

Covid-19 epidemic curve in New Zealand

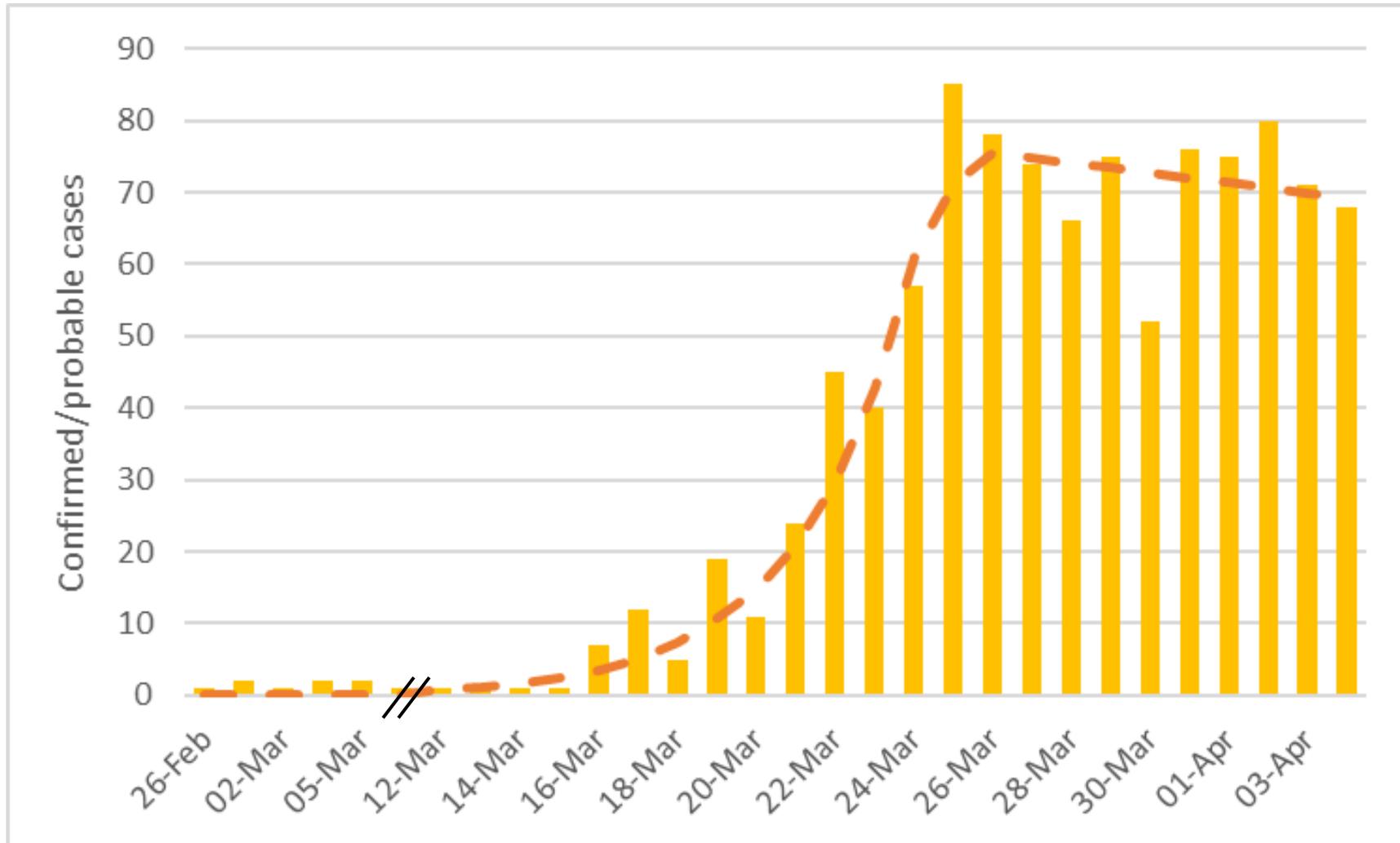
Dr Gary Jackson

29 March 2020

Update 1 - 5 April 2020

Epidemic curve by date of confirmation

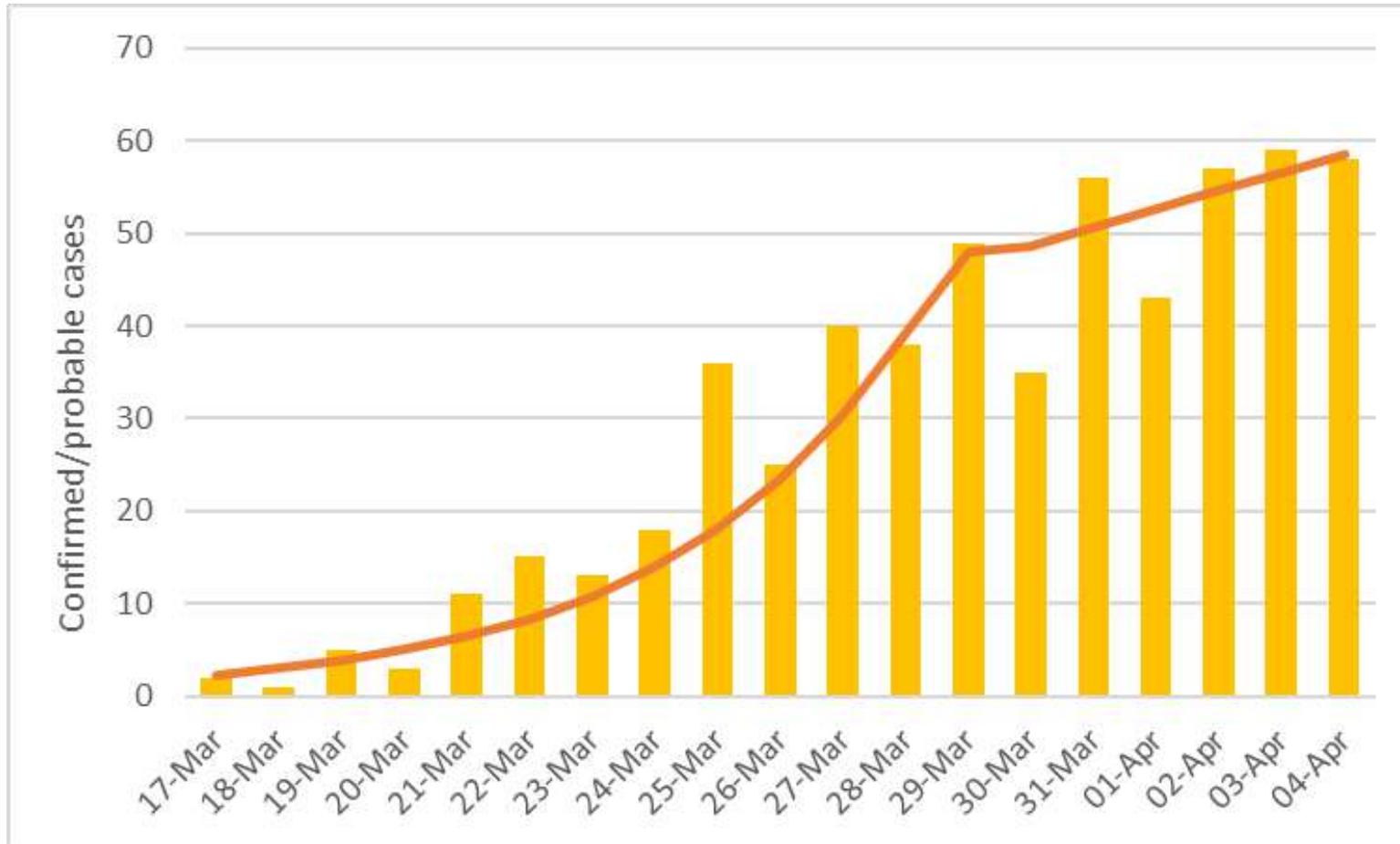
exponential rise then levelling from around 26 March



Data up to 5 April (Sun) announcement of cases = all confirmed or probable cases to Saturday 4 April = **1039 total** to date

Levelling **not** directly due to lockdown, rather the control events put in place 1-2 weeks prior – messages re social distancing and handwashing, cancelling of major events, etc

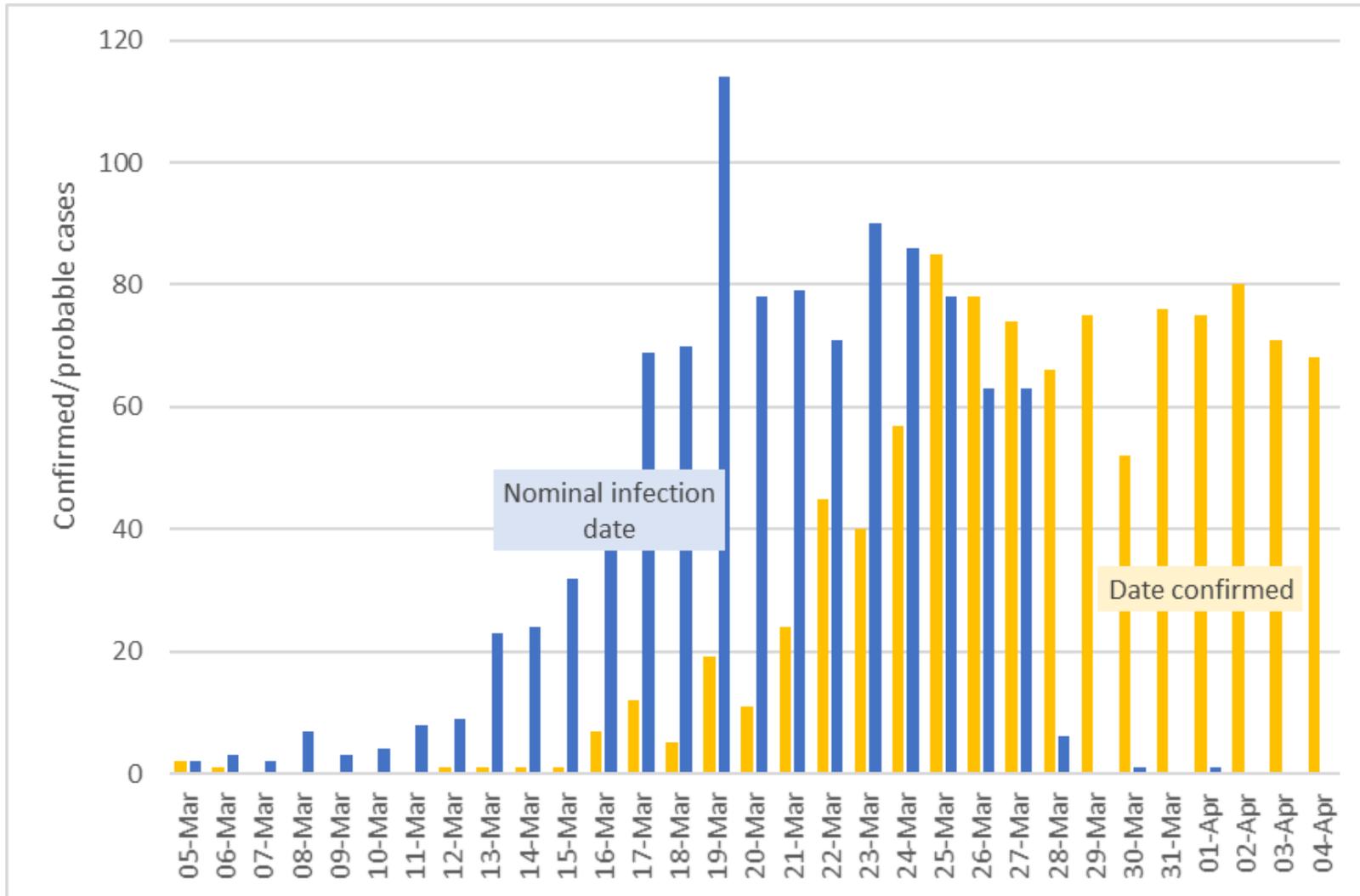
Epidemic curve excluding overseas traveller cases – still climbing, albeit slowly



Excludes cases in returning travellers = 573 total (including 171 with details still to come)

Change in increase, or inflexion point likely a little later, maybe around 30 March – more exponential before, linear after – last 3 days appear to be a levelling off?

Epidemic curve attempting a comparison with date of infection

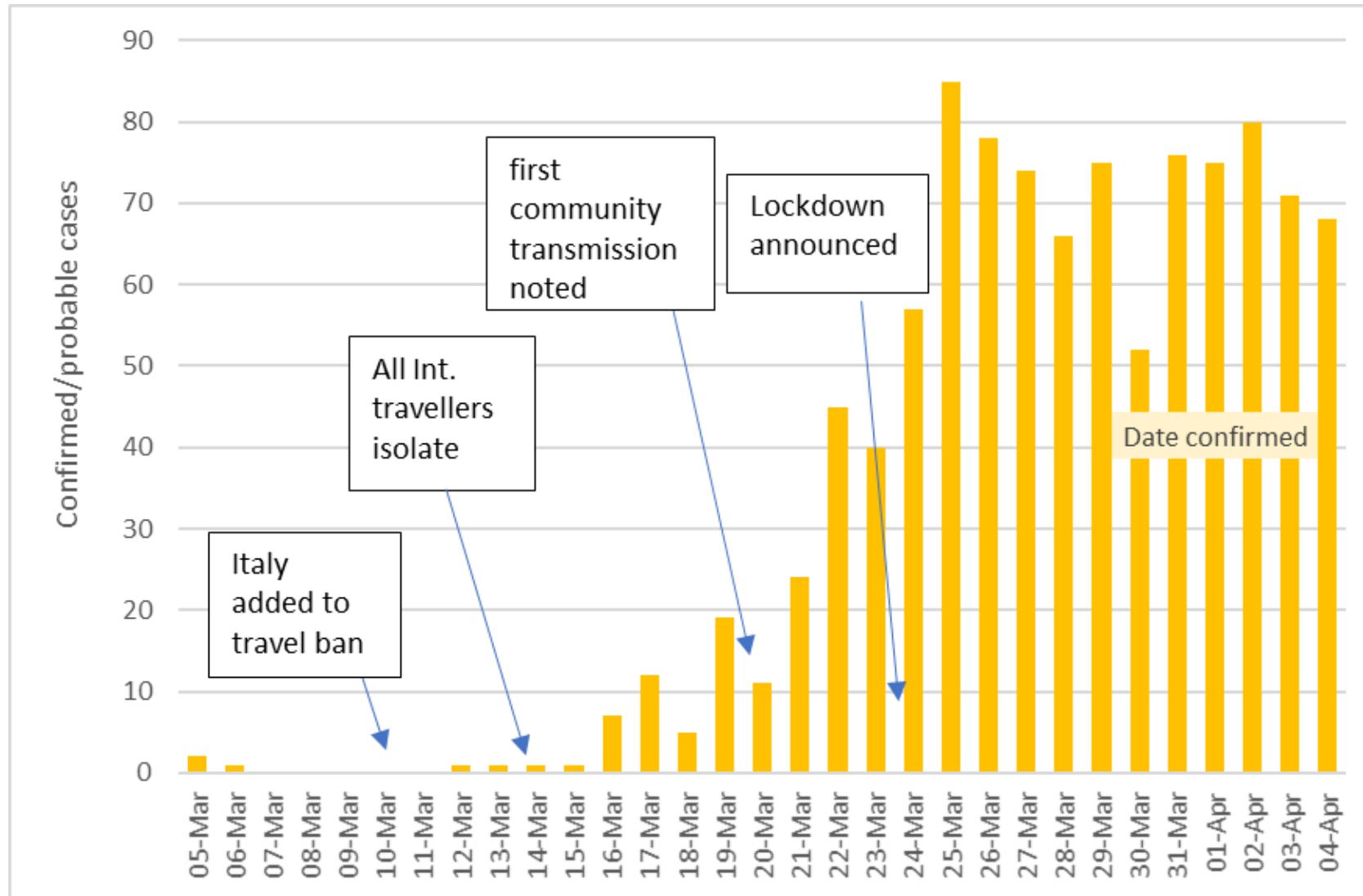


Including all confirmed/ probable cases. “Nominal date of infection” set at:

1. Date of arrival back in NZ;
- or
2. 8 days prior to confirmed date

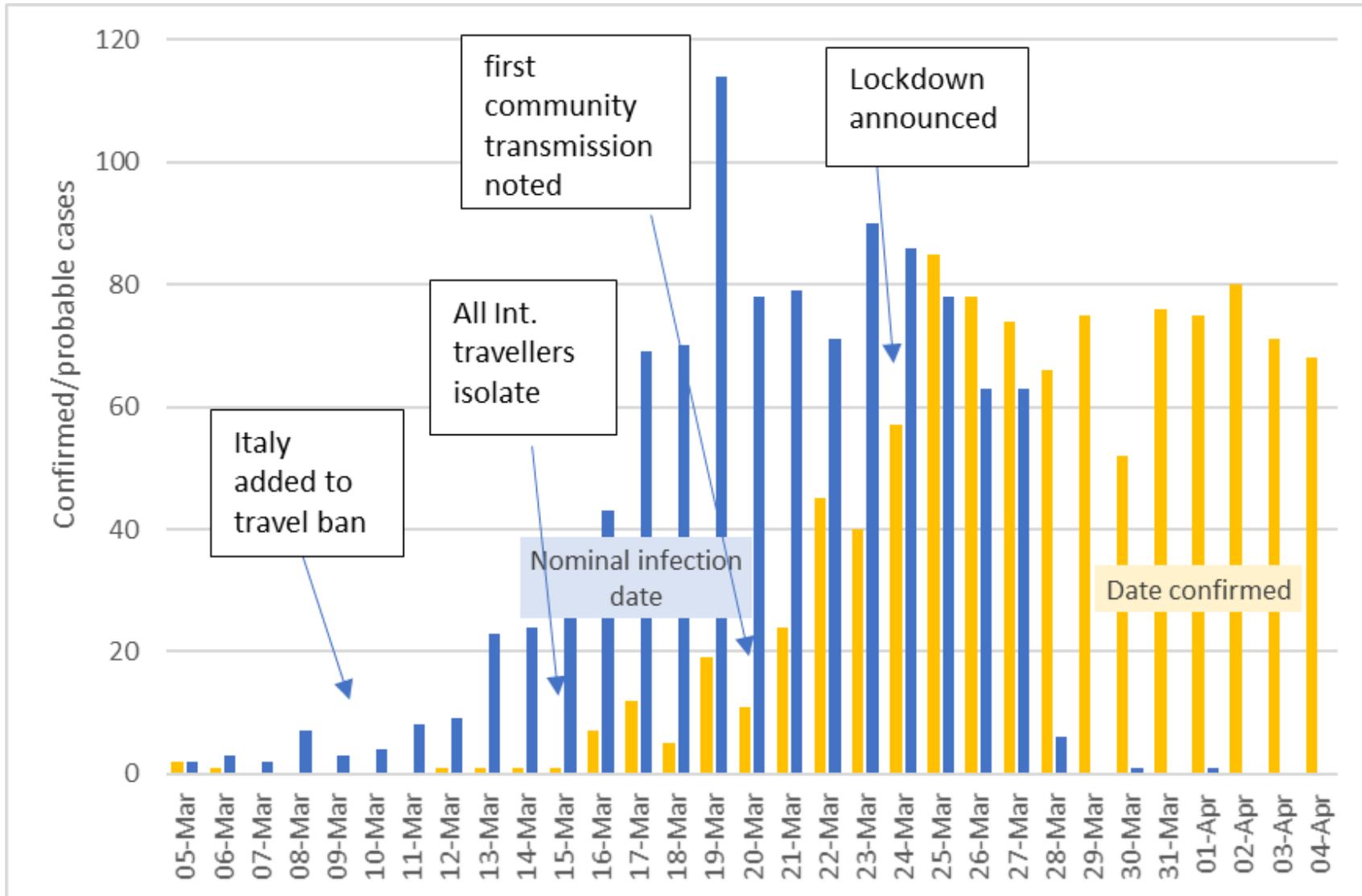
The number of confirmed cases is telling us about what happened 1-2 weeks ago

New Zealand's decision points have been more timely than most



Decisions compared with the confirmed or probable cases known at the time.

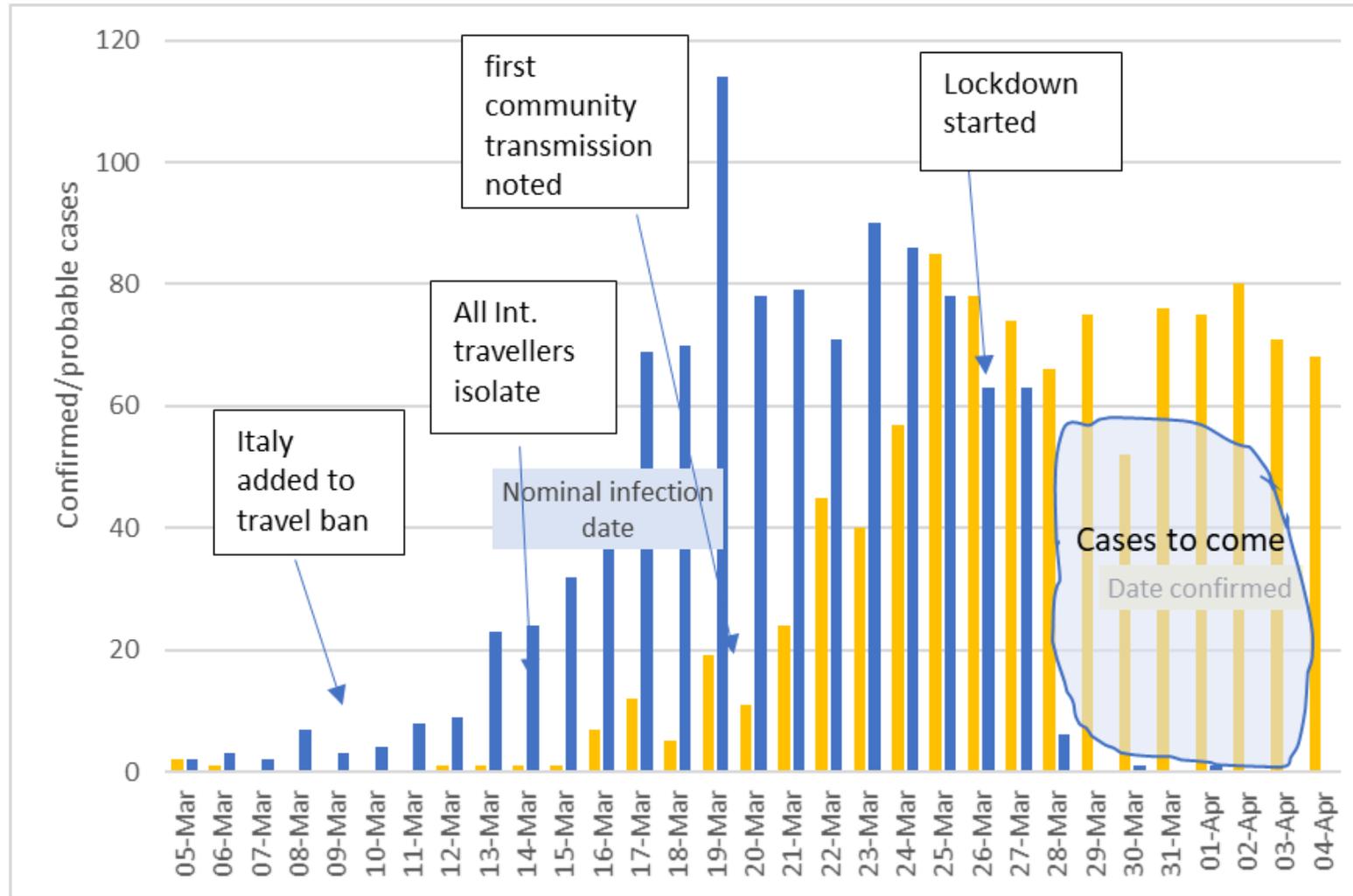
New Zealand's decision points have been just in time compared to actual cases



Once including the lag period before infected people become known the New Zealand decision point are a bit more 'just in time'.

Using 'first community transmission known' (20 March) as a trigger for action problematic due to lag times

Noting that the data for the last week is mainly about the week before lockdown



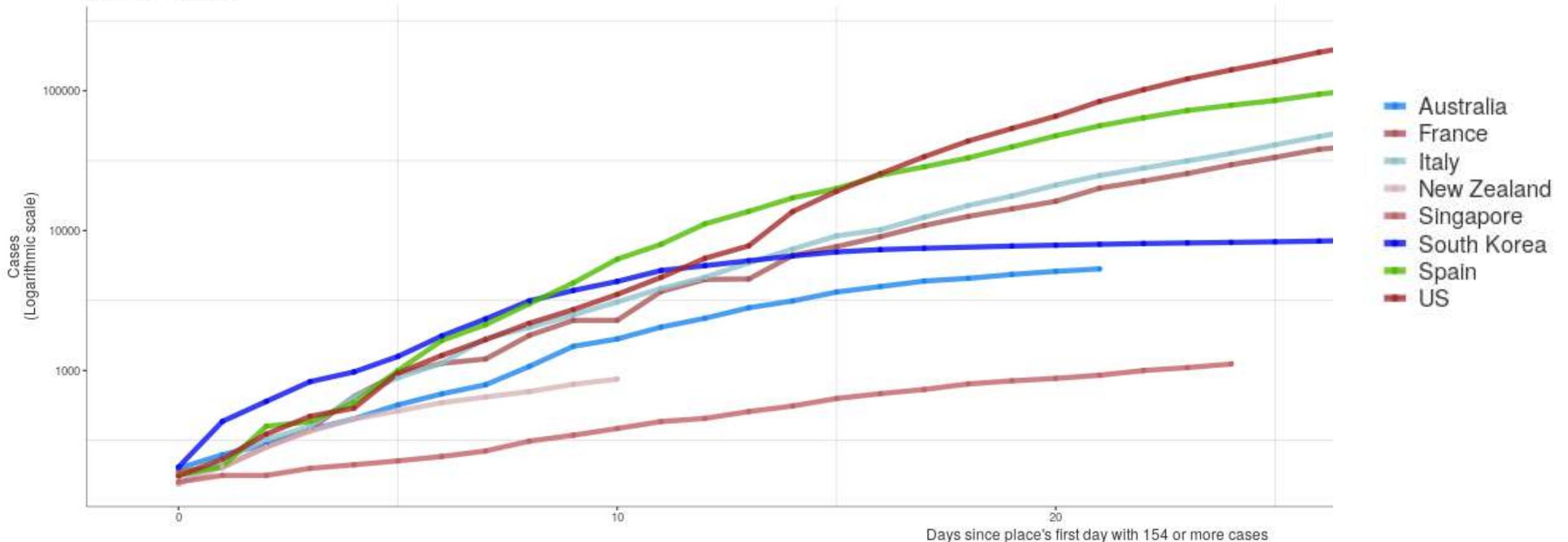
Confirmed/ probable cases to come in the next week will “fill in” the curve here – a 7-10 day lag between infection date and confirmation date.

Widespread undetected community transmission appears unlikely. There is reasonable testing volumes (low % positive), and low numbers of hospitalisations, ICU cases and deaths to date

International comparison with time starting when first 150 cases reached NZ and Australia starting to flatten

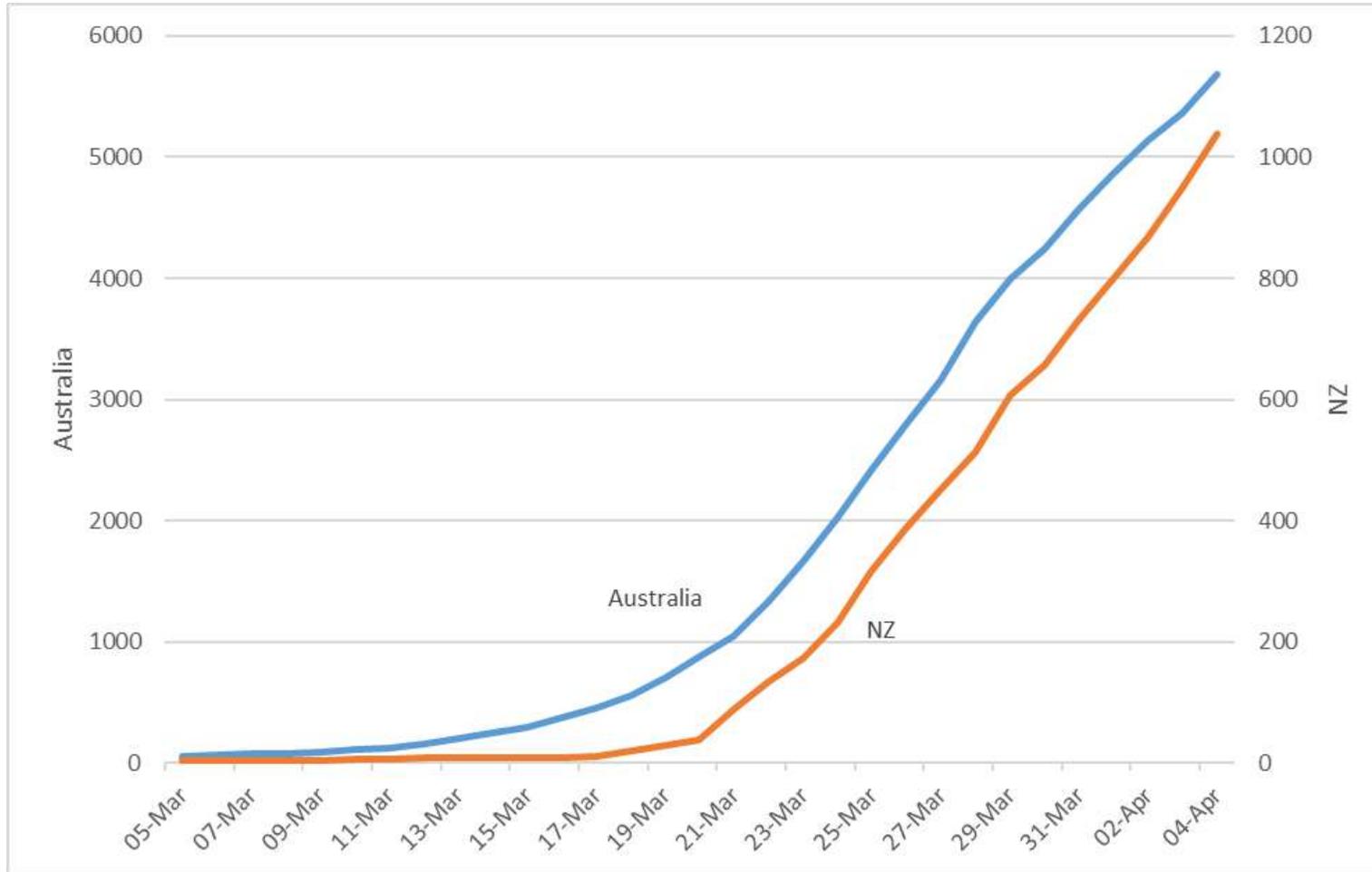
COVID-19 cases since place's first day with 154 or more cumulative cases

Data as of 2020-04-04



Selected countries with timing based on when the first 150 confirmed cases had accumulated. Note logarithmic y axis – Italy and others followed a similar trajectory, getting from 100 to 1000 cases in around 6 days. NZ (shortest line) earlier in journey, looking relatively controlled – perhaps more like Singapore/Taiwan/Hong Kong... <https://datacat.cc/covid/>

Compared with Australia weighted by population – still trailing

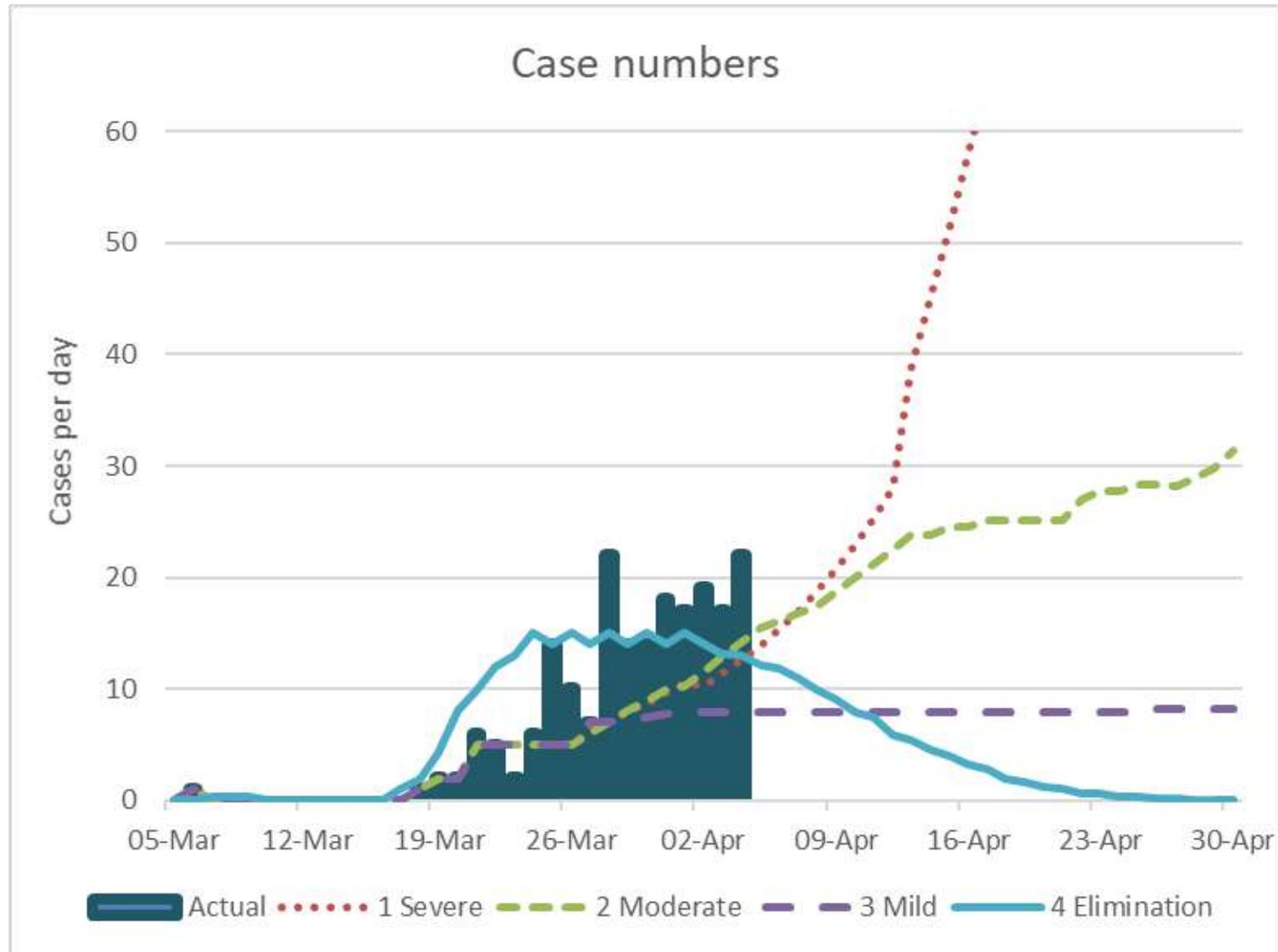


Note NZ axis is scaled to 1/5 of Australian to account for differing population size.

Both countries have flattening cases per day numbers, so slowing percentage increases

NZ has a higher proportionate number of travelers returning home, possibly exaggerating the comparison.

Compared with Northern Region prediction model

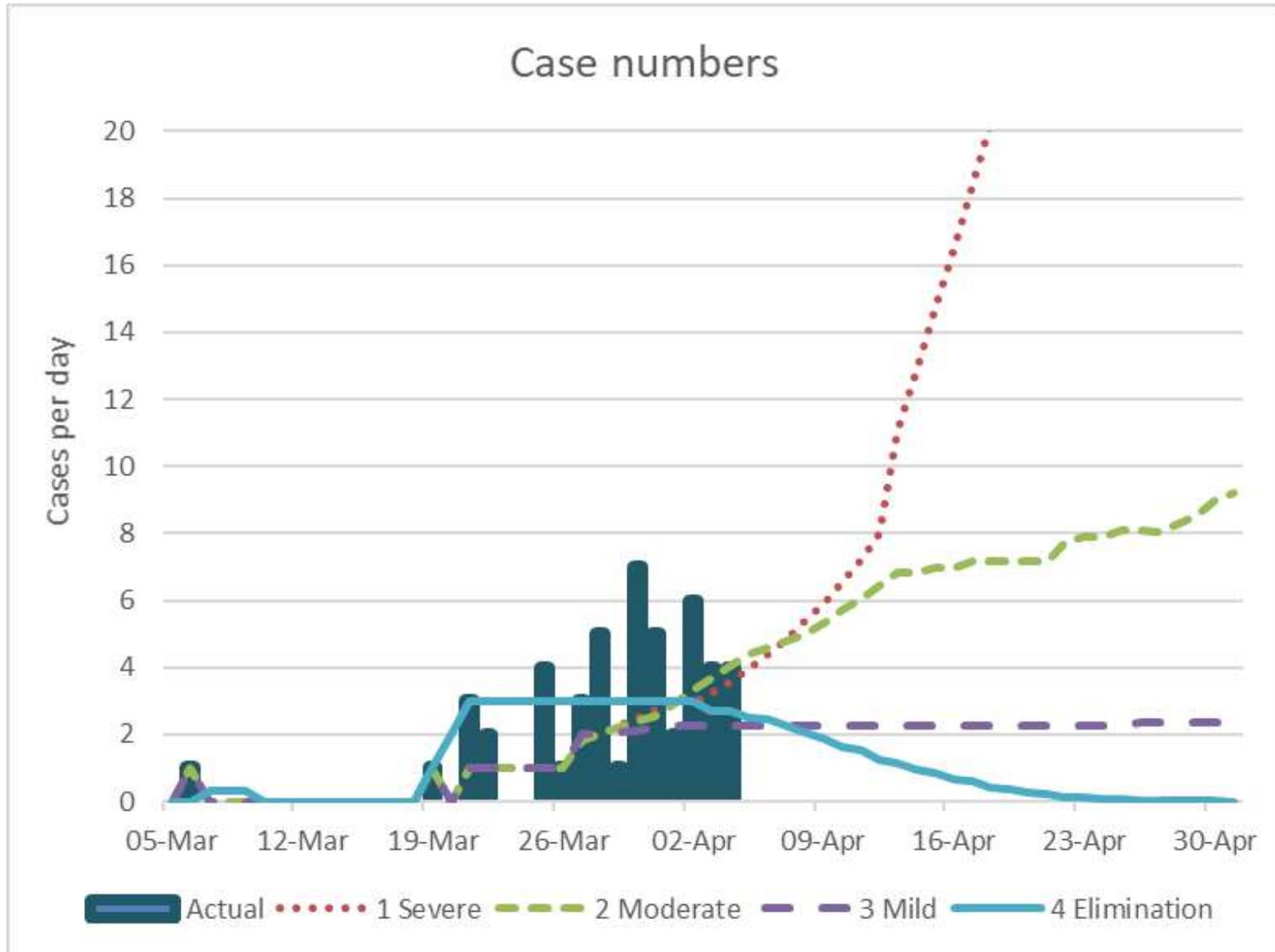


At present Northern Region (NR) community case numbers are flat at around 14-20 cases per day - tracking at around the modelled values. The next week should see clearer signs of which trajectory we might be on.

The Model predicted 9-15 hospital beds occupied in the Northern Region and 3-5 ICU beds, at this stage, which is well off the mark.

Note that around a third of the community cases to date in NR (66/205) are from a single school cluster.

In detail for Counties Manukau gives a similar picture

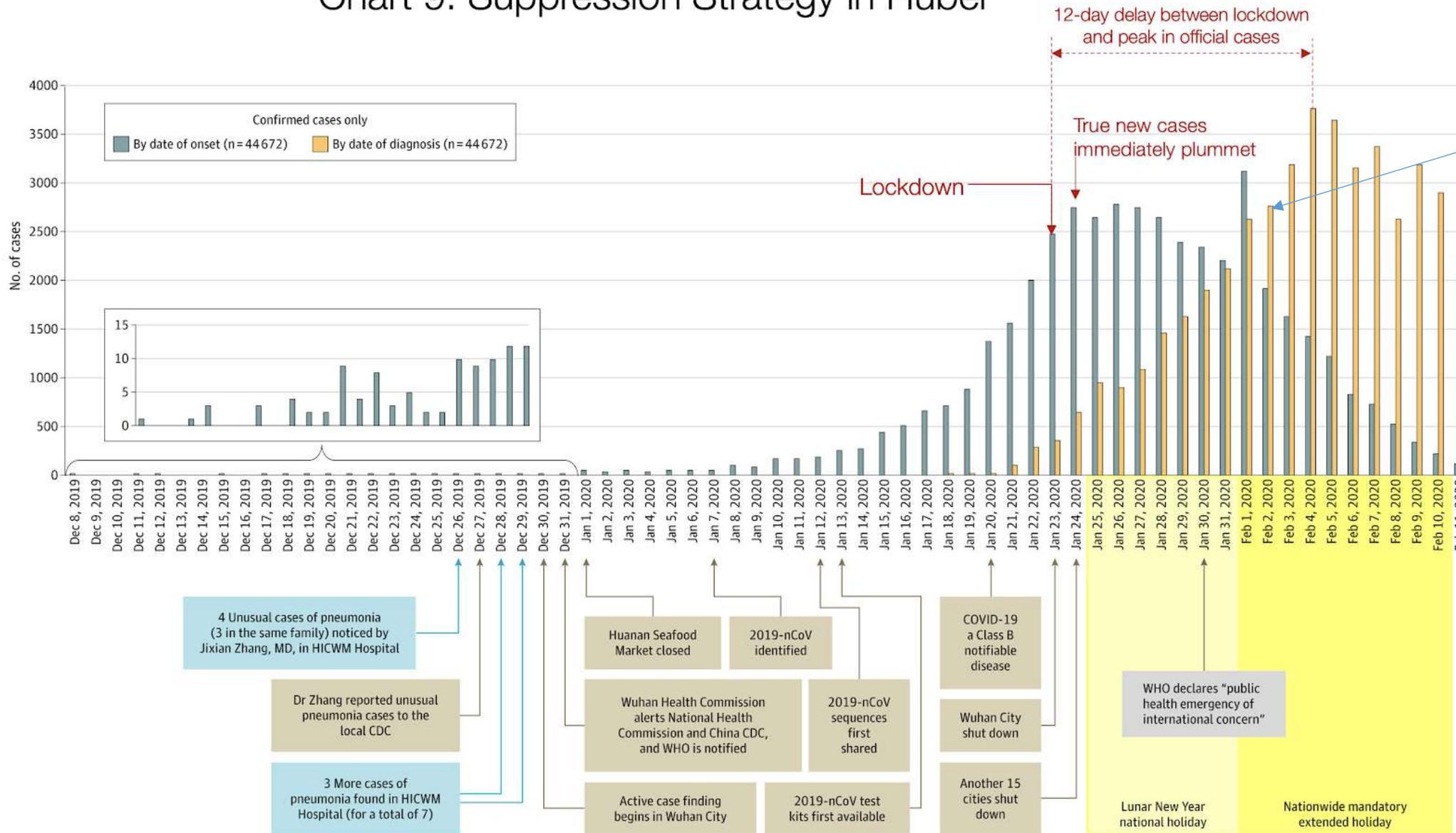


Counties Manukau community case numbers are low at around 4 a day – could be consistent with any of the modelled paths – again the next week should make clearer.

The Model predicted 4 hospital beds (actual 2) and 1-2 ICU beds (actual 0) occupied by covid-19 patients at this stage.

Finally – the Wuhan story – comparing official counts with estimated cases

Chart 9: Suppression Strategy in Hubei



NZ is the equivalent of here in its journey - albeit at much lower numbers! Will 12 days be our delay too?

The strategy – where NZ is better able to control the ‘Dance’ than most countries

