COVID POLICY IMPACT ASSESSMENT METHOD

A framework for policy evaluation

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Economic Insight

The initial policy response to the COVID-19 pandemic in the UK occurred at a time of considerable uncertainty. As we move forward, however, it is vital to ensure that policies are evaluated as robustly as possible, in order to ensure they are likely to achieve their stated aims and be cost beneficial in net terms. Critical issues to consider are: (i) 'what' objective is the policy intended to achieve; (ii) defining the counterfactual to the policy response; and (iii) identifying and quantifying the unintended consequences of the policy response (and understanding the associated causality of said consequences, which is also closely connected to the definition of the counterfactual). Developing and applying a robust impact assessment for COVID-19 policy is challenging. However, in this short paper we set out a suggested framework and approach that is intended to encourage greater transparency and debate, and so allow progress to be made based on observable data. The approach set out draws on Government's own published guidelines for evaluating policy, and proposes certain recommendations we consider to be pertinent to any assessment of COVID-19 policy.

1. Summary of our recommendations

Recommendation 1. We suggest a rationale for COVID-19 policy of: maximising Quality Adjusted Life Years (QALY) relative to the costs of the overall policy response. We recommend both existing and new policy be assessed in this manner.

Recommendation 2. Impact assessments should include a transparent analysis of whether policy interventions occurred before or after the infection peak. Given measurement issues, this should ideally start from an identified peak in COVID-19 deaths; and then a lag should be applied to identify the corresponding prior infection peak.

Recommendation 3. If the policy is targeted at suppression, any evaluation must explicitly include assumptions about the assumed 'vaccine' or 'treatment', its timing and effectiveness.

Recommendation 4. Impact assessments should transparently set out what the counterfactual policy is. The appropriate counterfactual policy is unlikely to be 'do nothing', and there is a case that a counterfactual policy of 'increased hygiene' and 'social distancing' is a useful reference point.

Recommendation 5. The counterfactual (and impacts of) COVID-19 policy should (in most circumstances) not primarily be informed by hypothetical forward-looking modelling. Rather, policy impacts should be estimated transparently from observable outcomes data.

Recommendation 6. The impact of policies on COVID-19 should be estimated directly in terms of their effect on COVID-19 deaths, rather than intermediate COVID-19 metrics, such as R or case numbers.

Recommendation 7. There is merit in analysing the impact of COVID-19 policies on all cause mortalities, including impacts on excess deaths.

Recommendation 8. A robust evaluation of policy impacts on COVID-19 deaths would ideally use a range of analytical methods, including both timeseries and cross-sectional. There is a particularly strong case for difference-in-difference methods (as these may better help isolate the policy impact from other factors that impact deaths).

Recommendation 9. Wider impacts on physical health (both deaths from other causes and health status), mental health, the economy and educational attainment, should be included in any policy evaluation.

Recommendation 10. Feedback effects between reduced economic performance and physical and mental health impacts over the longer-term should be captured.

Recommendation 11. The measurement of wider impacts (particularly those relating to non-COVID related healthcare) should be done in a manner consistent with a well-evidenced counterfactual regarding the likely profile of COVID-19 deaths (absent the policy response).

Recommendation 12. Given that COVID-19 deaths are highly concentrated in certain groups (e.g. the elderly and co-morbid), the distributional impacts of policies (both socioeconomic and intergenerational) should be evaluated.

2. Rationale for interventions and framework for costs and benefits

The Government's own guidelines for undertaking policy appraisal (as set out in the HM Treasury Green Book)[1] make clear that the first step in any evaluation is the articulation of the rationale for said policy intervention. Accordingly, when considering any future COVID-19 policy, it is important to be clear as to its rationale and the full scope of related costs and benefits. Given the complex interdependencies that exist: (i) within the UK's system of healthcare provision; (ii) between healthcare and the economy; and (iii) between social cohesion and both the aforementioned, it is important that both the evaluation of existing policy, and assessments of forward-looking policy, are not narrowly framed around the minimisation of COVID-19 deaths. Rather, the rationale should be framed such that trade-offs are explicitly recognised.

Recommendation 1. We suggest a rationale for COVID-19 policy of: maximising Quality Adjusted Life Years (QALY) relative to the costs of the overall policy response. We recommend both existing and new policy be assessed in this manner.

QALYs are a measure of an individual's state of health, in which their length of life is adjusted to also take into account their quality of life.[2] One QALY is equal to one year of perfect health. Therefore, by using our proposed framework above, an evaluation of COVID-19 policy can properly reflect the important interdependencies and trade-offs that exist. Specifically, it means spillover impacts on physical and mental health can be quantified; including impacts over the longer term, and those arising via economic performance in due course. The need to capture these impacts is consistent with SAGE's advice to Government around the time of the first lockdown.[3]

Importantly, this framework also allows one to quantify, in net terms, whether the benefits of the interventions are likely to exceed the costs, relative to a well-defined counterfactual. It allows for a full cost-benefit analysis, as the QALY impacts can be monetised and compared to other monetised costs and benefits. Another key argument in favour of the QALY approach is the fact that COVID-19 deaths are highly concentrated in the elderly and co-morbid; whereas the wider costs and benefits of policy interventions may be distributed more evenly across society.

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1 *'The Green Book: Central Government Guidance on Appraisal and Evaluation.' HM Treasury (2018); para 2.4.*

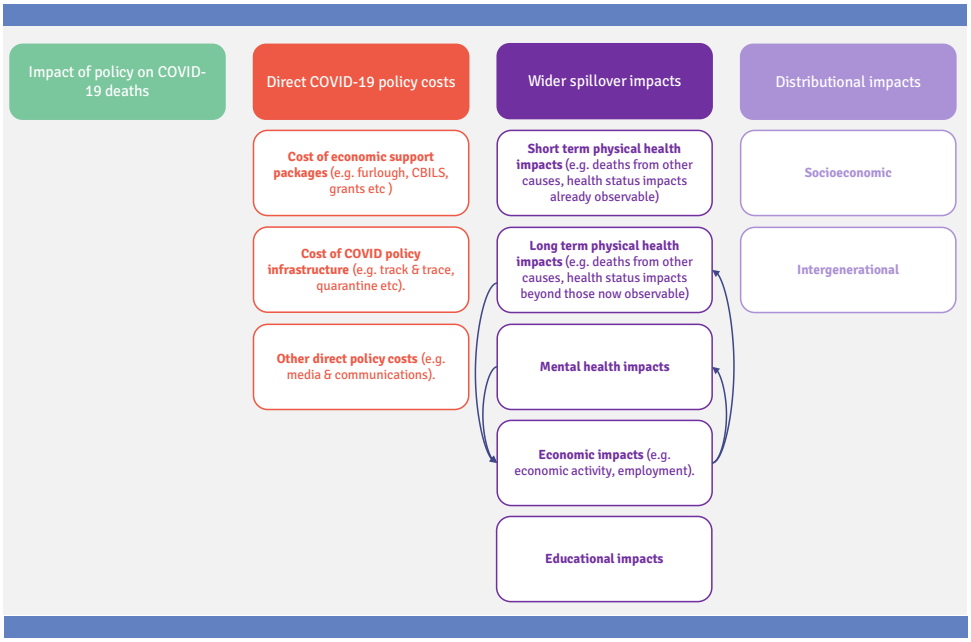
2 *NICE describes the calculation of QALYs as follows: "QALYs are calculated by estimating the years of life remaining for a patient following a particular treatment or intervention and weighting each year with a quality-of-life score (on a 0 to 1 scale). It is often measured in terms of the person's ability to carry out the activities of daily life, and freedom from pain and mental disturbance*

3 *SAGE minutes of March 23rd state: "given the clear links between poverty and long-term ill health, health impacts associated with the economic consequences of interventions also need to be investigated."*

3. Summary framework of costs and benefits of COVID-19 policies

We have given consideration to the spectrum of costs and benefits that likely need to be captured within an assessment of COVID-19 policy. These are discussed in more detail within the remainder of this paper. However, the following figure summarises our suggested framework for policy appraisal.

Figure 1: Overview of framework for assessing policy



4. Policy impacts on COVID-19 deaths – defining the counterfactual

In order to identify the impact of 'lockdowns' and any COVID-19 policy responses, it is essential to identify a counterfactual against which the impact can be assessed. By this we mean a best view of: *'what would have happened if the policy had not been implemented?'* The HM Treasury Green Book emphasises the importance of clearly defining a counterfactual.[4]

In the case of evaluating COVID-19 policy, perhaps the most important element of any counterfactual is determining the number and profile of COVID-19 deaths that would occur, absent the policy intervention.[5] This is because:

- It is clearly central to quantifying the 'direct' benefits any policy interventions may have achieved (i.e. on the assumption that lowering COVID-19 deaths is likely to be the main potential benefit of any policy, against which other impacts may need to be traded-off, as discussed further below).

[4] *'The Green Book: Central Government Guidance on Appraisal and Evaluation,' HM Treasury (2018); paras 3.6; and 4.3*

[5] *Another issue worth considering (and thus understanding the impact of policy on) is that of post viral syndromes associated with COVID-19 (commonly termed 'long COVID'). All else equal, the greater the number of people infected with COVID-19, the greater the number of people who may suffer from post-viral syndromes. However, more research is required to establish the prevalence of post-viral syndromes within the COVID-19 infected population; and the presentations associated with these. In practice, by definition a suitable period of time will need to elapse to enable robust, high-quality estimates to be derived.*

- However, the number of COVID-19 deaths under the counterfactual may also be critical to quantifying the wider impacts of policies and whether, in net terms, they give rise to 'additional', or 'reduced', costs.

By way of an example in relation to the second bullet above, if under the counterfactual COVID-19 deaths would have been *materially* higher without a policy intervention, then said policy intervention may also have mitigated negative impacts on wider healthcare provision arising from the pandemic. For example, it is widely documented that there has been a large number of missed cancer treatments and diagnoses during the pandemic. Under a counterfactual of much higher COVID-19 deaths, it might be that these missed cancer treatments etc would be *'even higher still'*. Therefore, the policy may have mitigated this wider impact. On the other hand, if such a counterfactual is *not* supportable, the reverse is more likely to be true. This same logic applies to a range of broader impacts, including aspects of UK economic performance. Therefore:

- robust and transparent method(s) for quantifying the impact of policy on COVID-19 deaths (and so identifying the counterfactual number of COVID-19 deaths) is essential for any evaluation to be credible; and
- consideration of how the level of COVID-19 deaths itself may affect other wider impacts is also critical to ensure the counterfactual assumed for those other impacts is appropriate (we discuss this issue further subsequently).

4.1 Assessing how lockdowns and other non-pharmaceutical interventions (NPIs) may impact COVID-19 deaths directly

As the assessment of how policy affects COVID-19 deaths is both central to quantifying its benefits (and wider impacts), it is important to consider 'how' this might be done. This includes: (i) being clear as to the *'in theory'* ways in which policy may impact COVID-19 deaths; and (ii) identifying the key questions that need to be answered, consistent with that theory.

4.1.1 The theory

In order to help identify the counterfactual number of COVID-19 deaths, it is important to be clear as to the underlying logic and causality as to how lockdowns and NPIs may impact them. Here, and as explained by SAGE early on in its advice to Government, it is important to recall that NPIs are <u>not</u> primarily a means of lowering COVID-19 deaths in totality (that goal is principally achieved through improved treatments and vaccines). Rather, NPIs mainly impact the <u>profile</u> of COVID-19 deaths (by slowing the rate of infection, and so 'spreading out' deaths). However, by affecting the profile of COVID-19 deaths, it is nonetheless possible that COVID-19 deaths (and deaths from other causes) may be reduced in totality by policy. This is as follows:

- **Mitigation.** If peak COVID-19 deaths were high enough, such that total demand for critical healthcare exceeded the capacity of the NHS, then by definition, total deaths would be higher (i.e. because the NHS could not treat patients once its capacity was exceeded). Hence, if lockdowns and other NPIs can lower the peak in COVID-19 deaths, they might reduce COVID-19 deaths overall. In practice under this rationale, the 'lives saved' by the policy would be represented by the difference between an 'unmitigated' and 'mitigated' peak in deaths, *over and above NHS capacity.*

- **Suppression.** Under suppression, NPIs are maintained in order to flatten COVID-19 deaths over a longer time period. Once a vaccine (or cure / treatment) is viable, citizens that might otherwise have died from COVID-19 may therefore live, as a result of the suppression policy (i.e. because they have been 'saved' from COVID-19 long enough to benefit from said vaccine or cure). In practice, any 'lives saved' under this rationale would be represented by the difference between an 'unmitigated' and 'mitigated' profile of deaths from the start of the intervention *up until the point where the vaccine or treatment was deployed.*

4.1.2 Key questions impact assessments should address in defining a counterfactual

In practice, there are considerable challenges in robustly identifying unmitigated peaks and profiles in COVID-19 deaths (which we discuss further below). However, the above means that one would expect any robust definition of a counterfactual to examine the following critical questions in some detail:

- **Did the lockdown / NPI occur prior to the peak in COVID-19 infections?** This matters because if an intervention occurred after peak infections, by definition it would not have reduced peak COVID-19 deaths. If it did not reduce the peak in COVID-19 deaths, it further follows that (irrespective of whether healthcare capacity was exceeded or not) the peak was *'as high as it would have been'* absent the intervention. In turn, the lockdown / intervention could not have reduced COVID-19 deaths in totality via the mitigation route (which would seem to be the primary way in which NPIs can avert material additional COVID-19 deaths). As the infection peak likely occurred at different times within the UK, this analysis would ideally be conducted at both a UK and regional level.

- **What is the evidence on the likely timescales and effectiveness of any vaccine / treatment?** This matters because to the extent that there may be trade-offs between COVID-19 deaths and wider costs and benefits, these will likely change over time. For example, if the policies used to suppress COVID-19 contribute to deaths from other causes and economic harm, the magnitude of these may increase with time, meaning that in net terms at a certain point (even if the policy reduces COVID-19 deaths) costs will offset benefits.

- **What is the counterfactual policy?** The impact of any COVID-19 policy *could* be evaluated against a 'do nothing' scenario. However, this may not be appropriate as: (i) there is a scientific basis for the basic measures of 'improved hygiene' and 'social distancing'; and (ii) those basic measures likely have very low wider health and economic costs. Hence, it is perhaps difficult to conceive of a COVID-19 policy response that would not include these steps. Relatedly, in the UK, policies varied over time, but began with increased hygiene and social distancing.

- **Is the counterfactual a static concept?** It is the case that many improvements have been seen in the medical treatment of COVID-19. Therefore, the relevant counterfactual (i.e. the number of COVID-19 deaths without the particular policy intervention of interest) may itself have varied over time.[6] Generally, the better the treatment options, the smaller the incremental benefits from NPI policies.

[6] *In addition, changes in COVID-19 treatments over time may also mean that the counterfactual amount of NHS capacity varies over time (most significantly, in relation to intensive care related capacity).*

Recommendation 2. Impact assessments should include a transparent analysis of whether policy interventions occurred before or after the infection peak. Given measurement issues, this should ideally start from an identified peak in COVID-19 deaths; and then a lag should be applied to identify the corresponding prior infection peak.

Recommendation 3. If the policy is targeted at suppression, any evaluation must explicitly include assumptions about the assumed 'vaccine' or 'treatment', its timing and effectiveness.

Recommendation 4. Impact assessments should transparently set out what the counterfactual policy is. The appropriate counterfactual policy is unlikely to be 'do nothing', and there is a case that a counterfactual policy of 'increased hygiene' and 'social distancing' is a useful reference point.

4.2 Defining counterfactual COVID-19 deaths in practice

At the time of the original policy choices, counterfactual COVID-19 deaths were identified using 'forward-looking' modelling (for example, as presented by SAGE in its early advice to Government). Such modelling takes assumptions about the characteristics of the virus (e.g. the infection fatality rate; risk variance by age; and so on) and overlays assumptions as to the effectiveness of various NPIs on the reproductive rate (the 'R'). Thus, a hypothetical counterfactual profile of COVID deaths can be derived.

There is now sufficient data that (in most circumstances) the above should not be the primary basis for identifying the counterfactual for future policy decisions (or the evaluation of existing policies). This is because there is now over 8 months of data in which COVID-19 deaths are present in the UK. Hence, it is highly preferable to identify counterfactual COVID-19 deaths by analysing what has actually happened. That is to say: can we observe (or directly estimate) a change in COVID-19 deaths due to lockdowns and other NPIs implemented to date? Hypothetical counterfactuals derived using forward-looking modelling may still be required in situations where the policy being considered is very different from ones previously deployed (meaning that backwards looking evaluation data does not exist). Relatedly, and also worth consideration, is whether public compliance with NPIs (and therefore efficacy) might vary over time. For example, whether compliance might fall through 'fatigue', if there were multiple lockdowns. If this were the case, then it would affect the relative benefits delivered by policies, which would need to be captured in any analysis.

Recommendation 5. The counterfactual (and impacts of) COVID-19 policy should (in most circumstances) not primarily be informed by hypothetical forward-looking modelling. Rather, policy impacts should be estimated transparently from observable outcomes data.

4.2.1 Metrics for quantifying the direct impact (benefits) of lockdowns / NPIs

The reference to 'COVID-19 deaths' above is intentional. That is to say, because within our framework, COVID-19 deaths are a key end outcome we care about (because it is both relevant to the potential direct benefits of lockdowns and NPIs, and to the wider costs and benefits). Because we have data on COVID-19 deaths, it therefore seems intuitively sensible to assess the impact of policies on these directly, without any interim steps (discussed below). Here, one issue raised is that policies firstly impact infections. Therefore, in assessing the impact of policy on COVID-19 deaths, one must

take into account the potential 'lag' between infection; symptom onset; and death. Whilst this lag remains subject to uncertainty, there is now sufficient evidence that a reasonable range for the lag can be identified.[7] Thus, so long as sensitivity analysis is undertaken to take this uncertainty into account, there is no reason not to focus on the impacts on COVID-19 deaths.

The alternative approach would be to estimate the impact of COVID policy on either the 'R' or 'cases', and then calculate the end impact on deaths from this. We do not think these should be primary metrics, however. This is because both the 'R' and 'case numbers' are subject to considerable measurement error. A further degree of measurement error is then introduced in the conversion of any impact on these intermediary metrics into an impact on COVID-19 deaths. Hence, given that deaths are a key outcome of interest, and are likely more robustly measured, it is hard to make a case for evaluating the impact of policy on cases or the R *per se.* Or, at the least, we would expect robust evaluations to focus on assessing impacts in terms of deaths, where impacts on other metrics (such as cases or R) might constitute relevant supplementary information.

Recommendation 6. The impact of policies on COVID-19 should be estimated directly in terms of their effect on COVID-19 deaths, rather than intermediate COVID-19 metrics, such as R or case numbers.

Further to the above, we consider there to be merit in examining policy impacts on *'all cause mortalities'.* This is because, whilst the measures of COVID-19 deaths are likely more robust than infection rates and R, the available deaths metrics in the UK still have certain limitations.[8] The advantage of all cause mortalities, of course, is that as a measure of 'total deaths', it is likely more reliable. Of course, estimating impacts on 'all cause mortalities' effectively combines the 'intended' policy impacts on COVID-19 deaths with wider 'unintended' impacts on other causes of deaths. However, as long as the results are interpreted with care, this is actually helpful. Specifically, it can provide a guide as to whether (in net terms) the policy had a net mortality increasing, or decreasing, impact. We further consider there to be particular merit in using an all-cause mortality 'excess deaths' metric (i.e. the difference between deaths in 2020 and the 5 year historical average at the same time of year) for ascertaining policy impacts.

Recommendation 7. There is merit in analysing the impact of COVID-19 policies on all cause mortalities, including impacts on excess deaths.

4.2.2 Techniques for identifying impacts of lockdowns / NPIs

In seeking to identify the impact of lockdowns / NPIs on COVID-19 deaths, there are a range of approaches / analytical techniques that can be used to help identify whether, and to what extent, policies had an impact. Various technical methods for evaluating impacts are set out in the HM Treasury Magenta Book.[9] In our view, methods that have merit for identifying NPI impacts include the following:

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[7] *We have undertaken a review of the existing literature. This suggests the overall lag from infection to death is >3 weeks but <6 weeks, with a mean of 4 weeks.*

[8] *Specifically, the 'deaths within 28 days of a positive test' metric has obvious limitations as regards COVID-19 being causal in death. Similarly, whilst metrics based on death certificates may mitigate this issue, the high % of COVID-19 deaths (95%) in which there were underlying conditions, combined with the overlap of COVID symptoms with other illnesses, inherently limits the ability to precisely identify death causality.*

[9] *See specifically: 'Magenta Book Annex A. Analytical methods for use within an evaluation.' HM Treasury (March 2020).*

- **Simple 'before and after' analyses** that examine changes in the levels and rates of change in COVID-19 deaths, following lockdowns / other policy interventions. The main limitation of this simple method is that many other factors may impact the profile of deaths over time within the UK (most obviously: immunity; susceptibility; and environmental factors, such as temperature varying over time). However, if the policy was a *material* driver of COVID-19 deaths, one would expect this to be readily observable, even using a simplified analytical method.

- **Statistical timeseries analysis.** The spirit of this approach is similar to the above, but the use of statistical methods allows one to 'control for' variation in COVID-19 deaths over time due to factors other than the policy, thus making it possible to better isolate policy impacts.[10] These methods are often used to evaluate historical patterns in seasonal flu, for example.

- **Cross sectional techniques.** By this we mean looking at variation in COVID-19 deaths by geography (i.e. within the UK, or across countries) where the policy response is included as a variable, alongside other factors that may impact COVID-19 deaths. Challenges with this approach (particularly cross country) include: (i) ensuring the relevant variables are comparable and robust; and (ii) how best to parameterise the lockdown / policy variables, when the nature of policy responses varies along a continuum across countries.

- **Difference in difference.** This method combines a 'before and after' and 'cross sectional' approach. Specifically, it compares: (i) the difference in COVID-19 deaths (rate of change) between two geographies *before* a policy intervention; with (ii) the difference *after* a policy intervention.[11] The intuition of this is that, because many variables might explain variation in COVID-19 deaths between geographies, if you measure the *'change in the change'* following a policy intervention, you can better cut through the variation that is not of interest; and thus better isolate the policy response impact. In the case of the UK, because interventions varied between England, Scotland and Wales (and latterly within England) there would seem to be scope to use this method both 'within country' and 'across country'.

The above methods could also be applied to assess policy impacts on 'all cause mortalities' (excess deaths) as well as impacts on COVID-19 deaths.

Recommendation 8. A robust evaluation of policy impacts on COVID-19 deaths would ideally use a range of analytical methods, including both timeseries and cross-sectional. There is a particularly strong case for difference-in-difference methods (as these may better help isolate the policy impact from other factors that impact deaths).

[10] *Discussed in Annex A of the Magenta Book, page 19.*
[11] *Discussed in Annex A of the Magenta Book, page 23.*

5. Direct policy costs

The 'direct' monetary costs of any policy response should be the most straightforward to identify and quantify within an impact assessment (i.e. actual £s costs should be identified and recorded for each). Key categories to be captured are listed in the following bullets. For each category, we have listed examples of the key costs incurred to date in relation to existing COVID policies.

- **Costs of economic support packages**: e.g. Coronavirus Job Retention Scheme (furlough); Self Employment Income Support Scheme; CBILS; grants; tax deferrals; eat out to help out, etc.
- **Incremental costs of COVID policy infrastructure**: e.g. Nightingale hospitals; additional ventilators; track & trace; quarantine infrastructure, etc.
- **Other direct policy costs:** e.g. media and communications; COVID marshals, etc.

6. Wider costs and benefits

An assessment of the wider costs and benefits associated with COVID-19 policy is essential, but there are considerable challenges associated with estimating each cost and benefit type. In the following, we briefly outline what we consider to be the appropriate 'types' of costs and benefits that should be included in any impact assessment, and discuss the complexities around these.

As noted in our discussion of the counterfactual, in addition to quantifying the wider impacts we observe in light of COVID-19 policies (such as lockdowns) careful consideration needs to be given as to whether certain wider impacts would have been 'greater' or 'smaller', absent said policy. This issue seems mainly relevant to wider health impacts where, if one finds a credible counterfactual under which COVID-19 deaths were materially higher (such that NHS capacity was exceeded) it might be that the COVID-19 policy response mitigated the extent of *certain* other healthcare harms. However, if such a counterfactual is not supported by data, the opposite is more likely to be true. In practice, the question of whether COVID-19 policy could potentially mitigate (rather than increase) wider health harms is likely to vary by the type of health impact in question. Thus, careful consideration should be given to care pathways for various other (non-COVID) conditions and how these may be impacted by increased or decreased COVID-19 deaths.

6.1 Wider health impacts

6.1.1 Wider physical health impacts (short term)

In relation to physical health, during the initial lockdown policy response, data shows large and rapid increases in non-COVID deaths. The ONS has published two papers relating to these. However, further careful investigation is required to understand the potential reasons for the excess non-COVID deaths; and the extent to which they are causally related to lockdowns / policy or not. Credible causality to be investigated includes: (i) that policy caused disruption to other critical healthcare provision, which contributed to additional deaths; and / or (ii) people's perception of COVID-19 risk was such that they avoided seeking treatment for other critical conditions.[12] Equally,

[12] *The second possibility is relevant because (i) SAGE specifically advised Government to increase the personal perception of COVID-19 risk in the general population; and (ii) data shows large reductions in*

there are explanations that do not imply a policy-related causality (such as measurement issues[13] or mortality displacement). This remains a complex area in which more work is required. Further to any additional non-COVID deaths, it is important to consider and quantify impacts on physical health status more broadly.

We would expect wider health impacts to be estimated on a QALY basis, to allow for comparison against any COVID-19 deaths impacts.

6.1.2 Wider physical health impacts (long term)

In addition to immediate health impacts, there is considerable evidence showing missed or deferred treatments across a range of medical conditions. Notably in relation to cancer care, there have been some 3 million missed cancer screenings, treatments and diagnoses in the UK, with suspected cancer referrals down 350,000 on 2019 levels.[14] Missed treatments and diagnoses of this kind will invariably result in increased future mortalities and lower life quality.

We would therefore expect any impact assessment to thoroughly identify the potential range of longer term physical health impacts and, as above, quantify them on a QALY basis. This will allow for a better like-for-like comparison with any reductions in COVID-19 deaths delivered by the policy response.

6.1.3 Mental health impacts

In relation to mental health, there has been considerable discussion of the potential impacts of both the COVID-19 pandemic itself; and of Government policy (e.g. the lockdown). There are clear, intuitive, reasons to expect policies that impose restrictions on society, and intentionally influence its perception of risk, will have significant adverse impacts on mental health. Similarly, the very existence of the COVID-19 pandemic must intuitively have adverse consequences for mental health.

We therefore consider it vital that any policy assessment evaluates mental health impacts thoroughly. Clearly, a key issue will be disentangling the pandemic impact from any policy impact. To this end, longitudinal studies[15] may be particularly helpful, as they may allow policy evaluators to identify changes in mental health metrics around the dates at which policy interventions were introduced or removed.

Again, to allow comparison to other health related impacts, there is an argument that mental health impacts should be estimated on a QALY basis.[16]

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certain healthcare during the policy response, even where access to said healthcare was possible (e.g. A&E admissions and attendances were heavily reduced).

13 *E.g. the ONS suggested some may be under-diagnosed COVID-19 deaths, although other published studies suggest otherwise.*

14 *The Lancet Oncology editorial, November 1st 2020.*

15 *For example, the UCL study: 'Understanding the psychological and social impact of the pandemic'.*

16 *We understand the use of QALY in a mental health context is complex and this would need careful consideration.*

6.3 Economic impacts

6.3.1 Economic activity

In terms of the economy, there has been a large reduction in economic activity, as reflected in falls in monthly GDP of -7.4% and -19.5% in March and April of 2020 respectively (reductions that have only partially been recovered since). There are both demand and supply related aspects of this that we would expect any impact assessment to consider:

- On the supply side, where COVID-19 policies (such as lockdown) mandate the closure of businesses, or restrict their trading, there will invariably be a considerable reduction in economic activity directly attributable to said policy.

- In addition, it may be that, irrespective of which businesses are closed / open, there is a general fall in demand (e.g. reduced consumer spending) due to behavioural changes. It might be that some element of this is unrelated to the policy response (e.g. people's spending / activity would have changed, even without any policy intervention). On the other hand, people's perception of the risk associated with COVID-19 cannot reasonably be said to be independent of the policy response (particularly where, in the UK's case, the policy itself included intentionally increasing risk perception).

6.3.2 Employment

In addition to the impact on overall economic activity (and thus living standards) it will be important to understand the impacts of policies on employment. As of September 2020, there were 2.7m unemployment claimants, up 1.5m since the March lockdown.[17] The unemployment rate is now the highest for 5 years, and over 3 million people remain on furlough (prior to the second lockdown) suggesting material further increases in the unemployment rate to follow.

It is important that any evaluation captures labour market impacts. It is likely that, intuitively, the majority of any employment impacts should be attributable to policy responses (rather than COVID-19). However, as per our discussion of the counterfactual, to the extent that some reduction in economic activity (on the demand side) may have occurred irrespective of policy, consideration will need to be given as to how best to distinguish between the two effects. Given the targeted nature of the policy restrictions on businesses by type (e.g. hospitality was subject to more restrictions and for longer than other industries) it should be possible to identify some sensible points of comparison within the UK to inform this.

6.3.3 Investment

Another economic impact consideration relates to the interactions between the pandemic, policy responses, and investment. Here, two particularly pertinent issues would seem to be: (i) the scope for certain policy responses to be 'repeated' over time (which seems most relevant to suppression strategies, with more than one lockdown); and relatedly (ii) uncertainty.

[17] *'Labour market overview, UK.' ONS (October 2020).*

Setting policy responses aside, the pandemic itself may deter business investment. For example, the impact of the pandemic (even without policy) on demand across markets will be subject to uncertainty, which in turn makes business planning harder.

Policy responses could impact business investment in a number of ways. Firstly, to the extent that policies impact consumer behaviour over and above the pandemic effect (which seems certain) this may have a further depressing impact on investment. Secondly, this 'demand side' impact of policy may itself be uncertain, if there is a pattern of 'changed messages' and 'communications' from Government. For example, 'reassuring' messages designed to increase consumer confidence, followed by conflicting messages. Thirdly, on the supply side, 'lockdown' or other 'business restrictions' give rise to two types of uncertainty: (i) 'how long' they will last for; and (ii) whether they will be repeated. Intuitively, there are grounds to suppose these policy effects on investment may be particularly material.

It is therefore important any impact assessment considers investment related impacts – particularly as a reduction in investment may well reduce UK productivity, and thus economic growth, over the longer term.

6.3.4 Feedback effects to health

Finally in relation to economic impacts, it will be important to consider the 'feedback loop' to health (as measured in QALYs). Specifically, it is well-established that recessions and weaker economic performance (and higher unemployment) are associated with poorer physical and mental health. These longer-term feedback mechanisms must also be considered with care and incorporated into any analysis.

6.4 Educational impacts

There will be a range of important educational impacts arising from COVID-19 policy. For example, in relation to the first lockdown, schools were closed, and subsequently re-opened on a staggered basis. In addition, GCSE and A Level exams were suspended; University (and other HE) level education provision was also disrupted. These effects should also be incorporated within any impact assessment.

6.5 Summary of recommendations relating to wider impacts

Recommendation 9. Wider impacts on physical health (both deaths from other causes and health status), mental health, the economy and educational attainment, should be included in any policy evaluation.

Recommendation 10. Feedback effects between reduced economic performance and physical and mental health impacts over the longer-term should be captured.

Recommendation 11. The measurement of wider impacts (particularly those relating to non-COVID related healthcare) should be done in a manner consistent with a well-evidenced counterfactual regarding the likely profile of COVID-19 deaths (absent the policy response).

7. Distributional impacts

In addition to estimating the 'net impact' of any COVID-19 policy, it will be important to examine distributional impacts. The most obvious distributional impacts to consider would seem to be as follows:

- **Socioeconomic status.** It is possible that both the impact of COVID-19 itself, and policies in response to the pandemic, have a highly 'regressive' impact, disproportionately adversely affecting the most vulnerable in society (in terms of both their economic and broader wellbeing).

- **Intergenerational.** Given that COVID-19 deaths are highly concentrated in the elderly and co-morbid, there is a high likelihood that COVID-19 policies adversely impact future generations at the expense of current generations. Understanding the extent of this transfer will help inform the likely *'intergenerational fairness'* of any policy response.

Recommendation 12. Given that COVID-19 deaths are highly concentrated in certain groups (e.g. the elderly and co-morbid), the distributional impacts of policies (both socioeconomic and intergenerational) should be evaluated.

8. Concluding thoughts

The task of robustly assessing the impact of COVID-19 related policies (including lockdowns) is a challenging one. However, progress can be made by adopting a transparent framework that reflects interlinkages and trade-offs across healthcare, the economy and society. Moreover, whilst quantifying costs and benefits precisely is (as in any policy evaluation) difficult, there are certain key questions, indicators and analyses, that collectively can provide a good sense of the likely net cost / benefit position of any policy. Above all, we strongly recommend a far greater focus on evaluating policy impacts on observable data (primarily on COVID-19 deaths and all cause mortalities), rather than the use of hypothetical modelling. Critically, this can be of particular help in defining the relevant counterfactual for policy evaluation.