

REPORT ON WEEKLY DEATHS IN SOUTH AFRICA

6 – 12 JUNE 2021

(WEEK 23)

Debbie Bradshaw, Ria Laubscher,
Rob Dorrington, Pam Groenewald, Tom Moultrie

Burden of Disease Research Unit
South African Medical Research Council
15 June 2021



UCT Centre
for Actuarial
Research

Glossary:

Age-standardised excess death rate: Indirectly age-standardised excess death rates have been calculated for each province to adjust the crude death rates per capita for the differences in distribution of the population by age. The adjustment factor for each province is calculated as the crude death rate for South Africa divided by what the crude rate for South Africa would have been had the age distribution of the population been that of the province. Standardisation for age is necessary when comparing populations that differ in their age structure because age has a powerful influence on the risk of dying. The rate is based on the cumulative number of excess deaths since 3 May 2020 to date divided by the population estimate for 2021 and has not been annualised.

Actual number of deaths: The actual number of deaths in South Africa have been estimated from the numbers recorded on the National Population Register using weighting factors set to produce results consistent with those of the annual Rapid Mortality Surveillance Report to account for deaths of persons who are not on the National Population Register as well as those that have not been registered with the Department of Home Affairs. **The adjustments to account for incompleteness of recording of deaths on the NPR have been re-estimated for the 2021 reports taking into account the 2017 cause-of-death data released by Stats SA in 2020.** A methodological note briefly outlining the changes can be downloaded with this report from the SAMRC website: <https://www.samrc.ac.za/reports/report-weekly-deaths-south-africa>.

Epi-week: The Weekly Death Reports in 2020 used weeks from 1 January and ran from Wednesday to Tuesday. In setting up the monitoring for 2021, we recast the data to report by an 'Epi-week' consistent with CDC and many NICD reports which run from Sunday to Saturday, ensuring continuity of weeks from one year to the next. Each week is aligned with the 'Epi-year' that has 4 or more days in that week. Week 53 of 2020 is from 27 December 2020 to 2 January 2021 and Week 1 of 2021 is 3 January – 9 January 2021.

Excess deaths: There is no universal definition of, or understanding of what is meant by, "excess mortality". It is a term used in epidemiology and public health that refers to the number of deaths that are occurring above what we would normally expect. The WHO uses the term to describe "Mortality above what would be expected based on the non-crisis mortality rate in the population of interest. Excess mortality is thus mortality that is attributable to the crisis conditions. It can be expressed as a rate (the difference between observed and non-crisis mortality rates), or as a total number of excess deaths."

Excess natural deaths associated with COVID-19: Generally, the number of excess deaths per week is calculated as the number of all-cause deaths in that week less the number that might be assumed to have occurred had there not been the epidemic (i.e. the counterfactual number), provided that the counterfactual is lower. However, this approach has generally only been applied to countries where deaths have been tracking the counterfactual before the onset of significant numbers of COVID-19 related deaths. The method provides a poor estimate of the numbers of COVID-19 and collateral deaths in the early stages of the epidemic when this is not the case. Thus, we estimated the numbers of COVID and collateral deaths, once a clear upward trend is evident, as the number of actual deaths less a baseline number determined as a proportion of the predicted number. By the end of the 1st wave of the pandemic, the predicted values have been used as the counterfactual.

Warning: The Department of Home Affairs has faced sporadic temporary office closures, particularly in areas that are more affected by COVID-19. This may affect our allocation of a death to a metro area. For example, a death that occurred in the City of Cape Town might have been registered at an office outside of the City because of a temporary closure. Closure may also cause a delay in the processing of the death registration which would result in an underestimate of the deaths in the most recent week. This accounts for the kinks in what should otherwise be a smooth increase in numbers of deaths in Cape Town and Buffalo City, for example.

Background

This report provides estimates of the weekly number of deaths of person 1+ years in South Africa for epidemiological **Week 23** of 2021, covering the period **6 – 12 Jun 2021**.

While preparing predicted numbers of weekly deaths for 2021, enhancements have been made to the estimation process. The estimates now take into account the release of vital registration data to include registrations up to the close of 2017. They also ensure that the national estimate of excess deaths is consistent with the sum of the estimates for the provinces. Reporting has changed to 'Epi-weeks' that run from Sunday to Saturday, which will align with other weekly reports and enable us to lessen the lag in reporting.

The main methodological change introduced in the 2021 reporting is that predicted values for 2020 and 2021 are based on death data for the period 2014-2019, instead of data for 2018 and 2019 as was done for 2020 estimates. After reviewing trends in the data, separate negative binomial models have been fitted to the unnatural deaths, the natural deaths for each of KwaZulu-Natal and Western Cape, and for natural deaths for the 7 other provinces in a combined model to provide estimates by age, sex and epi-week for each year. A prediction interval has been estimated on the basis of the variability in the observed weekly data for each reported domain. The data for both 2020 and 2021 have been recast and both years will be reported with a cumulative total of excess deaths taken from the week starting 3 May 2020, considered to be the point of rapid increase in excess deaths associated with the COVID-19 pandemic in South Africa. Except for KwaZulu-Natal (and eThekweni in particular), where the additional VR data identified substantial missing late registrations from the 2015 data, the impact of the changes is relatively small. Predicted values for the metropolitan areas are still based on data from 2018 and 2019 as the trends in the sub-provincial data need further investigation to develop a comprehensive district-level model.

A brief methodological note outlining the changes that have been made for monitoring deaths during 2021 can be downloaded with this report from the SAMRC website as well as a spreadsheet with estimated values:

<https://www.samrc.ac.za/reports/report-weekly-deaths-south-africa>.

Trends

- The weekly numbers of deaths of persons 1+ years of age from all causes was **13,373** in Week 23 (**6 - 12 Jun 2021**), showing clear signs of the impact of the 3rd wave of the pandemic in South Africa.
- The number of excess deaths of persons 1+ years from natural causes has continued to increase reaching **2,890** in Week 23 (**6 - 12 Jun 2021**), following the low in Week 11 (**14-20 Mar 2021**) of **1,036**.
- Since 3 May 2020, there has been a cumulative total of **170,000** excess deaths from natural causes of persons 1+ years of age of which just over **87,000** occurred in 2021 (since 3 Jan 2021).

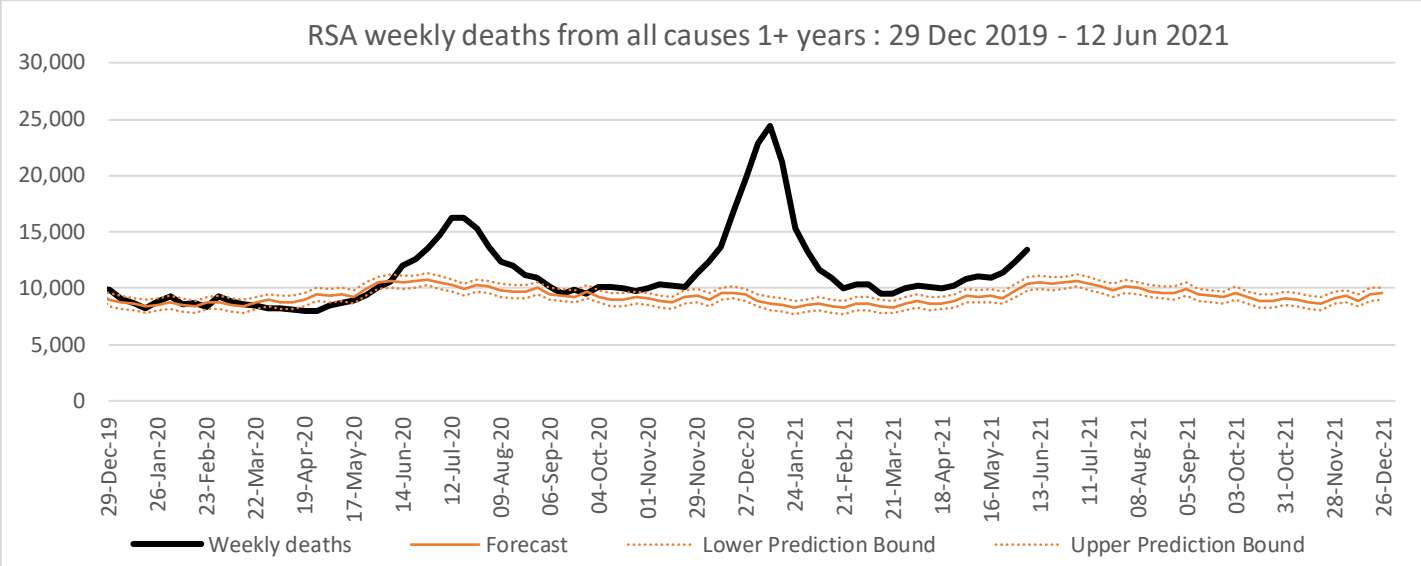
Week	Date	Weekly excess deaths from natural causes	Cumulative excess since 3 May 2020	Cumulative excess since 3 January 2021
18	2-May-21 – 8-May-21	1,517	159,038	76,069
19	9-May-21 – 15-May-21	1,698	160,736	77,768
20	16-May-21 – 22-May-21	1,605	162,341	79,373
21	23-May-21 – 29-May-21	2,231	164,572	81,604
22	30-May-21 – 5-Jun-21	2,629	167,201	84,233
23	6-Jun-21 – 12-Jun-21	2,890	170,091	87,123

- For people 1-59 years, the number of natural deaths has tracked the predicted number since February 2021 with a slight uptick in the past week. By the end of Week 23 (**6 - 12 Jun 2021**), the excess natural deaths since **3 May 2020** totals **39,478**.
- For people 60 years and older, the number of natural deaths remains well above the upper prediction bound. The excess natural deaths for people 60 years and older by the end of Week 23 (**6 - 12 Jun 2021**) is over **130,500**.
- Phase 2 of the vaccination programme, targeting persons 60 years and older in addition to health care workers, began on 17 May 2021. The table below, shows that in the weeks leading up to the vaccination roll-out, there have been about 1,200-1,500 excess deaths from natural causes among persons 60+ years with p-scores ranging from 29%-36%. The number of weekly excess deaths from natural causes in this age group increased to over 2,300 in Week 23 (**6 - 12 Jun 2021**) and the p-score increased to 49%.

Week	Date	Weekly excess deaths from natural causes for persons 60+ years	p-score
17	25-Apr-21 – 1-May-21	1,149	29.0%
18	2-May-21 – 8-May-21	1,453	35.2%
19	9-May-21 – 15-May-21	1,569	37.2%
20	16-May-21 – 22-May-21	1,340	30.8%
21	23-May-21 – 29-May-21	1,779	41.9%
22	30-May-21 – 5-Jun-21	2,083	46.0%
23	6-Jun-21 – 12-Jun-21	2,373	49.1%

- **Gauteng** has shown a sharp increase in natural deaths, associated with increases in the **Cities of Johannesburg** and **Tshwane** in the past few weeks. However, the rate of increase in the 3rd wave is slightly slower than the increases experienced in the 1st and 2nd waves.
- In Week 23 (**6 - 12 Jun 2021**), the numbers of deaths from natural causes in **Free State** and **Northern Cape** remain concerningly high. Natural deaths in **Mangaung** are well above the predicted numbers.
- **North West** and **Mpumalanga** have continued to increase in the past week, at a greater pace than the usual winter increase in that province.
- The numbers of natural deaths in **KwaZulu-Natal**, **Eastern Cape**, and **Limpopo** provinces are tracking slightly above the upper bound of the predicted numbers while the Western Cape is within the bounds of uncertainty.
- Per capita excess death rates have been calculated for the provinces to scale the cumulative deaths for the population size of each province (**Table 1**). By the end of Week 23 (**6 - 12 Jun 2021**), the national excess death rate since 3 May 2020 was **286 per 100,000** population.
- The provinces with the highest cumulative numbers of excess deaths at the end of Week 23 (**6 - 12 Jun 2021**), are, in order, **KwaZulu-Natal**, **Eastern Cape**, and **Gauteng**. The ranking changes to **Eastern Cape**, **Northern Cape**, and **KwaZulu-Natal** for the crude death rates per capita (i.e., taking size of the provincial populations into account) and to **Northern Cape**, **Eastern Cape**, and **KwaZulu-Natal** using the age-standardised rates (i.e., taking into account the age distribution of the provincial population).
- The weekly number of deaths from unnatural causes have continued to track close to the predicted numbers since the end of January 2021, with the month-end peaks being higher and at the February and March month ends reaching the upper prediction bound. (Note that as there is some uncertainty about the

estimate of unnatural deaths in the most recent week, readers are advised not to over-interpret the increase in the estimate of numbers of deaths for this week.)



Numbers have been scaled to the estimated actual number of death and for the last week has been adjusted for delayed registrations

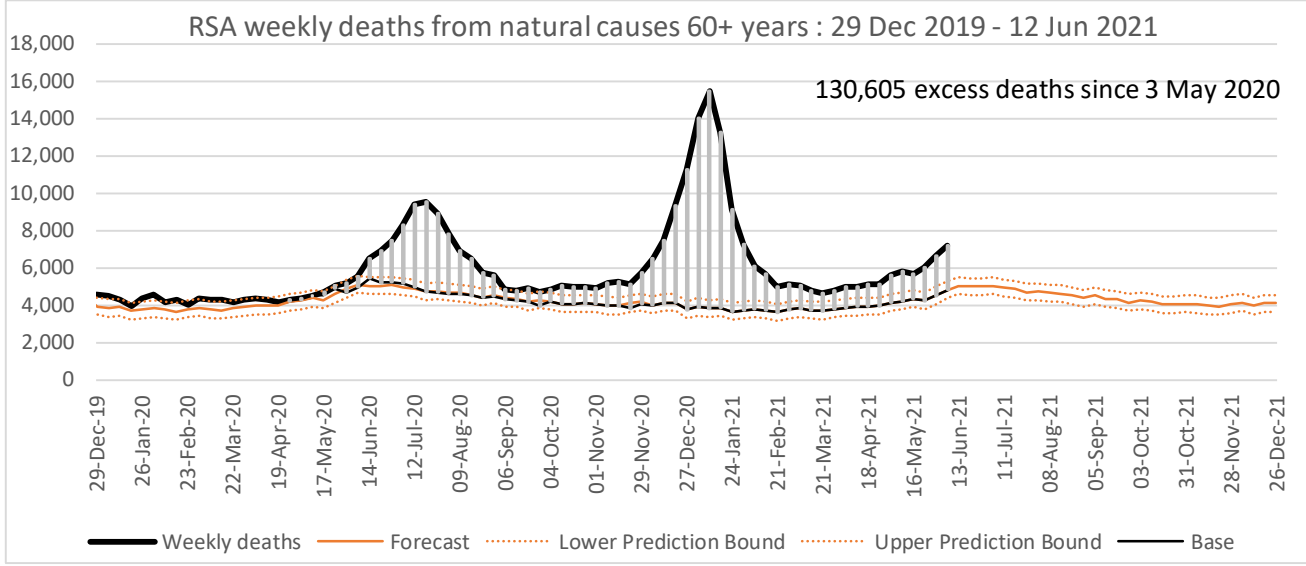
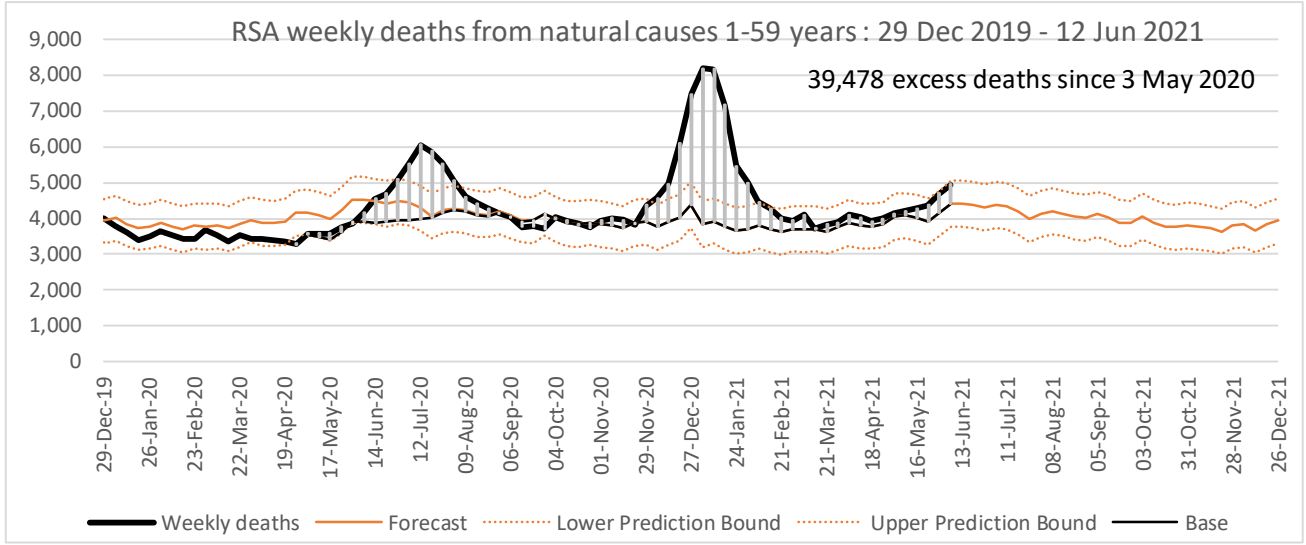
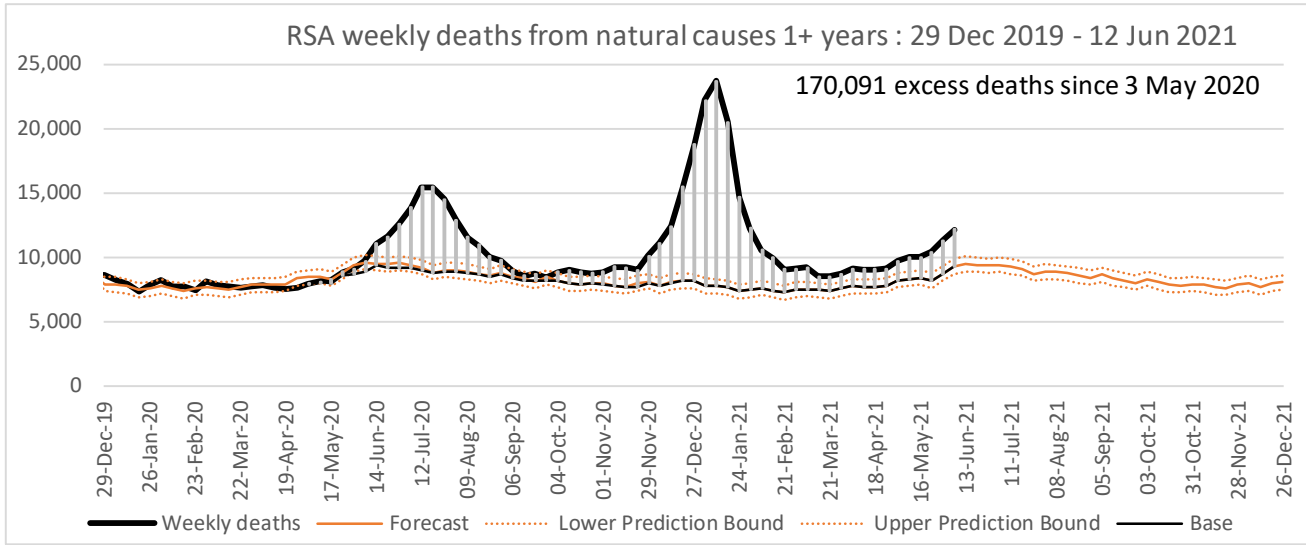
Table 1: Number of excess natural deaths of persons 1+ years by province and metro relative to revised predicted number based on the observed drop during lockdown, South Africa 2020/21

Region	Period	Excess deaths vs revised base	Excess deaths per 100,000 population	Age standardised excess death rate per 100,000
South Africa	3 May 20 – 12 Jun 21	170,091	286	286
Province				
Eastern Cape	31 May 20 – 12 Jun 21	34,416	523	421
Free State	21 Jun 20 – 12 Jun 21	9,963	342	342
Gauteng	7 Jun 20 – 12 Jun 21	29,027	186	205
KwaZulu-Natal	7 Jun 20 – 12 Jun 21	39,492	345	397
Limpopo	21 Jun 20 – 12 Jun 21	15,303	259	227
Mpumalanga	21 Jun 20 – 12 Jun 21	12,256	255	274
Northern Cape	28 Jun 20 – 12 Jun 21	5,324	455	426
North West	28 Jun 20 – 12 Jun 21	7,497	186	191
Western Cape	3 May 20 – 12 Jun 21	16,812	238	210
Metropolitan Municipality				
Buffalo City	31 May 20 – 12 Jun 21	3,603		
City of Cape Town	3 May 20 – 12 Jun 21	12,182		
Ekurhuleni	7 Jun 20 – 12 Jun 21	7,120		
eThekweni	14 Jun 20 – 12 Jun 21	9,229		
Johannesburg	7 Jun 20 – 12 Jun 21	10,234		
Mangaung	21 Jun 20 – 12 Jun 21	3,046		
Nelson Mandela Bay	31 May 20 – 12 Jun 21	5,104		
City of Tshwane	7 Jun 20 – 12 Jun 21	6,666		

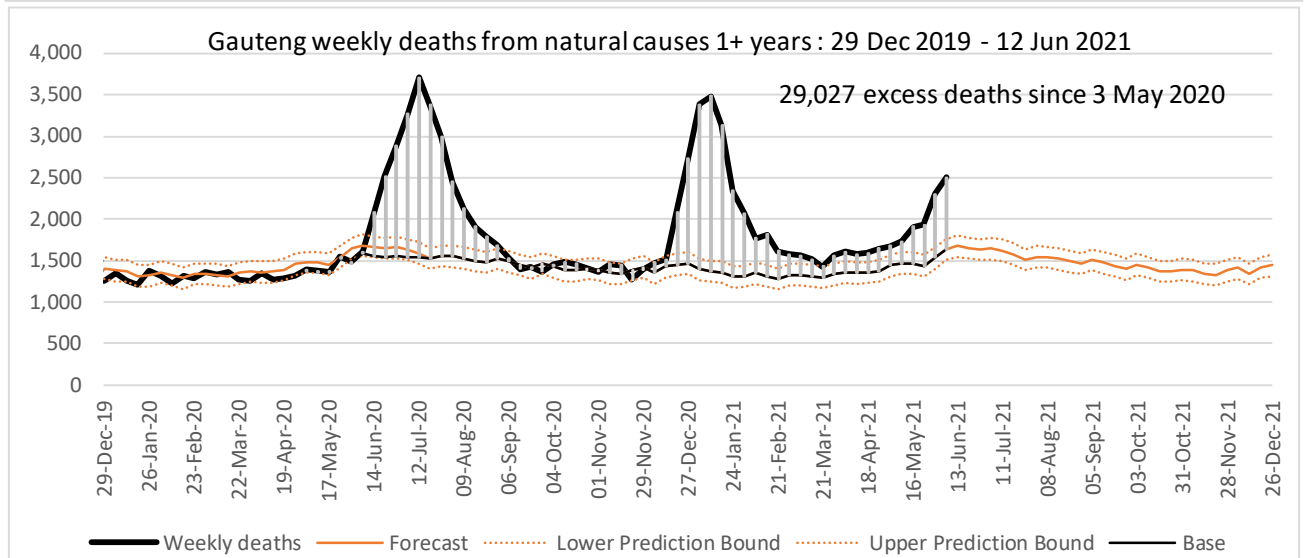
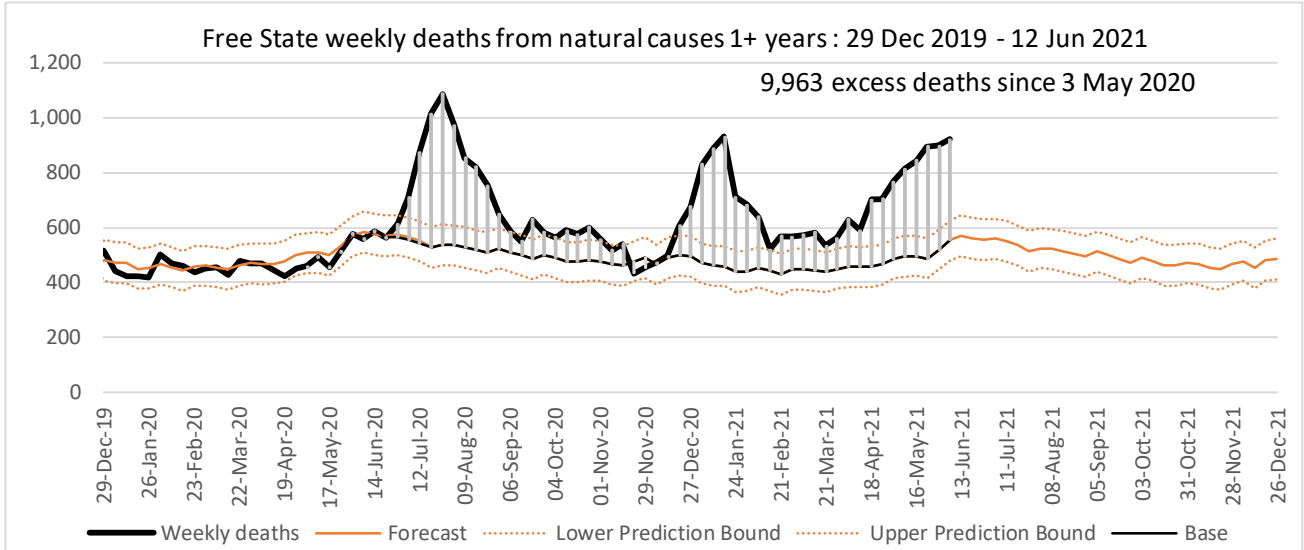
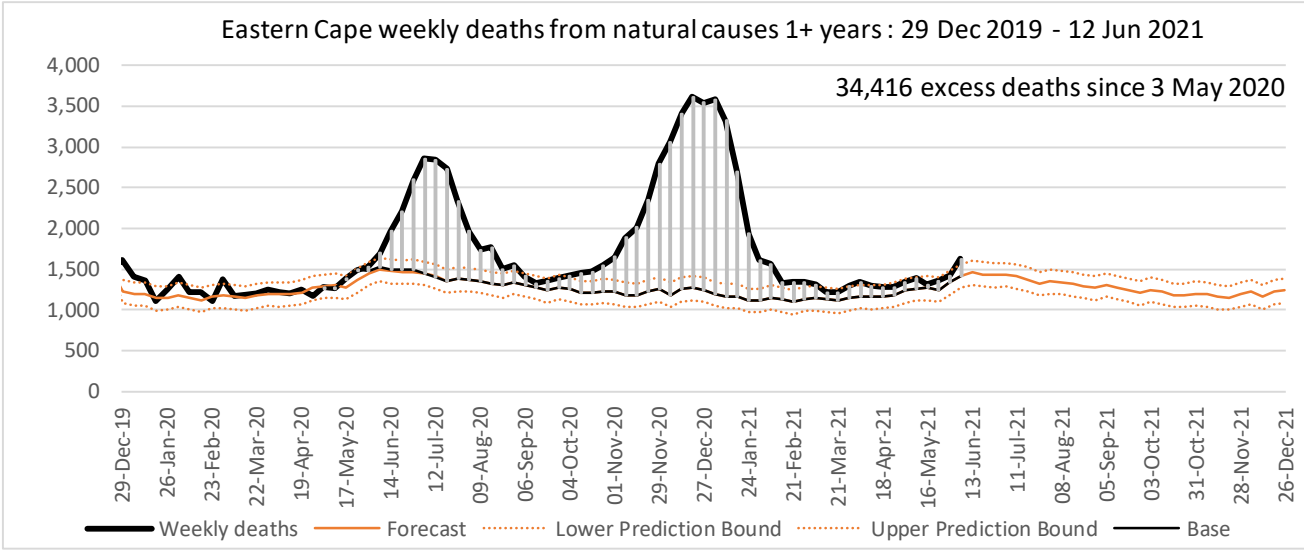
Note: Period has been determined based on when an upturn in the number of natural deaths became apparent. Parts do not sum to the whole because office closures due to Covid-19 may have led to registration of deaths at other offices which may not be in the same area, and random fluctuation at the point at which the baseline is determined.

Table 2: Number of excess deaths from all causes of persons 1+ years by province and metro relative to predicted number based on historical trend, South Africa 2020/21

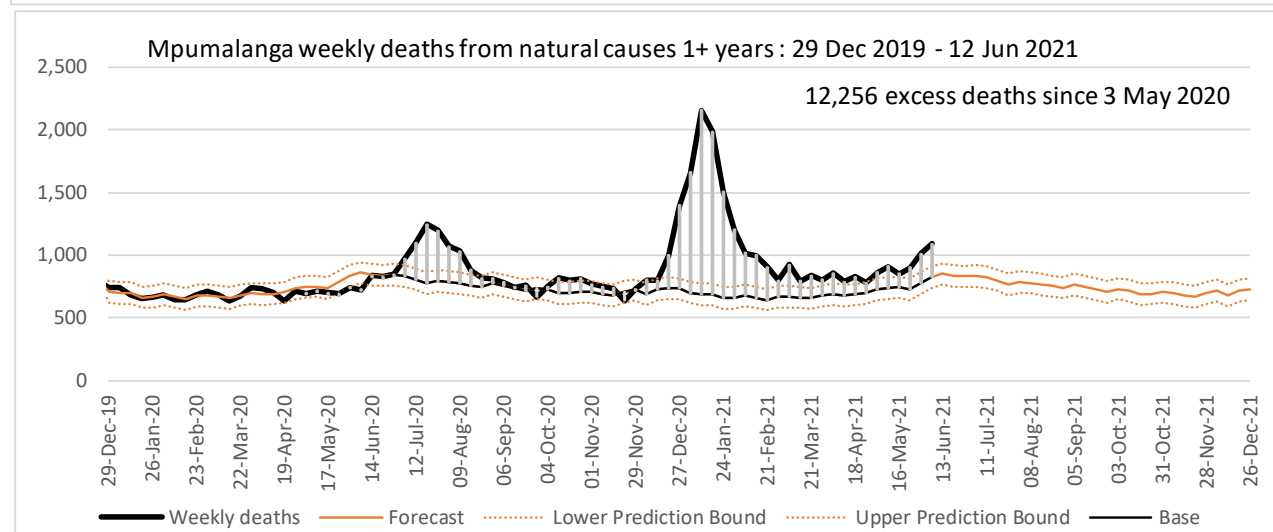
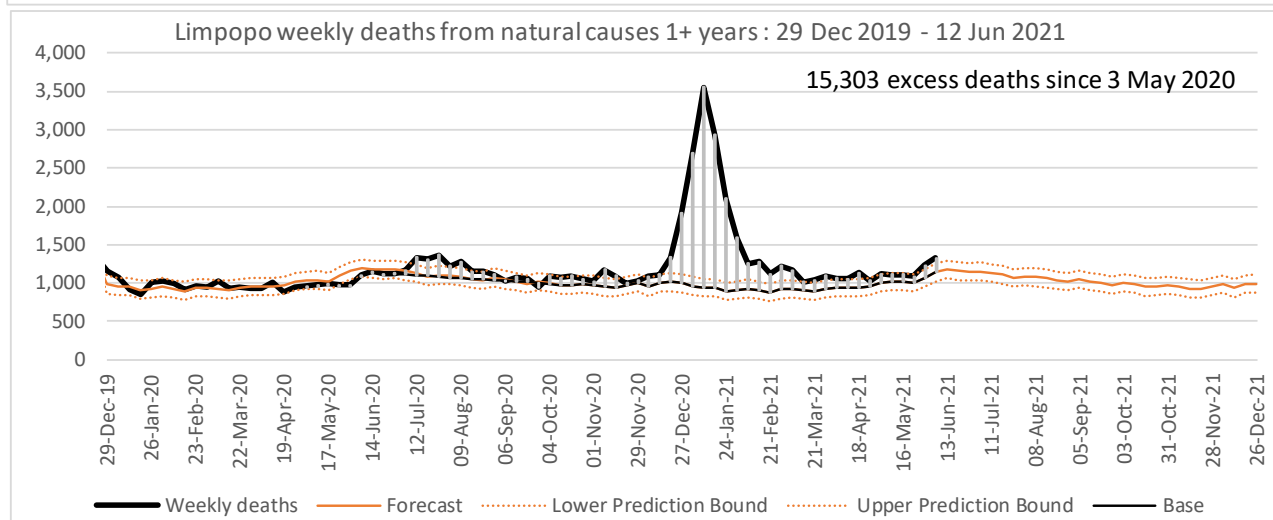
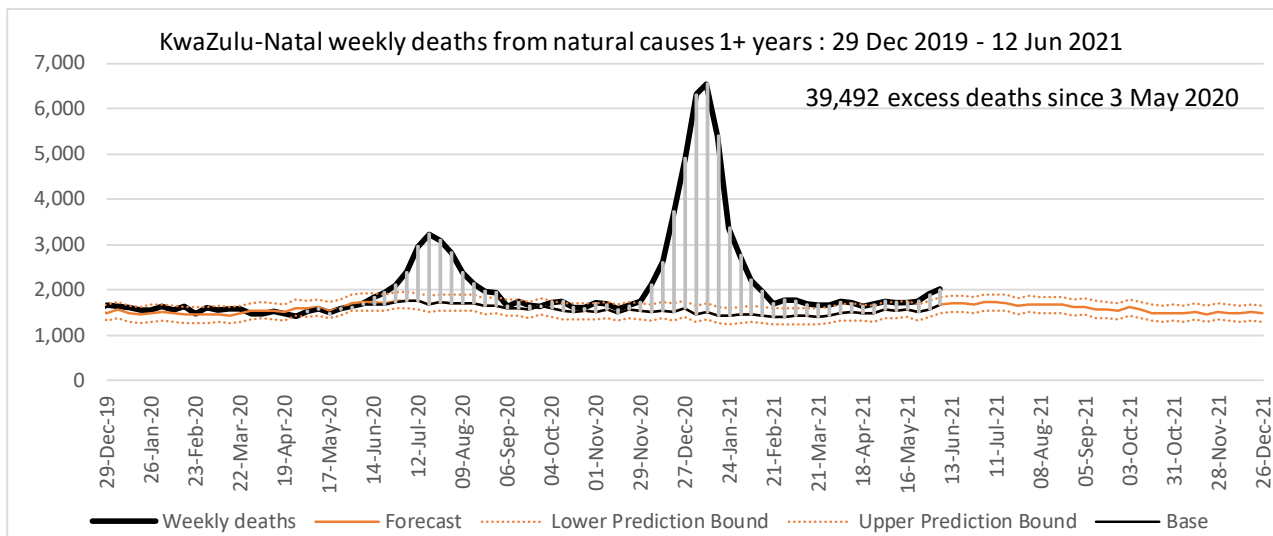
Region	Excess deaths vs forecast	Excess deaths per 100,000 population
South Africa	165,392	278
Province		
Eastern Cape	35,043	532
Free State	9,753	335
Gauteng	26,462	170
KwaZulu-Natal	39,597	346
Limpopo	15,085	255
Mpumalanga	11,914	248
Northern Cape	5,261	449
North West	7,178	178
Western Cape	15,100	214
Metropolitan Municipality		
Buffalo City	2,839	
City of Cape Town	9,791	
Ekurhuleni	7,114	
eThekweni	9,454	
Johannesburg	8,191	
Mangaung	3,349	
Nelson Mandela Bay	5,086	
City of Tshwane	6,297	



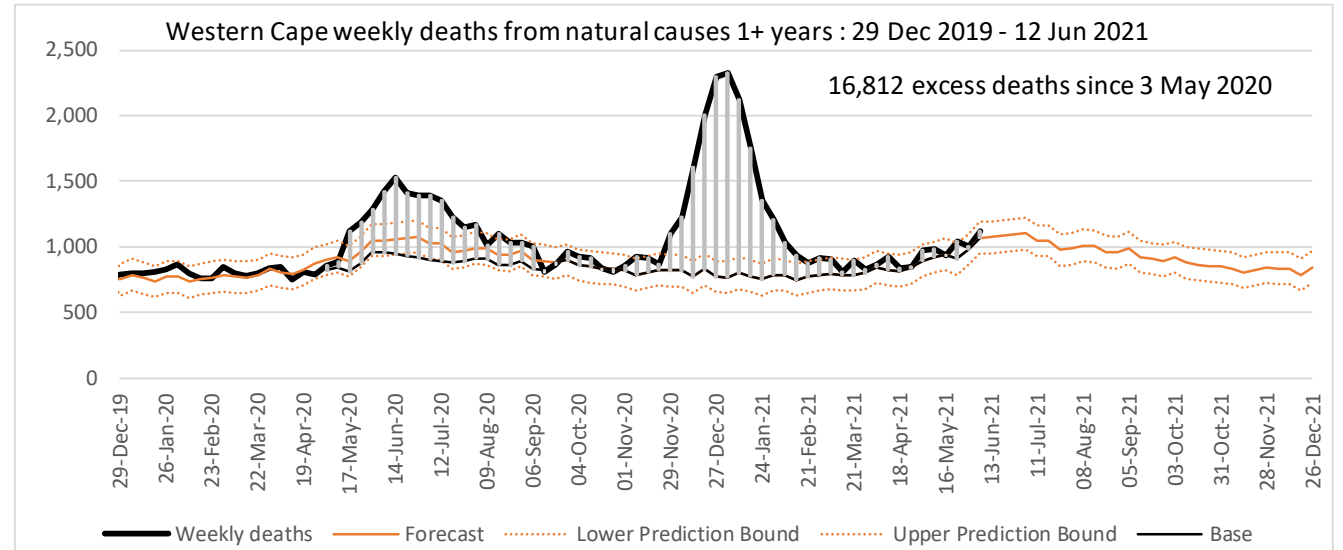
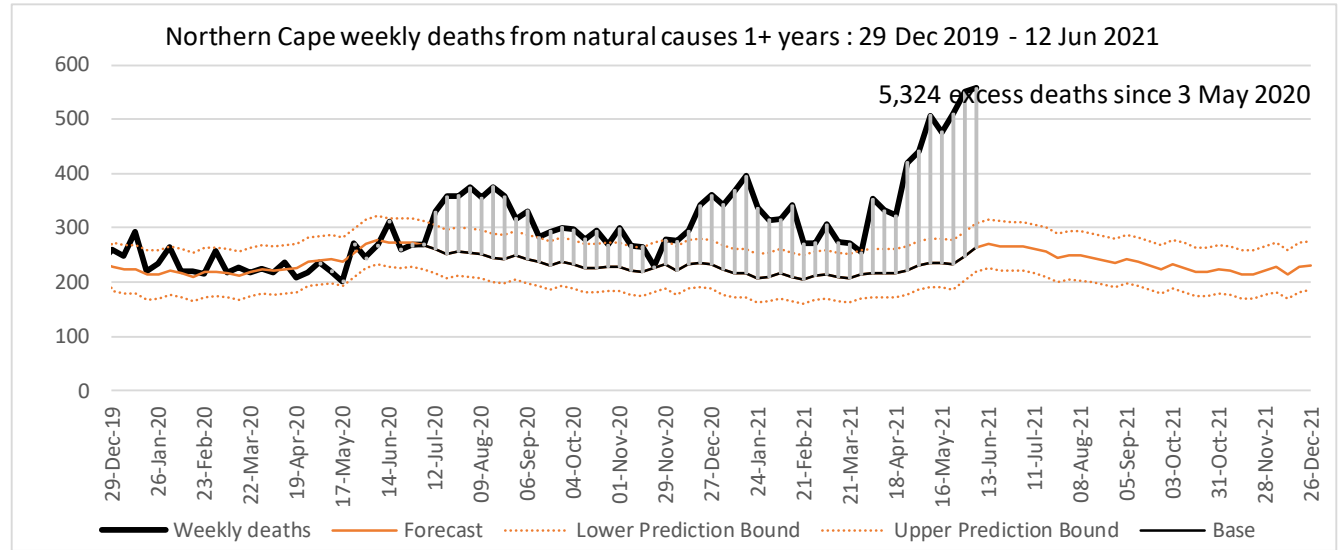
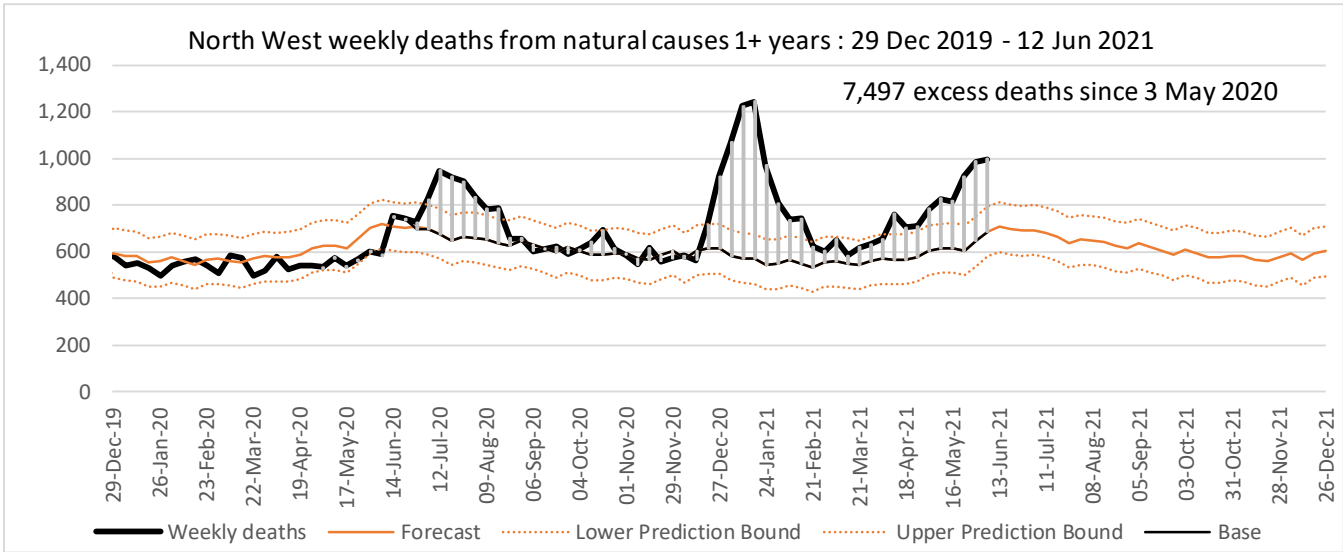
Numbers have been scaled to the estimated actual number of death and for the last week has been adjusted for delayed registrations



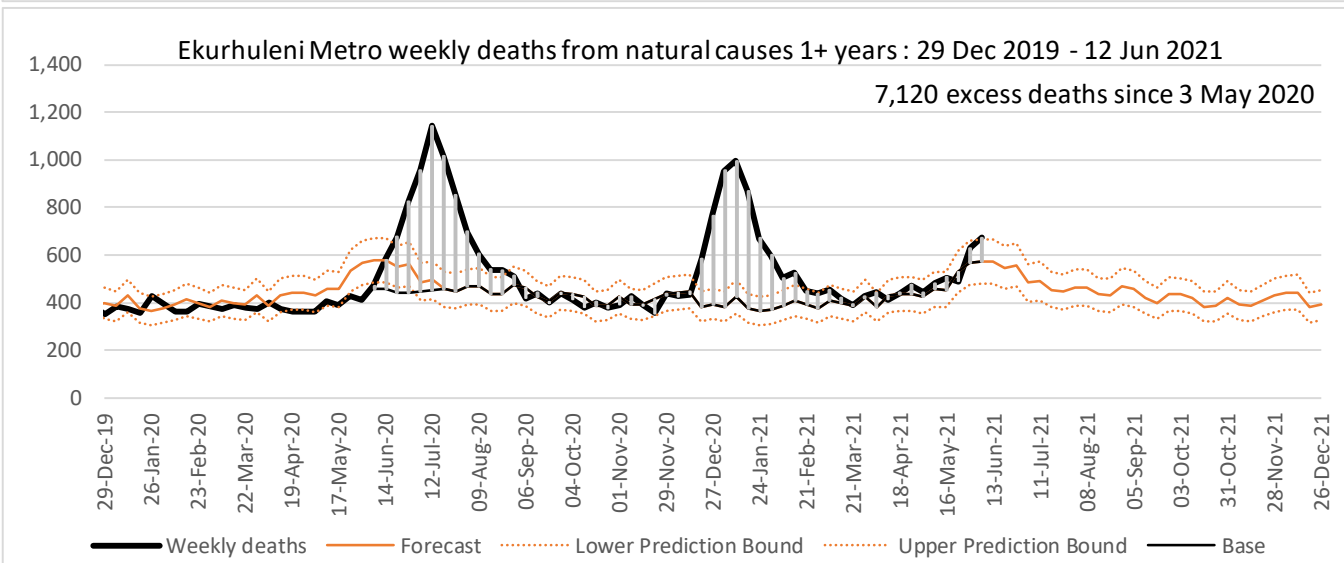
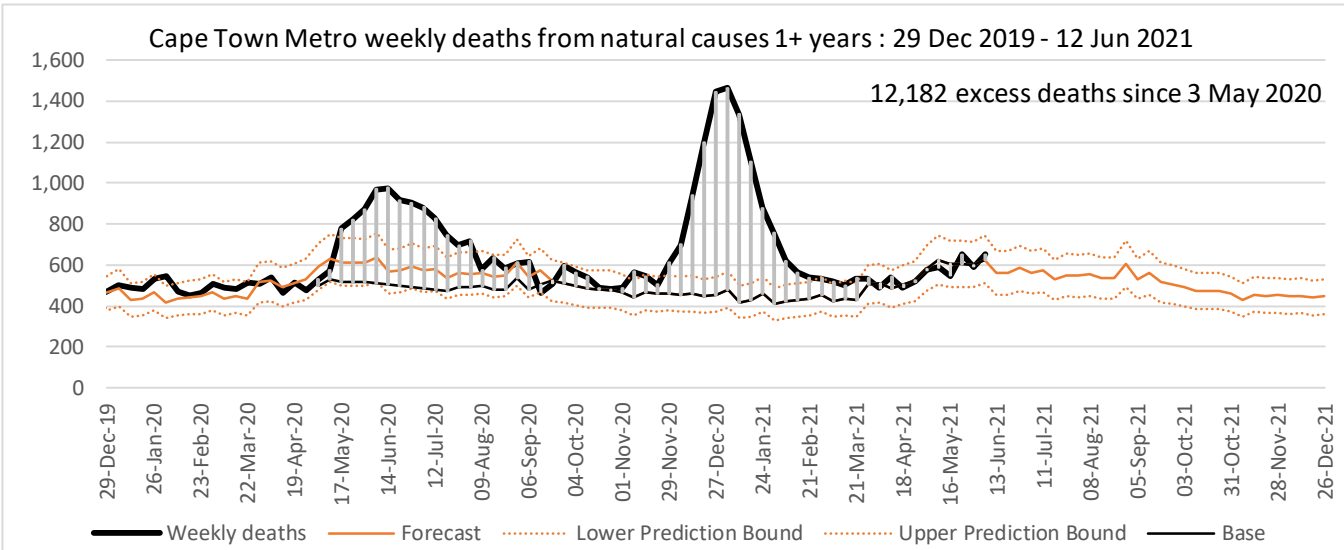
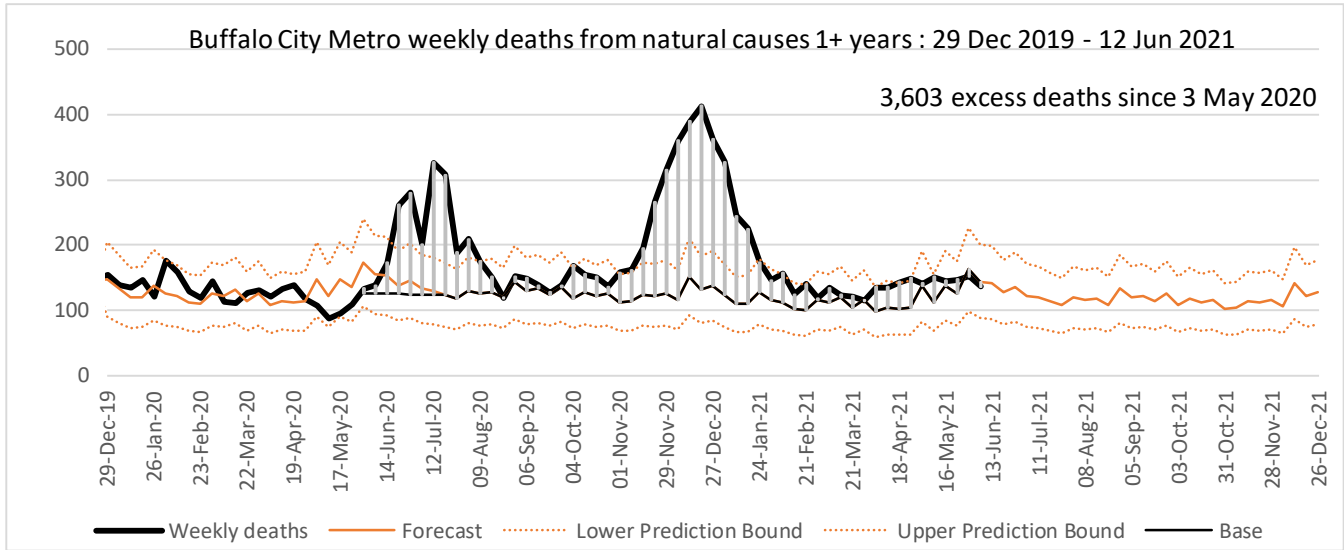
Numbers have been scaled to the estimated actual number of death and for the last week has been adjusted for delayed registrations



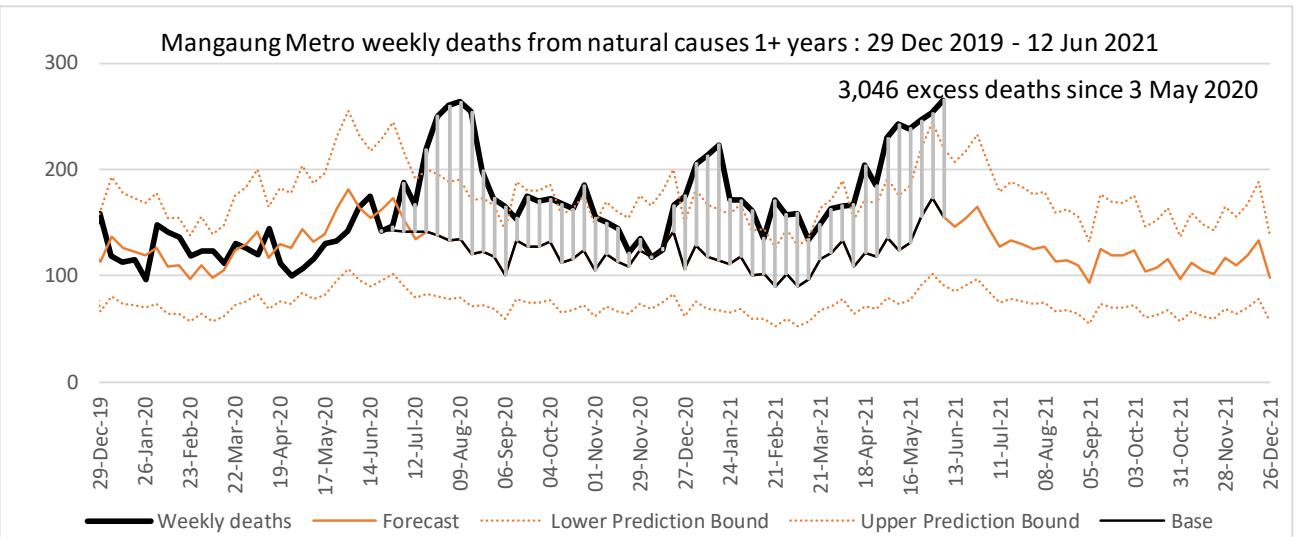
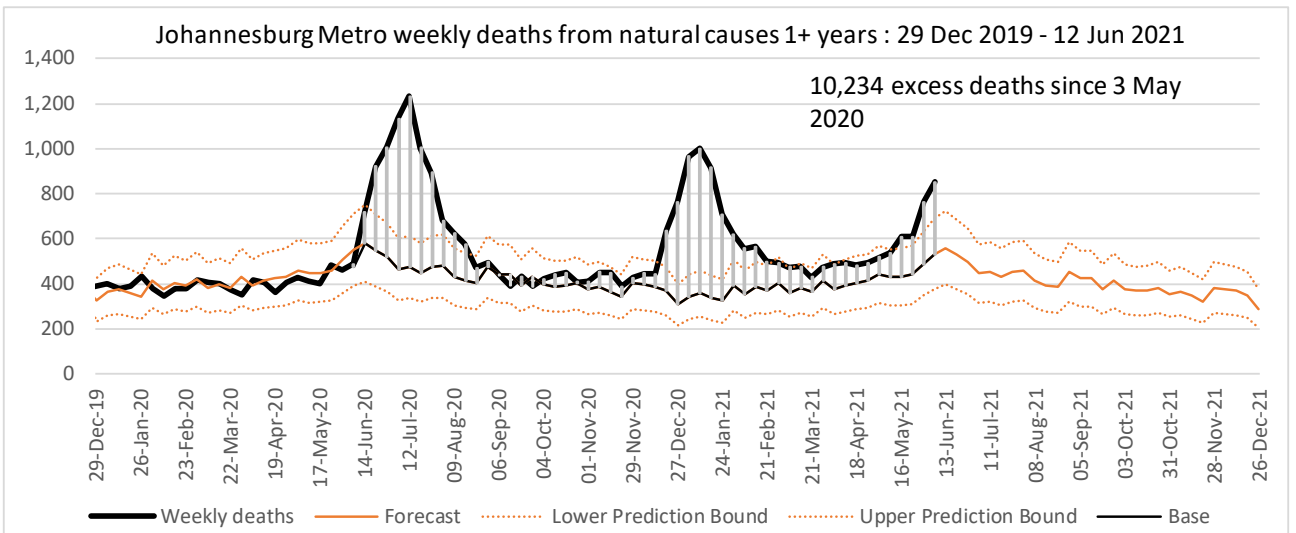
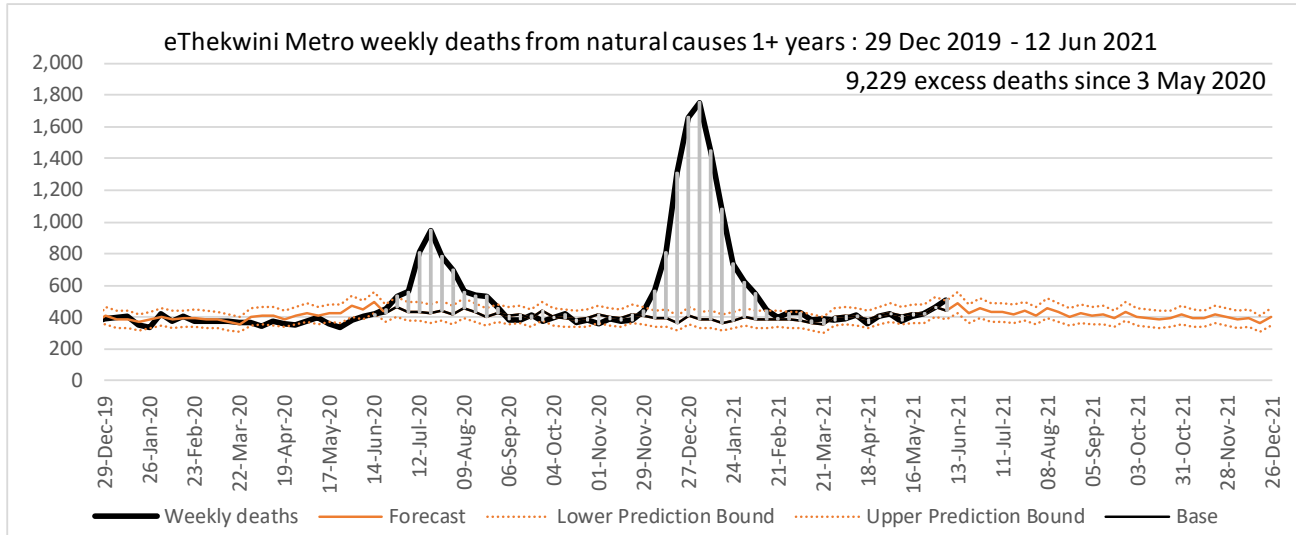
Numbers have been scaled to the estimated actual number of death and for the last week has been adjusted for delayed registrations



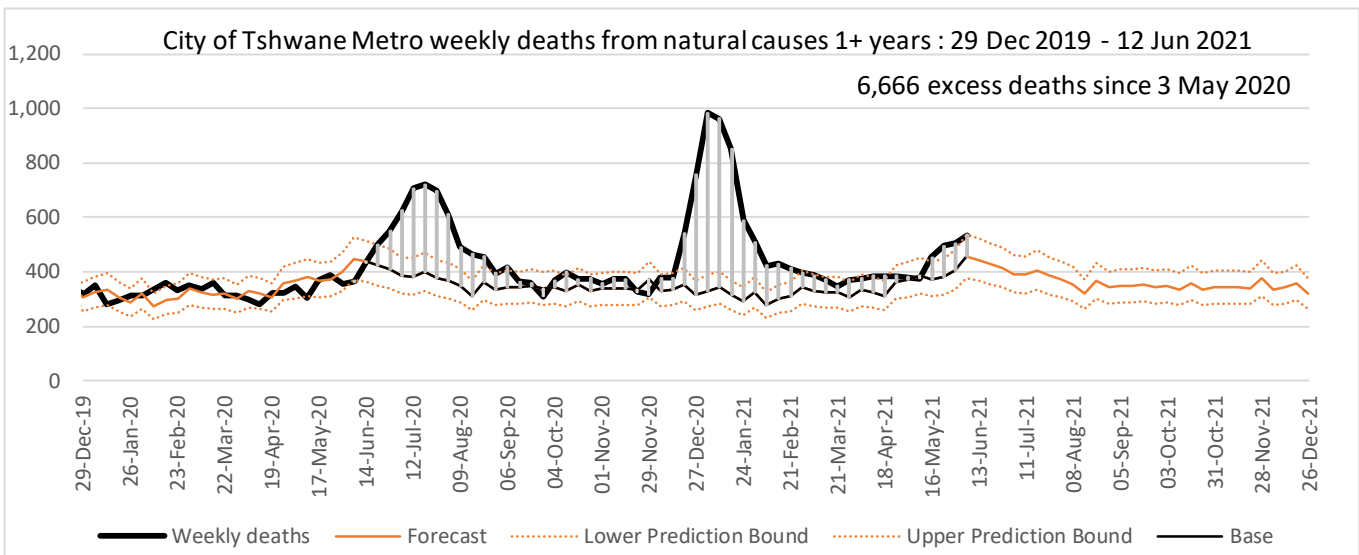
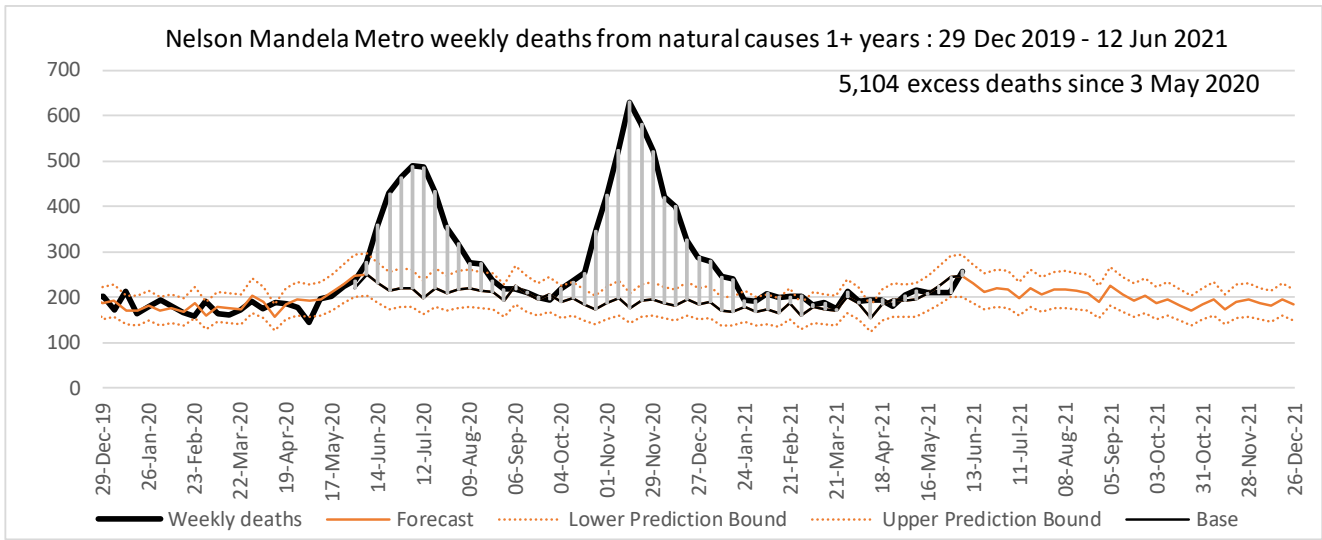
Numbers have been scaled to the estimated actual number of death and for the last week has been adjusted for delayed registrations



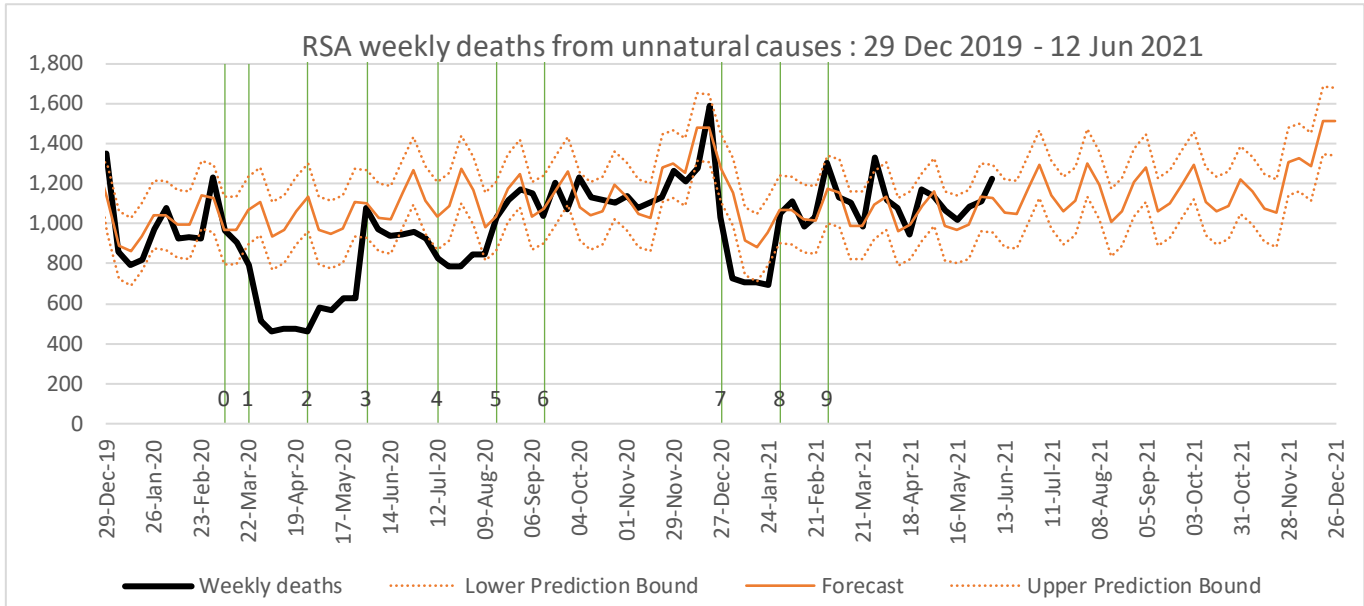
Numbers have been scaled to the estimated actual number of death and for the last week has been adjusted for delayed registrations



Numbers have been scaled to the estimated actual number of death and for the last week has been adjusted for delayed registrations



Numbers have been scaled to the estimated actual number of death and for the last week has been adjusted for delayed registrations



Numbers have been scaled to the estimated actual number of death and for the last week has been adjusted for delayed registrations. As only a quarter to a third of unnatural deaths in the most recent week are processed at the time of the survey, the estimate for the most recent week is quite uncertain.

Vertical lines in order

- 0 Week Disaster Management Act implemented
- 1 Week lockdown level 5 introduced
- 2 Week lockdown changed to level 4, with curfew
- 3 Week lockdown changed to level 3 including unbanning of alcohol
- 4 Week alcohol re-banned and a curfew re-introduced
- 5 Week lockdown changed to level 2, including unbanning of alcohol
- 6 Week lockdown changed to level 1
- 7 Week lockdown changed to level 3 advanced (rebanning alcohol and a extension of curfew)
- 8 Week lockdown relaxed to allow sale of alcohol 4 days/week and reduce curfew
- 9 Week lockdown relaxed to allow sale of alcohol except during curfew and reduce curfew to midnight to 4am