



## Proactive Release

The following item has been proactively released by the Rt Hon Jacinda Ardern, Prime Minister:

### **Public health modelling and scenarios A3**

Some parts of this information release would not be appropriate to release and, if requested, would be withheld under the Official Information Act 1982 (the Act). Where this is the case, the relevant section of the Act that would apply has been identified. Where information has been withheld, no public interest has been identified that would outweigh the reasons for withholding it.

#### **Key to redaction code:**

- 6(a), to protect the security or defence of New Zealand or the international relations of the Government of New Zealand
- 6(b), to protect the entrusting of information to the Government of New Zealand on a basis of confidence by the Government of any other country or any agency of such a Government

**Global situation – rapidly evolving and growing concern outside Mainland China**

In just 8 weeks, more than **100,000 cases** of COVID-19 have appeared in **100 countries/territories**. Close to **4,000 deaths** have been reported, 90% in Mainland China, eclipsing the SARS, MERS and Ebola outbreaks.

**Community transmission** has occurred extensively in China’s Hubei Province and is now present in South Korea, Iran and northern Italy. Cases in the Western United States and Western Europe have increased significantly in the past week, likely indicating the beginning of community transmission.

**What we know about COVID-19**

The majority of people infected show mild symptoms, often similar to the flu. **BUT**

- **Up to 14% of cases are serious** and **up to 6% are critical** (ie requiring ICU).
- COVID-19 appears to disproportionately affect **the elderly** and **those with chronic diseases**, such as cardiovascular disease and diabetes.
- The population has **no pre-existing immunity**.
- There are **no known effective treatments and no vaccines** (best case for a deployable vaccine is 12-18 months).
- The death rate is fluctuating: Italy 4.25%, US 3.95%, China 3.8%, Iran 2.6%, China outside Hubei 0.9% and South Korea 0.65%. The UK’s Chief Medical Officer has a “reasonably high degree of confidence” that **1% is at the “upper limit”** of the death rate for COVID-19.
- The death rate for seasonal flu is 0.1%

Emerging evidence on transmission (eg droplet spread and transmission within families) and attack rate (eg very low in children) is heavily informing our response.

Below are worst case scenarios from the UK and Australia used by those governments for planning purposes.

**UK “reasonable worst case” scenario:**

- Infections: 80% of population
- s6(a), s6(b)
- 20% of workforce off sick at peak of epidemic

**Australia “severe” scenario:**

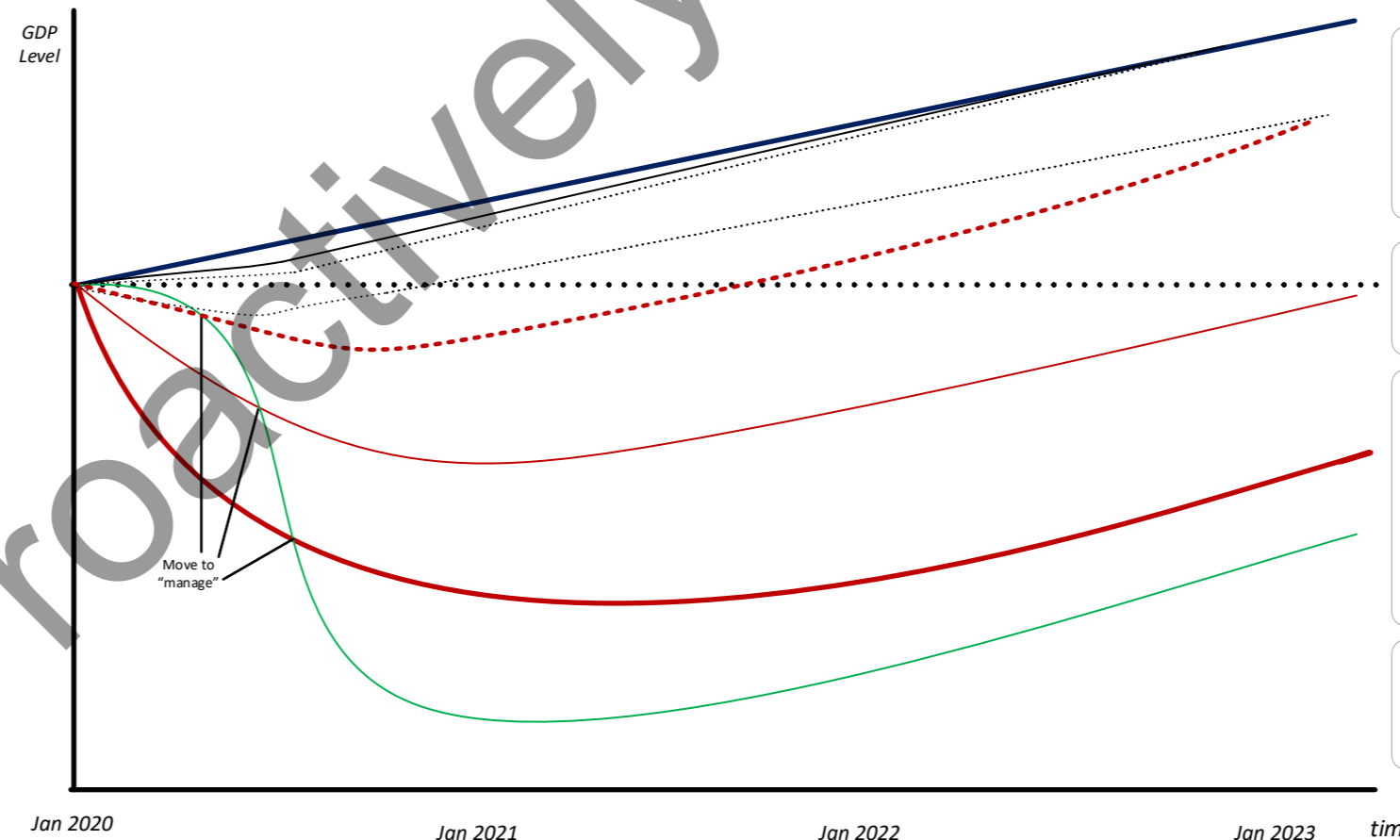
- Infections: 70% of population
- Hospitalisation: 14% of infected; ICU: 5% of infected
- Case fatality rate: 3% of infected
- Outbreak length: 10 months
- 40% of workforce affected by illness or caring for sick at peak

**Economic forecasts:** The vast majority of economic forecasts to date have assumed COVID-19 becomes contained in the first half of this year. Very few have considered a COVID-19 pandemic. An ANU study estimated a severe global pandemic could result in GDP falling by 8% globally. Studies on global pandemics have estimated output losses of up to 12%.

**Situation in New Zealand**

- **New Zealand has enacted its pandemic plan. We remain in “keep it out” with some “stamp it out” activity.** Border restrictions are in place for Mainland China and Iran. Self-isolation is required for travellers from other areas of concern, ie South Korea and Northern Italy. This is the first time New Zealand has applied border measures for public health reasons.
- COVID-19 is now a **quarantinable disease**, making new powers available.
- New Zealand has **five confirmed cases** of COVID-19. Cases are associated with travel to Iran and Northern Italy. Transmission within two families has occurred. More sporadic cases are expected.
- Public health officials are carrying out **contact tracing** and requiring **isolation** of close contacts.
- There is **no evidence of transmission occurring in the community**. No outbreaks have occurred in particular locations, such as a hospital, aged care facility, a correctional facility, or a community event.
- Based on the current situation outside of China and available evidence, ESR assesses the likelihood of **widespread outbreaks** in New Zealand to be **low**.
- New Zealand has **four sites for testing COVID-19**, one in each of Auckland, Wellington, Christchurch and Dunedin. These laboratories can carry out more than 1000 tests. Their capacities can be ramped up over the next few weeks.
- Public health units and District Health Boards have **activated their pandemic plans**.

**Scenarios: global containment, outbreaks in NZ, NZ keeps it out**



**BLUE** World prior to outbreak of COVID-19 in China

**BLACK** COVID-19 outbreak contained in China and other outbreak areas (such as South Korea, Italy and Iran) by March/April. Dotted black lines indicate where there are more outbreaks and containment thus takes longer, with more effects on the global economy. The solid black line corresponds to RBNZ’s forecasting in February.

**DOTTED RED:** Contained clusters of COVID-19 in New Zealand, during a global pandemic. A limited number of short, sporadic chains of transmission in New Zealand.

**RED** Moderate outbreak of COVID-19 in New Zealand, during a global pandemic. Sustained transmission to various degrees around New Zealand and the world.

**THICK RED** Severe outbreak of COVID-19 in New Zealand, during extensive global pandemic. More extensive transmission in New Zealand and globally than above. This indicates a worst case scenario.

**GREEN** No sustained outbreak in New Zealand, but global pandemic. “Keep it out” and “stamp it out” strategies succeed through containment and protective measures (such as border restrictions), but incurs heavy economic cost through isolation.



**Key points**

1. Delay the arrival
2. Flatten the peak and the curve

The way to support the healthcare system and the economy is to spread the load.

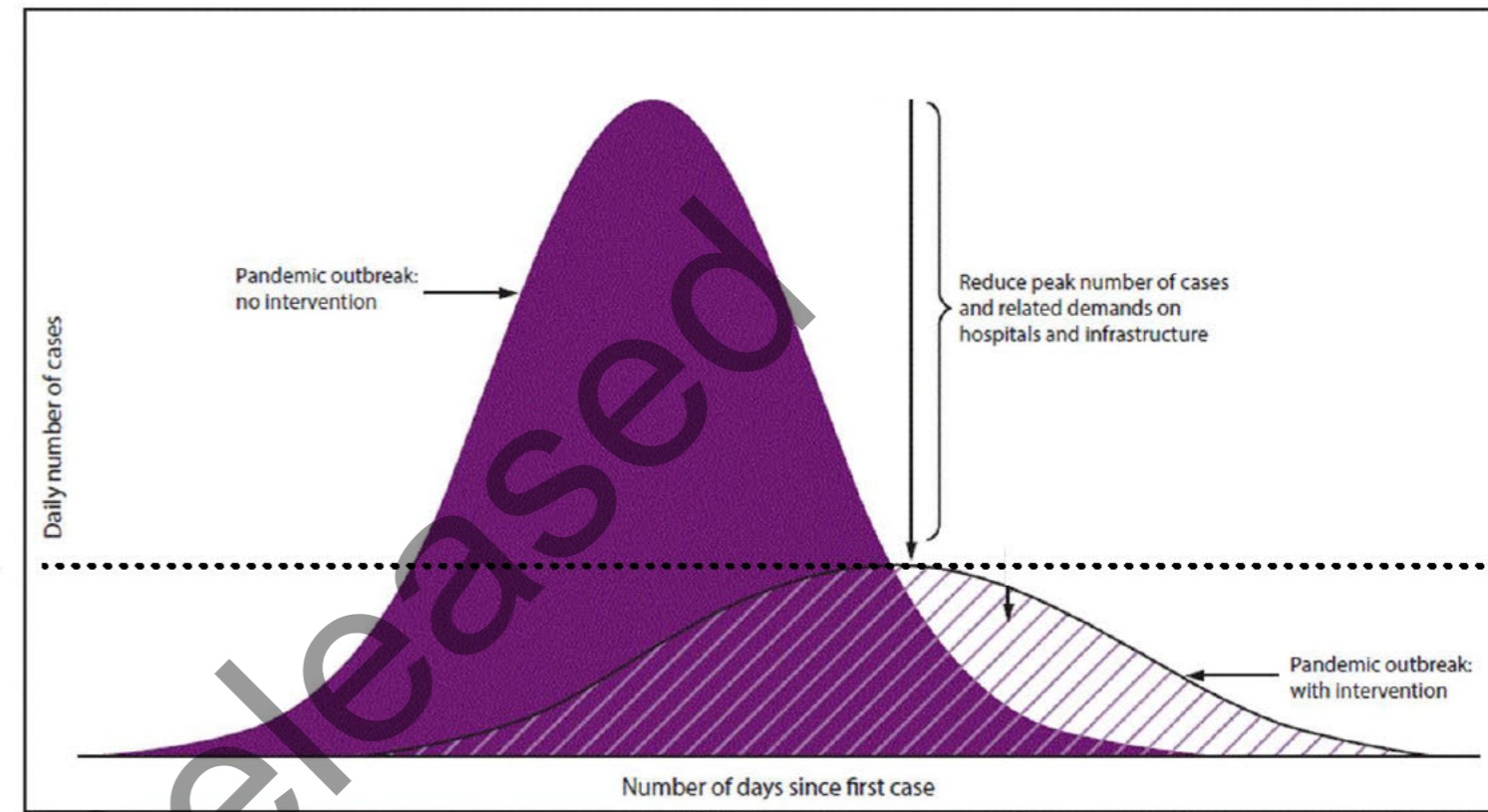
This means go early, go hard, stay the course.

We need to consider:

- Regional approaches
- Focus on Auckland
- Target high-risk vulnerable populations
- Telling New Zealanders that the border is not enough
- Getting 5 million New Zealanders to help us to help them
- Exercising powers that have not been exercised before

Some jurisdictions, eg Singapore and Taiwan, have successfully prevented widespread outbreaks. "We want to be Taiwan, not Italy"

Health system capacity →



**Government can apply various public health measures at each outbreak phase to slow the spread of the virus, ie "going hard":**

First cases or sporadic cases	<ul style="list-style-type: none"> <li>• Ensure <b>isolation</b> and effective treatment of the confirmed case; initiate immediate containment measures for the confirmed case – <b>contact tracing</b> and contact management</li> <li>• Apply <b>quarantine and containment measures for close contacts</b> of the confirmed case – eg quarantine family members, apply containment protocols for aged care facility</li> <li>• Increase <b>surveillance and testing</b> as part of increased efforts to actively find cases</li> <li>• Promote <b>basic hygiene messages</b> and infection prevention and control in the community through mass media campaigns, including highlighting the importance of hand washing and cough etiquette</li> <li>• Promote seeking <b>phone advice</b> (Healthline or GP) before presenting at General Practice, after hours clinics or Emergency Departments</li> </ul>
First cluster	<ul style="list-style-type: none"> <li>• Investigate and understand the cluster and then apply response measures – eg (1) if all cases are associated with international travel, <b>border restrictions</b> might be reviewed;</li> <li>• (2) a cluster associated with a facility (eg hospital, aged care facility, hotel, school, place of worship) could lead to <b>restrictions being placed on that facility</b> and <b>quarantining/isolating</b> of individuals concerned;</li> <li>• (3) a cluster associated with an event (eg participants at an event subsequently disperse) would lead to <b>contact tracing</b>;</li> <li>• (4) cases in a particular settlement (eg small town) could lead to measures to control spread such as <b>restrictions on travel</b> outside the affected area</li> <li>• Consider advising the <b>cancellation of mass gatherings</b> (eg sports events, festivals, camps, concerts, conferences, religious and public events) and consider advising the <b>closure of public venues</b> in relevant areas</li> </ul>
Multiple clusters	<ul style="list-style-type: none"> <li>• Encourage employers to consider <b>alternative ways of working</b> (eg remote working, shift-based working, social distancing, physical distancing within the workplace, staggering meal breaks, flexible leave arrangements)</li> <li>• Promote social distancing and consider <b>restricting mass gatherings</b> and closing public venues in affected areas</li> <li>• Consider the feasibility and effectiveness of placing <b>restrictions on affected areas</b> and/or <b>protecting unaffected areas</b> (eg forbid people from an infected place entering a healthy district; forbid people from leaving a healthy area)</li> <li>• Consider activating <b>community-based assessment centres</b> as appropriate</li> </ul>
Start of community or sustained transmission	<ul style="list-style-type: none"> <li>• Consider added legislative measures, eg <b>special powers under the Health Act and Epidemic Preparedness Act to allow more enforceable powers</b> (eg can require cancellation of mass gatherings (includes educational facilities), could require workplaces to close, issue travel advisories, impose internal travel restrictions (eg if transmission is mostly limited to particular locations), or impose restrictions on public transport)</li> <li>• Consider declaring a <b>state of local or national emergency</b> under the Civil Defence Emergency Management Act 2002</li> <li>• Review border restrictions: eg could lift import restrictions, but might consider <b>exit measures</b> (eg prevent infected from travelling, require 14-day quarantine before allowing departure to the Pacific)</li> <li>• Consider advising people at high-risk (eg older people, those with co-morbidities) to <b>remain at home</b></li> <li>• Activate <b>community-based assessment centres</b>, as appropriate, to triage people in order to minimise pressure on healthcare facilities and services</li> <li>• DHBs <b>defer elective procedures and reprioritise healthcare staff</b></li> </ul>
Sustained and intensive transmission	<ul style="list-style-type: none"> <li>• <b>Remove travel restrictions</b>, except exit measures at the border</li> <li>• Primary care and DHBs undertake <b>major prioritisation of healthcare services</b></li> <li>• Consider measures to <b>treat ill in the community</b> – eg facilities dedicated to COVID-19 cases</li> <li>• Promote <b>care in the community</b> NOTE: a significant proportion of all workforces likely to be affected by either illness or absence associated with care for dependants at home</li> <li>• Issue stronger messages to encourage people and <b>communities</b> to support each other</li> </ul>