

COVID-19 Recovery Committee

Inquiry into excess deaths in Scotland since the start of the pandemic

7th January 2022

About us

Public Health Scotland (PHS) is Scotland's lead national agency for improving and protecting the health and wellbeing of all of Scotland's citizens. Our vision is for a Scotland where everybody thrives. Focusing on prevention and early intervention, we aim to increase healthy life expectancy and reduce premature mortality by responding to the wider determinants that affect people's health and wellbeing. To do this, we use data, intelligence and a place-based approach to lead and deliver improvement against Scotland's public health priorities.

We have played a central role in Scotland's response to COVID, collaborating with partners to:

- provide expert public health advice to national and local partners
- monitor and track the epidemiology of the pandemic, including the development of surveillance capability and the modelling of future projections and impacts
- provide daily data on case numbers and severe outcomes associated with COVID
- develop a locally delivered, nationally supported contact tracing service
- provide clinical advice and public health leadership for the vaccination programme including vaccine safety, vaccine confidence and informed consent, and information for public and professional audiences
- build the evidence base on key areas including the effectiveness of vaccinations, the impact of education restrictions on children and young people, and the impact of the pandemic and control measures on population health outcomes

If you have any questions or would like further information, please contact:

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Has the public health emergency shifted from COVID-19 deaths to deaths from non-COVID-19 conditions?

The public health emergency response is broad in scope to try to prevent infections and to minimise the effects of COVID-19 illness throughout society.¹

Direct COVID-19 impacts

'Burden of disease' is an internationally recognised framework for assessing the comparative importance of diseases, injuries and risk factors in causing premature death, loss of health and disability in different populations. Disease burden is described in terms of disability-adjusted life years (DALYs) which represent the number of years of life lost (YLL) to premature mortality and ill health, compared to aspirational health. The Scottish Burden of Disease (SBoD) study is a national and local population health surveillance system which monitors how diseases impact on the population. The SBoD examined the impact of COVID-19 on the population's health in 2020.

In 2020 it is estimated that there were 641,789 people infected with COVID-19, resulting in 6,845 deaths and around 100,000 YLL in Scotland.² In the first wave of the pandemic, each COVID-19 death caused an average loss of 14 and 12 years of life for men and women respectively, indicating that this was not simply hastening the deaths of the oldest age groups or people who would have otherwise died of another cause within a short period of time.³

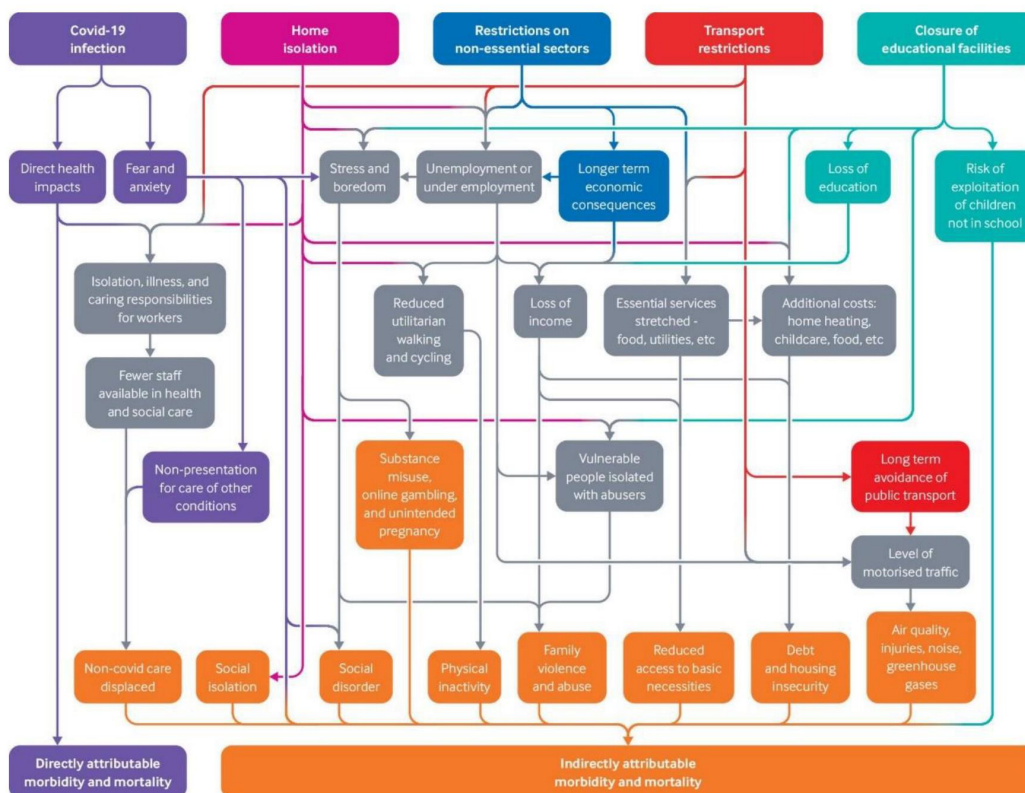
The morbidity, or ill-health, as a direct result from COVID-19 is also substantial, although it accounted for only 2% of the total DALYs due to COVID-19. This morbidity takes several forms; the ill-health managed in the community, any acute illness requiring hospitalisation or ventilation, or the long-term consequences (termed 'long-COVID') which is less well understood or quantified, but which may create a substantial long-term illness legacy for some people. The direct burden from COVID-19 in 2020 was substantial enough to be framed as the second leading specific cause of disease and injury behind ischaemic heart disease.

The direct impacts of COVID-19 also have substantial implications for health and social care services, creating high demand for intensive care beds within hospitals, the impact of care home closures and staff absence on the quality of care being provided, resources being allocated to managing patients with COVID-19, and resources to be allocated to preventing COVID-19 through vaccine development and administration, as well as the ongoing need for additional Personal Protective Equipment (PPE) to be used.

Indirect COVID-19 impacts

The indirect impacts of COVID-19, as a result of the control measures, are also very substantial (Figure 1).⁴ The impact of these are monitored in Scotland as part of the '4 harms framework' at: <https://data.gov.scot/coronavirus-covid-19/>.

Figure 1 – Indirect impacts of the COVID-19 pandemic (from Douglas et al⁴)



It is clear that the impact on the economy during the pandemic has been profound, and we know that the economy is an important determinant of health.⁵ The furlough scheme, and the uplift in Universal Credit, have both been essential in protecting people's incomes during the pandemic. However, these protections have now been removed. Economic policies prior to the pandemic were already having profoundly negative impacts on mortality prior to the pandemic, such that mortality had barely improved since 2012. Specifically, these economic causes include austerity measures, high levels of poverty, unemployment/precarious employment, and increasing economic inequality.^{Error! Bookmark not defined. 12}

Social isolation was a particular problem in the early phases of the pandemic, and risks becoming a severe problem once again if further lockdown measures are

deemed necessary. The disruption to the education of children, young people and adult learners also has public health implications over the short, medium and long-term. Balancing the harms to health and other outcomes through different strategic approaches to managing the pandemic is difficult, particularly when there are so many uncertainties about the trajectory of infection spread and the scale of the indirect impacts.⁶

The impacts on mortality from these indirect causes is likely to occur over a wide range of timescales, from immediate to over decades.

The impacts on the health service and the care of non-COVID-19 conditions is discussed further below.

Public health emergencies beyond COVID-19

In addition to the direct and indirect impacts of COVID-19, there are a series of other public health emergencies currently impacting on Scotland, all of which have implications for mortality.^{Error! Bookmark not defined.}

1. Climate change and biodiversity loss

Ecological damage through Greenhouse Gas (GHG) emissions and destruction of nature through deforestation, fishing and pollution, all present existential threats to human mortality and health. The failure of global government action to keep GHG emissions to a level that would have made it less likely to reach ecological tipping points means that we now need to prepare for stark and rapid global warming. This will impact societies and population health through a wide range of mechanisms, including economic disruption, food supply disruption, extreme weather events, climate-induced migration, etc. Acting urgently and radically to mitigate climate change, and to adapt to those consequences that are already in train is essential to protect population health.⁷

2. Inequalities, economic policy and stalled life expectancy trends

Life expectancy has not improved in Scotland since around 2012.⁸ This has meant that life expectancy in Scotland is now 1.3 years lower than expected for women, and 1.4 years lower than expected for men.⁹ It has impacted most on our most deprived communities such that mortality rates in the 40% most deprived areas in Scotland, in the decade leading up the pandemic, have been *increasing*. Over the course of a decade, inequalities in mortality are causing six times more Years of Life Lost (YLL) than even the initial worst case scenarios for COVID-19.¹⁰ The causes of these trends are primarily economic, arising because of the austerity policies that have been pursued since 2010 and the increasing inequalities in income, wealth and power across society.¹¹

This has exacerbated the long-standing higher mortality in Scotland compared to other countries which is known to be due to political and economic decision-making.^{12 13}

3. *Drug-related deaths*

A specific aspect of the rising inequalities in mortality in Scotland, and one that impacts particularly in more deprived areas and in the working-age population, is the rapidly increasing number of drug-related deaths.¹⁴ This is a substantial contributor to the overall stalling in life expectancy trends¹⁵ and represents an entirely preventable cause of death. The effective policy responses to prevent drug-related deaths have been articulated in detail elsewhere.¹⁶

4. *Mental health and wellbeing*

Accurately measuring mental health trends in the population can be difficult as it relies upon survey measures (with the attendant issues of non-response and bias in responses) or proxy measures such as prescribing which are subject to changes in treatment acceptability and clinical practice. However, there is evidence that mental health problems have increased in prevalence over the last decade.¹⁷ Mental wellbeing, or positive mental health, has displayed stable trends on average from the available data, but inequalities in this remain high.¹⁸ The implications for mortality are important but complex, with direct (i.e. suicide) and indirect mechanisms linking to mental health.

Is there evidence that patients are now presenting in a more acute condition?

We are interpreting this question to be about non-COVID-19 conditions.

Early in the pandemic many measures of healthcare use showed a decline. Reasons for this may include:

- people being less willing to present to healthcare services because they are ill, fearful of catching COVID-19, or not wishing to be a burden on services (around 20% of survey respondents in Scotland say that they would agree with the statement that they "...would avoid contacting GP for immediate non-COVID-19 health concerns¹⁹);
- services being less accessible to people (e.g. postponement of operations to make space in intensive care for COVID-19 patients; postponement of investigations and screening services; staff being reallocated to direct COVID-19 care; changes to points of access in primary care);
- a decline in the need for healthcare (e.g. with the night-time economy closed at the start of the pandemic there were likely to be fewer alcohol-associated

assaults requiring treatment; fewer cars on the road initially led to a decrease in road-traffic injuries).

For many conditions, the data on clinical severity or disease staging at presentation is not available. Cancer is one of the few conditions where staging is routinely carried out and recorded. It is therefore presented as a proxy that may be useful in understanding the impact of the reasons listed above on disease stage at presentation.

For cancer diagnosis and treatment, a series of changes resulted from both the direct and indirect effects of the pandemic. Cancer screening was paused and primary care face-to-face appointments reduced, leading to a large drop in cancer diagnoses. Just under 5,000 fewer individuals had a pathologically-confirmed cancer diagnosis in 2020 compared with 2019, a fall of around 15%. Hospital care for cancer was reorganised to minimise:

- the risk of patients contracting COVID-19 while being treated
- use of treatments that might increase susceptibility to COVID-19
- use of Intensive Care Units (ICUs), hospital and hospice beds.

These adaptations changed progressively as more was understood about the risks of COVID-19 and vaccination became available.

Information on stage of cancers at the time of writing was limited to the three Detect Cancer Early sites – lung, breast and colorectal. The absolute numbers of all stages of cancer fell in 2020, but it fell more for early-stage disease. This means that proportionally, later stage disease increased but it does not necessarily mean that there was a genuine shift in stage among patients with cancer; only that more information was missing for those with early stage disease.

This is easiest to explain for breast and colorectal cancers due to the pausing of screening. While the evidence is therefore not conclusive at the time of writing, it might still be assumed that if patients with earlier stage disease have not been diagnosed, the progressive nature of cancer means that when they are diagnosed, it will be at a later stage when outcomes will be poorer. A fuller account of cancer stage in 2020 compared to earlier years will be available when cancer incidence statistics are published in early 2022.

What accounts for the deaths from non-COVID-19 conditions?

Since the start of the pandemic the number of excess crude deaths has been used as a measure of the direct and indirect impacts of the pandemic on mortality. This has the advantage of allowing comparison with the relevant time period in the year, thereby accounting for the seasonal patterning of deaths seen prior to the

pandemic. It also accounts for substitution effects that might occur between different specific causes of death (for example, if a death from COVID-19 led to one less death from dementia). The approach does not account for trends in mortality (as noted above, there has been almost no improvement in mortality trends in the decade prior to the pandemic and so this is less likely to cause measurement issues), nor the ageing of the population (which is a small source of bias over such a short timescale).

The excess crude weekly deaths over the course of the pandemic are shown in Figure 2 as a percentage excess compared to the average expected number of crude deaths between 2015 and 2019. This shows that during the first wave of the pandemic in Spring 2020, the excess weekly deaths peaked at 80% higher than expected. This then declined to around the expected number by Summer 2020 before varying above average (with 10-20% excess deaths in most weeks) until Spring 2021. Deaths in Spring 2021 were briefly below the expected number before they once again increased to be around 20% higher than expected by Autumn 2021.

Figure 3 provides more detail on the broad categories of weekly crude deaths responsible for the excess over the course of 2021. It shows that in January-March 2021 there was a substantial excess in all-cause deaths, but this was almost entirely due to COVID-19 deaths. Non-COVID-19 causes of death during this time period were generally lower than expected, with some evidence of displacement (e.g. COVID-19 deaths replacing respiratory deaths). The lower than expected number of non-COVID-19 deaths up until summer 2021 reduced the total excess deaths substantially. However, from July 2021 onwards the pattern changed, with almost all causes of death being in excess. Although COVID-19 deaths continued to represent the largest single cause of excess crude deaths (and respiratory deaths remained similar to the long-term average), 'other' causes of death, circulatory deaths, dementia/Alzheimer's deaths and cancer deaths all were higher than expected. Note that inequalities in mortality have remained very wide throughout the pandemic, irrespective of whether COVID-19 is at a peak or trough (Figure 4). Most excess deaths have occurred in those aged over 65 years, but the proportion of the excess due to different causes is similar for those over and under 65 years old.

Fuller data on a wide range of conditions, with breakdowns by local area, age, sex and deprivation, are available at <https://scotland.shinyapps.io/phs-covid-wider-impact/>.

Figure 2 - Percentage change in deaths compared with the corresponding time in 2015-2019 by sex (downloaded from <https://scotland.shinyapps.io/phs-covid-wider-impact/> on 12.12.21)

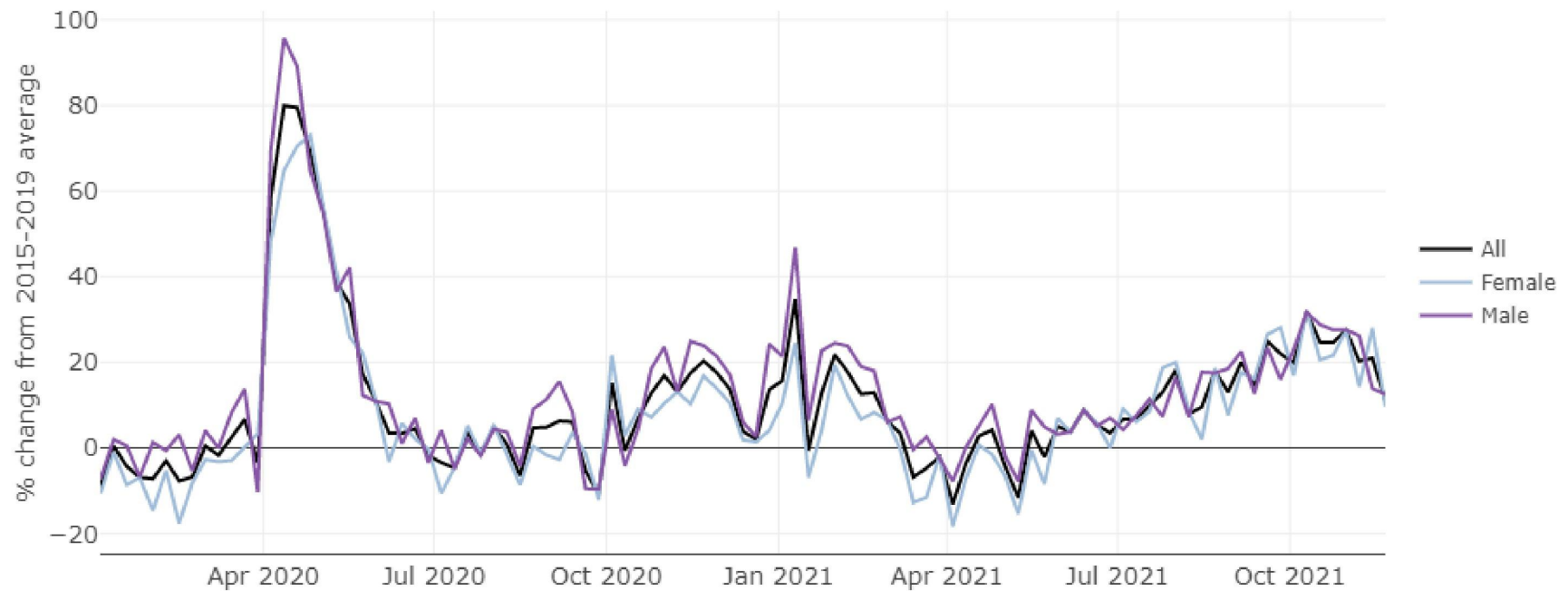


Figure 3 – Weekly excess crude deaths in 2021 by broad cause, compared to weekly average crude deaths in 2015-2019
(Redrawn from data published by NRS on 8th December 2021 at <https://www.nrscotland.gov.uk/covid19stats>)

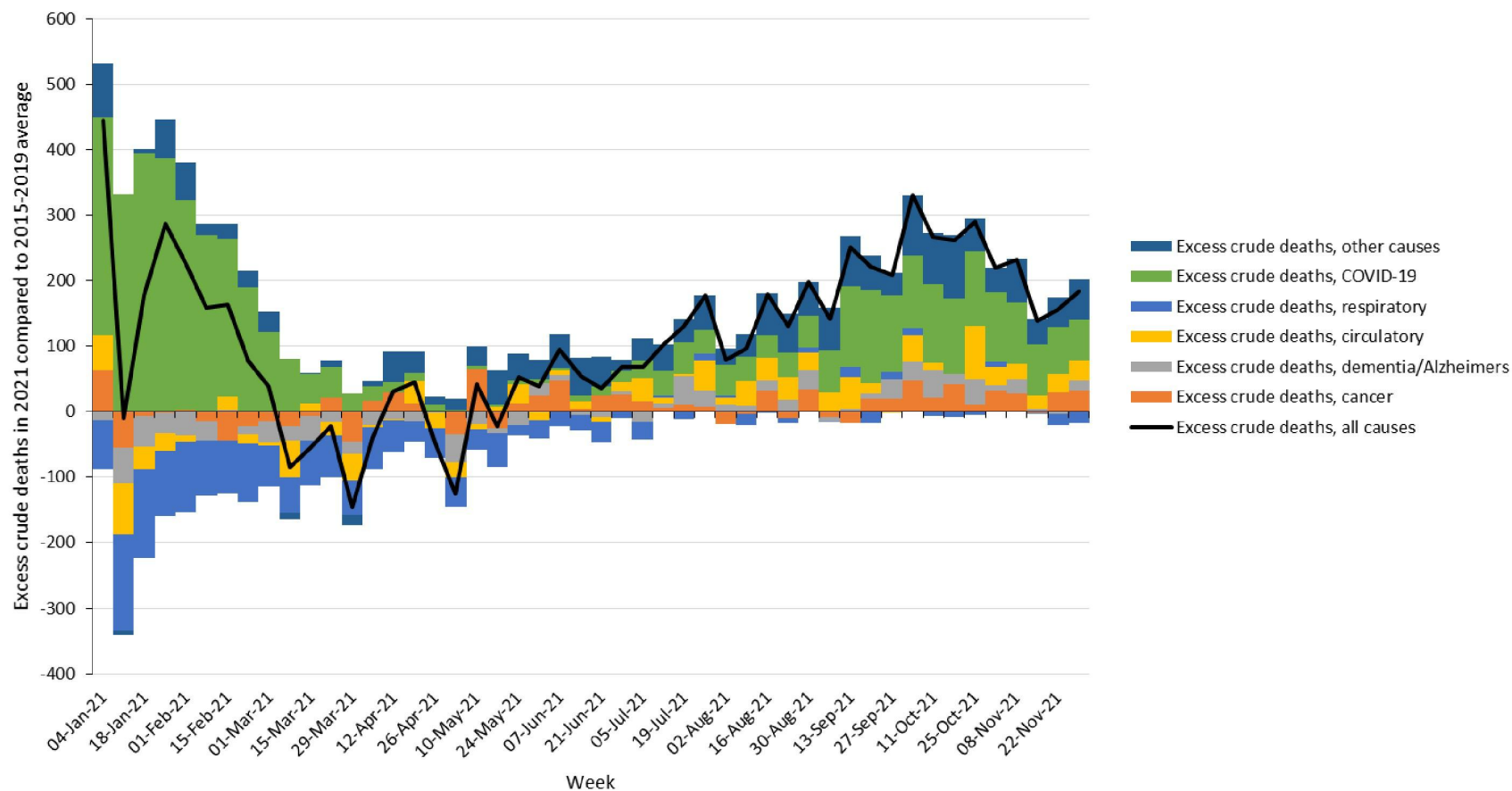
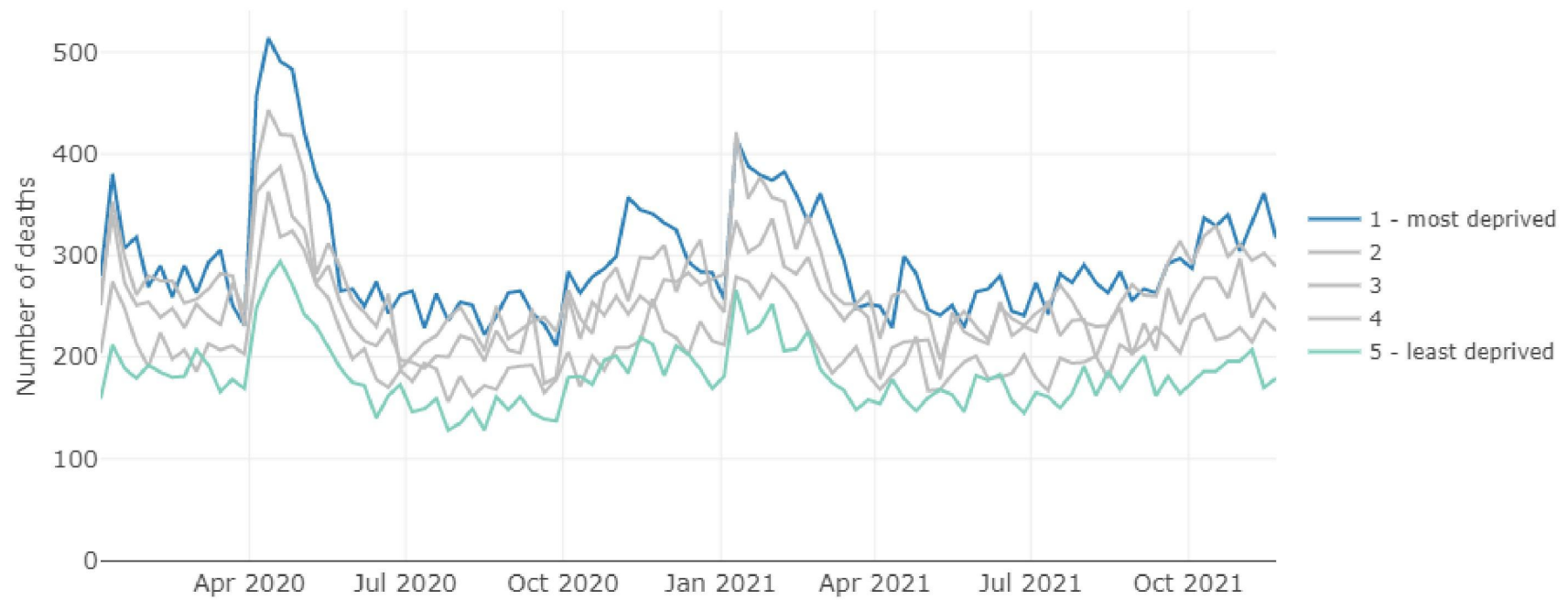


Figure 4 - Weekly number of deaths by Scottish Index of Multiple Deprivation (SIMD) quintile (downloaded from <https://scotland.shinyapps.io/phs-covid-wider-impact/> on 12.12.21)



What are the realistic options open to the government in addressing the indirect health impact of the virus in winter 2021/22?

The indirect impacts of the pandemic, and the appropriate responses, depend to some degree on the scale of the restrictions that are in place. If workplace restrictions are reintroduced, the furlough scheme will be required once again to protect jobs and incomes. Even without further restrictions, the impact of higher social security benefits to reduce poverty rates remains important for population health.^{12 13} The wide range of policies that should be introduced to support health have been described in detail elsewhere.^{1 Error! Bookmark not defined.12}

Succeeding in reducing the indirect negative impacts of the pandemic is also dependent on maintaining access, and reducing the longstanding inequalities in the benefits of access to, health services (and indeed education services). Health needs assessments, impact assessments and health equity audits may all have a role to play here, although the evidence for the latter having been implemented effectively such that inequalities are reduced is sparse. A range of toolkits and resources are available to help support this work (see <http://www.healthscotland.scot/reducing-health-inequalities/addressing-inequalities-in-practice> and <http://www.healthscotland.scot/reducing-health-inequalities/case-studies-of-inequalities-sensitive-practice>).

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