

# COVID-19: Moving between Alert levels and into the future

New Zealand is approaching the end of the planned four-week lockdown which has brought about significant economic losses and, it appears, significant benefits in the form of lives saved. As the country now looks toward a relaxing of the COVID-19 Alert level and an uncertain future, we offer some advice about decision-making.

## Building on success with quality decision-making

The COVID-19 Alert System is supposed to provide a framework that allows government, businesses and households to plan for an effective response to changing circumstances. But so far, no concrete information has been shared regarding the decision criteria that the government will use to decide on a change of level. Modelling of potential COVID-19 impacts has been based on assumptions where there are knowledge gaps and decisions yet to be made.

If the government wants to build on its success so far and continue running an effective public health campaign against COVID-19 at minimal cost to the economy, it needs a robust decision-making framework that will allow rapid response to changing circumstances and reflect a broad range of health, social and economic considerations.

In this Insight, we offer an economist's approach to simplifying the decision-making process and we leave the reader with the 5 key questions that need to be addressed in deciding to move between Alert levels.

## Decision-making under uncertainty

The difficulty the government faces in the COVID-19 context is making decisions under extreme uncertainty. There is a significant body of literature in economics about exactly this problem, much of our recent understanding owing to the work of Daniel Kahneman and Amos Tversky. Kahneman and Tversky showed that under uncertainty, people's decisions often depart from perfect

rationality but in ways that can be anticipated and predicted.

So far, the government has wisely followed a least regrets strategy (people may get their jobs back, but lost lives can't be recuperated). This approach is favoured in extreme uncertainty where there are irreversible outcomes. But we now need to move towards a more sustainable approach that considers the protection of health alongside wider social and economic objectives. This means prioritising:

1. Investing in more information to reduce uncertainty.
2. Being transparent and consulting more widely to balance objectives.
3. Maintaining flexibility to respond to new information as the situation evolves.

## Investing in more information to reduce uncertainty

Economist Frank Knight is credited for making the critical distinction between two levels of ignorance about an uncertain future (Knight, 1921) – outcomes or events that can be reliably quantified (Knightian risk) and outcomes or events that can't (Knightian uncertainty). We might think of uncertainty not so much as facing knowns and unknowns, but rather as facing knowns, knowables and unknowables.

Many unknowns have been replaced with assumptions in the various models that epidemiologists, mathematicians, physicists and every other kitchen table modeller has devised. But assumptions are a poor substitute for facts. And experts have been shown to be prone to

overconfidence in their assessments of risk (Slovic et al, 1981).

Many of these unknowns will become known with time and some only in hindsight. Other factors that matter for decisions are better described as not *currently* known but they are *knowable*. Some of these are avoidable economic costs of government decisions. Moving avoidable costs from the unknown to the known will improve the quality of decisions. Specifically, the government should be investing in analysis that produces cost estimates aligned with interventions at each Alert Level compared with a no-intervention counterfactual.

### **...not just for government but for businesses and consumers**

Possibly the easiest way for the government to reduce uncertainty is to minimise the uncertainty it creates. The costs of the pandemic and the government response can be minimised by reducing uncertainty for businesses. The medical briefings have been clear and easy to follow, but the economic material less so.

Even terminology would benefit from greater transparency and consultation. The definition of “essential” has been the subject of much debate. A more technical approach is needed to ensure definitions are practical and implementable. A shift towards risk-based categories makes sense but a possible return to Alert Level 4 still requires that essential services are better defined, ideally with more attention to supply chain dependencies.

It’s likely that government will ask that businesses demonstrate they are low risk enough to be able to operate under lower Alert levels. But businesses will want to be confident that the government is also able to manage risk under a lower Alert level. This will require more transparency around testing and contact tracing capacity, and stocks of equipment and supplies. Accounts from government and front line workers have often disagreed.

Furthermore, establishing and explaining decision criteria for moving between COVID-19 Alert levels should be prioritised, so that some degree of transparency about the decision-making process can be provided. So, what are the easy to understand and explain decision criteria that can be used to signal moving between COVID-19 Alert levels to provide some degree of certainty in a very

uncertain situation? This will depend on the overall public policy objectives which are yet to be fully identified. But establishing the decision criteria should involve consultation with a wide range of experts and stakeholders.

### **Being transparent and consulting more widely to balance objectives**

Climate change is an example of another current issue where modelling, scenario building, and policy making have struggled due to extreme uncertainty. A World Bank working paper on applying decision-making methods in the context of climate change concluded that it is impossible in the presence of so much uncertainty to identify a best solution or methodology (Hallegatte, 2012). Rather it recommended that a range of methodologies alongside indications of most appropriate strategies based on context would provide a practical way forward for policy makers.

The same working paper goes on to recommend that methods should be used as organising frameworks for discussions with a range of experts and stakeholders, rather than as tools that provide objective decision-ready results. The same can be said about epidemiological modelling and other scenario-based tools where wide consultation would deliver strengthened layers of understanding and provide a more robust basis for decision-making.

Open discussions create and maintain a sense of community that supports the necessary sacrifices to achieve objectives. By widening the advisory resources that the government draws upon to make decisions, a better representation of perspectives on the objectives and concerns of New Zealanders can be ensured.

### **...with discussion guided by the logic of cost-benefit analysis**

If wider consultation is to be guided by methods and tools, cost-benefit approaches should be one of the main tools used. Expected benefits must outweigh expected costs for any decision. In an ideal world, every cost and benefit of government action relative to no action could be quantified and monetised. In reality, this is often impossible, but abandoning the framework entirely is not conducive to good decision-making. The logic of the

approach can be applied effectively without getting into detailed monetisation, and in the case of COVID-19 does not preclude putting a very high premium on saving lives.

In cost-benefit analysis, time horizons for costs and benefits are important, as are the distribution of costs and benefits, and these should be described as fully as possible before decisions are made. Time horizons may be particularly significant in this context. It could be four or five years before a vaccine is available, so the benefits of an almost back-to-normal economy from total virus elimination may dwarf the short-term costs of measures to ensure elimination.

### ...and consideration of trade-off proportionality

Decision frameworks must be designed to focus attention on options that minimise trade-offs. Options that save lives at minimal cost to the economy should be favoured over those with similar benefits and higher costs. Even when costs can't be specifically identified, experts are generally able to identify broad magnitudes that provide a sense of proportionality to decisions. Proportionality also helps to highlight areas where investment to reduce uncertainty is most warranted (see Figure below).

**Figure 1 Balancing the proportionality of pandemic response with social and economic impacts**

		Social and economic impacts		
		Low	Medium	High
Pandemic response level	Low	Low level of response causes minimal economic impact but reliance on tracking and tracing (apps etc.), monitoring of people movements, shifts emphasis to treatment of infected individuals, strict isolation or quarantine. Possible flouting of individual rights or high levels of infection.	Low level of response can cause medium economic impact when individual social distancing behaviours result in reduced demand. Larger businesses and those with contactless services may be ok but smaller and face-to-face businesses struggle.	The worst of both worlds. High economic costs and high social costs resulting from extreme social distancing behaviours that affect demand and supply.
	Medium	Medium response causes minimal economic impact with measures supplemented by fine-tuned restrictions allowing more lower risk activity and smarter ways of doing business in a no contact environment. Will require creative thinking and flexibility by regulators to identify and minimise risk while promoting greater freedom.	Medium response causes medium economic impact with blunt social control measures. Economic activity only partially freed up. Smaller businesses struggle without specific enablers. Tension grows as economic impact becomes greater as time goes on. Can buy time to finetune restrictions for reduced impact.	Not a satisfactory scenario. Too much being given up economically for moderate level of pandemic control. Need to identify ways of reducing impacts while maintaining level of control.
	High	Not a credible scenario. High level of response involves restrictions with high economic impact.	Not a credible scenario. High level of response involves restrictions with high economic impact.	Complete focus on stamping out the virus. High economic impact can be sustained for a short time.

Source: NZIER

Cost-benefit and trade-off frameworks can also be applied to mental health effects, family violence, missed education, delayed care of long term conditions and other consequences of pandemic response decisions.

Another important dimension to trade-offs relates to the distribution of costs and benefits across groups and sectors. In some cases, the government may be able to mitigate the costs to affected parties

without tipping the balance of benefits and costs overall.

### Maintaining flexibility to respond to new information as the situation evolves

Before governments can make effective use of new evidence, they must make use of existing evidence to inform decisions. To date, decisions have reflected rich epidemiological evidence but very little evidence from other disciplines, including psychology and economics. Behavioural economics may have a lot to offer in this context since the effectiveness of government measures depend heavily on individual behaviour.<sup>1</sup>

#### ...using Bayesian approaches

Bayesian approaches are based on the simple notion that the probability of a hypothesis being true depends on how sensible it is based on current knowledge and how well it fits new evidence. Because of this, Bayesian methods are particularly well-suited to analysis of data that is new and subject to frequent updates. Bayesian approaches to decision-making, while less formal are equally useful when new evidence emerges. Decision-makers take a Bayesian approach when they ask “Given what we now know is true, does our belief about the right course of action change?” Bayesian approaches are compatible with experimentation and incremental improvements in knowledge. The more we experiment with approaches, or obtain new information, and evaluate results, the more informed decisions become: We move away from a multitude of plausible hypotheses and a high degree of uncertainty, to a smaller number of hypotheses and less uncertainty. Similar benefits can be drawn from other countries experiences if we can ensure fast learning and response capability.

Given the current high degree of uncertainty, all decisions represent some degree of experimentation. Experiences in other jurisdictions and variations in viral spread across regions in New Zealand where populations are different, infections levels are different, and restrictions are applied differently, may provide the benefits of natural

experiments. Methodical learning from these might help us to move away from precautionary approaches to a more balanced risk approach.

But if we do proceed with regional alert levels, as is being considered, there are critical dependencies similar to an experimental approach to maximise learning and minimise harm:

- Hypotheses need to be carefully established and based on the best available evidence to avoid unnecessary risk.
- Capacity for rapid evaluation and feedback is needed to inform decisions in a timely manner.
- Decision-making needs to respond rapidly to feedback to minimise costs.
- Time-lags for effects need to be short to avoid doing long-term damage.

#### ...and dealing with sunk costs like an economist and a politician

What we have already done in terms of pandemic response or already committed in terms of fiscal stimulus are now what economists call sunk costs. Recognising sunk costs is important in decision-making: A sunk cost is a cost that has already been incurred and cannot be recovered regardless of the decisions taken today or in the future.

Today’s decision-making should focus instead on *future* costs which may be avoided by making the right choices. Identifying and then deliberately ignoring sunk costs doesn’t just help to focus decision-making on the costs we have some control over, it allows strategy to change over time, adapting to and making best use of new information. This may seem straightforward but consumers and decision-makers frequently factor sunk costs into decisions (Arkes and Blumer, 1985).

Politically, of course, ignoring sunk costs in decision-making can make governments look like they are flip-flopping from one strategy to another. Political aversion to a change in strategy can also be related to economists’ Kahneman and Tversky’s observation that people feel a greater sense of

<sup>1</sup> For example, there has already been concern about ‘behavioural fatigue’ resulting in reduced effectiveness of social distancing. But despite government concern there is no evidence that ‘behavioural fatigue’ is a phenomenon worthy of serious concern in this context – a fact that was pointed out to the UK government in an open letter

made publicly available and signed by 600 behavioural scientists (Mills, 2020). With experts calling out governments on their use of evidence, government credibility may be a more important determinant of any behavioural fatigue than the restrictions imposed.

regret for bad outcomes from new actions than for bad outcomes from inaction (Kahneman & Tversky, 1982). For these reasons, it will be important that evidence for decisions – particularly new evidence – is made publicly available and that the decision-making process is transparent, including signals of the potential to change strategy.

### High public confidence represents an opportunity to move forward

Confidence in the government’s management of the COVID-19 pandemic is currently high (RNZ, 2020), owing to the success of the Level 4 Lockdown and the contrast between New Zealand’s trajectory and that of other countries where leaders were slower or less aggressive in their response. 84% of New Zealanders approve of the government’s handling of COVID-19, compared with an average of 54% for the G7 countries (Colmar Brunton, 2020).

Now is the right time for the government to build on that confidence by showing that it is establishing a framework, process, and wide panel of experts for decision-making that goes beyond epidemiological modelling and is designed to reduce uncertainty while taking a wider view of health, social and economic outcomes. The Epidemic Response Committee mechanism for testing the government’s response is to be commended but transparency about the impact of this process on policy could be improved.

A key takeaway is that that decision tools and considerations such as those described in this Insight will provide useful organising frameworks to drive discussions of options, even if the high degree of uncertainty we face reduces their potency as standalone objective decision tools.

A critical consequence of continued uncertainty is a significant mental health impact. Experience with the Canterbury Earthquakes showed that much of the mental health effects were caused by avoidable “secondary stressors” including the sense of uncertainty that prevailed for months after. As the Canterbury District Health Board Chief Executive emphasised in acknowledging these effects, “We’ve got to get better at planning to respond, rather than reacting to things when they turn to custard” (McDonald, 2018).

### Our five questions for moving between Alert levels

The COVID-19 situation is dynamic and rapidly evolving. We should be prepared for strategy shifting and this may mean a change in Alert levels in either direction. But a key issue that the government will be well aware of is the need to minimise the amount of yo-yoing between Alert levels. A lack of commitment to a more stable recovery pathway or a lack of adequate justification for strategy shifting will cause increased uncertainty for businesses and may reduce individual and business willingness to comply with restrictions.

Before any change in Alert level (or significant alteration to Alert level restrictions), the government should ask:

1. Does the decision to shift Alert levels reflect a strategy that is significantly better aligned with meeting overall policy objectives?
2. If the decision creates a yo-yo recovery pathway, is it justified by new evidence and based on realistic expectations of compliance?
3. Has new information or evidence been incorporated into the decision-making process via consultation with an appropriate range of experts?
4. Has the decision been evaluated from a cost-benefit perspective?
5. Does any proposed mitigation of inequitable distribution of impacts consider not only the impacts of the decision but the *cumulative* impact of COVID-19 decisions?

### References

- Arkes, H. and Blumer, C. (1985). “The psychology of sunk cost”. *Organizational Behavior and Human Decision Processes*, 35(1): 124-140.  
[https://doi.org/10.1016/0749-5978\(85\)90049-4](https://doi.org/10.1016/0749-5978(85)90049-4)
- Colmar-Brunton. (2020). Covid Times. 8 April, 2020.  
[https://static.colmarbrunton.co.nz/wp-content/uploads/2019/05/CB-COVID-Times\\_8-April-2020.pdf](https://static.colmarbrunton.co.nz/wp-content/uploads/2019/05/CB-COVID-Times_8-April-2020.pdf)
- Eastham-Farrelly, C. “Most New Zealanders willing to extend Covid-19 lockdown 'pain' – survey”. RNZ. 12 April 2020.  
<https://www.rnz.co.nz/news/national/414069/most-new-zealanders-willing-to-extend-covid-19-lockdown-pain-survey>
- Hallegatte, S. et al. (2012). “Investment Decision Making Under Deep Uncertainty. Application to Climate

Change". The World Bank Sustainable Development Network. Office of the Chief Economist. September 2012.

<https://openknowledge.worldbank.org/bitstream/handle/10986/12028/wps6193.pdf?sequence=1>

Kahneman, D. (2020). "Why We Underestimated COVID-19". New Yorker Podcast with Dorothy Wickenden. April 6, 2020. <https://www.newyorker.com/podcast/political-scene/why-we-underestimated-covid-19>

Kahneman, D., and Tversky, A. (1982). The psychology of preference. Scientific American, 246, 160-173.

Kahneman, D., and Tversky, A. (1979). "Prospect Theory: An Analysis of Decision under Risk". Econometrica, 47, 263–291.

Knight, F. H. (1921). "Risk, Uncertainty, and Profit". Boston, MA: Hart, Schaffner & Marx; Houghton Mifflin Company.

McDonald, L. (2018). "Health effects of Canterbury earthquakes 'like a wartime recovery'". Stuff. November 30, 2018. <https://www.stuff.co.nz/national/health/108978391/health-effects-of-canterbury-earthquakes-like-a-wartime-recovery>

Mills, S. (2020). "Coronavirus: how the UK government is using behavioural science". The Conversation. March 25, 2020. <https://theconversation.com/coronavirus-how-the-uk-government-is-using-behavioural-science-134097>

RNZ (2020). "Most New Zealanders willing to extend Covid-19 lockdown 'pain' – survey". RNZ. 12 April 2020. <https://www.rnz.co.nz/news/national/414069/most-new-zealanders-willing-to-extend-covid-19-lockdown-pain-survey>

Slovic, P., Fischhoff, B., Lichtenstein, S., Roe, F.J.C., 1981. Perceived risk: psychological factors and social implications [and discussion]. Proceedings of the Royal Society of London. A. Mathematical and Physical Sciences 376, 17–34. <https://royalsocietypublishing.org/doi/pdf/10.1098/rspa.1981.0073>

Tversky, A. and Kahneman, D. (1986). "Rational Choice and the Framing of Decisions". The Journal of Business, Vol. 59, No. 4, Part 2: The Behavioral Foundations of Economic Theory; S251-S278. The University of Chicago Press Stable. <http://www.jstor.org/stable/2352759>

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