Analyst

Steven Anastasiou 613 9235 1952

Authorisation

Damien Williamson 613 9235 1958

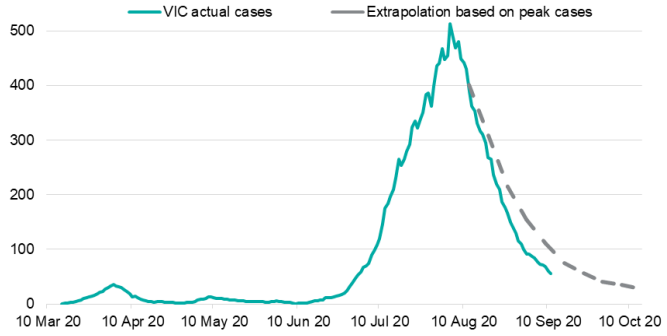
Coronavirus analysis & outlook

No through road - Victoria goes for broke

Victoria's cases falling above Western European extrapolation

After peaking at a 7-day average of 513, Victoria's new cases have fallen at a faster pace than the Western European extrapolation. This may be a result of Victoria's restrictions being far harsher and longer, or perhaps because of less community spread than most Western European nations. If the extrapolation is updated based on the latest week, 7-day average cases may fall to ~17 by mid-October.

Figure 1: Actual 7-day avg. VIC cases vs extrapolation



SOURCES: OURWORLDINDATA.ORG, COVID19DATA.COM.AU, BELL POTTER

Roadmap leaves Victoria with permanent lockdown risk

Victoria does not plan to materially reduce restrictions unless 14-day average cases fall to less than 5. Across the 15 Western European nations we analysed, only a single nation, being Finland, was able to hit this metric, and it only managed to do so for 6 days. This highlights the difficulty in maintaining such a low level of transmission. This becomes even more challenging for Victoria given that its testing rates are amongst the highest in the world. NSW would even be in a full-lockdown under the Victorian model. This places Victoria at risk of permanent lockdown, or the frequent yo-yoing in and out of lockdowns as cases likely rise once restrictions are loosened.

Reigns given to those pushing for elimination

Abandoned by almost the entire world, Victoria's elimination strategy is being led by a small group of academics, with a study and associated modelling coming out of the University of Melbourne (UoM). We raise concerns with the study, including: the failure to acknowledge that no other nation in the world has permanently achieved elimination after having material community transmission; modelling assumptions that are vastly different to CDC best estimates; and whose core assumption (that a 6-week Stage 4 style lockdown could eliminate the virus in Victoria), has been completely debunked by Victoria's actual experience.

Victorian sovereign risk is extreme, will leave lasting damage

Victoria's current roadmap creates an extreme level of sovereign risk. The current approach will leave lasting damage, irrespective of whether initial targets are hit, as businesses know they could be shut down at any moment, and at just the slightest sight of a new outbreak.

Strategy requires input from broader voices

Victoria's strategy requires input from broader voices. In addition to elimination advocates, those who advocate for strict suppression, as well as a lighter approach, all need to be heard. A taskforce must be established to also include views from economists, business operators, and general practitioners, who see the depression, anxiety, delay to cancer screening, and impact of elective surgery delays first-hand. Only then can we put fear behind us, and develop a sensible and rational policy, for the benefit of all Victorians, and indeed Australia.

Victorian decline exceeding extrapolation

Victorian case decline ahead of European extrapolation

Victoria's 7-day average case growth has declined ahead of the Western European extrapolation. This may be a result of the severe restrictions imposed in Victoria, which are likely to easily be the longest and most strict of any nation in the entire world. It may also be due to Victoria having a lesser level of community spread than most Western European nations.

A visual depiction of the extrapolation versus the actual result to date can be seen in Figure 2. For further detail on how this extrapolation was created, please view our original Coronavirus analysis & outlook report dated 13 August 2020.

Please note that 7-day average case numbers are subject to ongoing adjustments by the Victorian Health Department and future updates may thus vary somewhat from the current figures presented. The Victorian government has generally blamed these variations on data duplications.

Cases continue trending lower, likely to continue

Victoria's case growth continues to trend lower, with Victoria's 7-day average cases falling to 55 on 11 September. If the extrapolation is updated based upon the latest weekly results, the extrapolation suggests that 7-day average cases could fall to ~17 by mid-October.

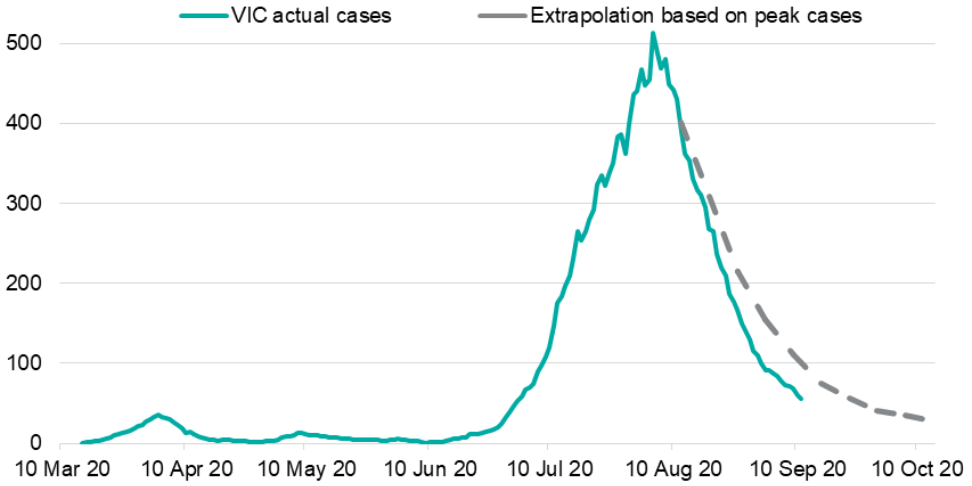
Though given that Victoria's restrictions are far more extreme than almost all Western European nations in the extrapolation, there may be potential for cases to fall below this number. Offsetting this is a decline in the reduction in case growth in Week 5 versus prior weeks. This may be a result of Victoria's numbers starting to get very small, with case positivity rates already extremely low—i.e. it may become more difficult to reduce numbers below levels which are already so low.

Figure 2: Western European extrapolation - key figures using peak cases as base

Extrapolation from peak 7-day cases	Peak 7-day cases	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Western Europe median change		-21.8%	-23.1%	-30.4%	-28.1%	-28.7%	-32.1%	-23.9%	-27.2%	-14.2%	-22.2%
Applicable Victorian date	5 Aug 20	12 Aug 20	19 Aug 20	26 Aug 20	2 Sep 20	9 Sep 20	16 Sep 20	23 Sep 20	30 Sep 20	7 Oct 20	14 Oct 20
Victoria forecast cases (based on 513 peak)		401	308	215	154	110	75	57	41	35	28
Victoria actual 7-day average cases	513	389	268	167	92	69					
Victoria forecast (based on actual prior week)		401	299	186	120	65	47	35	26	22	17
Actual % change from prior week		-24.2%	-31.1%	-37.5%	-45.2%	-25.2%					

SOURCES: OURWORLDINDATA.ORG, COVID19DATA.COM.AU, BELL POTTER

Figure 3: Actual 7-day average Victorian cases versus Western Europe extrapolation



SOURCES: OURWORLDINDATA.ORG, COVID19DATA.COM.AU, BELL POTTER

Data says Stage 4 extension has little merit

Stage 4 was never required to reduce the spread

The continued implementation of Stage 4 restrictions is an astounding decision which appears to have very limited basis in the data and the science - it was **NEVER** required to result in a reduction in cases.

Instead, the data shows that cases would have fallen under Stage 3 restrictions. This is confirmed by Victorian cases peaking and then declining, just 3 days after Stage 4 restrictions were announced—i.e. the peak had nothing to do with the Stage 4 measures, and occurred as a result of the Stage 3 measures.

This outcome is backed up by the Western European nations, where countries that adopted lighter lockdown measures (i.e. Stage 2/3 type Victorian measures instead of Stage 3/4 type measures) all saw major reductions in new cases. Those that implemented softer lockdowns actually saw a reduced average increase in cases versus those that implemented harsher lockdowns. The Nordic nations all adopted softer style lockdowns (or no lockdowns at all), with Finland able to temporarily reduce 14-day average cases to below 5. This was a feat that none of the other 14 nations in Western Europe that we analysed, was able to achieve.

This analysis is further explained in our 13 August Coronavirus report.

Figure 4: Hard style lockdown statistics

Hard-style lockdown	Days until 7-day average case peak	7-day avg. case peak vs day of lockdown
Austria	13	6.9x
Belgium	25	4.8x
France	16	6.1x
Ireland	19	4.4x
Italy	17	5.5x
Spain	16	6.4x
United Kingdom	32	5.4x
Average	**19.7**	**5.6x**

SOURCES: OURWORLDINDATA.ORG, BELL POTTER

Figure 5: Soft style lockdown statistics

Soft-style lockdown	Days until 7-day average case peak	7-day avg. peak vs day of lockdown
Denmark	22	3.0x
Finland	24	4.1x
Norway	17	3.7x
Switzerland	17	4.1x
Average	**20.0**	**3.7x**

SOURCES: OURWORLDINDATA.ORG, BELL POTTER

Data says Stage 4 extension has little merit

Effectiveness of Stage 3 also seen via extrapolation

The effectiveness of Victoria's Stage 3 lockdown can be further seen via our Western European extrapolation to countries that adopted lockdowns at a similar stage of community spread. This shows that Victoria's peak in 7-day average locally transmitted cases was almost spot-on in-line with the average seen in these Western European nations (i.e. it worked just as expected, with cases set to materially decline from this point). If real world extrapolations, as opposed to arbitrary guesstimated modelling, which has unsurprisingly proved wildly incorrect, were given greater prominence, perhaps the policy response would have been more sensible.

Figure 6: Lockdown stats from Western European countries at similar spread

Similar country spread	7-day avg. cases on lockdown	Days until 7-day avg. case peak	7-day avg. case peak vs day of lockdown	Peak 7-day avg. case number
Austria	108	13	6.95x	752
Denmark	109	22	3.02x	328
Finland	40	24	4.14x	165
Ireland	205	19	4.40x	903
Norway	76	17	3.68x	281
Portugal	117	17	6.86x	803
Switzerland	261	17	4.10x	1069
Average	**131**	**18**	**4.73x**	**620**
	7-day avg. cases on lockdown	**Expected date**	**Expected multiple**	**Expected 7-day avg. case peak**
Victoria Stage 3 extrapolation	108	27 Jul 20	4.73x	511
	7-day avg. cases on lockdown	**Actual date**	**Actual multiple**	**Actual 7-day avg. case peak**
Current Victorian peak	108	5 Aug 20	4.76x	513

SOURCES: OURWORLDINDATA.ORG, COVID19DATA.COM.AU, BELL POTTER

Ultimately, not only does the data show that a Stage 4 extension is not necessary, and that cases can effectively be suppressed under Stage 2/3 type restrictions, but it shows that Stage 4 was never necessary to begin with.

Victoria adopts an elimination strategy

Victoria adopts an elimination strategy

Victoria's new roadmap has adopted an elimination strategy, with no real sense of normality returning until no new cases have been recorded for 14 days, and not until at least 23 November.

Figure 7: Restriction threshold and social restrictions

	First Step	Second Step	Third Step	Last Step	COVID Normal
Allowed from	**13 Sep 20**	**28 Sep 20**	**26 Oct 20**	**23 Nov 20**	**n/a**
IF	**n/a**	**14-day average cases between 30-50**	**14-day average cases <5**	**No new cases for 14 days**	**No new cases for 28 days**
Restrictions on:					
Curfew	9pm - 5am	9pm - 5am	none	none	none
Leaving home	for 4 essential reasons & 5km limit	for 4 essential reasons & 5km limit	none	none	none
Public gatherings	2 people or a household for max 2 hours	5 people from max of 2 households	up to 10 people outdoors	up to 50 people outdoors	none
Visitors to home	1 nominated visitor if living alone/single parent	1 nominated visitor if living alone/single parent	Up to 5 visitors from a single nomimated houshold	up to 20 visitors	none
Religion	places of worship closed	places of worship closed, outdoor gatherings (not ceremonies) of up to 5 people (plus faith leader)	outdoor gatherings up to 10 people (plus faith leader), facilities open for private worship for households plus faith leader	public worship allowed subject to density limits	none
Weddings	for compassionate reasons only, up to 5 people in total	for compassionate reasons only, up to 5 people in total	allowed with up to 10 people in total	allowed with up to 50 people in total	none
Funerals	up to 10 attendees	up to 10 attendees	up to 20 attendees	up to 50 attendees	none

SOURCES: VICTORIAN GOVERNMENT, BELL POTTER

Victoria adopts an elimination strategy

Figure 8: Restriction threshold and work/community services related restrictions

	First Step	Second Step	Third Step	Last Step	COVID Normal
Allowed from	13 Sep 20	28 Sep 20	26 Oct 20	23 Nov 20	n/a
IF	n/a	14-day average cases between 30-50	14-day average cases <5	No new cases for 14 days	No new cases for 28 days
Construction					
Manufacturing					
Wholesale trade & warehousing					
Postal distribution centres					
Supermarket and food distribution					
Offices and professional services			1		
Agriculture					
Meat and seafood processing					
Hospitality	2		3	4	
Permitted retail (per current Permitted Workplaces list)					
Other retail	5		6		
Hairy and beauty services			7		
Repairs, maintenance and cleaning	8				
Real estate services	9		10		
Mining					
Ports and freight					
Accomodation					
Tourism operators			11		
Media and film production			1		
Creative studios			1, 12		
Outdoor entertainment venues (e.g. zoo, amusement park)					
Museums and galleries (indoor)				13	
Indoor entertainment venues (e.g. cinemas, performing arts)				14	
Nightclubs and karaoke					
Gaming and casinos				14	
Adult entertainment				14	
Professional sport and racing	15			16	
Indoor physical recreation facilities (e.g. gyms)					
Early childhood education and care					
Schools	17	18	19		
Adult education			20		
Community facilities and libraries	21				
Courts	22				
Commercial passenger vehicles					
Public transport					
Healthcare and social assistance					
Veterinary services	22				
Emergency and safety services					
Utilities					
Waste services					
Defence and national security					

Closed
Heavily restricted. Workforce restrictions
Restricted
Open with a COVIDSafe Plan

1 Employees must work from home or single site where reasonably practicable
2 Take away only
3 Predominately outdoor dining with patron and density cap
4 Patron cap per indoor space. Density cap applies outdoors, no patron cap
5 Click & collect within 5km or delivery only
6 Open with density limits and cleaning requirements
7 Hairdressers open. Beauty services closed
8 Repairs & Maintenance for emergencies only. Household cleaning only for people with medical reasons
9 Property settlement or commencement/end-of-lease services that cannot be done remotely allowed
10 Outdoor auctions allowed with caps, private inspections by appointment
11 Limited booking sizes
12 For creative studies with classes, onsite learning allowed with density limits and safety measures
13 Patron caps
14 Seated venues only with patron caps
15 No crowds
16 Outdoor, seated crowds only with patron caps
17 Remote learning unless an exception applies
18 Remote learning, with staged return of onsite learning for Prep - Grade 2 & VCE (Y10-12) in Term 4
19 Remote learning, potential staged return of onsite learning for Grade 3 - 10
20 Learn from home if you can, onsite learning for hands-on, skills-based learning
21 Contactless collection and delivery only for libraries
22 Urgent matters only

SOURCES: VICTORIAN GOVERNMENT, BELL POTTER

Elimination strategy not based on reality

Maintaining cases at under 5 is without precedent

Victoria will not see any real change in its extreme lockdown until 26 October, and this change will only occur if new cases remain below a 14-day average of 5. The ability for Victoria to hit such a threshold is uncertain.

What is less uncertain, is Victoria's ability to maintain cases at such a level. **The idea that cases can be maintained at below 5 per day for long periods of time, is without precedent in any region that has seen material community transmission. Even places like NSW, which has not seen very high levels of community transmission, has been unable to achieve this target in recent weeks. Despite this, NSW's outbreak continues to be more than manageable. Such a low threshold to ease restrictions thus leaves Victoria at risk of failing to hit/ maintain the required threshold, for what would appear to be little to no public benefit, whilst continuing to result in enormous costs.**

In Western Europe, across the 15 nations that we analysed, only 1 nation was able to reduce its 7-day average cases to below five, which was Finland, and it was only able to achieve this feat for 9 days. On the Victorian government's 14-day average measure, Finland was able to achieve average cases of below 5 for only six days.

When looking at case positivity rates, the difficulty of the equation is also seen. After cycling off some high days of testing, Victoria's 7-day average tests have fallen to ~15k, but rates have at times been over ~25k per day. At ~25k tests per day, no country was able to hit the positivity rate required for Victoria to average less than 5 cases per day—not even Finland. At 15k tests per day, Finland was the only nation that hit the required positivity rate.

Western Europe's example of countries that implemented lockdowns at a similar level of spread, suggests that it will be difficult to maintain cases in the single digits, without continued lockdowns. High levels of testing are inflating case numbers and fear, with little discussion given to the positivity rate remaining extremely low, which indicates transmission **has never been wildly out of control, even at the peak of Victoria's outbreak.**

Figure 9: Positivity rate cross-check

Cases	5	10	15	20	25	30	35	40	45
Positivity rate required - 10k tests	0.05%	0.10%	0.15%	0.20%	0.25%	0.30%	0.35%	0.40%	0.45%
Positivity rate required - 15k tests	0.03%	0.07%	0.10%	0.13%	0.17%	0.20%	0.23%	0.27%	0.30%
Positivity rate required - 20k tests	0.03%	0.05%	0.08%	0.10%	0.13%	0.15%	0.18%	0.20%	0.23%
Positivity rate required - 25k tests	0.02%	0.04%	0.06%	0.08%	0.10%	0.12%	0.14%	0.16%	0.18%

Western European comparables	Austria	Denmark	Finland	Ireland	Norway	Portugal	Switzerland	Average	Avg. excl. Portugal
Minimum 7-day average positivity	0.40%	0.10%	0.02%	0.15%	0.20%	1.20%	0.32%	0.34%	0.17%

SOURCES: OURWORLDINDATA.ORG, COVID19DATA.COM.AU, BELL POTTER

Elimination strategy not based on reality

Elimination strategy likely futile, requires permanent change

Going even further than the 14-day average cases of 5 per day, in order for Victoria to return to any real sense of normalcy, there must be **NO NEW CASES** for 14 days. **Victoria's strategy is thus rooted in elimination as opposed to suppression**. I**ndeed, Victoria should already be open if a suppression strategy was the goal. Case positivity is extremely low, and our hospitals have been more empty than they have ever been, meaning we should be able to handle cases far in excess of current levels.**

The futility of such a strategy is recognised by almost the entire world, with most nations long abandoning hopes of complete elimination. Given the incredible difficulty involved with completely eliminating an easily spread virus, there are likely to be frequent flare ups. This is being seen in NZ, and Queensland, which are now both seeing some community transmission after a period of no cases. A severe suppression/elimination strategy thus creates the potential for a yo-yo of lockdowns and re-openings, like is now being seen in some areas of New Zealand, and of course, Victoria.

Given that the rest of the world has accepted material spread, and realised the futility of attempting to eliminate a virus that is supposedly more easily spread than the flu, the only way that Australia could continue to maintain a semblance of elimination or severe suppression, **is if they never re-open international borders for the rest of time. An elimination strategy may thus result in permanent isolation from the wider world.**

A vaccine won't change this, risks permanent confinement

This is unlikely to be changed by a potential future vaccine. As discussed in our 13 August Coronavirus report, a vaccine is very unlikely to prove 100% effective. If it is anything like the seasonal flu vaccine, it may be lucky to be only ~50% effective. The US CDC estimates that the seasonal flu vaccine was only 29% effective in the 2018-19 flu season. The effectiveness of any vaccine is likely to change based upon future variations in strains, which also makes the flu vaccine so ineffective.

Similar effectiveness for a potential COVID-19 vaccine would mean vast swaths of the population will remain vulnerable. Cases would certainly be above 0. An elimination strategy thus results in the potential for the permanent confinement of such populations.

This is further evidenced by the 1968 Hong Kong flu pandemic (estimated to have killed between 1-4 million people), with the responsible virus (H3N2), remaining in circulation today as part of the seasonal flu, some 52 years later. This is despite a vaccine long being available - unfortunately vaccines are not 100% effective (nor are they without their own risks) and viruses continue to mutate and adapt.

Original modelling appears too aggressive

Victorian strategy based on incorrect modelling

In April, the Victorian government released modelling which it believed was supportive of its severe suppression/elimination strategy. The modelling was conducted as a collaborative effort between the Victorian Department of Health and Human Services, Monash University, and modellers based at the UoM, led by the Peter Doherty Institute for Infection and Immunity.

Given the alarming predictions of this model, it can be more easily seen why the Victorian Premier has undertaken the initiatives that he has. Though real world evidence suggests that this modelling is wildly incorrect and heightened fear unnecessarily.

Case expectations far in excess of worldwide outcomes

The model assumed 58,000 Victorian cases a day at their peak without any interventions.

If this is intended to reflect actual confirmed case numbers, this is an absolutely enormous tally and suggests that Victoria's outbreak would have been the worst in the entire world, and by an incredible margin.

The modelling assumes that at their peak, cases would have been 54x greater per million people, than Sweden, which has been well publicised as not locking down. Cases were modelled as being 31x and 38x greater than the highest single daily recorded cases per million in Spain and the United States, which have both seen significant outbreaks and widespread transmission.

If this figure is intended to represent infections, as opposed to confirmed cases, such figures become somewhat more realistic, but it still appears to be an aggressive assumption versus worldwide experiences.

Figure 10: Comparison of official Victorian case model vs actual world outcomes

	Peak daily cases	Population (million)	Peak cases per million
Victoria - April model	**58,000**	**6.6**	**8,833**
Spain*	13,280	47.3	281
Ireland	1,169	5.0	236
United States	77,255	328.2	235
Belgium	2,336	11.5	202
Sweden	1,698	10.3	164
Switzerland	1,390	8.6	162
Portugal	1,516	10.3	147
France	8,975	67.1	134
Austria	1,141	8.9	128
Italy	6,557	60.2	109
Denmark	566	5.8	97
United Kingdom	5,487	67.0	82
Norway	425	5.4	79
Netherlands	1,335	17.4	77
Germany	6,294	83.2	76
Finland	267	5.5	48

SOURCES: OURWORLDINDATA.ORG, JHU CSSE COVID-19 DATA, EUROSTAT, US CENSUS BUREAU, ABS, VICTORIAN GOVERNMENT, BELL POTTER

*SPAIN REPORTS ITS WEEKEND INFECTIONS (SATURDAY + SUNDAY) AS A SINGLE FIGURE, WE HAVE DIVIDED THE SINGLE FIGURE OF 26,560 BY 2 TO ESTIMATE ITS HIGHEST DAILY RECORDED INFECTION RATE

DATA CURRENT TO 10 SEP 20 FOR ALL REGIONS BARRING BEGLIUM AND SPAIN (9 SEP 20)

Original modelling appears too aggressive

Death rate prediction currently appears ridiculous

The document stated that it expected total deaths of 36,000 in Victoria without restrictions. This appears ridiculously alarmist, and extremely out of touch with international outcomes, including places like Sweden, where no national lockdowns were ever imposed. The document also stated that without restrictions, a peak of 650 COVID-19 deaths would have been recorded in a single day.

In terms of total deaths per million, the Victorian modelling suggests it would have been 6.4x, 8.8x, 8.8x, 9.3x, and 9.4x higher than the current total in Belgium, Spain, the United Kingdom, Italy, and the United States respectively.

Total deaths per million were modelled as being 9.7x greater than the current tally in Sweden, where no national lockdown was ever implemented.

Deaths were also modelled to be 111x higher than the current rate in Norway, where restrictions were very soft compared to Victoria's actual restrictions.

Victoria's actual deaths currently remain on the lower end of the table, but higher than Austria, Finland and Norway. Each of these nations implemented far shorter lockdowns than Victoria. While Austria implemented a relatively strict lockdown, Finland and Norway adopted much lighter measures. Victoria's death rate looks like it will soon pass Denmark's, another nation that adopted a far lighter, and much shorter lockdown than Victoria.

Figure 11: Comparison of official Victorian death model vs actual world outcomes

	Total deaths	Peak daily deaths	Population (million)	Total deaths per million	Peak deaths per million
Victoria - April model	**36,000**	**650**	**6.6**	**5,482**	**99**
Belgium	9,917	321	11.5	859	28
Spain	29,628	950	47.3	626	20
United Kingdom	41,594	1,224	67.0	621	18
Italy	35,577	971	60.2	591	16
United States	190,859	2,666	328.2	581	8
Sweden	5,842	115	10.3	566	11
France	30,794	2,004	67.1	459	30
Ireland	1,781	234	5.0	359	47
Netherlands	6,237	234	17.4	358	13
Switzerland	1,734	78	8.6	201	9
Portugal	1,849	60	10.3	180	6
Germany	9,341	315	83.2	112	4
Denmark	628	22	5.8	108	4
Victoria actual	**701**	n/a	**6.6**	**107**	n/a
Austria	747	31	8.9	84	3
Finland	337	43	5.5	61	8
Norway	264	13	5.4	49	2

SOURCES: OURWORLDINDATA.ORG, JHU CSSE COVID-19 DATA, EUROSTAT, US CENSUS BUREAU, ABS, VICTORIAN GOVERNMENT, COVID19DATA.COM.AU, BELL POTTER

VICTORIA'S PEAK DAILY DEATH DATA HAS NOT BEEN INCLUDED DUE TO HISTORICAL REVISIONING INFLUENCING THE NUMBERS

SPAIN'S PEAK DAILY DEATH DATA AS PER OURWORLDINDATA.ORG HAS EXCLUDED A NUMBER WHICH APPEARS TO BE A RESULT OF HISTORICAL REVISIONING. SPAIN HAS CONDUCTED HISTORICAL REVISIONING OF DEATH NUMBERS ON SEVERAL OCCASIONS (BOTH UPWARDS AND DOWNWARDS)

DATA CURRENT TO 10 SEP 20 FOR ALL REGIONS BARRING BELGIUM AND SPAIN (9 SEP 20)

Policy explanation distorts the data

In addition to the April modelling (which continues to be referred to in policy presentations), the Victorian government has more recently focused on modelling produced by the University of Melbourne (UoM). The implications of this model for Victoria's policy response have been provided in an explanatory presentation (entitled "Emerging from lockdown: modelling, outputs and assumptions"). Further details of the model itself are available in a formally published study. Both of these will now be analysed in separate sections.

Concerningly, the Victorian government response appears to be heavily weighted to this single study, which has not provided an objective view, and has simply mounted an argument for elimination, without consideration of its costs, or alternatives. The study also applies little logic or common sense, with it purporting that we can effectively legislate away the flu, despite no other region in the world eradicating this virus after suffering material community spread.

A broader explanation of the concerns that we have with the explanatory presentation, which explains the modelling and assumptions behind Victoria's formal policy framework, are explained in further detail on the following pages. **We note that the policy presentation also appears to have quietly undergone further revision since its initial release.**

Policy explanation distorts the data

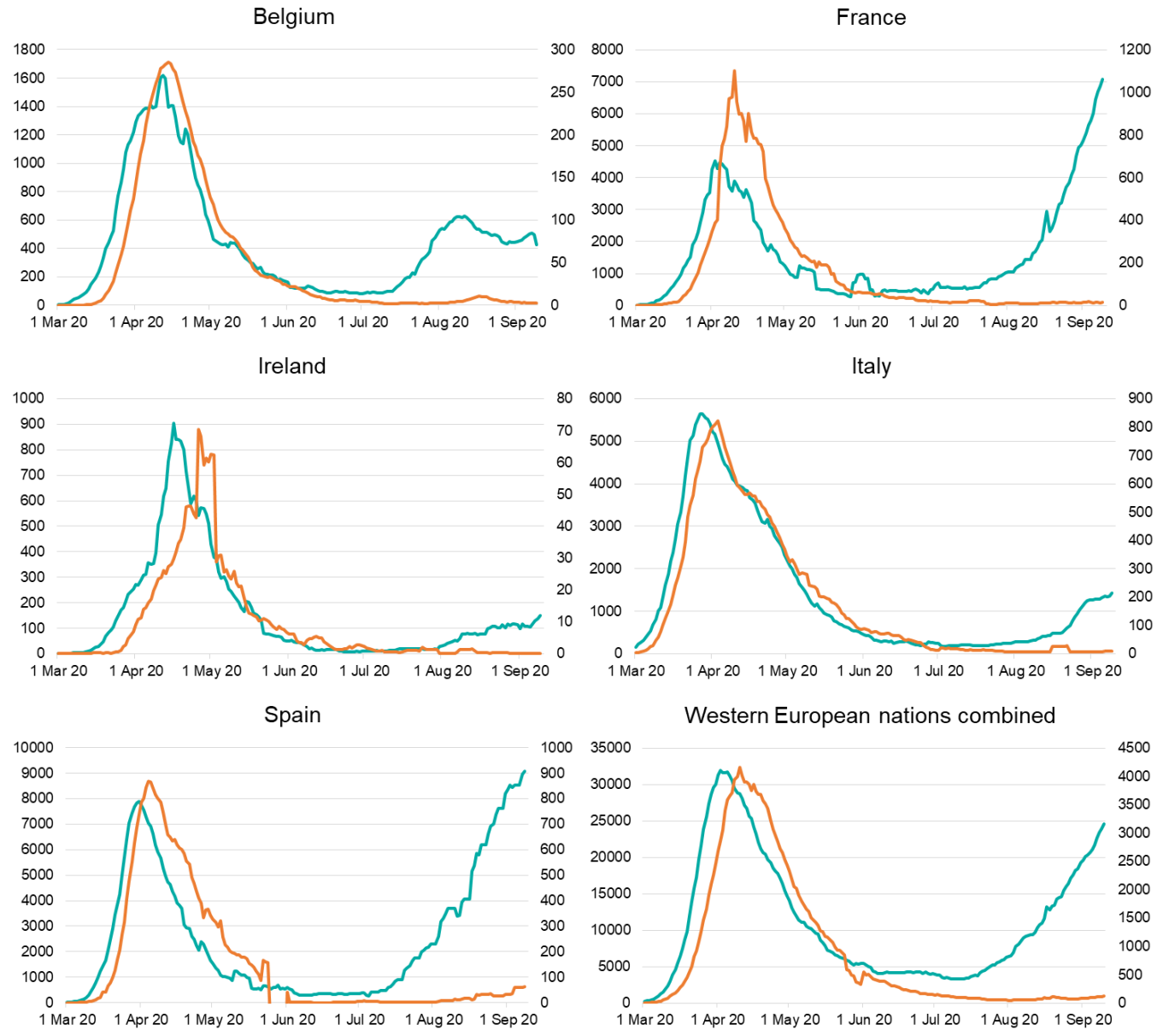
European death rate declines

The explanatory presentation notes an increase in cases across the Western European nations of Belgium, France, Ireland, Italy and Spain, **but fails to acknowledge the sharp decline in deaths recorded across these regions**:

- For the sake of a proper and informed analysis, on the next page, we have provided the graphs that should have been provided (i.e. both cases **and deaths**) in the explanatory presentation. Our 1 September Coronavirus report goes further and provides data and analysis on 15 Western European countries.
- We have also provided a graph detailing the combined historical cases and death figures for the 15 Western European nations as a whole. **As detailed in our 1 September report, this shows a clear delinking between case growth and death rates.**
- The explanatory presentation notes in **fine print** that cases between Western Europe's 2nd and 1st waves are not directly comparable **due to changes in testing levels.**
    - **This is something that deserved a proper analysis, and which would debunk the alarmist rhetoric. The current rise in cases across Western Europe likely pales in comparison to the number of real (as opposed to confirmed) infections during its first wave. This is best evidenced by the extremely low death numbers versus the first wave.**
    - **As noted in our 1 September report, the recent increase in cases and decline in deaths also likely indicates increased testing, an increased spread amongst younger individuals following the lifting of lockdowns, a buildup of immunity within the community, and improvement to patient treatment.**
- The presentation further makes the claim that France has not ruled out another national lockdown, and that Spain's hospitals are reaching capacity. **The Spanish comments are directly refuted by its Health Minister**.
    - For the sake of further context, while President Macron in France has not ruled out another national lockdown, he has also noted **that he is seeking to avoid a second lockdown given the collateral damage that they cause.**
    - **The French Health Ministry was reported on September 7, as stating: "despite the sharp increase in cases, daily deaths and hospital numbers are relatively stable, this is mainly because young people, who are less vulnerable to the disease, make up most of the new infections".**
    - **Reuters also reports on September 1 that Spain's Health Ministry stated that no new lockdown was necessary, with the Health Minister noting that the surge in infections had not led to heightened pressure on hospitals, where occupancy beds earmarked for COVID-19 patients is at around 6% across the country.**
    - **The Minister also noted a decline in mortality, with new infections hitting younger people who display little or no symptoms of illness due to their strong immune systems.**

Policy explanation distorts the data

Figure 12: 7-day average cases (GREEN Line, LHS) vs 7-day average deaths (ORANGE LINE, RHS)



SOURCES: OURWORLDINDATA.ORG, BELL POTTER

BELGIUM AND SPAIN DATA CURRENT TO 9 AUG 20

ALL OTHER NATIONS CURRENT TO 10 AUG 20

Policy explanation distorts the data

Stage 3 was effective, would allow for case suppression

- The **original explanatory presentation** noted that "Stage 3 restrictions have proven ineffective in Victoria". **For reasons unknown, the current presentation uploaded to the Victorian Government website has removed this slide**.
    - As earlier detailed, this is incorrect. Stage 3 restrictions likely resulted in Victoria's case growth slowing and peaking at the level it did. This was in-line with what occurred in Western Europe, where similar restrictions were imposed. If allowed to continue, Stage 3 restrictions would have very likely resulted in a significant reduction in new case growth, as occurred in Western Europe.
- The **original presentation** notes that Stage 4 restrictions have allowed case growth to decline at a faster rate. This may be true, but this does not mean Stage 3 was ineffective - it still would have very likely resulted in a dramatic reduction in new cases, and resulted in more palatable restrictions for Victorians. Some Western European nations also allowed some small gatherings. This would have dramatically reduced the mental health burden on Victorians.
- **Both the current and past presentation** claims that the UoM model shows that it would not be safe to move to 're-open' in mid September. This goes against all of the international, and Victorian evidence, that suggests case growth can be effectively controlled in a Stage 2/3 environment. The softer-style Western European lockdowns (Stage 2/3 type Victorian measures), all resulted in a dramatic reduction in new cases.
- The presentation states that the UoM model shows aggressive suppression is the best bet for avoiding a yo-yo effect. This is simply not grounded in common sense or logic. Aggressive suppression is in-fact a **precondition** for a yo-yo of lockdowns, openings and the re-entering of lockdowns. This is because aggressive suppression never allows for herd immunity to be built within the community.
    - Regions such as Victoria will thus be open to many further outbreaks as a result of this aggressive suppression approach. Nations such as Sweden (which allowed for controlled spread, avoided a national lockdown and never saw its hospital system overloaded), is the only country in Western Europe to have seen a major reduction in new cases and case positivity rates since 1 July, indicating that it has hit its herd immunity threshold. Similar results appear to be being achieved across the North East, and Southern United States. This is further discussed in our 1 September 2020 Coronavirus report.
    - **This is the only feasible manner that a yo-yo of shutting down and re-opening can be avoided. Without herd immunity, a perpetual cycle of case growth, and case declines, will be seen. This is even occurring in Finland, which was the only Western European nation which actually saw case growth fall below a 14-day average of 5. While still low, 7-day average cases in this nation have now hit 38. What will the Victorian response be to such numbers, when the official policy of returning to relative normality requires 0 cases, and when such numbers would have Victoria in its current full scale lockdown?**

Concerns with the UoM study

The University of Melbourne (UoM) study "The probability of the 6-week lockdown in Victoria (commencing 9 July 2020) achieving elimination of community transmission of SARS-CoV-2", which underpins current Victorian policy and UoM modelling, suggested that **elimination** could have been achieved if Victoria had gone into a full Stage 4 lockdown immediately from 9 July. Here are some concerns with this study:

No nation with material spread has eliminated the virus

- The study claims that we know elimination is possible based upon outcomes in New Zealand and Taiwan. It also references Australian states.
    - **Though we know for a fact that New Zealand has not achieved elimination, and continues to have community transmission.**
    - **Queensland, which was thought to have achieved elimination, is also again seeing community transmission.**
    - **NSW also continues to see community transmission.**
    - **Other Australian states have never seen material community spread like Victoria—i.e. it is an apples to oranges comparison.**
    - **According to its official statistics, Taiwan has also never had material community transmission.**
    - **In its official statistics, Taiwan also does not include asymptomatic cases.**
    - **Additionally, according to Our World in Data, as of 9 September, Taiwan had only conducted on average, tests on 184 people each day over the past 7 days. This compares to Victoria's recent average of ~15,000 tests per day. If Victoria were to only test 184 people a day, it would also appear that Victoria would have virtually eliminated the virus.**
    - **Taiwan has conducted a total of just 181,922 tests since the beginning of its pandemic for a region with a population similar to Australia, versus 2.4m tests across Victoria or 6.7m across Australia (13.3x and 37.0x greater respectively).**
    - **In summary, the study claims that elimination is possible by referencing regions that have failed to achieve elimination or never had material community spread.**

Concerns with the UoM study

Study goes to extremes to push elimination

- The study references comments made by Prime Minter Scott Morrison on 24 July, ("The goal of that is obviously, and has always been no community transmission") which they claim states that he endorses an official strategy to eliminate the virus. While everyone would love to eliminate the virus, **this is simply distorting the Prime Minister's comments to advance their own elimination beliefs, with the Prime Minister in fact describing NSW's suppression strategy as the "gold standard"**.

- The study claims that "it seems unlikely that states and territories that have eliminated local transmission will relinquish their status by freely opening borders and engaging with Victoria (and NSW if community transmission remains)" and that it would be "a significant concern" if "one or two" states did not eliminate the virus. **This is not a reason for Victoria to pursue a strategy that is unlikely to prove achievable over the long-term, and places Victorians at risk of ongoing and sporadic lockdowns. Australian states that continue with an elimination strategy instead face permanent isolation from the world, which has largely rejected such an approach.**

- The study claims that society has largely rejected a mitigation approach. **This flies in the face of the experiences now being seen across the world, where lockdowns have broadly been abandoned, and societies are coming to terms with the reality of inevitable transmission.**

- The study has chosen to ignore the international evidence which points to the futility of lockdowns and the long-term ineffectiveness of an elimination strategy and instead **recommends the formation of "an expert advisory group on elimination" to be established.**

- **The study further recommends the use of "South Korean-style use of telecoms data", "GPS monitoring, or electronic bracelets"** to strengthen contract tracing and the isolation of individuals. While the lockdowns already fly in the face of a liberal democracy, these are further measures that would be out of place in a society that has traditionally advocated for freedom and individual liberty.

- The study further recommends that the suspension of international arrivals into Victoria should be continued, **with capacity redeployed for isolation of infected Melbournian residents (and potentially their high risk close contacts), if their home environment is deemed inadequate for self-isolation.** This again goes against the liberal democratic foundations of a nation such as Australia, and is likely to receive significant community pushback.

Concerns with the UoM study

Dismissal of Stage 3 not supported by the data

- The study claims that Victoria's most recent Stage 3 lockdown failed on account of cases reaching 500 per day after it was implemented. **This does not indicate failure, and goes against the international evidence. As earlier detailed, the Stage 3 lockdown was effective at reducing Victoria's case spread**. **Just because it did not occur immediately, does not make it ineffective. This was the experience seen across Western Europe, whereby whether a soft (Stage 2/3) or hard (Stage 3/4) style lockdown was chosen, it took several weeks for case growth to peak before falling. The same occurred in Victoria, with cases peaking and then beginning to decline, as a result of Stage 3 restrictions.**
    - Indeed, the actual real-world evidence seen across the Western European countries we analysed, shows that the softer-style lockdowns achieved better results than the harder-style lockdowns.

Concerns with the UoM study

The model contains dubious assumptions

- In terms of the model itself, it is full of guesses, assumptions and estimates. Such models should only be used to provide a theoretical explanation of certain concepts. The use of such models to provide minute data and estimates on factors such as elimination, is fraught with danger and likely to prove completely incorrect (as seen via this very study (as later discussed) and the April 2020 model which predicted outcomes which are currently completely unrealistic with reality, and which continues to be sited, including in the original explanatory presentation to outline the current policy response).
- While all assumptions are dubious and subject to guesses, some of the specific assumptions which can be particularly argued include:
    - An asymptomatic case rate assumption of 25%.
        - **The US CDC instead has a best estimate of 40%.**
        - This would have a major impact on the ability to achieve elimination as more unknown cases would be in the community than forecast by the UoM model.
    - Asymptomatic case infectiousness of 33% versus symptomatic cases.
        - **The US CDC instead has a best estimate of 75%.**
        - This would again have a major impact on the ability to achieve elimination, as asymptomatic cases would be more likely to spread the virus to others in the community than forecast by the UoM model.
    - Reduction in transmission risk per contact for people wearing face-masks of 80%.
        - This appears to be a very high number, particularly for a prevention that was up until recently considered to have no impact on the spread of a highly infections disease, and to the contrary, was considered to potentially increase disease transmission as a result of incorrect use and a false sense of security.
            - This is further supported by areas with low mask wearing (being the Nordic nations), who often have far lower levels of community transmission, and which comes despite having no hard lockdowns.

Concerns with the UoM study

Stage 4 did not eliminate the virus as the study predicted

The study ultimately claimed that after 6 weeks of this strict lockdown, the virus could have been eliminated. While the study authors would no doubt claim that this 6 week timeframe was no longer relevant as a result of Stage 3 'failing' and cases rising, Western European evidence suggests that cases would have risen by a similar level irrespective of whether a soft or hard lockdown was implemented (if anything, it suggested a harder lockdown would have resulted in a higher peak).

Therefore, we have actually seen over 3 weeks of an effective Stage 3 lockdown, followed by 6 weeks of a Stage 4 lockdown, at which point Victoria will remain nowhere near achieving elimination.

After more than 3 weeks of a Stage 3 lockdown, and 8 weeks of a Stage 4 lockdown (i.e. by the end of September), the Victorian government, based upon the modelling from this very study, says not only will elimination not be achieved, but it will not even be safe to relax restrictions. This should provide all the evidence necessary to refute the study and its predictions.

Adding a dose of reality

Though perhaps the biggest argument against this study, is that it is simply not grounded in logic or common sense. Throughout world-history, there is no example of a highly contagious virus, that has materially spread throughout the community, being permanently eliminated by lockdowns. This becomes ever more difficult for a virus like COVID-19, which has a very high asymptomatic infection rate, meaning the real level of underlying cases in the community is unknown.

In the event that the seemingly impossible was achieved (remembering that no country in the world has eliminated COVID-19 following material community transmission), Australia would face permanent world isolation in order to maintain its elimination status, as the rest of the world has largely now realised the futility of an elimination strategy, and has accepted community spread as a fact of life.

Victoria cannot continue running public policy based upon virus hysteria (perhaps virus denial would be just as apt a description, being a belief that elimination is a feasible long-term strategy, which denies all logic and reason surrounding a highly transmissible virus), and which has held Victorians in strict confinement, by contending that we can effectively simply legislate away the flu.

The Victorian Government urgently needs to also receive advice from the myriad of experts who contend that an elimination strategy is not sustainable, and causes an untold amount of collateral damage. **As long as virus hysteria drives public policy, as opposed to a balanced debate on the impacts of the virus and the cost of mitigation measures, Victoria will not return to any sense of normality.**

The rest of the world is realising reality

Measures are unprecedented versus the rest of the world

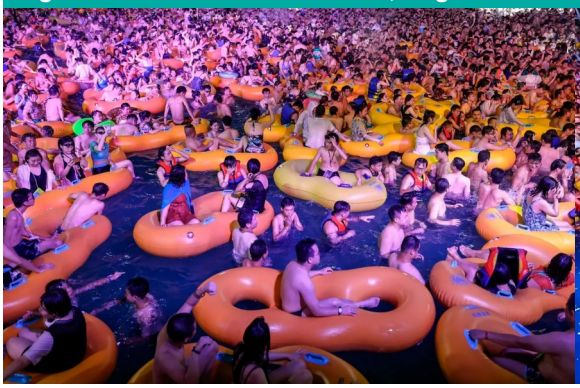
Further highlighting the contrast in Victoria's strategy, it appears to be the only major region in the entire world under a Stage 4 stay at home order, and very likely has some of the strictest and most draconian measures that are currently implemented or were previously implemented, anywhere in the world.

This comes despite Victoria recording 710 deaths from people with coronavirus (note this is different to the number of people who actually died of coronavirus), versus more than 20,000 overall Victorian deaths from January to June. Of those that died while infected with coronavirus, only 17 Victorian deaths are from people under the age of 60, and 4 under the age of 50.

This compares to historical suicide figures which suggest ~1,500 people will have committed suicide across Australia from January to June. This number is likely to sharply increase over the years to come, as a result of the extreme measures that have removed the freedom of Victorians, and created an environment full of fear and anxiety. This has resulted in major spikes to crisis hotlines, and a 33% increase in the number of people under 18 presenting to hospital with self-harm injuries. Money continues to be thrown at a problem that it cannot fix. The removal of fear, and re-introduction of freedom, would instead go a long way to reducing such terrible statistics.

While we are told that things may never go back to normal, thousands of individuals recently enjoyed an electronic music festival in Wuhan, and Beijing residents are no longer required to wear face masks when outdoors. Who would have thought that Victorians would soon be in the position of wishing they enjoyed the same freedoms as those in China?

Figure 13: Wuhan Music Festival, August 15



SOURCES: AFP

Figure 14: Wuhan Music Festival, August 15

SOURCES: AFP

Rest of the world has accepted the reality of spread

Ultimately, apart from most of Australia, and some select regions of the world like New Zealand, the rest of the world is not adopting an elimination strategy. Some have allowed the virus to spread with limited mitigation measures, whilst others have adopted a more strict approach. Irrespective of the approach taken, the goal has not been complete elimination. Nations are instead increasingly coming to terms with reality.

Australia faces permanent isolation

Will Australia never open its international borders?

This begs the question, will Australia ever re-open its international borders? If an elimination strategy continues to be the goal, it would seem impossible to do so. This is irrespective of whether or not a vaccine is ultimately developed, as an effective vaccine is unlikely to eliminate the virus, but merely make it easier to mitigate its spread.

As a result, the virus will not suddenly disappear. If Australia was to ever re-open its international borders, the virus will certainly come with it. Unless the plan is to permanently close the international border, the current posturing over an elimination strategy is nothing more than temporary theater.

How about interstate borders?

Of course, this same posturing is also occurring over interstate borders. Australia today represents not a nation, but a group of independent colonies. As was also noted in the UoM study, if an elimination strategy remains the goal, the same question applies in the event of Victoria and NSW not eliminating the virus—will the interstate borders ever re-open?

Though instead of VIC/NSW trying to achieve the near impossible, and at a great cost that is not being fully considered by elimination advocates, perhaps other states may have to recognise that this virus won't simply disappear—with or without a vaccine. This becomes particularly true now that Queensland is also again seeing recent community transmission.

We know that a solution must be found, as indefinite state border closures would not be sustainable for the union of the nation, but it may take a significant length of time before this becomes apparent. In the interim, the strength of our union and our nation as a whole, will continue to suffer.

Victoria practically uninvestable

Sovereign risk extreme, Victoria practically uninvestable

Unfortunately, the current roadmap places Victorians at risk of permanent confinement and creates some of the biggest sovereign risk of any region in the entire world. How can a business owner invest in a state that has the power to shut down a business at any moment, without any parliamentary or judicial oversight? Given that capital flows to where it is most wanted, it will simply flee the state.

Even if the current restrictions are somewhat lifted as planned from October 26, the sovereign risk will long linger, with investors likely to be frightened by past policies, which they know all too well, could be re-implemented at any moment, and at the slightest little flare up in cases.

Australia not much better given Victoria's importance

Given that Victoria is Australia's 2nd biggest region by population and economic activity, its continued lockdown will have a broader spillover impact on the rest of Australia. This is likely to result in significant fiscal strain on not only the Victorian budget, but the Federal budget. This may result in a further blowout to the national budget deficit, and result in additional monetary and fiscal support being provided.

In an attempt to get Victoria to re-open in a faster fashion, the Federal Government may seek to make its financial contribution to Victoria contingent upon a faster re-opening plan.

Focus on rational international regions and export led firms

Given the economic impact of Victoria's continued lockdown for not just that state, but the rest of Australia, investors would be wise to limit their exposure to Victorian focused entities, and those that are reliant on a strong rebound in the Australian economy.

Better opportunities will likely be found in different geographies, where many nations are in the midst of a strong economic rebound from a faster re-opening. China is leading the way, with its economy now firing on all cylinders. The United States is also beginning to pick up pace, with over 10m jobs created during the last four months, as it appears to have put the worst of its outbreak behind it.

There are also some Australian firms that will likely benefit from this broader global economic re-opening. For instance, the Australian mining sector continues to be supported by generally strong commodity prices (particularly in Iron Ore and Gold), and operations are generally performing well given the lack of restrictions in Western Australia, where material coronavirus transmission has not yet occurred. Other firms that have significant exports, and overseas operations in regions that are returning to normal, may also provide better opportunities.

What is needed to achieve better policy

Taskforce with a broad range of views required

The key problem with Victoria's current strategy, is that it appears to be driven by a small group of individuals that are advocating for an elimination strategy. It is all well and fine for these people to be advocating for as such, and for the Victorian Government to consider such a view, but it also needs to consider a broader range of views.

A taskforce should be established comprising not just those advocating for elimination, but also those who advocate for severe suppression, and for herd immunity. Only when a range of alternative views are listened to and canvassed, can an effective strategy be created. Nothing should be off the table without giving it proper consideration.

Additionally, the taskforce must comprise more than just relevant health experts. It must also comprise economists and business owners. It must comprise practicing general practitioners, the ones on the frontline, who are seeing the mental health struggle, the decline in cancer detection and screening, the impact of long delays in elective surgery, and the myriad of health problems that are being created by an elimination approach.

The ability for parliamentary oversight and scrutiny is also necessary to ensure that a range of voices are being heard and, that each are being given proper consideration.

Always consider the flow-on impacts

When formulating this policy, we must consider, who actually needs protecting. With this virus, we know that the risk of severe harm is very low for young and healthy individuals. Blanket lockdowns are of thus far greater harm to these individuals, who experience all of the downsides of social isolation, job losses, fear and anxiety, for very little benefit. At the same time, by isolating these individuals, we lose the ability to build immunity, which would allow for a natural decline in the virus' ability to spread.

Even those who are vulnerable to this virus, being the elderly and those with significant comorbidities, suffer extreme consequences from lockdowns. We must remember that those who are particularly likely to succumb to this virus, also have the least amount of life left. Confining them for 6 months, and not allowing them to see their loved ones, has an enormous impact on what may already be the final months of their lives. Many of those that we are attempting to save, may thus consider the cure worse than the disease. For by isolating them in their home, or room, alone, and without the ability to see their loved ones, we may in some instances be giving them more time, but it comes at the cost of effectively taking away their reason to live.

Give individuals the ability to decide for themselves

This is the key problem with blanket lockdowns and government aggression—it does not allow any scope for individuals to evaluate risks for themselves. For nobody wants to die of this disease, nor do they want to pass it on to a family member, and particularly one who is more likely to be vulnerable to it.

Just as individuals take common sense precautions regarding the seasonal flu, and who may avoid visiting loved ones during times of sickness, the same common sense would be applied here. If a young, healthy individual, who realises they are at low risk of severe complications wants to see a friend, why not allow that? If an elderly individual, knowing they have lived a long and good life, would simply like to see their children and grandchildren, knowing the potential risk of transmission, why should we deny that to them? By the same token, for those who fear the virus and would prefer to remain isolated, that too, should be their right. But to instead pretend that there is only one way to deal with this virus, and that one group of individuals has the suppository of all wisdom, and thus must control the lives of others, is a very dangerous fallacy that has caused enormous death and destruction, far in excess of anything, that this virus could ever do.

Is permanent change acceptable?

Is permanent change to our lives an acceptable ask?

Some key things to remember for those currently living under an elimination strategy, and particularly those in Victoria, is that it will likely require many more months of lockdown to achieve any semblance of elimination. Are we truly willing to spend many more months in lockdown? Particularly given the lack of evidence that it is sustainable over the long-term? Particularly given the enormous costs involved with maintaining such a strategy? For this is not simply about lives versus the economy. This is about lives versus lives. Lockdowns cause real death, and real destruction, in and of themselves.

In the event that we do remain in lockdown for many more months and achieve a semblance of elimination, in order to maintain this semblance, are we truly willing to forever shut our international borders? Are we truly willing to lockdown again at any moment, each and every time additional cases pop up?

If the answer to any of these questions is no, then our whole strategy seems to be meritless, for what will be the point if we simply allow transmission to occur at a later date? This here lies the key problem with an elimination approach—it never allows for a return to normality, even with a potential vaccine, as like for the seasonal flu vaccine, it is very unlikely that it will eliminate the virus.

When considering an elimination strategy, the question must thus be asked, are Victorians, and Australians, prepared to forever change their lives for a virus? A virus that the data suggests is generally not dangerous for young and healthy individuals? A virus that nations like Sweden appear to have now defeated? We have been strong enough to defeat pandemics that were much more dangerous than this in the past, have we now suddenly lost our fighting spirit? Do we now accept permanent changes to our way of life and simply cower?

Evidence suggests that most individuals worldwide, will not accept this, with protest movements across the world growing in size and frequency. Evidence suggests that the current lockdown extension is the straw that broke the camel's back for many Victorians. Evidence suggests that this could be the tipping point, to restoring some much needed normality to our way of life, for the sake of our present, and our future.

Recommendation structure

Buy: Expect >15% total return on a 12 month view. For stocks regarded as 'Speculative' a return of >30% is expected.

Hold: Expect total return between -5% and 15% on a 12 month view

Sell: Expect <-5% total return on a 12 month view

Speculative Investments are either start-up enterprises with nil or only prospective operations or recently commenced operations with only forecast cash flows, or companies that have commenced operations or have been in operation for some time but have only forecast cash flows and/or a stressed balance sheet.

Such investments may carry an exceptionally high level of capital risk and volatility of returns.

Research Team

Staff Member	Title/Sector	Phone	@bellpotter.com.au
TS Lim	Head of Research/Banks	612 8224 2810	tslim
Analysts			
Lafitani Sotiriou	Diversified Financials/Fintech	613 9235 1668	lsotiriou
John Hester	Healthcare	612 8224 2871	jhester
Tanushree Jain	Healthcare	612 8224 2849	tnjain
Elyse Shapiro	Healthcare	613 9235 1877	eshapiro
Steven Anastasiou	Industrials	613 9235 1952	sanastasiou
James Filius	Industrials	613 9235 1612	jfilius
Sam Haddad	Industrials	612 8224 2819	shaddad
Alex McLean	Industrials	612 8224 2886	amclean
Hamish Murray	Industrials	613 9235 1813	hmurray
Chris Savage	Industrials	612 8224 2835	csavage
Jonathan Snape	Industrials	613 9235 1601	jsnape
Damien Williamson	Industrials	613 9235 1958	dwilliamson
Peter Arden	Resources	613 9235 1833	parden
David Coates	Resources	612 8224 2887	dcoates
Stuart Howe	Resources	613 9235 1856	showe
Associate			
Joseph House	Associate Analyst	+61 3 9235 1624	jhouse

Bell Potter Securities Limited
ACN 25 006 390 7721
Level 29, 101 Collins Street
Melbourne, Victoria, 3000
Telephone +61 3 9256 8700
www.bellpotter.com.au

Bell Potter Securities (HK) Limited
Room 1701, 17/F
Posperity Tower, 39 Queens Road
Central, Hong Kong, 0000
Telephone +852 3750 8400

Bell Potter Securities (US) LLC
Floor 39
444 Madison Avenue, New York
NY 10022, U.S.A
Telephone +1 917 819 1410

Bell Potter Securities (UK) Limited
16 Berkeley Street
London, England
W1J 8DZ, United Kingdom
Telephone +44 7734 2929