Stay home.
Protect our health system.
Save lives.

In this together

Coronavirus (COVID-19) is the biggest acute public health challenge of our lifetime.

To protect our health system and save lives, the Victorian Government has implemented a range of measures to slow its spread.

Right now, the measures in place in our state are working. We have acted early and decisively to avoid catastrophic outcomes.

And overwhelmingly, Victorians have played their part. Together, our actions have made a real difference. But we still have a long way to go.

Relaxing these measures too soon could risk everything we've achieved – overwhelming our health system and putting lives at risk.

If we work together – if we stick together – we'll get through this. And we'll get through it together.

As we do, our message remains the same:

Stay home.
Protect our health system.
Save lives.

Purpose

The purpose of this document is to provide greater understanding of the spread of coronavirus in Victoria.

This includes modelling on case numbers before and after the introduction of restrictions and increased physical distancing measures.

It also provides insight into scenario projections on future case numbers and demonstrates the importance of maintaining our current trajectory.

Further detailed analysis behind the modelling is available here.

This analysis has been a cooperative effort between the Victorian Department of Health and Human Services, Monash University and modellers based at The University of Melbourne led by the Peter Doherty Institute for Infection and Immunity.

VICTORIA State Government | Health and Human Services

What we've done

Victoria is home to world-class healthcare.

And with the right planning and policies in place, we can give ourselves the best possible chance of slowing the spread of coronavirus – and ensuring the integrity of our hospitals and healthcare system.

Already, significant investment has been made in intensive care capacity, protective equipment for our frontline workforce, and additional capacity to detect and trace transmission of the virus in our community.

But it's not enough to just prepare our hospitals. As individuals, we each have a role to play in protecting our health system.

It's the reason we've also implemented a number of physical distancing measures, including restricting activity and a clear direction for people to stay home. This includes:

- restrictions on businesses and other organisations, as well as limiting recreational, cultural and entertainment activities
- a direction for people not to leave their homes unless it is for one of four reasons: food and supplies, medical care and caregiving, basic exercise, and work or education – if necessary
- physical distancing requirements for businesses that remain open, particularly retail services
- restrictions on entry to hospitals and visits to care facilities
- self-isolation for confirmed cases of coronavirus and quarantine for their close contacts
- supporting remote learning in our schools.

These measures, combined with travel restrictions and tighter border control measures enacted by the Commonwealth Government, have resulted in a reduction of new cases in Victoria.

The Victorian Government will continue to be guided by the Victorian Chief Health Officer, as well as working alongside the National Cabinet and the Australian Health Protection Principal Committee (AHPPC), in its response to coronavirus.

There are positive signs

Victorians are being asked to make very real sacrifices. But each of us should take pride in knowing these measures are making a very real difference.

As shown in Figure 1, and because of the actions of Victorians, we have seen a reduction in the daily number of new cases.

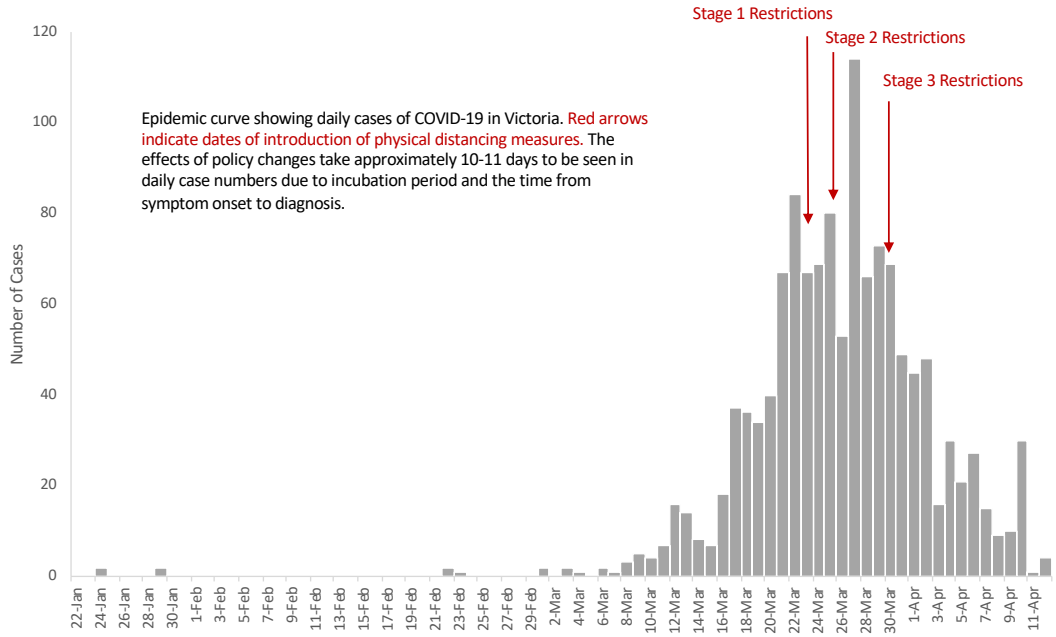

Figure 1: Number of confirmed COVID-19 cases in Victoria[1]

When Stage 1 Restrictions were introduced, Victoria's number of daily cases was less than 60. By the time Stage 3 Restrictions were introduced we had seen days with more than 100 cases.

Since the introduction of physical distancing measures, and thanks to the efforts of Victorians, we have begun to experience a gradual decline in case numbers.

1 Data correct as of 16 April 2020. Data are subject to change due to cleaning and reclassification. We constantly review the data to present the most accurate information available.

A different scenario

However, without these measures in place, we faced a very different scenario.

Under such a scenario, Victoria would likely have seen the same dramatic growth in new coronavirus cases experienced in cities and countries around the world.

Figure 2 demonstrates the projected number of daily coronavirus cases if only quarantine and isolation measures – that is, isolation of confirmed cases, and the quarantine of their contacts, as well as returning travellers – were in place.

Under these projections, Victoria was on-track to hit up to 58,000 cases per day at the peak of the outbreak – demonstrating the rapid potential spread within the community.

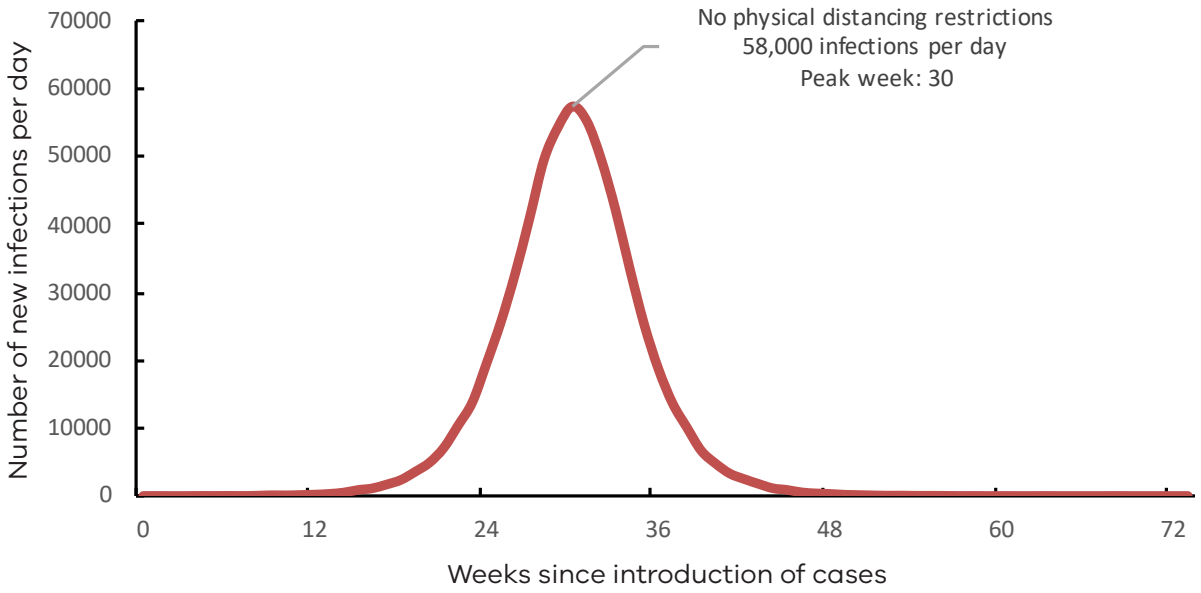

Figure 2: Number of new cases if Victoria's physical distancing measures and Chief Health Officer directions not enacted[2]

As we have seen internationally, the impact of such a peak could rapidly overwhelm a health system.

Victoria would have been no different.

As set out in Figures 3 and 4 – and despite our important actions to prepare our hospitals – without physical distancing measures in place, this projected peak would have had a significant impact on our state's healthcare system.

2 Victoria has modelled various scenarios to give us a guide for planning. Here we show the timing and number of daily infections that could happen in Victoria in the absence of physical distancing. Modelling scenarios use specific – and constant – parameters chosen by analysis of real-world data, to show how cases could spread under those conditions. Models do not predict what will happen, but indicate what could happen under constant conditions. In reality, changes in regulations and behaviour change outcomes. This is what we are currently seeing happen in Victoria as restrictions in activity have slowed the spread of COVID-19. If these restrictions were relaxed too soon, the model shown here could be our reality.

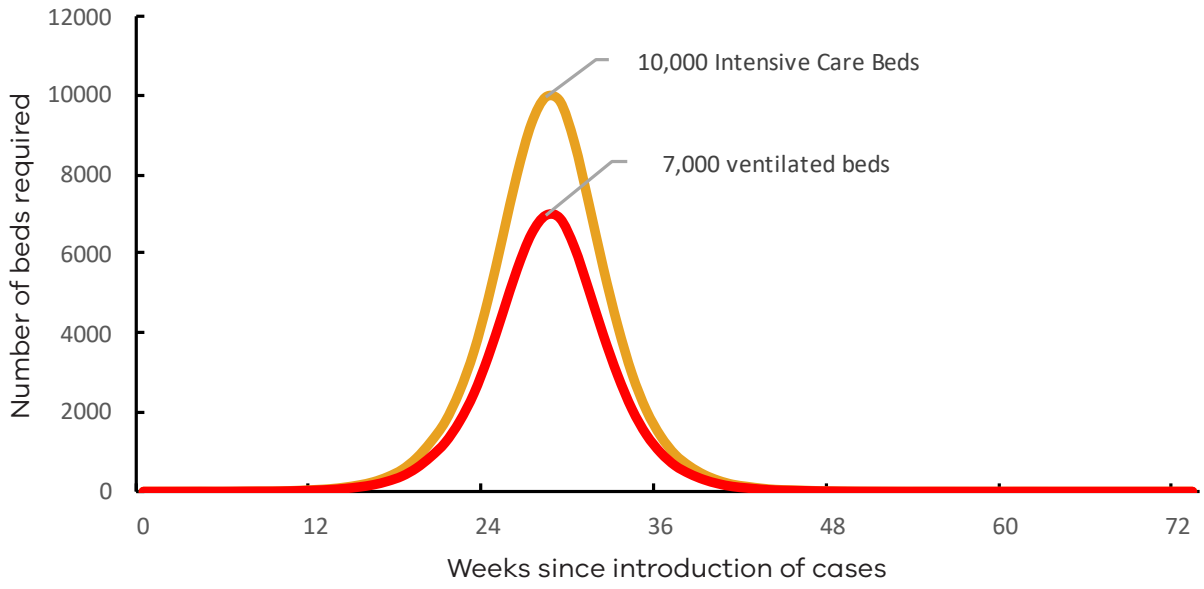

Figure 3: Number of ICU beds (and those that would be ventilated) required at any given time if Victoria's physical distancing measures and Chief Health Officer directions not enacted

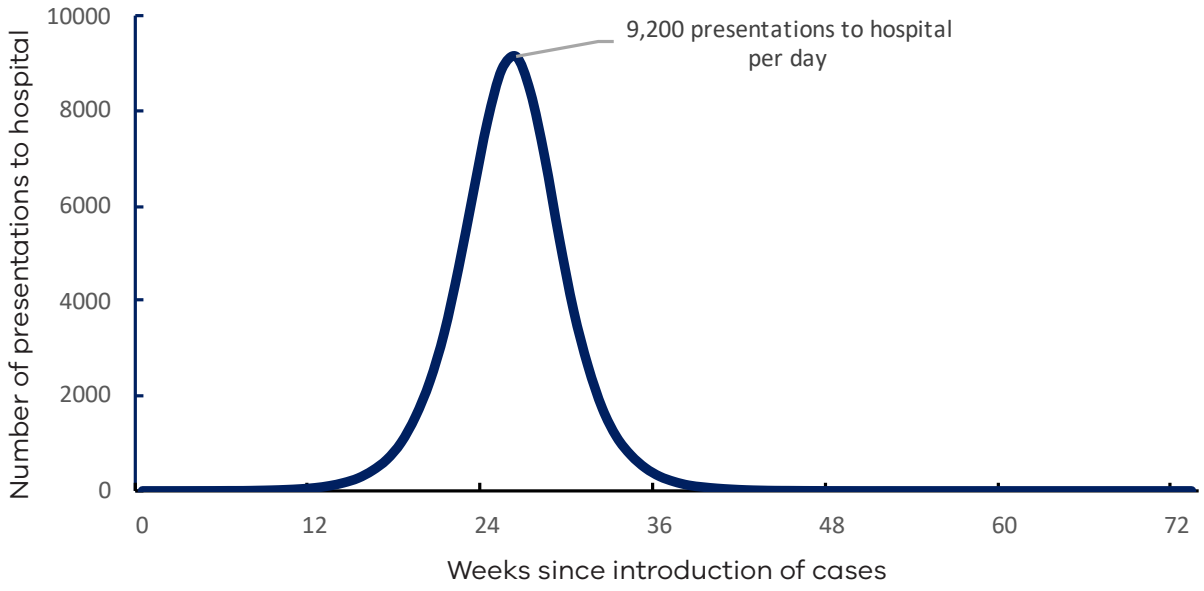

Figure 4: Daily number of hospital presentations if Victoria's physical distancing measures and Chief Health Officer directions not enacted

As modelled, and at the peak of cases, the number of daily hospital presentations would have risen to 9,200. Prior to the pandemic, Victoria's public and private health services had approximately 450 fully equipped and staffed ICU beds. Work is underway to establish a further 4,000 ICU beds. But under this scenario, demand for ICU beds would have reached 10,000, with the additional need for 7,000 ventilators.

Figure 5 demonstrates the impact of such a peak on Victoria's potential death toll, averaging 70 lives lost every day and up to 650 deaths in a day during the peak. Under this modelling, some 36,000 Victorians would have died.

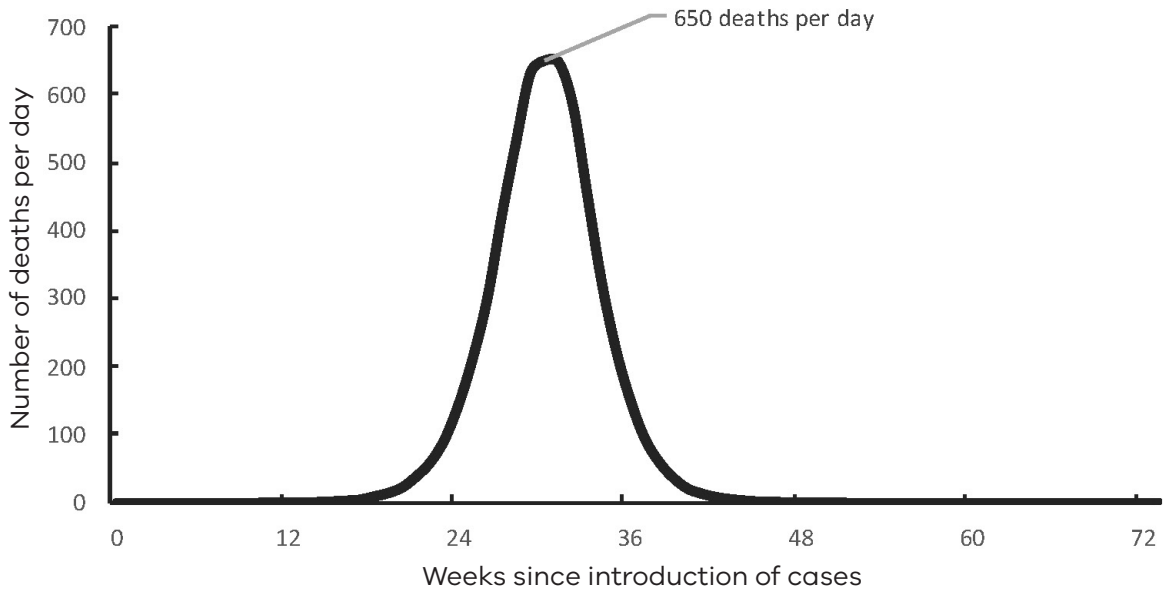

Figure 5: Number of deaths if Victoria's physical distancing measures and Chief Health Officer directions not enacted

The international evidence

International evidence clearly shows the human cost of an uncontrolled spread of coronavirus, with the number of patients requiring hospital care exceeding capacity within the healthcare system.

Around the world, countries that have acted early and maintained more stringent restrictions are seeing reductions in coronavirus cases and less strain on their health systems.

Slower and less active responses from governments have seen rapid increases in the spread of coronavirus, with health systems unable to cope and thousands of people losing their lives.

Figure 6 plots Victoria against different cities and nations around the world, illustrating the difference in outcomes and the subsequent number of cases.

Countries that enacted more stringent control measures early have shown much slower growth rates and overall case numbers.

Since the introduction of measures to help slow the spread of coronavirus, we have seen the curve in Victoria experience that same flattening.

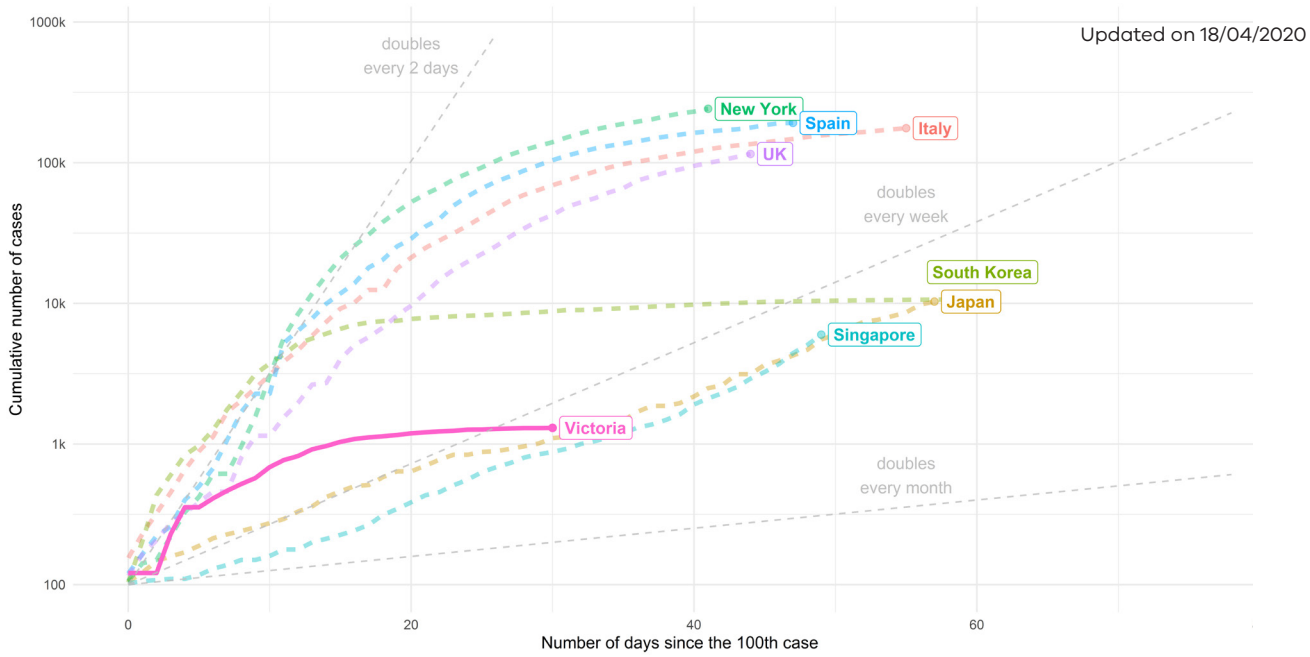

Figure 6: Cumulative number of known cases since the 100th case, from various countries and cities

The Victorian Government is closely monitoring the situation internationally so we can learn from these experiences how to best manage our own situation going forward.

We need to stay the course

Even with a very small number of cases, coronavirus can spread rapidly if physical distancing is not observed and other measures are prematurely lifted.

Any easing of restrictions must be done gradually to ensure the virus does not start spreading quickly and our health system does not become overwhelmed.

Currently, the estimated R_{eff} in Victoria is 0.5 (please see below for further explanation). If R_{eff} is kept below one, an outbreak will slowly wane.

We have only been able to achieve such a low rate thanks to the actions of Victorians. By following restrictions and staying home, we have driven down the spread of coronavirus – and saved lives.

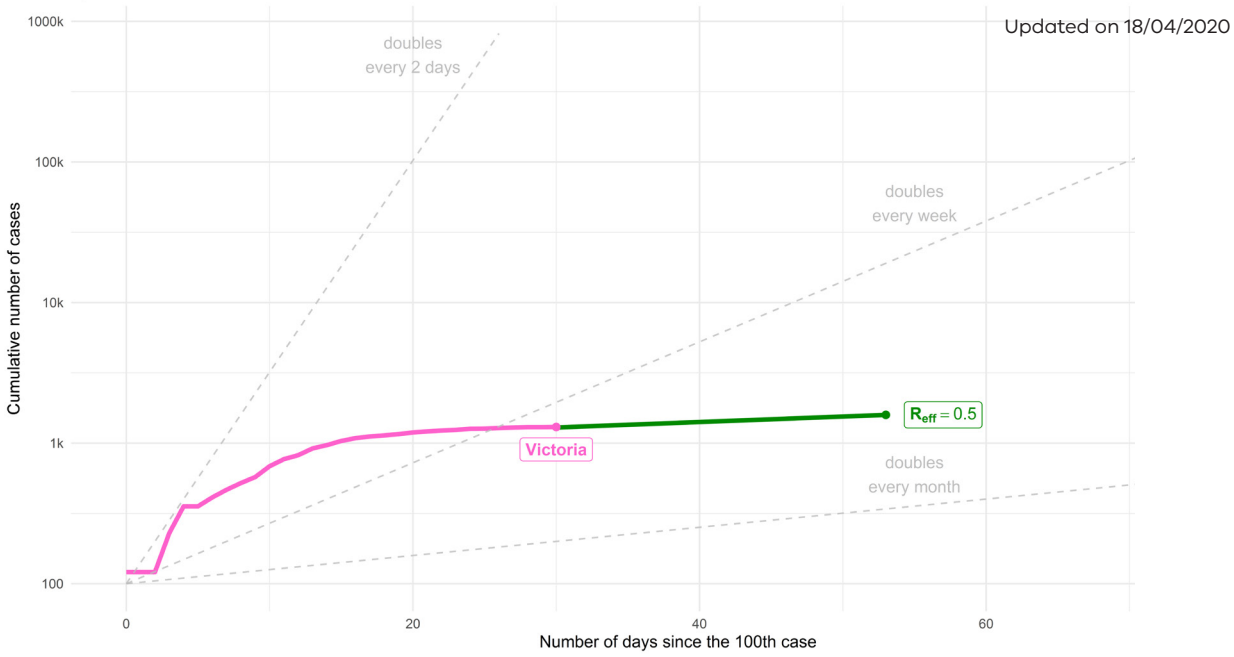

Figure 7: Victoria's total case numbers, showing a 'flattening curve'

Explainer

The effective reproduction number, or 'R_{eff}' number, in Figure 7 refers to the projected number of infections passed on by a person with coronavirus. For example with a R_{eff} of 2.5, 10 infected individuals would pass it on to 25 people.

Victoria's current R_{eff} rate is sitting below one, which means that on average each infected person is passing coronavirus on to less than one person.

If R_{eff} is kept below one, an outbreak slowly wanes, if it is above one it grows.

Potential scenarios for case growth in the next three weeks

If we act too quickly or broadly to ease restrictions, the potential spread in our community would be rapid.

Based on two potential scenarios – an R_{eff} of 1.5, or an R_{eff} of 2.5 – we can project the theoretical spread of the virus over time if the transmission rate increases.

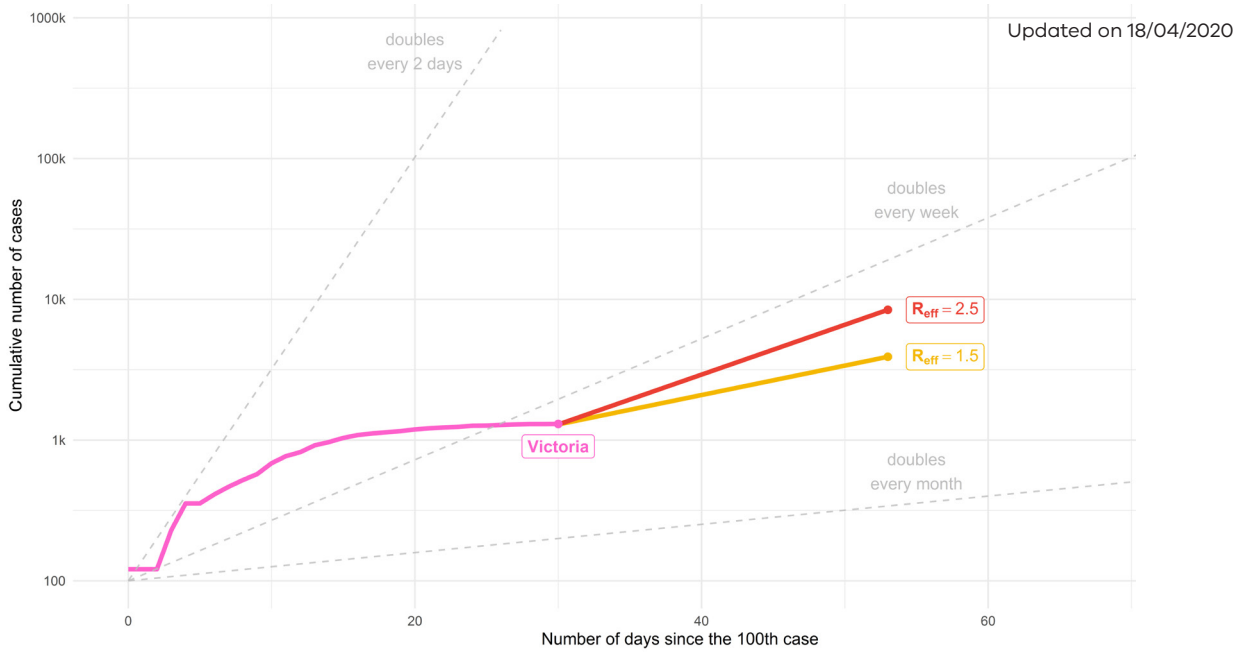

Figure 8: Victoria's total predicted case numbers if R_{eff} was to increase to 1.5 or 2.5

Without Stage 3 Restrictions, and based on the above modelling, Victoria could expect to see the below case numbers in the next three weeks alone. This would represent just the beginning, with Victoria moving towards a new peak as cases continued to spread in the following weeks and months.

R_{eff}	Total cases	Total hospital presentations	Total ICU admissions	Total deaths
2.5	8420	505	151	72
1.5	3900	235	70	40

These potential scenarios demonstrate the very real need for Victoria to maintain our current measures. If we lift restrictions too quickly our health system could soon become overwhelmed and people will die.

By slowing the spread of the virus, we can continue to ensure care is available when and where Victorians need it.

Thank you Victoria

Despite early success, there remains a risk of a resurgence in local transmission if restrictions are eased too quickly or broadly.

As we continue to stay the course, we ask that Victorians do too.

We understand that a lot is being asked of you – and we'd like to thank Victorians for their commitment and their courage to date.

We will continue to carefully monitor health, social and economic impacts of all of our measures.

Together, we're having a real impact on slowing the spread of coronavirus.

By staying at home, we're protecting our health system – and saving lives.

Find out more www.dhhs.vic.gov.au/coronavirus

If you are concerned, call the

Coronavirus hotline 1800 675 398 (24 hours)

Please keep Triple Zero (000) for emergencies only

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