social care system and COVID-19: What are experts concerned about?', POST Horizon Scanning, published 14 May 2020.

158 Bermingham (2020), 'Health and social care system and COVID-19'; See also Chapter 3 section 3.3.2, particularly on perceptions of unity and solidarity amongst keyworkers.

159 Snow, S., Shields, J. and Whitecross, A. (December 2020), 'Written Evidence submitted to the British Academy by: University of Manchester, NHS Voices of Covid-19', Centre for the History of Science, Technology and Medicine, University of Manchester, *British Academy Covid and Society Call for Evidence*.

160 Snow et al. (December 2020), 'Written Evidence'.

161 'Ibid'.

a significant proportion of frontline healthcare staff. Workers from these groups reported higher levels of anxiety associated with PPE and COVID-19.¹⁶² The impact has been such that the Royal College of Psychiatry and the NHS have together produced guidelines in an effort to mitigate the mental health impacts on some health workers from Black, Asian and minority ethnic backgrounds.¹⁶³

Strains on mental health have not only come from additional pressures and dramatic changes to the methods of care in the workplace, but also from the additional measures healthcare workers have taken to protect their own family members.¹⁶⁴ This can include changing footwear and clothes before entering their home or limiting physical contact with their family. One participant in the NHS Voices of COVID-19 project, speaking of the impact on interactions with her family, said: ‘they want to come and hug me ... I walk away with tears in my eyes’.¹⁶⁵

The increasing numbers of additional deaths caused by the pandemic have also disrupted the ability of staff to provide best-practice care for patients around end of life and dying, whether or not patients were infected with COVID-19.¹⁶⁶ The pandemic has disrupted the social rituals around dying such as funerals and community farewells which allow people to grieve.¹⁶⁷ This has also taken a toll on the wellbeing of nurses and medical staff in these positions of care:

‘That’s draining for a nurse, because you want to provide the best care that you can for these patients ... so these wee souls were dying with a stranger holding their hand, or, in some cases, nobody holding their hand.’¹⁶⁸

The COVID-19 Social Study being undertaken by researchers at University College London has also provided some more specific data for care key workers’ mental health. When compared to key workers who were not care workers, there was evidence of higher and more fluctuating levels of depression and anxiety over the period between 21 March and 13 June 2020.¹⁶⁹ While care key workers reported lower levels of thoughts about death during this period, they reported more fluctuating levels of engaging in self-harm, with a notable spike between the 21 and 22 April that was not replicated across other groups in the study.¹⁷⁰

There is anecdotal evidence from healthcare workers that their level of fear was not as acute during the second wave of the pandemic, partly as a result of better supplies of appropriate PPE – but they nevertheless reported that their morale remained low and levels of exhaustion were increasing.¹⁷¹

162 Gillean, J., Santaolalla, A., Valdearenas, L. and Fusté, M. (2020), ‘The Impact of the COVID-19 Pandemic on the Mental Health and Wellbeing of UK Healthcare Workers’, *The Lancet preprint*, available at SSRN; Moorthy, A., and Sankar, T.K. (2020), ‘Emerging public health challenge in the UK: perception and belief on increased COVID19 death among BAME healthcare workers’, *Journal of Public Health*, 42(3), pp. 486-492.

163 Royal College of Psychiatrists (June 2020), *Impact of COVID-19 on Black, Asian and Minority Ethnic (BAME) staff in mental healthcare settings. Assessment and management of Risk*; Royal College of Psychiatrists (2020), ‘Risk Assessment Tool for Staff during the COVID-19 Pandemic’.

164 Snow et al. (December 2020), ‘Written Evidence’.

165 ‘Ibid’, p. 4.

166 Snow et al. (December 2020), ‘Written Evidence’.

167 ‘Ibid’.

168 ‘Ibid’, p. 6.

169 Fancourt, D., Bu, F., Mak, H.W. and Steptoe, A. (May 2020), *Covid-19 Social Study. Results Release 10*, Department of Behavioural Science & Health, University College London; Fancourt, D., Bu, F., Mak, H.W. and Steptoe, A. (June 2020), *Covid-19 Social Study. Results Release 11*, Department of Behavioural Science & Health, University College London; Fancourt, D., Bu, F., Mak, H.W. and Steptoe, A. (June 2020), *Covid-19 Social Study. Results Release 12*, Department of Behavioural Science & Health, University College London; Fancourt, D., Bu, F., Mak, H.W. and Steptoe, A. (June 2020), *Covid-19 Social Study. Results Release 13*, Department of Behavioural Science & Health, University College London.

170 Fancourt et al. (June 2020), *Covid-19 Social Study. Results Release 12*.

171 Snow et al. (December 2020), ‘Written Evidence’.

2.4 Implications for social care

The full impact of COVID-19 on the social care system, including the level of COVID-associated mortality in care homes and the impact of restrictions on services and care for vulnerable individuals, is yet to be fully understood. More longitudinal, disaggregated data is needed before we can fully understand the mental health impact of the crisis on care home residents and staff. The pandemic has highlighted structural complexities and funding shortfalls which may have undermined an effective response and left the sector more exposed to just such a health crisis. The scale of the death toll to date has also demonstrated a need to improve infection prevention and control measures in both home and community-based care settings.

The pandemic may provide an opportunity to reassess the future structure and funding of social care and the weighting that it is given alongside healthcare and the NHS. This includes assessing relationships with local councils and the voluntary sector in providing care and support.

2.4.1 The toll on the sector

Age is perhaps the predominant risk factor for COVID-19, and the disease has taken a particularly heavy toll on care homes and their residents. Between 10 April 2020 and 5 January 2021, data from the Office for National Statistics indicate that there were 26,299 deaths involving COVID-19 in care homes.¹⁷² The scale of the impact, compared with deaths in hospital and at home from COVID-19, is illustrated in the graph below.

While national initiatives have focused on protecting the NHS to save lives, less attention has been paid to the care sector, particularly in the early stages of the pandemic – despite strong international evidence for the heightened risk in social care settings.¹⁷³ In order to help free up space in hospitals, there was a rapid discharge of patients to care homes at a time when there was no policy to test all discharged patients for COVID-19: before this was announced by the Department for Health and Social Care, 25,000 people were discharged to care homes in the period 17 March-15 April 2020.¹⁷⁴ The scale of the problem is further evidenced by the fact that between 9 March and 17 May 2020, 38% of care homes in England reported at least one outbreak of COVID-19.¹⁷⁵

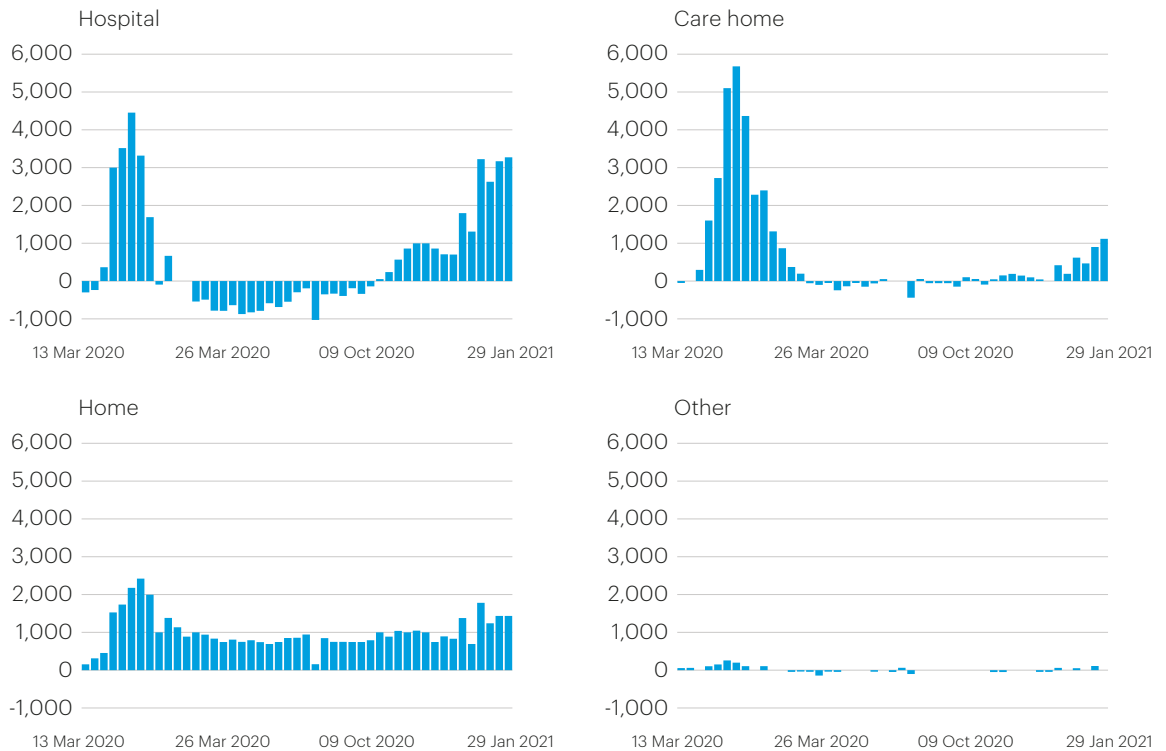
172 Office for National Statistics, *Number of deaths in care homes notified to the Care Quality Commission, England*, Released date: 9 February 2021.

173 Charles, A. and Ewbank, L. (2020), 'Lasting reform for social care', in *The road to renewal: five priorities for health and care*, The King's Fund [accessed 05/02/2021].

174 House of Commons Public Accounts Committee (July 2020), *Readying the NHS and social care for the COVID-19 peak. Fourteenth Report of Session 2019-21*.

175 House of Commons Public Accounts Committee (July 2020), *Readying the NHS and social care for the COVID-19 peak*.

Figure 13: Number of excess deaths by place of occurrence, England and Wales, registered between 7 March and 29 January 2020



Source: Office for National Statistics, *Deaths registered weekly in England and Wales, provisional: week ending 29 January 2021*, Release date: 9 February 2021.

Those receiving home care were also affected, with total deaths in this group between mid-April and mid-June 2020 more than double the three-year average for that time of year.¹⁷⁶

Health and care staff at all levels have continued to deliver care whilst putting themselves at increased risk of infection through exposure. Office for National Statistics data show that just under three in four deaths involving COVID-19 in social care occupations (74%) were care workers or home carers.¹⁷⁷ Nurses also had statistically higher mortality rates involving COVID-19 when compared with those of the same age and sex in the rest of the population, and rates of death were also accelerated in nursing auxiliaries and assistants.¹⁷⁸ As noted elsewhere in this report, those from more at-risk groups in the population are also disproportionately represented in frontline health and social care roles.¹⁷⁹ There is already evidence that the toll on mental wellbeing may also be considerable, with the potential for long-term scarring, as discussed above in the section on mental health impacts.¹⁸⁰

176 Charles and Ewbank (2020), 'Lasting reform for social care'.
 177 Office for National Statistics, *Coronavirus (COVID-19) related deaths by occupation, England and Wales: deaths registered between 9 March and 28 December 2020*, Release date: 25 January 2021.
 178 Office for National Statistics, *Coronavirus (COVID-19) related deaths by occupation*.
 179 See above, section 2.2.3, 'Disaggregating the impacts on minority groups'.
 180 See section 2.3.5, 'Frontline health and care workers'.

2.4.2 Structure and funding

The current structure of social care provision may have hindered a more joined-up response to the crisis, with responsibilities for adult social care spread across the Department for Health and Social Care, local government and care providers.¹⁸¹ Structures for testing for COVID-19 and providing PPE have been similarly complex, with several bodies involved – including the Department for Health and Social Care, Public Health England, and NHS England and NHS Improvement – before responsibility for PPE was taken over by Lord Deighton in mid-April 2020.¹⁸²

It is not within the scope of this review to provide a detailed assessment of the structure and governance of health and social care in the UK, but with a view to the historical context, we have considered some of the origins of the current governance system. Public health reforms under the coalition government in 2013, and through the Health and Social Care Act 2012, were intended to bring local government into more local decisions about public health.¹⁸³ The formation, as part of the Act, of Public Health England – bringing together the various public health bodies under one umbrella – came in the wake of the swine flu pandemic, which arrived in the UK in April 2009.¹⁸⁴

As has been the case with the COVID-19 crisis, swine flu outbreaks spread rapidly, impacting certain areas more heavily, and information about the virus and definitions of symptoms were constantly evolving.¹⁸⁵ The ability to alter the nature of the response to developments in the swine flu pandemic – away from one of containment once it became evident that this was no longer possible – was hampered by confusion between different agencies with responsibility for public health and social care, and by the relatively subordinate place of local knowledge in the mechanisms for delivering advice and expertise to government.¹⁸⁶

Although the 2012 and 2013 reforms did endeavour to bring more coordination across the different levels of governance of health and social care, and to increase the local dimension of provision, the course of the COVID-19 crisis (particularly during the first period of lockdown) suggests that structural disconnection continues to be problematic.¹⁸⁷ A report from the House of Commons Public Accounts Committee from July 2020 states that:

‘While it was clear that the NHS had responsibility for ensuring there were enough beds, oxygen and ventilators to provide treatment for COVID-19 patients when required, it was unclear who was leading on the social care response.’¹⁸⁸

In the areas of children’s services, adult and children’s health, and social care services there is some evidence of good levels of communication and integration across local council departments, although this has been less positive at the level of district council officers.¹⁸⁹ However, some argue that long-term funding pressures for local councils, impacting social care and other services, may be further affected by the economic impacts of the pandemic and steps will be needed to stabilise the provider

181 House of Commons Public Accounts Committee (July 2020), *Readying the NHS and social care for the COVID-19 peak*.
 182 *Ibid.*
 183 Buck (2020), *The English local government public health reforms*.
 184 Mold et al. (2020), *The History of Public Health Crises*.
 185 *Ibid.*
 186 *Ibid.*
 187 House of Commons Public Accounts Committee (July 2020), *Readying the NHS and social care for the COVID-19 peak*.
 188 *Ibid.*, p. 6.
 189 Buck (2020), *The English local government public health reforms*.

market and increase the amount local authorities can pay for care.¹⁹⁰

Previous health crises have sometimes instigated new funding and direction for local government and related health services. Following the HIV/AIDS crisis of the early and mid-1980s, for example, AIDS coordinator posts proliferated across UK local government and there were more sustained efforts to coordinate health and social care.¹⁹¹ It is too soon to say whether responses to the COVID-19 crisis have established any especially effective new modes of coordination, but certainly one impact is that COVID-19 has drawn attention to the overarching structures and balances of funding between the NHS and social care, at both national and local level.

2.4.3 Vulnerable groups

Impacts on vulnerable groups and those in need of support from the social care sector are likely to persist beyond the duration of the pandemic itself. Lockdown and social distancing measures have meant that local authorities have been left with a backlog of care assessments.¹⁹² This will mean an increased burden of assessment for some time to come and some of the most vulnerable in society will be unable to access the care and support that they need.

Inequalities in the treatment of some of the most vulnerable in society have also resulted in negative health outcomes during the pandemic which might otherwise have been lessened. Until 5 June 2020, official advice was that care home residents with a learning difficulty were not automatically eligible for a COVID-19 test.¹⁹³ This group has been particularly vulnerable to COVID-19 and it is estimated that their mortality rate was as much as 6.3 times higher than the general population.¹⁹⁴

Those using care and support services before the pandemic have also had their access disrupted. A lack of suitable PPE for carers has resulted in some disabled people cancelling their home care through fear of infection.¹⁹⁵ According to the COVID-19 Substudy of the English Longitudinal Study of Ageing, as many as one-fifth of older people have been without access to community health, social care services or support from other health professionals (such as dentists) during the pandemic and lockdowns.¹⁹⁶

The longer-term effects of a lack of access to care and support will not only affect older members of society. More than half of all people with multimorbidity (two or more long-term medical conditions) are aged under 65.¹⁹⁷ When it came to accessing community health and social care services and support, 52% of people with multimorbidities aged over 50 may have needed to access these services during and after the first period of lockdown, and one in five did not have access to health and social care services even though they needed them.¹⁹⁸ These figures are based on data from over 10,000 participants in the English Longitudinal Study of Ageing.

The pandemic and its effect on social care services have also had an impact on vulnerable children, including the approximately 800,000 children living with

190 Charles and Ewbank (2020), 'Lasting reform for social care'.

191 Mold et al. (2020), *The History of Public Health Crises*.

192 Birmingham (2020), 'Health and social care system'.

193 Department for Health and Social Care, 'Guidance: Coronavirus (COVID-19): getting tested'.

194 Albert, A. (2020), 'Coronavirus: People with learning disabilities have six time higher death rate from COVID-19' [accessed 21/01/2021].

195 Inclusion London (March 2020), 'Coronavirus Bill could leave thousands of Disabled people without support' [accessed 09/02/2021].

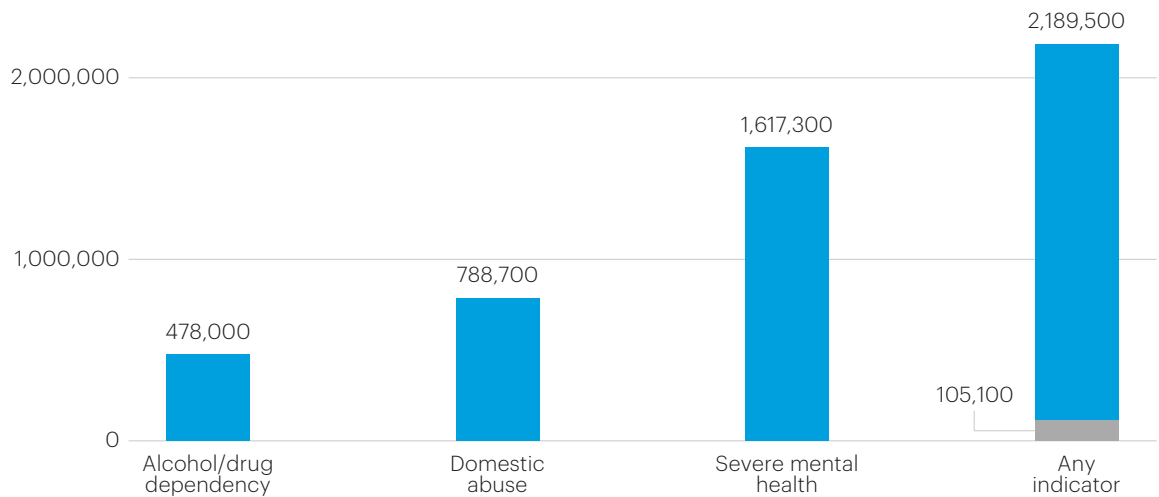
196 Zaninotto et al. (2020), *The experience of older people with multimorbidity*.

197 *Ibid.*

198 *Ibid.*

domestic abuse, 478,000 with parents who have drug or alcohol dependency and 1.6 million who have a parent with a significant mental health condition.¹⁹⁹ Many of these children will already have been invisible to social care services and the closure of schools will have made them yet more vulnerable.

Figure 14: Estimated number of children aged 0-17 in England living in households with any indicators of the so-called 'toxic trio', 2019/20



Source: Longfield (2020), *Childhood in the time of Covid*, p. 11, Vulnerability estimates from Children’s Commissioner (2019), *Childhood vulnerability in numbers. Need, spend and the millions of children in England who miss out*, updated for 2019/20 as part of CHLDRN, *Local and national data on childhood vulnerability*.

According to a report by the Children’s Commissioner for England, by September 2020 only 8% of the additional emergency grant funding given directly to local authorities had gone towards children’s services; this will be increasingly stretched as demand for these services increases.²⁰⁰ Children known to social care have also been identified as prime targets for increasing gang activity and exploitation by ‘county lines’ drug gangs.²⁰¹ There is the potential for longer-term scarring for vulnerable children and young people if the negative effects of lockdown and restrictions continue, including increasing family financial pressures and worry from disruption to education and exam cycles.²⁰²

Individuals reliant on the social care sector are some of the most vulnerable in society but have also been among the least visible. The increased visibility of the NHS throughout the pandemic and response to it, as suggested in the evidence above, may have decreased the visibility of the social care sector and the patients and care workers within it. The effect on those being cared for at home is also yet to be fully understood, although the societal impact may have been significant – based on YouGov polling, it is estimated that as many as 4.5 million people in the UK became unpaid carers during the first period of lockdown, supporting older, ill or disabled

199 Longfield (2020), *Childhood in the time of Covid*.
 200 *Ibid*.
 201 Longfield (2020), *Childhood in the time of Covid*; Brewster, B., Robinson, G., Brotherton, V., Silverman, B. and Walsh, D. (2020), ‘County lines: Online harms during the pandemic’, written response to Covid-19 Research: Home Affairs Select Committee call for evidence: Home Office preparedness for Covid-19 (Coronavirus), Rights Lab, University of Nottingham
 202 Longfield (2020), *Childhood in the time of Covid*.

relatives or friends.²⁰³ A significant proportion of unpaid carers have been balancing these responsibilities with their own work.²⁰⁴ Data from University College London's COVID-19 Social Study suggest that those with informal caring responsibilities experienced more depressive symptoms and higher levels of anxiety than non-carers, particularly during periods of lockdown and increased restrictions.²⁰⁵ Making these invisible groups visible may help to address some of the longer-term impacts for social care resulting from COVID-19.

2.5 Pandemic duration and 'long COVID'

There are now questions to be asked about when the pandemic will 'end', who gets to decide and how this should best be communicated. The way in which the 'end' of the pandemic is managed will also influence positive or negative outcomes for those who may be suffering from long-term physical, psychological and neurological effects of COVID-19.

'Long COVID' has drawn greater attention to other long-term conditions associated with viral infections, such as loss or distortion of smell and taste (anosmia and parosmia), and other 'invisible' disabilities. Mobilising patient groups and working with sufferers offers an opportunity to better understand the impacts of these conditions and the needs of those experiencing them.

Even if the immediate biological aspects of COVID-19 itself can be overcome, there will be social and medical implications with a less certain end point and potential ramifications stretching into the longer-term. In this section we cover the implications of the pandemic coming to an 'end', the long-term implications of foregone care for non-COVID conditions, longer-term health implications of 'long COVID' and finally the potential social benefits of learning from these experiences.

2.5.1 'End' of the pandemic

With many historical crises, the reality of events rarely fits into a neat pattern of beginning and end, and this will also be the case with the COVID-19 pandemic.²⁰⁶ The virus itself will not suddenly disappear. It may continue to mutate in ways that require repeated lockdown measures and regularly updated vaccines, with prolonged social and economic implications, as has been seen at the start of 2021 – or it may become endemic in the population in a way that is more manageable but still requires some level of daily preventative measures, such as continued mask wearing.²⁰⁷

The symptomatology of so-called 'long COVID', discussed in greater depth below, complicates the process of declaring an 'end' to a pandemic such as this, because for some it will continue. The lasting burden of grief and disruption to normal processes, social or otherwise, will also not end when the pandemic itself is declared over.²⁰⁸ While some mental health impacts may be short-term responses to the crisis, others have the potential for long-term scarring in different groups.²⁰⁹

203 Carers Week (2020), *Carers Week 2020 Research Report. The rise in the number of unpaid carers during the coronavirus (COVID-19) outbreak*.

204 Carers Week (2020), *Carers Week 2020 Research Report*.

205 Mak, H.W., Bu, F. and Fancourt, D. (2021), 'Mental health and wellbeing amongst people with informal caring responsibilities across different time points during the COVID-19 pandemic: A population-based propensity score matching analysis', *medRxiv preprint*.

206 Greene, J.A. and Vargha, D. (2020), 'How Epidemics End', *Boston Review* [accessed 05/02/2021].

207 These various scenarios are discussed in our accompanying policy report, *Shaping the Covid Decade: Addressing the long-term societal impact of Covid-19*, section 2.2 'Dealing with uncertainty'.

208 See above, section 2.3.5 'Frontline health and care workers' for their experiences of disruption to normal care practices.

209 Bemme et al. (2020), *Long term societal implications of COVID-19*; also discussed further above in section 2.3, 'Mental health'.

Authority for both declaring a global pandemic (or a Public Health Emergency of International Concern) and declaring a pandemic to be at an end sits with the World Health Organisation (WHO).²¹⁰ The response to this at the national and local level will be most relevant to the potential long-term societal impacts of COVID-19. There is a risk that the needs of groups impacted by COVID-19 in different ways could be overlooked if societal and medical focus shifts too rapidly away from the virus. These long-term effects may also intersect with other inequalities, prolonging the ‘syndemic’ nature of COVID-19 and its impact on society.²¹¹

Epidemics are easily forgotten, particularly when they disappear from the news. This was seen in the case of the HIV/AIDS crisis, in which the WHO also played a key role, when the epidemic did not materialise in the way that many had feared (at least not in the UK).²¹² Historically, however, there has been a standard narrative for interpreting responses to such health crises, focusing on delay in the early stages and moving on to potential overreactions.²¹³ This narrative has then framed responses to subsequent crises in a way that creates a close relationship between previous or current health crises and how society and governments respond to the next one.²¹⁴

There are always elements of the unexpected, however, which cannot be planned for. As Professor Chris Whitty, now Chief Medical Officer for England, commented during a lecture in 2018: ‘The reality ... is that we need to respond to the epidemic we are confronted with and that is inherently unpredictable.’²¹⁵ In the years prior to the onset of COVID-19, public health funding has experienced substantial cuts, resulting in a 22% fall per capita in real terms between 2015 and 2020.²¹⁶ Prevention services have been cut more than treatment, which may have impacted the ability to boost capacity and capability as needed during times of crisis.²¹⁷ Building capacity to respond to the unknown in our future pandemic preparedness may, therefore, be a consideration.

2.5.2 Foregone care and non-COVID health consequences

The pandemic has seen a dramatic reduction in care seeking for non-COVID conditions. The impact of this may be long-term, lasting far beyond the duration of the pandemic itself due to missed opportunities for early diagnosis and treatment, with the potential to increase burdens on an already overstretched NHS and wider health and social care system. The groups in society that have been most at risk from COVID-19, including those from Black, Asian and minority ethnic backgrounds, are likely to continue to be those most affected.²¹⁸ The scale of the impacts may also differ by area, as the number of patients per GP in England is 15% higher in the most deprived areas compared with the least deprived.²¹⁹

Non-elective hospital admissions declined by 28% and GP referrals by 58% from March to May 2020.²²⁰ In London alone, there were 2.6 million fewer GP appointments

210 Greene and Vargha (2020), ‘How Epidemics End’.

211 Horton, R. (2020), ‘Offline: COVID-19 is not a pandemic’, *The Lancet*, 396(10255), p. 874. As Horton explains, ‘Syndemics are characterised by biological and social interactions between conditions and states, interactions that increase a person’s susceptibility to harm or worsen their health outcomes’, p. 874.

212 Mold et al. (2020), *The History of Public Health Crises*.

213 *Ibid.*

214 *Ibid.*

215 Whitty, C. (2018), ‘Epidemics, Pandemics and How to Control Them’, Gresham College Lecture, 10 October 2018 [accessed 01/03/2021].

216 The Health Foundation (2020), ‘Today’s public health grant announcement provides some certainty, but more investment is needed over the longer-term’, The Health Foundation, 17 March 2020 [accessed 06/03/2021].

217 Marmot et al. (2020), *Build Back Fairer*.

218 Dowd et al. (2020), *Health and Inequality*.

219 Bambra et al. (2020), ‘The COVID-19 pandemic and health inequalities’.

220 Kenway, P., Street, C., Holden, J., Tunstall, R., Chandran, C. and Ayrton, C. (2020), ‘People and places in London most vulnerable to COVID-19 and its social and economic consequences’, New Policy Institute.

in March-June 2020, with communities in East London particularly affected, and 620,000 fewer referrals for a first outpatient appointment for those with ‘specific acute’ conditions, with East London boroughs once again seeing the biggest drop.²²¹ Cancer Research UK also estimate that around 200,000 people were not screened for bowel, breast, or cervical cancer in the UK, resulting in 2700 fewer diagnoses each week.²²²

Emergency department visits have also seen a drop in numbers, with a reduction of 56.6% in April 2020 compared with the same time the previous year.²²³ Under normal circumstances, emergency admissions tend to be concentrated in the more deprived areas of the UK.²²⁴ As a recent Institute for Fiscal Studies report on COVID-19 and inequalities put it:

‘To the extent that the decline in emergency attendances and admissions reflects lower demand due to self-isolation or a reduction in workplace accidents, this may not be a bad thing. But if it reflects people in need of medical treatment staying away from hospitals in fear of catching the virus – and therefore storing up health problems for the future – this may further exacerbate health inequalities (and pressure on health services) further down the line.’²²⁵

There is some evidence that avoidance is partly to blame for these declining figures. Data from the COVID-19 Social Study run by University College London indicates that during the first 19 weeks of the pandemic, one in five people surveyed did not tell their GP about symptoms related to their physical health where they normally would have done so.²²⁶ This is not the whole picture, however, as 39% of respondents also reported facing challenges accessing healthcare, with one in 10 reporting that they had been unable to speak to their GP about symptoms and one in 20 unable to speak with a professional about their mental health.²²⁷

There is also evidence for particular impacts on some disabled groups. Visually impaired people in Hong Kong, for example, have reportedly cancelled outpatient appointments with oncologists due to their greater reliance on touch for navigation and the potential to interact with contaminated surfaces, as well as the fact that once-familiar places had become unfamiliar due to measures taken to prevent the spread of the virus.²²⁸ An Office for National Statistics survey also found that some people in the UK with hearing impairments had been less likely to leave their homes or visit a green space – perhaps due to greater discomfort when wearing a mask or other face covering with hearing devices, or from difficulty lip reading when others are wearing face masks, as has been suggested for those with hearing difficulties in Italy.²²⁹ There is also some evidence that poorly organised shops and online facilities have made it more difficult for those with various disabilities to access food, medicine and other

221 Kenway et al. (2020), ‘People and places in London most vulnerable to COVID-19’.

222 ‘Ibid’.

223 NHS (2020), *A&E Attendances and Emergency Admissions 2020-21*, NHS England [accessed 28/02/2021].

224 Blundell et al. (2020), *Covid-19 and Inequalities*.

225 *Ibid.*, p. 21.

226 Fancourt, D., Bu, F., Mak, H.W. and Steptoe, A. (July 2020), *Covid-19 Social Study: Results Release 17*, Department of Behavioural and Health Science, University College London.

227 Fancourt et al. (July 2020), *Covid-19 Social Study, Results Release 17*.

228 Au, S.C.L. (2020), ‘Blindness during the coronavirus outbreak’, *Cancer Research Statistics and Treatment*, 3(5), pp. 90-91.

229 Office for National Statistics, *Coronavirus and the social impacts on disabled people in Great Britain: May 2020*, Release date: 11 June 2020; Trecca, E.M.C., Gelardi, M., Cassano, M. (2020), ‘COVID-19 and hearing difficulties’, *American journal of otolaryngology*, 41(4), 102496.

necessities during the pandemic.²³⁰ The table below outlines some of the negative health behaviours of those older people instructed to shield during the pandemic. These behaviours and limitations all have the potential to impact health and wellbeing negatively longer-term.

Figure 15: Health-related behaviours

	High risk - isolating	High risk - not isolating	Average risk group	P ¹
Less physical activity than usual	47.4%	39.5%	33.4%	<0.001
More sitting than usual	48.1%	39.3%	38.4%	<0.001
More smoking (among smokers)	25%	28%	22.2%	n.s
More alcohol (among drinkers)	19.4%	15.8%	20.8%	n.s
Less sleep than usual	27.9%	24.2%	20.8%	<0.001
Sleep fair or poor quality	56.7%	45.6%	40.6%	<0.001
Eating less than usual	16.8%	12.2%	8.8%	<0.001

Source: Steptoe and Steel (2020), *The experience of older people instructed to shield*, p. 7. P¹ = significance of differences between groups after adjustment for age, sex, number of people in household and marital/partnership status.

2.5.3 Health implications and ‘long COVID’

The long-term health effects of COVID-19 are becoming increasingly apparent and many patients who have suffered the more severe health complications will require varying forms of additional health and social care.²³¹ This is in addition to the significant direct burden of mortality on the NHS and on society more broadly, as well as the long-term costs of care and loss of productivity for those who have been hospitalised with COVID-19.²³²

Effects of serious cases of COVID-19 are being shown to include inflammation and lesions which may result in long-term lung damage and cardiac injury, and those who have been admitted to ICU are at risk of developing post-intensive care syndrome, cognitive impairments and weakness and physical deconditioning.²³³ The impact of this will not only be felt by older people. A small study of a young, low-risk group who had COVID-19 found that 70% had a degree of impairment in one or more organs four months after initial symptoms of infection.²³⁴ Previous studies of young patients with severe acute respiratory distress syndrome have also shown exercise limitations up to five years later, and patients may continue to have higher levels of engagement with

230 House of Commons Women and Equalities Committee (July 2020), ‘CVD0002 – Unequal impact? Coronavirus, disability and access to services. Written evidence submitted by A. Bennetton’; Savanta: ComRes (May 2020), *Scope, Disability Polling - April 2020*; Inclusion London (2020), *Abandoned, forgotten and ignored. The impact of the coronavirus pandemic on Disabled people. Interim Report – June 2020*; Inclusion London (March 2020), ‘Coronavirus Bill could leave thousands of Disabled people without support’ [accessed 09/02/2021].

231 Salehi, S., Reddy, S. and Gholamrezanezhad, A. (2020), ‘Long-term Pulmonary Consequences of Coronavirus Disease 2019 (COVID-19): What We Know and What to Expect’, *Journal of Thoracic Imaging*, 35(4), pp. 87-89; Li, J-W., Han, T-W., Woodward, M., Anderson, C.S., Zhou, H., Chen, Y-D. and Neal, B. (2020), ‘The impact of 2019 novel coronavirus on heart injury: A Systematic review and Meta-analysis’, *Progress in Cardiovascular Diseases*, 63(4), pp. 518-24.

232 Dowd et al. (2020), *Health and Inequality*.

233 Salehi et al. (2020), ‘Long-term Pulmonary Consequences of Coronavirus Disease 2019 (COVID-19)’; Li et al. (2020), ‘The impact of 2019 novel coronavirus on heart injury’.

234 Dennis, A., Wamil, M., Kapur, S., Alberts, J., Badley, A.D., Decker, G.A., Rizza, S.A., Banerjee, R. and Banerjee, A. (2020), ‘Multi-organ impairment in low-risk individuals with long COVID’, *medRxiv preprint*.

health services.²³⁵

Alongside these negative health outcomes, there is increasing evidence for what has been termed ‘long COVID’. Symptoms of this condition include profound fatigue, trouble breathing, skin rashes, palpitations and body aches, often with intermittent relapses, and have affected those who did not require hospitalisation.²³⁶

The phenomenon of ‘long COVID’ is, however, helping to shed light on other post-viral conditions, in particular anosmia (absent sense of smell) and hyposmia (reduced sense of smell), which have previously received little attention, to the detriment of sufferers.²³⁷ Those who have suffered post-viral smell loss, or olfactory dysfunction arising from any cause, are one such group and their symptoms have significant impacts on their day-to-day lives and wellbeing.²³⁸ The proportion of the population who may suffer from these conditions in the longer-term may be significant, as the related condition parosmia (distorted sense of smell) is being seen in up to 43% of COVID-19 cases, with one in five sufferers showing no improvement in their condition after six months.²³⁹

The effect of these conditions on the daily lives of sufferers is considerable. Altered eating, appetite loss, weight change, loss of pleasure in food, altered intimacy in close personal relationships and an altered relationship to self and others are just some of the consequences of the condition.²⁴⁰ One sufferer described their experience in the following way:

‘The world is very blank ... I feel alien from myself. It’s also kind of a loneliness in the world. Like part of me is missing as I can no longer smell and experience the emotions of everyday basic living ... It’s so hard to explain.’²⁴¹

There are also potential risks arising from sufferers not being able to smell food that has ‘gone off’, or smell gas or burning in their homes.²⁴²

Loss or distortion of smell also has consequences for sufferers’ mental health and may therefore require additional support. Respondents to a small 2014 study reported high levels of depression (43%), anxiety (45%) and isolation (57%) as a result of their condition.²⁴³ There are also gender differences, perhaps related to different social and family roles, as women experiencing olfactory loss reported higher levels of social and domestic dysfunction than men.²⁴⁴ Patients experiencing these ongoing, potentially chronic, conditions are reporting little available support, further compromising their mental wellbeing.²⁴⁵

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- 235 Felten-Berentsz, K.M., Oorsouw, R van., Klooster, E., Koenders, N., Driehuis, F., Hulzebos, E.H., van der Schaaf, M., Hoogeboom, T.J. and van der Wees, P. J. (2020), ‘Recommendations for Hospital-Based Physical Therapists Managing Patients with COVID-19’, *Physical Therapy*, 100(9), pp. 1444-1457; Herridge, M.S., Tansey, C.M., Matté, A., Tomlinson, G., Diaz-Granados, N., Cooper, A., Guest, C.B., Mazer, D., Mehta, S., Stewart, T.E., Kudlow, P. and Cook, D. et al. (2011), ‘Functional Disability 5 Years after Acute Respiratory Distress Syndrome’, *The New England Journal of Medicine*, 364(14), pp. 1293-1304.
- 236 Nabavi, N. (2020), ‘Long covid: How to define it and how to manage it’, *British Medical Journal webinar*, 370:m3489.
- 237 Smith, B., Hopkins, C., Whitcroft, K., Kelly, C., Burgess Watson, D.L. and Deary, V. (2020), *Covid and Society: Accessing Healthcare before, during and after the pandemic*, School of Advanced Study, University of London.
- 238 Smith et al. (2020), *Accessing healthcare*.
- 239 Hopkins, C., Burgess Watson, D.L., Kelly, C. and Smith, B. (2020), ‘Managing long covid: don’t overlook olfactory dysfunction’, *British Medical Journal*, 370:m3736.
- 240 Smith et al. (2020), *Accessing healthcare*.
- 241 Watson, B., Campbell, D., Hopkins, M., Smith, B., Kelly, C., and Deary V. (2020), ‘Altered Smell and Taste: anosmia, parosmia and the impact of long Covid-19’, *medRxiv preprint*, at p.11.
- 242 Santos, D. V., Reiter, E. R., DiNardo, L. J. and Costanzo, R. M. (2004), ‘Hazardous Events Associated with Impaired Olfactory Function’, *Archives of Otolaryngology Head and Neck Surgery*, 130(3), pp. 317-319.
- 243 Philpott, C.M. and Boak, D. (2014), ‘The Impact of Olfactory Disorders in the United Kingdom’, *Chemical Senses*, 39(8), pp. 711-718.
- 244 Philpott and Boak (2014), ‘The Impact of Olfactory Disorders in the United Kingdom’.
- 245 Smith et al. (2020), *Accessing healthcare*.

Before the pandemic, it is estimated that up to 40% of patients seeking GP appointments had persistent symptoms which remained undiagnosed, were not regarded as ‘organic’ disease and did not fit with standard models of illness.²⁴⁶ For a proportion of these individuals, symptoms remain undiagnosed and untreated even after secondary referrals, with consequent impacts in terms of their own frustration and distress, workplace absenteeism resulting in economic impacts and a reduction of overall confidence in healthcare services.²⁴⁷ Loss of smell and taste has historically fallen into this category. There is the potential for this significant proportion of those who experienced COVID-19 infection to be forgotten as the present urgent medical focus eventually shifts to address other chronic conditions associated with ‘long COVID’, with consequences for levels of public trust and confidence in healthcare services.²⁴⁸

2.5.4 Societal benefits of learning and innovation

Patient organisations and patient advocacy groups not only offer support and information to those suffering from conditions such as anosmia or parosmia, but can also have wider societal benefit in helping researchers and the medical profession better understand previously overlooked conditions.

Working in cooperation with medics and research scientists, there is the potential for these patient groups to help form a virtuous triangle of information and best practice.²⁴⁹ Some benefits of such coworking have already been seen, as a sustained campaign by ear, nose and throat clinicians, sensory scientists, healthcare specialists and patient advocacy groups was instrumental in having loss of taste and smell recognised as an effective predictor of COVID-19 infection.²⁵⁰ Such collaboration has also underpinned the formation of the Global Consortium for Chemosensory Research to look at this issue and what it can tell us about COVID-19, as well as the establishment of charities such as Fifth Sense and AbSent.²⁵¹

Such collaborative working may also help to develop the necessary training to help GPs and other medical professionals better identify conditions associated with ‘long COVID’. As one clinician and researcher has put it,

‘because of its prevalence and significant media attention ... “[long COVID]” may shine a light on the out-dated, dualistic notions of health ... At the very least, “[long COVID]” will hopefully put to bed the notion that patients with symptoms and signs but no demonstrable abnormalities on conventional testing, are not worthy of our care or research.’²⁵²

The health effects discussed in the previous section indicate a range of potential longer-term health implications for those who have been infected with COVID-19. These range from post-intensive care syndromes in those who have been particularly ill and have required extensive hospital treatment, to post-viral chronic fatigue which is a feature of COVID-19 for some (though not unique to this virus), persistent loss

246 Haller, H., Cramer, H., Lauche, R. and Dobos, G. (2015), ‘Somatoform Disorders and Medically Unexplained Symptoms in Primary Care’, *Deutsches Ärzteblatt International*, 112(6), pp. 279-287.

247 Smith et al. (2020), *Accessing healthcare*.

248 *Ibid.*; see Chapter 3 section 3.4 for trends of public trust during the pandemic.

249 Smith, B., Covid and Society Evidence Workshop, ‘Health and Wellbeing’, 30 December 2020.

250 Smith et al. (2020), *Accessing healthcare*.

251 *Ibid.*

252 *Ibid.*, quoting clinician and researcher Mahinda Yoga, p. 14.

of taste and/or smell and specific longer-term organ damage in some individuals. There are also distinctions to be drawn between those who have suffered severely from COVID-19 with some lingering effects and those who have experienced relatively mild but ongoing symptoms.²⁵³ While ‘long COVID’ as a term has brought attention to these issues, in the longer-term, and as we learn more about the virus, it may be beneficial to develop more nuanced definitions concerning the range of complications and consequences and therefore enable more targeted treatment and support.

Social distancing measures and efforts to reduce the burden on the NHS have seen an increase in GP consultations conducted via video or telephone.²⁵⁴ Such developments may make it easier for more people to access healthcare if they are continued, including better access for those with some disabilities and for those working or with caring responsibilities. Better data on the health outcomes of patients relying on virtual consultations will, however, be needed to fully understand the long-term implications and which patient groups may benefit most.²⁵⁵ Some local councils have also used technological solutions to support adult social care throughout the pandemic – best practice that could be shared more widely.²⁵⁶ That these initiatives have been achieved largely through clinical and support staff sharing learning and good practice across the sector suggests that there is the potential for further roll-out.²⁵⁷

2.6 Information and communication

The communication of information about the virus and the measures taken to tackle the pandemic is critical for avoiding the negative health outcomes and behaviours associated with the spread of disinformation through social media and other outlets. This spread has been highlighted during the pandemic and compounded by issues of transparency in decision-making and policy responses, balancing tensions between individual rights and the public interest. These raise questions about trust and governance as well as inequalities of access (hearing impairments, linguistic background, generational differences and digital literacy and access) which have implications for responses to future crises.

There is an opportunity to build on the lessons learned to create improved, evidence-based cross-linguistic and cross-cultural health communication, both to improve future pandemic response and to reduce health inequalities.

2.6.1 Quality and quantity

While the majority of people in the UK appear to be well informed about the measures that they can take to protect themselves and others, as well as displaying a willingness to take them, there is evidence of declining levels of trust in some of the key sources of this information.²⁵⁸

253 Nabavi (2020), ‘Long covid: How to define it and how to manage it’.

254 Charles, A. and Ewbank, L. (2020), ‘Embedding and accelerating digital change’, in *The road to renewal: five priorities for health and care*, The King’s Fund; The Health Foundation (2020), ‘Three projects that have successfully spread virtual consultations’, online newsletter [accessed 01/03/2021].

255 Ada Lovelace Institute and the Health Foundation (2021), ‘Living online: the long-term impact on wellbeing’, response to the House of Lords COVID-19 Committee’s call for evidence [accessed 01/03/2021].

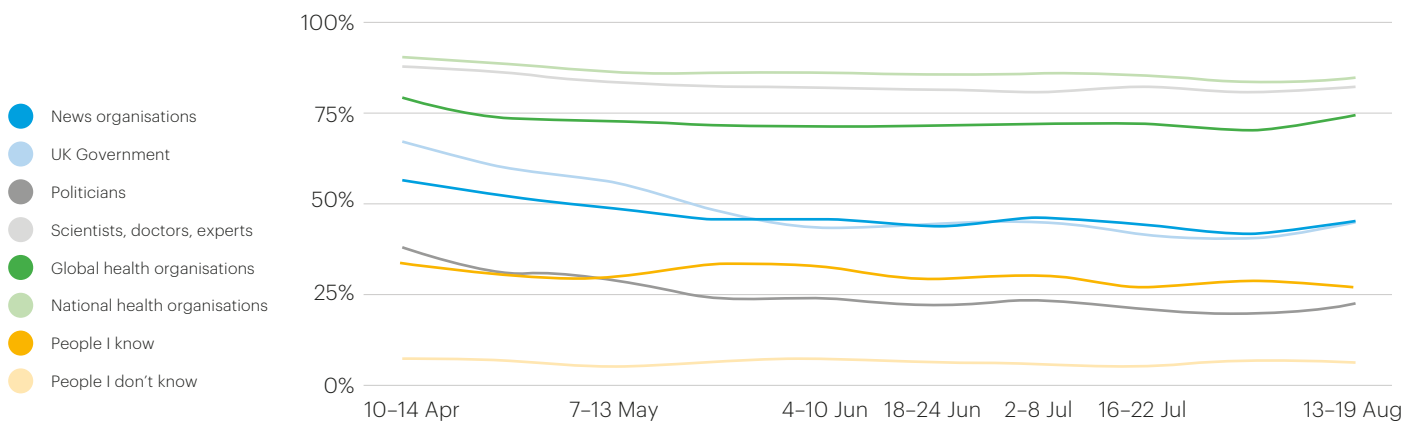
256 Local Government Association, ‘COVID-19: Local examples of care technology approaches’ [accessed 05/02/2021].

257 Charles and Ewbank (2020), ‘Embedding and accelerating digital change’.

258 Nielsen, R.K., Fletcher, R., Kalogeropoulos, A. and Simon, S (2020), *Communications in the Coronavirus Crisis: Lessons for the Second Wave*, Reuters Institute for the Study of Journalism, University of Oxford.

Trust in the UK Government and in politicians declined markedly over the course of 2020, with trust in news organisations following a similar downward trajectory.²⁵⁹ This was accompanied by a decline in news use, following an initial increase in the early part of the first national lockdown.²⁶⁰ By contrast, scientists, doctors, experts and national health organisations retained a high level of public trust as sources of news and information about COVID-19.²⁶¹

Figure 16: Proportion that trust news organisations as a source of news information about COVID-19



Source: Nielsen et al. (2020), *Communications in the Coronavirus Crisis*, p. 17.

It has been estimated that by August 2020 as many as 8 million people in the UK, or 15% of the population, could be considered ‘infodemically vulnerable’, consuming little or no news about COVID-19 and having low levels of trust in news when they do engage with it.²⁶² A primary reason given for such news avoidance is the negative effect it has on mood.²⁶³ Given the continuation and even deepening of the pandemic crisis, it is likely that this trend will continue.

Media use has proven to be a good predictor of health behaviours, with a positive relationship between health-protective behaviours and use of broadcast media for COVID-19 information and a negative relationship between regular social media use and negative health behaviours during the pandemic.²⁶⁴ Those aged 18-54 have continued to engage with social media platforms during lockdown and, despite actively engaging with news about COVID-19 less, are more likely to have been passively engaging through these platforms.²⁶⁵ This is significant because of a positive relationship between frequent use of social media for COVID-19 information and holding one or more conspiracy beliefs.²⁶⁶ When surveyed for a recent report on vaccine deployment, 25% of 2501 adults in England endorsed conspiracy theories about the pandemic, and the greater the extent of this endorsement, the less likely

259 Lalot, F., Davies, B. and Abrams, D. (2020), *Trust and cohesion in Britain during the 2020 COVID-19 pandemic across place, scale and time. Report for the British Academy, November 2020*, Centre for the Study of Group Processes, School of Psychology, University of Kent; Nielsen et al. (2020), *Communications in the Coronavirus Crisis*; see also Chapter 3 section 3.4.
 260 Fletcher et al. (2020), *Information inequality*.
 261 Nielsen et al. (2020), *Communications in the Coronavirus Crisis*.
 262 Nielsen et al. (2020), *Communications in the Coronavirus Crisis*; see also Chapter 3 section 3.4.3.
 263 *Ibid.*
 264 Allington, D., Duffy, B., Wessley, S., Dhavan, N. and Rubin, J. (2020), ‘Health-protective behaviour, social media usage and conspiracy belief during the COVID-19 public health emergency’, *Psychological Medicine*, pp. 1-7, Studies 1 and 2; Mills (2020), *COVID-19 vaccine deployment*.
 265 Fletcher et al. (2020), *Information inequality*.
 266 Allington et al. (2020), ‘Health-protective behaviour’, Study 2, pp. 3-4.

they were to follow positive health behaviours such as wearing face masks or to accept a vaccination against COVID-19.²⁶⁷

A more positive historical correlation exists between active engagement with health information and national television news. During the H1N1 pandemic, parents who engaged with national television news and actively sought information about the disease were more likely to vaccinate their children.²⁶⁸ Should trends in news avoidance and lack of engagement with public broadcast news continue, there may be significant negative consequences for the successful roll-out of COVID-19 vaccines in these groups and longer-term implications for the quality and nature of communication in future health crises.

2.6.2 Inequality of access

Access to news and information about COVID-19 and the pandemic response has also been undermined by existing inequalities, with information not widely accessible to some of the most vulnerable groups and health messaging sometimes excluding them. While some news avoidance can be attributed to individual preference or decreasing levels of trust, inequalities of access have also increased.

A report published by researchers at the Reuters Institute for the Study of Journalism has shown that women are engaging with COVID-19 news less than men, and there is some suggestion that this may in part be due to unequal roles and time spent in caregiving, exacerbated by lockdowns, home working and school closures.²⁶⁹ Those with lower levels of education and household income are also less likely to engage with news about COVID-19.²⁷⁰ A failure to engage these groups with clear and up-to-date information may increase the likelihood of negative health outcomes for them, as they are more likely to have an occupation where home working is not possible and Office for National Statistics data show there have been higher rates of mortality.²⁷¹

Attention has not always been paid to the way in which information about what individuals should and should not do in order to protect themselves and others may be received in different cultural or linguistic contexts. A study of the Turkish and Kurdish communities in the London Borough of Haringey, for example, has demonstrated the linguistic barriers to accessing information about COVID-19.²⁷² This negatively impacts some of those most at-risk groups, including those from ethnic minority communities – the same communities which also make up a significant proportion of the workforce in frontline health and social care, as well as other key worker occupations.²⁷³ The deaf or hard of hearing have also been excluded from government briefings in England, although briefings in Scotland and Wales have featured sign-language interpreters.²⁷⁴

267 Freeman, D., Waite, L., Rosebrock, L., Petit, A., Causier, C., East, A., Jenner, L., Teale, A-L., Carr, L., Mulhall, S. Bold, E. and Lambe, S. (2020), 'Coronavirus conspiracy beliefs, mistrust, and compliance with government guidelines in England', *Psychological Medicine*, pp. 1-13.

268 Mills (2020), *COVID-19 vaccine deployment*.

269 Nielsen et al. (2020), *Communications in the Coronavirus Crisis*.

270 Fletcher et al. (2020), *Information inequality*.

271 Dowd et al. (2020), *Health and Inequality*; Office for National Statistics, *Coronavirus (COVID-19) related deaths by occupation, England and Wales: deaths registered up to and including 20 April 2020*, Release date: 11 May 2020.

272 Healthwatch Haringey (2020), *Understanding the impact of Covid-19 on Turkish/Kurdish communities in Haringey*.

273 Dowd et al. (2020), *Health and Inequality*.

274 Morgan Jones et al. (2020), 'Words, stigma and the coronavirus'; Shakespeare et al. (2021), 'Disabled people in Britain'.

The disabled community has also been largely excluded from the pandemic response and the communication of information about COVID-19. Responses to the crisis have often not included the needs of this group even though they are continually referred to as ‘vulnerable’, and it has been left to voluntary and other organisations to provide key information and support.²⁷⁵

These diverse groups can be better engaged through community-based dialogue, including meaningful references to everyday lived experiences, communicated in multi-linguistic and visual ways, actively engaging local stakeholders in designing and delivering communication in places where these groups are more likely to find it readily accessible.²⁷⁶

It is essential to engage with and build trust among some of the communities and groups most at risk of serious health effects of the virus. For example, in the case of Haringey’s Turkish and Kurdish communities, local organisations and religious centres have proved vital in communicating information.²⁷⁷ A survey conducted by BAMEStream has highlighted how these organisations have also been a crucial source of bereavement and trauma support for some of the most heavily impacted groups, citing a lack of cultural competency from mainstream service providers.²⁷⁸ These community-centred, culturally sensitive approaches are more likely to gain support and confidence than centralised messaging which addresses ‘the public’ as if it is a single entity and ignores important cultural and linguistic differences.²⁷⁹

2.6.3 Individual rights and the public interest

Communicating the importance of individual action has been complicated by the rapidly evolving nature of the COVID-19 pandemic and corresponding changing nature of the message being delivered, with conditions of uncertainty making communicating safety and efficacy of measures like masks and vaccines more difficult.

Vaccine information is normally introduced and communicated to the public with detailed long-term data on immune responses, effectiveness, various risks etc. With the new strains of COVID-19 there remain questions around effectiveness of the different vaccines to mutated strains of the virus, even as roll-out is underway, combined with widely published safety concerns.²⁸⁰ This will be compounded by the legacy of previous health scares such as the spread of misinformation about the MMR vaccine, which in turn was influenced by the memory of prior health scares and crises.²⁸¹

Ineffective communication can lead to differences between public and expert conceptions of the risk from health crises and pandemics.²⁸² Genuine concerns around the safety of vaccines and individual risk, as well as the efficacy of other health behaviours and interventions, however, should not simply be dismissed. There may also be a certain level of complacency from those who do not deem

275 Shakespeare, T. (2020), *British Academy Covid and Society Call for Evidence*, 21 December 2020; Shakespeare et al. (2021), ‘Disabled people in Britain’.

276 Mills (2020), *COVID-19 vaccine deployment*; Morgan Jones et al. (2020), ‘Words, stigma and the coronavirus’; Tang and Rundblad (2020), ‘Social learning about COVID-19 vulnerability’, Ongoing project, King’s College London [accessed 18/01/2021].

277 Healthwatch Haringey (2020), *Understanding the impact of Covid-19 on Turkish/Kurdish communities in Haringey*; Nazroo et al. (2020), *Inequalities in relation to Covid-19*.

278 Murray, K (2020), *National Mapping of BAME Mental Health Services*, BAMEStream.

279 Mold et al. (2020), *The History of Public Health Crises*.

280 Mills (2020), *COVID-19 vaccine deployment*.

281 Mold et al. (2020), *The History of Public Health Crises*.

282 *Ibid.*

themselves at such great risk from COVID-19, particularly those in younger age groups, and a corresponding need for additional effort to encourage vaccination in these groups.²⁸³ There is also some evidence that internet users are more likely to believe that healthy individuals do not need to be vaccinated.²⁸⁴

Scaremongering has proven ineffective in the past, and communication can better focus on individual and lived experience to convey a more positive message, rather than relying purely on ‘facts’, modelling and worse-case scenarios.²⁸⁵ Increasing awareness and publicisation of the impact of ‘long COVID’ and other associated health complications from the virus for younger age groups may also have a positive impact on health behaviours and vaccine uptake.²⁸⁶

Levels of trust in government and levels of trust in public health measures are closely linked and certain events have markedly undermined public trust in the UK Government, most notably the actions of Dominic Cummings, then chief adviser to the Prime Minister, during the first lockdown – with negative consequences for support for and willingness to comply with preventative health measures.²⁸⁷ A report published by the Royal Society and the British Academy estimated that vaccine uptake of around 80% or above may be needed to ensure community protection against COVID-19.²⁸⁸ Anything which undermines public confidence and may therefore compromise individual behaviours should be of great concern. This may also have longer-lasting knock-on impacts for further vaccination programmes against COVID-19 and public responses to future health crises. As a study commissioned for this report, on trust and cohesion during the pandemic, has put it:

‘Although the wider perils from this pandemic have yet to reveal themselves, the initial trust dividend that may have facilitated collective resilience through the first lockdown appears to have all but evaporated ... It is quite doubtful that further crisis will necessarily generate the same level of trust as people reflect on their disappointment from the first time around.’²⁸⁹

2.7 Data gathering and new health technologies

The impact of rapid development and deployment of health technologies such as contact tracing apps, combined with the severity and immediacy of the current crisis, has pushed the boundaries of what people may normally consider to be acceptable levels of surveillance and data collection. Health technologies have necessarily advanced rapidly in response to the pandemic, but improvements will need to continue in order to obtain accurate and thorough data on mortality and demographics, infection rates and transmission for different groups on which to base future research and preparedness measures.

In further developing health technologies and gathering appropriate data, there is an important balance to be drawn between benefit and risk, ensuring that suitable safeguards are in place particularly for those from more vulnerable groups or

283 Mills (2020), *COVID-19 vaccine deployment*.

284 *Ibid.*

285 Mold et al. (2020), *The History of Public Health Crises*.

286 Mills (2020), *COVID-19 vaccine deployment*.

287 Mold et al. (2020), *The History of Public Health Crises*; Fancourt, D., Steptoe, A. and Wright, L. (2020), ‘The Cummings effect: politics, trust and behaviours during the COVID-19 pandemic’, *The Lancet*, 396:10249, pp. 464-465; see also Chapter 3 section 3.4.1.

288 Mills (2020), *COVID-19 vaccine deployment*.

289 Lalot et al. (2020), *Trust and cohesion in Britain*, p. 22.

communities.²⁹⁰ As this report demonstrates, the impacts of COVID-19 have not been felt equally across society, and while it is important to collect better data on some protected characteristics to aid our understanding of these impacts, there is also a need to protect the most vulnerable communities.²⁹¹

With the speed of roll-out of technological responses to the crisis has come a corresponding difficulty in effectively sharing valuable data in a timely and relevant way between sectors and between national and regional or local levels of government.²⁹² Inequalities of data access may exacerbate existing inequalities between regions and for vulnerable groups. There have also been inconsistencies across different parts of the UK, with different data on ICU beds made available in Scotland, as compared with England.²⁹³ There may be consequences for recovery from the COVID-19 crisis and for future pandemic preparedness if the governance and relationships of data sharing are not better organised. The rapid development of data technology has demonstrated how far there still is to go in putting appropriate structures, processes and safeguards in place.

2.7.1 Building trust in data and technology

There are notable trust and governance issues surrounding the increasing datafication of health as well as the development of public-private health initiatives and data partnerships which have formed in response to the crisis.

There has always existed a tension between safety and security and personal freedoms and the pandemic has highlighted this tension; many feel that use of a contact tracing app should not be made mandatory as it has been in some countries, but there is also recognition of civic duty and acting with solidarity.²⁹⁴ In a public online deliberative exercise run by the Ada Lovelace Institute on the circumstances in which solutions like a contact tracing app were appropriate, participants listed a transparent evidence base as a top priority in building public support and legitimacy, as well as clear boundaries on data use and rights.²⁹⁵ One participant noted concerns that data gathering may intersect with existing structural inequalities or structural racism, with negative impacts for certain groups:

‘Being a Black person in the UK, you are characterised by how the police and other people interact with you. People with a history of being targeted might have that distrust that this info won’t be weaponised. It’s happened before.’²⁹⁶

Levels of trust may not be equal across ‘the public’ and may differ between groups. A lack of trust in the motives of government and other bodies for the use of public health surveys and the data they would collect is not new, having been apparent in health surveys conducted throughout the 20th century, and there is little evidence that the situation has improved.²⁹⁷

290 Ada Lovelace Institute (2020), *Confidence in a crisis? Building public trust in a contact tracing app*.

291 Ada Lovelace Institute (2020), *Confidence in a crisis?*

292 Ada Lovelace Institute and the Royal Society (2020), *Learning data lessons: data access and sharing during COVID-19*.

293 Ada Lovelace Institute and the Royal Society (2020), *Learning data lessons*.

294 Patel, R. (2020), ‘A rapid online deliberation on COVID-19 technologies: building public confidence and trust’, Ada Lovelace Institute [accessed 01/02/2021].

295 Ada Lovelace Institute (2020), *Confidence in a crisis?*

296 *Ibid.*, p. 20.

297 Mold et al. (2020), *The History of Public Health Crises*.

Concerns around data protection are also evident in willingness to engage with different measures designed to prevent the spread of COVID-19. A study by the Reuters Institute for the Study of Journalism found that, while between 75% and 90% of people indicated that they would probably take most of the preventative measures advised by government, such as mask wearing, hand washing and social distancing, the proportion willing to download a contact tracing app was much lower (only 28% definitely would and 22% probably would).²⁹⁸

Trust in public health measures and levels of public trust in government are linked, and the impact of public health measures therefore depends on the context in which they are deployed and who is deploying them.²⁹⁹ As discussed elsewhere in this section, there has been a decline in trust in government over the course of the pandemic to date, and this may continue as the crisis deepens.³⁰⁰

The balance of public trust may hinge on the level of transparency about who is making use of health-related data (including any third party agreements) and what they are using it for, as well as what kind of data is being held in repositories and for how long.³⁰¹ While many people may accept the use of their data to support efforts to control and overcome the current crisis, there may not be a similar level of acceptance if such data continues to be used for other purposes once the pandemic has ended, when such levels of data gathering may no longer be widely seen as proportionate.³⁰²

War-related allusions and metaphors have been commonly used to describe the current crisis, with emphasis placed on ‘fighting’ the virus, calls to ‘stay alert’ and do our ‘civic duty’ and attempts to invoke a ‘Dunkirk’ or ‘Blitz’ spirit – framing a public health emergency in language associated with threats to national security.³⁰³ Such ‘biosecuritisation’ of language around COVID-19 and its associated health technologies may heighten concerns about the use of novel modes of digital surveillance, if it is not accompanied by critical and transparent public debate.³⁰⁴ Such concerns were voiced by a participant in the Citizens’ Biometrics Council, Bristol, February 2020: ‘I am a bit fearful that we are sleepwalking into certain things as a society.’³⁰⁵

The NHS already makes use of large amounts of data which is often processed by third parties, including academics, charities and industry.³⁰⁶ There is, however, little public transparency about what agreements are made or the terms of those agreements, and there are few ways for individuals to express their preferences about data usage.³⁰⁷ Greater involvement of a broad section of the public in setting future standards for the use and development of health data, as well as in the framing of data partnerships, may be beneficial.³⁰⁸

298 Nielsen et al. (2020), *Communications in the Coronavirus Crisis*.

299 Mold et al. (2020), *The History of Public Health Crisis*; Ada Lovelace Institute (2020), *No green lights, no red lines. Public perspectives on COVID-19 technologies*.

300 See above section 2.6.1, ‘Quality and quantity’.

301 Ada Lovelace Institute (2020), *Confidence in a crisis?*.

302 *Ibid.*

303 Wienroth, M., Samuel, G., Cruz-Santiago, A. and Platt, J. (2020), ‘COVID-19: How public health emergencies have been repurposed as security threats. Shedding light on the capacity of technology to trace and monitor the movement of individuals’, Ada Lovelace Institute [accessed 01/02/2021].

304 Wienroth et al. (2020), ‘COVID-19: How public health emergencies have been repurposed’.

305 Ada Lovelace Institute (2020), *No green lights*, p. 8.

306 Understanding Patient Data and Ada Lovelace Institute (2020), *Foundations of Fairness: Where next for NHS health data partnerships?*.

307 Understanding Patient Data and Ada Lovelace Institute (2020), *Foundations of Fairness*.

308 *Ibid.*

2.7.2 Using data and technology to overcome, not exacerbate, inequalities

Sharing data is crucial for furthering research and maximising its potential to help overcome the current pandemic and better prepare for future health crises. However, greater use of data and new health technologies can come with associated societal concerns about exploitation and possible harms.

Public engagement conducted by the Ada Lovelace Institute has raised concerns about the accuracy and inclusiveness of biometric and identity technologies and the potential for errors to result in negative outcomes such as discrimination.³⁰⁹ This may have implications for trust in and support for COVID-19 related technologies.³¹⁰ There is value in maintaining a human element to the process, alongside the technology, both as a safeguard and as a way of ensuring that the differences between individuals and groups are accounted for, not reducing personal experience to binary categories or labels such as ‘BAME’.³¹¹

Just as COVID-19 has had differential impacts across groups and across regions, so gathering appropriate and reliable data will need locally and culturally appropriate systems and solutions alongside equitable and responsible sharing of information.³¹² Technologies can ideally compliment local community responses and health services in monitoring and responding to health crises, but they are not an effective replacement for this provision.³¹³

Existing digital and health inequalities which, as discussed earlier, have impacted access to information about COVID-19 and the pandemic may also limit the potential benefits of health technologies and further disadvantage certain groups.³¹⁴ As many as 6 million people in the UK cannot turn on a device and up to 50% of those are aged under 65.³¹⁵ There are also accessibility concerns for certain apps which rely on voice recognition software that may not work effectively for those with a speech impairment – although there may be benefits for those with reduced sight.³¹⁶ As well as safeguarding against profiling of different demographic groups and other misuse of data, there is a risk that overreliance on technologies could become a gateway to privileges for some, while further disadvantaging others.³¹⁷

2.7.3 Communicating the benefits

Some technological developments during the pandemic may, however, have longer-term positive applications. A drone delivery service provider has collaborated with Vodafone and Deloitte to transport medical supplies and testing kits between hospitals and medical practices in communities on the west coast of Scotland.³¹⁸ Such initiatives may lead to positive longer-term medical transport solutions, particularly for more isolated communities.

The COVID-19 crisis has also placed huge pressures on staffing numbers in the health sector. Virtual reality training has been used to retrain and upskill retired doctors and

309 Ada Lovelace Institute (2020), *No green lights*.

310 *Ibid.*

311 Ada Lovelace Institute (2020), *No green lights*; Abrams et al. (2020), *What factors make a community more vulnerable*.

312 Wright, K. and Harvey, K. (2020), *Research in global health emergencies: ethical issues. Short report*, Nuffield Council on Bioethics.

313 Wright and Harvey (2020), *Research in global health emergencies*.

314 See above, section 2.6.2 ‘Inequality of access’.

315 Ada Lovelace Institute (2020), *Confidence in a crisis?*; Ada Lovelace Institute (2020), *No green lights*.

316 Ada Lovelace Institute (2020), *No green lights*.

317 Ada Lovelace Institute (2020), *Confidence in a crisis?*; Ada Lovelace Institute (2020), *No green lights*.

318 Brown, A. (2020), ‘Skyports collaborates with Vodafone and Deloitte on space-enabled drone deliveries for NHS in Scotland in COVID-19 response funding initiative’, Skyports [accessed 01/02/2021].

nurses, helping them return to frontline service in the NHS, boosting staff numbers in response to the pandemic.³¹⁹ Learning from technological interventions and data partnerships may have been focused on certain areas of the UK, but the benefits of these developments could be spread and shared more evenly – something a majority of the public suggest they would support.³²⁰

Some technological initiatives, used appropriately and designed well, may also have longer-term benefits for specific groups, such as better data on those with disabilities. King’s College London has developed a C-19 COVID Symptom Tracker which includes some additional data on particular needs, such as wheelchair use.³²¹ While not comprehensive, such tools provide opportunities for further enhancement, for example by including additional measures for people with hearing, sight and cognition impairments, using more tailored questions from the Washington Group Short Set on Functioning to better understand individuals’ disabilities.³²²

As recently argued by the Ada Lovelace Institute and the Health Foundation, however, more evidence is needed before we can fully understand the implications or benefits of data-driven technologies for health and wellbeing in the long-term.³²³ Simply gathering more and better data on underrepresented groups is not a solution to inequalities in and of itself, and efforts to implement technological ‘quick fixes’ may have unpredictable or unwanted outcomes.³²⁴ Broad, meaningful engagement when developing or expanding data use and health technologies, particularly with underrepresented groups, may help.³²⁵

2.8 Environmental conditions, health and wellbeing

Although the global carbon economy has remained active, lockdown measures saw air quality dramatically improve in many areas, providing a vision of what a greener, carbon-neutral future might offer.³²⁶ The pandemic has also highlighted the beneficial effects of access to green spaces for both mental and physical health, but access to these spaces is unequal. Poor-quality housing has also been linked to increased risk from COVID-19.

2.8.1 Air quality

In the earliest stages of the pandemic, COVID-19 deaths were more common in highly polluted urban areas, particularly London, and there are known pre-existing links between air pollution and breathing difficulties and other long-term conditions related to the heart and lungs.³²⁷ As deaths rose and the virus spread from its initial concentration and the first period of national lockdown came into effect, however, the level of correlation between COVID-19 mortality and air pollution fell.³²⁸

319 Weiss, T.R. (2020), ‘17,000 doctors and nurses training for COVID-19 pandemic using VR technology’, TechRepublic [accessed 08/02/2021].

320 Understanding Patient Data and Ada Lovelace Institute (2020), *Foundations of Fairness*.

321 Kuper et al. (2020), ‘Disability-inclusive COVID-19 response’.

322 Kuper et al. (2020), ‘Disability-inclusive COVID-19 response’; Washington Group on Disability Statistics, ‘WG Short Set on Functioning (WG-SS)’ [accessed 09/02/2021].

323 Ada Lovelace Institute and the Health Foundation (2021), ‘Living online: the long-term impact on wellbeing’.

324 ‘Ibid’.

325 ‘Ibid’.

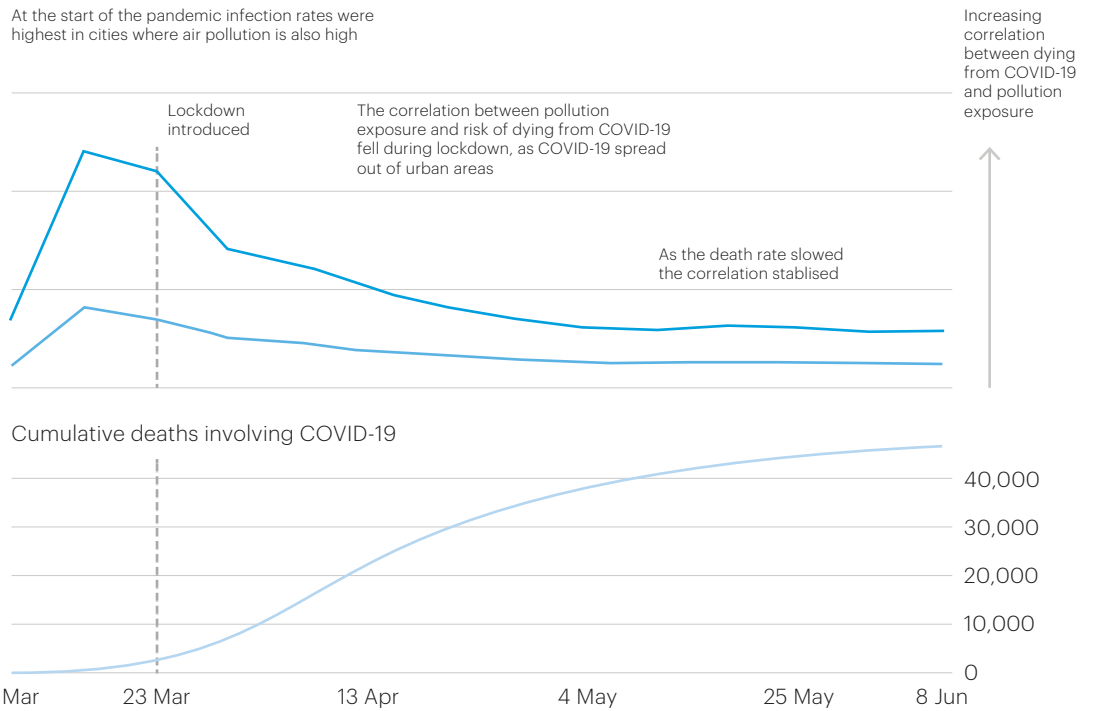
326 Morgan Jones, M., Abrams, D. and Lahiri, A. (2020), ‘Appendix 15: Living with or against nature? COVID-19 and our relationship with the natural world’, in ‘Shape the Future: how the social sciences, humanities and the arts can SHAPE a positive, post-pandemic future for peoples, economies and environments’, *Journal of the British Academy*, 8, pp. 167-266, at pp. 234-239; see also Chapter 3 section 3.5.3.

327 Office for National Statistics (August 2020), *Does exposure to air pollution increase the risk of dying from the coronavirus (COVID-19)?* [accessed 01/02/2021].

328 Office for National Statistics (August 2020), *Does exposure to air pollution increase the risk of dying*.

Figure 17: Correlation between COVID-19 deaths in England and 10-year exposure to nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5})

Correlation between dying from COVID-19 and average exposure pollutant over 10 years



Source: Office for National Statistics (August 2020), *Does exposure to air pollution increase the risk of dying*. This graph is to show that the relationship in the data between COVID-19 mortality and air pollution changed as the infection spread. It is not designed to provide any deeper interpretation of the correlation. The values here are the log naturals of the odds ratio of death from COVID-19 for the whole population based on models in which nothing else is controlled for.

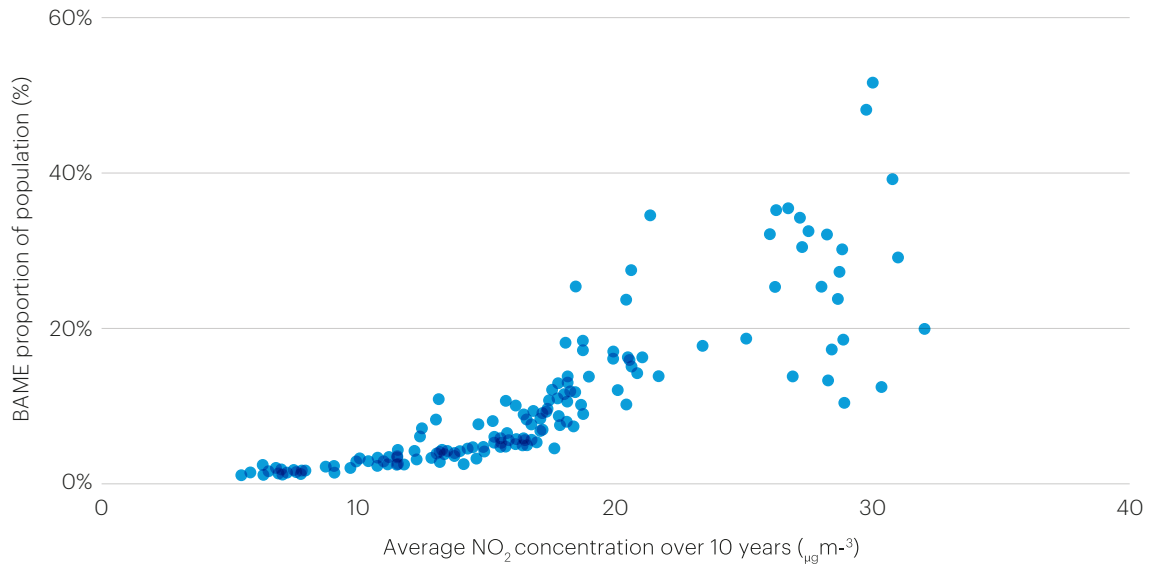
Exposure to air pollution may be affected by many different variables, including location and employment type. This makes it difficult to draw specific conclusions about the relationship between air pollution exposure among the general population and negative health outcomes for COVID-19, based on the level of data currently available.³²⁹ Analysing evidence on air pollution which includes ethnicity as a variable, however, once again highlights structural inequalities which adversely impact health outcomes for certain groups in society.

Analysis of data on major air pollutants suggests either that higher exposure to fine particulate matter with a diameter smaller than 2.5 microns (PM_{2.5}) and to nitrogen dioxide (NO₂) is driving disproportionately negative outcomes from COVID-19 for Black, Asian and ethnic minority groups or that these groups are more likely to live in areas with high exposure to these pollutants (predominantly urban areas).³³⁰ While it may not be possible to draw a direct link between pollution exposure and deaths from COVID-19, pollution exposure in urban areas may be interacting with other inequalities which influence negative health outcomes and increase associated risk from diseases such as COVID-19.

329 Office for National Statistics (August 2020), *Does exposure to air pollution increase the risk of dying*; Office for National Statistics (August 2020), *Coronavirus (COVID-19) related mortality rates and the effects of air pollution in England. Research report examining the potential relationship between long-term air pollution exposure and coronavirus (COVID-19) mortality rates* [accessed 01/02/2021].

330 Office for National Statistics (August 2020), *Coronavirus (COVID-19) related mortality rates and the effects of air pollution in England*.

Figure 18: Percentage of the population of Black, Asian and minority ethnicity compared with average 10-year exposure to nitrogen dioxide (NO₂), selected areas in England



Source: Office for National Statistics (August 2020), *Does exposure to air pollution increase the risk of dying*.

A study of hospital admissions for COVID-19 in Birmingham found that those from Black, Asian and minority ethnic backgrounds were more likely than those from White backgrounds to present with multi-lobar pneumonia; they were also more likely to come from areas with highest air pollution and highest levels of deprivation, in terms of living environment and overcrowded households.³³¹

2.8.2 Housing

The quality of UK housing stock has also had an impact on health outcomes for COVID-19, and exposure to poor-quality housing is associated with negative health outcomes more generally.³³² These include greater risk of respiratory diseases, higher infection rates from overcrowding and increased likelihood of household accidents.³³³ Living conditions have also made it more difficult for certain communities and groups to protect themselves and others through more basic measures such as social distancing and regular hand washing.

Multiple occupancy housing, higher population densities and lack of access to outdoor space are common to more deprived urban neighbourhoods across the UK and these also represent increased risk factors for COVID-19 transmission.³³⁴ It is estimated that 23 million households in England were overcrowded between 2014 and 2017, with this particularly affecting Black, Asian and minority ethnic communities.³³⁵ Isolating from others and maintaining social distance is not possible

331 Office for National Statistics (August 2020), *Does exposure to air pollution increase the risk of dying*, citing Soltan, M., Crowley, L.E., Melville, J., Varney, J., Cassidy, S., Mahida, R., Grudzinska, F., Parekh, D., Dosanjh, D.P. and Thickett, D. (2020), 'To what extent are social determinants of health, including household overcrowding, air pollution and housing quality deprivation, modulators of presentation, ITU admission and outcomes among patients with SARS-COV-2 infection in an urban catchment area in Birmingham, United Kingdom?', *Research Square preprint*.
 332 See also Chapter 3 sections 3.5.1 and 3.5.2.
 333 Bimbra et al. (2020), 'The COVID-19 pandemic and health inequalities'.
 334 Ibid.
 335 Doreen Lawrence Review (2020), *An Avoidable Crisis*.

in such circumstances. Access to clean water and sanitation, another essential protective measure against COVID-19, has been noted as a particular problem for Gypsy, Roma, and Traveller communities.³³⁶

2.8.3 Living well with nature

Access to green outdoor space can have positive impacts for overall health and wellbeing and not just in a pandemic crisis. COVID-19 has made regional and social inequalities of access apparent and there are long-term questions about how we can help and educate all groups to experience the benefits of immersing themselves in nature.³³⁷ In doing so, however, there needs to be a balance with the pressing need to distance ourselves more from wild nature as a society, thus reducing exploitative interactions with nature and wildlife which increase the prevalence of diseases such as COVID-19.³³⁸

2.9 Chapter summary

The impacts of COVID-19 on health and wellbeing have not been felt uniformly across society. COVID-19 has exacerbated existing structural and social inequalities, with particularly negative health outcomes for those already disadvantaged.

While some predicted impacts have not materialised, others have taken their place – such as the negative impacts on mental health and wellbeing for many children and young people and frontline workers. Mortality rates in the social care sector, particularly in care homes, have also highlighted pre-existing complexities in governance and funding. Not all these impacts will be short-lived, nor will they all end when the pandemic itself does. Many have the potential for longer-term scarring, and we are yet to fully understand the prolonged health implications of the pandemic, including the consequences of foregone care for non-COVID conditions and ‘long COVID’.

The pandemic has also highlighted the ease with which misinformation and disinformation can spread during a crisis, and the importance of timely, trustworthy and accessible sources of information. Previously accepted boundaries of surveillance and data collection have been pushed through rapid developments in the use of personal and health data and an increasing role for new health technologies. Throughout the pandemic, access to green spaces has proven beneficial to health and wellbeing – but this need has further highlighted social disadvantage. The health and wellbeing impact of the COVID-19 pandemic will underpin responses to the next health crisis.

336 *Ibid.*

337 Morgan Jones et al. (2020), ‘Living with or against nature?’; see also Chapter 3 sections 3.5.2 and 3.5.3.

338 *Ibid.*



3.0 Communities, culture and belonging

3.1 Introduction

In this chapter we present a synthesised summary of the evidence in the area of communities, culture and belonging. As noted previously, this summary is not intended to be exhaustive. Rather, we hope that it offers a starting point for further discussion and understanding. The research provided in response to our open call for evidence, in our engagement with researchers and other stakeholders and in the detailed evidence analyses for specific issues within this theme has all informed the integrated summary below.

In our review, we initially took a broad view of the topics within this area. Our analysis highlights the key issues that emerged and those where the evidence of continuing effects, challenges and opportunities was found to be strongest: community-level responses, volunteering and mutual aid; social cohesion and solidarity; trust in government and media; place, regions, cities and housing; race, ethnicity, immigration and prejudice; and arts, culture and sport.

3.2 Community-level responses, volunteering and mutual aid

The evidence suggests that local volunteer, community and mutual aid groups have been critical to the response to COVID-19, revealing the potential advantages of building and sustaining this type of capacity across the country. Evidence from history suggests that local and community knowledge, including knowledge held within local government, is a vital resource in combating and recovering from

epidemics.³³⁹ However, enabling this may be challenging because COVID-19 is creating a ‘perfect storm’ for local councils’ finances, particularly as inequalities in community infrastructure across the UK mean that some areas have less capacity to respond to the crisis than others. Below, we review the evidence across three interrelated areas.

3.2.1 The state of community in the UK before the pandemic

In order to understand fully the impact that COVID-19 has had on community dynamics in the UK, we need to recognise the complex and changing context for UK communities pre-pandemic.³⁴⁰ Drawing on one of the evidence syntheses submitted for this review, we highlight some of the central trends in UK communities over the last decade:

- **A slow decline in people’s sense of neighbourhood belonging since 2014-15.** This has included a fall in positive neighbour engagement since 2011-12, and evidence of less help being given to sick, elderly or disabled persons.³⁴¹
- **A shift to people finding a sense of community in virtual spaces and online** – with ‘community Facebook groups and online forums being the most consistent space where the majority of people experienced community’.³⁴² This was driven partly by greater mobility and patterns of internal and external migration, resulting in more transient communities – trends which contributed to the decline in the sense of belonging to local areas.³⁴³
- **Impacts of austerity policies on social and community resilience, with substantial cuts to local services and investments.** Local authority budgets (excluding social care) fell by 32.6% between 2011-12 and 2016-17.³⁴⁴ Between 2014-15 and 2019-20 there was a £700 million reduction in real terms in the public health grant, which allocates funding for local authorities to provide services that improve health in local populations.³⁴⁵ Some analyses suggest that these cuts reduced the resilience of the NHS prior to the pandemic,³⁴⁶ and contributed to the UK’s lack of preparedness in facing the crisis.³⁴⁷
- **Loss of funding for, and closure of, civic institutions and spaces** (eg libraries, post offices, community centres), as well as reduced footfall in the ‘centres’ of place-based communities (eg high streets).³⁴⁸ The capacity of local authorities to work with their communities was also diminished, due to reductions in local support officers and community development teams during the periods of austerity.³⁴⁹

339 Birn, A. (2020), ‘Perspectivizing pandemics: (how) do epidemic histories criss-cross contexts?’, *Journal of Global History*, 15(3), pp. 336-349; Morgan Jones, M., Abrams, D. and Lahiri, A. (2020), ‘Shape the Future: how the social sciences, arts and the humanities can shape a positive, post-pandemic future’, *The Journal of the British Academy*, 8, pp.167-266.

340 Morrison, E., Fransman, J. and Bulutoglu, K. (November 2020), *The social implications of Covid-19 on communities*, The Institute of Community Studies, The British Academy Covid and Society Review.

341 Office for National Statistics, (February 2020), *Social Capital in the UK: 2020*, Released date: 20 February 2020.

342 Morrison et al. (November 2020), *The social implications of Covid-19 on communities*, p.7.

343 *Ibid.*

344 Finch, D., Bibby, J., and Elwell-Sutton, T. (October 2018), *Taking our health for granted: plugging the public health grant funding gap*, Health Foundation Briefing Paper.

345 *Ibid.*

346 Thomas, C. (2020), *Resilient Health and Care: Learning the lessons of Covid-19*, Institute for Public Policy Research; and Institute for Public Policy Research (2020), ‘Austerity “ripped resilience out of health and care services” before Covid-19 crisis hit, says IPPR’, *IPPR.org*, 27 July 2020.

347 Morrison et al. (November 2020), *The social implications of Covid-19 on communities*; the impact of these cuts on the social care sector is discussed above in Chapter 2, section 2.4.2.

348 Onward (March 2020), *Repairing our social fabric*, Onward.

349 Morrison et al. (November 2020), *The social implications of Covid-19 on communities*.

- **Varying degrees of community strength across rural and urban regions** – as defined by indicators of community ties (strength of relationships between people) and resources (the facilities and assets available to and managed by communities) – with urban areas demonstrating less community strength generally, and possessing considerably fewer resources. While some urban areas did show community strength, this was on the basis of community ties (eg sharing economies, social enterprises, community kitchens) rather than resources (eg community-owned assets, energy projects).³⁵⁰
- **Significant spatial inequalities.** Before COVID-19, the UK was the most regionally unequal large high-income OECD country. While the London region is the richest region in Europe, six of the ten poorest regions in Europe are also in the UK.³⁵¹
- **Growing concern that people’s lives had become increasingly driven by individualism.**³⁵² There also appeared to be a slight decline in volunteering in 2019-20 compared with previous years in the decade – prior to the impact of the COVID-19 pandemic in the UK.³⁵³

Prior to the pandemic, the UK was therefore already facing the challenge of diminished levels of community resilience – required for local communities to respond optimally to, and recover from, large-scale shocks and their aftermath.³⁵⁴

3.2.2 Local and hyper-local responses to COVID-19

Local and hyper-local charity, voluntary and mutual aid groups were key to the early response to the pandemic. They have demonstrated the importance of community-led infrastructure and resilience that enables communities to support and respond to local needs effectively in both the short and long term.³⁵⁵ Successful community responses to the pandemic have been rooted in existing local infrastructure and community support networks.³⁵⁶ A Local Trust study examining how communities have reacted to, coped with and recovered from events during the pandemic found that:

‘Where community-led infrastructure – consisting of connected networks of residents, community leadership, trust, relationships with agencies, and access to money – has been built, it appears to make a difference. Where it is limited, the crisis response has primarily been food-focused, often through the actions of individuals; where it is richer and more established, the response has been wider ranging.’³⁵⁷

350 Young Foundation (November 2019), *Flipping the Coin: the two sides of community wealth in England*, Young Foundation.

351 UK2070 Commission (February 2020), *Make No Little Plans: Final Report of the UK2070 Commission*, UK2070 Enquiry: An Inquiry into Regional Inequalities Towards a Framework for Action, p9. See Chapter 4, subsection 4.5.3 for evidence on the regional variance in economic performance and employment.

352 Morrison et al. (November 2020), *The social implications of Covid-19 on communities*.

353 Department for Digital, Culture, Media & Sport, (2020), *Community Life Survey 2019/20*, GOV.UK.

354 South J., Stansfield J., Amlôt R., and Weston, D. (2020), ‘Sustaining and strengthening community resilience throughout the COVID-19 pandemic and beyond’, *Perspectives in Public Health*, 140(6), pp. 305-308.

355 McCabe, A., Wilson, M., and Macmillan, R. (September 2020), *Stronger than anyone thought: Communities responding to COVID-19*, Local Trust; See also Chapter 2, subsections, 2.2.3 and 2.6.2 on the value of local approaches.

356 Cook, J., Thierry, H., Burchell, J., Walkley, F., Ballantyne, E., and McNeil, J. (September 2020), *Mobilising Volunteers Effectively (MoVE project): Report #1 Lessons from Lockdown*, University of Sheffield.

357 McCabe et al. (September 2020), *Stronger than anyone thought*, p. 3.

The evidence suggests that responses to COVID-19 accelerated these existing models of community engagement and enabled them to strengthen community relations.³⁵⁸ Local, coordinated responses have also enabled communities to break down ‘systemic bureaucratic barriers to working collaboratively, including reducing risk averseness, flexibility in finance/funding and sharing data’.³⁵⁹

One salient trend in community-level COVID-19 responses is the shift from local to ‘hyper-local’ forms of intervention and organisation.³⁶⁰ Hyper-local responses, such as mutual aid networks, often utilised digital infrastructure such as WhatsApp and Facebook groups in order to coordinate and function effectively, along with Slack, Zoom and email for other organisational purposes.³⁶¹ Digital spaces such as community Facebook groups, neighbourhood-based WhatsApp groups and local online forums that ‘were the first point of reference for many pre-Covid ... may have become an even stronger influence during the period of lockdown’.³⁶² Crucially, effective mutual aid networks have complemented these forms of communication with physical outreach through leafleting and posters, to reach the digitally excluded.

COVID-19 has also changed volunteering, accelerating trends towards online and ‘micro’ volunteering. Seen by many as a central part of the COVID-19 response, there has been a rise in young volunteers and a decline in older volunteers, due to older people facing higher risks associated with COVID-19 with many being asked to shield.³⁶³ Volunteers tend to be from higher socioeconomic groups, highlighting how financial and resource constraints linked to existing inequalities create barriers to participation for lower-income groups.³⁶⁴ Furthermore, there are indications that motivations for volunteering may have changed, as some people see it as an opportunity to make social connections at a time of challenge.³⁶⁵

Many voluntary, community and social enterprise organisations are also developing new services, practices and ways of working. A new cohort of people has volunteered for the first time.³⁶⁶ The scale and connectedness of these grassroots activities varies greatly, but it is helpful to think of them as a mesh of networks (eg mutual aid networks) that has enabled the local and hyper-local to be bridged, with communication going both ways.

Some local areas had already invested in such local and hyper-local infrastructure and connections and were therefore able to draw on these to mobilise quickly – both in responding to the needs of vulnerable people within their communities, and more broadly (for example, using trusted local interlocutors to tailor the communication of important public health messages to diverse groups). In a report on *Community, connection and cohesion during COVID-19*, researchers observed that:

358 Cook et al. (September 2020), *Mobilising Volunteers Effectively*.

359 *Ibid.*, p. 2.

360 Morrison, E., Roeschert, F., Tauschinski, J., Boelman, V. (June 2020), *Safety in Numbers? A research agenda with communities, for communities*, Institute for Community Studies, p. 62.

361 Tiratelli, L. and Kaye, S. (July 2020), *Communities vs. Coronavirus: The Rise of Mutual Aid*, New Local Government Network; and Kavada, A. (2020), ‘Creating a hyperlocal infrastructure of care: COVID-19 Mutual Aid Groups’, *OpenDemocracy.net*, 12 June 2020.

362 Morrison et al. (June 2020), *Safety in Numbers? A research agenda with communities, for communities*, p. 62.

363 Lepper, J. (2020), ‘Covid-19 crisis escalates volunteering boom among young people’, *Charity Times*; and Paine, A.E. (September 2020), *Rapid Research COVID-19. Volunteering through crisis and beyond: Starting, stopping and shifting*, Local Trust.

364 Paine, (September 2020), *Rapid Research COVID-19*.

365 *Ibid.*

366 *Ibid.*

*'levels of local trust in ... six local areas [that had invested in cohesion] have remained stronger than elsewhere, perhaps reflecting the strength of relationships that were developed pre-pandemic via local social cohesion programmes. These relationships could then be relied on as communities mobilised to support and protect the vulnerable, further strengthening and deepening those connections. Acknowledgement and gratitude towards the local council for all it was doing for local communities was a strong and recurring theme in our focus group and one-to-one interviews.'*³⁶⁷

There are known methods for building and sustaining community connections and skills that maintain local capacities to strengthen support structures. For example, 'intersectoral', 'systemic' or 'holistic' approaches bring different service providers together to tackle local needs.³⁶⁸ These kinds of approaches help to bridge communities and broker formal and informal support structures through what some refer to as 'cogs of connection'³⁶⁹ or 'interconnectors'.³⁷⁰ These are individuals with the social capital and skills in community development and partnership to operate as intermediaries.

In addition, there is variation in the presence and activity of grassroots and voluntary groups. Broadly, grassroots volunteering activities during the pandemic have centred on packing and distribution of emergency food aid and the provision of social support, especially for isolated and vulnerable residents.³⁷¹ Many groups have responded creatively and various organisations are reviewing and tracking the diverse community-level responses to the pandemic through grassroots initiatives, volunteers and mutual aid networks. Examples range from cooking and distribution of hot meals, food banks, community fridges and freezers and recipe boxes, to community choirs, drama and street art, online activities, provision of space, funding for local response activities, outreach, wellbeing and mental health support, and social enterprise and support for small scale enterprises.³⁷²

The case study box below draws from the Institute for Community Studies deep-dive report, giving the example of the Area Action Partnerships in Durham as an effective local-led response to the community's evolving needs during the pandemic. Through its response, Durham County Council has been able not only to support those in need but also to lay the groundwork for a transformation in how it delivers services and maintains relationships with communities and partners in the future.³⁷³

Evidence suggests that engaging people at this grassroots level has often enabled more adept and effective mobilisation than regional and national 'command and control' volunteer initiatives. Indeed, evidence from other epidemics in other

367 Abrams, D., Lalot, F., Broadwood, J. and Davis Hayon, K. (2021), *Community, Connection and Cohesion During COVID-19: Beyond Us and Them Report*, Nuffield Foundation, p. 57.

368 Morrison et al. (November 2020), *The social implications of Covid-19 on communities*, p. 18.

369 Locality (June 2020), *We were built for this: How community organisations helped us through the coronavirus crisis - and how we can build a better future*, Locality.

370 Goff, C. (2020), *Neighbourhood working beyond the pandemic: how Covid-19 has shone a spotlight on the power of local approaches*, Shared Intelligence and the National Association for Neighbourhood Management.

371 Morrison et al. (November 2020), *The social implications of Covid-19 on communities*; and McCabe et al. (September 2020), *Stronger than anyone thought*.

372 McCabe et al (September 2020), *Stronger than anyone thought*, p. 10

373 Morrison et al. (November 2020), *The social implications of Covid-19 on communities*, p. 19; see also case examples of community responses in Richards, J., Law, J., Bird, H.S., and White, R. (2020), *Covid and Society: The Impact of COVID-19 on Children and Young People and the potential contribution of the Arts, Humanities and Social Sciences*, Newcastle University, British Academy Covid and Society Review, pp. 21-25.

places (eg Ebola in West Africa) has suggested that community-level responses can contribute significantly to combating epidemics effectively.³⁷⁴ However, many grassroots groups in the UK have operated with very limited support and resources during the pandemic.

As noted, there is also variation in the presence and activity of local and grassroots groups. They are more prevalent in wealthy places, and extensive and pre-established community-led infrastructure has underpinned the most effective community responses.³⁷⁵ Many mutual aid networks, for example, built upon campaigning infrastructure developed in the 2019 elections, and ‘often operate in “micro-localities”, e.g. neighbourhoods within wards, estates, streets or residential blocks’.³⁷⁶

Case Study: Area Action Partnerships, Durham

(Source: Morrison et al. November 2020, p. 19)

In response to the outbreak of Covid-19, Durham County Council worked closely with a number of partners – including local voluntary and community organisations, general practitioners, other local health services staff, local DWP teams, the NHS GoodSAM app – and across all council teams to provide speedy and comprehensive support to shielded and vulnerable residents.

In the early weeks of the pandemic the Council responded by setting up a central call centre, utilising staff redeployed from other non-critical council services to support those in need of immediate help. A central hub was created, operating into local communities across the county to respond locally with help and advice. The Hub quickly provided initial support for those identified as needing immediate help (26,000 on the shielded list, 75,000 identified as having multiple social vulnerabilities). Durham’s approach of continual learning and transformation meant that it was able to respond quickly as needs changed and new responses were required, for example from hearing from many people with short term food needs, to people getting in touch with more complex mental wellbeing support needs, operating on a ‘no wrong door’ basis.

The Hub’s approach built on an existing structure of Area Action Partnerships (AAPs) with community working and voluntary sector involvement. The Council devolved additional grant funding to these AAPs to support local community resilience and growth. Building on these existing strong relationships was key to Durham’s successful cross-organisational and multi-agency approach. Local areas and communities were able to direct funding to where it was most needed based on local knowledge, networks and intelligence. This collaboration meant the Council was able to maximise place-based resources to help directly, or signpost to appropriate agencies or community groups, quickly engaging with those services and overcoming the barriers that may have previously existed. Examples of this include the creation of the Chat Together service to tackle social isolation, digital access to library services, through to provision of more holistic ‘wrap around’ support to individuals with multiple needs.

The longer impact and benefit for Durham Council has been that it now has an even more enhanced understanding of its communities and how to help its more vulnerable residents. For example, by having contact with residents previously unknown to the Council, and as a result of redeployed staff gaining an enhanced understanding of Durham’s communities (as well as new skills) which they will take back to their main roles.

374 Camara, S., Delamou, A., Millimouno, T. M., Kourouma, K., Ndiaye, B., and Thiam, S. (2020), ‘Community response to the Ebola outbreak: Contribution of community-based organisations and community leaders in four health districts in Guinea’, *Global Public Health*, 15(12), pp. 1767–1777; The importance of local and culturally sensitive approaches to health and wellbeing initiatives are also discussed in Chapter 2, subsections, 2.2.3 and 2.6.2.

375 O’Dwyer, E. (2020), ‘COVID-19 mutual aid groups have the potential to increase intergroup solidarity – but can they actually do so?’ *British Politics and Policy at LSE*, Blog Entry, 23 June 2020; and Tiratelli and Kaye, (July 2020), *Communities vs. Coronavirus: The Rise of Mutual Aid*.

376 Morrison et al. (November 2020), *The social implications of Covid-19 on communities*.

3.2.3 Inequalities across community infrastructures

As evidenced in all chapters of this report, inequalities across the UK population existed prior to the pandemic, spanning gender, ethnicity, age and geography.³⁷⁷ Some aspects of inequality were worsening prior to the pandemic (eg regional wealth, and inequalities associated with health, education and social mobility), and inequalities between local authorities within regions were larger than inequalities between regions.³⁷⁸

Prior to COVID-19, poverty rates have remained largely unchanged over the last few years, with the overall UK poverty rate at 22%, persistent poverty at 11% and deep poverty increasing in the last two decades from 5% to 7%.³⁷⁹ Moreover, poverty rates vary significantly by region (with the highest rates in London and the North East), and are highest among families with children, families that include a disabled person and Black, Asian and minority ethnic families. Half of all people in poverty live in a family that includes a disabled person, and people from Black, Asian and minority ethnic families are two to three times more likely to be in persistent poverty than White families.³⁸⁰

The COVID-19 crisis has exacerbated many of these pre-existing inequalities and has highlighted the patterns and variations in multiple deprivation at neighbourhood level.³⁸¹ COVID-19 has been described as a ‘syndemic’ because it involves the ‘accumulation and adverse interaction between two or more conditions in a population, often resulting from the social context in which that population lives’.³⁸² The argument is that the impacts of COVID-19 have to be understood in relation to their interaction with existing epidemics and social determinants of health.

Food poverty is one area where this is apparent. The onset of the pandemic prompted an increase in the use of food banks, especially from people accessing them for the first time, who made up 52% of those accessing food bank support in April 2020.³⁸³ Families with children were especially hard hit, as seen by a 95% increase in food parcels to families with children between April 2019 and 2020. Evidence of food poverty during the pandemic shows that those most affected are those disproportionately affected by existing inequalities such as availability of affordable housing. The 25–44 age group constituted 62% of those receiving emergency food in June–July 2020 (an increase from 53% in early 2020), while private renters made up 30% of those in need of food bank support (a slight increase from early 2020). Social renters remain the largest group in need of food bank support.³⁸⁴

In the context of inequalities at regional and neighbourhood levels, community-based organisations and volunteer groups have a vital role to play in effective local responses. However, many such organisations have suffered from funding shortages while grappling with the sharp uptick in the need and audience for their services and

377 Blundell, R., Dias, M.C., Joyce, R., and Xu, X. (June 2020), *Covid-19 and Inequalities*, Institute for Fiscal Studies, The IFS Deaton Review.

378 Agrawal, S. and Phillips, D. (August 2020), *Catching up or falling behind? Geographical inequalities in the UK and how they have changed in recent years*, Institute for Fiscal Studies, The IFS Deaton Review.

379 Social Metrics Commission, (July 2020), *Measuring Poverty 2020*, A report of the Social Metrics Commission.

380 *Ibid.*

381 Covid Recovery Commission (2020), *Paper one: Levelling up communities*, Covid Recovery Commission; see also Chapter 2, subsection 2.2.2

382 Campos-Matos, I., Newton, J. and Doyle, Y. (2020), ‘An opportunity to address inequalities: learning from the first months of the COVID-19 pandemic’, *Public Health Matters Blog*, Public Health England, 29 October 2020; the impact of pre-existing inequalities on health and wellbeing are discussed above in Chapter 2, in particular sections 2.2 and 2.3.

383 Morrison et al. (November 2020), *The social implications of Covid-19 on communities*.

384 Trussell Trust (2020), *Lockdown, Lifelines and the Long Haul Ahead: The impact of Covid-19 on food banks in the Trussell Trust network*, The Trussell Trust.

were not viewed as relevant in the government response to the crisis.³⁸⁵

‘At a time when demand for services and support provided by the voluntary sector has increased by an average of a third in the numbers they support per week, income has decreased. Many voluntary organisations are simply struggling to survive and furthermore, to adapt services to the challenges of safety and social distancing without additional resource.’³⁸⁶

Moreover, the contours of inequality across the UK, discussed earlier in this section, also point to the question of to what extent mutual aid groups disproportionately serve communities that are already advantaged in terms of their ability to respond to and cope with the pandemic and its economic impact. It remains a challenging task for mutual aid groups and community organisations to assess how to include and engage meaningfully with people from a wider range of backgrounds and in areas where infrastructures are not as developed but arguably needed the most.³⁸⁷

Barriers to working with partner organisations have emerged due to COVID-19, and these will impact cohesion between researchers and partners, with long-term implications for their relationships. Nevertheless, some researchers and partners have used this time as an opportunity to overcome traditional competition. In Newcastle’s West End Children’s Community, for example, schools, the local authority and other community and cultural organisations formed an agreement on a kind of governance structure, working collaboratively with local communities for the needs of children and families – indicating the opportunities that an interconnected way of working offers.³⁸⁸

COVID-19 has also had numerous implications for those interacting with the justice system – including those living in institutionalised settings such as prisons, immigration detention or care settings – with respect to access to justice through courts and tribunals, access to legal advice and representation, and access to service and safeguards.³⁸⁹

Many court hearings have had to be put on hold, resulting in delays and a growing backlog of cases, making it harder for people to access timely help. Other hearings are held remotely through technological means (with which the justice system has responded swiftly), but there remain questions about whether these methods provide fair justice for certain vulnerable people.³⁹⁰ The lockdowns have made it more difficult for victims of domestic abuse to have time away from their abuser to access legal advice, for example. Similar issues apply to access to legal advice for those living in institutionalised settings, for whom contact with a solicitor ‘provides a source of support and an important check on the treatment of people who are otherwise closed off from the outside world’.³⁹¹ Finally, access to services and safeguards has shifted, as measures introduced during the pandemic have led to resources being diverted to protect public health and away from areas such as social care, mental health

385 Groundwork UK, (November 2020), *Community groups in a crisis: insights from the first six months of the Covid-19 pandemic*, Groundwork; and Hargrave, R. (2020), ‘Government saw charities as ‘an irrelevance’ early in pandemic, says Karl Wilding’, *Civil Society News* [accessed 27/01/2021].

386 Morrison et al. (November 2020), *The social implications of COVID-19 on communities*, p. 20.

387 O’Dwyer (2020), ‘COVID-19 mutual aid groups have the potential to increase intergroup solidarity’.

388 Richards et al. (2020), *Covid and Society: The Impact of COVID-19 on Children and Young People*.

389 The Law Society (September 2020), *Law under lockdown: The impact of COVID-19 measures on access to justice and vulnerable people*.

390 The Law Society (September 2020), *Law under lockdown: The impact of COVID-19 measures on access to justice and vulnerable people*; and Byrom, N., Beardon, S. and Kendrick, A. (May 2020), *The impact of COVID-19 measures on the civil justice system*, Civil Justice Council, The Legal Education Foundation.

391 The Law Society, (September 2020), *Law under lockdown*, p. 6.

detention and children's services – with the consequence that people who are reliant on state support in these areas are not having their fundamental needs met.³⁹²

3.3 Cohesion and solidarity

Recent definitions of social cohesion have placed emphasis on the importance of 'shared beliefs and morals, beyond norms and values, that individuals share about the trajectory of a nation or a more local entity such as a city or region, which in turn create trust between groups and people'.³⁹³ The policy and practice reviews conducted for the British Academy's Cohesive Societies programme concluded strongly that a multi-dimensional conceptualisation of social cohesion is required, with five areas of focus: cultural memory and tradition; the social economy; meaning and mechanisms of social responsibility; identity and belonging; and care for the future. Whatever the formulation, the roles of these facets of societal cohesion, and the challenges and opportunities they point to, are important for understanding the long-term impacts of the pandemic.

3.3.1 Social cohesion before COVID-19

There was a strong sense of division in the UK before the pandemic. Following the general election in December 2019, 66% of respondents in one research study felt the UK was becoming more divided, and only 12% said it was becoming more united.³⁹⁴ In the years since the Brexit campaign and referendum, lines of division have cut across an array of communities with a multitude of beliefs. For example, a 2020 report from More in Common identified seven groups in the British population according to values and core beliefs, with groups differing along lines such as political engagement, ideology, trust in government and trust in other people. (The seven categories are: progressive activists, civic pragmatists, disengaged battlers, established liberals, loyal nationals, disengaged traditionalists and backbone conservatives).³⁹⁵ These groups are often divided across a range of issues such as Brexit, social media, inequality, immigration and their sense of insecurity.

The stark sense of division between different groups thereby posed a major though not insurmountable challenge to social cohesion prior to COVID-19, at both national and local levels. People were growing concerned that our lives had become more individualistic, 'creating a sense of vulnerability in the face of growing economic and political precarity' and causing people to question whether they could look to others to support their economic and social security.³⁹⁶ Levels of social mixing across socioeconomic background and ethnicity were low. Data in 2019 revealed that 44% of Britons had no contact with people from different ethnic backgrounds in their wider social network, and 72% of people who reported having no close contacts from a different socioeconomic background also had no ethnic diversity in their friendship circle.³⁹⁷

392 *Ibid.*

393 Morrison et al. (November 2020), *The social implications of COVID-19 on communities*, p. 12.

394 Lalot, F., Davies B., and Abrams, D. (November 2020), *Trust and Cohesion in Britain during the 2020 COVID-19 pandemic across place, scale and time*, Report for the British Academy, Centre for the Study of Group Processes, School of Psychology, University of Kent, The British Academy Covid and Society Review.

395 Juan-Torres, M., Dixon, T., and Kimaram, A. (October 2020), *Britain's Choice: Common Ground and Division in 2020s Britain*, More in Common.

396 Morrison et al. (November 2020), *The social implications of COVID-19 on communities*, p. 8; Morrison et al. (June 2020), *Safety in Numbers?*

397 The Challenge (2019), *British Integration Survey 2019*, The Challenge.

Meanwhile divisions across the UK have become more prominent in recent years, as indicated by the Brexit process, renewed discussions surrounding the peace process in Northern Ireland, debates on Scottish Independence and a fledgling independence movement in Wales. Recent work from the British Academy's Cohesive Societies programme has examined the policy context for social cohesion in the UK prior to the pandemic, finding that social cohesion was not often thought of as a positive social goal in its own right, and was often viewed only as an outcome rather than a process requiring continuous support (like health), leading to an incoherent policy framework.³⁹⁸

3.3.2 Social cohesion during the pandemic

There is clear empirical evidence that social cohesion and community solidarity grew across the UK at the start of the COVID-19 pandemic, but this has not been sustained across all parts of the country. Measures of people's sense of division and unity across the UK indicate that feelings of unity subsided from May onward and by September had returned to slightly above pre-pandemic levels, with only 15% saying that the UK was becoming more united.³⁹⁹ Although the advent of the vaccination programme might have been expected to be accompanied by slight amelioration of these divisions, it remains the case that more people across Britain view the UK as becoming increasingly divided rather than increasingly united.⁴⁰⁰

Perceptions of local unity are generally higher than perceptions of national unity and remained more stable throughout 2020. Notably, in contrast to the national picture, where most people perceived the UK as becoming more divided, a greater proportion of people consistently perceived their local area as becoming more unified. Prior to London and the South of England entering Tier 4 status at short notice on 19 December 2020, and in the five weeks that followed, between 57% and 60% of people perceived national division to be growing and only 20-23% perceived growing unity. In contrast, approximately the same proportion regarded local division as increasing (24-26%) as thought local unity was increasing (29-30%).⁴⁰¹

Moreover, even once 40% of the population had received a first vaccine and following an annual budget that committed further support to individuals and businesses, people across Britain continued to regard local unity as gaining ground faster (23%) than national unity (10%) and local division to be growing much less (26%) than national division (78%) – continuing the patterns and trends observed towards the end of 2020, as shown in Figure 19. In other words, although the national picture is one of division, there is a valuable foundation of unity within local communities. Local unity also appears to be far more stable, with approximately 50% of people perceiving no change, as compared with only 12-20% perceiving no change at the national level.⁴⁰²

398 Donoghue, M., and Bourke, S. (January 2019), *Cohesive Societies: Policy Review*, The British Academy, Cohesive Societies.

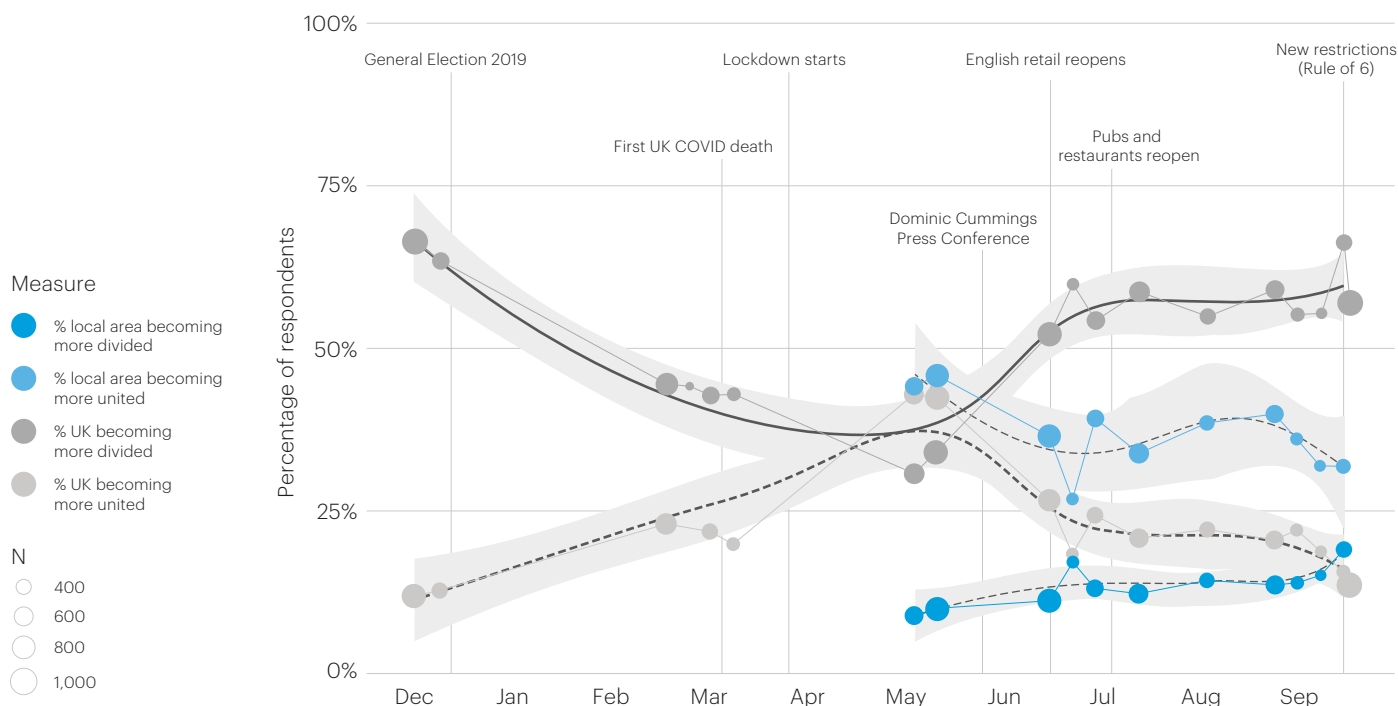
399 Lalot et al. (November 2020), *Trust and Cohesion in Britain*.

400 Abrams, D. and Lalot, F. (2021), *What has happened to trust and cohesion since Tier 4 restrictions and the third national lockdown (December 2020 – March 2021). Further evidence from national surveys*, Technical report to the British Academy Covid & Society Review.

401 *Ibid.*

402 *Ibid.*

Figure 19: Change in feelings of division and unity among the UK and local communities from December 2019 to October 2020



Source: Lalot et al. (November 2020), *Trust and Cohesion in Britain*, p. 19.

Research has demonstrated that in the early part of the pandemic, local authorities that had invested in social cohesion programmes fared better.⁴⁰³ For example, the *Community, connection and cohesion during COVID-19: Beyond Us and Them* report presents findings on social cohesion in six very different local areas that had all invested in programmes to strengthen social cohesion and integration in the two years prior to the pandemic.⁴⁰⁴ These areas reported consistently higher levels of neighbourliness, volunteering and positive social action than elsewhere over the six months from June to December 2020, demonstrating that even a modest investment in social cohesion can show benefit for community resilience and ability to respond to a crisis. In particular, the research showed the close relationship in these areas between the councils and the community, as demonstrated by the quote below from a local area focus group participant:

*‘I think that [name of council] has done a fantastic job. And it’s the councillors, all the management and all the employees, the foot soldiers. They’ve been out there from day one, with food parcels and guidance, and I don’t think they’ve stopped. they themselves have really run ragged to help the community; and it’s felt that, Yeah, I’m not.. I’ve not felt alone’.*⁴⁰⁵

403 Abrams, D., Lalot, F., Broadwood, J., Davies Hayon, K. and Platts-Dunn, I. (2020), *The Social Cohesion Investment: Local areas that invested in social cohesion programmes are faring better in the midst of the Covid-19 pandemic*, Belong Network.
 404 Abrams and Lalot (2021), *What has happened to trust and cohesion since Tier 4 restrictions*.
 405 Abrams et al. (2020), *The Social Cohesion Investment*.

Divisions between some specific groups (remainers/leavers, Scotland/England, UK/Europe, wealthy/poor, young/old) have followed similar trends to national patterns of unity/disunity, with public perceptions of division between these groups in the 55-75% range in December 2019, falling by around 25% by May 2020, before returning to around pre-pandemic levels by October 2020.⁴⁰⁶

The steepest declines in perceptions of unity and solidarity have been in some (but not all) of the most deprived communities, among key workers and in certain ethnic minority groups. Data from June 2020 revealed that key workers were feeling more detached than other people, and reported less compassion for those most vulnerable to COVID-19, less trust in politicians and less connection with their family.⁴⁰⁷ Another study found that people living in the most deprived neighbourhoods, those with less education, younger age groups and those from certain ethnic minority backgrounds (Pakistani, Bangladeshi, Black and 'Other') experienced greater declines in feelings of cohesion during the pandemic.⁴⁰⁸ The authors of that study speculate that reasons for this could include greater economic and social vulnerability among these groups and increases in interethnic divisions, stemming in part from negative rhetoric about the virus being associated with particular ethnicities.

Community divisions are frequently characterised along ethnic, religious or national lines, but tensions between 'newcomers' and 'outsiders' in communities are also salient, and new residents can have a highly emotive displacing effect on existing communities.⁴⁰⁹ Where strong divisions exist, they can create or exacerbate feelings of isolation and leave certain groups feeling marginalised, with some disempowered and ambivalent about participating in their community and contributing to its success.⁴¹⁰

The British Academy's Cohesive Societies review on faith and belief highlighted the role that these can play in 'bridging' social capital (bringing members of separate groups into relationship) and generating inclusive feelings of belonging.⁴¹¹ The pandemic has disrupted many faith-based activities, yet faith still plays a key role in social cohesion through providing people with comfort, connection and opportunities for 'bridging' via interfaith activities.⁴¹²

While COVID-19 has had a net negative impact on most people's lives, a substantial minority have reported positive impacts. These were associated with connection to local community and relationships among those who have been able to volunteer their time and energy, thereby sustaining social connections and purpose – more often, but by no means exclusively, among middle-class people with the time and resource to engage with these opportunities.⁴¹³

In the early stages of the pandemic, many people did recognise the power and strength of their communities in response to the crisis and reported local people 'pulling together' to confront the challenges of COVID-19.⁴¹⁴ According to the Young Foundation, many people reported 'forming new and deeper connections with neighbours' (due to more openness to chat for longer and in different places such as

406 Lalot et al. (November 2020), *Trust and Cohesion in Britain*.

407 Abrams, D., Lalot, F., Broadwood, J. and Platts-Dunn, I. (July 2020), *Beyond Us and Them: Perception of Covid-19 and Social Cohesion*, Nuffield Foundation.

408 Borkowska, M., and Laurence, J. (2020), 'Coming together or coming apart? Changes in social cohesion during the Covid-19 pandemic in England', *European Societies*, 23, pp. 1–19.

409 Morrison et al. (June 2020), *Safety in Numbers?*

410 *Ibid*, p. 53.

411 Pennington, M. (July 2020), *Cohesive Societies: Faith and Belief*, The British Academy, Cohesive Societies.

412 Age UK (November 2020), 'The role of faith during the coronavirus pandemic', *AgeUK.org*, 10 November 2020.

413 Abrams et al. (July 2020), *Beyond Us and Them: Perception of Covid-19 and Social Cohesion*.

414 Roeschert, F., Tauschinski, D. and Dibb, Z. (July 2020), *How Covid-19 changed community life in the UK*, Young Foundation.

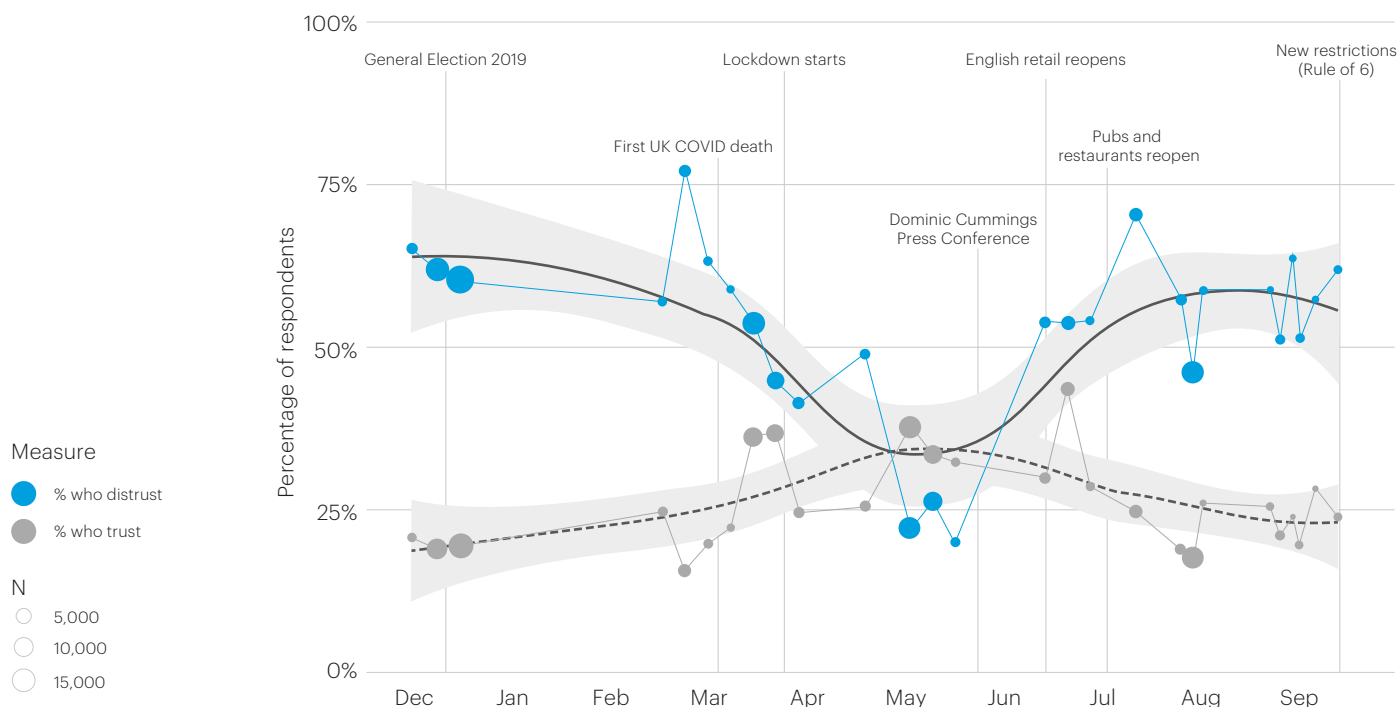
across garden fences), and '[i]n smaller villages there was a sense that people who rarely attended events or got involved in community initiatives were starting to take part and become more visible'.⁴¹⁵ In the months of the first lockdown, the NHS 'clap for carers' contributed to a sense of social cohesion, bringing feelings of togetherness and community pride, though as time went on people increasingly began to grow concerned about the clap 'becoming politicised'.⁴¹⁶

3.4 Trust in government and media

There has been a reduction in trust in government and media.⁴¹⁷ Britain entered the COVID-19 pandemic with already very low levels of trust in government institutions and politicians.⁴¹⁸ While measures of trust saw a substantial rise at the onset of the first UK lockdown and in the subsequent month, these declined across the year to return to pre-pandemic levels.⁴¹⁹ Figure 20 demonstrates patterns of both general political trust and COVID-19 related trust over the year.

The latest evidence shows that this pattern has persisted, before and after Tier 4 restrictions were imposed on London and the South East of England in December 2020, and onward to the period immediately following the spring budget statement. Through December, levels of general political distrust rose from 57% to 61%, and those expressing trust dropped from 24% to 21%. These levels have persisted through to 5 March 2021.⁴²⁰

Figure 20: Change in political trust and distrust from December 2019 to October 2020



Source: Lalot et al. (November 2020), *Trust and Cohesion in Britain*, p. 13.

415 Roeschert et al. (July 2020), *How Covid-19 changed community life in the UK*, p. 4.
 416 Sullivan, G. B. (2020), 'Collective emotions and Covid-19', *The Psychologist*, [accessed 12/02/2021].
 417 The impacts of varying levels of trust in different sources of news and information, as well as in government, on health behaviours and adherence to health measures during the pandemic is discussed above in Chapter 2, section 2.6.
 418 Morrison et al. (November 2020), *The social implications of COVID-19 on communities*.
 419 Lalot et al. (November 2020), *Trust and Cohesion in Britain*.
 420 Abrams and Lalot (2021), *What has happened to trust and cohesion since Tier 4 restrictions*.

These findings need to be understood against the background of pre-pandemic levels of trust in government. In 2019, the Hansard Society's 16th Audit of Political Engagement revealed that opinions of the system of governing were at their lowest point in the 15-year Audit series; people were pessimistic about the country's problems and their possible solution, with sizeable numbers willing to entertain radical political changes, and while core indicators of political engagement remained stable, the strongest feelings of powerlessness and disengagement were intensifying.⁴²¹

Pre-pandemic measures of trust show a high level of disenfranchisement with both the systems and figures of governance,⁴²² painting a picture of a nation that is 'actively at odds with the sense that the central governing system is serving their needs and reflecting their voice'.⁴²³ Trust in government stood at just 14% before the 2019 general election. Thus the existing environment of distrust in the UK forms the context for shifting patterns of trust observed throughout the pandemic, and for understanding how the pandemic is impacting trust and cohesion within diverse communities around the nation.

3.4.1 Patterns of trust during the pandemic

Social solidarity and cohesion within groups often increase following mass tragedies or disasters,⁴²⁴ and the fusion of individual and collective identity can underpin increases in efforts to protect the community.⁴²⁵ Despite the national bonding process from being 'all in this together', the longer-term aftermath often involves conflicts over scarce resources and competition over symbolic power (such as the right to speak for the nation).⁴²⁶ There is therefore a danger that continued challenges, hardships or unmet expectations can give rise to conflict, prejudice and partisanship.⁴²⁷

Trust in politicians appeared to rise at the beginning of the pandemic, with 32% of people saying in May 2020 that they trusted politicians, according to Ipsos Mori (up by 10% since December 2018).⁴²⁸ Other survey data from April 2020 revealed that 52% of respondents felt the government was making 'good decisions' during the first wave of the pandemic.⁴²⁹

However, there was a steep decline in trust in the government's ability to handle the pandemic from May onward, following the news that Dominic Cummings (then chief adviser to the Prime Minister) had broken government lockdown rules. The reversion to distrust was not necessarily entirely due to the Cummings affair, with broader factors such as the growing complexity of rules around the containment of the virus and confusion about how they are applied, challenges with the track and trace response, and built-up public frustration with economic and emotional losses.

421 Hansard Society (2019), *Audit of Political Engagement 16: The Report*, Hansard Society.

422 Flinders, M. and Geddes, M. (2019), 'Democracy: Problems and Challenges, Opportunities and Design', in Larres, K. and Wittlinger, R. (eds.), *Understanding Global Politics: Actors and Themes in international Affairs* (London, Routledge), pp. 27-41.

423 Morrison et al. (November 2020), *The social implications of COVID-19 on communities*, p. 14.

424 Hawdon, J., and Ryan, J. (2011), 'Social relations that generate and sustain solidarity after a mass tragedy', *Social Forces*, 89(4), 1363-1384.

425 Ntontis, E. and Rocha, C. (2020), 'Solidarity', in Jetten, J., Reicher, S.D., Haslam, S.A. and Cruwys, T. (eds.), *Together Apart: The psychology of COVID-19*, (Sage Publishing), pp. 102-106; Paredes, B., Briñol, P., Petty, R. E. and Gómez, Á. (2020), 'Increasing the predictive validity of identity fusion in leading to sacrifice by considering the extremity of the situation', *European Journal of Social Psychology*, In Press.

426 Abrams, D., Lalot, F., and Hogg, M.A. (2021), 'Intergroup and intragroup dimensions of COVID-19: A social identity perspective on social fragmentation and unity', *Group Processes and Intergroup Relations*, in press.

427 Abrams, D. and Vasiljevic, M. (2014), 'How does macroeconomic change affect social identity (and vice versa?): Insights from the European context', *Analyses of Social Issues and Public Policy*, 14(1), pp. 311-338.

428 Ipsos Mori (October 2020), *Social Cohesion in the Pandemic Age*, Ipsos.

429 Enria, L., Waterlow, N., Rogers, N. T., Brindle, H., Lal, S., Eggo, R. M., Lees, S., and Roberts, C. H. (2020), 'Trust and Transparency in times of Crisis: Results from an Online Survey During the First Wave (April 2020) of the COVID-19 Epidemic in the UK', *MedRxiv*.

Against this backdrop, there was a substantial change in the public mood at the time of the Cummings affair, perhaps ‘reawaken[ing] feelings already shared by two-thirds of people before the pandemic that the system in the UK is rigged to serve the interests of the rich and influential rather than the interests of the majority’.⁴³⁰

Following the Cummings event there was a sharp spike in general political distrust, which rose to 65% at the end of June from the 25-35% range it had been in during the initial months of lockdown.⁴³¹ However, as noted above in relation to patterns of social cohesion (section 3.3.2), there are significant differences at play with respect to local and national dynamics, such that it is important not to reduce lessons regarding patterns of trust simply to a ‘Cummings’ narrative. These elements are explored in more detail in section 3.4.4 below.

Since May, there has not been a strong recovery in confidence in the Government, with levels of political trust and distrust now restabilised at February 2020 levels.⁴³² Indeed, even with the subsequent roll-out of vaccines, 60% of the population continued to question the UK Government’s competence in tackling the pandemic and only 25-27% thought it was competent. In contrast, only 24-28% thought their local council lacked competence and 38-43% believed they were competent. Even by the time 40% of the population had been vaccinated and a timetable announced for unlocking, 54% doubted the government’s competence whereas only 21% doubted their local council’s competence.⁴³³

Low levels of government trust have worrying implications for people’s commitment in following government guidelines, and for how effectively central and local government structures work together to achieve common goals.⁴³⁴ Local resilience forums, strategic coordinating groups, local governments and other local community groups have reported that they do not feel understood or trusted by the central government.⁴³⁵ This risks compromising the efficacy and consistency of public messaging and response to the crisis, and indicates that building and consolidating relationships and collaborations between central and local governments could significantly benefit the government’s response and should be a priority.

3.4.2 Trust among key workers and volunteers

Key workers’ trust in government has fallen particularly dramatically. Research has shown that people’s political trust and personal optimism are significantly related to their sense of family connection and perception of deprivation.⁴³⁶ Those who report a strong sense of family connection and perceive lower levels of deprivation within their local area also express higher trust in politicians and optimism about the future. Significantly, key workers reported the most negative perceptions of deprivation in their local area as well as less connection with family compared with volunteers and other respondents.

These patterns highlight the concerning impact that being on the frontline of the

430 Juan-Torres et al. (October 2020), *Britain’s Choice: Common Ground and Division in 2020s Britain*; Fancourt, D., Steptoe, A. and Wright, L. (August 2020), ‘The Cummings effect: politics, trust, and behaviours during the COVID-19 pandemic’, *The Lancet*, 396(10249), pp. 464-465.

431 Lalot et al. (November 2020), *Trust and Cohesion in Britain*; see also Chapter 2, subsection 2.6.3.

432 Lalot et al. (November 2020), *Trust and Cohesion in Britain*

433 Abrams and Lalot (2021), *What has happened to trust and cohesion since Tier 4 restrictions*.

434 See also Chapter 2, section 2.6, especially subsection 2.6.3.

435 Hill, R., Pickford, R., West, S., and Potter, A. (September 2020), *Communications and the Covid-19 Pandemic: Rapid insights from practitioners and research*, C19 National Foresight Group.

436 Abrams, D., Lalot, F., Broadwood, J. and Platts-Dunn, I. (2020), *All in it, but not necessarily together: Divergent experiences of keyworker and volunteer responders to the Covid-19 pandemic*, Nuffield Foundation.

pandemic response is having on key workers, disconnecting them from family, diminishing their trust in politicians and making them more pessimistic about the future. A recent study found ‘substantial rates of probable mental health disorders, and thoughts of self-harm, amongst ICU staff’, particularly nurses.⁴³⁷ Almost half of ICU staff in the study (45%) reported symptoms consisted with post-traumatic stress disorder, severe depression or anxiety or problem drinking. These developments indicate a need for healthcare managers to develop and provide better social and psychological support systems for key workers as the pandemic continues.⁴³⁸

Volunteers have had markedly different experiences of the pandemic than those of key workers. In contrast to key workers, only a minority of volunteers perceive their local area to be deprived, and also generally reported an increase in family connection.⁴³⁹ These experiences corresponded with volunteers reporting higher levels of trust in politicians and more optimism about the future.

Notably, Black, Asian and minority ethnic people are more likely to be employed in ‘essential’ and frontline services: people from these groups make up 40% of doctors, 20% of nurses and 17% of social care workers.⁴⁴⁰ In London, they account for 50% of NHS and clinical commissioning group (CCG) staff.⁴⁴¹ Only 57% of people from a Black, Asian or minority ethnic background reported trusting government advice at the peak of the pandemic, compared with 75% of white people.⁴⁴² This disparity is further compounded by the fact that minority ethnic groups have experienced disproportionately more direct and indirect harms as a result of the pandemic and its social consequences, as detailed below in section 3.6.⁴⁴³

3.4.3 Trust in media

The pandemic has also seen a decline of public trust in mainstream media. During the first wave of COVID-19 in the UK, despite an initial surge in news use, trust in news organisations as sources of information about COVID-19 fell from 57% of the population in April to 45% in August.⁴⁴⁴ News consumption in the UK has gradually returned to pre-crisis levels, with news avoidance growing and trust in key sources of COVID-19 news and information declining.⁴⁴⁵ Digital platforms (social media, video sharing sites, messaging apps) have had high levels of use throughout the pandemic, though only 10% of people trust news and information about COVID-19 on these platforms. These channels do often promote official health information, but also have serious issues related to the circulation and consumption of misinformation.⁴⁴⁶

Information inequality poses growing problems, as access to and engagement with information about COVID-19 differs according to inequalities related to age, gender, income and education,⁴⁴⁷ leading to a ‘digital divide’ that disadvantages low-income groups (especially those without access to phone credit, wifi or digital devices).

437 Greenberg, N., Weston, D., Hall, C., Caulfield, T., Williamson, V., and Fong, K. (2021), ‘Mental health of staff working in intensive care during COVID-19’, *Occupational Medicine*, kqaa220

438 The impact of the pandemic on the mental health of frontline health and care workers is also discussed in Chapter 2, subsection 2.3.5

439 Abrams et al. (2020), *All in it, but not necessarily together*.

440 Public Health England (June 2020), ‘Beyond the Data: Understanding the Impact of COVID-19 on BAME Groups’.

441 ‘Ibid’.

442 Morrison et al. (November 2020), *The social implications of Covid-19 on communities*.

443 See also Chapter 2, subsections 2.2.2, 2.2.3 and 2.3.3

444 Nielsen, R.K., Fletcher, R., Kalogeropoulos, A. and Simon, F. (October 2020), *Communications in the coronavirus crisis: lessons for the second wave*, Reuters Institute for the Study of Journalism, University of Oxford.

445 *Ibid*.

446 Nielsen, R. K., Kalogeropoulos, A. and Fletcher, R. (June 2020), ‘Social media very widely used, use for news and information about COVID-19 declining’, *Reuters Institute for the Study of Journalism*, 30 June 2020; the health impacts of this are discussed above in Chapter 2, subsection 2.6.1

447 Nielsen et al. (October 2020), *Communications in the coronavirus crisis*; see also Chapter 2, section 2.6, especially subsection 2.6.2.

Consequently, these inequalities have led to differing experiences in encountering and engaging with news between communities, prompting more polarised responses. Relatedly, the group known as the ‘infodemically vulnerable’ – those who consume little to no news and information about COVID-19 and say they would not trust it even if they did – grew from 6% at the start of the pandemic to 15% by late August.⁴⁴⁸ There have also been concerns about access to information for many minority groups (including minority language groups) and people who have a disability.⁴⁴⁹

In contrast to the fall in trust of mainstream media, however, trust in local community journalism has increased in recent years,⁴⁵⁰ indicating that local and ‘hyper-local’ community journalism has a central role to play in building and maintaining the trust of local communities, responding to community issues and providing these communities with trustworthy information and opportunities for engagement. The pandemic has left local papers struggling for funding, and there are growing concerns that the closure and disappearance of local newspapers could be catastrophic because it would lead to a reduced scrutiny of democratic functions.⁴⁵¹

3.4.4 Trust in each other

There is growing evidence of misperceptions of the extent to which others are not following the rules, and it is possible that believing that particular groups (e.g. young people) are somehow more delinquent than others may foster both a false sense of safety (over-perception of personal control) and an erosion of social trust.⁴⁵² There is evidence for a growing culture of blame that specifically focuses on the actions of students and young people, for instance.⁴⁵³

Significantly, patterns of trust also have a local component: while 29% of people trust other people a lot or completely to follow guidelines, their trust in people living in their neighbourhood was considerably higher (38%).⁴⁵⁴ This mirrors patterns that show that people feel a stronger sense of unity and cohesion within their local communities than in general.

Recent research on trust during the pandemic has used the term ‘distrustful complacency’ to describe a combination of low personal concern and low trust in government, showing that it is an important predictor of non-compliance with rules.⁴⁵⁵ As distrustful complacency is associated with rule-breaking, managing the pandemic requires strategies that address both the perception of risk and the level of trust in governmental and scientific authority. Trust is likely to be greater when people feel connected to, and can hold to account, those agencies requesting compliance. Consequently, trust in local agencies tends to be greater and more stable than trust in remote national-level figures or organisations, potentially giving local agencies more leverage in coordinating and implementing local responses to the crisis.

In contrast to levels of trust and distrust in the UK Government, distrust in local MPs

448 Nielsen et al. (October 2020), *Communications in the coronavirus crisis*.

449 Morgan Jones et al. (2020). ‘Shape the Future’.

450 Edelman (2020), *20 years of trust*, Edelman; Morrison et al. (November 2020), *The social implications of Covid-19 on communities*.

451 Tobitt, C. (October 2020), ‘UK gov report links local newspaper circulation and voter turnout: Absence of journalism in some areas potentially “catastrophic”’, *Press Gazette*, 6 October 2020; Wilkinson, L. (October 2020), ‘A pressing issue: local newspaper performance & election turnout’, *Plum Consulting*, 27 October 2020.

452 Abrams et al. (July 2020), *Beyond Us and Them: Perception of Covid-19 and Social Cohesion*.

453 Bell, A., Avdoulos, E., Tauschinski, J. and Boelman, V. (October 2020), *Covid & Community Life Snapshot 2: Why are cases rising?*, The Young Foundation.

454 Abrams et al. (July 2020), *Beyond Us and Them: Perception of Covid-19 and Social Cohesion*.

455 Lalot, F., Heering, M. S., Rullo, M., Travaglino, G. A., and Abrams, D. (2020), ‘The dangers of distrustful complacency: Low concern and low political trust combine to undermine compliance with governmental restrictions in the emerging Covid-19 pandemic’, *Group Processes and Intergroup Relations*, pp. 1-16.

remained well below 50% through December to January (in the range of 33% to 36%), although it had risen slightly to 40% by March 2021. Trust in local MPs also remained relatively high (in the range of 36% to 39% between December and January) although this also showed some reduction by March 2021 (33%). Thus, it continues to be the case that whereas a majority of people show distrust in the UK Government, only a minority of people show distrust at the local level.⁴⁵⁶

Nodes of trust in local governments and organisations have a crucial role in shaping a more resilient and adaptable response to the pandemic, as described in an Institute for Community Studies report:

‘It is important to note that a range of challenges and pressures have affected even distribution or equal coverage of mutual aid groups. One of the key drivers of the local community response to the coronavirus has been the build-up of knowledge and trust over time. This strong social infrastructure cannot be created at pace and it is in-group or culturally specific community organisations that have been key in providing support and disseminating information.’⁴⁵⁷

3.5 Place, regions and cities

Chapter 2 discussed the uneven distribution of COVID-19 infection rates and mortality, particularly as a result of regional deprivation, socioeconomic inequalities and the living and employment situation of particular groups. Thus, while COVID-19 is concentrated in large towns and cities, the disproportionate health effects on urban populations are likely to be the result of existing structural inequalities, differences in the strength of community infrastructure and regional differences in the pandemic response.⁴⁵⁸

3.5.1 Urban-rural migration

The wider social impact of COVID-19 on different places could have very significant consequences especially for our towns and cities. One real concern coming out of the crisis is the impact on urban-rural migration. Increased remote working, decreased reliance on city centres for shopping and demand for larger and more affordable housing may deplete city and town centres – with implications, in turn, for surrounding rural areas related to inward and outward mobility.

There is already evidence that increased numbers of people are considering relocating away from cities. This is particularly the case for more affluent people working in jobs that can be performed remotely. Rising costs of living and perceived relative quality of living in less urban areas were already factors encouraging greater movement out of cities. COVID-19 has provided a further push which has also forced employers to adapt practices and make remote working easier. It is estimated

456 Abrams and Lalot (2021), *What has happened to trust and cohesion since Tier 4 restrictions*.

457 Morrison et al. (November 2020), *The social implications of COVID-19 on communities*, p. 17.

458 Sharifi, A. and Khavarian-Garmsir, A.R. (2020), ‘The COVID-19 pandemic: Impacts on cities and major lessons for urban planning, design, and management’, *Science of the Total Environment*, 749; Carozzi, F., Provenzano, S. and Roth, S. (2020), ‘Urban Density and Covid-19’, *CEP Discussion Paper No 1711*; Connolly, C., Keil, R. and Ali, S.H. (2020) ‘Extended urbanisation and the spatialities of infectious disease: demographic change, infrastructure and governance’, *Urban Studies*, 58(2), pp. 245-263; Dowd, J.B., Ding, X., Akimova, E.T. and Mills, M. (November 2020), *Health and inequality: The implications of the COVID-19 pandemic*, Leverhulme Centre for Demographic Science.

that 1.6 million Londoners have been working remotely outside the city since the first lockdown, and there are expectations that many employers will continue to adopt more flexible working practices that encourage the continuation of home working.⁴⁵⁹ Survey data suggests that around 14% of Londoners want to leave the city permanently because of the pandemic.⁴⁶⁰ Although some of the reasons for urban-to-rural migration trends were contributing to migration out of cities before the pandemic,⁴⁶¹ the accelerated relocation of entrepreneurs and creatives to rural and village locations which offer gardens, more living space and a greater sense of local community will impact housing markets and local economies.⁴⁶²

The implications of accelerated urban-to-rural migration are significant. The adoption of home working patterns and the relocation trends with respect to where people live in relation to their workplace, for example, differ considerably across groups, and these variations have further compounded already existing inequalities. For example, 53% of workers in social grade ABC1 households compared to only 22% in C2DE households worked from home full time during the first lockdown.⁴⁶³ The fact that those most able to move out of urban communities are more affluent 'knowledge workers' risks worsening place-based inequalities and enticing business, commerce and key investment in local infrastructure away from urban communities.⁴⁶⁴ Prior to the pandemic, community research had shown that patterns of relocation and the 'monoculture' associated with new housing developments in areas across the country have led to a division between newcomers and existing residents that has developed alongside divides related to wealth, quality of life and 'class'.⁴⁶⁵ For example, there are notable socioeconomic divides in communities outside urban areas where towns have grown through largely homogenous housing developments, and these divisions can undermine effective local responses to the pandemic.⁴⁶⁶

There are also major concerns about the impact of urban-rural migration on the environmental sustainability of our towns and cities. Maintaining urban density is an essential part of creating more efficient, economically productive and sustainable towns and cities. There is strong evidence that sprawling cities with large and low-density suburban areas force people to travel further to access basic services and amenities, and to do so more frequently by car, increasing carbon emissions as well as air and water pollution.⁴⁶⁷ The increased and less efficient use of land also has wider effects on biodiversity.⁴⁶⁸

459 Morrison et al. (November 2020), *The social implications of COVID-19 on communities*, p. 31

460 London Assembly Housing Committee, (2020), 'Half of Londoners wanting to move home want out of London'; PwC (2021), *UK Economic Outlook*.

461 Morrison et al. (November 2020), *The social implications of COVID-19 on communities*, p. 31;

462 Strutt and Parker (July 2020), 'Strutt & Parker's InSPire:LIVE webinar series reveals heightened importance of connection and community for today's homebuyers', [accessed 29/01/2021].

463 Smith, M. (May 2020), 'Many more middle class workers able to work from home than working class workers', YouGov, 13 May 2020. The acronyms refer to the social grading derived from the British National Readership Survey (NRS). This categorises household according to the occupation of the chief income earner. ABC1 refers to households with a chief income earner in the following occupation categories: higher managerial, administrative or professional (A), intermediate, managerial, administrative or professional (B), or supervisory, clerical and junior managerial, administrative or professional. C2DE refers to households with a chief income earner in the following occupation categories: skilled and manual workers (C2), semi and unskilled manual workers (D), or state pensioners, casual or lowest grade workers, unemployed with state benefits only (E).

464 Morrison et al. (November 2020), *The social implications of COVID-19 on communities*. See Chapter 4 subsection 4.5.3 on Regional employment.

465 Morrison et al. (June 2020), *Safety in numbers*. See also Chapter 3, section 3.3 for more detail.

466 Morrison et al. (June 2020), *Safety in numbers*.

467 OECD (2018), *Rethinking Urban Sprawl: Moving Towards Sustainable Cities*.

468 Cieslewicz, D.J. (2002). 'The Environmental Impacts of Sprawl' in Squires, G. (ed), *Urban Sprawl: Causes, Consequences and Policy Responses*. (Washington DC: The Urban Institute Press).

3.5.2 Challenges in housing and urban living

Living conditions in lockdown were influenced by long-term housing trends. There have been large and growing discrepancies in housing quality in the last decade, with young people, poor people, private tenants and certain ethnic minority groups losing out. Meanwhile, trends in relocation highlight that more affluent populations have been able to use the shift to home working as an opportunity to move away from urban areas with high living costs to rural areas. Finally, there is also an emerging range of implications for sustainability linked to changes in housing during the pandemic.

Entering the pandemic, 32% of households in England had at least one major housing problem relating to overcrowding, affordability or poor-quality housing, and 1 million households face more than one housing problem.⁴⁶⁹

Before COVID-19 the UK suffered from a distinct lack of diversity with respect to housing stock, in addition to the lack of affordable social housing – making housing insecurity a concern for many communities. According to a May 2020 report, ‘more than one in five children now live in privately rented homes’, and privately rented housing has ‘replaced social renting as the typical home’ for the young and the poor.⁴⁷⁰ In 2017, the 4.7 million dwellings in the private rental sector had overtaken the stock of 4 million social homes.⁴⁷¹ Going into the pandemic, private renters were spending an average of 32% of their income on rent compared to an average figure of 18% for social renters and 13% for mortgaged home owners,⁴⁷² highlighting the housing precarity associated with the rise in private renting (and decline in social housing) for many communities. This precarity is especially stark when faced with the current and anticipated employment and income shocks due to the pandemic.⁴⁷³

In London, many people already faced unaffordable housing prior to the pandemic, with 75% of the poorest fifth of Londoners living in unaffordable housing, and 33% of those with average incomes also living in unaffordable housing.⁴⁷⁴ By May 2020, more than 30% of all private tenants in 15 boroughs were claiming the housing element of Universal Credit. The cost and insecurity of housing in London are ‘a source of vulnerability in their own right’ while also magnifying vulnerabilities resulting from unemployment and loss of income.⁴⁷⁵

Black, Asian, minority ethnic and migrant people are more likely than White British to have precarious housing conditions, or to be housed in such a way that social distancing is difficult. Among migrants, 54% rent their property, compared with 29% of the UK-born population. One in 20 non-EU migrants lives in accommodation linked to their employment.⁴⁷⁶ This includes severely impacted employment areas such as seasonal agricultural work and in-person service such as domestic workers.

Of households in ‘statutory homelessness’ in 2017-18, 31% were Black, Asian and minority ethnic.⁴⁷⁷ Overcrowding affects 30% of Bangladeshi, 16% of Black

469 Tinson, A. and Clair, A. (December 2020), *Better housing is crucial for our health and the COVID-19 recovery*, The Health Foundation.

470 Medact, (May 2020). *The impact of insecure housing on COVID-19 transmission*, Medact Submission to the Housing, Communities and Local Government Committee Inquiry into the Impact of COVID-19 (Coronavirus) on homelessness and the private rented sector.

471 House of Commons, (2020), *Building more social housing*, Housing, Communities and Local Government Committee, Third Report of Session 2019-21.

472 Judge, L. (May 2020), *Coping with housing costs during the coronavirus crisis*, Resolution Foundation, p. 3.

473 Chapter 4 subsection 4.6 on income.

474 Kenway, P., Street, C., Holden, J., Tunstall, B., Chandran C., and Ayrton, C. (October 2020). *People and places in London most vulnerable to COVID-19 and its social and economic consequences*, NPI.

475 *Ibid.*, p. 9.

476 Morris, M. (2020), *Migrant workers and coronavirus: risks and responses*, IPPR.

477 BMA (2020), *PHE Review into the disparities and outcomes of COVID-19*, BMA.

African and 15% of Pakistani households (compared with just 2% of White British households).⁴⁷⁸ Overcrowding is considered a key factor in the increased likelihood of Black, Asian, minority ethnic and migrant people contracting COVID-19. Undocumented migrants are particularly at risk of insecure housing, exacerbated by the pandemic. With no legal right to rent, they have no remedy for eviction during the government ban, and in some cases were evicted for displaying COVID-19 symptoms.⁴⁷⁹

There is evidence for a positive relationship between access to green space in an urban area and better self-reported health, as shown in Figure 21.⁴⁸⁰ The most affluent towns are those more likely to have green space within them, with the least affluent unlikely to have an easily accessible commons or park within the boundaries of their built-up area.⁴⁸¹

During the lockdowns has been an increased use of public parks and spaces,⁴⁸² though this has highlighted regionally dependent issues of access. For example, in London 58% of the population lives within a five-minute walk of either a park or a playing field, but this is the highest of any region or country in Great Britain.⁴⁸³ This access is particularly the case in poorer areas of London, which is potentially positive for the health and wellbeing of the most deprived communities in the capital. However, temporary park closures, resulting from a tightening of lockdown restrictions and attempts to enforce social distancing, could have affected access, and in particular those without access to alternative outdoor space.

One in eight British households has no access to a private or shared garden, and in London this rises to one in five. According to the Office for National Statistics, Black people are nearly four times as likely as White people to have no access to outdoor space at home.⁴⁸⁴ During the COVID-19 crisis and the various lockdowns, 12% of British households have had no access to a shared or private garden, with Black people and other minority ethnic groups less likely to have access to outdoor space of any kind at home than White people, as shown in Figure 22.⁴⁸⁵

478 Marmot, M., Allen, J., Boyce, T., Goldblatt, P. and Morrison, J. (2020), *Health Equity in England: The Marmot Review 10 Years On*, The Health Foundation and Institute of Health Equity.

479 Doctors of the World (May 2020), 'A Rapid Needs Assessment of Excluded People in England During the 2020 COVID-19 Pandemic', pp. 62-63.

480 Goodair, B., Kenny, M., and Marteau, T. (May 2020), *Townscapes: 4. England's Health Inequalities*, Bennett Institute for Public Policy, p. 23.

481 *Ibid.*, pp. 22-23.

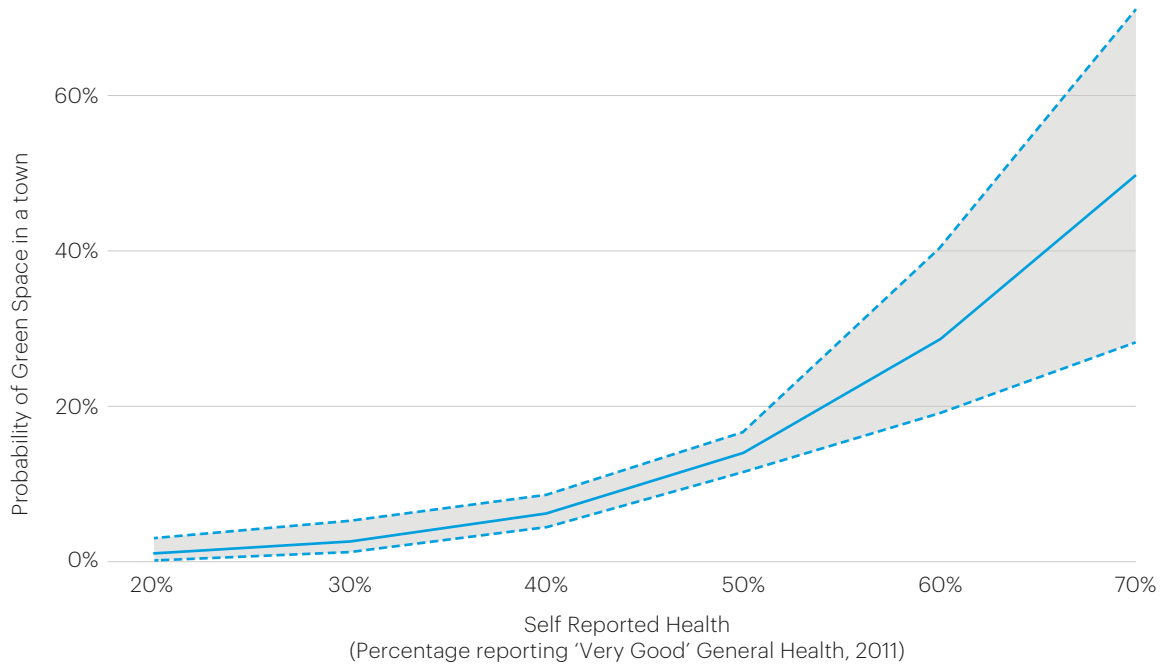
482 Grecksch K. (November 2020), *Rapid review of evidence on COVID-19 and sustainability for the British Academy*.

483 Office for National Statistics (August 2020), *One in eight British households has no garden*.

484 Office for National Statistics (August 2020), *One in eight British households has no garden*.

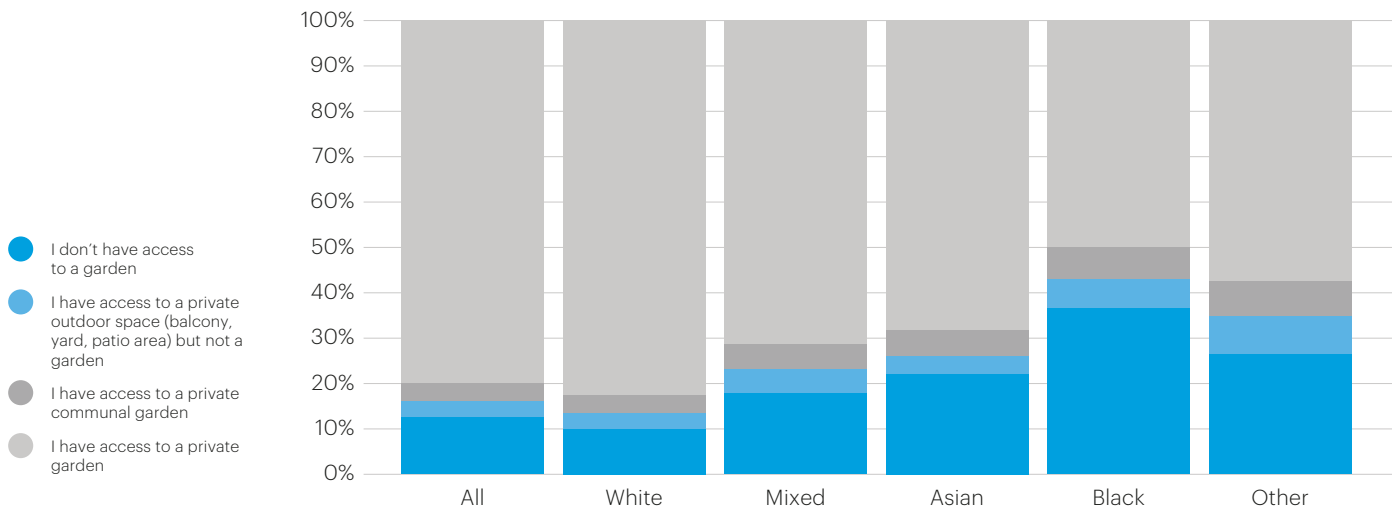
485 *Ibid.*

Figure 21: Green space and self-reported health. Predicted probability of a town-based park



Source: Goodair et al. (2020), *Townscapes: England's health inequalities*, p. 23. Using Ordnance Survey, Points of Interest. 'Green space' is any classified 'commons', 'municipal parks and gardens' or 'country and national parks'. Towns are classified as having a green space if any of the locations of these green spaces fall within their built-up area boundary. The figure plots the results of a simple binomial regression between green space and deprivation rank.

Figure 22: Percentage of people with access to a private garden, by ethnic group England, 2014 to 2019



Source: Office for National Statistics (2020), *One in eight British households has no garden*. Using data from Natural England, Monitor of Engagement with Natural Environment Survey.

Older people and those in managerial, administrative and professional occupations were more likely to have access to a private garden than those employed in semi-skilled or unskilled manual occupations, casual workers or the unemployed.⁴⁸⁶ As discussed elsewhere, this latter group is more likely to include people from Black, Asian or other minority ethnic backgrounds.⁴⁸⁷

Poor living conditions and housing issues affect physical and mental health outcomes, with this impact becoming more severe with multiple housing problems. People whose living arrangements changed as a result of COVID-19 have had a higher likelihood of stress and family conflict, have had to spend more time in high-density living spaces associated with greater spread of COVID-19 and in homes that are damp or unsafe.⁴⁸⁸

Work to address the immediate and short-term need to house rough sleepers during the first lockdown had notable successes, but the situation reverted towards the end of 2020.⁴⁸⁹ It is not clear whether local authorities have the capacity to pursue a sustained strategy based on these past successes, nor whether they have the means to convert them into long-term housing solutions.⁴⁹⁰ The inevitable rise in poverty arising from loss of employment means that there is likely to be even greater pressure on housing. There is a need to anticipate and plan for ways to avoid evictees being catapulted into long-term homelessness. Beyond this short-term challenge is the urgent need for substantial investment in affordable, social and sustainable housing which can both support the construction sector and establish a more sustainable housing sector.⁴⁹¹ Issues associated with the affordability and sustainability of housing predated the pandemic and demand a holistic systems approach that recognises the interconnected nature of the challenges that UK housing faces.⁴⁹² Building and consolidating a holistic and multi-level approach in response to the pandemic could provide a foundation for strategies to address these issues in the long term.

3.5.3 Sustainability-related implications and opportunities

The question of whether housing is fit for remote work has become important for many in the UK and has implications for sustainability. Working from home has increased use of domestic utilities. For example, people use more water for cooking, drinking and cleaning but also adopt new water uses such as more intensive gardening, or taking longer showers during the day rather than before work.⁴⁹³

These changes are likely to result in more expensive utility bills for households. They also have implications for sustainability and utilities efficiency: social norms and practices associated with encouraging efficient consumption that may previously have been embedded in the workplace are no longer significant forces guiding

486 Office for National Statistics (August 2020), *One in eight British households has no garden*.

487 See Chapter 2, subsection 2.2.3, 'Disaggregating impacts on minority groups'

488 Tinson and Clair (December 2020), *Better housing is crucial for our health and the COVID-19 recovery*.

489 Initiatives and interventions to help rough sleepers are also discussed in Chapter 2, subsection 2.2.4, 'Learning from and building on positive interventions'.

490 Kenway et al. (October 2020), *People and places in London most vulnerable to COVID-19*; and Teixeira, L. (2020), 'Coronavirus: a Historic Opportunity to End Homelessness for Good in the UK', UK Collaborative Centre for Housing Evidence, 6 April 2020; see also Chapter 2, subsection 2.2.4

491 Gibb, K. and Munro, M. (July 2020), 'After coronavirus, can the housing market support economic recovery?' *Economics Observatory* 24 July 2020.

492 National Engineering Policy Centre (2020), *Sustainable living places – a systems perspective on planning, housing and infrastructure*, National Engineering Policy Centre and Royal Academy of Engineering.

493 Grecksch (November 2020), *Rapid review of evidence on COVID-19 and sustainability for the British Academy*; and Alda-Vidal, C., Smith, R., Lawson, R., and Browne, A. L. (2020), 'Understanding changes in household water consumption associated with Covid-19', *Artesia Consulting*.

people's energy and water use. There is some evidence to suggest that the pandemic may lead to longer-term changes to household energy use, alongside short-term changes in home energy consumption prompted by lockdowns and people working from home. Higher demand for household energy has resulted from more use of household appliances, and longer periods of energy use for cooling, heating and lighting.⁴⁹⁴

As people become more aware of their daily utilities use, there may be an important role for targeted campaigns by utility companies on how to save water and energy.⁴⁹⁵ For example, water features in public parks, which have seen increased use during the pandemic, could be harnessed to provide opportunities for education in sustainable water use alongside their recreational role. As one researcher noted, the pandemic presents a chance to 'rethink existing assumptions and strategies in the UK water sector to make it more sustainable ... creating a wider environmental story that connects water to food, agriculture, energy and climate change'.⁴⁹⁶ These points could have significance for utilities more broadly as well as just water, though a detailed examination of potential changes in utilities use is outside the scope of this evidence review.

Lockdown has also resulted in positive changes in food waste behaviours, with UK consumers reporting greater awareness and willingness to minimise household food waste. This led to a reduction in food waste across bread, milk, potatoes and chicken from 24.1% in November 2019 to 13.7% in April 2020. Following the end of the lockdown this rose to 17.5% in September, but remains 27% lower than 2019 figures.⁴⁹⁷

3.6 Race, ethnicity, immigration and prejudice

As detailed in Chapter 2, Black, Asian and other minority ethnic groups are at greater risk from COVID-19 and have suffered from indirect harms. Entering the pandemic, poverty levels were higher and savings were lower in Black, Asian and minority ethnic communities.⁴⁹⁸ Poverty is linked with the likelihood of contracting the virus and of health conditions that result in greater severity or death, and makes it significantly harder to weather the economic effects of the pandemic and lockdowns in the long term.⁴⁹⁹

3.6.1 Prejudice and discrimination

In the early stages of the pandemic, there was a significant increase in hate crimes against Chinese and East Asian people; these doubled in February 2020 and tripled in March 2020.⁵⁰⁰ There is also evidence that policing responses to the pandemic have discriminated against ethnic minorities. Ethnic minority people received a disproportionately high number of COVID-19 fixed penalty notices from the police during the first national lockdown, and, in London, stop and search and arrests of ethnic minority people were disproportionately high during this period.⁵⁰¹

494 Cheshmehzangi, A. (2020), 'COVID-19 and household energy implications: what are the main impacts on energy use?', *Heliyon*, 6(10): e05202.

495 Grecksch (November 2020), *Rapid review of evidence on COVID-19 and sustainability for the British Academy*.

496 Ibid, p. 3.

497 Roberts, M. and Downing, P. (October 2020), *Food Waste and Covid-19 – Survey 3: Life in Flux*, WRAP, Key Findings Report.

498 BMA (2020), *PHE Review into the disparities and outcomes of COVID-19*, BMA.

499 Parry-Davies, E. (2020), *COVID and Society: Evidence Synthesis*, British Academy Covid and Society Call for Evidence; see also Chapter 2 subsection 2.2.2

500 Nazroo, J., Murray, K., Taylor, H., Bécaries, L., Field, Y., Kapadia, D., and Rolston, Y. (2020), *Rapid Evidence Review: Inequalities in relation to COVID-19 and their effects on London*, Centre on Dynamics of Ethnicity.

501 Nazroo et al. (2020), *Inequalities in relation to COVID-19*, p. 29.

Evidence from focus groups and from community researchers and practitioners points to barriers created by language and communication.⁵⁰² For example, some ethnic groups have faced unique challenges, for example in communities where young people are relied on as cross-cultural and cross-linguistic interpreters.⁵⁰³ However, some of these groups have been more positive in their outlook than White people.⁵⁰⁴

Black, Asian, minority ethnic and migrant children could also experience impacts of xenophobia and racial discrimination as a result of pandemic-related changes such as the suspension of examinations in schools.⁵⁰⁵ There are concerns that the use of predicted grades for GCSE, AS and A levels could have discriminatory effects, as teachers' expectations of working-class students and Black students 'tend to be systematically lower than warranted by their performance in class'.⁵⁰⁶ Children of immigrants are also more likely to face challenges related to education at home, such as lack of computer access, discussed in more detail in Chapter 4.

A highly concerning trend during the pandemic has been the higher levels of domestic violence and violence against women and girls.⁵⁰⁷ In particular, many migrant women who are undocumented or have no recourse to public funds stay with or return to perpetrators of domestic violence due to lack of other options, because they are unable to access other forms of refuge and financial support.⁵⁰⁸

The closure of places of worship and associated community venues has disrupted the lives of people in ethnic groups who used these spaces, at a time when the information and support networks that such venues provide is key. Furthermore, some specific religious and cultural customs make social distancing harder to implement, a particular challenge during a time of higher bereavement within ethnic minority communities.⁵⁰⁹

3.6.2 Immigration

Delays to immigration procedures have had severe impacts for migrants in the UK, especially those with no recourse to public funds. Outstanding citizenship applications have been delayed, affecting applicants' ability to claim benefits and access social housing.⁵¹⁰ Travel restrictions have meant family members have been unable to join their families in the UK. Asylum seeking processes have been delayed due to solicitors not being able to access files, leading to prolonged destitution, uncertainty and mental health problems.⁵¹¹ Moreover, asylum seekers and refused asylum seekers are not entitled to banking services, and feel less able to access universal food banks for fear of discrimination.⁵¹² Interruptions to English classes for speakers of other languages are also expected to have long-term consequences,

502 See also Chapter 2, subsection 2.6.2

503 Morgan Jones et al. (2020), 'Shape the Future.'

504 Government Office for Science (2020), *Rebuilding a Resilient Britain: Vulnerable Communities*; Abrams et al. (forthcoming), *Beyond Us and Them*.

505 Parry-Davies (2020), *COVID and Society: Evidence Synthesis*.

506 Runnymede Trust (April 2020), 'Open Letter: Predicted Grades and BME Students', *Runnymede Trust*, 5 April. See also Chapter 4 subsection 4.3.3 on access to higher education.

507 Women's Budget Group (April 2020), *Crises Collide: Women and Covid-19*, Women's Budget Group; End Violence Against Women Coalition (April 2020), *Rapidly Complicated - Initial Briefing on the COVID-19 Pandemic And the Duty to Prevent Violence Against Women & Girls*, End Violence Against Women Coalition (UK).

508 Coalition of Latin American Organisations in the UK (July 2020), 'Evidence Submission: Unequal Impact? Coronavirus and BAME People', Response by the Coalition of Latin American Organisations in the UK.

509 Nazroo et al. (2020), *Inequalities in relation to COVID-19*.

510 Coalition of Latin American Organisations in the UK and Latin American Women's Rights Service, Written Evidence Submitted to 'Unequal Impact? Coronavirus and BAME People', CVB0049.

511 Parry-Davies (2020), *COVID and Society: Evidence Synthesis*.

512 Doctors of the World (May 2020), 'A Rapid Needs Assessment of Excluded People in England During the 2020 COVID-19 Pandemic'.

especially for 'recent immigrants for whom the first five years of language learning and network building are crucial for long term success'.⁵¹³

These same conditions have the potential to create other social fractures, such as intergenerational conflicts, interregional conflicts, class disparities and battles over health and social service resources. Discrimination and conflict are both significant social stressors that affect a wide range of outcomes, from individual capability and productivity to health and wellbeing. Thus, the more difficult conditions in the years ahead also pose challenges for building and sustaining cohesion and community to better equip ourselves to cope with those conditions.

3.7 Arts, culture and sport

A vital way for people to sustain social connection and relationships, and find meaning in their lives, is through their engagement with culture, sport and the arts.⁵¹⁴ There is strong evidence that engaging and participating in arts activities promotes more active social engagement such as volunteering and charitable donation, and thus the arts provide a key vehicle for building and sustaining social cohesion.⁵¹⁵ For many, this happens at a local or hyper-local level through interest groups, teams or activities they share with family and friends. There are a significant number of artists (often self-employed) of one sort or another, who contribute substantially and often for minimal or no income to improving the lives of others. The pandemic has posed a major challenge to sustaining these activities and livelihoods, many of which are fragile and have been further threatened by the diminished number of venues and spaces within which artists can operate during the pandemic.⁵¹⁶

There are significant concerns about the impact of COVID-19 on the creative industries, a critical part of the UK economy that may collapse, contract or change significantly as a result of the pandemic.⁵¹⁷ These industries also provide a pipeline and draw on a supply chain that stretches back to grassroots arts organisations. Across the UK, small creative organisations have made significant moves to reach out to people and work together, and the arts have continued to contribute significantly to people's lives at home, for example through literature, films and television.⁵¹⁸ It is essential to find ways to sustain these areas because they are likely to become increasingly valuable for health, wellbeing and the economy, particularly if other factors are pushing towards social fragmentation. This means resources need to stretch from the largest national-level investments right down to local-level investments, and there is a need to ensure the skills base is sustained through education from early years right through the school years.

For example, one of the reviews submitted to us highlights how arts programmes within schools have come under pressure as schools have spent money to become COVID-secure and therefore had less money available to put toward extra-curricular activities.⁵¹⁹ Many such schools are focusing on 'the basics' and helping children 'catch up', and would benefit from support that enables them to sustain

513 Parry-Davies (2020), *COVID and Society: Evidence Synthesis*, p. 11; OECD (October 2020), 'What Is the Impact of the COVID-19 Pandemic on Immigrants and Their Children?', *OECD Policy Responses to Coronavirus (COVID-19)*.

514 Morgan Jones et al. (2020), 'Shape the Future'.

515 Van de Vyver, J., and Abrams, D. (2018), 'The arts as a catalyst for human prosociality and cooperation', *Social and Personality Psychological Science*, 9, pp. 664-674.

516 Marrone, J.V., Resetar, S.A., and Schwam, D. (2020), 'The Pandemic Is a Disaster for Artists', *The RAND Blog*, 4 August 2020.

517 See also Chapter 4 subsection 4.3.4 of this report; STUC (November 2020), *The impact of Coronavirus on Hospitality and Creative Workers*; Owen, G., O'Brien, D. and Taylor, M. (December 2020), 'A jobs crisis in the cultural and creative industries', *Creative Industries Policy & Evidence Centre*, 10 December 2020.

518 Creative Review, 'Creativity and Coronavirus', *Creative Review*, [accessed 17/02/2021].

519 Richards et al. (2020), *Covid and Society: The Impact of COVID-19 on Children and Young People*.

arts programmes. Partnerships between charities and researchers have also been important in this context, and many of these have flourished in circumstances where they were able to be flexible (by adapting provision quickly, moving online and meeting demand for online resources). In some cases, arts organisations and libraries have strengthened ties with local communities by operating 'in effect as charities'.⁵²⁰

COVID-19 has threatened the economic viability of professional sport and may also have a detrimental effect on recent steps to address discrimination and inequality in sport.⁵²¹ It also threatens local and grassroots sport because of potential losses of local facilities or the cost of using facilities becoming too great, and a reliance on volunteers from those groups most vulnerable to COVID-19.⁵²²

3.8 Chapter summary

This chapter has covered evidence of the impacts of COVID-19 on communities, culture and belonging in the UK. It has examined the range of challenges and opportunities for policy moving forward, in particular those related to community-level responses, volunteering and mutual aid; social cohesion and solidarity; trust in government and media; places, cities and housing; race, ethnicity, immigration and prejudice; and arts, culture and sport.

A central theme across this evidence is the vital importance of community-led responses that draw upon local knowledge and resources, and build capacities and channels of interconnectedness between government, community organisations and the public. The evidence clearly shows that those communities that entered the pandemic with such infrastructure in place have been in the best position to respond. A key opportunity moving forward is to take advantage of – and learn from – such structures where they already exist, while developing these capacities in areas that lack such infrastructure through community-level initiatives.

520 *Ibid.*, p. 4.

521 Mackintosh, C., Ives, B., Staniford, L., Gale, L., Thompson, A., Sims, D., Daniels, J., Oldfield, S., and Kolic, P. (2020), *COVID-19 RESEARCH REPORT: The impact of the Pandemic on Community Sport provision and participation*, Manchester Metropolitan University; Evans, A. B., Blackwell, J., Dolan, P., Fahlén, J., Hoekman, R., Lenneis, V., McNarry, G., Smith, M., and Wilcock, L. (2020), 'Sport in the face of the COVID-19 pandemic: Towards an agenda for research in the sociology of sport', *European Journal for Sport and Society*, 17(2), pp. 85–95.

522 Evans et al. (2020), 'Sport in the face of the COVID-19 pandemic'.



4.0 Knowledge, employment and skills

4.1 Introduction

In this chapter we present a synthesised summary of the evidence in the area of knowledge, employment and skills. As noted previously, this is not intended to be exhaustive. Rather, we hope that it offers a starting point for further discussion and understanding. The research provided in response to our open call for evidence, in our engagement with researchers and other stakeholders and in the detailed evidence analyses for specific issues within this theme has all informed the integrated summary below.

We began by taking a broad view of the topics within this area and ultimately cover evidence in the area of education and skills, further and higher education, economic uncertainty, employment and income inequalities.⁵²³ The evidence presented in this chapter demonstrates that COVID-19 has revealed and exacerbated longstanding inequalities, particularly affecting people living at or below the poverty line, women and those with caring responsibilities, and ethnic minorities. This exacerbation of inequalities has impacted access to education, employment prospects and experiences, and individual and household incomes. Impacts have varied depending on where in the UK people live, their qualification level, socioeconomic status and health status. Wider issues around the national economy, educational infrastructure and the social security system have compounded these impacts, pushing many more

523 There is a limitation to what we can cover in this chapter in particular and we have drawn on and point to other organisations with strong bodies of research and expertise doing so, see for example the Economics Observatory, Office for Budget Responsibility, Institute for Fiscal Studies, International Monetary Fund, the Nuffield Foundation, and the Organisation for Economic Co-operation and Development.

people into poverty.⁵²⁴

4.2 Experience of education and skills building

Education plays a crucial role in a child's social, cultural and emotional development. It is too early to appreciate and understand fully the long-term impact that the loss of time in the formal school setting and social interaction with peers will have on this generation, particularly for the youngest children missing out on early years education. However, these impacts are expected to be most severe for the most disadvantaged children and families.

The disruption from lockdowns, social distancing and self-isolation to all types and levels of education – from early years to higher education, in education institutions, the home and the workplace – may be felt for years to come. Past examples of missed education demonstrate that it is likely to have significant adverse effects on educational outcomes.⁵²⁵ But this evidence also suggests that these effects will not be felt equally. Instead, they may entrench aspects of existing inequality, impede intergenerational mobility and constrain young people to education and career binary paths, limiting their options and reducing the agility of the labour market.

An issue prior to the pandemic was that the UK's education system produces a relatively high proportion of people with low basic skills and a low proportion with high-level vocational skills.⁵²⁶ A mismatch between skill levels and employment opportunities implies a higher risk of unemployment, low earnings and greater reliance on social security for support.⁵²⁷ It also holds back productivity and hinders efforts to reduce inequality and improve social mobility.⁵²⁸ Initial evidence shows that these effects have been compounded by the unequal and intermittent access to education over the last 12 months.

4.2.1 Early years and school education

The closing of education institutions in March 2020 resulted in children receiving their compulsory education in a home setting, often working through unfamiliar digital platforms overseen by parents and carers.⁵²⁹ The variable success of this has depended on factors such as the age and educational level of the child, the working status of parents and carers and their access to resources such as digital equipment and study spaces. However, the effect has generally been to compound existing inequalities long observed in compulsory education across socioeconomic background, race and ethnicity, gender and educational need.⁵³⁰

524 According to the Social Metrics Commission, the poverty line is defined as 54% of the median UK income. This equates to £325 per week for a single parent with two children, £439 per week for a couple with two children, and £271 for an elderly couple. See The Social Metrics Commission, (July, 2020), *Measuring Poverty 2020: A report of the Social Metrics Commission*. For the increase in UK poverty as a consequence of the pandemic, see: Legatum Institute, (November, 2020), *Briefing: Poverty During the Covid-19 Crisis*.

525 See: Burgess, S. and Sieverston, H. H. (2020), 'Schools, skills and learning: The impact of COVID-19 on education', *VOX*; Eyles, A., Gibbons, S. and Montebruno, P. (2020), 'Covid-19 school shutdowns: What will they do to our children's education?', *CEP Covid-19 Analysis, Paper No. 001*; DELVE Initiative, (2020), 'Balancing the risks of pupils returning to schools', *DELVE Report No.4*; and Lavy, V. (2015), 'Do differences in school's instruction time explain international achievement gaps? Evidence from developed and developing countries', *Economic Journal*, 125 (588), pp. 397-424.

526 Musset, P. and Field, S. (2013), *A Skills beyond School Review of England*, OECD Reviews of Vocational Education and Training, (Paris, OECD Publishing), and Wolf, A. (March, 2011), *Review of Vocational Education: The Wolf Report*, Department for Education and Department for Business, Innovation and Skills.

527 OECD (2012), *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*, (Paris, OECD Publishing).

528 Bagaria, N., Bottini, N. and Coelho, M. (2013), *Human Capital and Growth: A Focus on Proper Secondary Education in the UK*, LSE Growth Commission Report.

529 Busby, E. (2020) 'Coronavirus: UK schools prepare for online classes in event of widespread closures', *The Independent*, 4 March 2020.

530 The impact on children and young people's mental health of measures including school closures are discussed above in Chapter 2, section 2.3.

Prior to the pandemic, a substantial gap in attainment associated with socioeconomic background is evident even when children start school at the age of four.⁵³¹ This attainment gap is in part a product of access to early years settings. Children of parents with lower levels of education experience a smaller gap if they attend a pre-school setting – although it does not help them catch up once at school.⁵³² This gap based on socioeconomic background widens as education progresses, leaving poorer students an average of 18 months behind their peers by GCSE age and resulting in fewer opportunities to progress to tertiary education, reducing their returns in the labour market.⁵³³ This perpetuates the socioeconomic cycle and decreases intergenerational income mobility, the trend which allows children to be better off than their parents.⁵³⁴

The process of closing schools to all or some pupils during the pandemic has exacerbated these existing inequalities. Many early years settings were also closed to some or all children at different points in the pandemic. High-quality early years provision is considered key to tackling socioeconomic inequalities and closing the attainment gap, but the pandemic has had a major impact on this sector, with two-thirds of early years providers in the private, voluntary and independent sector closed during the first lockdown, although comparatively more providers in deprived areas did stay open. Where children have been unable to attend a childcare provider, stark differences were reported in physical, social and emotional development compared to those who were able to attend.⁵³⁵

For school aged children, materials and teaching time – whether live or pre-recorded – have not been offered or received equitably. In the spring 2020 lockdown, 74% of private school children benefitted from full, virtual school days compared with just 38% of state school pupils. A quarter of pupils (25%) received no schooling or tutoring at all.⁵³⁶ For both primary and secondary school students, household income is positively associated with the learning resources and activities provided by schools.⁵³⁷

Not only were children from higher-income households better served by online provision, but they also spent more time on their home learning in total.⁵³⁸ Both modes of learning were further supported by greater access to resources such as dedicated study spaces, adult support and digital tools.⁵³⁹ In contrast, working-class children and children whose parents were unemployed were less likely to have access to additional educational resources.⁵⁴⁰ This not only impacts children from lower socioeconomic backgrounds, but children of parents who lost their job due to the pandemic.

Specific groups of children have also been affected. For example, research has found the children of migrants are less likely to have a computer or access to a quiet place to

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- 531 Jerrim, J. and Macmillan, L. (2015), 'Income inequality, intergenerational mobility, and the Gatsby curve: Is education the key?', *Social Forces*, 94(2), pp. 505-533.
- 532 Becker, B. (2011), 'Social disparities in children's vocabulary in early childhood. Does pre-school education help to close the gap?', *The British Journal of Sociology*, 62(1), pp. 69-88.
- 533 Hutchinson, J., Reader, M. and Akhal, A. (2020), *Education in England: Annual Report 2020*, Education Policy Institute.
- 534 Jerrim and Macmillan (2015), 'Income inequality'.
- 535 Pascal, C., Bertram, C., Cullinane, C. and Holt-White, E. (July, 2020), *COVID-19 and Social Mobility Impact Brief #4: Early Years*, The Sutton Trust. As cited in Hutchinson et al. (August, 2020), *Education in England: Annual Report 2020*.
- 536 Elliot Major, L., Eyles, A., and Machin S. (October, 2020), 'Generation COVID: Emerging work and inequalities', *CEP Covid-19 Analysis*, Paper No. 011.
- 537 Andrew, A., Cattan, S., Costa-Dias, M., Farquharson, C., Kraftman, L., Krutikova, S., Phimister, A. and Sevilla, A. (August 2020), *Inequalities in Children's Experiences of Home Learning During the COVID-19 Lockdown in England*, The Institute for Fiscal Studies.
- 538 Cullinane, C., and Montacute, R., (April, 2020) *Covid-19 and Social Mobility, Impact Brief 1: School Shutdown*, The Sutton Trust.
- 539 Andrew, A., Cattan, S., Costa-Dias, M., Farquharson, C., Kraftman, L., Krutikova, S., Phimister, A. and Sevilla, A. (2020), *Family Time Use and Home Learning During the Covid-19 Lockdown*, The Institute for Fiscal Studies.
- 540 Benzeval, M., Burton J., Crossley, T. F., Fisher, P., Jäckle, A., Low, H. and Read, B. (September 2020), 'The Idiosyncratic Impact of an Aggregate Shock: The Distributional Consequences of COVID-19', *Understanding Society Working Paper Series*, Paper No. 09.

study at home.⁵⁴¹ Migrant children are also more likely to face an obstacle in parental support due a language barrier: 70% of first-generation immigrant children and 30% of children with immigrant parents do not speak English at home. Parents with less proficiency in the language of instruction or familiarity with the UK education and assessment system may find it harder to support their children's education at home.⁵⁴²

The Children's Commissioner for England and others have also called attention to the effects on vulnerable children.⁵⁴³ Schools in the UK remained open for vulnerable children, but in the first lockdown only between 5% and 14% of these children were attending school.⁵⁴⁴ Children with safeguarding concerns and those living in vulnerable environments have lost some of the protections of being at school, with impacts including increased food insecurity, particularly for the estimated 4 million children living in poverty.⁵⁴⁵ In addition, there are 800,000 children living with domestic abuse, 478,000 with parents who have drug or alcohol dependency and 1.6 million who have a parent with a significant mental health condition.⁵⁴⁶ Many of these children are made more vulnerable by the closure of schools and loss of access to support and safeguarding.⁵⁴⁷ It is expected that inequalities in family circumstances and home settings will not only affect a child's attainment, but also their social and emotional wellbeing and development, creating even worse outcomes for these vulnerable children than normal.⁵⁴⁸

Among students in England, 15% have special educational needs and disabilities (SEND). This group experiences large differences in attainment due to the nature of their needs. But support for these needs was insufficient and varied across the UK during the pandemic.⁵⁴⁹ Provision of support was dependent on local authorities, with attendance rates of students with SEND varying from 91% in Scotland to 78% in England.⁵⁵⁰ The variance and lack of sufficient support may result in consequences for these students' education and development. This could be compounded by parental reluctance for children to return to school, due to concerns about safety, medical vulnerability and the needs and behaviours of children (in particular, an inability to adhere to social distancing).⁵⁵¹ A study into children and young people's mental health found that children with SEND experienced elevated levels of behavioural, emotional and restless or attentional difficulties during and immediately after the first lockdown.⁵⁵²

The precise impacts of these inequalities on long-term attainment may be wider and deeper than current evidence permits us to know. But data from previous instances of education absence (for example, teacher strikes and natural disasters)⁵⁵³ suggests that the unequal provision of, and access to, learning will likely have serious consequences on the long-term educational progression of students from lower socioeconomic backgrounds, affecting in turn their labour market prospects and

541 OECD (October, 2020), 'What Is the Impact of the COVID-19 Pandemic on Immigrants and Their Children?', OECD Policy Responses to Coronavirus (COVID-19).

542 Parry-Davies, E. (2020), COVID and Society: Evidence Synthesis, British Academy Covid and Society Call for Evidence.

543 Longfield, A. (2020), *Childhood in the time of Covid*, Children's Commissioner.

544 Department for Education, (2020), *Attendance in Education and Early Years Settings During the Coronavirus Outbreak*, Gov.uk.

545 Joseph Rowntree Foundation, (2020), *UK Poverty 2019/20*.

546 For more information see Chapter 2, section 2.4.3.

547 Longfield, A. (2020), *Childhood in the time of Covid*.

548 Andrew, A. et al. (2020), *Family time use*; see also Chapter 2, section 2.3.1.

549 Sibieta, L. and Cottell, J. (October, 2020), *Education Policy Responses Across the UK to the Pandemic*, Education Policy Institute.

550 Sibieta, L. (November, 2020), *School Attendance Rates Across the UK since Full Reopening*, Education Policy Institute.

551 Skipp, A. and Hopwood, V. (2020), *Special Education During Lockdown: Returning to Colleges in September*, Nuffield Foundation.

552 Skripkauskaitė, S., Pearcey, S., Raw, J., Shum, A., Waite, P. and Creswell, C. (2020), *Report 06: Changes in children and young people's mental health symptoms from March to October 2020*, Co-SPACE; see also Chapter 2 section 2.3.1.

553 See: Burgess and Sieverston, (2020), 'Schools, skills and learning'; Eyles et al. (2020), 'Covid-19 school shutdowns; DELVE Initiative, (2020), 'Balancing the risks of pupils returning to schools'; and Lavy, (2015), 'Do differences in school's instruction time explain international achievement gaps?'

decreasing intergenerational mobility. Of the estimates that do exist, the Education Endowment Foundation's median estimate predicts that the attainment gap for pupils eligible for free school meals will increase by 36%, reversing the progress made since 2011 in narrowing performance differences.⁵⁵⁴ For young people with poor qualifications, the collapse of youth employment will compound the impact of this. In the past, it was relatively easy to combat a lack of qualifications with labour market experience,⁵⁵⁵ but this may change as we feel the full economic impact of the pandemic. The Institute for Fiscal Studies estimates that the total bill for lost earnings due to missed schooling in the pandemic is £350 billion, which amounts to £40,000 per child over the course of their lifetime.⁵⁵⁶

4.2.2 Skills

Pre-pandemic, much research and attention focused on the skills needed for the future, considering the overlapping and interconnected roles of the compulsory, tertiary and adult education systems as a mechanism for skills delivery. The UK was projected to need more higher-level skills. According to Department for Education projections, between 2017 and 2027 the UK was expected to see a 30.5% increase in the employment of people with higher-level qualifications and a 32.4% increase in the employment of those with master's degrees and doctorates.⁵⁵⁷ By 2027, it was expected that 57% of the UK workforce will need a higher-level qualification.⁵⁵⁸

Prior to the pandemic, British Academy research identified seven forces driving changes in demand for skills for the future.⁵⁵⁹ While much attention has focused on automation and computerisation, there are also impacts of the environment, urbanisation, growing inequality, political uncertainty, globalisation and demographic change.⁵⁶⁰ Also prior to the pandemic, the top skills needed to thrive in the current and near-future economy were identified as initiative and entrepreneurialism, accessing and analysing information, critical thinking and problem solving, agility and adaptability, curiosity and imagination, collaboration and leadership, and effective oral and written communication.⁵⁶¹

Since the pandemic, the issue of future skills has been subject to research and discussion. The National Council for Education lists the skills needed for recovery as adaptability, creativity, data literacy, leadership and emotional intelligence.⁵⁶² McKinsey has similar findings, focusing on the need for digital, cognitive, social and emotional, and adaptability and resilience skills sets.⁵⁶³ The increased focus on data and digital literacy is to be expected given the role both have played over the last year, and some argue that data-driven decision-making is at the heart of the global future world of work.⁵⁶⁴ The Centre for Data, Ethics and Innovation has argued that delivering digital skills, data science and analytics across the entire workforce

554 Education Endowment Foundation (June, 2020), *Impact of School Closures on the Attainment Gap: Rapid Evidence Assessment*.

555 Wolf (2011), *Review of Vocational Education*.

556 Sibieta, L. (2021), *The Crisis in Lost Learning Calls for a Massive National Policy Response*, Institute for Fiscal Studies.

557 This is defined as RQF levels 4-6 in England, Wales and Northern Ireland, SCQF levels 7-10 in Scotland, which includes Higher National qualifications, foundation degrees and bachelor's degrees. Wilson, R., Owen, D., Bosworth, D. and Barnes, S. A., (February, 2020), *Working Futures 2017-2027: Long-run Labour Market and Skills Projections*, Department for Education, as cited in British Academy (May, 2020), *Qualified for the Future: Quantifying Demand for Arts, Humanities and Social Sciences*.

558 Wilson et al. (February, 2020), *Working Futures 2017-2027*, as cited in The British Academy (May, 2020), *Qualified for the Future*.

559 British Academy (2020), *Qualified for the Future*.

560 Office for National Statistics, (2018), *Civil Service Statistics, UK: 2018*, 3 August 2018, as cited in The British Academy (May, 2020), *Qualified for the Future*.

561 Joynes, C., Rossignoli, S. and Fenyiwa Amonoo-Kuofi, E. (August, 2019), *21st Century Skills: Evidence of Issues in Definition, Demand and Delivery for Development Contexts*, Department for International Development; and Neves, J. (2018) *UK Engagement Survey*, Advance HE as cited in The British Academy (May, 2020), *Qualified for the Future*.

562 National Council for Education (2020), 'The skills needed from a post COVID-19 workforce', *National Council for Education*.

563 Feld, A., Reich, A., Störk, K. and Durth, S. (July, 2020), 'Thriving after COVID-19: What skills do employees need?', *McKinsey*.

564 D'Ercole, N. and Ancion, A. (2020), *The Upskilling Imperative: Building a Future-Ready Workforce for the AI Age*, Deloitte.

will not only build capacity and capability for the sectors of the future, but also for resilience in local and central government against future pandemics or crises.⁵⁶⁵ Prior to the pandemic, evidence demonstrated that the ‘ubiquity of statistics makes it vital that citizens, scientists and policy makers are fluent with numbers’.⁵⁶⁶

These skills can be embedded across the breadth of the curriculum, at all levels. Evidence from the Institute of Student Employers concludes that 86% of employers do not recruit based on degree,⁵⁶⁷ and work by the British Academy and the Royal Society demonstrates the need for a broad and balanced curriculum, as employers look across disciplines for in-demand skills.⁵⁶⁸ Despite the disruption to provision due to COVID-19, the tertiary education sector seems to be delivering on these needs. When surveyed in December 2020, university students were confident or quite confident that they were building some of these skills during the pandemic, reporting that they felt they were developing independent learning skills (76%), digital learning skills (67%) and information literacy skills (67%). However, only 60% of students during the pandemic were as confident in their project management skills, and just 57% in engaging with groups.⁵⁶⁹

Post-pandemic, we may expect the labour market to look very different; vacancies have fallen and both graduate schemes and apprenticeships have decreased (the latter particularly at intermediate level, which is post-GCSE).⁵⁷⁰ As covered elsewhere in this chapter, some sectors have been hit much harder than others. This will have both short- and long-term effects. For example, the closure of the arts industry has had immediate effects, with severe impacts on the employment status of actors, production workers, ticket salespeople etc, and on the solvency of galleries, museums, heritage sights, theatres and music venues.⁵⁷¹ But there are also longer-term, wider effects to consider: the diminution of our stock of talent, loss of export of culture, loss of tourist income, loss of cultural richness and cohesion and loss of breadth of skills.⁵⁷²

In contrast, we may expect to see heightened demand for skills in the health and care sector. Prior to the pandemic, NHS hospitals, mental health services and community providers were operating with more than 100,000 full-time vacancies. There will be increased pressure to fill these shortages, as well as the 120,000 vacancies in social care.⁵⁷³ Not only will there be significant physical health effects from the pandemic, but there may also be a shift towards more holistic working as employers recognise the role that mental health plays in productivity. Investment in employee wellbeing would increase the demand for workers in health and social care and in mental health and counselling.⁵⁷⁴

Previous analyses have shown that there can be recession-induced falls in

565 Centre for Data Ethics and Innovation, (February, 2021), Local Government Use of Data During the Pandemic.

566 The British Academy (2015), *Count Us In: Quantitative Skills for a New Generation*, p. 1.

567 Institute of Student Employers, (2019), *Inside Student Recruitment 2019*.

568 The British Academy (November, 2019), *A Manifesto for the Humanities and Social Sciences*; and The Royal Society, (2014), *Vision for Science and Mathematics Education*.

569 McVitty, D., Jackson, A. and Hutchens, B. (February 2021), ‘Students’ experiences of study during Covid-19 and hopes for future learning and teaching’, *WonkHE*.

570 Graduate jobs dropped 12% in 2020, the largest fall since 2008/9 according to Institute for Employers, (2020), *Student Recruitment Survey 2020: Challenge and Resilience in the Year of Covid-19*. For apprenticeship data see Department for Education (2021), *Apprenticeships and Traineeships: Academic Year 2020/21*. Release date: 4 February 2021.

571 See also Chapter 3, section 3.7.

572 Morgan Jones, M., Abrams, D. and Lahiri, A. (October 2020), ‘Shape the Future: How the social sciences, humanities and the arts can SHAPE a positive post-pandemic future for peoples, economies and environments’, *Journal of the British Academy*, 8, pp. 167-266, p. 232; and OECD (September, 2020), ‘Culture Shock: COVID-19 and the cultural and creative sectors’, *OECD Policy Responses to Coronavirus (COVID-19)*.

573 Charles, A. and Ewbank, L. (July, 2020), *The Road to Renewal: Five Priorities for Health and Care*, King’s Fund; and Jung, C. and Murphy, L. (July, 2020), *Transforming the Economy after COVID-19: A Clean, Fair and Resilient Recovery*, Institute for Public Policy Research.

574 Allas, T. (June 2020), ‘Future-proofing fiscal stimulus for the post-COVID-19 world’, *Campaign for Social Science*, 16 June 2020.

productivity, which can be compounded by mismatch between the skills supplied and demanded in the labour market.⁵⁷⁵ This evidence suggests that there will be a need to monitor for potential mismatch and to develop comprehensive and sustained ways for people to build training and education throughout their lives – so-called ‘life-long learning’. Much of this could involve the further and higher education sectors. We know that economic recessions support an increase in mature and postgraduate study as higher-level skills are valued in the UK labour market.⁵⁷⁶ Through the post-2008 recession, those with higher skills and qualifications were more likely to stay employed, with substantially higher earnings prospects.⁵⁷⁷

Forecasts before the pandemic were already suggesting that the next decade would see a sharp decline in demand for low-skilled work, meaning the least skilled will need the most support. However, people with lower levels of education are significantly less likely to receive in-work training.⁵⁷⁸ This is despite the fact that training has a positive correlation with paid work for those who have previously been unemployed.⁵⁷⁹ This has implications for the concept of life-long learning and for the role of adult education in meeting the skills and training needs of the economy post-pandemic.

4.3 Further and higher education

The pandemic has highlighted issues in the sustainability of education and training institutions. This applies to both finance and practice, as the two are linked. Schools, further education colleges and universities have demonstrated flexibility and commitment to find ways to continue to deliver education despite the practical and financial challenges created by the pandemic. The university sector in Scotland, for example, is projecting a 2020-21 academic year loss of £132.2m.⁵⁸⁰

In further education, the pandemic could provide increased motivation for a financial injection, as further education colleges are well placed to lead on the adult training schemes in place to boost the economy. In higher education, the financial impact of the pandemic, coupled with falling international student numbers, risks the sector’s ability to deliver benefits to students, their community and the economy, undermining reputational claims of public good and destabilising the research base.⁵⁸¹

4.3.1 Further education

Further education has seen a 12% cut in funding, in real terms, between 2010-11 and 2019-20.⁵⁸² At the same time, post-compulsory education has increasingly incentivised young people into narrow channels, in a binary structure of higher degree-level education or further work-based learning. It has been argued that this

575 UK Commission for Employment and Skills, (2014), *The Labour Market Story: The UK Following Recession*.
 576 Evidence from the Institute of Student Employers suggests only 14% of employers state that specific degree subject are a selection criterion. Institute of Student Employers, (2019), *Inside Student Recruitment 2019*, as cited The British Academy (May, 2020), *Qualified for the Future*.
 577 UKCES, (2014), *The Labour Market Story*.
 578 Wilson, R., Cockett, J., Paputsaki, D. and Takala, H. (April, 2020), *Getting Back to Work: Dealing with the Labour Market Impacts of the Covid-19 Recession*, Institute for Employment Studies.
 579 Henehan, K. (2020), *Can Training Help Workers Change Their Stripes?*, Resolution Foundation.
 580 The Scottish Parliament, (2021), ‘Impact of Covid-19 on Further and Higher Education’, *Education and Skills Committee Public Papers*, 27 January 2021.
 581 Though international numbers did not fall in 2020, the January application data for 2021 suggest a fall of 23% across EU and non-EU students. See UCAS, (2021), *2021 Cycle Application Figures – 15 January Deadline*.
 582 Britton, J., Farquharson, C., Sibietta, L., Tahir, I. and Wattmann, B., (November 2020), *Annual Report on Education spending in England*, Institute for Fiscal Studies.

channelling perpetuates inequality by stifling flexibility of movement across the divide.⁵⁸³

In further education, a concern is age-based restriction of government funding for students impacting access for learners and the financial sustainability of institutions. This creates obstacles due to delays in provision (particularly likely with technical learning), lack of opportunity for mandatory placements or personal impacts from the pandemic.⁵⁸⁴ In Scotland, for example, 7500 further education students from the 2019-20 cohort have been unable to complete their qualifications due to restricted college facilities based on COVID-19 regulations.⁵⁸⁵

Part-time students and apprentices are also affected. During the first lockdown in 2020, only 40% of apprenticeships continued as normal and one in five apprentices left either their learning or earning role.⁵⁸⁶ In England during the period after the start of lockdown (23 March-31 July 2020) there was a 45.5% drop in starts compared with the same period in 2019. The worst-hit level was intermediate apprenticeships – which saw a fall of 10.6 percentage points, compared with higher apprenticeships which rose 13.7 percentage points.⁵⁸⁷ By the 2020-21 academic year, intermediate level apprenticeships continue to see the greatest decline in starts, and the worst-hit subject areas for apprenticeship starts were leisure, travel and tourism; engineering and manufacturing technologies; and retail and commercial enterprise.⁵⁸⁸

The ability of an apprentice to transfer employers is difficult in a healthy labour market. In a recession, options for apprentices made redundant are severely limited, prompting a likely fall in successful completion rates.⁵⁸⁹ The Government has instigated a support scheme, but evidence from past schemes suggests that incentive payments for employers – such as those pledged by the Government in August 2020 – are unlikely to have much impact.⁵⁹⁰ As apprenticeships at all levels are more common pathways for boys, people from low socioeconomic backgrounds and White people,⁵⁹¹ the impact of the pandemic on the provision and employment of apprentices may affect these groups more widely than some others.

4.3.2 Higher education

The total income of the UK higher education sector is around £40 billion per year. Of this, roughly half comes from tuition fees, with EU and overseas students accounting for one-third of this.⁵⁹² Falling numbers would mean a decline in tuition fee income and in the amount of public funding granted to institutions for teaching, which is calculated on the basis of first-year enrolments. This would have consequences for institutions' finances, as their net cash inflow may fall, impacting their ability to cover variable or operating costs.⁵⁹³ An inability to do this would mean a failure to be commercially viable.

583 Augar, P. (2019), *Independent panel report to the Review of Post-18 Education and Funding*, Department for Education.
 584 Loans are available for post-19 on a similar basis to in higher education, but these are taken by the learner, rather than sourced by the provider. See Education and Skills Funding Agency, (2019), *16 to 19 funding: how it works*, Gov. UK [accessed on 21/02/2021].
 585 Scottish Parliament, (2021), 'Impact of Covid-19 on Further and Higher Education'.
 586 Doherty, K and Cullinane, C. (May, 2020), *COVID-19 and Social Mobility Impact Brief 3: Apprenticeships*, The Sutton Trust.
 587 Department for Education (2021), *Apprenticeships and Traineeships: Academic Year 2019/20*, Release date 28 January 2020.
 588 Department for Education (2021), *Apprenticeships and Traineeships: Academic Year 2020/21*, Release date: 4 February 2021.
 589 Education and Skills Funding Agency (2020), 'Apprentices that have been made Redundant', Gov.UK [accessed on 09/02/2021].
 590 For the COVID-19 incentive payments, see: Education and Skills Funding Agency (August, 2020), *Incentive Payment for Hiring a New Apprentice*, Gov.UK. For evidence of the success of past schemes, see: 'The Apprenticeship Grant for Employers' in Cavaglia, C., McNally, S., and Overman, H. (2020), 'Devolving skills: the case of the Apprenticeship Grant for Employers', *Fiscal Studies*, 41 (4), pp. 829-849.
 591 Blundell, R., Cribb, J., McNally, S., Warwick, R. and Xu, X. (November, 2020), *Inequalities in Education, Skills, and Incomes in the UK: The Implications of the COVID-19 Pandemic*.
 592 Watermeyer, R., Crick, T., Knight, C. and Goodall, J., (June, 2020), 'COVID-19 and digital disruption in UK universities: afflictions and affordances of emergency online migration', *Higher Education*, 81, pp. 623-641.
 593 *Ibid.*

However, the expected falls in international recruitment did not manifest in the September 2020 intake of students. Instead, UK universities recorded a 9% increase in the number of non-EU undergraduates, accounting for 44,300 students.⁵⁹⁴ Early data from the 2021 application cycle suggests that while non-EU numbers will rise, a substantial fall of 40% in the number of students from the EU will mean an overall decrease in numbers.⁵⁹⁵

Any fall in international student numbers next year may be offset by domestic undergraduate students, as 2021 will see an increase in the number of 18-year-olds in the market as we move out of a ‘demographic dip’,⁵⁹⁶ Domestic demand may rise as the cohort currently playing catch-up academically lacks other opportunities, notably employment and travel. This is also true for mature students, as a rise in mature applicants can be linked to a weakened job market. The number of mature applicants entering higher education in 2020 increased by 7000 – the single highest year-on-year growth since 2009 – reflecting demand for upskilling and reskilling as the economic outlook became uncertain.⁵⁹⁷ Lessons from the 2008 recession suggest that this trend can be expected to continue into the 2021 admissions cycle, and early indications project a 21% rise in mature applicants.⁵⁹⁸

Similarly, 2020 saw an increase in the number of 18-year-olds entering higher education. Due to the cancellation of exams, level 3 assessments (A level and equivalent) were replaced with grades produced using unpublished teacher predictions and rankings moderated by an algorithm designed by UK qualifications regulators. These grades were later withdrawn, and revised grades were awarded based on teacher predictions, unless the original algorithm moderated grade was higher.⁵⁹⁹ This change in government policy and removal of temporary student number caps in August 2020 enabled more students to achieve higher grades and gain acceptance to their first choice of university – more students achieved their offers and universities were able to accept greater numbers.⁶⁰⁰

The policy change raised grades for 160,000 students, but an estimated 15,000 of these had already accepted a second-choice offer or used the clearing system to find a place, with their first-choice places allocated to other students based on the initial results.⁶⁰¹ The Office for Statistics Regulation has reviewed the approach taken in the original grade allocation. While confident that the bodies involved ‘acted with integrity’, there is concern that public bodies will be less willing in future to use statistical models to support decisions, for fear of a public backlash.⁶⁰² This fear is illustrated by the Secretary of State for Education’s statement in January 2021 – ‘This year, we will put our trust in teachers rather than algorithms’ – referring and responding to the lack of public trust.⁶⁰³

Despite the lifting of the temporary student numbers cap to allow the sector to meet its legal obligations and students not to be disadvantaged, not all universities were

594 UCAS, (2020), *Statistical Releases, Daily Clearing Analysis 2020*, released 24 September 2020. It is important to note that these figures do not account for all international students, as many international undergraduates and all international postgraduates apply directly to institutions.

595 UCAS, (2020), *2021 Cycle Applicant Figures – 15 January Deadline*, released 18 February.

596 Corver, M. (2019), ‘The great recruitment crisis: planning for rapid student number growth’, *WonkHE*, 18 March 2019.

597 UCAS, (December, 2020), *What Happened to the COVID Cohort? Lessons for levelling up in 2021 and beyond*.

598 UCAS, (2020), *2021 Cycle Applicant Figures*.

599 Office for Statistics Regulation, (2021), *Ensuring Statistical Models Command Public Confidence*.

600 UCAS, (2021), *What Happened to the COVID Cohort?*

601 UCAS, (August, 2020), ‘UCAS receives upgraded centre assessed grades and provides analysis on number of upgraded students able to meet conditions of original first choice’, *UCAS*, 19 August 2020.

602 Office for Statistics Regulation, (2021), *Ensuring Statistical Models Command Public Confidence*.

603 The Secretary of State for Education, COVID-19: Educational Settings Volume 686: debated on Wednesday 6 January 2021, Hansard, as cited in Office for Statistics Regulation, (2021), *Ensuring Statistical Models Command Public Confidence*.

able to accommodate everyone entitled to a place: access to resources, amenities and housing had to be considered. Instead, a commitment was made by the Department for Education that places would be honoured ‘where possible’.⁶⁰⁴ Overall, however, the university sector absorbed these numbers effectively: 84.5% of 18-year-olds were placed at their original first-choice provider, or at a provider in the same or higher tariff band. This is higher than in 2019, when the proportion was 80.8% – demonstrating that more students were able to meet the terms of their offer.⁶⁰⁵ Teaching was moved online during the initial spring 2020 lockdown, with a hybrid approach maintained to the end of the calendar year. There were initial and ongoing fears over quality in light of costly tuition fees, lost value from missed study and research and a concerning lack of digital readiness. Some surveys have found that while most academics did not feel well prepared to deliver online learning they did feel confident in their ability to facilitate this new online learning, though there are some differences by discipline within these findings.⁶⁰⁶

For those students at university during the pandemic, their sense of community and environment was severely disrupted. This environment may be defined by physical proximity and shared experiences. For many it is a crucial part of the higher education experience, which may explain levels of dissatisfaction among student communities with less face-to-face teaching.⁶⁰⁷ Students from the lowest income backgrounds lost 52% of their normal teaching hours in the first lockdown as a result of the pandemic. But those from the highest income groups fared better, losing 40%. Female students were also more likely than males to report that the pandemic had adversely affected their wellbeing.⁶⁰⁸

When surveyed in December 2020, 16% of students felt unequipped to engage with online learning⁶⁰⁹ and only 40% agreed that their online academic experience had been of sufficiently good quality during the autumn term.⁶¹⁰ Moving online requires efforts to replicate face-to-face social relations and interactions, but research does show that online learning communities can help to create connections with other students and may be viewed as an opportunity for knowledge construction and growth.⁶¹¹

Much of summer 2020 campus time was lost to the pandemic, and while a degree of normality welcomed students in September 2020, the hybrid approach combining online and in-person working was not easy. Under social distancing rules, a lecture theatre designed to fit 400 students can be used by just 20 people at any one time.⁶¹² Some libraries have banned browsing, instead making research materials available online or by home delivery. For many, even placements and lab time have been moved online.⁶¹³ Despite these changes, most students felt trust in the way their institutions are adapting, with 69% stating that communication has been clear and their course well organised and 82% agreeing that they have good access to tutors.⁶¹⁴

604 Department for Education, (2020), *Awarding Qualifications in Summer 2021* [accessed 25/02/2021].

605 UCAS, (December, 2021), *What Happened to the COVID Cohort?*

606 Watermeyer et al. (June, 2020), ‘COVID-19 and digital disruption in UK universities’.

607 McVitty et al. (February 2021), ‘Students’ experiences of study during Covid-19’.

608 Elliot Major et al. (2020), ‘Generation COVID: Emerging work and inequalities’.

609 Office for National Statistics, (2020), *Coronavirus and the impact on Students in Higher Education in England: September to December 2020*, data released 21 December 2020.

610 McVitty et al. (February 2021), ‘Students’ experiences of study during Covid-19’.

611 Akcaoglu, M. and Lee, E. (2016) ‘Increasing social presence in online learning through small group discussions’, *The International Review of Research in Open and Distributed Learning*, 17(3), pp. 1-17; and Cho, M. H. and Tobias, S. (2016), ‘Should instructors require discussion in online courses? Effects of online discussion on community of inquiry, learner time, satisfaction, and achievement’, *The International Review of Research in Open and Distributed Learning*, 17 (2), pp. 123-140. As cited in Händel, M., Stephan, M., Gläser-Zikuda, M., Kopp, B., Bedenlier, S. and Ziegler, A. (2020), ‘Digital readiness and its effects on higher education students’ socio-emotional perceptions in the context of the COVID-19 pandemic’, *Journal of Research on Technology in Education*.

612 QAA, (May, 2020), *The Impact of COVID-19 on Admissions and Transitions into Higher Education*.

613 Scottish Parliament, (2021), ‘Impact of Covid-19 on Further and Higher Education’.

614 McVitty et al. (February 2021), ‘Students’ experiences of study during Covid-19’.

Of course, at the time of writing this review, the UK is in the midst of a third national lockdown, and the data may change again.

4.3.3 Inequality in higher education access

The impact of COVID-19 on student recruitment does not end with the 2020 cohort. If attainment levels in compulsory education fall, as discussed earlier in this chapter, then grade requirements, pathway and institution choice will all be affected. Similarly, if overall grades increase, a student's risk of being 'overmatched' to a university increases, with implications for continuation rates.⁶¹⁵

It has been confirmed that 2021 summer exams will again be replaced with teacher assessments.⁶¹⁶ But research from teacher grade predictions show that these tend to favour more advantaged students over their disadvantaged counterparts.⁶¹⁷ High-achieving comprehensive school pupils are more likely to be underpredicted compared with their counterparts at grammar schools and private schools. This is attributed partly to the trajectories that these pupils tend to follow from GCSE to A level, which involve more movement in relation to grades.⁶¹⁸ Pre-pandemic, this was also evident in predicted grades at level 3, which tend to be higher for more advantaged students.⁶¹⁹ However, Ofqual research suggests that, regardless of whether the original calculations or final accepted grades were used, no groups of students were systematically disadvantaged in 2020 based on their protected characteristics or socioeconomic status.⁶²⁰

2020 also saw continuation of progress in other forms of widening participation in higher education. There were record numbers of acceptances of 18-year-olds from those areas and groups with the lowest participation rates: 29,020 UK students from POLAR4 Q1, including 1645 Scottish students from SIMD Q1, and over 14,000 English pupils on free school meals.⁶²¹ The grading change had a positive impact on widening participation at all universities and colleges; for the most selective providers the impact saw acceptances of the most disadvantaged grow 11.6% between 19 August 2020 (when revised grades were issued) and the end of the annual cycle.⁶²²

Regional gaps in entry remain, with 49.2% of 18-year-olds from London entering higher education compared with just 32.4% of those from the South West and 33.2% in the North East. There are also gaps among ethnic minorities, as young Black people remain the least likely to enter higher tariff providers, albeit reaching a record level of 15.2% in 2020.⁶²³ A study of five UK higher education institutions found that students from ethnic minority groups, women and low-income students were more affected by both health and economic consequences of the pandemic and experienced greater

615 Campbell, S., Macmillan, L., and Wyness, G. (December, 2019), *Mismatch in higher education: prevalence, drivers and outcomes*, Nuffield Foundation.

616 Department for Education and Ofqual, (February, 2021), *Consultation: How GCSE, AS and A level Grades Should be Awarded in Summer 2021*.

617 Burgess, S. and Greaves, E. (July 2013), 'Test scores, subjective assessment, and stereotyping of ethnic minorities', *Journal of Labor Economics*, 31(3), pp. 535-76; and Campbell, T. (April, 2015), 'Stereotyped at Seven? Biases in Teacher Judgement of Pupils' Ability and Attainment', *Journal of Social Policy*, 44(3), pp. 517-47, as cited in Education Policy Institute (August, 2020), *Analysis: A Level results 2020*.

618 23% of comprehensive school pupils are underpredicted by two or more grades compared to just 11% of grammar and private school pupils. Anders, J., Dilnot, C., Macmillan, L. and Wyness, G. (August, 2020), 'Grade Expectations: How well can we predict future grades based on past performance?', *CEPEO Working Paper, 20*, Centre for Education Policy and Equalising Opportunities, UCL.

619 Wyness, G. (February 2016), *Predicted Grades: Accuracy and Impact*, University and College Union.

620 Ofqual (2020), 'Summer 2020 outcomes did not systematically disadvantage students', *Gov.UK*, 26 November 2020.

621 POLAR4 stands for 'the participation of local areas'; Q1 refers to the quintile with the lowest young participation rates and considered as the most disadvantaged. SIMD stands 'Scottish Index of Multiple Deprivation'; Q1 refers to the most deprived data zone. See 'Definitions' in UCAS, (2021), *UCAS Undergraduate Sector-Level End of Cycle Resources 2020*, data released 21 February 2021. For the statistics on acceptances, see UCAS, (2021), *What Happened to the COVID Cohort?*

622 UCAS, (2021), *What Happened to the COVID Cohort?*

623 Higher education providers are grouped on the average levels of attainment of their UK 18-year-old accepted applicants. Higher tariff providers account for the top third. See 'Definitions' in UCAS, (2021), *UCAS Undergraduate Sector-Level End of Cycle Resources 2020*.

disruption in academic activity.⁶²⁴ We know from previous research that vulnerable groups such as care leavers and care givers are more likely to need part-time work to support their studies, as are students from poorer socioeconomic backgrounds, due to the prevalence of family financial support in higher education.⁶²⁵ With the hospitality and retail sectors shut down, typical revenue streams are closed for those who need them most: among Scottish students, for example, 73% are concerned about managing financially during the pandemic and 14% have used food banks.⁶²⁶

4.3.4 Wider research and knowledge capacity

As the UK went into lockdown in March 2020, economic activity was disrupted. This includes the R&D and innovation activities of universities, which deliver on a range of government priorities, including (but not limited to) increasing R&D and innovation in the economy, levelling up across the UK and supporting industries, economies and communities in recovering from the effects of the pandemic. Disruption varies by institution, but early research indicates that the estimated impact to innovation overall could be a fall of 6%.⁶²⁷

The R&D, commercialisation and innovation-focused projects that universities undertake are funded from a mix of public, private and charitable sources. While funding and support for COVID-19 projects increased during the first lockdown, for other types of R&D, innovation and commercialisation it decreased. For projects not related to COVID-19, public funding decreased for 22% of universities, and private and charitable funding decreased for 50% of institutions. More broadly, for all types of projects, private and charitable funding decreased more than public funding.⁶²⁸

Industry economic performance data (covered later in this chapter) shows that some sectors have been disproportionately affected by the pandemic. This translates into reduced innovation activity with universities. When asked to identify key sectors for engagement, universities who named aerospace manufacturing reported a 92% decrease in activity. The fall for automotive, transport and machinery manufacturing was 61%, for other non-manufacturing it was 48% and for creative industries and media 41%.⁶²⁹ In past crises, companies that invested in innovation experienced superior growth and performance in the aftermath. For example, global companies that maintained innovation during the 2009 financial crisis outperformed the market average by over 30% in the next three-to-five years.⁶³⁰

4.3.5 Education and local communities

There has been a growing movement in recent years to emphasise and encourage the civic responsibilities of universities.⁶³¹ Part of this is as employers: universities

624 Day, T., Chang, I. C. C., Chung, C. K. L., Doolittle, W. E., Housel, J. and McDaniel, P. N. (2020), 'The immediate impact of COVID-19 on postsecondary teaching and learning', *The Professional Geographer*, 73 (1), pp.1-13.

625 Callender, C. (2008), 'The impact of term-time employment on higher education students' academic attainment and achievement', *Journal of Education Policy*, 23, pp. 359-377.

626 Scottish Parliament, (2021), 'Impact of Covid-19 on Further and Higher Education'.

627 Coates Ulrichsen, T. (January, 2021), *Innovating During a Crisis: The Effects of the Covid-19 Pandemic on how Universities Contribute to Innovation*, University Commercialisation and Innovation Policy Evidence Unity, University of Cambridge and National Centre for Universities and Business.

628 Ibid

629 See Figure 8 in Ibid, p.31.

630 Bar Am, J., Furstenthal, L., Jorge, F. and Roth, E. (2020), 'Innovation in a crisis: Why it is more critical than ever', *McKinsey*, 17 June 2020.

631 See the Civic University Commission.

are frequently among the largest employers in their regions,⁶³² meaning that their survival plays a role in the economic vitality and strength of identity of their communities. This community role is also fulfilled through the interactions, partnerships and relationships universities have with a variety of local actors, including councils, community organisers, and wider civil society organisations such as faith groups, sports clubs, theatres, museums and galleries.⁶³³

Many in these communities see universities as a force for good. Prior to the pandemic, 30% of people felt that universities were performing well to improve their local area, behind only hospitals, charities and sports teams. Half of those polled believed that universities could and should be involved in the delivery of local government services and 60% wanted universities to play a greater role in their local economy.⁶³⁴ This beneficial community role is supported by a study of social cohesion and COVID-19, which found that people with less education experienced greater declines in perceived social cohesion during the pandemic.⁶³⁵

4.4 Economic uncertainty

The impact of COVID-19 on knowledge, employment and skills will be influenced by the wider state of the economy. The global economic contraction brought about by the pandemic – and directly influenced by countries’ responses to the crisis – has, in the UK, led to a substantial decrease in economic output and been accompanied by increased levels of public borrowing, economic uncertainty, high numbers of failed businesses and decreased economic confidence. It has also stalled progress in productivity and business investment.

This has the potential for deep and lasting repercussions on people and society. In our review of the evidence on societal impacts of COVID-19, economic analyses have not been covered in depth, as the economic impact of the pandemic continues to attract detailed, expert attention from many other institutions. While the economic picture is rapidly changing, we aim to provide below some of the wider economic context in which the effects of the pandemic are being experienced and to identify the issues that may shape recovery.

4.4.1 Growth and economic recovery

Early in the pandemic, modelling by the Bank of England suggested that the decrease in output in 2020 could be as high as 14%, the sharpest fall in over 300 years. In the third quarter of 2020, when case numbers had fallen and the initial lockdown was reversed, the UK experienced a strong consumption-driven GDP rebound. However, this was short-lived due to the reintroduction of restrictions in November, and analysis by the OECD records a fall of 11.2% in GDP across the year.⁶³⁶ There is hope that growth through 2021 and 2022 will be driven, in particular, by a rebound in consumption – especially by those who have increased their savings during the pandemic to date. However, the risk of further outbreaks and repeated lockdown

632 Kelly, U., McNicoll, I. and White, J. (April, 2014), *The Impact of Universities on the UK Economy*, Universities UK. For example, in Oxford, the university employed 14,478 people in 2019, making it the largest employer in Oxfordshire. See: University of Oxford, (2021), ‘Staff Numbers’, University of Oxford [accessed 10/02/2021]. The University of Birmingham supports 15,545 jobs in 14-15 - almost one in 50 jobs in Birmingham. See University of Birmingham, (2016), *Our Impact: The Economic, Social and Cultural Impact of the University of Birmingham*.

633 See also Chapter 3, section 3.2.

634 Brabner, R. (February 2020), ‘A Tale of a Divided Britain’, UPP Foundation.

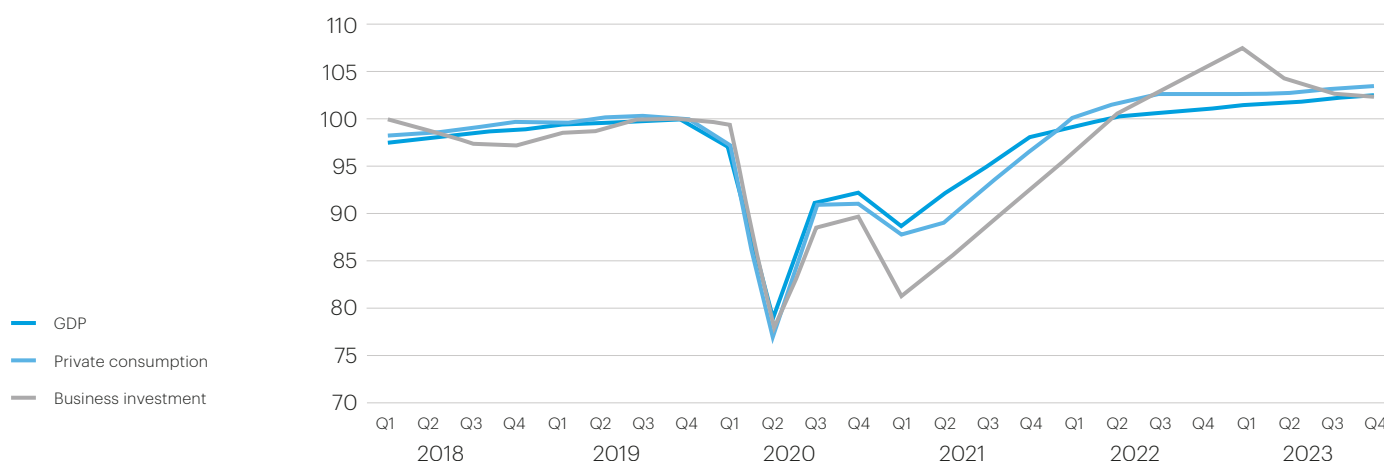
635 Borkowska, M., & Laurence, J. (October, 2020), ‘Coming together or coming apart? Changes in social cohesion during the Covid-19 pandemic in England’, *European Societies*, 23, pp. 1-19; see also Chapter 3, section 3.3.

636 OECD (2020), *OECD Economic Outlook: Volume 2020 Issue 2*, (Paris, OECD Publishing).

measures may dent confidence and stagnate growth.⁶³⁷

The longer-term economic response after the initial shock of the pandemic and lockdown is the subject of considerable debate. Historically, economic shocks caused by epidemics such as the 1918 Spanish flu, 1958 Asian flu, 1968 Hong Kong flu and (most recently) SARS have followed a V-shaped trajectory.⁶³⁸ This is based on the assumption that a swift, sharp drop in production and consumption causes severe impact but usually only over a short period. This is then followed by a rapid bounce-back.⁶³⁹ But some research indicates that the UK’s large service sector, combined with low levels of investment, changes to consumer behaviour and the gradual lifting of lockdowns, makes a strong, V-shaped economic recovery unlikely.⁶⁴⁰ While the start of COVID-19 vaccines roll-out has led to improved economic forecasts, there could be continued uncertainty around the impact of leaving the EU single market and customs union, compounding the impact of COVID-19 on business markets.⁶⁴¹ The agreement of a trade deal by the exit deadline has stabilised some potential economic disturbances, but short-term impacts are still being felt.⁶⁴²

Figure 23: Path of real GDP, private consumption and business investment, indexed to 100 in 2019 Q4



Source: By Jonathan Cribb, Institute for Fiscal Studies for the British Academy, using data taken from Office for Budget Responsibility, (2021), *Economic and Fiscal Outlook March 2021*, data released 3 March 2021, Charts 2.7, 2.9, 2.11.

Groups of industry experts argue that a more stable, investment-led approach will be needed if start-ups and small businesses are to play a key role in economic recovery.⁶⁴³ Start-ups are key drivers of economic growth and job creation and are often a catalyst for radical innovation. Across the OECD, young firms account for 20%

637 Ibid.
 638 See Carlsson-Szlezak, P., Reeves, M. and Swartz, P. (2020), 'What Coronavirus could mean for the global economy', *Harvard Business Review*, 3 March 2020.
 639 Ibid.
 640 Romei, V. and Strauss, D. (2021), 'UK economists' survey: recovery will be slower than in peer countries', *Financial Times*, 3 January 2021.
 641 Bourquin, P., Davenport, A., Emmerson, C., Faraquharson, C., Johnson, P., Miles, D., Nabarro, B., Schulz, C., Stockton, I., Waters, T. and Zaranko, B. (2020), 'Current, necessary, fiscal largesse will need to be followed by tough decisions as we deal with a smaller economy, rising demands on government and elevated debt', *Institute for Fiscal Studies*, 13 October 2020.
 642 OECD (2020), *OECD Economic Outlook*.
 643 The City UK, (2020), *Supporting UK Economic Recovery: Recapitalising Businesses Post COVID-19*. The balance of public and private investment is one of the 'Principles for Purposeful Business'. See The British Academy (2019), *Principles for Purposeful Business: How to Deliver the Framework for the Future of the Corporation*.

of employment and 50% of new jobs.⁶⁴⁴ But not only are smaller, younger firms more vulnerable to economic shocks, their ability to innovate is more procyclical than that of larger firms (rising in periods of growth and falling in periods of crisis).⁶⁴⁵ Small firms reduced their R&D spending after the 2008 financial crisis, contributing to long-term productivity gaps and their position in the ‘long tail’ of productivity.⁶⁴⁶

Periods of crisis usually also correspond with declining numbers of new business registrations.⁶⁴⁷ However, some speculate that the emerging ‘COVID economy’ could be more entrepreneurial, as workers seek to offset rising unemployment and capitalise on changing demand for services. In June 2020 there was a record-breaking number of new business formations, including a 110% increase in new internet retail businesses, 89% in sports retail, 89% in games and toys, 99% in computer retail, 58% in bakeries and 53% in clothing.⁶⁴⁸

Every major economy except China saw GDP shrink in the first half of 2020, mostly by historically large margins. Spain and the UK suffered the most, with output drops of roughly 20% – more than double the impact in the US or Germany.⁶⁴⁹ We know from history that successful mitigation of crises can lead to immediate inflation and then deflation, over different timescales.⁶⁵⁰ Some project that as a result of the pandemic the UK will see longer-term low and stable inflation, close to the Bank of England’s target of 2%.⁶⁵¹ But there could be a higher rate of imported and goods inflation, particularly if household inflation expectations rise. These expectations have been heavily disrupted by the pandemic and impact consumption levels.⁶⁵²

4.4.2 Revenue raising ability

One impact of the economic and labour market changes during the pandemic is on the revenue raising abilities of governments. Measures such as social distancing and closing retail and hospitality outlets reduce the threat from COVID-19 while reducing the economic activity that supports the tax base.

Thus, COVID-19 is expected to cause a major decline in tax revenue in most countries.⁶⁵³ In November 2020, the Office for Budget Responsibility predicted that even by 2024-25 revenues would remain £58 billion below the forecasts made in March 2020.⁶⁵⁴ This is partly due to the effect of the pandemic on the economic structure, but is also dependent on effects to taxpayer compliance and the tax base itself. Taxpayer compliance tends to decline during an economic downturn.⁶⁵⁵ But we also know that the tax base will be affected by changing and reduced employment. The expected rise in insecure work will erode the tax base, as will redundancies. So too will missed schooling: as noted earlier in this chapter, lost earnings due to missed

644 OECD (2016), ‘No country for young firms?’, *Policy Note, Directorate for Science and Innovation Policy*, as cited in Calvino, F., Criscuolo, C. and Verlhac, R. (2020), ‘Start-ups in the time of COVID-19: Facing the challenges, seizing the opportunities’, *VOX*, 23 June 2020.

645 See Kabukcuoglu, Z. (2019), ‘The cyclical behaviour of R&D investment during the Great Recession’, *Empirical Economics*, 56 (1), pp. 301-323, as cited in Roper, S. and Turner, J. (2020), *What Will Coronavirus Mean for Innovation by Firms?*, Economics Observatory.

646 Roper and Turner. (2020), *What Will Coronavirus Mean for Innovation by Firms?*

647 Calvino et al. (2020), ‘Start-ups in the time of COVID-19’.

648 Centre for Entrepreneurs, (2020), *Covid Startups Kick off Entrepreneurial Recovery*.

649 Bourquin, et al. (2020), ‘Current, necessary, fiscal largesse’: It is important to note that the UK includes education and health outputs in its measure of GDP. Policy responses in the initial lockdown – the closure of schools in particular – has therefore had an impact on the way that non-market output has been measured. For more information, see Office for National Statistics, (2020), *Coronavirus and the Impact on Measures of UK Government Education Output*. Release date: 13 May 2020.

650 Goodhart, C. (July, 2020), *After Coronavirus: Deflation or Inflation?*, The Economics Observatory.

651 Bank of England, (2021), *Monetary Policy Report, February 2021*.

652 Bourquin, et al. (2020), ‘Current, necessary, fiscal largesse’.

653 International Monetary Fund, (April, 2020), ‘Challenges in Forecasting Tax Revenue’, *Fiscal Affairs*; and OECD (2020), ‘Tax and fiscal policy in response to the Coronavirus crisis: Strengthening confidence and resilience’, *OECD Policy Responses to Coronavirus (COVID-19)*.

654 Office for Budget Responsibility, (November, 2020), *Economic and Fiscal Outlook*, data released 25 November.

655 International Monetary Fund (January, 2015), ‘Current challenges in revenue mobilization: Improving tax compliance’, *Policy Papers*.

schooling in the pandemic are estimated at £350 billion – an average of £40,000 per child over the course of their lifetime – which will impact future tax revenues.⁶⁵⁶ If there is rising unemployment it will add weight to this effect, as not only will there be less income on which to pay tax and fewer taxpayers moving into higher income tax brackets, but also an increase in social security spending.

4.4.3 Impact on borrowing and spending

Bold fiscal policy by the UK Government has been aimed at mitigating the economic shocks brought about by the pandemic and the measures put in place to limit its spread. But the impacts have still been felt, and the cost of the policies coupled with the impact of the recession on tax revenues have increased constraints. Government net borrowing is predicted to peak at 16.9% of GDP in 2020-21, and gross public debt is set to rise to 110% of GDP in 2023-24.⁶⁵⁷

Projections by the Institute for Fiscal Studies in October 2020 considered that the economy would be 5% smaller in 2024 than was predicted pre-pandemic. This would mean a hit of £100 billion to public finances due to lower tax revenues, even before any extra spending. In a scenario in which COVID-19 is a longer-term issue, government borrowing could easily exceed £200 billion in that year. And this is without taking into account the almost inevitable increased spending pressures on the NHS, social care, track and trace etc. By October 2020 the Government had already spent £70 billion on day-to-day public services in response to the pandemic. If just 25% of this extra spending were to continue over four years, public spending – and therefore borrowing – could be at least £20 billion higher.⁶⁵⁸

But this spending may not be enough to protect the economy fully in the medium term. The economy will shrink in the coming years compared with pre-pandemic projections. Combined with higher spending and lower tax revenue, this means that debt will keep rising. Even if all temporary measures to insure households, businesses and the public sector were to cease, net debt would stabilise at much higher levels than in recent decades, forecasted to be in excess of 110% of national income in 2024-25. For context, net debt was 80% prior to the pandemic, and 35% before 2008.⁶⁵⁹ But further, carefully timed, fiscal stimulus may be necessary in order to prevent sluggish growth pulling down tax revenues further and causing increased spending on social security.⁶⁶⁰

Finally, some issues closely connected with COVID-19 are devolved, most notably health and education, and so too are elements of economic development and recovery. Some UK Government responses in this area have applied across the UK, including the Coronavirus Job Retention Scheme, and changes to Universal Credit rates and statutory sick pay. Other initiatives have been England-only, generating additional grant funding for devolved administrations.⁶⁶¹ During the first lockdown, both the Scottish Government and the Welsh Government sought temporary flexibilities to support budget management during the crisis.⁶⁶² There has also been some renewed support for region- and city-based devolution, following the argument

656 Sibieta, L. (2021), *The Crisis in Lost Learning*.

657 OBR, (2021), *Economic and Fiscal Outlook, March 2021*, data released 3 March 2021.

658 Bourquin, et al. (2020), 'Current, necessary, fiscal largesse'.

659 Ibid.

660 OECD (2020), 'Tax and fiscal policy in response to the Coronavirus crisis'.

661 Due to the Barnett formulae. See Her Majesty's Treasury, (November, 2015), Statement of Funding Policy: Funding the Scottish Parliament, National Assembly for Wales and Northern Ireland Assembly.

662 Eiser, D. (August, 2020), *What are the Implications of Coronavirus for Fiscal Devolution in the UK?*, The Economics Observatory.

that the best people to make decisions are those closest to the place in question.⁶⁶³ This may prompt debates about the appropriateness of devolving further fiscal powers from central government.

4.5 Changing effects on employment

We know from history that economic recessions and recoveries are not felt equally across society.⁶⁶⁴ This is because the economy is not evenly structured. The worsening state of the UK economy has exacerbated existing inequalities: vulnerable people (such as those with caring responsibilities, older workers or disabled people) are more likely to be made redundant; women are more likely to have borne the economic and caring burden; young people entering a job market in a recession face lower wages and higher unemployment for up to a decade; and private renters are more likely to have lost income and therefore their ability to pay rent.

Recessions also impact places and sectors in different ways. The arts, entertainment and recreation industry and accommodation and food services are expected to feel the worst of the impact,⁶⁶⁵ while existing regional economic differences and skills gaps are expected to grow.

Unemployment rose from 3.8% in November 2019 to 5% in November 2020,⁶⁶⁶ and has been forecasted to reach 6.5% in 2021.⁶⁶⁷ Vacancies remain 26% below their pre-pandemic levels, although this is an improvement on the 60% fall seen in summer 2020.⁶⁶⁸ The Office for Budget Responsibility projects that unemployment will continue to rise through 2021, meaning that (unusually) vacancies and unemployment are rising concurrently. This suggests that the unemployed are not accessing these new openings, lending weight to concerns over economic ‘mismatch’.⁶⁶⁹

COVID-19 may have longer-term effects on the labour market and income inequality and our understanding in this respect needs to be based on analysis of existing trends. In this chapter we have frequently drawn on a detailed analysis provided by Institute for Fiscal Studies experts.⁶⁷⁰ Changes in technology may make working from home more prevalent, particularly among higher-educated workers whose jobs are more likely to be amenable to this, leading to up to 20% of work time spent at home.⁶⁷¹ Changes in shopping preferences may lead to a higher demand for high-skilled tech and online retail workers, reducing demand for low-skilled hospitality and in-person retail.⁶⁷²

However, there is a considerable risk that the pandemic has created a schism between those who can work predominantly from home and those who cannot.⁶⁷³ This may

663 Centre for Policy Studies, (2020), *After the Virus: A Plan for Restoring Growth*.

664 Hu, Y. (2020), ‘Intersecting ethnic and native-migrant inequalities in the economic impact of the COVID-19 pandemic in the UK’, *Research in Social Stratification and Mobility*, 6; and McEwen, B. S. and Steller, E. (1993), ‘Stress and the Individual. Mechanisms leading to disease’, *Archives of Internal Medicine*, 153, pp. 2093-2101.

665 Bloom, N., Bunn, P., Chen, S., Griffith, R., Mizen, P., Stroud, R., Thwaites, G. and Smietanka, P. (2020), *Which firms and industries have been most affected by Covid-19*, The Economics Observatory; and McKinsey, (2020), ‘COVID-10 recovery in hardest hit sectors could take more than 5 years’, *McKinsey*, 29 July 2020.

666 Office for National Statistics, (2021), *Labour Market Overview*, released 26 January 2021.

667 OBR, (2021), *Economic and Fiscal Outlook, March 2021*.

668 Office for National Statistics, (2021), *Vacancies and Jobs in the UK: February 2021*, released 23 February 2021.

669 Wadsworth, J. (December, 2020), *What Explains the Revival in Job Vacancies Alongside Rising Unemployment*, The Economics Observatory.

670 For more information and an understanding of the connection between longer-term effects on ways of working and inequalities, see Blundell et al. (2020), *Inequalities in Education, Skills, and Incomes in the UK*.

671 Bloom, N. (2020), *How Working from Home Works Out*, SIEPR Policy Brief.

672 Blundell et al. (2020), *Inequalities in Education, Skills, and Incomes in the UK*.

673 Ibid. Some health and wellbeing implications of this difference are discussed above in Chapter 2, subsections 2.2.2 and 2.2.3.

mirror the unequal distribution of earnings in society. In the bottom tenth of the earnings distribution, 80% of people are in sectors that were shut down during the pandemic or in a job which they are unable to do from home. This compares with just 25% from the highest-earning tenth.⁶⁷⁴ Among social housing tenants, 80% work in sectors which have been shut down during the pandemic, are unable to work from home or have caring responsibilities, compared with just 50% of homeowners.⁶⁷⁵ As private renters spend 32% of their income on housing, compared with 1% for owner-occupiers,⁶⁷⁶ loss of income poses a greater risk to renters' household solvency.

4.5.1 Employment and gender inequality

If the UK economy continues to suffer due to the pandemic, this may exacerbate existing labour market inequalities. Prior to the pandemic there had been a large rise in the proportion of women of working age in paid work.⁶⁷⁷ However, women with either low-paid or very high-paid partners are still much less likely to be in work.⁶⁷⁸ Single parents are also less likely to be in work, although their employment rates have risen rapidly over the last two decades.⁶⁷⁹ Over the last 25 years women's weekly earnings have grown faster than for men, partly due to an increase in hours of work,⁶⁸⁰ and partly due to a reduction in the gender pay gap between the mid-1990s and mid-2000s.⁶⁸¹ However, progress began to stall prior to the pandemic, and with lower average pay and working hours than men and a much higher probability of being a single parent, women are more likely to be living in income poverty.⁶⁸²

Despite some of the progress on employment and wage inequalities, the pandemic has had a greater impact on the economic status of women.⁶⁸³ At the start of the pandemic women seemed less likely to be furloughed or suffer job loss, due to being lower earners and employed fewer hours.⁶⁸⁴ However, as the crisis has lengthened this picture has changed. Women are more likely to work in shut-down sectors,⁶⁸⁵ and more likely to have been furloughed or lost their job.⁶⁸⁶ Working-class women were more likely to be furloughed than either their middle-class counterparts or men.⁶⁸⁷

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- 674 Blundell, R., Joyce, R., Costa Dias, M. and Xu, Xiaowei, (June, 2020), COVID-19 and Inequalities, institute for Fiscal Studies, The IFS Deaton Review; See also Chapter 3 sections 3.5.1 and 3.5.2.
- 675 Rowlingson, K. (April, 2020), 'Poverty, household debt and COVID-19', *University of Birmingham COVID-19 briefing series*.
- 676 Judge, L. (May 2020). *Coping with housing costs during the coronavirus crisis*, Resolution Foundation, p3.
- 677 Bourquin, P. and Waters, T. (2020), 'Jobs and job quality between the eve of the Great Recession and the eve of COVID-19', *IFS Working Paper WP20/19*.
- 678 Roantree, B. and Vira, B. (2018), *The Rise and Rise of Women's Employment in the UK*, Institute for Fiscal Studies.
- 679 Avra, S., Brewer, M. and Salvatori, A. (2018), 'Can't work or won't work: quasi-experimental evidence on work search requirements for single parents', *Labour Economics*, 51, pp. 63-85.
- 680 Belfield, C., Blundell, R., Cribb, J., Hood, A. and Joyce, R. (2017), 'Two decades of income inequality in Britain: The role of wages, household earnings and redistribution', *Economica*, 84(334), pp. 157-179; and Connolly, S., Aldrich, M., O'Brien, M., Speight, S. and Poole, E. (2016), 'Britain's slow movement to a gender egalitarian and equilibrium: parents and employment in the UK 2001-13', *Work, Employment and Society*, 30 (5), pp.838-857.
- 681 Costa Dias, M., Joyce, R., and Parodi, F. (2018) 'The gender pay gap in the UK: children and experience in work', *IFS Working Paper 18/02*.
- 682 Ibid and Reis, S. (July, 2018), *The Female Face of Poverty: Exploring the Cause and Consequence of Economic Deprivation for Women*, Women's Budget Group.
- 683 Adams-Prassl, A., Boneva, T., Golin, M. and Rauh, C. (2020), 'Inequality in the impact of the coronavirus shock: New survey evidence for the UK', *Cambridge Working Papers in Economics 2023*; Kristal, T. and Yaish, M. (2020), 'Does the coronavirus pandemic level the gender inequality curve? (It doesn't)', *Research in Social Stratification and Mobility*, 68; and Zhuo M., Hergo, E., Kolpashnikova, K. and Kan, M-Y. (2020), 'Gender inequalities: Changes in income, time use and well-being before and during the UK COVID-19 lockdown', *SocArXiv Papers*.
- 684 Witteevan, D. (2020), 'Sociodemographic inequality in exposure to COVID-19-induced economic hardship in the United Kingdom', *Research in Social Stratification and Mobility*, 69.
- 685 Alon, T., Doepke, M., Olstead-Rumsey, J. and Tertilt, M. (April, 2020), 'The impact of Covid-19 on gender inequality', *Covid Economics Vetter and Real Time Papers*, Issue 4; and Blundell, R., Costa Dias, M., Joyce, R. and Meghir, C. (2020), 'Wages, Experience and Training of Women over the lifecycle', *Journal of Labour Economics*, 39.
- 686 Adams-Prassl, A., Boneva, T., Golin, M. and Rauh, C. (2020), 'Furloughing', *Fiscal Studies*, 41(3), pp. 591-622; Adams-Prassl, A., Boneva, T., Golin, M. and Rauh, C. (2020), 'Inequality in the Impact of the Coronavirus Shock: Evidence from Real Time Surveys', *Journal of Public Economics*, 189; and Sevilla, A. and Smith, S. (2020), 'Baby steps: the gender division of childcare during the Covid-19 pandemic', *Oxford Review of Economic Policy*, 27.
- 687 43% of women in semi-routine (eg care-workers, retail assistants and hospital ports) or routine jobs (eg cleaners, wait staff and bar staff) did no hours of work in April compare with 20% of women in Management and Professional positions. The figures for each classification were lower for men. See Warren, R and Lyolette, C. (2020), *Carrying the Work Burden of the COVID-19 Pandemic: Working Class Women in the UK*, Warwick Institute for Employment Research and Nottingham University Business School.

The differences are particularly large for those with young children and demonstrate the double effect of the economic factors that contribute to the unequal childcare burden. Research has previously shown that women tend to take on a greater portion of the responsibility for childcare due to earning, on average, less than a male partner in the household.⁶⁸⁸ In the first lockdown, women seeking or in employment were disproportionately affected by nursery closures: 45% of mothers' work hours versus 26% of fathers' were spent trying to look after children,⁶⁸⁹ and women took primary responsibility for caring activities.⁶⁹⁰ For those with school aged children, studies have found that women are 50% more likely to have stopped work than fathers,⁶⁹¹ are doing most of the extra childcare and housework,⁶⁹² and experiencing mental health deterioration at twice the rate of men.⁶⁹³

The ability of women to pursue education or employment is disproportionately affected by lacking the means to organise or pay for childcare, reducing women's opportunities. If, as expected, rates of furlough predict redundancies as the Coronavirus Job Retention Scheme is scaled back, we may see far higher unemployment rates for women and people from ethnic minorities. This is particularly true for low-paid women working in more severely affected sectors.⁶⁹⁴ For all women affected, being out of paid work in 2020 will reduce their earnings and employability in coming years, which could have a wider economic impact on productivity and skills. However, if the increased possibilities for people to work from home become a long-term trend, this may help more women with caring responsibilities to work, or to work full time, potentially improving some career opportunities and progression.⁶⁹⁵ Equally, there is also a risk that this would segment the world of work, with a separate 'path' for mothers, contributing to social isolation with increased mental and physical health risks in the longer term.⁶⁹⁶

4.5.2 Employment and intergenerational inequality

Inequalities in employment are not restricted to gender. Prior to the pandemic, inequalities between generations were also clear. Those born after 1980 were the first post-war generation to have lower average household incomes and lower levels of wealth than the generation born a decade earlier.⁶⁹⁷ This was due to a combination of lower average earnings and a fall in home ownership due to rising house prices and stricter lending. Lower earnings experienced by this group reflect the poor pay growth in the UK in their formative career years: born in the 1980s, most entered the labour market between 2000 and 2010 and started their careers in lower-ranking occupations than their predecessors.⁶⁹⁸

Already we have seen a large decrease in the number of young people aged 16-24 in employment. It was estimated by the International Labour Office that one in six young people had stopped working since the start of the pandemic.⁶⁹⁹ For those who

688 Belfield et al. (2017), 'Two decades of income inequality in Britain'.

689 Andrew, A. et al. (2020), *Family time use*.

690 Sevilla and Smith, (2020), 'Baby steps'.

691 Andrew, A. et al. (2020), *Family time use*.

692 Hupkau, C. and Petrongolo, B. (October, 2020), 'Work, care and gender during the Covid-19 crisis', *Centre for Economic Performance Discussion Paper 1723*.

693 Etheridge, B. and Spantig, L. (June, 2020), 'The gender gap in mental well-being during the Covid-19 outbreak: Evidence from the UK', *Covid Economics*, 33, pp.46-72; see also Chapter 2, section 2.3.4

694 Blundell et al. (2020), *Inequalities in Education, Skills, and Incomes in the UK*.

695 Ibid

696 Ibarra, H., Gillard, J. and Chamorro-Premuzic, T. (2020), 'Why WFH isn't necessarily good for women', *Harvard Business Review*, 16 July 2020.

697 Cribb, J. (2019), 'Intergenerational differences in income and wealth: evidence from Britain', *Fiscal Studies*, 40 (3), pp. 275-299.

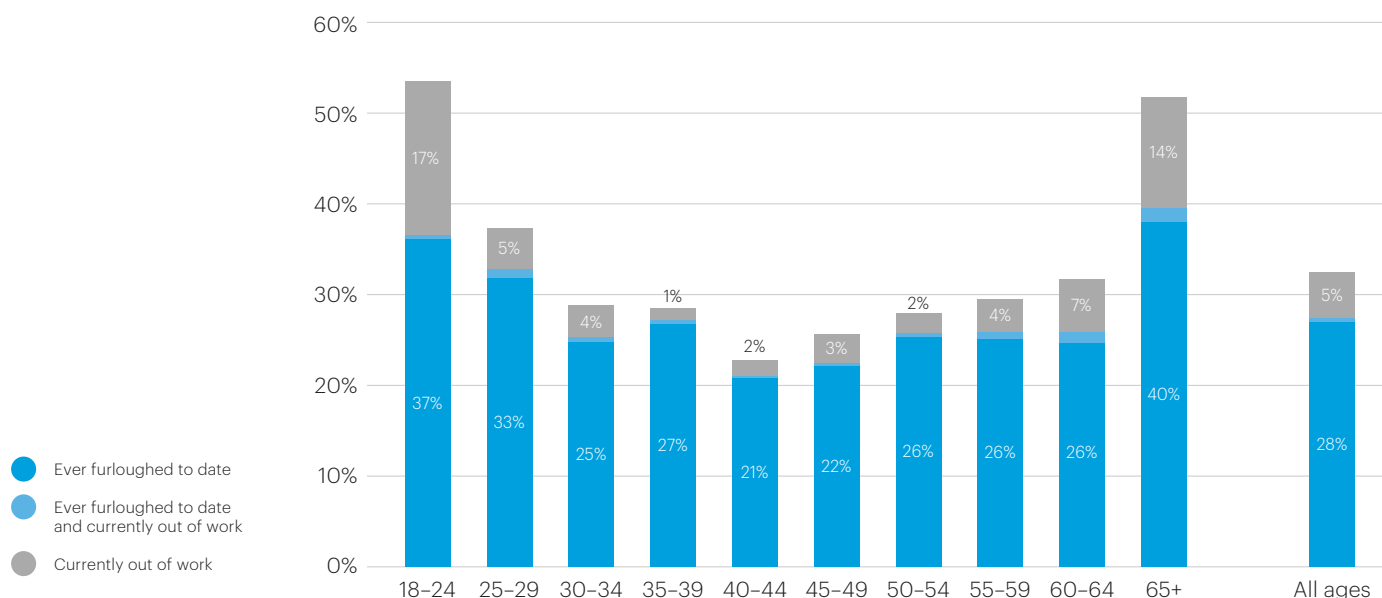
698 Blundell et al. (2020), *Inequalities in Education, Skills and Incomes in the UK*.

699 International Labour Organisation, (2020), *ILO Monitor: COVID-19 and the world of work*. 4th Edition.

do find employment, entering the labour market during a recession depresses an individual's earnings and employment for up to 10 years.⁷⁰⁰ But the sectoral nature of COVID-19 may create a post-pandemic recession which is more damaging to young people, who are disproportionately likely to work in the retail, hospitality and leisure sectors where furlough and redundancy have been common.⁷⁰¹ The large fall in vacancies – especially in the low-paid service sectors where young people increasingly begin their careers – will make it difficult for new labour market entrants to find work and will disproportionately impact low-educated young people, as the drop in vacancies has been far sharper among low-skilled jobs.⁷⁰²

Workers around or past retirement age have also been affected by the pandemic and, if trends follow the same pattern as the 2008 recession, this group are less likely to search for new work, leaving the labour market instead.⁷⁰³

Figure 24: Proportion of pre-COVID-19 employees who have been furloughed during the COVID-19 outbreak or are now out of work, by age group, UK June 2020



Source: Gardiner, L., Gustafsson, M. Brewer, M., Handscomb, K., Henehan, K. Judge, L. and Rahman. (2020), *An intergenerational audit for the UK 2020*, Resolution Foundation, p. 46. Based on analysis on ISER, Understanding Society. The furlough variable in Understanding Society is absorbing, meaning those who had previously been furloughed by come off furlough by June cannot completely be identified. Data labels include those who have both been furloughed and are currently out of work (shaded areas).

700 Oreopoulos, P., von Wachter, T. and Heisz, A. (2012), 'The Short- and Long- Term Career Effects of Graduating in a Recession', *American Economic Journal: Applied Economics*, 4 (1), pp. 19-29; and Altonji, J., Kahn, L. and Speer, J. (2016), 'Cashier or Consultant? Entry Labour Market Conditions, Field of Study, and Career Success', *Journal of Labor Economics*, 34(1), pp. 361-401.

701 Joyce, R. and Xu, X. (2020), *Sector Shutdowns During the Coronavirus Crisis: Which Workers are More Exposed?*, Institute for Fiscal Studies; Adams-Prassl et al. (2020), 'Furloughing'; and Gardiner, L. and Slaughter, H. (2020), *The Effects of the Coronavirus Crisis on Workers*, Resolution Foundation Spotlight.

702 Blundell et al. (2020), *Inequalities in Education, Skills, and Incomes in the UK*.

703 Coile, C. and Levine, P. (2011), 'Recessions, retirement and social security', *American Economic Review*, 101 (3), pp.23-28.

4.5.3 Employment and ethnic inequalities

As discussed in all the evidence chapters of this report, the disproportionate impact of COVID-19 on Black, Asian and ethnic minority groups may have long-term effects on employment and incomes.⁷⁰⁴ In addition, there is evidence that the economic effects of social distancing measures will have their own, varied, implications for different groups. Differences in age structure mean that ethnic minority groups are more exposed to educational as well as employment disruption – almost all these groups have a greater concentration in younger age brackets than White British.⁷⁰⁵ For Pakistani, Bangladeshi, Black African and Black Caribbean adults of working age, two-earner households are less prevalent. For Pakistani and Bangladeshi families this is largely due to low female labour force participation, while single-adult Black African and Black Caribbean households are more common.⁷⁰⁶ Despite different causes, the impacts are similar: lower resilience to changes in income and, with more children per household and higher child poverty rates, greater long-term consequences.⁷⁰⁷

There is also an occupational concentration of certain minority groups in some sectors and roles, which has resulted in differential exposure to the impact of lockdowns. People from Black, Asian and minority ethnic groups make up 14.4% of the working age population⁷⁰⁸ – but account for 40% of doctors, 20% of nurses and 17% of the social care workforce. Regionally, there is even greater concentration: in London nearly 50% of NHS and clinical commissioning group (CCG) staff come from Black, Asian and minority ethnic groups.⁷⁰⁹ This concentration is reflected in COVID-19 data as 60% of health workers who died as a result of the virus identified as belonging to one of these groups.⁷¹⁰

Evidence shows that women are, on average, more likely to work in shut-down sectors such as hospitality. However, this only holds true for White women.⁷¹¹ Among non-White groups, work in this sector is more common for men, again partly due to low labour force participation among women from some ethnic minority groups.⁷¹² Bangladeshi and Pakistani men are heavily concentrated in restaurants and taxi driving, and this is especially common in older age brackets making the scope for reskilling more limited.⁷¹³ More generally, ethnic minority groups are less likely to have employment with secure income: Black individuals are overrepresented in insecure jobs while Bangladeshis and Pakistanis are disproportionately self-employed.⁷¹⁴ The self-employed were struck hard by the pandemic, suffering a substantial reduction in working hours, from (on average) 31-40 to 11-20 hours per week.⁷¹⁵ Employment scarcity, as may be faced in a recession, has led to greater exploitation in the past.⁷¹⁶

Overall, Black, Asian and ethnic minority individuals are more likely to have faced

704 See Chapter 2, section 2.2.3 and Chapter 3, section 3.4.2.

705 Joyce and Xu, (2020), *Sector Shutdowns*.

706 Platt, L. and Warwick, R. (2020), *Are Some Ethnic Groups More Vulnerable to COVID-19 than Others?*, Institute for Fiscal Studies.

707 ONS, (2020), *Child Poverty and Education Outcomes by Ethnicity*. Release date: 25 February 2020.

708 NHS Digital, *NHS Workforce*, released 26 January 2021.

709 Public Health England, (June, 2020), *Beyond the Data: Understanding the Impact of COVID-19 on BAME Groups*.

710 Amnesty International, (2020), *Exposed, Silenced, Attacked: Failures to Protect Health and Essential Workers during the COVID-19 Pandemic*; and Public Health England, *Beyond the Data*; see also Chapter 2, subsections 2.2.2, 2.2.3 and 2.3.5.

711 Blundell et al. (2020), *Inequalities in Education, Skills, and Incomes in the UK*.

712 Platt and Warwick, (2020), *Are Some Ethnic Groups More Vulnerable to COVID-19 than Others?*

713 Ibid

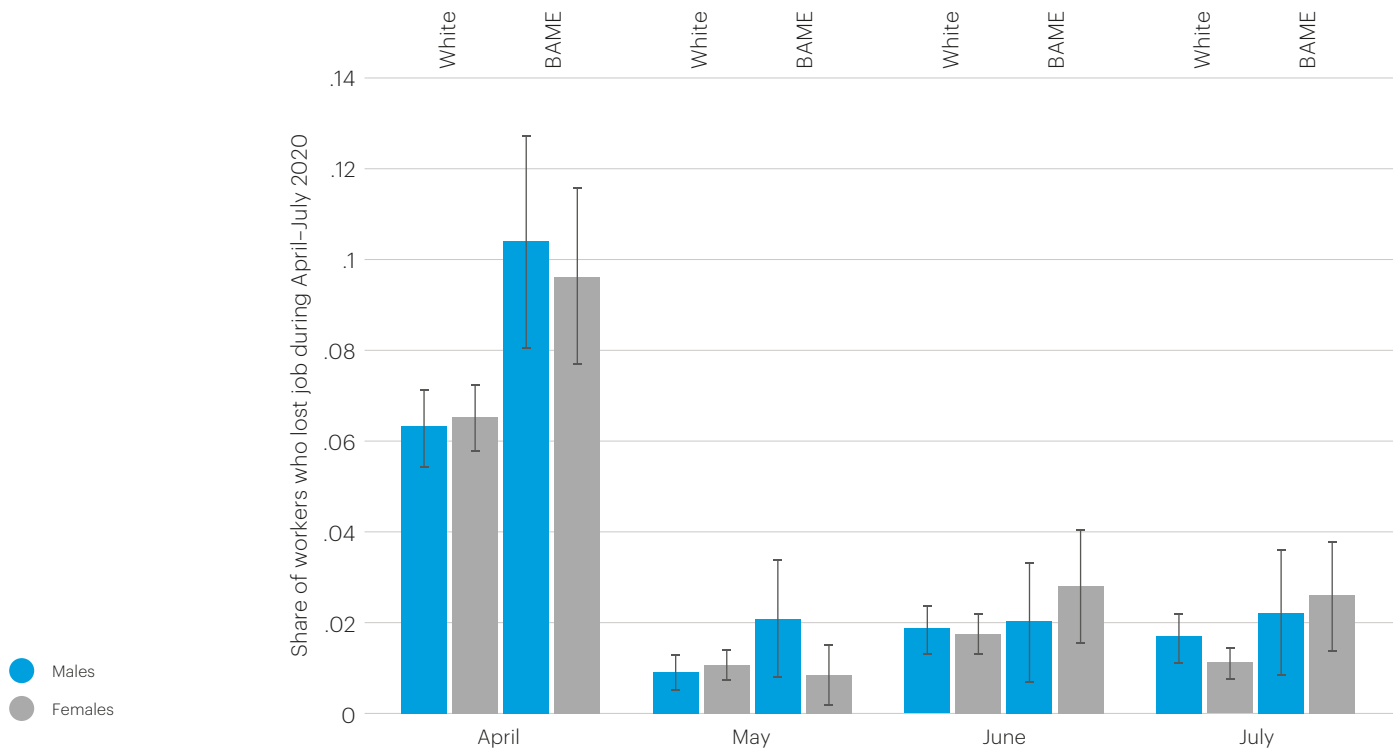
714 Trade Union Congress, (2017), *Insecure work and ethnicity*.

715 Blundell, J., Machin, S. and Ventura M. (November 2020), 'Covid-19 and the self-employed: Six months into the crisis', *Centre for Economic Performance Covid Analysis Paper 12*.

716 Quoting Dr Rhetta Moran of RAPAR UK, and Loraine Mponela of Coventry Asylum and Refugee Action Group. Cited in Parry-Davies, (2020), *COVID and Society Review*.

reduced working hours or job loss since March 2020 (see Figure 25),⁷¹⁷ and more likely to have had to use existing savings or borrow in the aftermath.⁷¹⁸ Among those initially furloughed, 22% of those from an ethnic minority group have since lost their jobs, compared with 9% of all furloughed workers.⁷¹⁹ But there is not simply one story for all ethnic minorities. Some are exposed to the pandemic in a particular way by being disproportionately represented in key worker roles, especially in health and social care. Pre-pandemic, Indian and Black African men were much more likely than White men to work in such exposed roles, as were Black African women compared with White British women. While employment in these roles has not been made precarious in the same way as in many sectors, it has caused differential exposure to COVID-19 and therefore created an unequal experience of the pandemic, as seen in Chapter 2 of this report.⁷²⁰

Figure 25: Job loss probability due to COVID-19 by ethnicity and gender



Source: Dowd, J., Ding, J., Akimova, E. and Mills, M. (2020), *Health and Inequality: The Implications of the COVID-19 Pandemic*, Leverhulme Centre for Demographic Society, p. 17. Produced using data from Understanding Society COVID-19 survey, wave 1-4.

4.5.4 Vulnerable sectors of the economy

Not only does COVID-19 have unequal health impacts across gender, age and ethnicity, but the economic consequences of the pandemic have impacted places and sectors in different ways. The arts, travel, retail, entertainment, accommodation and

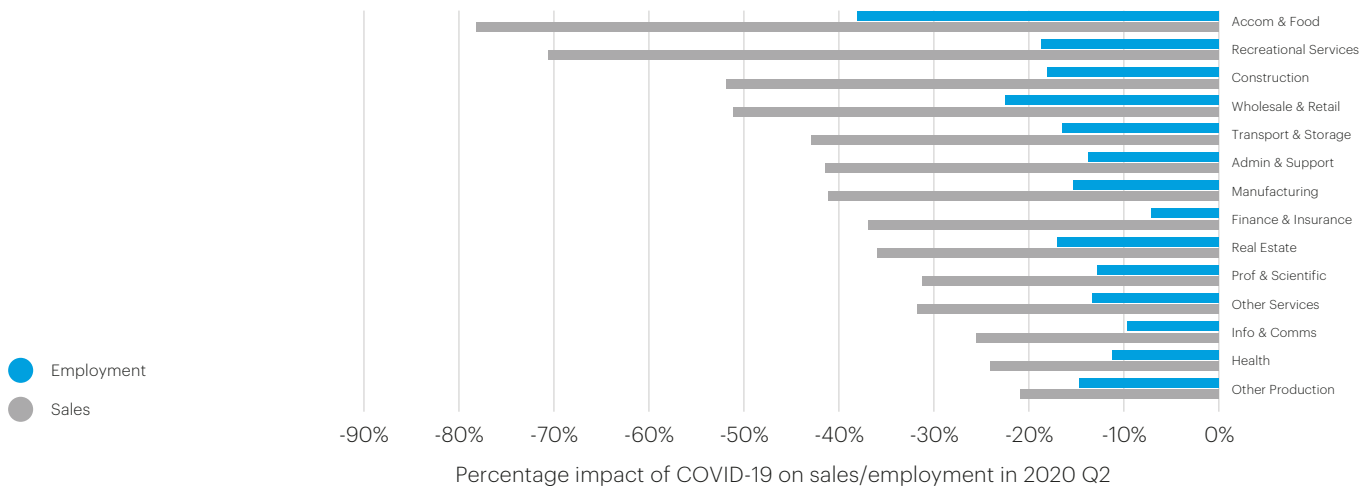
717 Dowd, J., Ding, J., Akimova, E. and Mills, M. (2020), *Health and Inequality: The Implications of the COVID-19 Pandemic*, Leverhulme Centre for Demographic Society.
 718 Social Metrics Commission, (August, 2020), *Poverty and COVID-19*.
 719 Brewer, M., Cominetti, N., Henehan, K., McCurdy, C., Sehmi, R. and Slaughter, H. (2020), *Jobs, Jobs, Jobs. Evaluating the Effects of the Current Economic Crisis on the UK Labour Market*, Resolution Foundation.
 720 See Chapter 2, especially sections 2.2.3 and 2.3.3

recreational services sectors are expected to feel the worst of the pandemic-induced recession.⁷²¹ Arts, entertainment and recreation, and accommodation and food services, could take up to five years to recover.⁷²²

The impact was clear by the end of the first lockdown in spring 2020: except for food and basic needs, consumption had dropped rapidly. Industries which rely on personal interactions or travel were also hard hit, namely accommodation, food services, air travel, clothing and footwear retail, construction, entertainment and recreational services.⁷²³ By May 2020 accommodation and food service activity was 90% smaller than the previous year. While many sectors recovered as lockdown was eased, by October 2020 clothing and footwear retail was still below February 2020 levels.⁷²⁴ Graduate jobs in retail and fast-moving consumer goods fell 45% in 2020, compared with the previous year.⁷²⁵

The arts and culture and hospitality and tourism industries were highlighted as particularly vulnerable early in the pandemic.⁷²⁶ The intermittent closure of businesses in these sectors since March 2020 has affected profits and the ability to continue operating. These are industries which employ many people and contribute significantly to the UK economy.⁷²⁷ They are also industries that were notably precarious before the pandemic, with a high prevalence of freelancers and zero-hours or temporary contracts.⁷²⁸

Figure 26: Expected impact of COVID-19 on sales and employment in 2020 Q2 by industry



Source: Bloom, N., Bunn, P., Chen, S., Griffith, R., Mizen, P., Stroud, R., Thwaites, G and Smietanka, P. (2020), *Which firms and industries have been most affected by Covid-19?* The Economics Observatory. Using results from April DMP survey, based on the question 'Relative to what would have otherwise happened, what is your best estimate for the impact of the spread of coronavirus (COVID-19) on the sales/employment of your business in 2020 Q2 (April to June)?'.

721 Bloom et al. (2020), *Which firms and industries have been most affected by Covid-19*.
 722 McKinsey, (2020), *COVID-10 recovery in hardest hit sectors could take more than 5 years*.
 723 Bloom et al. (2020), *Which firms and industries have been most affected by Covid-19*.
 724 Office for National Statistics, (2020), *The Impact of Coronavirus so far: The Industries that Struggled or Recovered*, released 9 December 2020.
 725 Institute for Employers (2020), *Student Recruitment Survey 2020*.
 726 Bermingham, R. (2020), *Business, trade and COVID-19: What are experts concerned about?*, POST Horizon Scanning, published 11 May 2020; See also Chapter 3, section 3.7.
 727 In 2019 a report by The Arts Council noted that the arts and culture industry contributed £10.8 billion a year to the UK economy in 2019, paying £2.8bn a year to the treasury in tax, and generated a further £23bn a year and 363,700 jobs. See Centre for Economics and Business Research (2019), *Contribution of the Arts and Culture Industry to the UK Economy*, Arts Council England. A similar piece of research conducted the same year for DCMS by Economic Insight found that the hospitality and tourism sector delivered £66bn GVA and employed 3 million people. See Economic Insight, (June, 2019), *Hospitality and Tourism Workforce Landscape*, Department for Digital, Culture, Media and Sport.
 728 Economic Insight, (2019), *Hospitality and Tourism Workforce Landscape*.

4.5.5 Regional impact on employment

The differential impact across sectors intersects with the effects on regional economies. The UK is one of the most regionally imbalanced economies in the world.⁷²⁹ Productivity, incomes and wealth all differ across the UK, with London and the South East experiencing the highest levels, while Wales has the lowest levels of productivity and earnings.⁷³⁰ These inequalities predate the pandemic and correlate with educational attainment: areas with high rates of educational attainment above level 3 (A level or equivalent) map onto areas with higher wealth and incomes.⁷³¹

The proportion of the workforce in each sector varies between UK regions. For example, London and the South East have the highest proportion of people working in the two most knowledge-intensive, high-value-added sectors – professional, scientific and technical activities, and information and communication. These two sectors are those in which workers are most able to work from home and therefore most cushioned from economic shock. They account for 22.4% of people in London, compared with just 8.5% in Wales and 9.5% in the North East. The sector least able to work from home is hospitality, with low numbers able to do so in construction, wholesale and retail, and manufacturing.⁷³²

Figure 27: Reduction in workplace activity vs GDP per capita, by local authority or county



Source: Ansell, B. (April 2020), What Explains Differences in Social Distancing in the UK? The UK in a Changing Europe, p. 6. Using Community Mobility Reports and Office for National Statistics data.

729 McCann, P. (2020), 'Perceptions of regional inequality and the geography of discontent: Insights from the UK', *Regional Studies*, 54 (2), pp. 256-267.
 730 Agrawal, S. and Phillips, D. (2020), *Catching Up or Falling Behind? Geographical Inequalities in the UK and How They Have Changed in Recent Years*, The Institute for Fiscal Studies, The IFS Deaton Review.
 731 Blundell et al. (November, 2020), *Inequalities in Education, Skills and Incomes*.
 732 Office for National Statistics, (2020), *Business Impact of COVID-19 Survey (BICS)*, Sheet 20: Proportion Working Arrangements, Release date: 7 May 2020, as cited in Centre for Policy Studies, (2020), *After the Virus: A Plan for Restoring Growth*.

Figure 27 shows the correlation between GDP per capita and the numbers of people still going to work.⁷³³ Thus, not only are there regional differences in economic resilience to the pandemic, based on the balance of sectors, but those regions that have been hardest hit are those already suffering from low productivity, low levels of capital intensification and lack of investment.⁷³⁴

The regional variances in UK productivity, linked to sector, are rooted in unequal dispersion of high-skilled jobs and highly educated people. There are significant regional educational inequalities in the UK, which in turn drive geographical inequality and contribute to 'left-behind' places.⁷³⁵ Regional gaps in entry to higher education remain: 49.2% of 18-year-olds from London enter higher education, compared with just 32.4% of those from the South West, 33.2% in the North East and 34.6% in Yorkshire and the Humber.⁷³⁶ As much as 90% of the variation in area-level wages can be explained by differences in the dispersion of high-skilled workers.⁷³⁷

Existing regional economic differences and skills gaps are expected to grow. The economic effects of the pandemic on regional inequalities will be driven in the short term by those areas which see the most economic change after the government support schemes are withdrawn – for example, areas where hospitality and non-essential retail are significant employers. This will likely include coastal areas with high reliance on tourism and will contrast sharply with areas with around large public sectors (Northern Ireland) or high-productivity services (the South East).⁷³⁸

Longer term, the balance of regional inequalities will be determined in part by the extent to which the shift to remote working proves lasting. The ability to work from home, even part time, will release the geographic ties between some sectors and locations. On a national scale this may make highly educated people less likely to cluster in high-cost areas such as London. And within regions, this may prompt greater dispersion of household incomes as people seek to live in lower-cost areas (see also section 3.5.1).⁷³⁹ Combined with increased remote working, decreased reliance on city centres for shopping and demand for larger and more affordable housing, this may change the way we view 'suburban' and 'remote' living, and have policy implications for how and where to create new and sustainable communities.⁷⁴⁰ It would also mitigate the impact on opportunity of living in areas of low employment, but comes with risks.

Remote work does not recognise regional or national boundaries. The ability to work remotely could see an increase in the number and types of jobs which are outsourced to countries with much lower wages. In addition, the likelihood of dispersal of educated people within the UK is reduced by the fact that less prosperous areas have, on average, fewer amenities and lower quality of life.⁷⁴¹ Low movement would have its own implications for the Government's levelling-up agenda and the post-pandemic recovery of already deprived areas, as the persistent geographic concentration of

733 For the impact of regional inequalities and deprivation on health and wellbeing during the pandemic, see Chapter 2, section 2.2.1.

734 Centre for Policy Studies, (2020), *After the Virus: A Plan for Restoring Growth*.

735 Davenport, A. and Zaranko, B. (2020), 'Levelling Up: Where and How?' in Institute for Fiscal Studies, (October, 2020), *IFS Green Budget 2020*.

736 UCAS, (December, 2021), What Happened to the COVID Cohort?

737 Gibbons, S., Overman, H. and Pelkonen, P. (2013), 'Area disparities in Britain: Understanding the contribution of people vs place through variance decompositions', *Oxford Bulletin of Economics and Statistics*, 76 (5), pp. 1-19.

738 McCurdy, (2020), 'Local Differences'.

739 There is already evidence that increased numbers of people are considering relocating away from cities. For example, survey data suggests that around 14% of Londoners want to leave the city permanently because of the pandemic. See London Assembly Housing Committee (2020) 'Half of Londoners wanting to move home want out of London'.

740 See for example the concept of the '15-minute-neighbourhood'. Sutcliffe, M. (2020), 'Famous for 15 minutes?', *Smart Transport Journal*, 20 pp. 8-13.

741 Winters, J. (2011), 'Human capital, higher education institutions and quality of life', *Regional Science and Urban Economics*, 41(5), pp. 446-454; and Gibbons, S., Overman, H. and Resende, G. (January, 2011), 'Real earnings disparities in Britain', *Spatial Economics Research Centre Paper 65*.

educated workers makes it difficult to attract business, and therefore jobs, elsewhere.

4.6 Income inequality

Research by the Economics Observatory has shown how the pandemic has reinforced the ‘haves’ and the ‘have-nots’.⁷⁴² Low-income households have lost any ability to save as earnings have fallen below expenditure due to furlough, redundancy and lack of secure work. In contrast, middle- and high-income households have seen savings grow due to lower spending and consumption of non-essential goods.⁷⁴³

Loss of income (often due to job loss) and increased financial strain is hazardous to mental and physical health.⁷⁴⁴ It may lead to a lower living standard, limiting access to health services and resources.⁷⁴⁵ Involuntary job loss is stressful, causing individuals to lose self-esteem, sense of control, social status, support and connections.⁷⁴⁶ Among workers who experience job loss, there is a 10-15% increase in rates of mortality within twenty years.⁷⁴⁷ Unemployment at a young age can have substantial long-term consequences on quality of life and health, including increased anxiety, depression and suicidal thoughts, persisting into middle age;⁷⁴⁸ it also harms the integration of young people into society. This is exceptionally detrimental for the most disadvantaged.⁷⁴⁹

4.6.1 Household income

Household incomes rose in real terms between the early 1990s and 2008, though not in the same way. The relatively low growth for poorer households was bolstered by a rise in employment and the introduction of tax credits in 2003. This allowed household income inequality to remain relatively stable, though still higher than most other industrialised countries.⁷⁵⁰ Rises in inequality of household earnings were largely driven by increased inequality in male earnings, attributed to the rise in part-time work for low-paid men⁷⁵¹ and a move towards ‘atypical work’ such as self-employment, zero-hours contracts and agency work.⁷⁵² These forms of work reflect a lack of opportunities rather than indicating changing work preferences, and offer little protection for workers making them more vulnerable to economic shocks.⁷⁵³ However, since the 2008 financial crisis, the picture has changed. Real incomes barely grew in the subsequent 10 years, and there have been large cuts to working-age

742 Surico, P., Känzig, D. and Hacıoglu, S. (May, 2020), ‘Consumption in the time of COVID-19: Evidence from UK transaction data’, *Centre for Economic Policy Research Monetary Economics and Fluctuations Paper*.

743 Ibid.

744 See above Chapter 2, section 2.2.2.

745 Cutler, D. M., Lleras-Muney, A and Vogl, T. (2008), ‘Socioeconomic status and health: Dimensions and mechanisms’, *National Bureau of Economic Research Paper 14333*.

746 Burgard, S. A., Brand, J. E. and House, J. S. (2007), ‘Toward a better estimation of the effect of job loss on health’, *Journal of Health and Social Behaviour*, 48(4), pp. 369-384.

747 Sullivan, D. and Wachter, T von, (2009), Job displacement and mortality: An analysis using administrative data’, *The Quarterly Journal of Economics*, 124(3), pp. 1265-1306.

748 Banks, J. and Xu, X. (2020), ‘The mental health effects of the first two months of lockdown and social distancing measures during the COVID-19 pandemic in the UK’, *Fiscal Studies*, 41(3), pp. 685-708; Virtanen, P., Hammarström, A. and Janlert, U. (2016), ‘Children of boom and recession and the scars to the mental health – a comparative study on the long term effects of youth unemployment’, *International Journal for Equity in Health*, 15(14), pp. 2-6

749 Aguilar-Palacio, I., Carrera-Lasfuentes, P. and Rabanaque, M. J. (2015), ‘Youth unemployment and economic recession in Spain: influence on health and lifestyles in young people (16–24 years old)’, *The International Journal of Public Health*, 60(4), pp.427–435; and Hammer, T. (2003), *Youth Unemployment and Social Exclusion in Europe*, (Bristol, Bristol University Press).

750 Blundell et al. (November, 2020), *Inequalities in Education, Skills and Incomes*.

751 Belfield et al. (2017), ‘Two decades of income inequality in Britain’.

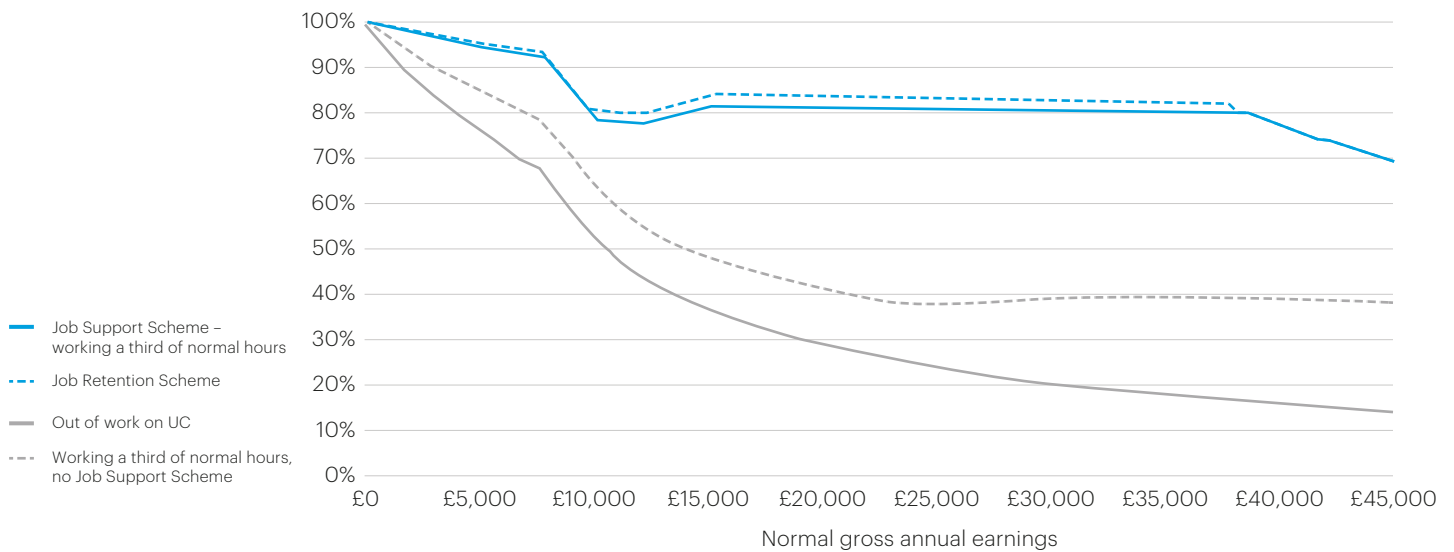
752 D’Arcy, C. and Rahman, F. (2019), *Atypical Approaches: Options to support Workers with Insecure Incomes*, The Resolution Foundation.

753 Boeri, T., Giupponi, G., Krueger, A. and Machin, S. (2020), ‘Solo self-employment and alternative work arrangements: A cross-country perspective on the changing composition of jobs’, *Journal of Economic Perspectives*, 34 (1), pp.170-195; Datta, N. (2019), ‘Willing to pay for security: a discrete choice experiment to analyse labour supply preferences’, *Centre for Economic Performance (CEP), Discussion Paper 1632*; and Mas, A. and Pallais, A. (2017), ‘Valuing alternative work arrangements’, *American Economic Review*, 107, pp. 3722–59.

benefits since 2010.⁷⁵⁴ This has especially impacted families with children, increasing relative child poverty by three percentage points since 2011.⁷⁵⁵ A large number of families rely on the state to insure them against economic shock. At the start of the pandemic, 20-40% of low- to middle-income households were unable to manage for a month if they lost their main source of income. This is partly due to low private liquid savings and relatively high levels of unsecured debt, combined with weak earnings since 2008.⁷⁵⁶

This has meant the need for extraordinary, temporary measures as part of the pandemic response, such as the Coronavirus Job Retention Scheme, the Job Support Scheme and the Self-Employment Income Support Scheme (see Figure 28).⁷⁵⁷ These schemes have helped to mitigate inequality in household incomes produced by the pandemic by being proportionately more generous to low earners.⁷⁵⁸ We may expect a significant rise in household income inequality when these schemes come to an end. This is because those who have benefited from the schemes have lower savings and therefore reduced ability to adjust their spending, so that any fall in income has a greater impact on their household finances and position. This is especially true among Black, Asian and minority ethnic groups, making them more vulnerable to longer-term economic impacts.⁷⁵⁹

Figure 28: Income replacement rates for a single person home-owner without children, under the existing Job Retention Scheme, or working a third of their normal hours with and without the Job Support Scheme, or out of work, by pre-COVID-19 earnings, UK 2020-21



Source: Bell, T., Brewer, M., Corlett, A., Handscomb., Judge, L., Smith, J. and Tomlinson, D. (2020), *The Winter (Economy Plan) is Coming*, Resolution Foundation, p. 4. RF analysis using the RF microsimulation model. Modelled on the Universal Credit system, where adult is aged 25 or over.

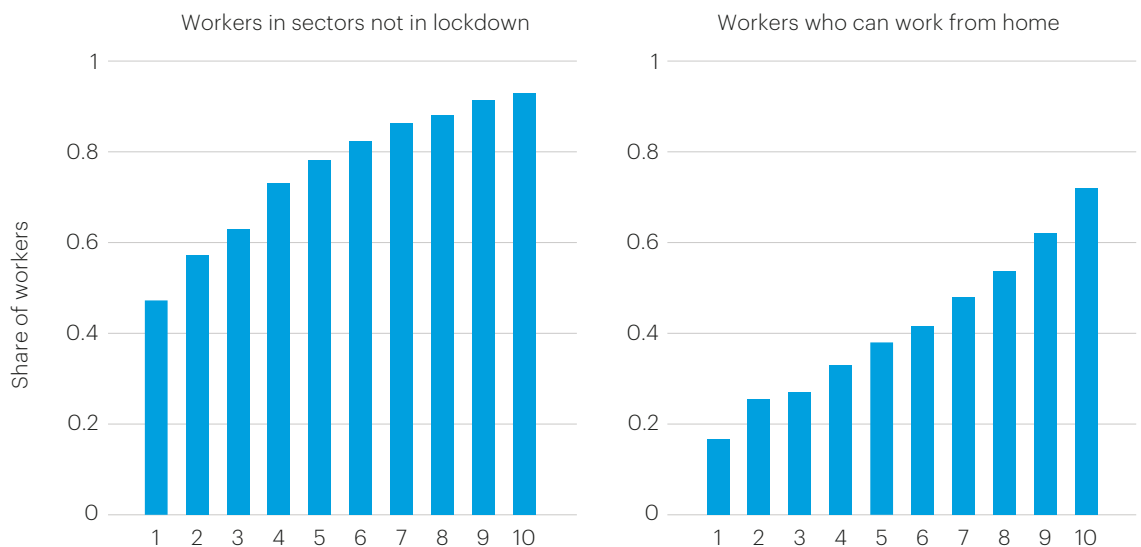
754 De Agostini, P., Hills, J. and Sutherland, H. (2015), 'Were we really all in it together? The distributional effects of the 2010-2015 UK Coalition government's tax-benefit policy changes: an end-of-term update', Centre for Analysis of Social Exclusion; and Hood, A., and Waters, T. (2017), *The Impact of Tax and Benefit Reforms on Household Incomes*, Institute for Fiscal Studies.
 755 Bourquin, et al. (2020), 'Current, necessary, fiscal largesse'.
 756 Blundell et al. 'Covid-19 and Inequalities'.
 757 Bourquin, et al. (2020), 'Current, necessary, fiscal largesse'; and Gardiner and Slaughter, (2020), *The Effects of the Coronavirus Crisis on Workers*.
 758 Blundell et al. 'Covid-19 and Inequalities'.
 759 Runnymede Trust, (2020), *The Colour of Money*; Crawford et al. (2020), Household Spending and Coronavirus.

4.6.2 Regional incomes

The sectoral effects of the pandemic on the economy may also increase regional income inequalities. COVID-19 has hit some parts of the UK harder than others. London, the North East and North West suffered the initial clusters of deaths,⁷⁶⁰ while the South West and Scotland saw the most disruption to jobs.⁷⁶¹ But in general, the areas which have seen the greatest economic disruption are not the traditionally ‘left-behind’ places.⁷⁶²

Low paid workers are much more likely to work in hard-hit sectors (which are distributed regionally), and much less likely to be able to work from home (see figure 29). Household income inequality is not caused by these regional differences, as it exists *within* regions. There are clusters of very poor areas in all regions, irrespective of overall prosperity.⁷⁶³ While the cost of living also varies significantly across the country – particularly the cost of housing in the South East – adjusting for these differences reduces, but does not eliminate, the gap in household incomes.⁷⁶⁴

Figure 29: Share of workers in sectors not in lockdown and who can work from home, excluding key workers, by decile of earnings distribution



Source: Blundell, R., Cribb, J., McNally, S., Warwick, R. and Xu, X. (November 2020), *Inequalities in Education, Skills, and Incomes in the UK: The Implications of the COVID-19 Pandemic*, p. 13.

760 Davenport, A., Farquharson, C., Rasul, I., Sibieta, L. and Stoye, G. (2020), *The Geography of the COVID-19 Crisis in England*, Institute for Fiscal Studies.
 761 McCurdy, C. (2020), 'Local Differences: Responding to the Local Economic Impact of Coronavirus', Resolution Foundation.
 762 The caveat to this is some coastal towns and Northern inner cities which are both deprived and have been badly hit by the pandemic. See Davenport and Zaranko, (2020), 'Levelling Up: Where and How?'.
 763 For example the deprived coastal areas of Great Yarmouth, the Isle of Wight and Thanet all exist within the relatively prosperous South and East of England. Blundell et al. (2020), *Inequalities in Education, Skills and Incomes in the UK*.
 764 Rienzo, C. (2017), 'Real wages, wage inequality and the regional cost-of-living in the UK', *Empirical Economics*, 52, pp. 1309-1335.

4.6.3 Social security and income support

An immediate challenge facing the Government will be to reverse the rise in unemployment and the resulting fall in living standards. This will be especially pronounced once the government support schemes begin to be wound down. The current social security system was able to manage the spring 2020 increase in demand; there were days which saw 100,000 new applications,⁷⁶⁵ and increasing the basic rate by £20 per week benefited more than 4 million families.⁷⁶⁶ But some analysts predict that the current social security system is not equipped to deal with the rise in need expected through a pandemic-induced recession – certainly not as it did post-2008, when it helped to prevent the increase in income inequalities typical of recessions.⁷⁶⁷

The UK benefit system is unusual among European countries. Entitlements do not relate to previous earnings and the amount of income replaced when an individual falls out of work is among the lowest in OECD countries.⁷⁶⁸ Replacement income rates for average earners are only 13% for single people and 20% for couples, compared with an international average of 50%.⁷⁶⁹

The current system is rooted in policy trends stretching back to the 1980s, in which the focus shifted from out-of-work benefits towards tax credits. This makes the current system supportive of low-paid workers, but less able to help those who become unemployed.⁷⁷⁰ Out-of-work support has been cut in the last 10 years, as have working age benefits in general.⁷⁷¹ Some economists assess that these cuts have further decoupled support for families, weakening the state's ability to support those who suffer a fall in income,⁷⁷² and leaving many families unable to respond to the economic impact of the pandemic.

As already discussed, much of the policy response taken during the pandemic has been active government interventionism – which seeks to correct market failures in the interest of a wider public good – but the current system is £6.1 billion per annum more expensive than it was prior to the pandemic.⁷⁷³ This may prompt reflection on what type of system the country wants and needs. Some changes which have been made (and may continue) are more subtle: the removal of the minimum income floor for the self-employed and changes to local housing allowance, for example.⁷⁷⁴

765 Johnson, P. (October, 2020), *Covid Gives Us the Chance to Choose How Generous Benefits Should Be*, Institute for Fiscal Studies.

766 Ibid.

767 Blundell et al. (November, 2020), *Inequalities in Education, Skills and Incomes*.

768 OECD (2020), Net Replacement Rate in Unemployment, [data accessed 17 February 2021].

769 Johnson, (2020), *Covid Gives Us the Chance to Choose How Generous Benefits Should Be*.

770 Cribb, J., Hood, A. and Joyce, R. (2017), *Recessions, Income Inequality and the Role of the Tax and Benefit System*, Institute for Fiscal Studies.

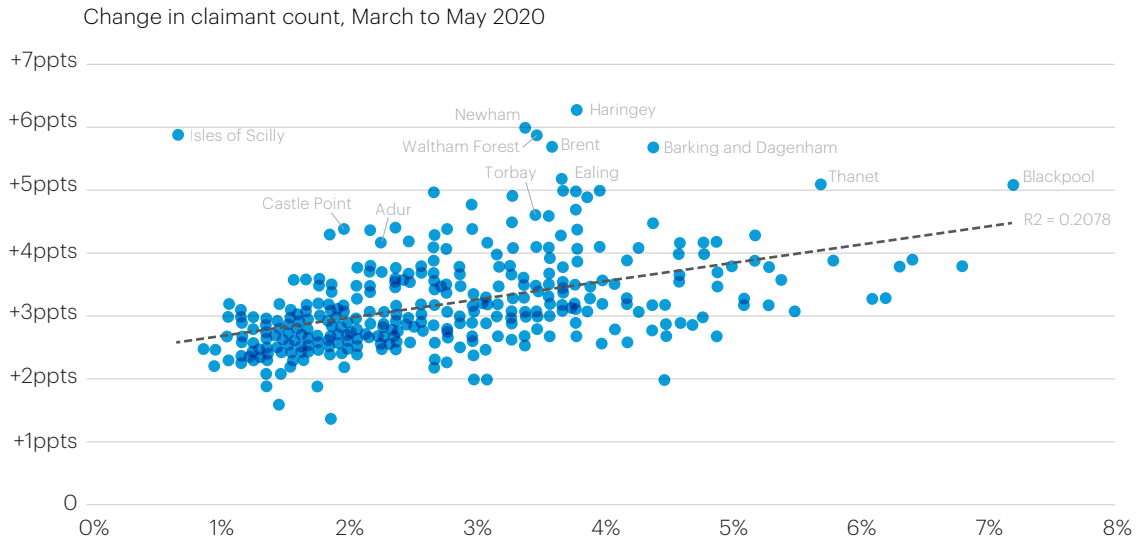
771 EG the 'two child limit' to tax credits, the 'bedroom tax' and changes to housing benefit for private sector tenants. See Blundell et al. (2020), *Inequalities in Education, Skills and Incomes in the UK*.

772 Joyce, R. (2019), *The Future of Benefits*, Institute for Fiscal Studies presentation.

773 Office for Budget Responsibility, (2021), *Economic and Fiscal Outlook March 2021*.

774 Johnson, (2020), *Covid Gives Us the Chance to Choose How Generous Benefits Should Be*.

Figure 30: Working-age claimant count compared to change in working-age claimant count, local authorities, residence-based, UK March to May 2020



Source: Cominetti, N., Gardiner, L. and Slaughter, H. (June, 2020), *The Full Monty: Facing Up to the Challenge of the Coronavirus Labour Market Crisis*, Resolution Foundation, p. 32. Using data from Office for National Statistics, Claimant count by unitary and local authority. The figures relate to the proportion of 16-64-year-olds claiming unemployment-related benefits on 12 March and 14 May.

Any major reform to the social security system will be hard to achieve when faced with poor public finances. Public opinion of providing social security to working-age people is low but was increasing pre-pandemic.⁷⁷⁵ Some speculate that attitudes may continue to change, given that job disruption has been significant across the country (see figure 30).⁷⁷⁶ An extension of these changes in opinion could see appetite for a social security system social security system that works differently to the current conditional benefits approach and a range of ideas are being put forward.⁷⁷⁷ COVID-19 has highlighted existing inequalities and how people can fall through the gaps in the current social security system.

775 Curtice, J. (2020), 'Submission by John Curtice, University of Strathclyde', British Academy Covid and Society Call for Evidence.
 776 In the US there has been an increased support for expanding social security related to exposure to the health and economic impacts of C19. See Rees-Jones, A., D'Attoma, J., Piolatto, A. and Salvadori, L. (2020), 'COVID-19 changed tastes for safety-net programs', *NBER Working Paper 27865*.
 777 For example, specific lockdown measures proposed include job sharing to preserve existing jobs, compensating employees on reduced hours, and extending existing unemployment insurance schemes. See Dube, A. (2020), *Filling the Holes in Family and Business Budgets: Unemployment Benefits and Work Sharing in the Time of Pandemics*, EFIP Policy Brief as cited in Boshoff, J. (2020), *Why Should the Government Provide Income Protection in a Recession*, Economics Observatory. Some argue that the introduction of a universal basic income would add resilience for future crises and for expected developments in the labour market, including the automation of low-skilled work and an expected depression on labour intensive services. See Suskind, D. (2020), *A World Without Work: Technology, Automation and How We Should Respond*, (London, Allen Lane). Alternatively, the UK could adopt a social insurance approach, which is more common in continental Europe. This would support those who cannot quickly adjust their spending when faced with economic shock and would require linking support to past earnings. See Blundell et al. (November, 2020), *Inequalities in Education, Skills and Incomes*. For more information on the choices regarding social security policy, see Johnson, (2020), *Covid Gives Us the Chance to Choose How Generous Benefits Should Be*.

4.7 Chapter summary

COVID-19 has had significant and unequal effects on access to education, employment prospects and experiences, individual and household incomes. It has done so differently depending on where in the UK people live, their qualification level, their socioeconomic status, their health status. Wider issues around the national economy, educational infrastructure and the social security system have compounded these impacts, pushing many more people into poverty. In the immediate term, poverty affects the likelihood of contracting and surviving COVID-19. In the longer term, poverty will make it harder to weather the economic effects of the pandemic and lockdowns, as it is linked to worsening health and social outcomes.

Impacts on incomes have widened a schism in society, highlighting differences between those in knowledge-intensive sectors able to work from home – and able to save – and those in front-line or shut-down sectors, suffering either increased exposure or loss of income. Lost employment and exposure to the virus through employment vary across the UK, and have disproportionately impacted Black, Asian and minority ethnic groups and women. This has compounded gender inequalities with respect to earnings, childcare and housework, and socioeconomic inequalities in education.

The economy is contracting, prompting high levels of unemployment, falling GDP and stagnating investment. This has impacted sectors and places unequally raising issues of governance and cohesion, and more individuals and families have needed support. The education system has undergone a rapid transformation, facing significant issues with digital readiness and in responding flexibly and safely to the pandemic threat. Socioeconomic background has affected a child's access to and attainment in education during periods of lockdown. While the sector has adapted rapidly to the situation, it has not been able to address and alleviate the effect of existing structural inequalities on educational outcomes, often leaving the most disadvantaged even further behind. The impacts of this will continue to play out as a generation of students enter the labour market in a recession, experiencing worse employment opportunities and income levels, exacerbating intergenerational mobility.



5.0 Conclusion: nine areas of long-term societal impact

We have reviewed and presented a range of evidence across the areas of potential long-term impact of COVID-19, based on the evidence of the societal effects we are seeing play out today. We have assessed this evidence under three broad headings – health and wellbeing, communities, culture and belonging, and knowledge, employment and skills – all the while considering how effects may develop and differ from our various analytical perspectives, namely governance, trust, cohesion, inequalities and sustainability. This integrated assessment across a very broad evidence base underpins the set of conclusions reached in this final chapter. We outline how we reviewed this evidence base, considered the elements of uncertainty over a 10-year horizon and arrived at a set of nine areas of long-term societal impact.

5.1 Dealing with uncertainty

An important challenge in considering the impacts of COVID-19 was to address the uncertainty created by the pandemic. Therefore, at the final stage in our process of analysing the evidence, we stretched our understanding of the potential longer-term impacts of COVID-19 by testing the robustness of our evidence synthesis against scenarios that could capture the uncertainty and complexity of how the crisis might evolve.

We created a set of three scenario narratives to allow us to consider a range of societal impacts and policy directions without knowing, or trying to predict concretely, how the COVID-19 crisis will evolve. These broad scenarios provided a flexible framework within which to examine different opportunities and challenges and the potential interventions that can be made over the decade.

The scenarios consider the known facts about the COVID-19 pandemic and the response so far, to give a general picture of how people, public services, the economy and decision-making might be affected. These scenarios were discussed with a range of experts in a series of workshops in December 2020, and insights from these discussions have informed the final set of strategic goals for addressing the long-term impacts of COVID-19.

Baseline scenario: successful early mitigation

Our baseline scenario takes what we know about the development of vaccines against COVID-19 and assumes that these are successfully rolled out to the majority of the population relatively quickly, leading to successful early mitigation of the virus threat and giving actors greater ability to focus on long-term social and economic recovery.



All groups in society are at low health risk from the virus; free movement and social interactions resume.



The NHS and other public services can resume general, non-crisis operations quickly.



Economic recovery is strong and early; government support schemes can end; unemployment falls. There are inevitably, however, high levels of government debt.



Decision-making is **less constrained** in terms of trade-offs against mitigating the virus, with a range of policy options available to government bodies, businesses and civil society organisations.

Scenario 2: managed risk

In the second scenario, we consider partially successful mitigation of COVID-19, where there remains a persistent but manageable health threat – perhaps due to reduced effectiveness or slow uptake of vaccines, transmission via national and international travel corridors and/or challenges keeping pace with virus mutations.



Health risks to some vulnerable groups persist but are lower; many freedoms are restored but some less intrusive measures remain; people stay vigilant at certain times in certain settings.



The NHS can manage ongoing – perhaps seasonal – COVID-19 prevention and treatment while restoring other operations; other public services can operate effectively but with some resource still diverted to mitigate COVID-19 risk.



There is pressure on the economy and public finances to manage COVID-19, slowing the recovery; some businesses and sectors may require additional support to adapt to changing markets; unemployment for certain groups remains high.



Decision-making is **difficult**, with the need to balance policy options for recovery against managing COVID-19. Most policies are complicated by the need to account for COVID-19 risk.

Scenario 3: prolonged, significant disruption

In the final scenario, we consider the effects of a more prolonged and severe social and economic crisis, where significant disruption is felt for some time, even if the immediate health threat in the UK from COVID-19 declines. Such a prolonged crisis may stem from global asymmetries in mitigation efforts, virus mutation or the compound effect of protracted complexities arising from Brexit.



Everyone's daily life remains affected by the ongoing repercussions of the global crisis. Foreign travel and other freedoms may be impeded by an asymmetrical response to COVID-19 mitigation in other countries.



Public services, including education, remain under pressure and cannot function effectively for some time.



The economy remains stagnant or contracts further; there is severe disruption to businesses in certain sectors; public debt increases further, and public spending cannot effectively support an economic recovery and prevent high unemployment.



Decision-making is **limited** to responding to the ongoing crisis, with little time or resource to consider long-term policy options. Businesses and other organisations will be focused on survival rather than long-term recovery.

5.2 Nine areas of long-term impact

Bringing together the evidence presented in this report with our analytical process and consideration of uncertainty has led us to identify a set of nine areas of long-term impact of COVID-19. Of course, we cannot be sure exactly how these impacts, and the challenges and opportunities they create, will develop and unfold. But the evidence suggests that they highlight key areas for decision-makers to consider when making policy interventions if they are to respond effectively, and at the right time, to the impacts of COVID-19 on society. Hence, these nine areas of impact also serve as the starting point for our companion report, *Shaping the COVID decade*, which examines the goals and opportunities for policy.

Below, we summarise each area of long-term impact. We provide a brief assessment of why that impact is important and what the drivers of continued impact might be if not addressed. Each area is accompanied by an illustrative ‘map’ to the main points of evidence in the earlier chapters of this report, so the reader can see how the evidence outlined in Chapters 2, 3 and 4 is interconnected across these nine areas of impact.

Figure 31: The nine areas of long-term impact of COVID-19

1. Increased importance of local communities

2. Low and unstable levels of trust

3. Widening geographic inequalities

4. Exacerbated structural inequalities

5. Worsened health outcomes and growing health inequalities

6. Greater awareness of the importance of mental health

7. Pressure on revenue streams across the economy

8. Rising unemployment and changing labour markets

9. Renewed awareness of education and skills

Figure 32: Subsections of report which provide evidence for impact 1: Increased importance of local communities



1. Increased importance of local communities

Local communities have become more important than ever during the pandemic. Local and hyper-local charitable and voluntary organisations have been crucial to the response to COVID-19, but there are inequalities between communities based on the strength of community infrastructures. National capacity to respond to changing circumstances and challenges requires effort to sustain strong communities and community engagement at local levels.

Early in the pandemic, community solidarity and cohesion grew. While they have since started to fade, they are still comparatively strong and steady. There was also a parallel increase in people's belief in the power of community. Although there is considerable variation in the presence and activity of local and hyper-local charity, voluntary and mutual aid groups, many have responded creatively to the pandemic.

However, as we look forward we need to realise that effective community-led responses have been underpinned by established, funded community infrastructure. This has led to inequalities: communities with more community infrastructure and social capital have done better. There is significant financial risk in this area, related to reduced funding for charities and challenges for local government finances. Reduced trust in national government and reduced national unity may also affect the strong, shared sense of community seen in the early stages of the pandemic.

Looking ahead, evidence from other countries and other times suggests that specific local and community knowledge and responses are crucial to recovering well from epidemics. But doing more locally, and doing that well, requires local data, and people at a local level who can use it. Without intervention, reliance on charity and voluntary groups will lead to very different levels of provision in different parts of the country, correlated with wealth and local government funding.

Figure 33: Subsections of report which provide evidence for impact 2: Low and unstable levels of trust



2. Low and unstable levels of trust

Following a short initial increase, trust in the UK Government and feelings of national unity are in decline. Trust in local government and feelings of local unity have been higher and steadier. Declining trust is a major challenge that needs to be addressed because it undermines the Government’s ability to mobilise public behaviour for wider social and health benefits. Reduced trust in national government also leads to reduced societal trust, enabling division and the targeting or scapegoating of particular groups. Thus, trust and cohesion are linked, as discussed in Chapter 3.

Lack of information – or, conversely, spread of disinformation – not only carries health risks, but contributes to feelings of mistrust. At different points in the COVID-19 crisis, information about the pandemic has not been as accessible for many minority groups (including minority language groups) and people who have a disability. Information inequalities may also exist in relation to age, income, location and education where communication is primarily reliant on online services.

Looking forward, there is a real risk over the coming decade that trust in government will continue slowly to erode, in line with trends before the pandemic, and that national unity will continue to fragment. There may also be questions about trust in governments’ use of other measures, such as technology or data linkage, to support public health, which may be important for managing future health crises. Without intervention, we may thus be less prepared for future crises, if there is continued instability in trust and cohesion.

Figure 34: Subsections of report which provide evidence for impact 3: Widening geographic inequalities



3. Widening geographic inequalities

Geographic and spatial inequalities have widened during the pandemic. Health and wellbeing, local economic risk and resilience, poverty and deprivation, and response planning all have an important place-related dimension that has shaped the impact of the crisis. Attending to these inequalities is important because they expose ways in which the combination of geographical location, physical infrastructure and social conditions implies that different priorities may be needed in different places.

COVID-19 has been referred to as a ‘syndemic’ crisis, a situation where there is ‘the accumulation and adverse interaction between two or more conditions in a population, often resulting from the social context in which that population lives’.⁷⁷⁸ There is, however, strong evidence of place-based vulnerability to COVID-19; the disease has hit the most deprived communities hardest. Inequalities are rising within communities, with more people falling into poverty and existing trends in inequalities pre-COVID are being exacerbated and accelerated. The pandemic has also revealed inequalities in digital access across regions, with implications for employment and education.

Local economies may also change due to greater online consumerism and changed working patterns, with increased working from home particularly for those on higher incomes and in particular sectors, especially the ‘knowledge economy’. Over the long term, the shift towards greater home working and continued ‘local’ living is likely to continue. With this come potential opportunities for many to rebalance work and other life priorities. However, without targeted intervention in areas of social deprivation and poor infrastructure, we risk locking in increased geographic inequalities as more permanent effects of the pandemic. In addition, an increase in local living can only be realised by those in certain professions and sectors. There could be significant knock-on effects for the transportation sector, particularly rail and other public transport services, and a risk of increased personal vehicle travel and traffic.

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Campos-Matos, I., Newton, J. and Doyle, Y. (2020), ‘An opportunity to address inequalities: learning from the first months of the COVID-19 pandemic’, *Public Health Matters Blog*, Public Health England, 29 October 2020.

Figure 35: Subsections of report which provide evidence for impact 4: Exacerbated structural inequalities



4. Exacerbated structural inequalities

As stressed throughout this report, COVID-19 and the government response to it have impacted different people in different ways, often amplifying existing structural inequalities in income and wealth, socioeconomic inequalities in education and skills, and intergenerational inequalities, with particular effects on children (including vulnerable children), families with children and young people. There are differential effects within these along dimensions of gender, race and ethnicity and social deprivation which have been both exposed and exacerbated, as well as effects related to social development, relationships and mental health which are all variably affected and interlinked. The evidence demonstrates that addressing the underlying and interconnected propellants of inequality is a key challenge ahead.

Black, Asian and minority ethnic groups have had worse COVID-19 outcomes than White groups, including health effects, death rates and economic impacts. This includes an early rise in hate crime against East Asian people. The worse outcomes for Black, Asian and minority ethnic groups relate to longstanding, underlying structural inequalities, which would need to be addressed in order to address inequalities specifically related to COVID-19.

Children and young people have also been heavily impacted in terms of lost access to education (particularly where digital inequalities limit access to learning resources), social engagement, employment and loneliness, with potential long-term physical and mental health implications.

The worsening economic situation has exacerbated existing inequalities. Vulnerable people (those with caring responsibilities, older or disabled people) are more likely to be made redundant; women more likely to bear economic and caring burdens; private renters are more likely to have lost income than homeowners, and therefore their ability to pay rent. There is a significant risk that an ongoing economic crisis would further exacerbate existing racial inequalities and deepen the long-term scarring for younger people (physical and mental health and economic impact). Depending on how the economy recovers, young people entering the labour market during a recession may see reduced earnings and opportunities, with a significant impact on generational inequalities as the ripple effects are seen in housing, security, health, social opportunities and relationships.

Figure 36: Subsections of report which provide evidence for impact 5: Worsened health outcomes and growing health inequalities



5. Worsened health outcomes and growing health inequalities

Health outcomes for COVID-19 have followed patterns of existing health inequalities. There are ongoing health impacts from ‘long COVID’ as well as from delays in care seeking and reprioritisation of resources. Deficiencies in home and community care infection prevention and control measures, as well as inequalities in the structure and funding of social care provision, have been laid bare. These are all areas that need significant attention to avoid critical gaps in the health system going forward.

Prior to the pandemic, the health service was already under strain. National and individual efforts to protect the NHS created a backlog of non-COVID-19 patient care, with implications for chronic disease management. The initial and ongoing symptoms of COVID-19 have also drawn increased attention to ‘invisible’ disabilities and other long-term conditions. Moreover, the social care system has been hit hard by the pandemic, including high levels of mortality associated with COVID-19 in care homes and the impact of restrictions on services and care for vulnerable individuals. Poor infection prevention and control measures in both home and community care settings have been exacerbated by the lack of coordination between health and social care.

In the longer term, there are likely to be unequal indirect impacts on health and wellbeing if social and economic upheaval continues. Disadvantaged groups may continue to be disproportionately impacted and the long-term challenge of supporting those suffering with ‘long COVID’ will become more apparent. Long-term effects of disability from hospitalisation and ‘long COVID’ could require changes in medical education and training. In the longer term, sustainable funding and structural solutions are needed for the social care system. Pressures on the NHS and health services will remain high and may be exacerbated by the impact of other crises or socio-political events on already stretched staffing levels in both health and social care. Learning from COVID-19 and previous health crises is needed to enable the necessary level of future pandemic preparedness.

Figure 37: Subsections of report which provide evidence for impact 6: Greater awareness of the importance of mental health



6. Greater awareness of the importance of mental health

The pandemic and various measures taken to address it have resulted in differential mental health outcomes, as discussed especially in Chapter 2. Access to support for new cases and for those with pre-existing conditions has also been disrupted, as have services for children and young people. Both have the potential to result in long-term mental health impacts for particular groups if there is not a renewed focus on the causes of poor mental health and on solutions for sustaining mental health across society, including by tackling the structural and root causes of inequality.

Those who have reported worse or worsening mental health during the pandemic are often the same groups who have been most negatively impacted both by COVID-19 itself and by the measures in response to it. Individuals from Black, Asian and minority ethnic backgrounds, care givers, lower-income households, and children and young people have been particularly affected. Frontline NHS staff have also reported heightened levels of stress and anxiety. However, not all effects have been negative; for example, reported loneliness among older people has been less than predicted.

Looking ahead, however, impacts of the pandemic such as economic uncertainty may have lasting implications for the mental health of certain groups, in particular young people. Large-scale top-down solutions to long-term mental health challenges may not be appropriate to support different groups. There may be an opportunity to improve a range of services through more targeted local provision, with better dialogue and communication between national and local levels.

Without intervention, there is a significant risk of longer-term mental health impacts and ‘scarring’ for certain groups, especially if these are not understood in relation to underlying structural and systemic causes or poor mental health. The effects will cross groups and generational divides, from children and young people to women and primary care givers, and from those with worse health outcomes from COVID-19 to the frontline health and care workers experiencing enduring strain.

Figure 38: Subsections of report which provide evidence for impact 7: Pressure on revenue streams across the economy



7. Pressure on revenue streams across the economy

Although detailed economic analyses were outside the scope of this report, there are likely to be additional pressures on government spending in the medium to long term, as a result of increasing levels of debt and possible falling tax revenues due to risks around unemployment, failing businesses, decreased consumption and significant shifts in the structure of the economy. It will be increasingly important to address the balance of revenue generation and weigh up expenditure against non-economic impacts, considering a diversity of mechanisms and actors to meet societal goals.

We know from history that successful mitigation of crises can lead to immediate inflation and then deflation. It is highly likely that in the short to medium term, unemployment levels will be higher than we have been used to. Existing and expected skills gaps in social care, healthcare, languages and public services will need to be met – and met in a changing world of work where remote working, digital fluency and greater emphasis on wellbeing can all be expected.

The pandemic offers an opportunity to adapt and improve the resilience and responsiveness of our economic structures. A different economic structure could be more inclusive, sustainable and green. The pandemic may also lead to consideration of different models of fiscal devolution and interventionism, options for an active state, and different kinds of social security systems.

Figure 39: Subsections of report which provide evidence for impact 8: Rising unemployment and changing labour markets



8. Rising unemployment and changing labour markets

Employment and household income levels have fallen and may yet worsen. Among people in the lowest tenth of earnings distribution, 80% are in shut-down sectors or those which do not enable working from home; women are more likely to have been furloughed or have lost their job; and people from ethnic minority backgrounds are overrepresented in insecure or frontline work. Recent improvements to gender equality in households and the wider economy may be reversed, as we have seen women take on a greater proportion of the childcare and home-schooling burden.

Falling income levels are more likely to impact the youngest and oldest workers, with long-term impacts for their prospects in employment or retirement which may require support. Similarly, vulnerable people (those with caring responsibilities, clinically vulnerable and disabled people) are more likely to have been made redundant, and the self-employed are most likely to have lost their income prospects. The effect on incomes is felt most by those who earn least. Many people are ‘newly poor’ and only one month’s lost wages away from poverty. In addition, as noted above, those leaving education over the next few years may be hard hit if economic recovery is slow, as entering the labour market in a recession restricts earnings and opportunities.

The social security system in the last 30 years has been designed to support people with low earnings rather than those with no income or who are unemployed. The pandemic has turned this on its head, and furlough, the Self-Employment Income Support Scheme and relaxing of Universal Credit’s conditionality have allowed more people to be supported during employment hardship. There is a question about whether there will be an appetite to explore new kinds of social security systems and mechanisms to crisis-proof incomes.

Figure 40: Subsections of report which provide evidence for impact 9: Renewed awareness of education and skills



9. Renewed awareness of education and skills

The closing of education institutions in March 2020 resulted in children receiving their compulsory education through digital platforms and in a home setting. The consequence of lost access to education at all levels, coupled with changes to assessments, has been to exacerbate existing socioeconomic inequalities in attainment and to highlight digital inequality. The pandemic has also highlighted issues in the sustainability of education and training institutions. This applies to both finance and practice, as the two are linked. In higher education, the financial impact of the pandemic, coupled with changing student demographics, challenges the sector's ability to deliver benefits to students, communities and the economy.

In the longer term, we might expect to see an overhaul of skills and training budgets to support those who are unemployed, match provision to a changing economy and focus on continual learning. Further education colleges may pick up most of this effort and see the greatest changes in finance and governance over the next ten years. The impact of lost schooling will also be felt over the longer term. Children have lost out on education which may be evident in GCSE and post-16 qualifications over the next decade. And this loss will not be felt equally: students from lower socioeconomic backgrounds were an average of 18 months behind wealthier peers by GCSE age before the pandemic. This will be significantly worse as inequalities around home learning and digital access are seen. Some studies suggest that no amount of extra effort will allow the shortfall to be corrected.

5.3 Moving from evidence to policy

This evidence review has gathered a comprehensive array of material to assess how the COVID-19 pandemic has affected society so far. Our scoping stages built on an extensive catalogue of work that the British Academy and others had already been doing. We then held an intensive consultation stage asking academic experts, research funders, experienced civil servants and external organisations to judge both the content and our interpretation of what we found. Finally, in a further series of workshops we reviewed these conclusions and tested the nine impacts against expert knowledge and perceptions of key points.

This report is the culmination of a robust and rigorous multidisciplinary analysis of what we know and what it means. It is intended to serve as both a reference point and benchmark for future research and evaluation, and the set of premises on which policy analysis can proceed. Our policy analysis, which considers responses to the areas of impact in this report, can be found in the companion report, *Shaping the COVID decade* – but this evidence report is intended to stand alone as a valuable resource for researchers, practitioners and policymakers.

Annex A: Methodology

The Research Question

The initial question put to us to consider is: What are the long-term societal effects of COVID-19? From here, we began to consider what are the challenges and opportunities in different policy areas which COVID-19 has unearthed, and over what timescales do we need to be thinking about in addressing them.

This review is the result of a 5-phase project methodology that began in September 2020 and concluded in February 2021. Below we have outlined each phase of the project in a manner that will illustrate in detail the various methods, stakeholder engagement, evidence sources and responses that facilitated our synthesis and analysis, allowing us to arrive at the findings set out in the review.

Phase 1 – Scoping

Landscape review

Our starting point was to begin with a scoping phase. As the question posed to us was large and sprawling in scope, the first task was to define a clearer focus and narrow down what kinds of societal effects we mean, what are the sectors, what outcomes and impacts we can/want to look at; in other words, what are our unit of analyses and how do we define them? What kinds of effects are we looking at and how direct or indirect are the links to COVID that we can and should consider? To do so, we undertook a review of the landscape, carrying out desk research of individual projects and publications across a range of disciplines that were either published or underway. The rapid scanning strengthened our evidence base and provided a general insight on the emerging themes in wider discourse. This allowed us to establish an evidence based on which we could identify a set of policy areas and impacts for deeper exploration in the further stages of the project.

Stakeholder engagement

Our first step was to reach out to our established community. We solicited views from the Academy's fellowship comprising of over 1,400 of the world's leading academics across all the humanities and social science disciplines. We wrote to the fellowship with the initial question, along with a set of five distinct questions to try and pull out some of the long list of issues and topics that we may consider.

1. Please suggest up to three pieces or bodies of research which might be particularly important to refer to?
2. Are there particular indicators and data sets that might be particularly relevant, or that may need to be developed?
3. What do you think might be one or two of the most significant social transformations arising from the pandemic in 1 years' time, and over 5 years' time?
4. Please suggest up to three areas in which you anticipate there may need to be the most significant shifts in policy.
5. Please let us know if your own recent or current work is likely to provide evidence relevant to any of the above questions.

To complement the input from our fellowship and the desk research, we also held a range of short scoping discussions with a range of external experts, research funders, learned societies, national academies, and other representative stakeholder organisations who we believed could help map funding priorities or programmes that could draw relevant insight for the project. This early engagement became useful in allowing for a snowball technique, as we expanded our links and engagement with organisations and researchers as we came across them.

Call for responses to the research community

In the same manner that we engaged with the fellowship we also sought the help and support of our SHAPE research community and were keen to be informed by their insights, data and evidence from across all of the disciplines that we represent. We invited contributions whilst posing the question more specifically which was “What are likely to be the long-term societal effects of COVID-19 across different sectors of UK culture, society and the economy, and areas of our lives and livelihoods?”. Understanding the breadth of such question we felt it was important to also provide five specific prompts that could facilitate in getting insights that would help feed into the development of our analytical framework.

1. What do you think might be one or two of the most significant social transformations arising from the pandemic in 1 years’ time, and over 5 years’ time?
2. Please suggest up to three pieces or bodies of research which might be particularly important to refer to?
3. Are there particular indicators and data sets that might be particularly relevant, or that may need to be developed?
4. Please suggest up to three areas in which you anticipate there may need to be the most significant shifts in policy.
5. Please let us know if your own recent or current work is likely to provide evidence relevant to any of the above questions.

Articulation of our evidence framework

After compiling all this insight together, which included responses from sections, fellows, and early career researchers, we developed a long list of potential areas using a form of content analysis to identify repeated and commonly developed ideas to generate a long list. The criteria for selecting a set of viable themes was tested against the following evaluation points.

- How much work is already out there? (Indicative of volume to draw on and potential strength of evidence base/relative importance in wider discourse)
- Existing BA policy expertise (Indicative of what is already in our portfolio that we could draw on)
- Responses from FBAs and funded researchers (Indicative of strength of view about priority areas from our community)
- Relevance to Comprehensive Spending Review priorities (As a proxy for current government priorities)

Our final evidence framework

The final evidence framework we arrived at is summarised below. We determined we would collect and assess evidence in three integrated areas of policy, using five cross-cutting analytical themes. Table 1 summarises the evidence framework, where the rows (policy areas) indicate where there may be the largest societal effects and impacts, while the columns are cross-cutting analytical themes which we expected would apply across policy areas, but themselves will have differential effects on policy and vice versa. The dimensions of place, scale and time were areas covered across all rows and columns. The three policy areas are:

- **Health and wellbeing:** physical and mental health (including young people and at work), wellbeing, and the environment we live in.
- **Communities, culture and belonging:** includes communities and civil society, cities and towns, family and kinship, and arts, media, culture, heritage, and sport.
- **Knowledge, employment and skills:** includes education (compulsory and post-16), skills, knowledge and research, and work and employment.

The five cross-cutting themes are:

1. **Governance** - How COVID-19 has affected relationships between national and local actors, accountability for decisions, and freedom of the individual (e.g. responsibilities for regional welfare, use of devolved powers, politicians vs experts, individual citizens' voices.)
2. **Trust** - How COVID-19 has affected society's relationship with information, data, the media and the role of experts. (e.g. trust in government, institutions, technology, information, and in research)
3. **Cohesion** - The effect of COVID-19 on relationships within and between communities of people and ideas. (e.g. cohesion when facing change, in making decisions, as a day-to-day practice (e.g. being neighbourly) vs as a societal 'glue' (e.g. shared values).
4. **Inequalities** - The role of COVID-19 in highlighting, ameliorating, causing or exacerbating inequalities. (e.g. inequalities in place, religion and belief, sex and gender, economics and class, race and ethnicity, health and disability.)
5. **Sustainability** - How COVID-19 has affected the way we think about, and the importance we attribute to, issues of sustainability. (e.g. the long-term health of the environment, value of green spaces, impact of political decisions, institutions and practices.)

We also set out to understand how any aspect of the evidence generated against this framework might be affected by the dimensions of place, scale and time. These dimensions of **place** (locality, physical and social context), **scale** (national, regional, community, individual) and **time** (past, present, future; short, medium and longer term) play a significant role in understanding how policy interventions could interact with the observed effects of COVID-19 on society and alter their long-term impact.

Figure 41: The evidence framework for the COVID-19 and Society project

		Cross-cutting thematic areas					Dimensions of analysis		
		Governance	Trust	Cohesion	Inequalities	Sustainability	Place	Scale	Time
Policy areas	Health and wellbeing								
	Communities, culture and belonging								
	Knowledge, employment and skills								

Narrative

At this point, we also began thinking about ways in which to frame the report and the various entry points for the analytical framework we could use for the thematic areas. Our narrative we believed, had to be constituted by an interpretation of the evidence insights of our fellowship and research community. Such narrative should be underpinned by having *intellectual honesty, clarity and coherence, progress, and openness*.⁷⁷⁹ With this in mind, we developed a draft narrative structure that was useful when thinking about the overall framing of the entire report. The narrative of the Covid decade was used as reference point to come back to as we continued developing the analytical framework.

Phase 2 – Developing the evidence base

In order to populate the analytical framework that we had developed, we proceeded by undertaking a further set of evidence reviews and syntheses. These included a call for evidence, a generation of evidence syntheses against the framework from 12 research teams and researchers, continued desk research scanning through an additional 240 pieces of literature and continued wider stakeholder engagement.

Call for Evidence

We began with a wider call for evidence in October 2020 using an online form and published on the British Academy website. Rather than posing the original question, we included 7 questions that directly related to the three key policy areas and the cross-cutting themes that were established for the project. The questions included:

1. What are the main challenges and opportunities for health and wellbeing, and how have these changed, or not, in light of the COVID-19 pandemic?

2. What are the main challenges and opportunities for communities, culture and belonging, and how have these changed, or not, in light of the COVID-19 pandemic?
3. What are the main challenges and opportunities for Knowledge Skills & employment, and how have these changed, or not, in light of the COVID-19 pandemic?
4. What are the acute (one-two years) challenges and opportunities to consider and what are the longer-term ones (two-10 years)?
5. What is not covered above that you think should also be considered?
6. To which of the following policy areas does your evidence relate? (Health & Wellbeing, Communities, Culture and Belonging, Knowledge Skills and Employment)
7. To which of the following cross cutting themes does your research relate? (governance, trust, cohesion, inequalities, sustainability)

The call received a total of 21 responses primarily from universities, academia, and other policy research-based organisations that had valuable contributions towards each of the policy impact areas. The evidence collected in this call was analysed by the internal project team and synthesised for later use in phase 3.

Evidence syntheses

Deeper evidence analysis work was received from a range of external research groups. They were asked to provide a short, evidence-based report with a particular focus on each of the three specific areas whilst also covering the cross-cutting themes. The research groups are listed below with a summary of their contributions provided. All of these are referenced throughout the evidence report and full versions provided on our evidence hub.

Institute for Fiscal Studies

Project lead: Professor Sir Richard Blundell FBA

A synthesis of the evidence in the policy area *Knowledge, employment and skills*, viewed through the theme of *Inequalities*, looking at the effect of the COVID-19 pandemic on inequalities in employment, incomes and skills, with some additional analysis of *governance* on how COVID-19 has affected the relationships between different tiers of government and devolved administrations. The synthesis combines data from household surveys with ‘real-time’ data from sources such as budgeting apps and government administrative data. It also look specifically at issues for young people through online surveys of parents and the COVID-19 studies in the UK Household Longitudinal Study.

Leverhulme Centre for Demographic Science

Project leads: Professor Melinda Mills FBA, Dr. Jennifer Dowd

A deep-dive into the policy area of *Health and Wellbeing* through the theme of *Inequalities*. The researchers synthesized evidence on what is currently known about individual and local/regional inequalities in COVID-19 infections, morbidity, and mortality, making use of individual level ONS COVID-19 linked mortality data and hospitalization data. They assess available data sources and outline what analysis will be needed to create a comprehensive picture of the burden of COVID-19 morbidity and mortality in the UK to inform planning of services for multiple services (health, pension system, social security, social care) going forward as well

as think through what policies could potentially mitigate rather than exacerbate the impact of COVID-19 on health inequalities. The synthesis summarises what is known about the health effects of past economic crises and how COVID-19 may be similar or different based on emerging evidence from special COVID-19 surveys collected in existing longitudinal studies such as ELSA and the British Cohort Studies.

Institute for Community Studies

Project Leads: Victoria Boelman, Emily Morrison

The evidence synthesis draws on published and unpublished quantitative and qualitative research on the impacts of COVID-19 on UK communities, including a major qualitative study on the impact of COVID-19 on communities funded by the Wellcome Trust, research with Power to Change on community businesses, and relevant projects at the What Works Centre for Wellbeing. The primary focus of the study is the relationships between people, between people and place, and between people and local institutions/organisations. Most of the evidence related to the cross-cutting themes of *Trust*, *Cohesion*, and *Inequalities*, but included insights on *Governance* and *Sustainability* where they emerge.

Centre for the Study of Group Processes

Project Leads: Professor Dominic Abrams FBA, Dr Fanny Lalot

The proposed work focuses on the nature of these changes through two dives into available evidence on the cross-cutting themes of *governance*, *trust* and *cohesion*. It examines cross-sectional UK surveys dating from the 2019 general election until present to understand the potential dynamics between different types and forms of trust and how these may or may not relate to regional, national, and international identity (belonging) and events. It draws on quantitative and qualitative data as part of a project funded by the Nuffield foundation on communities and cohesion. The researchers provided a statistical report of evidence with a brief introduction to methods, measures and objectives and a conclusion with interpretation of the meaning and implications of the evidence.

London School of Hygiene & Tropical Medicine

(Project Leads: Dr Alex Mold, Professor Virginia Berridge, Dr Suzanne Taylor)

This analysis draws on existing research conducted by Mold, Berridge and Taylor on the recent history of public health issues in Britain, including oral history interviews, archival research and visual material. The two key sources of evidence are an oral history of the response of the UK Health Protection Agency to swine flu, and research on the place of the public in public health in Britain from 1948-2012. Focusing on a specific case-study of a public health crisis, the response and aftermath will allow for a comparison between swine flu and Covid-19 in relation to trust and governance. The wider lens offered by Mold's research provided an opportunity to delineate a broader set of issues around governance and trust, and how these played out in relation to a variety of public health issues in different places within the UK and at different times. Taken together, these case-studies allowed us to identify a set of past public health challenges and opportunities, how these were dealt with and what can be applied to the response to COVID-19 and its aftermath.

School of Advanced Study

Project Lead: Professor Barry Smith

The aim was to provide a case study around the societal effects of ‘long COVID’ symptoms, particularly loss of smell and taste. A synthesis of what we know, why it matters, how it can be addressed to avoid both neglect and health inequality, will highlight the way in which patient groups and patient advocacy have filled the knowledge gap and fostered more scientific research and a growing awareness of wider societal issues related to chronic medical conditions relating to the chemical senses. There are important conclusions to draw about how the urgent need to focus on transmission of the virus has eclipsed research on the impact of the virus, including issues of inequality, the priorities tilting the playing field against invisible disabilities, and the potential division between those suffering the symptoms and those who are not and may not understand or welcome the assignment of resources to the former group.

Newcastle University’s Humanities Research Institute

Project Lead: Professor Jennifer Richards

The project aimed to synthesise evidence relevant to the policy *areas Health and Wellbeing and Communities, Culture, and Belonging*, undertaken by our research groups working with Children and Young People. It reviewed and synthesised research undertaken on the role played by educational and cultural amenities for the well-being of children and young people, and the impact of COVID-19 and the withdrawal / limitation of these amenities on the well-being of children and young people. It also synthesises views on the role humanities and social science research can play in developing solutions with and for the communities with whom we live and work and their (inter)national significance.

Centre for Society and Mental Health, KCL

Project Lead: Professor Nikolas Rose FBA

The research team prepared a report in the policy area “*Health and Wellbeing*” with a specific focus on the profound social inequalities starkly highlighted by the differential effects of the pandemic and lockdowns on the mental health and wellbeing of sections of the population experiencing high levels of adversity. The analysis developed projections of the likely medium- and long-term effects of COVID-19 on mental health and identify key challenges facing policy makers at all levels, from national to local, and the role of NGOs, community groups and others in addressing these challenges in different localities, at different scales, and across different timelines. The report proposes actions that enabled us to be better prepared to mitigate mental distress and support well-being should a similar event occur in the next decade.

University of Warwick

Dr William Barylo, British Academy Post-doctoral research fellow

Dr Barylo reviewed evidence in the areas of *Health and wellbeing and Communities, Culture and Belonging*. In the former he covers general health inequalities due to socioeconomic factors and ethnicity, mental health inequalities and trust matters in the social media era, and in the latter he reviewed evidence on thick trust versus thin trust and impacts on social cohesion and governance, all at international, national and local levels and in the near future and long term. He also synthesised evidence in the area of *Knowledge Skills and Employment*, covering, the importance of trust and face-to-face interactions in job-seeking and mentorships, cultural, linguistic and emotional skills in retaining jobs and effective workplaces.

University of Glasgow

Adrian Zancajo, British Academy Post-doctoral research fellow

Dr Adrian Zancajo reviewed evidence in the area of *Knowledge Skills and Employment*. In his synthesis, he provides evidence on the effects the COVID-19 pandemic has had on education. His evidence provided two perspectives, one is the analysis of the dimensions and areas of research that has captured the impact of the pandemic on the education sector for instance touching on the effect and growth of online/virtual teaching and learning, responses to school closures, responses to lockdown restrictions more broadly, and the impact on higher education at local and national level. The second set of evidence identifies the main short- and long-term challenges for education as a consequence of the pandemic detailing the social inequalities exacerbated by the changes to online teaching and the significant challenge of teachers' working conditions and wellbeing.

University of London

Ella Parry-Davies, British Academy Post-doctoral research fellow

Dr Ella Parry-Davies reviewed evidence in the areas of *Communities, Culture and Belonging*. In her synthesis she details the impact of COVID-19 on Black, Asian and Ethnic minority groups and migrant groups in the UK, focusing specifically on the effects of COVID-19 on precarious employment status seen in Filipino Migrants. Dr Parry-Davies's synthesis of evidence highlights the fact that Black, Asian and Ethnic minority groups and migrant individuals, particularly those who do not have leave to remain or recourse to public funds will be most affected by the pandemic. The evidence provided details the cross-cutting themes of trust, cohesion, and inequality by detailing the longer-term impact on community and feelings of belonging for migrants and their children in the UK.

Centre for Socio-Legal Studies, University of Oxford

Dr Kevin Grecksch British Academy Postdoctoral Fellow

Dr Grecksch reviewed evidence in the areas of *Communities, Culture and Belonging* and *Knowledge Skills and Employment*. In his synthesis he focused on aspects of climate change, adaptation, water governance and the governance and regulation of underground space, specifically with regard to communities and civil society and in the context of sustainability. In his synthesis Dr Grecksch reviewed evidence on the power of local knowledge particularly in relation to how COVID-19 much like climate change is a global phenomenon, but the impacts are local and they differ from locality to locality, meaning a complete rethinking of current, overcentralised policy making is needed. He finds that focusing on local knowledge could lead to regaining trust in political institutions and legitimise decisions and measures taken locally.

Continued desk research

Alongside the reviews, we continued to rapidly scan and map additional evidence and reviews that were highlighted to us through the open call, the evidence syntheses, our stakeholder engagements, and our own rapid reviews of the landscape. We produced short synthesis documents to summarise the themes that were emerging, providing an indication of key opportunities and challenges in the policy area at the time of writing and were used to inform further and ongoing discussions with our external reference group, project steering group and at the evidence synthesis workshops in phase 3.

Phase 3- Analysis and integration

Evidence Synthesis Workshops

In this phase we began developing an integrated synthesis. Here we conducted a set of three evidence synthesis virtual workshops on the week commencing 30th November 2020 covering the three societal impacts themes: Health and Wellbeing, Communities, Culture and Belonging and Knowledge Skills and Employment. The aim of these workshops was to present findings and stimulate cross fertilisation across policy areas and analytical themes. These workshops brought together 35 individuals to collect and discuss the main impacts for each policy area, debate supporting evidence, analytical themes, and key policy interventions.

After completing the first set of workshops we distilled the discussions into a synthesis of an emerging set of key impacts and an assessment of their project trends over a ten-year period. The synthesis in this 'impact grid' presented a set of headlines for where there is strong evidence of the societal effects of COVID-19 and was used as the basis for discussion in the scenario workshops.

Scenario Workshops

We conducted three scenario workshops the week commencing the 14th December 2020. The aim of these workshops was to draw together the evidence of long-term policy impacts and interventions and apply that thinking to a set of future scenarios. These included a:

- **Baseline Scenario:** Successful early mitigation, in which we assumed that the immediate crisis of COVID-19 was to be over quickly and that the main effect of the pandemic had already been felt.
- **Scenario 2:** Managed risk, in which we considered any difference in impact that could arise if the UK was in the situation of a persistent, but manageable threat from COVID-19, perhaps due to ineffectiveness, or slow uptake of a vaccine.
- **Scenario 3:** Prolonged, significant disruption, in which we wanted to fully test the worst-case impact of the COVID-19 crisis, where significant, prolonged economic and social disruption is felt, even if the immediate health threat in the UK declines. Such prolonged crisis may stem from global asymmetries in mitigation efforts, mutation of the virus, or the compound effect of unsuccessful Brexit trade negotiations.

Participants were asked to examine the evidence of the headline societal effects of COVID-19 and the challenges and opportunities that emerge from them. In doing this, we aimed to draw out in discussion the longer-term consequences of these emerging challenges and opportunities by considering where society might end up by 2030 if they are left unchecked and, subsequently, the impact that different policy interventions could have in determining a better outcome for society by 2030.

The scenarios provided a flexible framework and were structured in a deliberate manner to allow individuals to consider their own vision of life under each scenario and aid in discussion of the potential impacts and interventions, without necessarily trying to concretely predict how the COVID-19 crisis will evolve. Participation across all 6 workshops brought over 40 individuals ranging from those involved in academia, research, policy, and civil society.

At the end of these three main phases of work we were able to collate a wealth of insight from the integration of evidence through continued stakeholder engagement, desk research, virtual workshops, insights from our fellowship and SHAPE research

community. This allowed us to identify nine long term societal impacts of COVID-19 which are presented in the report above and an associated set of seven strategic policy goals and five principles of a policy framework which are outlined in the accompanying report.

Annex B - Covid & Society Review Governance groups

The Covid & Society Project Steering Group

Lead Fellow: Dominic Abrams
 Fellows: Geneva Richardson (V-P Public Policy)
 Aditi Lahiri (V-P Humanities, Linguistics)
 Patricia Clavin (History)
 Peter Taylor-Gooby (Social Policy)
 Melinda Mills (Geography)

The Covid & Society External Reference Group

The role of this group is to provide external advice and critical, constructive challenge to the Covid and Society project. We should strive for a diverse group which should be comprised of individuals and/or organisational representatives from across disciplines, sectors, and perspectives.

Professor Dame Theresa Marteau
FMedSci,
 Director of Behaviour and Health
 Research Unit, University of Cambridge

Tim Chapman, Arup,
 Director, Infrastructure Design, FRAEng

Professor Peter Smith FRS,
 Professor of Soils and Global change
 at the University of Aberdeen

Dr João Rangel de Almeida,
 Portfolio Development Manager,
 The Wellcome Trust

Tim Gardam, Chief Executive,
 Nuffield Foundation

Professor Alison Park,
 Interim Chief Executive, ESRC

Professor Edward Harcourt,
 Director of Research, AHRC

John Pullinger,
 Former National Statistician

Vidhya Alakeson,
 CEO, Power to Change

Dr Claire Craig, The Provost,
 The Queen's College, Oxford

Ray Shostak,
 Member of BA Public Policy Committee,
 Former Head of the Prime Minister's
 Delivery Unit, Director General
 Performance Management and member
 of the Board of Her Majesty's Treasury
 from 2007-2011

Stephen Aldridge,
 Chief Analyst/ Chief Economist and
 Director of Analysis and Data Directorate,
 MHCLG

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Research

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Global trends in wildfire and its impacts: perceptions versus realities in a changing world

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Wildfire has been an important process affecting the Earth's surface and atmosphere for over 350 million years and human societies have coexisted with fire since their emergence. Yet many consider wildfire as an accelerating problem, with widely held perceptions both in the media and scientific papers of increasing fire occurrence, severity and resulting losses. However, important exceptions aside, the quantitative evidence available does not support these perceived overall trends. Instead, global area burned appears to have overall declined over past decades, and there is increasing evidence that there is less fire in the global landscape today than centuries ago. Regarding fire severity, limited data are available. For the western USA, they indicate little change overall, and also that area burned at high severity has overall declined compared to pre-European settlement. Direct fatalities from fire and economic losses also show no clear trends over the past three decades. Trends in indirect impacts, such as health problems from smoke or disruption to social functioning, remain insufficiently quantified to be examined. Global predictions for increased fire under a warming climate highlight the already urgent need for a more sustainable coexistence with fire. The data evaluation presented here aims to contribute to this by reducing misconceptions and facilitating a more informed understanding of the realities of global fire.

This article is part of themed issue 'The interaction of fire and mankind'.

1. Introduction

Fire has been an important factor in the dynamics of the Earth's climate and in the development of biomes since its widespread occurrence began 400–350 million years ago (Ma) [1,2]. In fire-prone ecosystems, humans have always coexisted with fire in the landscape, and its use can be seen as the first anthropogenic tool that has affected ecosystem dynamics beyond the very local scale [3]. Whether as open biomass burning or as the relatively recent practice of combusting fossil fuels in engines and power stations, fire has been a key factor in the rise of human societies [4,5]. Yet, over the past couple of centuries the traditional European perception of fire has been implemented in many parts of the world (box 1), and fire in the landscape (commonly termed wildfire, wildland fire or landscape fire) has been typically considered as 'bad' and our focus on the whole has been on eliminating or at least containing it [16–18]. The 'command and control' attitude of most Western societies neglects the fundamental role that fire has in sustaining biodiversity and ecosystem health [11,19].

The media still promote perceptions of wildfire as the enemy even in very fire-prone regions, such as the western USA or eastern Australia where managers are attempting to move away from aggressive suppression policies and residents are slowly assimilating the concept of fire as an ecological factor [11,20,21]. While the vast majority of 3–4.6 million km² of the global land surface burned per year (approx. 4% the global land surface) [22] has little direct impact on individuals and therefore does not attract wider attention, the media tend to report on the costly and sometimes tragic impacts of some wildfires, with a focus on the fate of individuals [21,23]. This is not surprising given the fundamental risk some specific fires pose for human lives, infrastructures

Box 1. A Western-biased perception of fire.

In this paper, we discuss widely held perceptions of fire and compare them with fire data and statistics available to date. We also highlight that our scientific knowledge and social perceptions are Western biased because most available data are derived from Western societies in fire-prone countries such as the USA, Australia and Mediterranean Europe. In these countries, current policies and social perceptions share a common starting point: the German forestry school of the nineteenth century, which spread the systematic protection of forests against fire across the Old Continent and former colonies [6–8]. This 100% fire exclusion policy has long proven to be impractical, unsustainable and ecologically detrimental in fire-prone regions [9,10]. Although fire management is now slowly changing, with prescribed burning also being increasingly used, policies of aggressive wildfire suppression still apply almost everywhere [7,9,11]. For example, in the USA, only 0.4% of wildfires, whether ignited by lightning or humans, are allowed to burn [11]. All others are actively suppressed. Regarding social perceptions, it is important to stress that, in many of these regions, intentional burning had been used for a very long period both by native people and settlers. Thus, in rural areas fire was understood as part of the landscape management culture [12]. However, the current general public perception is predominantly different. Until very recently, governments refused to present fire as a potential positive ecological factor out of concern that any admission of a positive role for fire would sound contradictory [9]. Smokey Bear in the USA is the best, but not the only, example of effective public awareness campaigns supporting 100% fire suppression (figure 1). Nowadays, the perception of fire in Western communities living in high fire risk areas is slowly moving towards the recognition of fire as a valuable natural factor [13]; however, in many other regions fire is still perceived by the whole society as a natural hazard with only negative implications. This Western perception of fire currently dominates the world and is thus the focus of this paper. It is, however, not the only one. In this same issue, other contributions discuss societies which have long co-existed with fire and continue to do so sustainably, such as the aboriginal people of the Western Desert of Australia [14] or indigenous communities in Venezuela, Brazil and Guyana [15].



Figure 1. Public awareness campaigns supporting total exclusion of fire from our forests have driven largely our current perceptions of fire. For example, (a) Smokey Bear has been the American champion against fire since the 1950s; (b) the ‘all against fire’ campaign in Spain during the late 1980s and early 1990s also had wide national relevance.

and the value of commodities such as forest plantations, yet this type of media coverage can be a barrier to expand the notion of our need of learning to coexist with fire [24,25]. Numerous reports, ranging from popular media through to peer-reviewed scientific literature, have led to a common perception that fires have increased or worsened in recent years around the world [11,26–29]. Where these reports are accompanied by quantitative observations, they are often based on short timescales and regional data for fire incidence or area burned, which do not necessarily reflect broader temporal or spatial realities.

Unlike other natural hazards such as earthquakes or volcanic eruptions, fire is perceived as an avoidable risk and enormous resources are directed towards fire suppression efforts, particularly in the more developed world [9]. Yet the now widely acknowledged consequence that fire suppression often comes at the cost of an increased risk of more severe or extensive future fire within fire-prone landscapes [30] has to

date only led to limited changes to fire suppression practice in most regions [11].

The aim of this paper is to illuminate the discrepancies between the perceptions about global fire against the quantitative realities that have emerged through research on landscape fire occurrence and its impacts on society as a whole. Achieving a more balanced and realistic perspective about fire occurrence, its risks and impacts among fire specialists, decisions makers and the wider public is perhaps the most critical step towards regaining a more sustainable coexistence with landscape fires.

2. Has fire increased in many regions around the globe?

Analysis of charcoal records in sediments [31] and isotope records in ice cores [32] suggest that global biomass burning during the past century has been lower than at any

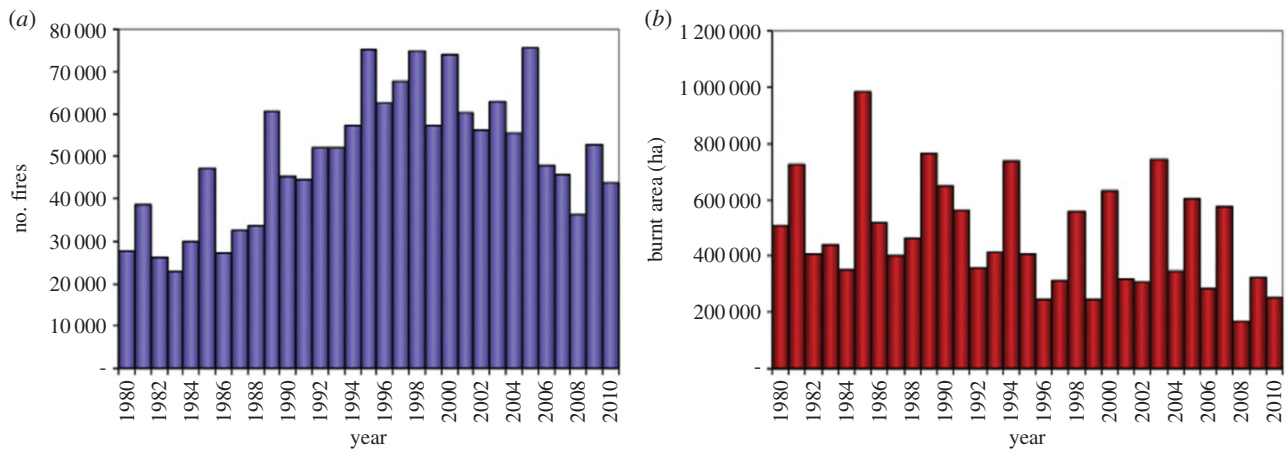


Figure 2. Wildfire occurrence (a) and corresponding area burnt (b) in the European Mediterranean region for the period 1980–2010. Source: San-Miguel-Ayanz *et al.* [37].

time in the past 2000 years. Although the magnitude of the actual differences between pre-industrial and current biomass burning rates may not be as pronounced as suggested by those studies [33], modelling approaches agree with a general decrease of global fire activity at least in past centuries [34]. In spite of this, fire is often quoted as an increasing issue around the globe [11,26–29]. One reason for this apparent contradiction may be that the global extent of fire is not necessarily correlated with impacts on human society as explored in §3. Another reason may be that our wider perception of fire is shaped by some widely publicized regional trends and a lack of discrimination between reported fire activity parameters. An important distinction regarding the latter is that between area burned (i.e. total ha or km²) and fire occurrence (i.e. the number of fires for a given area and period). Recent trends in area burned can now be derived from satellite observations and national records with reasonable accuracy at regional and global scales [35,36]. Trends in occurrence, however, are less reliable as recording efforts and methods vary between regions. A striking example where the lack of discrimination has led to contrasting perceptions is that of fire occurrence and associated area burned in the Mediterranean region in the past three decades (figure 2). There was indeed an increase in the number of fires from the early 1980s to the late 1990s. However, the past three decades have been characterized by an overall decrease in area burned, and also a decrease in the number of fires from mid-2000 (figure 2) [37,38]. This is often not recognized even within the scientific community, with some authors continuing to underpin the importance of their fire-related research with an increase of fire in this region [16,39].

Area burned is perhaps the most commonly used parameter when fire trends are being examined. It is a relatively simple and globally relevant parameter and it underpins estimations for carbon emissions by wildfire [22]. A summary of global trends in area burned during the twentieth century is given in Flannigan *et al.* [40]. During the first half century, the global average area burned decreased somewhat by about 7% [41]. This was largely attributed to human factors, such as increased fire prevention, detection and fire-fighting efficiency, abandonment of slash-and-burn cultivation in some areas and permanent agricultural practice in others. During the second half of the past century, this trend reportedly reversed with a 10% increase in global area burned. However, this trend was not reflected everywhere, and there

are regional variations and substantial uncertainties [40]. Overall, this increase in the latter half of the past century has been attributed to land management changes including increases in deforestation fires in the tropics [41], but it may also partially reflect a ‘return’ to a more ‘normal’ fire regime in areas where fire had been suppressed [40].

The availability of satellite data now allows a more consistent evaluation of temporal patterns in area burned. Thus, from an analysis based on MODIS burned area maps between 1996 and 2012, Giglio *et al.* [35] present some rather notable outcomes. In contrast to what is widely perceived, the detected global area burned has actually decreased slightly over this period (by 1% yr⁻¹). A more recent global analysis by van Lierop *et al.* [36], based primarily on nationally reported fire data supplemented by burned area estimates from satellite observations, shows an overall decline in global area burned of 2% yr⁻¹ for the period 2003–2012.

At coarse regional scales, overall trends for the period 1996–2012 are rather contrasting [35]. For example, data for Europe and Australia/New Zealand show a strong decline in area burned of 5% yr⁻¹, despite the latter region experiencing the largest annual area burned in the final year of the observation period. In contrast, for Southeast Asia, the Middle East and boreal North America the estimated area burned increased by 3–4%. For temperate North America the very small increase in area burned (0.1% yr⁻¹) estimated by Giglio *et al.* [35] over this period may seem surprising when compared with the widely reported increase in area burned for the USA [42] and particularly the western USA in recent decades [43–46]. This discrepancy may at least in part be because (i) the region used in Giglio *et al.*'s analysis excludes the boreal and drier southeastern zones of the USA, and (ii) area burned in the studies focused on the USA [42–46] is based on national and regional fire statistics produced using a variety of methods. These statistics need to be viewed with some caution when examining trends as annual reporting methods and biases have undergone changes over time [47]. Indeed, according to national statistics for the USA, while area burned by prescribed fire has changed little overall since reporting began in 1998 (10 year average: 8853 km²), area burned by wildfires has seen an overall strong trend of increase by over 5% yr⁻¹ over the period 1991–2015, with 2015 exceeding 40 000 km² burned for the first time during the past 25 years (figure 3). This

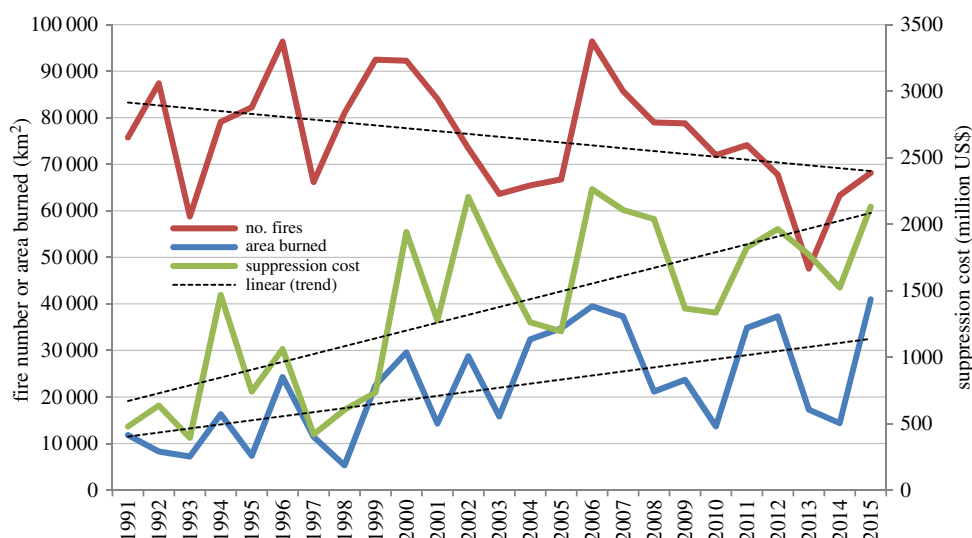


Figure 3. Area burned, number of fires and suppression costs (inflation adjusted to 2016 equivalent) for the USA with linear trend lines (1991–2015). Data: National Interagency Fire Center [48].

increase has been accompanied by an overall decline in the number of fires (figure 3). This suggests a general trend of fewer, but larger wildfires, which is also highlighted for forests in the western USA by Westerling for the period 1983–2012 [46]. However, caution is advised when considering the relative rates of change for area burned. The comparatively brief periods of observation discussed here are strongly influenced by regional interannual variability and are too short to be indicative of longer-term trends. For example, if only the past 16 full reporting years for the USA are considered (2000–2015), where annual area burned ranged between 14 284 (2001) and 40 975 km² (2015), the overall annual increase has been less than 1% [48]. Longer-term records can indeed reveal rather different perspectives. For example, for the Californian Cascades and Sierra Nevada, Mallek *et al.* [49] suggest that ‘modern’ (1984–2009) annual area burned was only 14% of that burned annually prior to European settlement (approx. 1500–1850). In addition to climate, changes in vegetation patterns and fire regimes also play an important role here and are discussed in the context of fire severity in §3a.

Thus, while there are clearly some noteworthy trends in area burned for specific recent periods and regions, the general perception of increasing fire around the world is not supported by the data available to date. This does not withstand the observation of increasing fire season length in some areas [50], which is an important contributor to the increase in area burned during this century in the northwestern USA [43,46], boreal Canada and Alaska [51,52]. A future lengthening of the fire season is also anticipated for many other regions of the globe, with a potential associated increase of fire activity [19,53–56]. It is, however, important to recognize that in addition to direct climatic factors, other factors such as fuel availability and human influence will also strongly affect future fire activity [57,58].

Thus the widespread use of limited datasets or excessive extrapolation of short-term regional trends may go some way in explaining the widely held view of generally increasing fire around the world. The wider impacts of fire on society examined in §3b–d, however, may be even more relevant in driving the overall perceptions of fire trends.

3. Have fire impacts increased in many regions around the globe?

(a) Fire intensity and severity

While the trends in area burned explored above have implications for the effects of fire on global carbon emissions, ecosystems and society, the spatial extent of burning is not always closely linked to the impacts of a fire. From a perspective of fire ecology or risk to infrastructures, the intensity of a fire (i.e. its rate of energy output), its severity (its ecosystem impacts) and its spatial patterns (degree of patchiness) may be more important than the total area burned. For example, the degree of vegetation consumption, the depth of burning into the organic and mineral soil, and the proximity of areas less affected or not by fire are key in determining the length of time for a burned area to ‘recover’¹ [3,61–63]. The notion that fire intensity and severity have increased in recent years pervades media reports and some of the literature [11,64–66]. Whether or not this is the case is not easy to ascertain given that these parameters and associated trends are much more difficult to determine compared with area burned. All else being equal, fire intensity can indeed be expected to increase with air temperature [67], and it can be deduced that areas that are experiencing higher atmospheric temperatures in the fire season associated with global warming would experience more intense fires. For example, the catastrophic 2009 Black Saturday fires of Victoria (Australia) were reportedly associated, among other factors, with unprecedented high atmospheric temperatures (since measurements began) and fire intensity [68]. Whether or not this extreme event signifies a trend or may simply be the result of longer-term natural variability in fire behaviour remains an open question. Indeed, it has subsequently been suggested that the fire weather potential witnessed during Black Saturday and the associated level of fire intensity was not unprecedented in southeastern Australia [69].

Few studies exist that have explicitly examined trends in fire severity. These have mainly focused on the western USA, an area where there are particular concerns about

Box 2. Good fire, bad fire?

Fire has long been a natural factor in many ecosystems around the world, from boreal forests to tropical savannas [76,77]. In these systems, fire is a necessary perturbation to preserve ecosystem health and stimulate rejuvenation [78,79]. Each ecosystem is adapted to a specific fire regime (i.e. fire type and recurrence), which could be understood as 'good fire'. However, when the fire regime moves away from the established one (e.g. owing to human influence), ecosystem resilience to fire may be surpassed [79]. The resulting long-lasting damage to the ecosystem would thus be caused by 'bad fire'. From an ecosystem perspective, it is therefore relatively easy to distinguish between 'good' and 'bad fire', although this is a simplification as ecosystems are dynamic entities which evolve and change [60]. Notwithstanding this, a more complicated picture arises when considering the human perspective. An ecologically 'good' stand-replacing fire in a fire-dependent forest, essential for forest regeneration, will be viewed as a 'bad fire' when it results in losses of homes or lives, or perhaps even by it resulting, in the short-term, in a black and desolate landscape. Equally, an ecologically 'bad' fire in a heathland, occurring too soon after the last one for full ecosystem recovery, can indeed be perceived as a 'good' fire for the landowner whose intention is to convert the heather into grass. Often a range of different perceptions comes into play, complicating even more the full picture, as highlighted in this issue by Davies *et al.* [80] in relation to the role of fire in UK peat and moorland management. Prescribed burning there is strongly supported by land managers, whereas opposition from the general public is a growing trend. An example of unequivocally 'bad fires', which is of global concern, is the recurring problem of peat fires in Southeast Asia. These are a consequence of land use changes and have enormous impacts on air and water quality, human health, ecosystem resilience and the global carbon cycle [81]. In September 2015, Indonesia's peat fires emitted carbon at a rate of 15–20 million tonnes per day, well above the daily carbon emissions of the whole American economy [82]. In most cases, however, whether a fire is considered 'good' or 'bad' will depend on its context, which can be ecological, social, economic or a combination of all. It is the role of the scientific community to provide an objective basis for society to understand and judge the consequences of the choices we make in how we manage, modify and coexist with fire.

increased fire activity [42,70]. Examining trends from 1984 to 2006 for large ecoregions in the north- and southwest USA, Dillon *et al.* [71] found no significant increase in the proportion of annual area burned at high severity for five of the six regions considered, with the southern Rockies being the exception. For the Sierra Nevada region (California), which was not covered in the previous study [71], Hanson & Odion [72,73] found no general increase in fire severity within the period 1984–2010. Considering ten national forests in California for the same period, Miller & Safford [74] found a significant increase in burn severity for yellow pine–mixed conifer forests. They attribute this largely to decades of fire suppression and other management practices rather than climate, which have led to major changes in forest composition and structure, increases in density and fuel-loading, and hence fire behaviour. Covering the much larger area of the dry forest landscapes of the western USA, including large parts of those examined in the aforementioned studies, Baker [75] found that the rate of high-severity fire in the period 1984–2012 was within or below that of historical century- to millennial-scale estimates.

Thus, while there is evidence of a recent increase in proportional fire severity for a specific forest type in California, these independent studies do not support the notion of an overall increase in fire severity over the past few decades in the fire-adapted forested landscapes in the western USA. Indeed, a longer term perspective focused on the Californian Sierra Nevada and Cascades by Mallek *et al.* [49] suggests that the annual area burned at high severity between 1984 and 2009 was only half that prior to European settlement (approx. 1500–1850), associated with an overall smaller area burned compared to pre-European times. Whether or not the overall lack of change in burn severity applies also to other regions where perceptions of increases in fire severity exist too has to remain unanswered until robust data emerge to test this notion.

(b) Impacts on society: direct effects on people

While the ecological impacts of fire or their interactions with climate are of concern to scientists, natural resource managers, policymakers and the public, policy and public perception regarding fire in the landscape is primarily shaped by the impacts of fire on people and society (box 2). Lives lost, together with direct damage to homes and other infrastructures create wide media attention and are probably of greatest importance here. For example, the Black Saturday fires of 2009, in which 173 people lost their lives, shook Australian society and led to major reconsideration of landscape fire related policy [68]. These and other tragic losses to lives from fire may or may not have been preventable, but should be also seen in perspective to other risks to lives. When considering some of the extreme landscape fires as a form of natural disaster, the number of deaths is actually relatively low compared with other natural disaster types. For example, data by the Emergency Events Database (EM-DAT)² suggest that over the period 1901–2014 3753 people have been killed by wildfire, compared with over 2.5 million from earthquakes and nearly 7 million from floods [83]. These figures are likely to be inaccurate and substantial underestimations of direct deaths from fire. For example, the EM-DAT reports 21, 35 and 17 deaths for 2012, 2013 and 2014, respectively, whereas data collected for recent years by the Global Fire Monitoring Centre report 215, 209 and 217 fatalities from landscape fires for the same years [84]. Irrespective of whether direct annual deaths number in the tens or the hundreds, they indicate a comparatively low risk of death as a result of fire compared with that from other natural disaster types (table 1), particularly considering that approximately 4% of the global vegetated land surface burns every year.

It is also worth noting that many of the deaths recorded as a result of landscape fires have indirect 'medical' or operational causes. For example of the 26 total landscape fire deaths recorded in the USA in 1999 [85], only one was a direct fire

Table 1. Global comparison of human and economic losses derived from wildfire, earthquakes and flood disasters from 1901 to 2014. (Source: EM-DAT 2015 [83].)

	wildfires	earthquakes	floods
no. of events	387	1291	4481
people killed	3753	2 574 627	6 947 908
people injured	6812	2 614 875	1 329 923
people affected (million)	6	190	3604
risk of death (%) ^a	0.06	1.4	0.02
total direct damage (million US\$)	54 828	774 771	681 427
cost per event (million US\$)	142	600	152
cost per person affected (US\$)	9138	4078	189

^aNo. of fatalities per no. of people affected (%).

death (burnover), nine were due to heart attack, and other causes included crushing by engines and electrocution. Unsurprisingly, fire fighters are at greatest risk from fires, particularly in regions where fire suppression involves the use of personnel on the ground in topographically complex terrain. The deaths of 19 wildland firefighters in Arizona in 2013, who became entrapped in steep terrain under changing fire behaviour [86], serve as a recent tragic example. Data from the USA show a total of 338 firefighter fatalities between 1977 and 2006 [87]. Additional deaths occur in training, and road and aircraft accidents. Among these there are no clear temporal trends in wildland fire deaths, except when considering those from aircraft crashes which have risen, probably owing to the increased use of aircraft in wildland firefighting over this period [87]. A study examining all recorded wildland fire fatalities in Spain between 1980 and 2010 reported 241 deaths of which 169 were firefighters and with no increasing or decreasing temporal trend [88]. Considering the reported global direct death toll from landscape fire ‘disasters’ between 1977 through to 2014, no clear trend emerges either, with large fluctuations between years ranging from zero in 1990 to a maximum of 266 in 1997 [83].

(c) Impacts on society: direct economic impacts

Human losses aside, the direct financial costs, such as the damage to homes and other infrastructures, often dominate the perception of the fire impacts and an increase in these is often highlighted in the media [89–91] or scientific papers and reports [92–94] (see also box 2). The data on fire disasters with continuous annual records of economic damage (1987–2014; [83]) give annual global values (adjusted to 2015 US\$ value) ranging from US\$4.6 million to US\$12 318 million (annual average US\$2677 million), showing no apparent temporal trend. These estimates of losses, however, only include damage to property, crops and livestock and do not reflect losses from fire events not classified as disasters.² Other important economic parameters not included here are the costs arising from human losses, injuries and longer-term health

implications [95]. Furthermore, fire suppression costs are not considered in these figures. These can be very substantial (figure 3). For example, Greece, France, Italy, Portugal and Spain together invest €2500 million each year in fire management, with most of this budget dedicated to fire detection and suppression [16]. This is similar to the estimated global average annual losses from fires reported by EM-DAT for 1987–2004. Canada spends an average of US\$ 531 million annually on fire prevention and suppression (2000–2010) [96]. There is limited data available from most countries to examine any global temporal trends.

For the USA, figure 3 shows suppression costs (adjusted to 2016 US\$ rates) in relation to the number of fires and area burned during the past 25 years. While the area burned has seen an overall increase of approximately 5% yr⁻¹ (see also §2), suppression costs have overall increased by approximately 1.5 times that rate. It is not clear to what degree this trend is (i) representative of any trends elsewhere in the world, and (ii) has resulted in a concomitant reduction in the actual area burned. The fact that the period of 2000–2016 has seen an increase of less than 1% yr⁻¹ in inflation adjusted suppression costs, which is similar to the rate of increase in area burned over the same period, indicates that the preceding period of a relative increase in resources allocated to suppression in the 1990s was followed by a levelling off of suppression expenditure per unit area affected. That said, area burned is perhaps not the most important factor to consider when examining suppression cost in the USA. Of greater relevance may be the increasing population density and hence need for fire suppression in the wildland–urban interface (WUI). For example, in the western states of California, Oregon and Washington, housing in the WUI comprised 61% of all new homes built during the 1990s, and 43% of the total housing in the region [97]. Given that 2.9 million American homes are in areas with fire return intervals of 100 years or less [97], an increase in suppression need would be expected even if the area burned had remained unchanged. Increased housing in the WUI may be a reason why the American continent is leading the global ‘league table’ (table 2) in terms of total economic damage over the period 1984–2014. Building in the WUI will also have resulted in more people experiencing fire, which may be associated with greater media coverage of fire from these areas.

(d) Impacts on society: indirect impacts

In addition to direct impacts on people and economic losses, fires also have other substantial effects on society through indirect impacts. Post-fire environmental effects such as accelerated flooding, soil erosion, mass movement and pollution of water bodies are among the most costly impacts on society [3,62,63]. Other important indirect effects are the longer-term health implications [95]. A notable example of this is how smoke from landscape fires has historically, and is currently, contributing to premature deaths among the world population [98]. Estimates for the period 1997–2006 suggest these to be in the region of 340 000 per year [99]. These figures are orders of magnitudes greater than direct deaths from fires (§3b). Other indirect social impacts include disruptions to social processes and functioning, such as disruptions to road and air traffic, and closure of businesses during and immediately after the fire, or even long-term reduction of tourism, aesthetic value of the landscape or home values [100]. Catastrophic fires can even change social dynamics

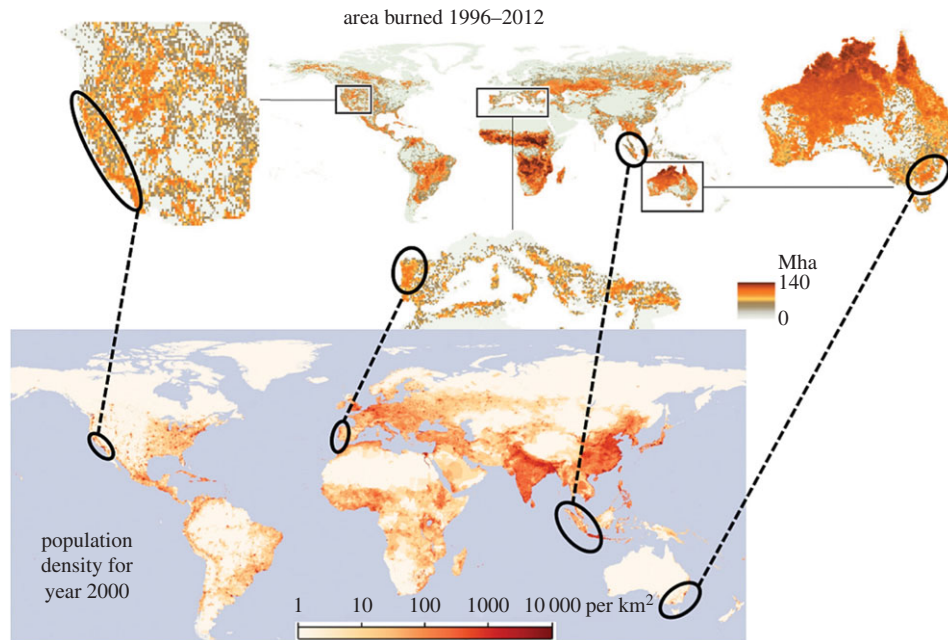


Figure 4. Global area burned with enlarged sections of the globe (1996–2012) and global population density with examples where regions with high proportions of area burned coincide with high population densities. (Based on and modified from Moritz *et al.* [19] and NASA (http://neo.sci.gsfc.nasa.gov/view.php?datasetId=SEDAC_POP).)

Table 2. Human and economic losses from wildfire ‘disasters’ by global region from 1984 to 2013. Costs are based on the actual value of US\$ in a given reporting year. (Source: EM-DAT 2013 [83].)

	no. events	people killed	total people affected	death rate/event	economic costs (million US\$)
Africa	25	272	21 672	11	440
America	118	234	1 229 175	9	25 229
Asia	50	748	3 188 257	30	11 892
Europe	89	462	1 295 562	18	12 619
Oceania	21	224	74 320	9	2121
total	303	1940	5 808 986	78	52 301

and the way people interact with each other and with the landscape [100]. Efforts are increasing to examine these indirect impacts more closely as they are currently only poorly understood and quantified [100]. It is therefore not possible here to explore any trends or their potential effects on people’s perceptions.

4. Synthesis and conclusion

We have shown here that the widely held perception of increasing fire and fire impacts at the global and some regional scales is not well supported by the realities that the available data show. We do not question that fire season length and area burned has increased in some regions over past decades, as documented for parts of North America, or that climate and land use change could lead to major shifts in future fire consequences, with potential increases in area burned, severity and impacts over large regions [19,50,53]. The data available to date, however, do not support a general increase in area burned or in fire severity for many regions of the world. Indeed, there is increasing evidence suggesting that there is

overall less fire in the landscape today than there has been centuries ago [34,101], although the magnitude of this reduction still needs to be examined in more detail [33].

Furthermore, the data evaluated here do not support the perception of increasing direct losses from fire. Over the past decades there is no clear trend of increasing direct losses such as losses of life or infrastructure. While any fire-related death can be seen as one too many, at least the risk of direct death from fire for the population as a whole is low compared with other natural hazards. From the data available for the USA covering the past 25 years, it is clear that suppression costs have increased substantially (figure 3). This increased expenditure and effort in the USA will most likely have saved many lives while it also led to the loss of others. Increases in suppression expenditure may, at least in part, be driven by a concern of worsening fire situation. The media are dominated by reports from fires where lives are lost or at risk, and these are typically from fire-prone regions exhibiting high population densities (figure 4). The increased population density in the WUI over past decades, for example, may itself have resulted in increased media reports. It is important to highlight that there is likely to be a bias in reporting of losses

for Western countries given that the largest number of people affected by fire and losses of life appears to be elsewhere (i.e. Asia; table 2 and box 1).

Perhaps rather than a 'wildfire problem' that has worsened globally in recent decades, the negative, and sometimes tragic, consequences of fire themselves may be gaining wider public attention and, therefore, recognition. The fact that nowadays the latest news reports about disasters from around the world are readily available to large parts of the population may be a contributing factor. What is not spreading equally well is the recognition that fire is a fundamental natural ecological agent in many of our ecosystems and only a 'problem' where we choose to inhabit these fire-prone regions or we humans introduce it to non-fire-adapted ecosystems [3]. The 'wildfire problem' is essentially more a social than a natural one.

The warming climate, which is predicted to result in more severe fire weather in many regions of the globe in this century [53] will probably contribute further to both perceived and actual risks to lives, health and infrastructure. Therefore, the need for human societies to coexist with fire will continue, and may increase in the future [19]. We thus need to move towards a more sustainable coexistence with fire. This requires a balanced and informed understanding of the realities of wildfire occurrence and its effects. It is hoped that the data and discussion presented here, together with the other contributions in this special issue, will reduce misconceptions about fire and assist in providing this understanding.

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Endnotes

¹The concept of the 'post-fire recovery window' or 'window of disturbance' can be viewed as the time it takes for ecosystem properties such as biomass, biodiversity, soil characteristics or the hydrological balance to return to a pre-fire status [59]. This assumes that fire is an episodic or even rare disturbance event. A more appropriate view in fire-adapted ecosystems is that fire is a natural process that is part of a natural cycle between fire and post-fire recovery conditions with varying recurrence [60].

²EM-DAT is a global database on natural and technological disasters which fulfil one or more of the following four criteria: (i) 10 or more people dead, (ii) 100 or more people affected, (iii) declaration of a state of emergency, (iv) call for international assistance [83]. It therefore excludes damaging landscape fire events where less than 10 fatalities have occurred or less than 100 people have been affected. Lives lost and economic damage based on EM-DAT reported here are therefore likely to be an underrepresentation of actual global values.

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Topic: Caribou and moose: Assessment boundaries: Clarify scale for LAA and assessment endpoints (DAR Pages 10-57, 10-52, 10-101)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

As noted in the DAR, caribou and moose are wide-ranging ungulates that require different habitats throughout the year. The developer has selected a Local Assessment Area and Regional Assessment Area that are the same, at 15 km on either side of the ROW. This likely is not appropriate for population assessment endpoints for either species. The developer also seems to indicate that the LAA, on its own, cannot support a caribou population, so it is unclear how the assessment endpoints related to effects in this region are relevant.

In 10.1.4, the developer states:

- “Neither moose nor caribou have discrete population or population management boundaries that would directly relate to the project's potential residual or cumulative effects” (p.10-10).

In 10.1.6, the developer states:

- “A significant adverse residual effect on caribou and moose is one that...: 1) causes or further contributes to the exceedance of a conservation-based threshold; or 2) threatens the long-term persistence or viability of caribou and moose populations in the Caribou and Moose Local Assessment Area.

The DAR concludes that “the Project... is not expected to contribute to measurable changes in movement, mortality risk and health of boreal caribou in the Caribou and Moose Local Assessment Area” (p.10-107). It is unclear how the assessment of effects in the Local Assessment Area is scaled up to assess the persistence and viability of caribou (and moose) populations at a geographic scale needed to provide habitat for a caribou population.

A biologically relevant spatial scale that reflects population-level processes would provide a useful basis to assess impact predictions from the Project on the distribution, abundance, persistence and viability of local populations of boreal caribou and moose. The spatial scale for predicting population-level effects should align with the study areas used for population monitoring.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer’s response.

Request from the Review Board:

- A. Considering that the Local Assessment Area does not support a local population, please describe how the predicted impacts in the Project Development Area and Local Assessment Area are scaled up to estimate demographic impacts and long-term persistence or viability of boreal caribou and moose populations at relevant spatial scales that can support viable or self-sustaining populations.
- B. If the area required for a self-sustaining population is larger than the Local Assessment Area, please describe what area would be required for a local self-sustaining population. Please describe biological and ecological rationales for scaling up analyses and predictions derived in the Local Assessment Area, to apply population assessment endpoints for caribou and moose.



Response from the Government of the Northwest Territories:

A. and B.

The Mackenzie Valley Highway Project (the Project) is a proposed 281-kilometre (km) extension of the existing all-season Mackenzie Highway in the Northwest Territories (NWT). The Project alignment runs parallel to the Mackenzie River between Wrigley and Norman Wells. The scale used to assess Project-related effects on boreal caribou and moose—the Caribou and Moose Local Assessment Area (LAA)—was developed by considering the local and regional context of the Project setting. Creating the LAA required a tradeoff between ecological and Project-scale boundaries. An area too large would dilute predicted Project effects, and an area too small would exaggerate those effects. Consequently, the Caribou and Moose LAA does not and is not meant to evaluate boreal caribou or moose at the level of designated population units.

Examination of assessment precedence is instructive. For example, different opinions about the spatial scales for assessment were communicated for the Inuvik to Tuktoyaktuk Highway Project and Tłı̄chǝ All Season Road reviews. Those views were summarized in the Developer’s Assessment Report (DAR) Section 10.1.4.1 (Spatial Boundaries), pp. 10-11, as follows:

“The Inuvik to Tuktoyaktuk Highway Project used a 15 km regional study area (Kiggiak – EBA Consulting Ltd. 2011). The Tłı̄chǝ All Season Road used the boreal caribou NT1 population boundary as a regional study area for the assessment on caribou, and a 35 km radius buffer for the assessment on moose (Golder Associates Ltd. 2017). However, the MVEIRB found the scale of NT1 to be inappropriately large and diluted the effects on caribou (MVEIRB, 2018; EA-1617-01 [PR#286]). There was no discussion on the suitability of the area used for moose.”

This discussion in the DAR highlighted the challenges faced by the Government of the Northwest Territories (GNWT) in attempting to define assessment scales relevant to the Project and applicable to caribou and moose ecology. Such challenges are not unique to projects under review in the NWT, and are similarly encountered for projects in other jurisdictions in Canada (based on the experience of the assessment team).

Moose have no defined population boundaries in the NWT. Approximately 2,028 moose occur within the Caribou and Moose LAA, with the highest densities along the Mackenzie River (Pathmanathan and Chan, 2024). Moose likely remain in the LAA year-round based on their documented (average) annual home range sizes (~200 km²; Stenhouse et al., 1995). Therefore, the Caribou and Moose LAA is considered adequate to assess Project-scale effects on moose.

The boreal caribou NT1 range is very large (441,665 km²) and includes many caribou that are unlikely to interact with the Project. Though the NT1 range is divided into smaller regional boundaries for range planning purposes, these boundaries are administrative and not based on biological criteria such as population substructure (GNWT, 2019). Further discussion is provided below to rationalize using the LAA to assess the Project’s effects on boreal caribou.

The Caribou and Moose LAA considers the Project’s local scale (<15 km) effects on caribou for several reasons. The Project occurs along the western extent of the NT1 range, reducing the likelihood of caribou interaction. The western boundary of the NT1 range is primarily defined by the Mackenzie Mountains, occupied by defined northern mountain caribou subpopulations or herds (Environment Yukon, 2016). The effect of the range boundary is exacerbated by natural barriers (e.g., Mackenzie River, terrain features) and a corridor of existing human disturbances (e.g., settlements, linear features) adjacent to the Project. EDI



(2024) found the existing MVWR, which the Project will replace between Wrigley and Norman Wells, had little effect on caribou movement patterns and crossings. Refer to the GNWT's response to Mackenzie Valley Environmental Impact Review Board (MVEIRB) Information Request (IR)#45 for a plain language summary of the EDI (2024) technical report.

Regional environmental conditions beyond the Caribou and Moose LAA are possibly too different in terms of habitat and disturbance levels to compare with conditions proximal to the Project. Broadening the assessment extent to include other settings would be inappropriate when the aim is to isolate Project-scale effects to ascertain, the potential incremental effects of the Project on the environment, which is a dominant requirement for any project assessment. For example, using the Southern NWT regional boundary from *A Framework for Boreal Caribou Range Planning* (GNWT, 2019) would have several contextual challenges. First, the disturbance level along this regional boundary's southern extent is substantially higher than in the area surrounding the Project (see Figure 4 in GNWT [2019]). Human disturbance to the south is widely distributed across the Southern NWT, whereas the Project occurs in a corridor of human disturbance. Second, climate-driven habitat changes could *degrade* boreal caribou habitat suitability in the south but *enhance* habitat suitability in the area encompassing the Caribou and Moose LAA (Stewart et al., 2023). These differences between the Project and more southern areas highlight the challenges in comparing different settings.

Comparing the Project to other NWT roads, like the Tłı̄ch̄o Highway (e.g., GNWT response to MVEIRB IR#54), also needs to respect and consider the fundamental differences in habitat and disturbance levels among settings. For example, the local area surrounding the Tłı̄ch̄o Highway (10 km buffer used in that assessment; GNWT [2024]) has relatively lower human disturbance (i.e., minimal linear features, no settlements) than the MVH LAA. It includes key late-winter habitats that are mostly undisturbed by fire (GNWT, 2024). In contrast, the Mackenzie Valley Highway occurs along a corridor of human disturbance affected by fire, parallel to natural barriers. A habitat selection assessment at the NT1 range scale (2nd order selection) also identified proportionally more year-round moderate-to-high quality boreal caribou habitat in the Tłı̄ch̄o Highway area than in the Mackenzie Valley Highway LAA (see Figure 8 in DeMars et al., 2020). The distribution of habitat quality and human disturbance will influence the potential for caribou to interact with each of these highways. Conditions at the Tłı̄ch̄o Highway are more conducive to caribou interactions, whereas existing conditions in the Mackenzie Valley Highway LAA limit such interactions (for all the reasons stated above). Therefore, predictions of caribou responses at the Tłı̄ch̄o Highway are not comparable to those of the Project.

Based on the Project's habitat and disturbance setting, assessing effects on boreal caribou is most relevant at a local scale that considers caribou that actually interact with, or may be affected by, the Project. Scaling up these local effects can result in lower prediction confidence for project-specific effects, which are based on applying project-specific mitigation measures intended to address direct and indirect effects of the Project. Scaling up local effects to predict long-term demographic changes beyond the LAA (e.g., NT1 range, or Southern NWT and Sahtú regional boundaries) is also challenging because it does not consider the regional differences in boreal caribou habitat and levels of human and natural disturbances. Any inferences made on population parameters beyond the recruitment-disturbance relationship (Environment Canada, 2011) assessed in the DAR (Table 10.18) would be without evidence (see IR #53 response for potential caveats to that assessment). Instead, the DAR assessment and future monitoring within the Caribou and Moose LAA should focus on local caribou endpoints such as crossings, habitat use, and mortality-related events.



In summary, the assessment of the effects of the Project on boreal caribou and moose has been carefully tailored to address the ecological context of the proposed Project. The Caribou and Moose LAA was designed to balance the need for a scale that accurately reflects Project-specific effects without overgeneralizing or overstating potential impacts.

For moose, the Caribou and Moose LAA is deemed adequate given their high densities (relative to caribou) and year-round presence within the area. However, for boreal caribou, the Caribou and Moose LAA focuses on local-scale effects rather than broader regional scales. This approach accounts for the caribou's large NT1 range and the minimal interaction observed within the Project area. Notably, the western boundary of the NT1 range, natural barriers, and existing human disturbances further reduce the likelihood of significant caribou interaction with the Project.

Comparisons with other projects, such as the Inuvik to Tuktoyaktuk Highway and Tẖcẖq̱ All Season Road, reveal that broader regional scales were either too large or contextually inappropriate to make accurate predictions for the Project. The local scale focus of the Caribou and Moose LAA avoids diluting the effects of the Project and supports an assessment that is relevant and precise. Expanding the scale would introduce uncertainties due to differing habitat conditions and disturbance levels, which could obscure the true impact of the Project.

The response to this Information Request has been prepared in accordance with the GNWT's Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



References

- DeMars, C., Hodson, J., Kelly, A., Lamontagne, E., Smith, L., Groenewegen, K., Davidson, T., Behrens, S., Cluff, D., and Gurarie, E. 2020. Influence of Land Cover, Fire and Human Disturbance on Habitat Selection by Boreal Caribou in the NWT. Project 202 of the Government of the Northwest Territories Department of Environment and Natural Resources, Northwest Territories Cumulative Impact Monitoring Program. 70 + 159 app pp.
- EDI Environmental Dynamics Inc. 2024. Mackenzie Valley Highway Project: Inferring the Potential Barriers to Boreal Caribou Movement. Prepared for K'alo-Stantec Limited for use by the Government of Northwest Territories, Calgary, Alberta. 55 + 14 app pp.
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Topic: Caribou and moose: Assessment boundaries: Getting data to support a Local Assessment Area/Regional Assessment Area (DAR section 10.2.2)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

Understanding caribou movements may help determine an appropriate scale for the assessment of effects of the road on a local population. Data from collared caribou may be valuable in determining appropriate scales for assessment as well as assessing and mitigating impacts on movement. For example, Figure 3.1 in the Technical Data Report (Appendix 10A) shows boreal caribou collar locations from 2003-2023. In addition to assessing habitat availability at broad scales, DeMars et al. (2020) assessed habitat selection of collared caribou within individual annual home ranges.

The developer has also provided a technical report (EDI 2024) on analyses of GPS telemetry data from 21 collared boreal caribou cows. The report showed the movement trajectories of those animals (Figure 2 in EDI 2024), but it did not provide any additional details on the individual collared caribou. Annual range use by the collared caribou that have interacted with the MVH Project is important context to understand road effects.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

References

- DeMars, C. A., J. Hodson, A. Kelly, E. Lamontagne, L. Smith, K. Groenewegen, T. Davidson, S. Behrens, D. Cluff, and E. Gurarie. 2020. Influence of land cover, fire and human disturbance on habitat selection by boreal caribou in the NWT. Government of the Northwest Territories Unpublished Report, Alberta Biodiversity Monitoring Institute, Department of Environment and Natural Resources, GNWT, University of Maryland.
- Environmental Dynamics Inc. (EDI). 2024. Mackenzie Valley Highway Project: Inferring the Potential Barriers to Boreal Caribou Movement. Report Prepared for K'alo-Stantec Limited for use by the Government of Northwest Territories. (PR#163)

Request from the Review Board:

- A. Please provide a descriptive summary (with maps and figures) of the individual home ranges (based on minimum convex polygons and capture locations) of collared caribou cows (that is, the 21 individuals identified in EDI 2024) that occur on or near the Local Assessment Area and highway corridor.
- B. Please provide a summary table with key information of collared individuals (in EDI 2024), such as a) when and how long the collars were deployed on each caribou, b) the fixed rate and total locations, and c) home range area.
- C. Please provide a plain language summary of the EDI (2024) report written for a target audience of community and board members.



Response from the Government of the Northwest Territories:

A. and B.

The Government of Northwest Territories (GNWT) wishes to first provide a correction to the number of individual caribou reported in-text in EDI (2024): a total of 21 individuals were present across *all seasons*. However, only 16 unique individuals (still totaling 42 animal-year-season combinations) had data for the three seasons analyzed: early-to mid-winter, late winter, and calving to post-calving. Table 2 in EDI (2024) is still correct; the one in-text reference and Table 2 footnote mentioning 21 individuals is incorrect (Section 2.1.2.1, Page 11).

A depiction of the 42 season- and year-specific home ranges of 16 caribou individuals used in the EDI (2024) movement analysis are provided in Figure MVEIRB 45-1. The first available GPS location for each caribou (approximating the capture location) is also provided in Figure MVEIRB 45-1; these locations do not necessarily occur within the depicted home ranges because the first GPS location may have occurred in seasons that were not analyzed in EDI (2024). These home ranges were derived using 100% minimum convex polygons (MCPs) around locations used in the movement analysis, which had 2-hour fix intervals (or fix rates) between each successive location. To achieve consistent 2-hour intervals for the integrated step selection functions developed, a ‘regularization’ method excluded locations with longer time intervals (see EDI, 2024 for details). A summary of the collaring information, location data, and home range sizes of individuals in each season and year, is provided in Table MVEIRB 45-1. In general, the home ranges of individuals were smallest during late winter because caribou remained confined to small areas on the landscape (presumably due to snow conditions). Individual home ranges were largest during calving to post-calving, but with substantial inter-individual variation—caribou that remained in rugged terrain had relatively smaller home ranges than caribou in open conifer stands.



Table MVEIRB 45-1. Descriptive summary of boreal caribou used in the EDI (2024) movement analysis, including deployment, mortality, and collar drop-off dates, current status, number of locations, start-end dates, and 100% minimum convex polygon (MCP) home range sizes.

Animal ID	Season	Year	Deploy Date	Mortality Date	Drop-off Date	Status	N ¹	Start Date	End Date	100% MCP (km ²)
BWCA20100	Early-Mid Winter	2020	4/13/2020	—	8/31/2023	Released	908	10/26/2020	1/13/2021	1204.74
	Early-Mid Winter	2021	—	—	—	—	759	1/13/2021	3/22/2021	502.65
	Late Winter	2021	—	—	—	—	172	3/22/2021	4/6/2021	9.34
BWCA20105	Early-Mid Winter	2020	4/12/2020	—	8/31/2023	Released	869	10/26/2020	1/13/2021	366.15
	Early-Mid Winter	2021	—	—	—	—	715	1/13/2021	3/22/2021	87.39
	Early-Mid Winter	2023	—	—	—	—	757	1/13/2023	3/22/2023	169.78
	Late Winter	2023	—	—	—	—	155	3/22/2023	4/4/2023	2.14
BWCA20107	Early-Mid Winter	2021	4/12/2020	—	8/31/2023	Released	736	1/13/2021	3/22/2021	1320.65
	Late Winter	2021	—	—	—	—	170	3/22/2021	4/6/2021	49.25
BWCA21101	Calving	2021	3/1/2021	4/24/2022	—	Dead	847	5/1/2021	7/13/2021	2428.79
	Early-Mid Winter	2021	—	—	—	—	822	10/26/2021	1/13/2022	915.55
	Early-Mid Winter	2022	—	—	—	—	688	1/13/2022	3/22/2022	316.75
	Late Winter	2021	—	—	—	—	164	3/22/2021	4/6/2021	86.29
	Late Winter	2022	—	—	—	—	161	3/22/2022	4/5/2022	15.76
BWCA21102	Calving	2022	2/24/2021	5/3/2023	—	Dead	849	5/1/2022	7/13/2022	458.56
	Early-Mid Winter	2022	—	—	—	—	786	1/13/2022	3/22/2022	65.67
	Early-Mid Winter	2023	—	—	—	—	811	1/13/2023	3/22/2023	113.18
	Late Winter	2021	—	—	—	—	178	3/22/2021	4/6/2021	10.48
	Late Winter	2022	—	—	—	—	177	3/22/2022	4/6/2022	3.59
	Late Winter	2023	—	—	—	—	151	3/22/2023	4/3/2023	0.61
BWCA21103	Calving	2021	2/28/2021	—	8/31/2023	Released	867	5/1/2021	7/13/2021	42.36
	Calving	2022	—	—	—	—	864	5/1/2022	7/13/2022	928.39
	Late Winter	2021	—	—	—	—	171	3/22/2021	4/6/2021	10.12
BWCA21108	Early-Mid Winter	2022	2/24/2021	4/12/2020	—	Dead	744	1/13/2022	3/22/2022	195.79
	Early-Mid Winter	2023	—	—	—	—	747	1/13/2023	3/22/2023	162.37
	Late Winter	2022	—	—	—	—	162	3/22/2022	4/6/2022	6.25
	Late Winter	2023	—	—	—	—	138	3/22/2023	4/3/2023	56.71
BWCA21109	Calving	2021	2/9/2021	4/29/2022	—	Dead	862	5/1/2021	7/13/2021	338.57
BWCA23114	Early-Mid Winter	2023	2/9/2023	—	8/31/2027	Alive	468	2/9/2023	3/22/2023	61.70
	Late Winter	2023	—	—	—	—	161	3/22/2023	4/4/2023	42.45
BWCA23116	Early-Mid Winter	2023	2/9/2023	—	8/31/2027	Alive	465	2/9/2023	3/22/2023	169.84
	Late Winter	2023	—	—	—	—	156	3/22/2023	4/4/2023	9.93
BWCA295	Calving	2019	3/13/2019	9/29/2022	—	Dead	646	5/1/2019	6/30/2019	164.99
	Calving	2020	—	—	—	—	648	5/1/2020	7/1/2020	246.45
BWCA296	Calving	2020	2/26/2020	—	8/31/2023	Released	700	5/1/2020	7/1/2020	1005.66
	Calving	2021	—	—	—	—	678	5/1/2021	7/1/2021	111.77
BWCA300	Calving	2020	4/11/2020	—	8/31/2023	Released	714	5/1/2020	7/1/2020	495.82
BWCA301	Calving	2021	2/25/2020	5/10/2022	—	Dead	597	5/1/2021	7/1/2021	469.24
BWCA303	Calving	2020	2/26/2020	—	8/31/2023	Released	676	5/1/2020	7/1/2020	1354.75
	Calving	2021	—	—	—	—	599	5/1/2021	7/1/2021	213.98
	Calving	2022	—	—	—	—	632	5/1/2022	7/1/2022	457.96
BWCA338	Calving	2022	3/3/2022	4/13/2023	—	Dead	520	5/1/2022	6/30/2022	2495.92

¹ N refers to the total sample size after 'regularizing' a caribou's trajectory to ensure 2-hour intervals between consecutive locations.



C.

Plain Language Summary of EDI (2024)

The report titled *Mackenzie Valley Highway Project: Inferring the Potential Barriers to Boreal Caribou Movement* (EDI, 2024) reports on a study to investigate whether the existing Mackenzie Valley Winter Road (MVWR), including the Délı̄ne Winter Road, impedes (acts as a barrier to) boreal caribou movement. The study used satellite data to track locations of 16 collared boreal caribou. The locations were used to test the MVWR's influence on boreal caribou movement patterns, habitat choices, and crossing abilities by: (1) comparing real caribou movements *with* and *without* considering the MVWR, and (2) comparing the number of road crossings by simulated caribou in both those scenarios. The MVWR's effect on movement was assessed for three seasons: early to mid-winter, late winter, and calving to post-calving.

Real caribou rarely crossed the MVWR—only five times across the three seasons. These crossings happened mainly along the east-west Délı̄ne Winter Road, not the north-south section of the MVWR (Wrigley to Norman Wells). The MVWR had minimal effect on caribou movement speed during early to mid winter; however, combined total disturbances on the landscape (e.g., MVWR, settlements, and other linear features) affected caribou movement speed during calving to post-calving. Caribou moved very little during late winter and remained in small areas, likely due to snow conditions. The MVWR had very little effect on the number of crossings by simulated caribou, especially along the north-south section. Instead, natural features (e.g., Mackenzie River, Norman Wells Range), other human disturbances (e.g., communities), and habitat conditions had the greatest influence on caribou movement.

In summary, the study concluded that the MVWR does not substantially impede caribou movement, especially along the north-south section between Wrigley and Norman Wells where the Project will occur. The east-west Délı̄ne Winter Road currently may present some barriers to movement.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories (GNWT)'s Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



References

EDI Environmental Dynamics Inc. 2024. Mackenzie Valley Highway Project: Inferring the Potential Barriers to Boreal Caribou Movement. Prepared for K'alo-Stantec Limited for use by the Government of Northwest Territories, Calgary, Alberta. 55 + 14 app pp.



Topic: Caribou and moose: Assessment boundaries: Clarify terms used to describe impacts to caribou and endpoints (DAR Pages 10-57, 10-52, 10-101)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

Section 10.1.6. The DAR provides the developer’s evaluation of impacts to boreal caribou from the project. This evaluation uses language to describe impacts and the significance of these impacts to caribou from the project that uses several terms. It appears to use two different thresholds for assessing the significance of impacts on caribou. One is the ‘long-term persistence or viability of the population,’ and the other is the ability to ‘maintain a self-sustaining population’.

The difference between these two evaluations and how they relate to each other is not clear to the Review Board. Also, it is not clear at what spatial scale the DAR applies these terms (see also the next information request about scale). For example, the DAR appears to provide contradictory statements about caribou:

1. The DAR states that residual effects on caribou and moose in the Local Assessment Area/Regional Assessment Area will not threaten “the long-term persistence or viability of boreal caribou and moose populations” in the Local Assessment Area/Regional Assessment Area.
2. The DAR also states that areas of the project may not be able to sustain caribou populations, “The Project exists in an area (the Caribou and Moose Local Assessment Area and the Southern NT Range Planning Region) with a pre-existing significant habitat disturbance that cannot sustain a caribou population.” (P10-103).

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer’s response.

Request from the Review Board:

- A. Please clarify what the terms or phrases listed below mean and at what spatial scale they are meant to apply:
 - a. “Not alter further the population viability or persistence.”
 - b. “Not expected to threaten the long-term persistence or viability”
 - c. “maintain a self-sustaining local population.”
- B. Use the information gathered through recent wildlife collar data (such as EDI 2024) to help define local populations and determine whether these local populations can be defined using these terms.



Response from the Government of the Northwest Territories:

A. a, b, c

Term/Phrase Clarification

A viable population was defined in the Developer's Assessment Report (DAR) (Section 10.1.6) as one with enough individuals to persist over a given period (Middleton and Nisbet, 1997).

As noted in the reviewer comments, the general term 'viable population' is used interchangeably to describe (a) population viability or persistence, (b) long-term persistence or viability, and (c) a self-sustaining local population. Given the interchangeable term use, the following definitions and discussions from federal government recovery strategies and scientific assessments are summarized below.

Further to the definition provided in the DAR, the Scientific Assessment for Critical Habitat (Environment Canada 2011) and the federal recovery strategy (Environment and Climate Change Canada [ECCC], 2012) defined a self-sustaining population as:

"A local population of boreal caribou that on average demonstrates stable or positive population growth over the short term (≤ 20 years), and is large enough to withstand stochastic events and persist over the long-term (≥ 50 years), without the need for ongoing active management intervention (e.g., predator management or transplants from other populations)."

The federal government, for another recovery strategy (ECCC, 2021), states further, "...determines if a population is healthy or self-sustaining, a population will be evaluated based on the criteria below:

- *the population has as many or more births as deaths over the long term*
- *it is large enough to survive and recover from natural events (such as weather events) and human activities*
- *it does not need human support (such as feeding or predator management)*
- *it can persist over the long-term (over a number of decades)"*

ECCC's (2024) discussion paper on boreal caribou protection suggests that:

"Boreal caribou require large range areas comprised of continuous tracts of undisturbed forested landscapes, with one estimate recommending that ranges need to be at least 10,000 to 15,000 km² to support ≥ 300 [EC, 2008] individuals [EC, 2011]".

Applicable Spatial Scales

A discussion was provided (Section 10.1.4.1 of the DAR) describing the challenge of assessing potential effects of the Project at a spatial scale that is a balance between areas either (a) too large and not meaningful to the scale of the Project; or, (b) too small relative to caribou and moose populations and associated habitat. Section 10.1.6 of the DAR (Significance Definition) states that significance is considered at the scale of the Caribou and Moose local assessment area (LAA), even though that scale is likely too small to consider population effects. It is not appropriate to refer to boreal caribou or moose



found in the Caribou and Moose LAA as local populations. As stated in Section 10.1.4.1 of the DAR (Spatial Boundaries):

“Neither moose nor caribou have discrete population or population management boundaries that would directly relate to the project's potential residual or cumulative effects. The boreal caribou NT1 range is expansive; there are no defined moose population boundaries.”

Table 10.19 in the DAR (Cumulative Effects) summarizes the cumulative effects characterization and Project contribution to cumulative habitat loss. The discussion on Change in Habitat (Table 10.19, pg. 10-103) attempts to provide perspective on pre-existing habitat loss in the Caribou and Moose LAA and the disturbance thresholds that are relevant to populations (in the case of Caribou, the broader NT1 range). As stated previously and throughout the DAR, moose have no defined population boundaries.

B. The EDI (2024) collar study is related to boreal caribou movement, and collar data were not intended to help define local populations or population metrics. The boreal caribou population in the Northwest Territories includes all caribou within the NT1 range. Regional planning boundaries within the NT1 (GNWT 2019) have no biological basis to discretize the NT1 population into subpopulation units—boreal caribou often cross these boundaries. There is no information available to define moose populations.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories (GNWT)'s Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



References

- EDI Environmental Dynamics Inc. 2024. Mackenzie Valley Highway Project: Inferring the Potential Barriers to Boreal Caribou Movement. Prepared for K'alo-Stantec Limited for use by the Government of Northwest Territories, Calgary, Alberta. 55 + 14 app pp.
- ECCC. 2021. Recovery Strategy for the Peary Caribou (*Rangifer tarandus pearyi*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa, Ontario, Canada. 86 pp.
- ECCC. 2024. Discussion Paper: Proposed scope of an Order under section 80 of the Species at Risk Act to provide for the Protection of Caribou, Boreal population (*Rangifer tarandus*). consultations. Environment and Climate Change Canada. (<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/related-information/discussion-paper-proposed-scope-order-section-80-protection-caribou-boreal-population.html>)
- Environment Canada (EC), 2011. Scientific Assessment to Inform the Identification of Critical Habitat for Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada: 2011 update. Ottawa, Ontario, Canada. 102 pp. plus appendices.
- Environment Canada. 2012. Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa, Ontario, Canada. 138 pp.
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- Middleton, D.A.J. and Nisbet, R.M. 1997. Population Persistence Time: Estimates, Models, and Mechanisms. *Ecological Applications* 7(1):107–117. DOI: 10.1890/1051-0761(1997)007[0107:PPTEMA]2.0.CO;2



Topic: Caribou and moose: Movement, habitat, methodology: Zone of Influence (DAR Pages 10-11, 10-49)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The DAR describes a range of possible zones of influence estimates that range from 1 km, 2.5 km, and 5 km (p10-11). The DAR describes the Project Development Area as the area of direct project disturbance, the 60 m right of way (ROW). However, the DAR states that a 500 m buffer was applied to the ROW to account for sensory disturbances, which affects how caribou use habitat near the ROW (p10-109). This is commonly called the zone of influence (ZOI).

This appears to contradict what the PDA is supposed to be (the direct project footprint) and appears to indicate that the PDA is actually the Local Assessment Area. The DAR then provides estimates of the ZOI that range from 1 km to 5 km (p10-11). This appears to contradict the developer's assertion that adding a 500 m buffer to the PDA is conservative and captures the ZOI.

The rationale for discounting the bigger buffers to account for ZOI effects states: "In the interest of providing comparable disturbance metrics and measures to that used by the federal government and comparable assessments, a 500 m buffer was applied to the Project's PDA to measure indirect habitat disturbance on caribou. While that buffer will not account for all indirect changes in boreal caribou habitat, it is intended to indicate anthropogenic habitat disturbance using a method comparable to the national scientific review" (10-49).

The DAR describes GNWT's rationale for discounting the evidence provided for a greater buffer to account for ZOI. This appears to contradict statements in the DAR that the assessment is conservative. Further, the statement referenced above explicitly states that the 500 m buffer does not account for all indirect changes to boreal caribou habitat. The evaluation of project-related effects in this assessment must be included.

The Review Board acknowledges GNWT's response to LKFN #10, which states that no further assessment of indirect impacts from the MVH to caribou habitat beyond the 500 m buffer has been undertaken. However, as noted by the DAR, the proposed use of a 500 m buffer does not account for all indirect changes to boreal caribou habitat.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

Please conduct a sensitivity analysis on the zone of influence and conduct analyses of indirect habitat loss in the Local Assessment Area based on varying buffer distances, including 500 m, 1.0 km, 2.5 km, and 5 km from the Project Development Area.



Response from the Government of the Northwest Territories:

The Developers Assessment Report (DAR) provided a literature review of the potential ranges of a zone of influence (ZOI) to provide perspective of what is available in the literature. The ZOI used in the analysis of changes to habitat from indirect habitat loss was based on Environment and Climate Change Canada's recruitment-disturbance relationship that implemented a 500 metre (m) buffer around human disturbances (Environment Canada 2011). Total disturbance using that 500 m buffer explained nearly 70% of the variation in caribou recruitment rates. Discussion and justification for using the 500 m ZOI was provided in the Government of Northwest Territories (GNWT)'s response to Łíídlıı Kúę First Nation's ORS#10.

Regardless of the justification of the 500 m buffer of indirect habitat effects, additional analysis is provided as requested in this Information Request (IR). Further analyses of selected habitats altered by variable ZOIs were conducted using varying buffer distances of 500 m, 1.0 kilometre (km), 2.5 km, and 5 km from the Project Development Area. These buffers are used as an estimate of the amount of indirect loss of selected caribou habitat (resource selection function [RSF] bins ≥ 6) year-round (all seasons) and during calving and late winter seasons due to the Project (as requested in Mackenzie Valley Environmental Impact Review Board IR #60). The results are presented in Table 47-1 and Table 47-2.

The response to this Information Request has been prepared in accordance with GNWT's Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



Table 47-1 Year-Round (All Seasons) Selected Habitat Altered Indirectly by Variable Zone of Influence Buffers in the Caribou and Moose LAA

Zone of Influence	Region ^{1,2}	Total Selected Boreal Caribou Habitat Altered (ha)	Percent of Selected Boreal Caribou Habitat Altered in the Caribou and Moose LAA (relative amount in %)
500 m	Sahtu Region	1,452	0.75
	Dehcho Region	18	0.01
	Total in Caribou and Moose LAA	1,470	0.46
1 km	Sahtu Region	3,351	1.72
	Dehcho Region	721	0.56
	Total in Caribou and Moose LAA	4,072	1.26
2.5 km	Sahtu Region	15,580	8.02
	Dehcho Region	10,473	8.15
	Total in Caribou and Moose LAA	26,053	8.07
5 km	Sahtu Region	40,751	20.98
	Dehcho Region	30,260	23.54
	Total in Caribou and Moose LAA	71,011	22.00

¹ Total area in the Caribou and Moose local assessment area (LAA): Sahtu = 651,945 hectares (ha); Dehcho = 359,038 ha; Caribou and Moose LAA = 1,010,983 ha.

² Total year-round selected boreal caribou habitat in the Caribou and Moose LAA: Sahtu = 194,281 ha (29.8%); Dehcho = 128,534 ha (35.8%); Caribou and Moose LAA = 322,814 ha (31.9%).

Note: All spatial calculations were completed using the UTM Zone 10 projection and circa 2017 RSF analyses (DAR Section 10).



Table 47-2 Calving/Post-Calving Season Selected Habitat Altered Indirectly by Variable Zone of Influence Buffers in the Caribou and Moose LAA

Zone of Influence	Region ^{1,2}	Total Selected Boreal Caribou Habitat Altered (ha)	Percent of Selected Boreal Caribou Habitat Altered in the Caribou and Moose LAA (relative amount in %)
500 m	Sahtu Region	1,072	0.69
	Dehcho Region	0	0.00
	Total in Caribou and Moose LAA	1,072	0.38
1 km	Sahtu Region	2,025	1.31
	Dehcho Region	287	0.23
	Total in Caribou and Moose LAA	2,312	0.83
2.5 km	Sahtu Region	11,176	7.22
	Dehcho Region	8,667	6.98
	Total in Caribou and Moose LAA	19,843	7.11
5 km	Sahtu Region	32,449	20.96
	Dehcho Region	26,532	21.38
	Total in Caribou and Moose LAA	58,981	21.15

¹ Total area in the Caribou and Moose LAA: Sahtu = 651,945 ha; Dehcho = 359,038 ha; Caribou and Moose LAA = 1,010,983 ha.

² Total calving selected boreal caribou habitat in the Caribou and Moose LAA: Sahtu = 154,814 ha (23.7%); Dehcho = 124,088 ha (34.6%); Caribou and Moose LAA = 278,903 ha (27.6%).

Note: All spatial calculations were completed using the UTM Zone 10 projection and circa 2017 RSF analyses (GNWT unpublished data, J. Hodson, 6 August 2024, pers. comm.).



Table 47-3 Late Winter Season Selected Habitat Altered Indirectly by Variable Zone of Influence Buffers in the Caribou and Moose LAA

Zone of Influence	Region^{1,2}	Total Selected Boreal Caribou Habitat Altered (ha)	Percent of Selected Boreal Caribou Habitat Altered in the Caribou and Moose LAA (relative amount in %)
500 m	Sahtu Region	2,007	0.92
	Dehcho Region	610	0.47
	Total in Caribou and Moose LAA	2,617	0.75
1 km	Sahtu Region	5,623	2.57
	Dehcho Region	3,624	2.80
	Total in Caribou and Moose LAA	9,247	2.65
2.5 km	Sahtu Region	18,059	8.24
	Dehcho Region	15,268	11.81
	Total in Caribou and Moose LAA	33,326	9.56
5 km	Sahtu Region	45,626	20.82
	Dehcho Region	35,271	27.28
	Total in Caribou and Moose LAA	80,897	23.22

¹ Total area in the Caribou and Moose LAA: Sahtu = 651,945 ha; Dehcho = 359,038 ha; Caribou and Moose LAA = 1,010,983 ha.
² Total late winter selected boreal caribou habitat in the Caribou and Moose LAA: Sahtu = 219,140 ha (33.6%); Dehcho = 129,308 ha (36.0%); Caribou and Moose LAA = 348,448 ha (34.5%).

Note: All spatial calculations were completed using the UTM Zone 10 projection (GNWT unpublished data, J. Hodson, 6 August 2024, pers. comm.).



Personal Communication

Hodson, J. 2024. RE: RSF layers and updated disturbance layers — email to EDI from GNWT with circa 2017 RSF layers for calving and late winter. August 6, 2024 email.



Topic: Caribou and moose: Movement, habitat, methodology: Indirect alteration of moose habitat (DAR section 10.4.2.3.1.4)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The DAR uses a ZOI of 250 m to estimate indirect habitat loss for moose: “based on the research from Laurian et al. (2012) an indirect habitat loss of 250 m from the highway was selected” (p. 10-56).

The 250 m ZOI was based on a review of six references and the basic rationale that the low density of roads and relatively lower vehicle traffic in the PDA would place the expected ZOI on the lower end of previously documented responses. Although road traffic volume is a key co-variate in how moose may respond spatially and temporally to a road corridor, increased hunter access is likely also an important factor in how moose will use the habitat along the road.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer’s response.

Shanley, C. S., and S. Pyare. 2011. Evaluating the road-effect zone on wildlife distribution in a rural landscape. *Ecosphere* 2:art16.

Shanley, C. S., G. P. Kofinas, and S. Pyare. 2013. Balancing the conservation of wildlife habitat with subsistence hunting access: A geospatial-scenario planning framework. *Landscape and Urban Planning* 115:10-17.

Request from the Review Board:

- A. Please assess the effects of the road (and harvest access) on moose using a more comprehensive literature review that would inform a sensitivity analysis for a plausible range of buffer distances, and not a single value of 250 m.
- B. Please conduct a sensitivity analysis on the zone of influence and conduct analyses of indirect habitat loss in the Local Assessment Area based on at least three plausible buffer distances, such as 250 m, 500 m, and 1.0 km (following Shanley and Pyare 2011, Shanley et al. 2013), from the Project Development Area.



Response from the Government of the Northwest Territories:

- A. The range of distances to which moose might respond to highways (up to 1,500 metres [m] depending on season) was noted based on the literature review presented in the Developer’s Assessment Report, Section 10.4.2.3.2.2 (Moose). The additional citations provided by the reviewer are an addition to the body of knowledge on moose responses to highways. However, the range of moose response distances reported by Shanley and Pyare (2011) and Shanley et al. (2013) (i.e., Laurian et al. [2012, pg. 72]) considered moose responses to a road network at distances up to and beyond 1,500 m. The authors of Laurian et al. (2012) considered variable distances and found a strong multi-season relationship (avoidance) within 250 m of a road. The 250 m buffer was used because the research conducted by Laurian et al. (2012) was considered most relevant to the Project as it was completed in an area with little human disturbance and low road density (albeit still greater than found in the Caribou and Moose Local Assessment Area [LAA]). That research had a reasonable sample size of collared moose (n=47), which assessed habitat selection using resource selection functions (RSF). The study considered habitat associations and potential effects related to sex and season, similar to Shanley and Pyare (2011). Shanley and Pyare (2011) and Shanley et al. (2013) looked specifically at off-highway vehicle trails, use by hunters, and their effects on moose, which was considered less relevant to the Project. Regardless, as requested by the Review Board, other zone of influence distances were analyzed in response to Part B.
- B. The GNWT interpreted the Review Board’s request for a ‘sensitivity analysis’ to entail calculation of indirect habitat loss using additional buffers. Potential indirect habitat loss for moose was calculated using the additional buffers of 500 m and 1.0 kilometre from the Project Development Area (PDA). The results are provided in Table 48-1. As expected, the magnitude of indirect habitat loss increases proportionally with the buffer size used in the analysis, (i.e., doubling the buffer size approximately doubles the indirect habitat loss). It should be noted that this exercise should not be a basis for testing which zone of influence (buffer) is most appropriate to predict indirect habitat loss for moose.

Table 48-1. Moose indirect habitat effects at variable zone of influence distances

Indirect Habitat Loss Buffer	Region	Moose Habitat in the Caribou and Moose LAA ^{1,2}	Amount of Indirect Habitat Loss (ha)	Percent Indirect Habitat Loss in the Caribou and Moose LAA (relative amount in %)
250 m	Sahtu Region	Sahtu Rivers (#29) IWA	618.2	0.1
		Three Day Lake (#33) IWA	0.0	0.0
		Common and Transient Use	11,242.5	1.7
		Regional Total	11,860.7	1.8
	Dehcho Region	Dehcho Winter Use Areas (#37) IWA	5,248.2	1.5
		Common and Transient Use	778.4	0.2
		Regional Total	6,026.6	1.7



Indirect Habitat Loss Buffer	Region	Moose Habitat in the Caribou and Moose LAA ^{1,2}	Amount of Indirect Habitat Loss (ha)	Percent Indirect Habitat Loss in the Caribou and Moose LAA (relative amount in %)	
	Total in Caribou and Moose LAA	IWAs	5,866.4	2.4	
		Common and Transient Use	12,020.9	1.6	
		Total	17,887.3	1.8	
500 m	Sahtu Region	Sahtu Rivers (#29) IWA	1,182.2	0.2	
		Three Day Lake (#33) IWA	0.0	0.0	
		Common and Transient Use	20,977.6	3.2	
		Regional Total	22,159.7	3.4	
	Dehcho Region	Dehcho Winter Use Areas (#37) IWA	9,738.1	2.7	
		Common and Transient Use	1,486.8	0.4	
		Regional Total	11,225.0	3.1	
	Total in Caribou and Moose LAA	IWAs	10,920.3	4.5	
		Common and Transient Use	22,464.4	3.0	
		Total	33,384.7	3.3	
	1 km	Sahtu Region	Sahtu Rivers (#29) IWA	2,425.5	0.4
			Three Day Lake (#33) IWA	0.0	0.0
Common and Transient Use			40,320.6	6.2	
Regional Total			42,746.1	6.6	
Dehcho Region		Dehcho Winter Use Areas (#37) IWA	18,776.7	5.2	
		Common and Transient Use	2,965.0	0.8	
		Regional Total	21,741.7	6.1	
Total in Caribou and Moose LAA		IWAs	21,202.2	8.7	
		Common and Transient Use	43,285.6	5.7	
		Total	64,487.8	6.4	

¹ Total area in the Caribou and Moose LAA: Sahtu Region = 651,945 ha; Dehcho Region = 359,038 ha; Caribou and Moose LAA =



1,010,983 ha.

² Total moose habitat in the Caribou and Moose LAA. Sahtu Region — Sahtu Rivers (#29) IWA = 33,125 ha (5.08%); Three Day Lake (#33) IWA = 5,406.82 ha (0.83%); Sahtu Common and Transient Use = 613,394 ha (94.09%). Dehcho Region — Dehcho Winter Use Areas (#37) IWA = 211,264 ha (58.84%); Dehcho Common and Transient Use = 147,774 ha (41.16%).

Note: All spatial calculations were completed using the UTM Zone 10 projection.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories (GNWT)'s Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



References

Laurian, C., Dussault, C., Ouellet, J.-P., Courtois, R., and Poulin, M. 2012. Interactions between a large herbivore and a road network. *Écoscience* 19(1):69–79. DOI: 10.2980/19-1-3461

Shanley, C.S., Kofinas, G.P., and Pyare, S. 2013. Balancing the conservation of wildlife habitat with subsistence hunting access: A geospatial-scenario planning framework. *Landscape and Urban Planning* 115:10–17. DOI: 10.1016/j.landurbplan.2013.03.006

Shanley, C.S. and Pyare, S. 2011. Evaluating the road-effect zone on wildlife distribution in a rural landscape. *Ecosphere* 2(2):1–16.



Topic: Caribou and moose: Movement, habitat, methodology: Expected indirect alteration of boreal caribou habitat (DAR Table 10.10)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

Table 10.10 (p. 10-52) summarizes the “indirect loss of currently selected boreal caribou habitat” in the Local Assessment Area based on a 500 m buffer applied to the PDA. In Section 10.4.1.1 (p. 10-41), the DAR indicates that the all-year Resource Selection Function (RSF) habitat model (bin classes ≥ 6) is the habitat basis for the effects assessment. This focus on selected boreal caribou habitat (based on RSF analyses) appears to equate all other habitats with all-season bin classes <5 as being irrelevant to boreal caribou. This approach is likely to underestimate indirect habitat loss (table 10.8, p. 10-49) and is not consistent with ECCC’s (2020) development and application of the 500 m buffer because the reduction in habitat effectiveness is considered irrespective of habitat selection indices to caribou.

This approach of emphasizing only “selected habitat” ignores the value of matrix habitat for boreal caribou and is inconsistent with the approach used to report on indirect habitat loss to moose. For example, the DAR states that “all the habitat in the PDA and the Caribou and Mosse LAA is considered suitable foraging and/or cover habitat for moose” (p. 10-41) and in Table 10.9, (p. 10-50) moose habitat includes areas of “common and transient use,” which are included in the overall area and relative reduction in available habitat to moose.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer’s response.

Request from the Review Board:

- A. Please confirm if the GNWT assessment of indirect loss of boreal caribou habitat only includes all-season RSF bin classes ≥ 6 .
- B. If the answer to the question above is yes, please update the assessment of indirect habitat loss to caribou to include the total area of habitat within the 500 m buffer and apply the sensitivity analyses on buffer widths as requested above.



Response from the Government of the Northwest Territories:

- A.** Section 10.4.1.1 of the Developer’s Assessment Report (DAR) (pg. 10-41) confirms that resource selection function (RSF) bins ≥ 6 were used to identify selected habitat. Selected habitat was the only area (ha) included in calculations of direct habitat loss (Table 10.8) and indirect habitat loss (Table 10.10).
- B.** Please see the Government of the Northwest Territories (GNWT)’s response to MVEIRB IR#52 for the analysis update on total area disturbance calculations using a 500 metre buffer. The analysis update includes all habitats disturbed, including those that are not considered ‘selected habitat’.

Please see the GNWT’s response to MVEIRB IR #47 for the sensitivity analyses on selected boreal caribou habitat using variable buffer widths.

The response to this Information Request has been prepared in accordance with the GNWT’s Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



Topic: Caribou and moose: Assessment boundaries: Cumulative effects/Regional Assessment Area (DAR Section 10.1.4)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The DAR states, “[b]ased on the species distributions, the Caribou and Moose Local Assessment Area adequately captures the potential residual and cumulative effects of the Project interacting with the effects of other past, present, and reasonably foreseeable future projects” (p. 10-11).

Normally, project-specific EA uses a Local Assessment Area to capture the project-specific impacts to the valued components, while the larger Regional Assessment Area is used to evaluate broader cumulative effects from other past, present and reasonably foreseeable human activities. For this assessment, the Local Assessment Area only includes 15 km on either side of the proposed road, the same as the Regional Assessment Area.

The DAR states that the rationale for this boundary is how far a caribou can walk in a day. However, boreal caribou or moose may experience effects from other projects that act cumulatively further than 15 km from the highway. The Local Assessment Area is likely not appropriate for cumulative effects. A Regional Assessment Area should be selected at an appropriate spatial scale to account for population-level processes that include seasonal movement patterns. The boundary for a cumulative effects assessment should include the area of impacts for other past, present and reasonably foreseeable human activities that could affect the same caribou as the project.

If the proposed assessment endpoint concerns population-level predictions of self-sustainability, viability, or persistence of caribou populations the assessment needs to include a large enough geographic extent that this population could persist without the project.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer’s response.

Request from the Review Board:

Please complete a cumulative effects assessment at a revised Regional Assessment Area (a larger scale than originally proposed in the DAR). This broader scale should be appropriate for evaluating the cumulative effects on caribou that encounter project impacts. This area should consider the full range of caribou in the vicinity of the project and seasonal movement patterns.



Response from the Government of the Northwest Territories:

A discussion on the spatial boundaries used in the assessment is addressed in the GNWT's responses to MVEIRB IR#44 and MVEIRB IR#46A. Those responses highlight the attempt to balance the relevance of the Project scale to the direct and indirect effects on habitat, movement, mortality, and health that might affect caribou and moose populations. Regardless, the cumulative effects assessment (Section 10.5 of the Developer's Assessment Report) addresses caribou interacting with the Project and seasonal movement patterns by including a range of spatial boundaries (see Table 10.18 [pp. 10-97]). Table 10.18 summarizes the Project contribution to existing cumulative disturbance at the scale of NT1, the Range Planning Regions of Sahtu and Southern Northwest Territories, and the Caribou and Moose local assessment area (clipped to the NT1 Range).

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories' Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



Topic: Caribou and moose: Cumulative effects: Norman Wells closure (DAR chapter 10)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

This section states that there are no reasonably foreseeable projects that would increase the number of industrial users of the highway. However, the section states that the business case for the project is to connect Canada's road network and open new resources to benefit Canadians. One of the purposes of the road is to induce development. Even though predictions of specific future developments are speculative, new access (in this case, all-season access) often brings new development.

Developing scenarios of future developments is one way to reasonably predict future developments in the absence of clear current development plans. This is relevant given the constructed design capacity of the highway at 200 vehicles per day. For example, the closure and reclamation of Imperial's Norman Wells operation is reasonably foreseeable and within the timeframe of the construction and operation of this project.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

- A. Please conduct a cumulative effects assessment scenario for caribou and moose where future developments result in the use of the Mackenzie Valley Highway at 200 vehicles per day.
- B. Please conduct a cumulative effects assessment for caribou and moose that includes closure and reclamation of Imperial's Norman Wells operation as a reasonably foreseeable development. Focus on the use of a completed Mackenzie Valley Highway for those closure and reclamation activities.



Response from the Government of the Northwest Territories:

Response to Preamble

The Government of Northwest Territories (GNWT) has reviewed the Review Boards's preamble and wishes, in the interest of being helpful, to first provide additional information to further establish context to our response and for several other responses to similar Information Requests.

The Mackenzie Valley Highway is envisioned as a project that will provide the needed infrastructure to support an improved quality of life and lower cost of living for territorial residents in the Mackenzie Valley, and support the expansion and diversification of the territorial economy. These priorities are compatible but are not currently equally important. Considering the considerable constraints that Sahtu communities are currently facing in terms of supply chain and fire risks, the primary reason to build the Mackenzie Valley Highway is to provide reliable, climate-resilient access to the Sahtu Region.

The GNWT also asserts that improved access to the region will incentivize development, thus creating social and economic benefits for territorial and Canadian residents. While this is an important and realistic vision, interest has not yet materialized in the form of such development. The GNWT is not aware of proposed developments in the region or if potential developers are waiting for the road to be built before declaring an interest. It is not reasonable, nor informative, to speculate on some scenario of future development as a surrogate for realistic development plans, as there is nothing upon which to base such a scenario (e.g., resource potential in geology for mines or hydrocarbon basins for oil and gas). The GNWT is optimistic that future development will eventually happen, but in light of the considerable uncertainty of what form that may take, the GNWT believes that consideration of what is reasonably known (as stated in the Developer's Assessment Report [DAR]) will more meaningfully inform mitigation measures and monitoring and management programs than what is based on conjecture. This is consistent with environmental best practices and guidelines (identification and assessment of hypothetical future scenarios do not represent current environmental assessment practice). The NWT regulatory regime is also well equipped to consider future developments on their own merits.

In response to the Review Boards's preamble and several Information Requests to consider the closure and reclamation of Imperial Oil Resources N.W.T. Ltd. (IORL)'s Norman Wells Operation (NWO) as a reasonably foreseeable project, and specifically one that contributes to vehicle use of the highway at 200 vehicles per day, the GNWT offers the following information, which will be referenced in several responses. The GNWT views this magnitude of vehicular traffic as unlikely based on currently available information, i.e., the inclusion of a multiple step change (fourfold) increase in vehicle traffic associated with the NWO closure and reclamation.

Section 4.6 of the DAR explains the GNWT's methodology for assessing the cumulative effects of the Project, including the identification of past, present, and reasonably foreseeable projects. The projects identified for inclusion are listed in Table 4.2 (project inclusion list). The ongoing operations of the NWO was not included, as most of the principal existing facilities in the Norman Wells Proven Area do not overlap spatially with the largest regional assessment area (RAA) identified for assessment of cumulative effects; although, specific activities associated with NWO were identified, such as ongoing water withdrawal from, and dredging in, the Mackenzie River, and operation of the Norman Wells Pipeline.

The NWO is anticipated to produce for the next five to ten years, and IORL is currently preparing for the transition to closure and reclamation (IORL, 2024). IORL is required to submit a Final Closure and



Reclamation Plan to the Sahtu Land and Water Board (SLWB) for approval at least two years prior to the end of operations of the NWO. IORL has stated that it anticipates that it will be appropriate to conduct an environmental assessment for review of the NWO final Closure and Reclamation Plan (IORL, 2024).

IORL's Interim Closure and Reclamation Plan (ICRP; 2016), as updated and approved by the SLWB in 2022, identifies the following principal activities to be undertaken within the Norman Wells Proven Area as part of final closure and reclamation of the NWO, over a period of ten years:

- Management of Long Term Management Areas (existing facilities will be managed)
- Construction, operation and closure of a Long-term Waste Management Facility (WMF) to be located within the Proven Area to provide long term storage of impacted soils that cannot be treated, and other debris and waste materials (a candidate area was identified in the ICRP, which is within the RAA)¹
- Excavation of impacted soils and backfill and revegetation of excavated areas
- Ongoing treatment of impacted soils to meet applicable criteria, and reinstatement
- Decommissioning, dismantling and/or demolition of facilities, and final disposal of materials by salvage (re-usable or recyclable materials), third-party disposal in southern Canada (hazardous materials), or placement in WMF (bulk of demolition waste)
- Study, engage, and develop options and recommendations for post-closure reclamation of artificial islands
- Abandonment, capping and backfilling/reclamation of wellbores
- Cleaning, removal/abandonment and disposal of pipe (salvage or WMF)

Several of these activities are ongoing as part of progressive reclamation during the ongoing operations of the NWO, and associated vehicle use is already accounted for in existing winter road traffic. In light of this available information, while the GNWT foresees that the closure and reclamation could overlap temporally with construction and operation of the Mackenzie Valley Highway, the works described are not expected to incrementally increase the amount of traffic on the highway accounted for in the DAR. There is no available information to corroborate this.

As noted in Section 5.5.9.1 of the DAR, and applied throughout the environmental assessment, the Project *does* include foreseeable uses of the highway once constructed, and this includes industrial traffic to support exploration, development, operations, and/or closure and reclamation of natural resource developments such as oil and gas, mining, or forestry, at an average of 50 vehicles per day. As with other commercial transportation and resupply, vehicles that may previously have accessed the NWO only during winter will be able to use the highway during other times of the year, therefore distributing traffic volume throughout the year. As such, the GNWT finds it unlikely, based on currently available information, that average daily traffic will exceed 50 vehicles per day, let alone a fourfold increase to 200

¹ Per Table 4.2 of the DAR, IORL's Norman Wells Waste Management Facility was not included as a reasonably foreseeable project, because the applications to the SLWB and Canada Energy Regulator were withdrawn in September 2022 following referral by the Sahtu Secretariat Inc. to environmental assessment, to allow further engagement to take place. Therefore, the scope and timing in relation to the Project are unknown.



vehicles per day, and this includes any vehicle use that may be associated with the closure and reclamation of the NWO.

Finally, the GNWT wishes to note that, as indicated by IORL, the final Closure and Reclamation Plan for the NWO is expected to be subject to environmental assessment. If warranted (i.e., IORL predicts that vehicle traffic could increase considerably), it would be appropriate to consider the effects of vehicle traffic as part of that project's assessment.

The following responds to each of the two information requests.

- A.** As noted above by the GNWT and in several other responses, there is no information available upon which to base a hypothetical traffic prediction of 200 vehicles per day (annual average daily traffic), which is approximately 8 vehicles per hour/day. As also stated in the response to MVEIRB IR#69, the value of 200 is not a prediction of actual traffic but an engineering design parameter. Nonetheless, the GNWT, in the interests of further assisting the informed understanding of the Project and potential effects, offers the following brief qualitative summary of potential incremental changes to effects on moose and caribou based on an increase in average daily traffic from 50 (as assessed in the DAR) to 200.

The increased traffic will have a potential incremental residual effect on change in movement (e.g., more frequent traffic on the road can be a barrier to caribou and moose movement) and mortality risk (i.e., increased probability of vehicle/animal collision) that is not accounted for in the current assessment.

The qualitative assessment that summarizes the residual effect characteristics for change in movement (DAR Section 10.4.3.3.2.3) and mortality risk (DAR Section 10.4.4.3.2.3) during operations does not change. The qualitative assessment for movement and mortality risk is not sensitive to a difference in traffic of 50 vehicles/day or 200 vehicles /day, both of which are substantially lower traffic volumes than, for instance, studies mentioned in DAR Section 10.4.3.1.2 (Change in Movement/Effect Pathways/Operations and Maintenance) of up to 2,800 vehicles/per day.

The GNWT has proposed, in the draft Wildlife Management and Monitoring Plan, the monitoring of vehicle traffic and providing information on daily traffic levels during sensitive seasonal periods for caribou and moose. The GNWT has also proposed to initiate a review of mitigation measures if the 50 vehicles per day AADT threshold is exceeded by 20% (i.e., exceeds 60 vehicles) in two consecutive years.

- B.** For the reasons provided in response to the preamble, and given the above response to part A, the GNWT's conclusions about cumulative effects on caribou and moose would not change by including the use of the highway for the closure and reclamation of the NWO.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories' Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:



Government of Northwest Territories
Gouvernement des Territoires du Nord-Ouest

- Department of Infrastructure
- Department of Environment and Climate Change



References

Imperial Oil Resources N.W.T. Ltd. (IORL). 2024. Type A Water Licence S13L1-007 Renewal Application. Accessed at: [S24L1-005 - S13L1-007 Renewal Application - Norman Wells Operation - June12 24.pdf \(mvlwb.ca\)](#)

IORL. 2016. Norman Wells Operations Interim Closure and Reclamation Plan. Available in four parts at: Imperial Oil Resources N.W.T. Limited - S13L1-007 | Mackenzie Valley Land and Water Board (mvlwb.com)



Topic: Caribou and moose: Habitat disturbance update (DAR Chapter 10)

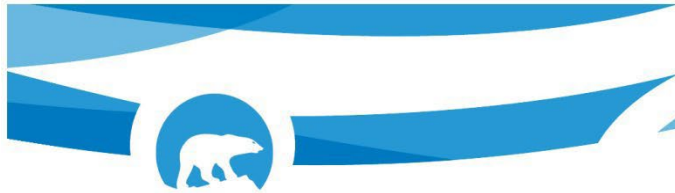
Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The severe wildfires of 2023 have affected boreal caribou habitat. The developer's evidence on the amount of undisturbed habitat at the NT1 scale, the range planning scales (Southern NWT and Sahtu), and the Local Assessment Area/Regional Assessment Area scales presented in the DAR do not account for this new disturbance. The developer has proposed the use of a habitat disturbance model to infer whether boreal caribou can maintain a local self-sustaining population. Given this change to habitat, the developer's conclusions may need revising.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response

Request from the Review Board:

- A. Please provide an update on caribou habitat in the Local Assessment Area/Regional Assessment Area that is current to 2024.
- B. The developer discusses the status of boreal caribou at a larger scale, including the south slave region and the NT1 range. Please provide an update on the state of habitat in these regions that is current to 2024.



Response from the Government of the Northwest Territories:

A. and B.

Disturbed habitat calculations for the NT1 Boreal Caribou Range, Sahtu and Southern Northwest Territories (NWT) Range Planning Regions, and the Caribou and Moose Local Assessment Area (LAA) are provided in Table 52-1 (update to Developer’s Assessment Report [DAR], Table 10.18). Here, disturbed habitat follows the definition provided in the Federal Recovery Strategy, which includes all human disturbances plus 500 metre buffers and wildfires <40-years old (ECCC 2020). As per the reviewer’s request, these calculations incorporate all available data as of August 2024, including wildfires documented up until and during 2023 and human disturbances circa 2020. The 2023 fire data was not available at the time of filing of the DAR.

Table 52-1. Existing Disturbance and Project Contribution in NT1 Boreal Caribou Range, Affected Range Planning Regions, and the Caribou and Moose LAA (updated DAR Table 10.18)

Boundary Name	Boundary Area (ha)	Before Project				Project	After Project					
		Human Disturbance Area (ha) ¹	Human Disturbance Area Percentage (%)	Total Disturbance Area (ha) ²	Total Disturbance Area Percentage (%)	MVH Disturbance Area (ha) ³	Human Disturbance Area (ha) ⁴	Human Disturbance Area Percentage (%)	New Disturbance Area (ha) ⁵	Total Disturbance Area (ha) ²	Total Disturbance Area Percentage (%)	Percent Change from Project (%)
NT1 Boreal Caribou Range	44,292,049	4,472,625	10.10	14,607,918	32.98	2,962	4,475,587	10.10	1,317	14,609,235	32.98	0.003
Range Planning Region: Sahtu	14,901,479	1,147,439	7.70	3,426,573	22.99	2,368	1,149,807	7.72	745	3,427,318	23.00	0.005
Range Planning Region: Southern NWT	16,241,765	2,810,094	17.30	7,855,359	48.37	594	2,810,688	17.31	573	7,855,931	48.37	0.004
Caribou and Moose LAA*	1,010,686	215,101	21.28	590,458	58.42	2,962	218,063	21.58	1,317	591,775	58.55	0.130

Notes:

Results were generated using the NT1 Range boundary provided in the NWT Species and Habitat Viewer (accessed 06/09/2024). Only portions of the Sahtu, Southern NWT, and the Caribou and Moose LAA that fell within the NT1 Range boundary were included in the assessment. All spatial calculations were completed using the Albers Equal Area Conic projection.

¹ Human disturbance layer circa 2020 (ECCC 2024), available at: <https://open.canada.ca/data/en/dataset/63e1cda6-debe-4b9b-b075-3666443e30b4>.

² Total disturbance represents the combined (unionized and dissolved) footprint of Human Disturbance Footprint (buffered by 500 m) and Forty-Year Fire Footprint (1983–2023)(GNWT-ECC 2024).

³ This number represents the amount of disturbance from the MVH Project Footprint (buffered by 500 m) in isolation.

⁴ Human disturbance from the MVH Project Footprint (buffered by 500 m) and Human Disturbance Footprint (buffered by 500 m).

⁵ New Disturbance Area represents the amount of disturbance from the MVH Project footprint (buffered by 500 m) after accounting for any overlap with the Human Disturbance Footprint (buffered by 500 m) and Forty-Year Fire Footprint (1983–2023).



The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories (GNWT)'s Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



References

Environment and Climate Change Canada. 2020. Amended Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada. *Species at Risk Act* Recovery Strategy Series. Environment and Climate Change Canada. 143 pp. (https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/plans/Rs-CaribouBorealeAmdMod-v01-2020Dec-Eng.pdf)

GNWT-ECC. 2024. Fire History (NBAC/CNFDB) - NT1 Range. Compiled and edited by J.Hodson and R.Abernethy, Wildlife Division, ECC, GNWT. Data Source: Natural Resources Canada (NRCan) (<http://cwfis.cfs.nrcan.gc.ca/datamart>)



Topic: Caribou and moose: Demographic effects (DAR section 10.4)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The existing Mackenzie Valley Winter Road likely affects caribou during its annual operations, and potentially impacts them as a linear disturbance throughout the year. The proposed Mackenzie Valley Highway will change the effects of road use from seasonal (~3 months) to year-round.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

Please describe the effects on demographics (population abundance, distribution, reproduction, survival) from the project. Include those effects that cause more impacts (considered additive) or those that cause different kinds of impacts without changing the total impact (considered compensatory), compared to the demographic impacts of the winter road.



Response from the Government of the Northwest Territories:

Quantifying potential demographic project-related effects on caribou and moose is not possible, given the available information. For example, boreal caribou collar data help describe distribution, movement (EDI, 2024), and habitat selection (DeMars et al., 2020) relative to the Project, but without any direct link to population parameters like recruitment and mortality. From a qualitative perspective, local effects on caribou endpoints (e.g., crossing, habitat use, and mortality-related events) *could*, in theory, result in demographic changes at a regional scale if the recruitment and mortality rates of many caribou (versus a few individuals) are affected by the Project. However, the likelihood of this occurring is low given the limited interaction between caribou and the Project, the relatively low-quality habitat adjacent to most of the Project alignment, and the high level of existing disturbance (e.g., settlements, linear features) in the Caribou and Moose Local Assessment Area.

Effects on boreal caribou recruitment are predicted by calculating the total disturbance (i.e., fire [no buffer] and human disturbance [500 metre buffer]) within a population's range (Environment Canada, 2011). Calculations provided in the cumulative effects assessment were updated to include wildfires until 2023, and human disturbance until 2020 (see the Government of the Northwest Territories [GNWT]'s response to Mackenzie Valley Environmental Impact Review Board [MVEIRB] IR #52). The disturbance levels tabulated in the GNWT's response to MVEIRB IR#52 are below the thresholds outlined in the boreal caribou range planning framework for the NT1 (35%) and Sahtu (30%) but exceed the threshold for Southern NWT (40%) (GNWT, 2019). Furthermore, the recruitment-disturbance relationship identified in Environment Canada (2011) is associated with southern boreal caribou with smaller subpopulations that have experienced extensive habitat loss and high levels of predation facilitated (or mediated) by linear and polygonal disturbances—see below why this might not apply to northern boreal regions.

Mortality-related events may occur through several mechanisms. Disturbance-mediated apparent competition, empirically linked to caribou population declines in southern boreal regions (DeMars et al. 2023), is a potential source of indirect mortality. However, this mechanism is unlikely to act in northern boreal regions due to the relatively low net primary productivity and low densities of alternative prey and predators (Neufeld et al., 2021; Superbie et al., 2022). A greater source of indirect mortality is possible from access the Project will provide to harvesters. Direct mortality from vehicle collisions is also possible. Based on the distribution of GPS-collared boreal caribou, the mortality risks from harvesting and vehicle collisions would be greatest near Wrigley, where caribou can occur ~3–5 km from the Project. However, the relatively low overall occurrence of caribou near the Project (and mostly near Wrigley) suggests that these mortality risks are unlikely to affect boreal caribou on a broad scale.

In summary, the potential for widespread demographic effects on boreal caribou from the Project is low. Further details on the effects on boreal caribou movement are provided in EDI (2024), and summarized in the GNWT's response to MVEIRB IR#45. The GNWT's response to the broader question of the appropriate scale and study extent to assess effects of the Project on boreal caribou is discussed in the GNWT's response to MVEIRB IR#44.

The response to this Information Request has been prepared in accordance with the GNWT's Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from



this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



References

- DeMars, C., Hodson, J., Kelly, A., Lamontagne, E., Smith, L., Groenewegen, K., Davidson, T., Behrens, S., Cluff, D., and Gurarie, E. 2020. Influence of Land Cover, Fire and Human Disturbance on Habitat Selection by Boreal Caribou in the NWT. Project 202 of the Government of the Northwest Territories Department of Environment and Natural Resources, Northwest Territories Cumulative Impact Monitoring Program. 70 + 159 app pp.
- DeMars, C.A., Johnson, C.J., Dickie, M., Habib, T.J., Cody, M., Saxena, A., Boutin, S., and Serrouya, R. 2023. Incorporating mechanism into conservation actions in an age of multiple and emerging threats: The case of boreal caribou. *Ecosphere* 14(7):e4627. DOI: 10.1002/ecs2.4627
- EDI Environmental Dynamics Inc. 2024. Mackenzie Valley Highway Project: Inferring the Potential Barriers to Boreal Caribou Movement. Prepared for K'alo-Stantec Limited for use by the Government of Northwest Territories, Calgary, Alberta. 55 + 14 app pp.
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- GNWT. 2019. A Framework for Boreal Caribou Range Planning. Department of Environment and Natural Resources, Government of Northwest Territories, Yellowknife, Northwest Territories, Canada. 87 pp. (https://www.gov.nt.ca/ecc/sites/ecc/files/resources/boreal_caribou_range_planning_framework_2019_-_cadre_de_planification_de_laire_de_repartition_du_caribou_boreal_2019.pdf)
- Neufeld, B.T., Superbie, C., Greuel, R.J., Perry, T., Tomchuk, P.A., Fortin, D., and McLoughlin, P.D. 2021. Disturbance-Mediated Apparent Competition Decouples in a Northern Boreal Caribou Range. *The Journal of Wildlife Management* 85(2):254–270. DOI: 10.1002/jwmg.21982
- Superbie, C., Stewart, K.M., Regan, C.E., Johnstone, J.F., and McLoughlin, P.D. 2022. Northern boreal caribou conservation should focus on anthropogenic disturbance, not disturbance-mediated apparent competition. *Biological Conservation* 265:109426. DOI: 10.1016/j.biocon.2021.109426



Topic: Caribou and moose: Movement, habitat, methodology: determination that no measurable change in Local Assessment Area (DAR Chapter 10.4.3.3.2.3)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

Chapter 10.4.3 provides a characterization of the effects of highway operations on caribou movement patterns. These findings point to a likely perpetual change in movement patterns. The literature and lessons from the Tłı̨chʔ highway would suggest that a barrier effect is likely.

The developer has identified other effects such as increased harvesting of caribou (chapter 10.4.4.1), increased use of the area around the road for other activities (cultural and traditional use), and that the all-season road will operate year-round as opposed to the Mackenzie Valley Winter Road. There are still significant concerns that the all-season road may act as a barrier to movement and cause habitat fragmentation.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

- A. Please provide evidence and further discussion about the potential for the highway to act as a barrier to the movement of boreal caribou. This should consider evidence from other northern highways, such as the Tłı̨chʔ highway, and consider not only average traffic volumes but also the use of the area around the road by people.
- B. Please include an evaluation of barrier effects should the road traffic increase due to the induced development of up to 200 vehicles a day, including industrial traffic.



Response from the Government of the Northwest Territories:

- A. EDI (2024) studied whether the Mackenzie Valley Winter Road (MVWR) altered boreal caribou movement patterns and posed a barrier to movement. This assessment demonstrated that the MVWR minimally affects caribou movement between Wrigley and Norman Wells, where the Project will occur, and does not prevent boreal caribou crossings (for reasons as noted in response to part B). For a detailed technical discussion of the study outcomes, refer to EDI (2024). A plain language summary of the study is also provided in the Government of Northwest Territories' (GNWT) response to Mackenzie Valley Environmental Impact Review Board (MVEIRB) Information Request (IR) #45.

Comparisons to other NWT roads, like the Tł̨ch̨ Highway, are challenging due to fundamental differences in individual behaviour and disturbance levels among settings. A study of the relevant setting for the Project has already been completed (EDI 2024). Refer to the GNWT's response to MVEIRB IR#44 for a more detailed discussion on the assessment scale and comparisons to other settings like the Tł̨ch̨ Highway.

Regarding different mechanisms affecting boreal caribou interaction with the road (e.g., hunter access and predator-prey dynamics), refer to the GNWT's response to MVEIRB IR #53.

- B. EDI (2024) provides evidence that the existing MVWR likely does not pose a barrier to caribou movement. Very few caribou approach the MVWR (Wrigley to Norman Wells) based on GPS collar data. Even if the MVWR were absent (i.e., no footprint, vegetation restored), caribou would make very few crossing attempts along the portion between Wrigley and Norman Wells (see the Habitat Connectivity analysis in EDI 2024). Natural barriers (e.g., Mackenzie River, terrain features), the corridor of existing human disturbances, and habitat conditions are likely the primary factors affecting caribou movement near the MVWR. For a detailed technical discussion of the study outcomes, refer to EDI (2024). A plain language summary of the study is also provided in the GNWT's response to MVEIRB IR#45.

As a point of clarification, traffic rates are predicted to increase to 50 vehicles/day, not 200 vehicles/day (refer to the GNWT's response to MVEIRB IR#51 response for more details). Rather than a barrier effect, this increased traffic *could* lead to mortalities from vehicle collisions. To date, no vehicle-related mortalities have been reported along the MVWR. Continued monitoring and mitigation measures should reduce the occurrence of these mortality events.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories' Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure



- Department of Environment and Climate Change

References

EDI Environmental Dynamics Inc. 2024. Mackenzie Valley Highway Project: Inferring the Potential Barriers to Boreal Caribou Movement. Prepared for K'alo-Stantec Limited for use by the Government of Northwest Territories, Calgary, Alberta. 55 + 14 app pp.



Topic: Caribou and moose: Movement, habitat, methodology: Effects to boreal caribou movement (DAR Pages 10-62, 10-63, 10-65)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The DAR states that “it is not expected that project-related changes in their movement will result in a measurable change in their distribution and/or abundance in the Caribou and Moose Local Assessment Area.” (10-62). The developer also states, “Based on the current use of the Mackenzie Valley Winter Road ROW and adjacent areas by boreal caribou and moose, it is not expected that project-related changes in their movement will result in a measurable change in their distribution and/or abundance in the Caribou and Moose Local Assessment Area.” (10-63). The DAR also notes that the change from a winter road to an all-season road may reduce the permeability of the ROW (P10-65).

The DAR also notes that there is insufficient data on boreal caribou movement to determine whether the existing Mackenzie Valley Winter Road acts as a barrier. It is not clear whether the developer is stating that changes to the movement of boreal caribou are "not measurable" means the changes are so small that they are not measurable, or if the changes cannot be measured because there is a lack of information about boreal caribou movement patterns in the Local Assessment Area.

The Review Board acknowledges submission of the technical report: MVH - Inferring the Potential Barriers to Caribou Movement PR#163 and the response to LKFN #14.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer’s response.

Request from the Review Board:

Please clarify the conclusion that the road is not expected to lead to a "measurable" change and whether this means a) the change is so small that it cannot be measured or b) if the change to movement (and possible barrier effects) cannot be measured because of a lack of existing data about boreal caribou movement patterns in the Local Assessment Area.



Response from the Government of the Northwest Territories:

The Developer’s Assessment Report’s conclusion that the road is not expected to lead to a "measurable" change uses the term “measurable” in the context of the two options. The Review Board (MVEIRB) states as the first meaning (a) that the “change is so small that it cannot be measured”. That said, the Government of Northwest Territories (GNWT) wishes to modify MVEIRB’s context to one the GNWT views as more appropriate and relevant as “that the incremental Project effect on caribou and moose movement is unlikely to occur to the extent that results in regional changes to distribution and abundance”.

EDI (2024) assessed the effects of the Mackenzie Valley Winter Road (MVWR) on boreal caribou movement in the Project local assessment area (LAA). EDI (2024) concluded that caribou movement on the landscape was more affected by natural barriers (e.g., terrain, Mackenzie River), other existing human disturbances, and habitat conditions than by the MVWR. Habitat quality along the MVWR corridor is relatively low compared to areas farther to the east within the NT1 range (see Figure 8 in DeMars et al., 2020). Historical observations and older GPS collar movement data indicate that caribou can cross the MVWR, but do so infrequently (Hodson pers. comm., 2024, Species at Risk Committee, 2012). Most (but not all) caribou remain to the east of the MVWR and Mackenzie River. Traditional Knowledge suggests that boreal caribou often do not cross major rivers like the Hay River or Mackenzie River (Gunn, 2009). Refer to EDI (2024) for further details and the GNWT’s response to Mackenzie Valley Environmental Review Board Information Request #45 for a plain language summary of the EDI (2024) study.

Based on the combined information presented above, the conclusion that *“Project-related changes in [caribou] movement will [not] result in a measurable change in [...] distribution and/or abundance”* highlights the localized nature of Project-related effects to movement, not the lack of existing data. Thus, local effects on movement from the Project within the Caribou and Moose LAA (15 kilometre buffer), if any, are unlikely to have broad-scale effects on boreal caribou distribution and abundance.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories’ Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



References

- DeMars, C., Hodson, J., Kelly, A., Lamontagne, E., Smith, L., Groenewegen, K., Davidson, T., Behrens, S., Cluff, D., and Gurarie, E. 2020. Influence of Land Cover, Fire and Human Disturbance on Habitat Selection by Boreal Caribou in the NWT. Project 202 of the Government of the Northwest Territories Department of Environment and Natural Resources, Northwest Territories Cumulative Impact Monitoring Program. 70 + 159 app pp.
- EDI Environmental Dynamics Inc. 2024. Mackenzie Valley Highway Project: Inferring the Potential Barriers to Boreal Caribou Movement. Prepared for K'alo-Stantec Limited for use by the Government of Northwest Territories, Calgary, Alberta. 55 + 14 app pp.
- Gunn, F.E. 2009. Traditional ecological knowledge of boreal woodland caribou in western Wood Buffalo National Park. M.A. Thesis. Royal Roads University, Victoria, British Columbia. 168 pp.
- Species at Risk Committee. 2012. Species Status Report for Boreal Caribou (*Rangifer tarandus caribou*) in the Northwest Territories. Species at Risk Committee, Yellowknife, NT. 176 pp.

Personal Communication

- Hodson, J. 2024. e-mail communication from GNWT-ECC to EDI regarding caribou crossing MVWR and general collision database. August 14, 2024 email.



Topic: Caribou and moose: Movement, habitat, methodology: Caribou and moose, wildlife crossing locations - knowledge gap (DAR Chapter 10, 10.4.4.3.2, 10.5.4.2, 10.5.5.2, 10.7.2, Table 11.18)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

Road traffic during all seasons means some wildlife crossing locations may not be known, especially outside of the winter road season. The developer needs to know where likely wildlife crossing locations are during all seasons to implement effective mitigation that reduces or avoids direct wildlife mortality from vehicle collisions. The DAR acknowledges that wildlife-vehicle collision data along the Mackenzie Valley Winter Road is assumed to be under-reported and is identified as a knowledge gap.

Table 10.7 and commitment #192, table 27.2, note that wildlife crossing locations will be identified and marked but do not describe how they will be identified. Crossing locations need to be identified before mitigation can be implemented, such as with signs and speed limit reduction).

Table 11.18 includes a recommendation to install wildlife cameras. However, GNWT does not appear to have committed to this recommendation.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

- A. Please describe locations of known and predicted wildlife crossing areas for moose and caribou along the road during all seasons. Describe actions (such as camera trapping, Traditional Knowledge gathering or other means) to locate any wildlife crossing locations that are currently not known.
- B. Please describe proposed mitigations to prevent vehicle collisions with wildlife at known crossing locations. For example, the Yukon Government distributes maps of known caribou crossing locations so that vehicles can take precautions when entering areas of frequent crossings. Are there opportunities to construct ditching and road shoulder slopes to make it easier for wildlife to cross the road at known crossing points?
- C. Please describe how the developer will assess the effectiveness of mitigation and adaptively manage potential collision impacts and mitigation at new crossing locations that are discovered during all-season road operations.



Response from the Government of the Northwest Territories:

A. *Known and predicted crossing locations*

Crossing locations of GPS-collared boreal caribou along the Mackenzie Valley Winter Road (MVWR) for all seasons are provided in Figure 56-1. Both crossing locations (coloured circles) and crossing intensity along 10-kilometre (km) road segments (coloured lines) are identified. The Government of the Northwest Territories (GNWT) is not aware of any publicly available Traditional Knowledge of known crossing locations.

There were only 34 unique MVWR crossings from 49 caribou (299 animal-season-year movement paths) that could have interacted with the MVWR (i.e., within 15 km) between 2003–2023. Caribou most frequently crossed the east-west section of the MVWR between Tulita and Délīne (Délīne Winter Road). During pre-calving, four crossings occurred along the east-west section of MVWR, three occurred along the north-south section between Tulita and Norman Wells, and two occurred just north of Wrigley. During calving to post-calving, two crossings occurred along the east-west section of MVWR, and one occurred just north of Wrigley. Only three crossings occurred during summer, approximately 20–40 km north of Wrigley. During the rut to late fall, five crossings occurred along the east-west section of MVWR and one crossing at Norman Wells. During late winter, four crossings occurred at the east-west section and only one at Norman Wells. In contrast to all other seasons, more crossings (six) occurred between Norman Wells and Tulita during early to mid-winter than the number of crossings (two) at the east-west section.

Predicted crossing locations from simulated caribou paths during early to mid-winter and calving to post-calving are provided in (EDI, 2024). Refer to Map 3 (early to mid-winter) and Map 4 (calving to post-calving) in the technical report for predicted caribou crossing locations. In those maps, red line segments indicate locations where caribou crossings are likely to occur but may be hindered by the winter road, specifically the Délīne Winter Road.

Actions to locate unknown crossings

No specific field surveys or additional Traditional Knowledge interviews are planned to identify caribou and moose crossing locations further. During project-specific engagement (see Table 10.1 of the DAR), participants indicated areas of good moose habitat near the Project development area. During recent alignment routing engagement completed in September 2024, participants noted that “moose cross everywhere”. Through construction and operation mitigation and monitoring, the following actions identified in the Wildlife Management and Monitoring Plan ([WMMP], Developer’s Assessment Report [DAR] Vol. 5) will be used to monitor for and identify unknown crossing locations:

- Section 5.2.1 (Caribou and moose monitoring) states that *reporting of caribou and moose observations by all project staff using the Wildlife Sightings Log and immediate reporting of any incidents or concerns to the Environmental Monitors. Reported caribou and moose observations will add to the understanding of habitat use and highway crossings by these species* [emphasis added].
- Section 5.2.2 and 5.2.3 identify a boreal caribou collaring program that will continue to collect ongoing information on movements. If noticeable road crossings are observed, then on-the-ground observations may follow (in tandem with other monitoring mentioned below).



- Section 5.2.6 identifies Wildlife-Vehicle Collision Monitoring. *Collision locations will be added to the information to determine the necessity of appropriate signage to alert drivers of crossing locations...* The DAR Section 10.8 (Follow-up Monitoring and Management) states that *“The database for wildlife-vehicle collisions, implemented and maintained by the GNWT-ECC, will be extended to include the MVWR ROW and completed sections of the highway during and after construction. Collision locations will be added to the information to determine the necessity of appropriate signage to alert drivers of crossing locations and identification of other possible measures.”*

B. Proposed mitigations to prevent vehicle collisions with wildlife

Several crossing locations have been identified along the winter road (see response to Part A above), and proposed mitigations to prevent collisions at known crossing locations vary among construction and operations and can include (Table 10.7 in the DAR):

- Vehicle speeds will be limited to 50 km/h on unfinished project road surfaces during construction.
- Caribou and moose will have the right of way on all project infrastructure during construction, as detailed in the WMMP.
- Wildlife crossing locations will be identified and marked.
- Vegetation control (brushing) will be implemented along the right-of-way (ROW) to decrease potential forage attraction and increase visibility for driver safety.
- Pre-construction surveys will be completed to identify possible wildlife habitat features along the right of way (like mineral licks) and potential crossing locations

Further, traffic management measures will include speed limits and warning signage at wildlife crossing locations (DAR Section 10.5.4.2 – Mitigation for Cumulative Effects).

Known crossing maps

Publicly distributing maps of known caribou crossing locations is problematic (due to potential misuse of information), and it is unclear to what extent the Yukon Government does this. Instead, more practical mitigation measures will be implemented at different stages of the Project (as described above).

Road Design

The road is designed to the same highway standard as other NWT highways. The Project will apply a 3:1 slope ratio to normal highway embankment side slopes (WMMP [October 2023] Sec. 4.4, pg. 28). The DAR Section 10.4.3.3.1 (Residual Effects/Construction) describes the embankment and cuts required for the Project. There are currently no special provisions for wildlife crossing included in the design.



- C. Mitigation effectiveness will be evaluated by continued monitoring of collision frequencies and locations. The WMMP will outline these monitoring protocols in further detail. However, ongoing monitoring and observations of known crossing sites will help to identify if further mitigation measures are required, and/or if there are previously unknown crossing locations.

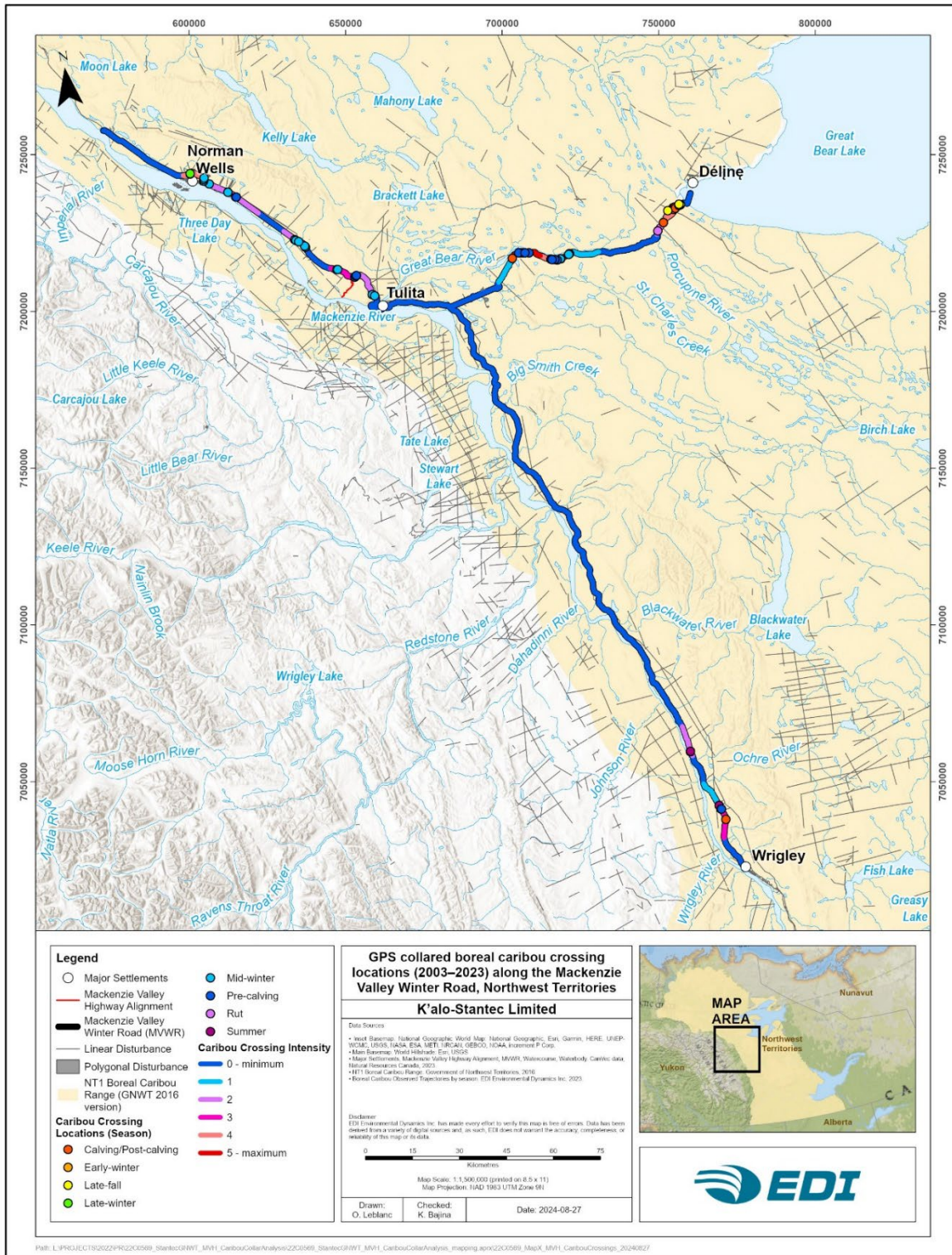
The response to this Information Request has been prepared in accordance with the GNWT's Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



Figure 56-1 GPS collared boreal caribou crossing locations (2003–2023) along the Mackenzie Valley Winter Road, Northwest Territories





References

EDI Environmental Dynamics Inc. 2024. Mackenzie Valley Highway Project: Inferring the Potential Barriers to Boreal Caribou Movement. Prepared for K'alo-Stantec Limited for use by the Government of Northwest Territories, Calgary, Alberta. 55 + 14 app pp.



**Topic: Caribou and moose: Movement, habitat, methodology: Gaps and uncertainties
Boreal caribou movement and response to Mackenzie Valley Winter Road (DAR section 10.7.2)**

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

Boreal caribou response to the Mackenzie Valley Winter Road is identified as a knowledge gap. The DAR states that a study of collared caribou in the region will be available during the project review to better understand movement patterns in the study area. On February 27, 2024, the developer submitted a study titled “Mackenzie Valley Highway Project: Inferring the potential barriers to boreal caribou movement” (EDI 2024; PR#163).

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer’s response.

Request from the Review Board:

Please provide the following:

- A. Describe if and how the study will be used to reassess the impacts of the MVH on movement, potential barrier effects of the all-season road, and distribution of caribou.
- B. Describe options for a continued and improved study design to further understand caribou movements in response to an all-season highway; and
- C. Suggest updated mitigations based on updated knowledge of caribou movements from the EDI (2024) collar study.



Response from the Government of the Northwest Territories:

- A. A description of how the caribou collar study was used to assess the potential movement, distribution, and barrier effects of the Project on boreal caribou was addressed in the Government of Northwest Territories' (GNWT) response to ORS LKFN-14.
- B. Sections 5.2.2 of the Wildlife Management and Monitoring Plan (Boreal Caribou Collar Program) and 5.2.3 (Boreal Caribou Collar Analysis) indicate that the GNWT Department of Environment and Climate Change will continue with a caribou collaring program as part of effects monitoring for the Project. Those sections describe the intent of the continued collar studies. Ongoing collar-based monitoring during project construction and operations will compare boreal caribou movement data analyzed in relation to the Mackenzie Valley Winter Road with movement analysis to be conducted in relation to the Project. The study results will be reported annually if the Project is approved.
- C. The GNWT is not recommending any additional mitigation measures based on the EDI (2024) caribou collar study findings. The GNWT will continue to investigate if there are features such as topographical pinch points (or funnels) that would mean wildlife are more likely to cross in those areas and where it may be beneficial to place signage or to implement speed reductions.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories' Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



References

EDI Environmental Dynamics Inc. 2024. Mackenzie Valley Highway Project: Inferring the Potential Barriers to Boreal Caribou Movement. Prepared for K'alo-Stantec Limited for use by the Government of Northwest Territories, Calgary, Alberta. 55 + 14 app pp.



Topic: Caribou and moose: Cumulative effects: modelling (DAR section 10.5)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

The DAR does not clearly describe key sources of uncertainties in impact predictions on caribou and moose habitat and populations. The Board needs to understand these to evaluate the credibility of predictions for this Key Line of Inquiry.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

Please describe the key sources of uncertainty in project-level effects to caribou and moose habitat and populations. Will the developer be conducting more studies to address, confirm, and test assumptions and predictions for residual effects? If so, please describe them.



Response from the Government of the Northwest Territories:

Section 10.7 (Prediction Confidence) of the Developer’s Assessment Report (DAR) identifies key sources of uncertainty related to predicted residual effects of the Project on caribou and moose, the determination of significance, and assumptions (Section 10.7.1) used in the assessment. A summary list of 15 key gaps and uncertainties is provided in DAR Section 10.7.2. Uncertainties include those regarding habitat models, interactions, harvest data, specific responses of individuals and populations, and data limitations. In most cases, uncertainty results from insufficient empirical evidence of how caribou and moose will specifically respond to the Project, rather than a paucity of data in the general wildlife literature regarding effects. Those uncertainties are generally universal to all projects, and follow-up monitoring to track potential effects predictions as described below are planned to address the uncertainties.

The GNWT proposes several studies to address, confirm, and test assumptions and predictions of residual effects of the Project on caribou and moose, and to collaborate with resource management organizations such as the Sahtú Renewable Resources Board to address uncertainty related to harvested resources in the study areas. The assessment conservatively identified various follow-up monitoring program requirements to reduce uncertainty in the DAR Section 10.8 (Follow-up Monitoring and Management). The draft Wildlife Management and Monitoring Plan (DAR Volume 5) details the proposed follow-up programs and will be required prior to construction and operation of the highway.

The response to this Information Request has been prepared in accordance with the Government of the Northwest Territories’ Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



Topic: Caribou and moose: Movement, habitat, methodology: Combined project effects to Boreal Caribou (DAR section 10.4.6)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):

Section 10.4.6 of the DAR provides a summary of the residual effects of the project. This section describes the conclusions individually for changes to:

- habitat,
- movement,
- mortality risk, and
- health.

There is no discussion about the combined residual project effects on caribou. There is concern that individual effects pathways might be minor, but when considered collectively, they may have an overall collective impact on caribou that matters and requires further mitigation.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

Please describe and evaluate the combined, collective residual project effects to boreal caribou (that is, the total effects), integrating the project-specific impacts, including caribou habitat, movement, mortality risk and health. Consider how a potential barrier effect caused by the all-season road could affect caribou movement and distribution.



Response from the Government of the Northwest Territories:

The following response is organized by each of the two primary requests.

Combined, Collective Residual Project Effects on Boreal Caribou

The Developer's Assessment Report (DAR) assessed the potential effects of the Project on change in habitat, movement, mortality risk, and health. The Government of Northwest Territories (GNWT) recognizes that residual effects are not mutually exclusive, and as such the interactions between mechanisms of several effects are discussed in Section 10.4.2.1 (Effect Pathways), pg. 10-43. Discussing the interrelationships among the Project's effects is an attempt to reflect potential interactions while structuring the assessment by individual effects (i.e. change in habitat, movement, mortality risk, and health) in conformance with accepted assessment practice and regulatory information requirement and precedence.

Section 10.4.6 of the DAR summarizes the Project's residual effects individually. However, there is no summary statement on the significance of those combined effects assessments. The GNWT is not aware of an existing combined project-related residual effects model for boreal caribou that could be used to quantify or otherwise characterize such combined or collective residual effects. Those unknowns are reflected in moderate prediction confidence (Section 10.7), recognizing the complex and unknown interactions between potential combined effects that may or may not be additive.

Potential Barrier Effect

The DAR considered the potential of the Project to act as a barrier to wildlife movement (first identified in Table 10.2 and discussed throughout the DAR). To supplement this, the GNWT conducted a study to evaluate whether the existing Mackenzie Valley Winter Road is a potential barrier to boreal caribou movement (EDI, 2024). Based on collar analysis to date and the mitigation measures planned to allow for wildlife movement along and across the road, the GNWT does not believe the Project will be a substantial barrier to caribou movement and distribution. There is a potential for greater deflection of caribou movements from the highway alignment during the construction and operations phases. Still, as observed with the Tł̨ch̨ Highway (see Section 11 of the 2023 Tł̨ch̨ Highway annual water licence report [GNWT 2024]), boreal caribou behaviour will change in response to the road (e.g., some deflection and increasing turn angles as the road is approached) but they will continue to cross the highway.

The response to this Information Request has been prepared in accordance with the GNWT's Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate Change



References

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GNWT. 2024. Tłıchǫ Highway Type A Water Licence (WL) Annual Report 2023 for WL W2020L8-0001. Available at:
https://www.gov.nt.ca/ecc/sites/ecc/files/resources/tlıcho_highway_water_licence_w2020l8-0001_annual_report_2023_may_31_2024.pdf