REPORT ON WEEKLY DEATHS IN SOUTH AFRICA

5 – 11 SEPT 2021

(WEEK 36)

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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-19 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.

Background

This report provides estimates of the weekly number of deaths of all persons in South Africa for epidemiological **Week 36** of 2021, covering the period **5 – 11 Sep 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. For the report for Week 32, the estimates of the predicted number of weekly deaths for 2020 and 2021 were revised to include the number of infant deaths (<1 year of age) as well as accounting for a different trend in mortality rates in the Northern Cape.

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

A review of provincial trends in mortality rates indicated an implausible distribution of excess deaths by age and a questioningly high rate of excess deaths per capita, indicating the necessity to model the numbers for this province separately. Previously we fitted a negative binomial regression to the 2014-2019 weekly number of natural deaths for 7 provinces excluding Western Cape (which has an earlier winter peak in deaths) and KwaZulu-Natal (which experienced a more rapid decline in mortality rates during the period 2014-2019 than the other provinces). In August 2021, we revised the predicted numbers of natural deaths for all ages based on separate negative binomial regression models for natural deaths in Northern Cape, Western Cape, KwaZulu-Natal and a single regression for the remaining 6 provinces including a provincial coefficient to allow for different levels in the provincial rates. The deaths from unnatural causes for all ages have been modelled nationally using a negative binomial regression as done previously. These changes also provided the opportunity to include, for the first time, infants under 1 year of age in all of the indicators.

Trends

- The weekly number of deaths (all ages) from all causes was **13,779** in Week 36 (**5 – 11 Sep 2021**) reflecting a continued downward trend in the weekly numbers of deaths.
- The number of excess deaths from natural causes (all ages) was **3,375** in Week 36 (**5 – 11 Sep 2021**), reflecting a decrease since the peak of **10,275** experienced in Week 28 (**11 – 17 Jul 2021**).
- Since 3 May 2020, there has been a cumulative total of nearly **258,000** excess deaths from natural causes of persons all ages of nearly **173,000** occurred in 2021 (since 3 Jan 2021).

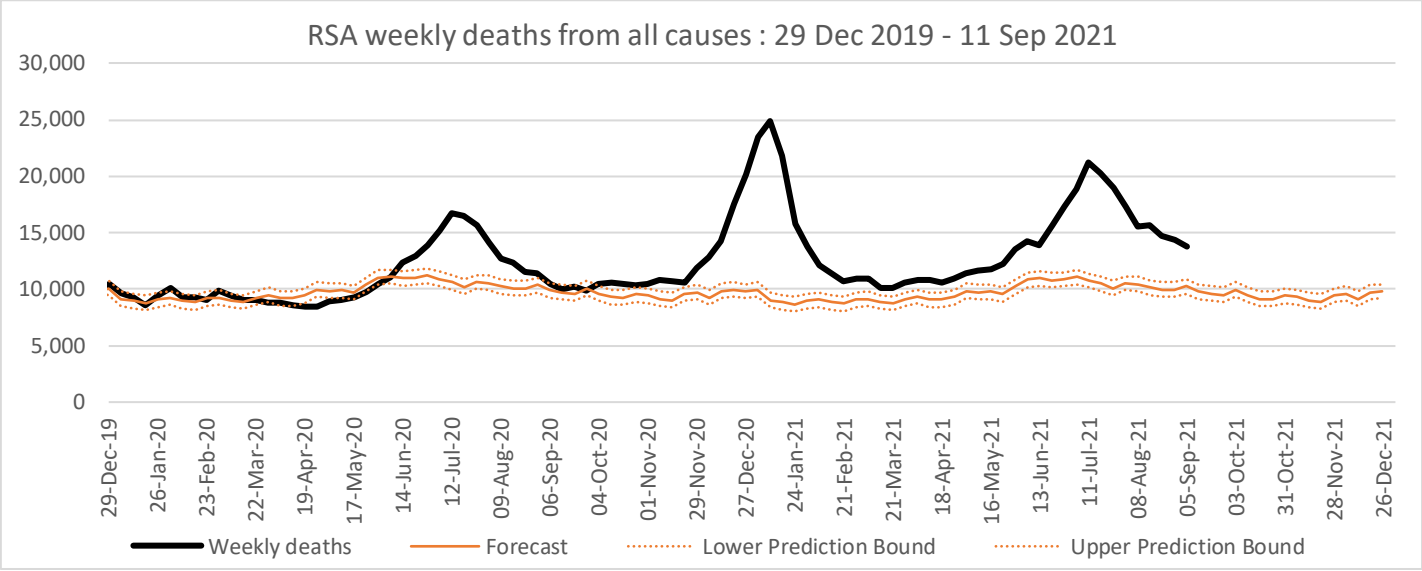
Week	Date	Weekly excess deaths from natural causes (all ages)	Cumulative excess since 3 May 2020 (all ages)	Cumulative excess since 3 January 2021 (all ages)
28	11-Jul-21 – 17-Jul-21	10,275	208,724	123,833
29	18-Jul-21 – 24-Jul-21	10,094	218,818	133,928
30	25-Jul-21 – 31-Jul-21	8,886	227,703	142,813
31	1-Aug-21 – 7-Aug-21	6,800	234,504	149,614
32	8-Aug-21 – 14-Aug-21	5,140	239,644	154,754
33	15-Aug-21 – 21-Aug-21	5,421	245,065	160,175
34	22-Aug-21 – 28-Aug-21	4,734	249,799	164,909
35	29-Aug-21 – 4-Sep-21	4,369	254,168	169,278
36	5-Sep-21 – 11-Sep-21	3,375	257,543	172,652

- For people under-60 years, the number of natural deaths tracked within the prediction bounds after waves 1 and 2. During Week 36 (**5 – 11 Sep 2021**), the number increased above the upper prediction bound and increased to a 3rd peak in Week 28 (**11 – 17 Jul 2021**). The numbers of excess deaths in this age group have continued to decrease. By Week 36 (**5 – 11 Sep 2021**), the number was within the prediction bound and the cumulative number of excess natural deaths for people under-60 years since **3 May 2020** was just over **63,600**.
- For people 60 years and older, the number of natural deaths has exceeded the upper prediction bound throughout. The 3rd peak also occurred in Week 28 (**11 – 17 Jul 2021**) and the numbers have decreased but remain well above the upper prediction bound. By the end of Week 36 (**5 – 11 Sep 2021**) the number was over **191,000**.
- Phase 2 of the vaccination programme, targeting persons 60 years and older in addition to health care workers, began on 17 May 2021. In the weeks leading up to the vaccination roll-out, there were about 1,200-1,500 weekly excess deaths from natural causes among persons 60+ years with p-scores ranging from 28%-33%. The number of weekly excess deaths from natural causes in this age group increased to **7,136** in Week 28 (**11 – 17 Jul 2021**) with a p-score of 152%. The numbers have been decreasing and during Week 36 (**5 – 11 Sep 2021**), the excess deaths in this age group was **2,451** and the p-score has dropped to 56%. It remains difficult to quantify the impact of vaccines.

Week	Date	Weekly excess deaths from natural causes for persons 60+ years	p-score
28	11-Jul-21 – 17-Jul-21	7,144	151.9%
29	18-Jul-21 – 24-Jul-21	7,090	154.0%
30	25-Jul-21 – 31-Jul-21	6,114	139.3%

31	1-Aug-21 – 7-Aug-21	4,554	101.1%
32	8-Aug-21 – 14-Aug-21	3,443	76.1%
33	15-Aug-21 – 21-Aug-21	3,744	83.9%
34	22-Aug-21 – 28-Aug-21	3,358	77.1%
35	29-Aug-21 – 4-Sep-21	3,204	74.9%
36	5-Sep-21 – 11-Sep-21	2,451	55.8%

- Numbers of natural deaths in **Gauteng, Mpumalanga, Limpopo, North West, Free State** and the **Western Cape** have continued decreasing during Week 36 (**5 – 11 Sep 2021**).
- **Gauteng** and its metro areas have all dropped below their upper prediction bounds.
- The numbers in the **Eastern Cape, KwaZulu-Natal** and **Northern Cape** have stagnated and are continuing well above their upper prediction bounds with little indication of a decrease in Week 36 (**5 – 11 Sep 2021**).
- 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 36 (**5 – 11 Sep 2021**), the national excess death rate since 3 May 2020 was **433 per 100,000** population.
- The provinces with the highest cumulative numbers of excess deaths at the end of Week 36 (**5 – 11 Sep 2021**), are, in order, **Gauteng, KwaZulu-Natal** and **Eastern Cape**. The ranking changes to **Eastern Cape, Northern Cape** and **Free State** for the crude death rates per capita (i.e., taking size of the provincial populations into account) and to **KwaZulu-Natal, Northern Cape** and **Eastern Cape** 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 has continued to track close to the predicted numbers since the end of January 2021, with increases corresponding with month-ends. During Weeks 26 and 27, the unnatural deaths dropped below their lower prediction bound, coinciding with the change of lockdown to adjusted level 4 with re-banning of alcohol sales and extension of curfew. However, coinciding with the unrest in **KwaZulu-Natal** and **Gauteng**, and continued taxi violence in the **Western Cape**, the number of unnatural deaths increased to the level of the upper prediction bound during Week 28 (**11 – 17 Jul 2021**) and dropped to below the lower prediction bound during Week 29 (**18 – 24 Jul 2021**) once the unrest had subsided. Coinciding with the easing of the alcohol ban to limited hours of sale during Week 30 (**25 – 31 Jul 2021**), the number of unnatural increased and has largely varied within the prediction bounds.



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

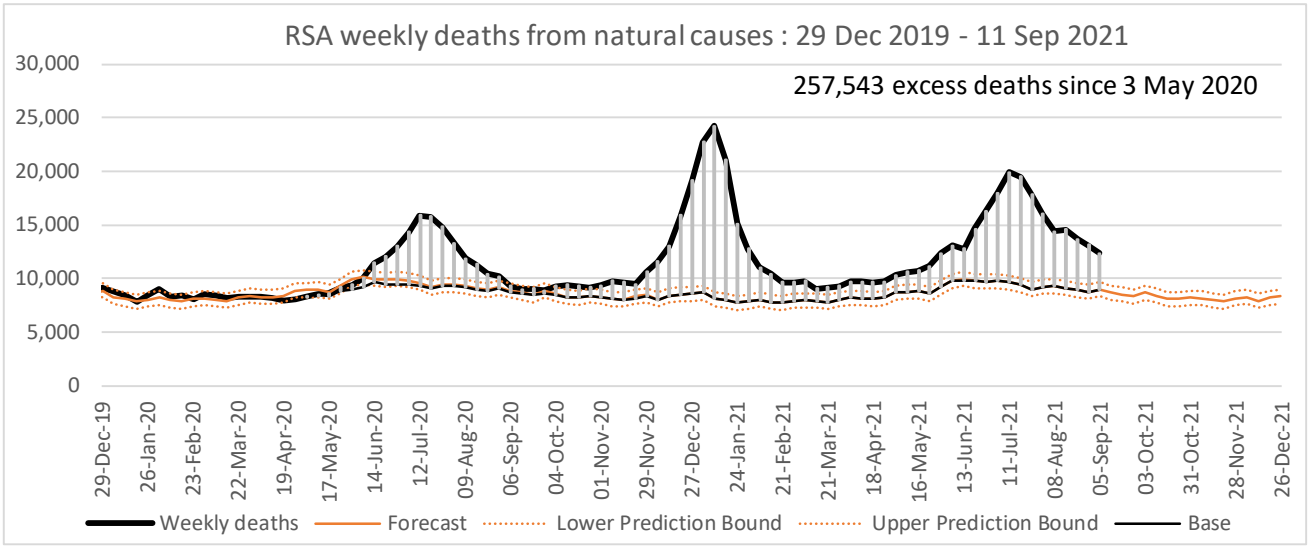
Table 1: Number of excess natural deaths of persons by province and metro relative to revised predicted number based on the observed drop during lockdown, South Africa 2020/21

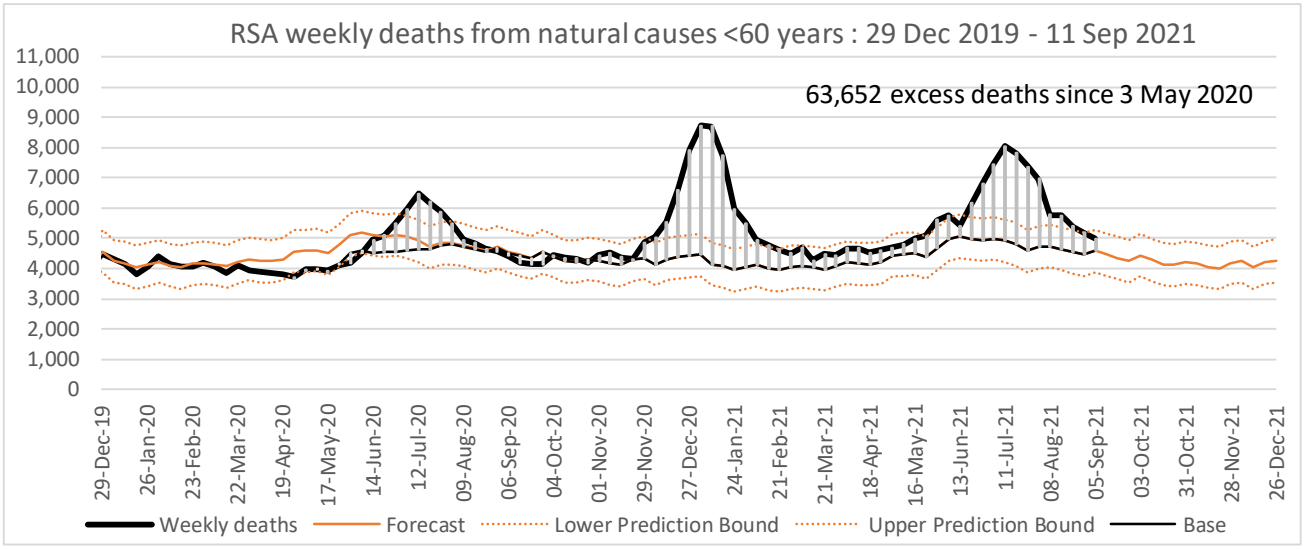
Region	Period	Excess deaths vs revised base	Excess deaths per 100,000 population	Age standardised excess death rate per 100,000
South Africa	3 May 20 – 11 Sep 21	257,543	433	433
Province				
Eastern Cape	31 May 20 – 11 Sep 21	41,443	630	508
Free State	21 Jun 20 – 11 Sep 21	14,360	493	493
Gauteng	7 Jun 20 – 11 Sep 21	54,712	351	386
KwaZulu-Natal	7 Jun 20 – 11 Sep 21	52,446	458	527
Limpopo	21 Jun 20 – 11 Sep 21	26,495	448	393
Mpumalanga	21 Jun 20 – 11 Sep 21	20,015	416	448
Northern Cape	28 Jun 20 – 11 Sep 21	6,592	563	527
North West	28 Jun 20 – 11 Sep 21	14,912	370	380
Western Cape	3 May 20 – 11 Sep 21	26,567	376	331
Metropolitan Municipality				
Buffalo City	31 May 20 – 11 Sep 21	4,313		
City of Cape Town	3 May 20 – 11 Sep 21	18,928		
Ekurhuleni	7 Jun 20 – 11 Sep 21	13,738		
eThekwini	14 Jun 20 – 11 Sep 21	11,668		
Johannesburg	7 Jun 20 – 11 Sep 21	17,868		
Mangaung	21 Jun 20 – 11 Sep 21	4,015		
Nelson Mandela Bay	31 May 20 – 11 Sep 21	6,581		
City of Tshwane	7 Jun 20 – 11 Sep 21	10,520		

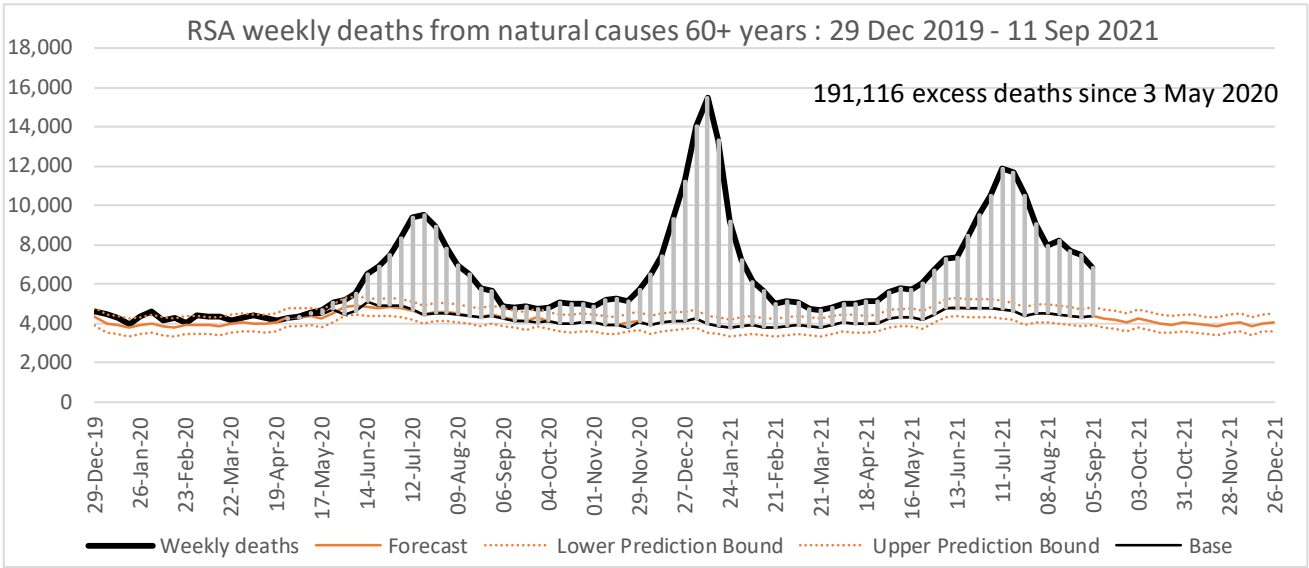
Note: Period has been determined based on when an upturn in the number of natural deaths became apparent. Parts do not sum to the whole because office closures due to Covid-19 may have led to registration of deaths at other offices which may not be in the same area, and random fluctuation at the point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

Table 2: Number of excess deaths from all causes of persons 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	252,841	425
Province		
Eastern Cape	42,013	638
Free State	14,130	485
Gauteng	51,748	332
KwaZulu-Natal	53,200	465
Limpopo	26,406	447
Mpumalanga	19,689	409
Northern Cape	6,485	554
North West	14,449	359
Western Cape	24,720	350
Metropolitan Municipality		
Buffalo City	4,336	
City of Cape Town	17,052	
Ekurhuleni	12,560	
eThekwini	10,864	
Johannesburg	17,477	
Mangaung	4,372	
Nelson Mandela Bay	6,606	
City of Tshwane	10,537	







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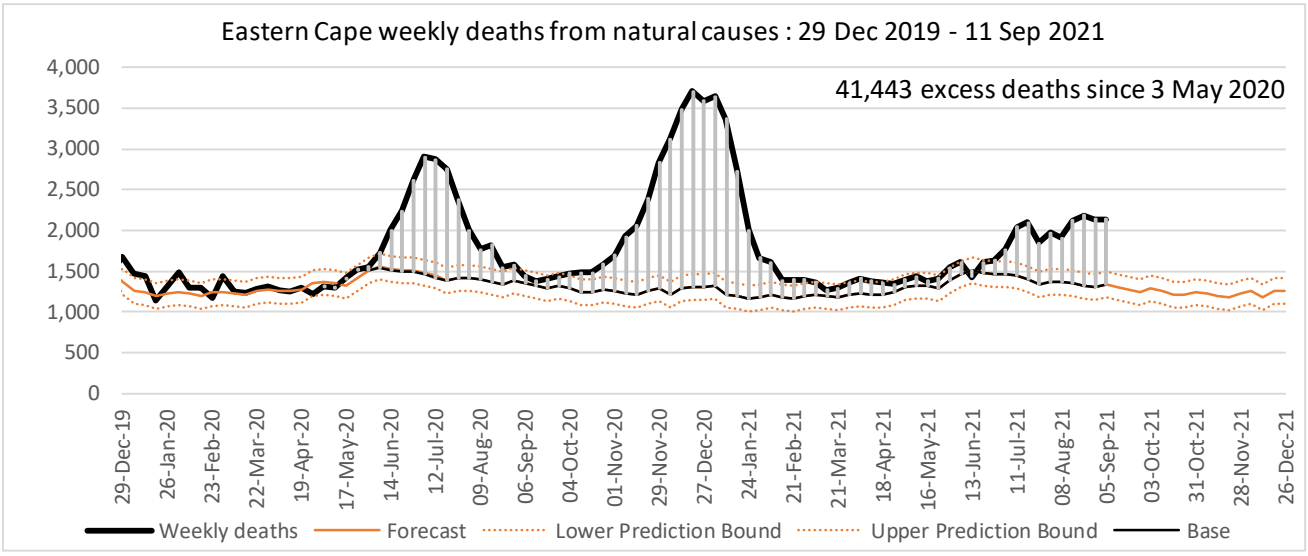

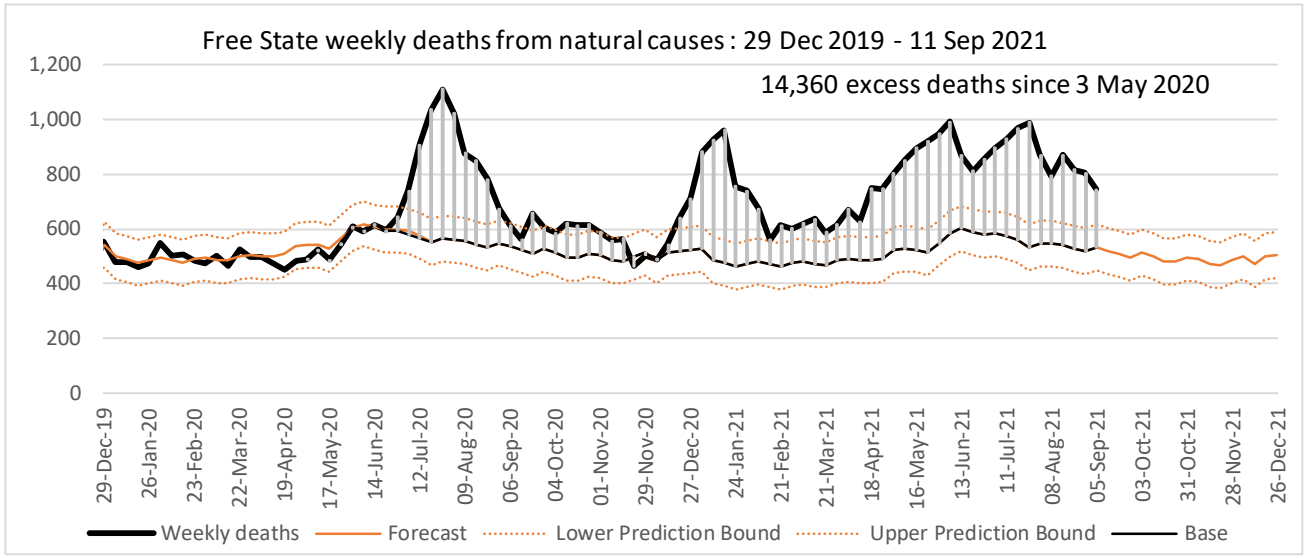

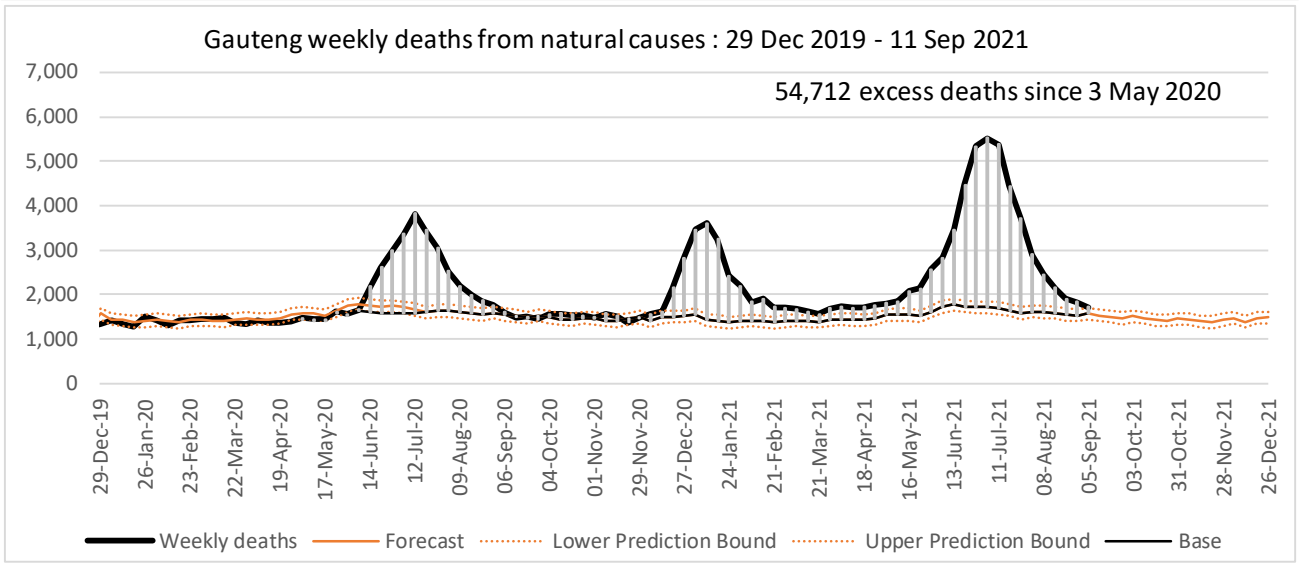

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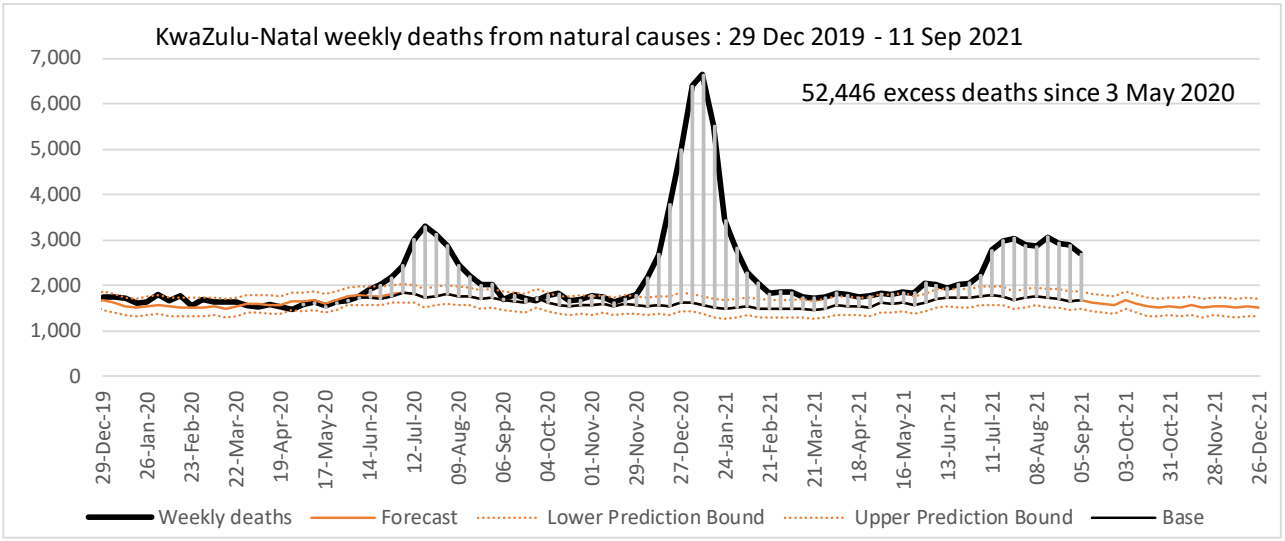

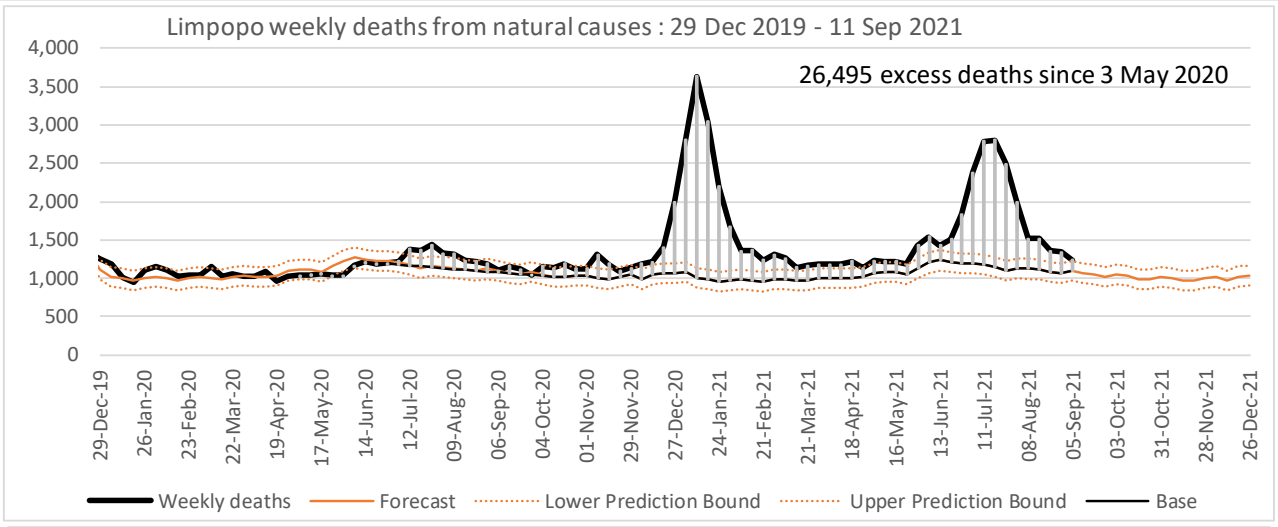

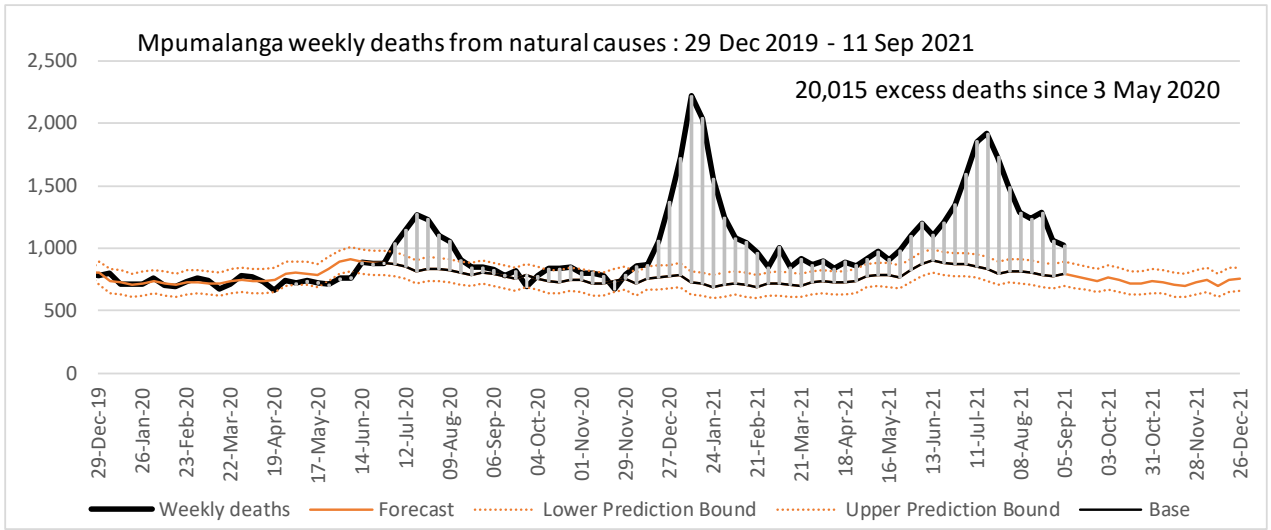

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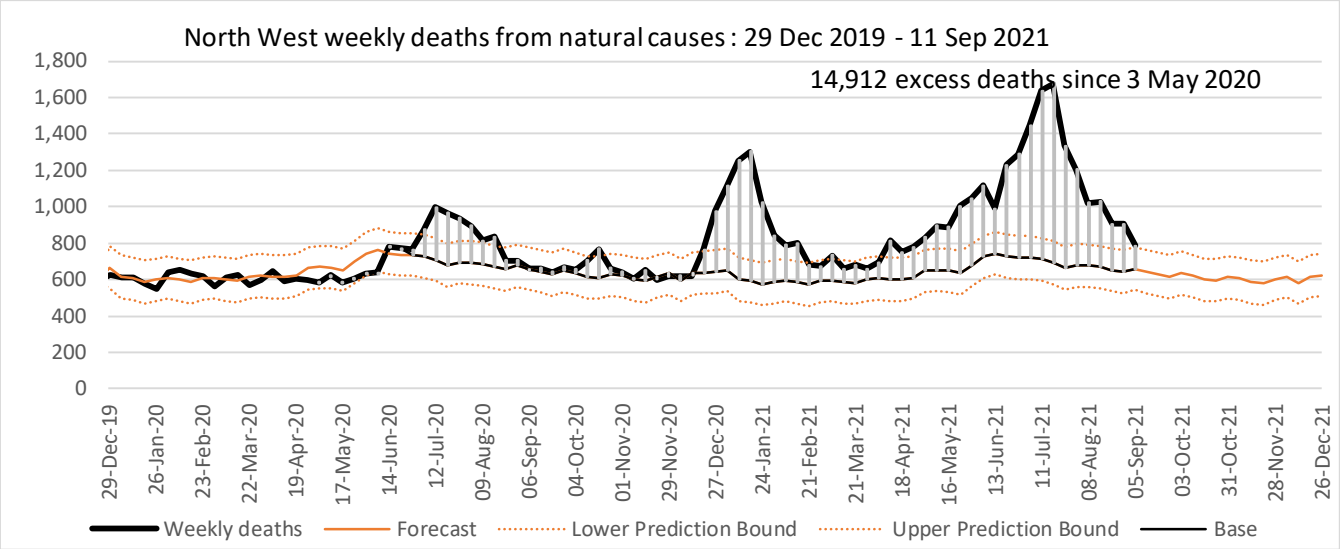

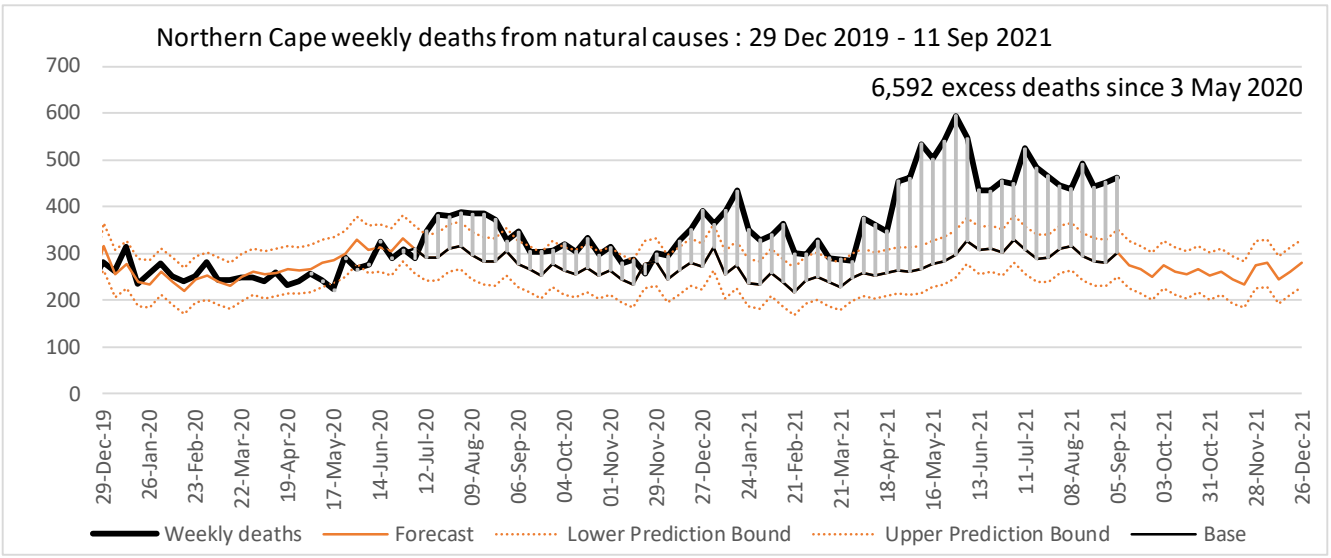

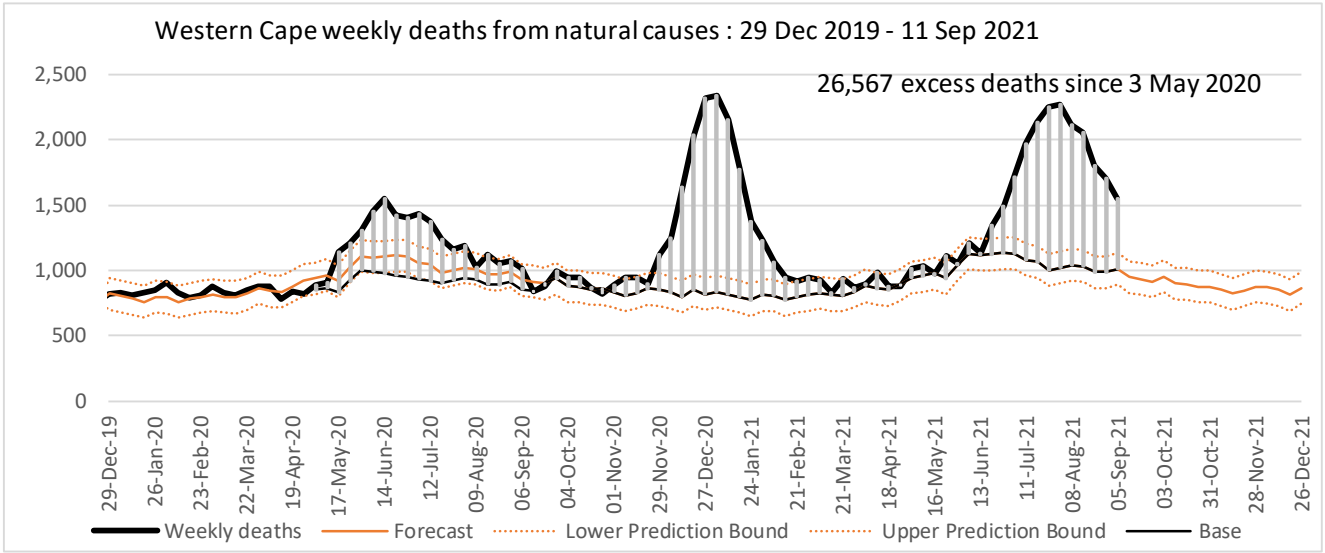

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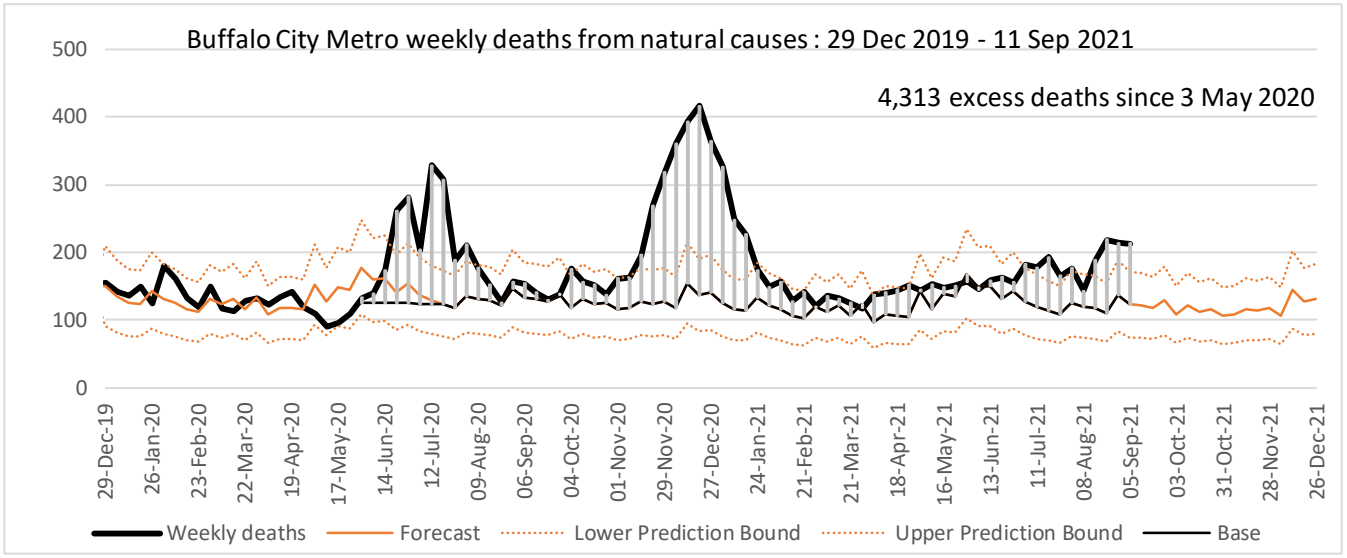

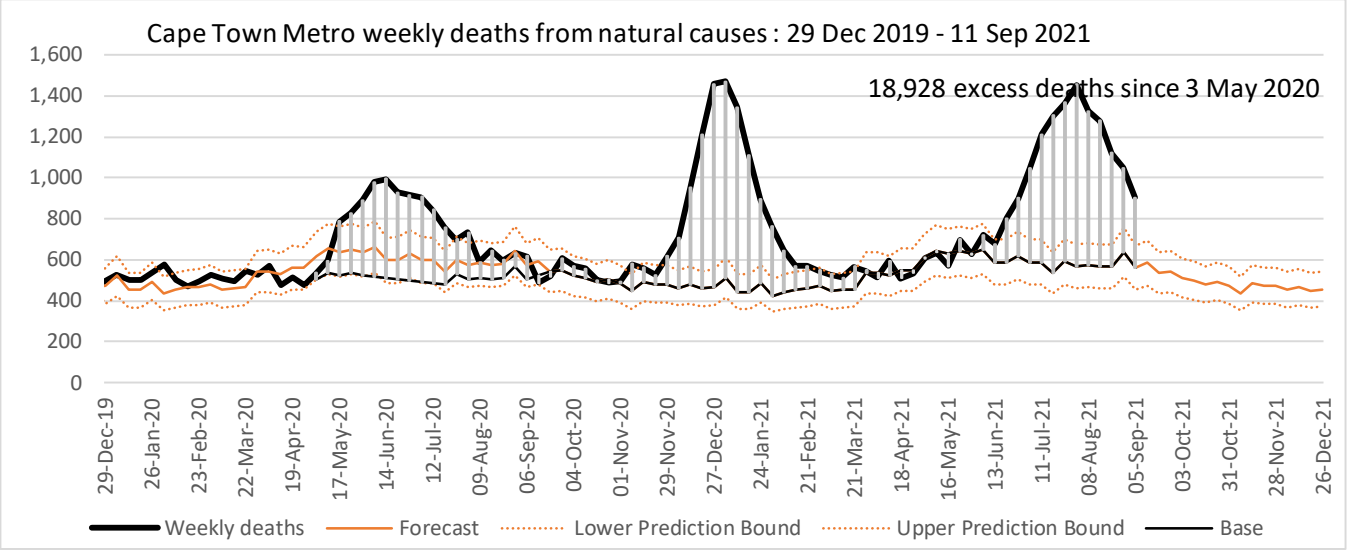

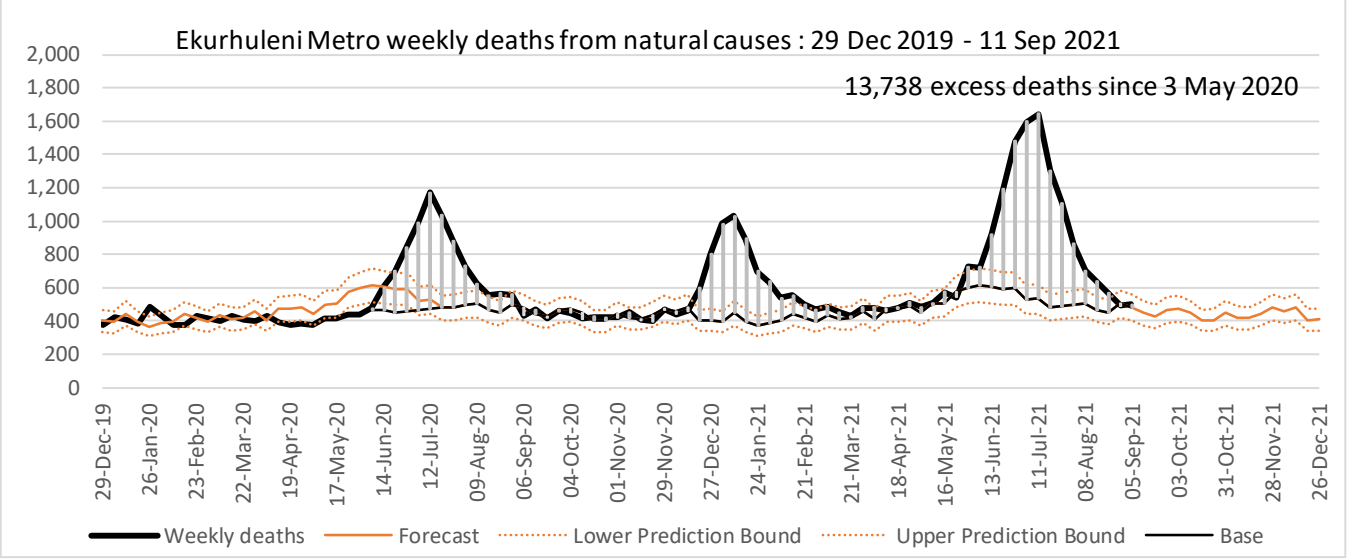

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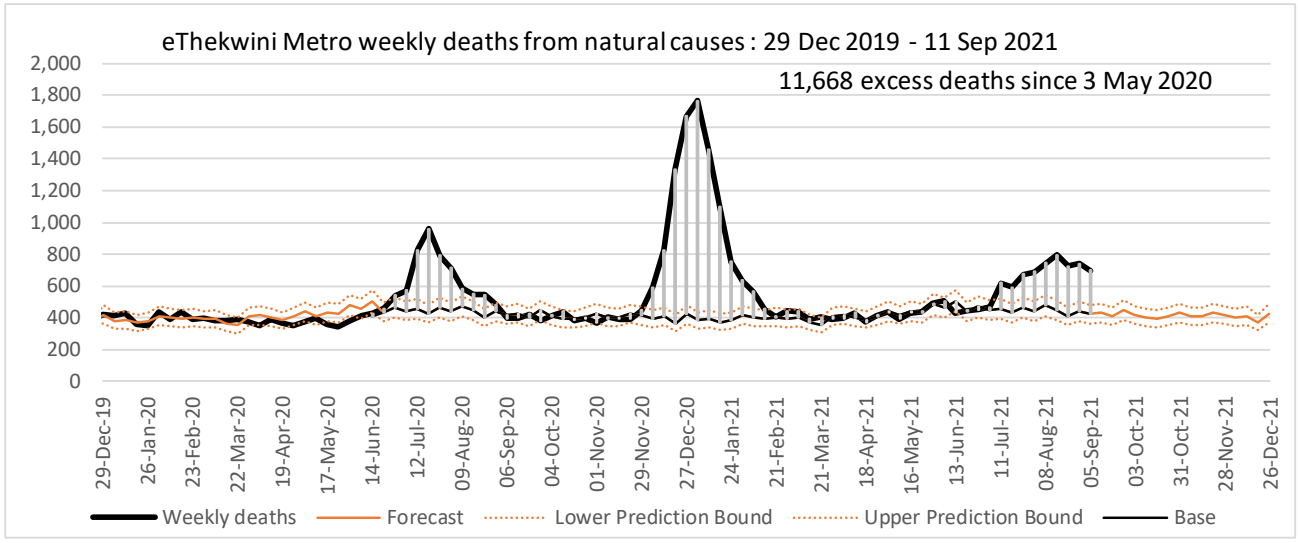

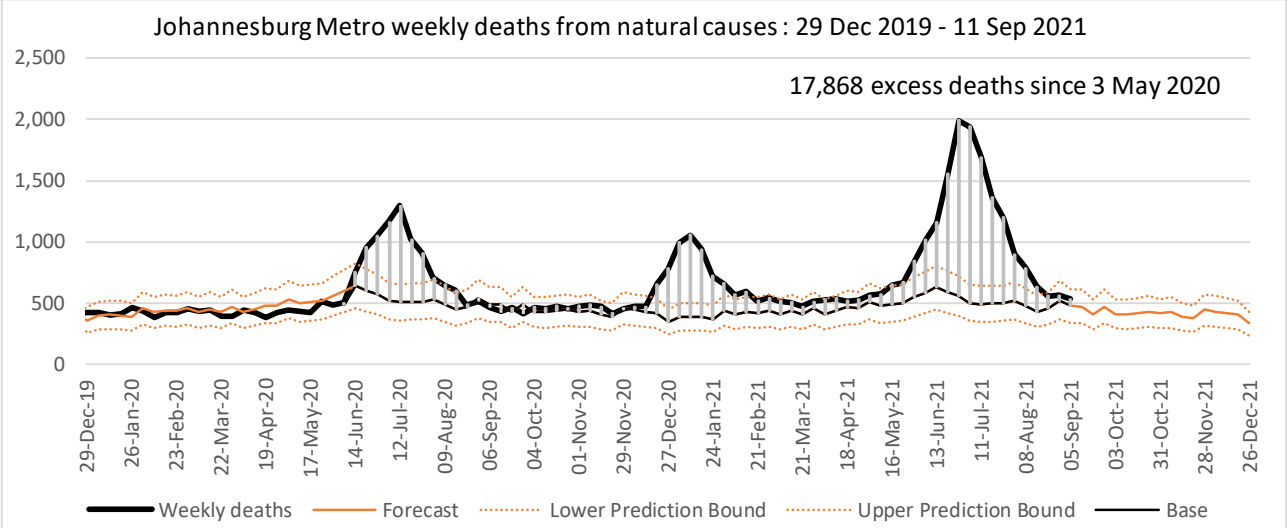

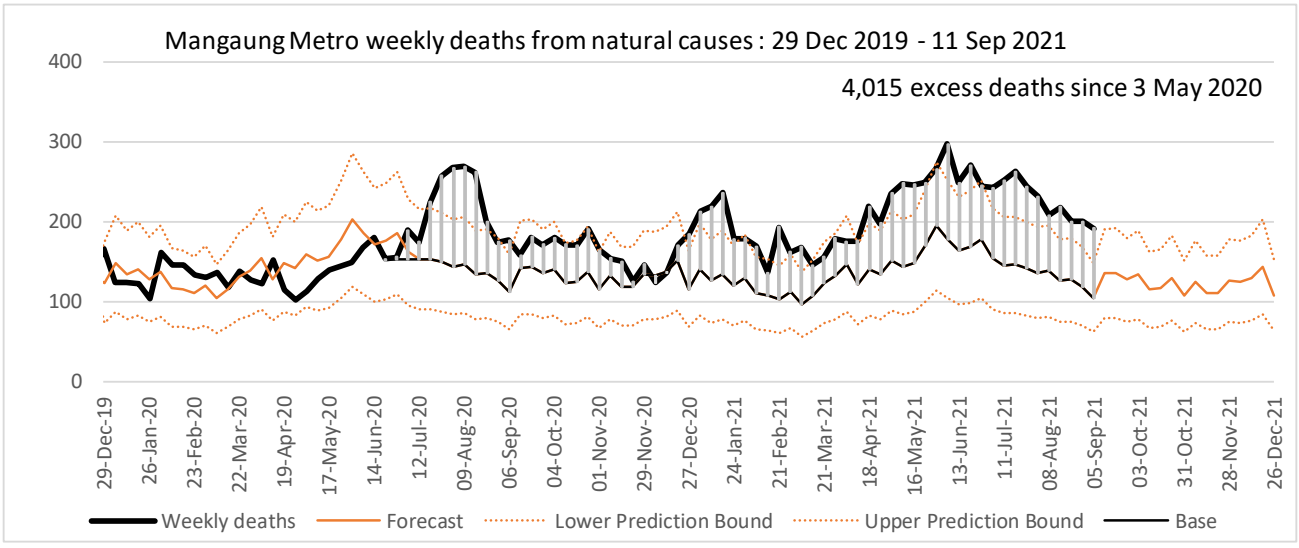

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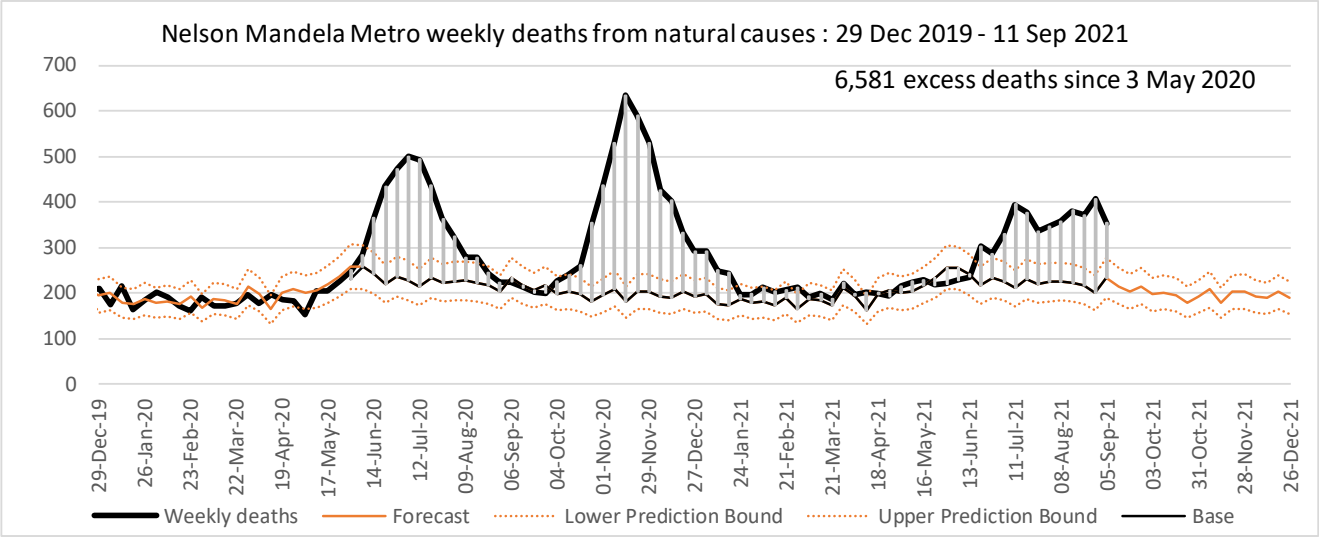

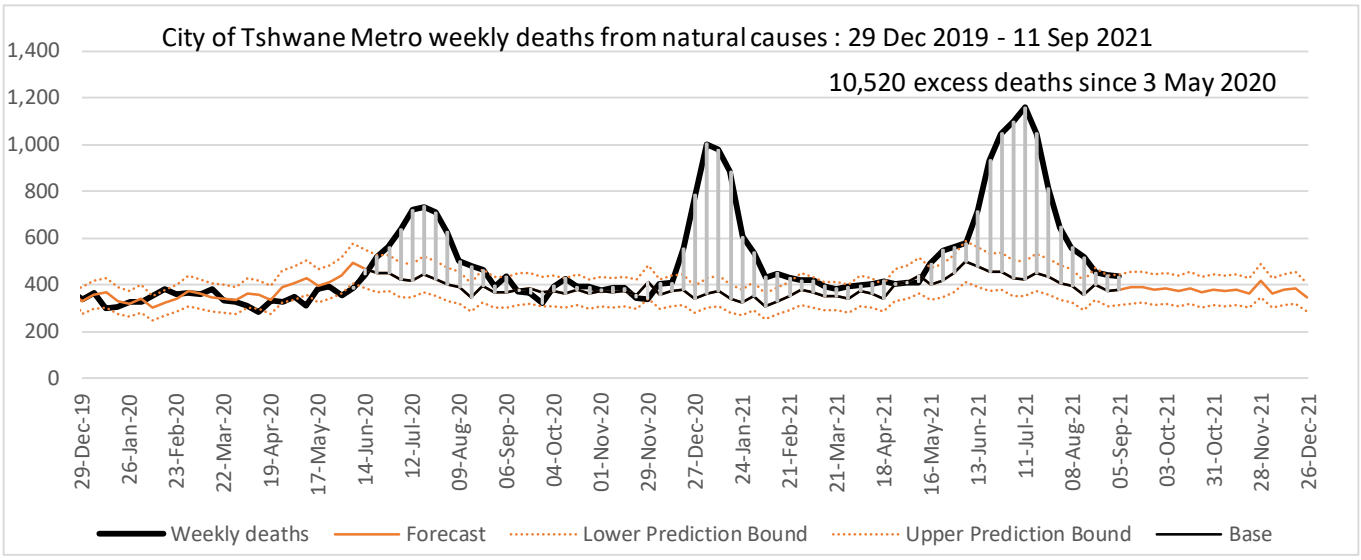

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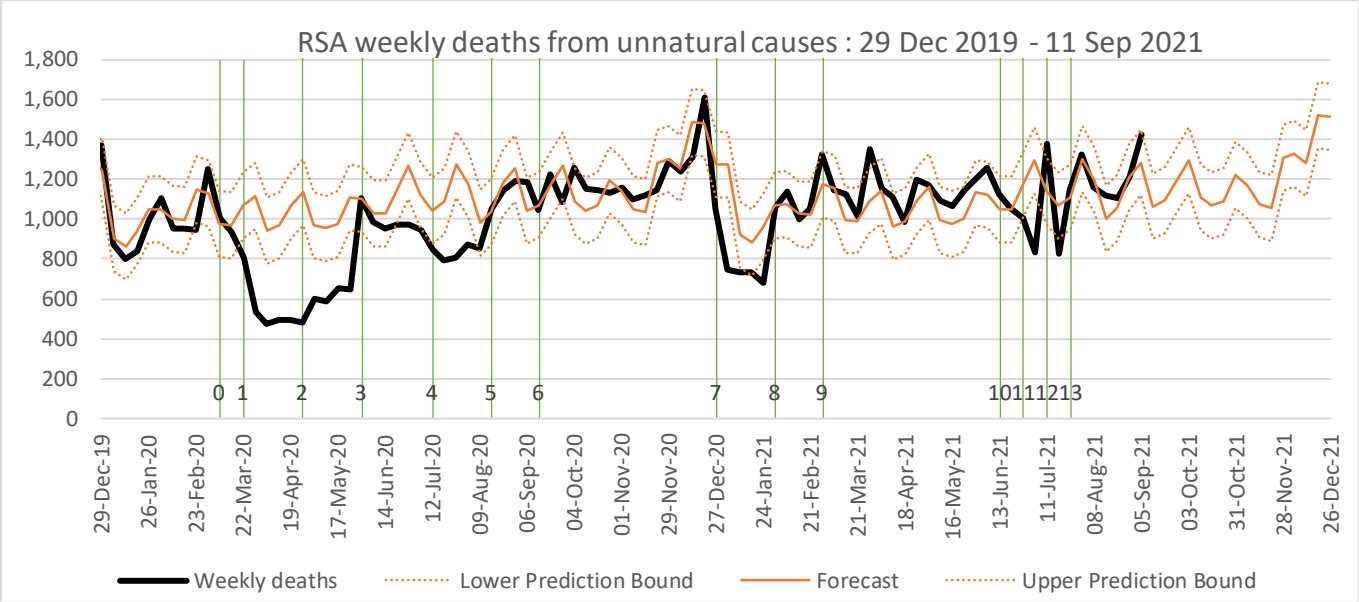

Numbers have been scaled to the estimated actual number of death and for the last week has been adjusted for delayed registrations. As only a quarter to a third of unnatural deaths in the most recent week are processed at the time of the survey, the estimate for the most recent week is quite uncertain.

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
10	Week lockdown changed to level 3 advanced (limiting alcohol and a extending of curfew)
11	Week lockdown changed to level 4, with re-banning of alcohol and longer curfew
12	Week of unrest in KZN and GT
13	Week lockdown changed to level 3 advanced (limiting alcohol and reducing curfew)