The Covid-19 pandemic in Africa
Putting South Africa into African perspective (as on 16 June 2020)

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Introduction

This is an update of the presentations published on 24 Apr 2020 and 22 May 2020. In addition to South Africa, Egypt, Nigeria, Algeria, Ghana and Morocco, Cameroon is included in this analysis because it now ranks amongst the 7 hardest hit countries on the continent.

In addition, provincial data for South Africa is updated as far as data is available. Please note that detailed Covid-19 data is currently only published on a daily basis by the Western Cape. Some Covid-19 models and projections for South Africa are also included.
Outline

• Covid-19 pandemic in Africa as on 16 June 2020
• Covid-19 epidemic in South Africa as on 16 June 2020
• How does the Covid-19 epidemic in South Africa compare to those in other African countries, such Egypt, Nigeria, Ghana, Algeria, Cameroon and Morocco?
• Comparison of Covid-19 pandemic indicators between South Africa and the most severely hit African countries (16 June 2020)
• Comparison of Covid-19 pandemic development over time between South Africa and the most severely hit African countries
• What would happen to the Covid-19 pandemic in Africa under various doubling time estimates?
• What would happen to the Covid-19 epidemic in South Africa under various doubling time estimates?
• Where are the critical areas (hotspots) in South Africa?
• Covid-19 models and projections for South Africa
• Concluding remarks
Covid-19 pandemic in Africa as on 16 June 2020
Covid-19 pandemic in Africa

Number of deaths as on 16 June 2020: 6 760

Source: Compiled from Our World in Data, 2020.
Africa Covid-19 pandemic situation as on 16.6.2020

- First Covid-19 case detected: 15 Feb 2020, about 2 months after it was first detected in China
- Cumulative number of infected people: 251 277 (3.1% of world infected total vs 17.2% of world population)
- Covid-19 infection rate: 0.187 per 1000 population
- Total number of deaths: 6 760 or 2.7% of infected people (1.5% of world total)
- Covid-19 crude death rate: 0.005 deaths per 1000 population
- Influenza/pneumonia death rate: n/a
- Overall crude death rate: 8.2 deaths per 1000 population
- Number of people recovered from Covid-19: n/a
- Number of tests done: n/a
- The infection curve is still rising rather rapidly
- The death curve continues to rise steadily

Sources: Compiled from Our World in Data 2020; UN, 2019 (World Population Prospects, 2019 Revision); WHO, 2018 Mortality Database.
Total confirmed COVID-19 cases, Jun 16, 2020

The number of confirmed cases is lower than the number of total cases. The main reason for this is limited testing.
Total confirmed COVID-19 cases per million people, Jun 16, 2020

The number of confirmed cases is lower than the number of total cases. The main reason for this is limited testing.

Source: European CDC – Situation Update Worldwide – Last updated 16th June, 11:00 (London time)  OurWorldInData.org/coronavirus • CC BY
Total confirmed COVID-19 deaths, Jun 16, 2020

Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.

Source: European CDC – Situation Update Worldwide – Last updated 16th June, 11:00 (London time)  OurWorldInData.org/coronavirus  •  CC BY
Total confirmed COVID-19 deaths per million people, Jun 16, 2020

Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true total number of deaths from COVID-19.

Source: European CDC – Situation Update Worldwide – Last updated 16th June, 11:00 (London time)  OurWorldInData.org/coronavirus • CC BY
Case fatality rate of the ongoing COVID-19 pandemic, Jun 16, 2020

The Case Fatality Rate (CFR) is the ratio between confirmed deaths and confirmed cases. During an outbreak of a pandemic the CFR is a poor measure of the mortality risk of the disease. We explain this in detail at OurWorldInData.org/Coronavirus.

Source: European CDC – Situation Update Worldwide – Last updated 16th June, 11:00 (London time)  OurWorldInData.org/coronavirus • CC BY
Note: Only countries with more than 100 confirmed cases are included.
Covid-19 epidemic in South Africa as on 16 June 2020
• The first case of Covid-19 in SA was reported on 5 March 2020

• Since then the number of daily confirmed cases of Covid-19 increased steadily, reaching a first peak of 243 cases reported on 27 March 2020

• Since lockdown started on 27 March the daily number of confirmed cases initially declined and fluctuated at a relatively low level (<100 new cases per day) for about 2 weeks, followed by a steady increase

• However, since mid-May the daily number of new cases started increasing significantly reaching a new peak of 4,300 confirmed cases on 14 June

• This is as a result of more people being screened and tested, and an indication that the epidemic has spread into communities

Prior to the national lockdown, the average daily number of new confirmed Covid-19 cases per week increased rapidly from 2 to 111.

Just after lockdown commenced, the average daily number of new cases per week declined to 67.

However, since the 3rd week of lockdown the average daily number of new cases started increasing again, gaining momentum during Stage 4 of the national lockdown and increasing very rapidly during the past three weeks of Stage 3 of the national lockdown, reaching a peak of an average of 3 560 new cases per day in the past 5 days.

This is a reflection of significantly more tests being conducted since mid-April – the more tests done, the more Covid-19 cases will be registered.

According to Prof Salim S Abdool Karim, Chair of the Ministerial Advisory Group on Covid-19, ‘a better measure to use is the percentage of tests that are positive’

This rate has stayed relatively stable at about 2.7-2.9% between mid-April and early May

However, since mid-May with the relaxing of the lockdown regulations, the rate started increasing rather rapidly, reaching 6.5% on 16 June

This means that currently about 6.5 out of every 100 Covid-19 tests done result in a positive test result

It is expected that this percentage will continue to increase since the peak of the epidemic has not yet been reached

Sources: Calculated from Johns Hopkins Coronavirus Resource Centre, 2020; Malan, 8 May 2020.
On a cumulative basis, the number of confirmed Covid-19 cases in SA has increased to 76 334 as on 16 June 2020, 103 days since the first case was detected.

Did the lockdown (stage 5) have an impact on the number of confirmed Covid-19 cases?

The initial rapid growth in the number of confirmed cases was slowed down by the lockdown but only for the first 2-3 weeks, after which the number of confirmed cases started increasing.

What has happened since stages 4 and 3 of the lockdown commenced?

The number of confirmed Covid-19 cases started to increase exponentially as generally expected by epidemiologists.

66 days after the first case was confirmed, SA had 10 000 confirmed cases; 12 days later 20 000 cases, 8 days later 30 000 cases; 5 days later 40 000 cases; 4 days later 50 000 cases; 3 days later 60 000 cases; and another 3 days later 70 000 cases.

Number of deaths as on 16 June 2020: 1 625

South Africa Covid-19 epidemic situation as on 16.6.2020

- First Covid-19 case detected: 5 Mar 2020
- Cumulative number of infected people: 76 334 of which 42.8% are active cases (30.4% of Africa’s infected total)
- Covid-19 infection rate: 1.287 per 1000 population
- Total number of deaths: 1 625 or 2.1% of infected people (24.0% of Africa’s death total)
- Covid-19 crude death rate: 0.027 deaths per 1000 population
- Influenza/pneumonia death rate: 0.320 per 1000 population
- Overall crude death rate (all causes): 9.5 deaths per 1000 population
- Number of people recovered from Covid-19: 42 063 or 55.1% of infected people
- Number of tests done: 1 172 513 or 19 780 per 1m population
- Percentage of tests done that are positive: 6.5%
- The infection curve has initially slowed down after lockdown but continues to rise rather rapidly
- The number of deaths are increasing although the number of deaths are still small compared to other countries
- The number of recoveries are increasing steadily and significantly outnumber the number of deaths
- The active cases curve is slightly below the recoveries curve with recoveries exceeding active cases

How does the Covid-19 epidemic in South Africa compare to those in other African countries?

Egypt, Nigeria, Ghana, Algeria, Cameroon and Morocco
Covid-19 epidemic in Egypt

Number of deaths as on 16 June 2020: 1 766

Number of confirmed Covid-19 cases per day in Egypt

Cumulative number of confirmed Covid-19 cases in Egypt

Egypt Covid-19 epidemic situation as on 16.6.2020

- First Covid-19 case detected: 14 Feb 2020
- Cumulative number of infected people: 47,856 of which 69.7% are active cases (19.1% of Africa's infected total)
- Covid-19 infection rate: 0.468 per 1000 population
- Total number of deaths: 1,766 or 3.7% of infected people (26.1% of Africa’s death total)
- Covid-19 crude death rate: 0.017 deaths per 1000 population
- Influenza/pneumonia death rate: 0.161 per 1000 population
- Overall crude death rate: 5.8 deaths per 1000 population
- Number of people recovered from Covid-19: 12,730 or 26.6% of infected people
- Number of tests done: 135,000 or 1,323 per 1m population (as on 15.5.2020)
- Percentage of tests done that are positive: 35.4%
- The infection curve is still rising rapidly
- The death curve is still rising
- The recovery curve is above the death curve, i.e., more recoveries than deaths
- The active cases curve is still rising steadily and close to the infection curve with 70% of infections being active cases

Covid-19 epidemic in Nigeria

Number of deaths as on 16 June 2020: 455

Number of confirmed Covid-19 cases per day in Nigeria

Cumulative number of confirmed Covid-19 cases in Nigeria

Nigeria Covid-19 epidemic situation as on 16.6.2020

- First Covid-19 case detected: 28 Feb 2020
- Cumulative number of infected people: 17,148 of which 64.6% are active cases (6.8% of Africa’s infected total)
- Covid-19 infection rate: 0.083 per 1000 population
- Total number of deaths: 455 or 2.7% of infected population (6.7% of Africa’s death total)
- Covid-19 crude death rate: 0.002 deaths per 1000 population
- Influenza/pneumonia death rate: n/a
- Overall crude death rate: 12.0 deaths per 1000 population
- Number of people recovered from Covid-19: 5,623 or 32.8% of infected people
- Number of tests done: 96,402 or 468 per 1m population
- Percentage of tests done that are positive: 17.8%
- The infection curve is rising steadily
- The death curve continues to rise but at a very low level
- The recovery curve is rising rapidly with recoveries exceeding deaths
- The active cases curve is still rising with 65% of infections being active cases

Covid-19 epidemic in Ghana

Number of deaths as on 16 June 2020: 58

Number of confirmed Covid-19 cases per day in Ghana

Cumulative number of confirmed Covid-19 cases in Ghana

Ghana Covid-19 epidemic situation as on 16.6.2020

- First Covid-19 case detected: 14 Mar 2020
- Cumulative number of infected people: 12 193 of which 64.0% are active cases (4.9% of Africa’s infected total)
- Covid-19 infection rate: 0.392 per 1000 population
- Total number of deaths: 58 or 0.5% of infected people (0.9% of Africa’s death total)
- Covid-19 crude death rate: 0.002 deaths per 1000 population
- Influenza/pneumonia death rate: n/a
- Overall crude death rate: 7.3 deaths per 1000 population
- Number of people recovered from Covid-19: 4 326 or 35.5% of infected people
- Number of tests done: 255 971 or 8 246 per 1m population
- Percentage of tests done that are positive: 4.8%
- The infection curve is slowly flattening
- The death curve is flattening at a very low level
- The recovery curve continues to rise
- The active cases curve is slightly below the infection curve, with active cases outnumbering recoveries

Covid-19 epidemic in Algeria

Number of deaths as on 16 June 2020: 788

Algeria Covid-19 epidemic situation as on 16.6.2020

- First Covid-19 case detected: 25 Feb 2020
- Cumulative number of infected people: 11,147 of which 22.6% are active cases (4.4% of Africa’s infected total)
- Covid-19 infection rate: 0.254 per 1000 population
- Total number of deaths: 788 or 7.1% of the infected population (11.7% of Africa’s death total)
- Covid-19 crude death rate: 0.018 deaths per 1000 population
- Influenza/pneumonia death rate: n/a
- Overall crude death rate: 4.7 deaths per 1000 population
- Number of people recovered from Covid-19: 7,842 or 70.3% of infected people
- Number of tests done: n/a
- Percentage of tests done that are positive: n/a
- The infection curve is flattening
- The death curve is flattening
- The recovery curve is rising rapidly, closing in on the infection curve
- The active cases curve is bending downwards, with significantly more recoveries than active cases

Covid-19 epidemic in Cameroon

Number of deaths as on 16 June 2020: 276

Cameroon Covid-19 epidemic situation as on 16.6.2020

- First Covid-19 case detected: 6 Mar 2020
- Cumulative number of infected people: 9,864 of which 40.7% are active cases (3.9% of Africa’s infected total)
- Covid-19 infection rate: 0.372 per 1000 population
- Total number of deaths: 276 or 2.8% of the infected population (4.1% of Africa’s death total)
- Covid-19 crude death rate: 0.010 deaths per 1000 population
- Influenza/pneumonia death rate: n/a
- Overall crude death rate: 9.4 deaths per 1000 population
- Number of people recovered from Covid-19: 5,570 or 56.5% of infected people
- Number of tests done: n/a
- Percentage of tests done that are positive: n/a
- The infection curve is still rising
- The death curve has flattened at a very low level
- The recovery curve is rising steadily
- The active cases curve is below the recoveries curve, with recoveries outnumbering active cases

Covid-19 epidemic in Morocco

Number of deaths as on 16 June 2020: 212

Number of confirmed Covid-19 cases per day in Morocco

Cumulative number of confirmed Covid-19 cases in Morocco

Morocco Covid-19 epidemic situation as on 16.6.2020

- First Covid-19 case detected: 2 Mar 2020
- Cumulative number of infected people: 8,931 of which only 8.7% are active cases (3.6% of Africa’s infected total)
- Covid-19 infection rate: 0.242 per 1000 population
- Total number of deaths: 212 or 2.4% of the infected population (3.1% of Africa’s death total)
- Covid-19 crude death rate: 0.006 deaths per 1000 population
- Influenza/pneumonia death rate: 0.023 per 1000 population
- Overall crude death rate: 5.1 deaths per 1000 population
- Number of people recovered from Covid-19: 7,937 or 88.9% of infected people
- Number of tests done: 455,768 or 12,354 per 1m population
- Percentage of tests done that are positive: 2.0%
- The infection curve has flattened
- The death curve has flattened at a very low level
- The recovery curve is very close to the infections curve with 89% of infected people recovered
- The active cases curve is bending downwards with recoveries significantly exceeding active cases

Comparison of Covid-19 pandemic indicators between South Africa and the most severely hit African countries as on 16 June 2020
# Covid-19 pandemic indicators: Comparison between South Africa, Egypt, Nigeria, Ghana, Algeria, Cameroon and Morocco (16.6.2020)

<table>
<thead>
<tr>
<th>Covid-19 indicator</th>
<th>South Africa</th>
<th>Egypt</th>
<th>Nigeria</th>
<th>Ghana</th>
<th>Algeria</th>
<th>Cameroon</th>
<th>Morocco</th>
<th>Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of infections</td>
<td>76 334</td>
<td>47 856</td>
<td>17 148</td>
<td>12 193</td>
<td>11 147</td>
<td>9 864</td>
<td>8 931</td>
<td>251 277</td>
</tr>
<tr>
<td>% of all Covid-19 infections in Africa</td>
<td>30.4</td>
<td>19.1</td>
<td>6.8</td>
<td>4.9</td>
<td>4.4</td>
<td>3.9</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>% of cases that are active</td>
<td>42.8</td>
<td>69.7</td>
<td>64.6</td>
<td>64.0</td>
<td>22.6</td>
<td>40.7</td>
<td>8.7</td>
<td></td>
</tr>
<tr>
<td>Infection rate (per 1000 population)</td>
<td>1.287</td>
<td>0.468</td>
<td>0.083</td>
<td>0.392</td>
<td>0.254</td>
<td>0.372</td>
<td>0.242</td>
<td>0.187</td>
</tr>
<tr>
<td>No deaths</td>
<td>1 625</td>
<td>1 766</td>
<td>455</td>
<td>58</td>
<td>788</td>
<td>276</td>
<td>212</td>
<td>6 760</td>
</tr>
<tr>
<td>% of all Covid-19 deaths in Africa</td>
<td>24.0</td>
<td>26.1</td>
<td>6.7</td>
<td>0.9</td>
<td>11.7</td>
<td>4.1</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>Covid-19 death rate (per 1000 population)</td>
<td>0.027</td>
<td>0.017</td>
<td>0.002</td>
<td>0.002</td>
<td>0.018</td>
<td>0.010</td>
<td>0.006</td>
<td>0.005</td>
</tr>
<tr>
<td>Case fatality rate (deaths per 100 infections)</td>
<td>2.1</td>
<td>3.7</td>
<td>2.7</td>
<td>0.5</td>
<td>7.1</td>
<td>2.8</td>
<td>2.4</td>
<td>2.7</td>
</tr>
<tr>
<td>Number recovered</td>
<td>42 063</td>
<td>12 730</td>
<td>5 623</td>
<td>4 326</td>
<td>7 842</td>
<td>5 570</td>
<td>7 937</td>
<td>n/a</td>
</tr>
<tr>
<td>Recovery rate (% of infected that recovered)</td>
<td>55.1</td>
<td>26.6</td>
<td>32.8</td>
<td>35.5</td>
<td>70.3</td>
<td>56.5</td>
<td>88.9</td>
<td></td>
</tr>
<tr>
<td>Number of tests done</td>
<td>1 172 513</td>
<td>135 000</td>
<td>96 402</td>
<td>255 971</td>
<td>n/a</td>
<td>n/a</td>
<td>455 768</td>
<td>n/a</td>
</tr>
<tr>
<td>Tests per 1m population</td>
<td>19 780</td>
<td>1 323</td>
<td>468</td>
<td>8 246</td>
<td>n/a</td>
<td>n/a</td>
<td>12 354</td>
<td>n/a</td>
</tr>
<tr>
<td>Percentage of tests that are positive</td>
<td>6.5</td>
<td>35.4</td>
<td>17.8</td>
<td>4.8</td>
<td>n/a</td>
<td>n/a</td>
<td>2.0</td>
<td></td>
</tr>
</tbody>
</table>

Ranking of worst hit African countries by number of Covid-19 infections and infection rates (16 June 2020)


Ranking of worst hit African countries by Covid-19 case fatality rates and recovery rates (16 June 2020)

Ranking of worst hit African countries by number of tests done and tests per million population (16 June 2020)

% distribution of confirmed Covid-19 infections for various African countries, 16 June 2020

- South Africa: 30.4%
- Egypt: 26.9%
- Nigeria: 19.1%
- Ghana: 6.8%
- Algeria: 4.9%
- Cameroon: 4.4%
- Morocco: 3.9%
- Other: 3.6%

% distribution of Covid-19 deaths for various African countries, 16 June 2020

- South Africa: 24%
- Egypt: 23.4%
- Nigeria: 26.1%
- Ghana: 11.7%
- Algeria: 4.1%
- Cameroon: 6.7%
- Morocco: 0.9%
- Other: 3.1%

Cumulative number of confirmed Covid-19 cases for various African countries

- The Covid-19 pandemic reached Africa mid-Feb 2020, with the first infections confirmed in Egypt, Morocco and South Africa.
- Currently, South Africa and Egypt have the largest numbers of infections, followed by Nigeria, Ghana, Algeria, Cameroon and Morocco but the pandemic has reached every African country.
- About 31% of Covid-19 infections are currently found in other African countries.

Comparison of Covid-19 pandemic development over time between South Africa and the most severely hit African countries
Cumulative number of confirmed Covid-19 cases by African country over time

Cumulative number of confirmed Covid-19 cases by African country over time (log scale on vertical axis)

Cumulative number of active Covid-19 cases by African country over time

Covid-19 infection rate by African country over time

Cumulative number of Covid-19 deaths by African country over time

Covid-19 death rate by African country over time

Cumulative number of Covid-19 recoveries by African country over time

What could happen to the Covid-19 pandemic in Africa under various doubling times?
Doubling times of Covid-19 infections in Africa, South Africa, Egypt, Nigeria, Ghana, Algeria, Cameroon and Morocco

For the infection curve to flatten at the top, the doubling time in infections has to increase or lengthen in days

Sources: Own calculations based on data from Johns Hopkins Coronavirus Resource Centre, 2020; Our World in Data, 2020.
Various Covid-19 doubling time estimates

- Africa still has a relatively small number of confirmed Covid-19 infections compared to Europe and the USA, but the infection curve is rising rather rapidly, and the number of people tested still very low

- Should the doubling time remain at the current 19 days, 1.59m would be infected by 8 Aug 2020

- BUT what if the doubling time would decline to 17, 15 or 13 days as the pandemic spreads throughout the continent and into communities?

- At a 17-day doubling time, 1.89m would be infected by 8 Aug 2020

- At a 15-day doubling time, 2.55m would be infected by 8 Aug 2020

- At a 13-day doubling time (similar to the current doubling time of SA), 3.56m would be infected by 8 Aug 2020

- It is therefore of the utmost importance that the doubling time remains high to prevent an exponential growth in new cases on the continent

- However, should the doubling time continue to increase, eg to 21 days, 1.34m would be infected by 8 Aug 2020

Source: Own calculations.
What could happen to the Covid-19 epidemic in South Africa under various doubling times?
Various Covid-19 doubling time estimates

- South Africa has the highest number of infections on the African continent and the number of confirmed cases has increased very rapidly during the past 3 weeks. The doubling time of infections has remained at 12-13 days since early May. As more people are being screened and tested and as the epidemic spreads into the community, the number of infections is expected to start rising exponentially.

- Should the doubling time remain at the current 13 days, 1.07m would be infected by 8 Aug 2020.

- BUT what if the doubling time would decline to 11 or 9 days as more people are being tested and the epidemic spreads into the community?
  - At an 11-day doubling time, 1.78m would be infected by 8 Aug 2020.
  - At a 9-day doubling time, 3.53m would be infected by 8 Aug 2020.

- OR what if the doubling time starts to increase to 15 or 17 days?
  - At a 15-day doubling time, 774 000 would be infected by 8 Aug 2020.
  - At a 17-day doubling time, 575 000 would be infected by 8 Aug 2020.

- It is therefore of the utmost importance that the doubling time starts rising again to prevent an even more rapid growth in new cases than in the past couple of weeks.

Source: Own calculations.
Where are the critical areas (or hotpots) in South Africa?
Currently, 59% (or 45 357) of all confirmed Covid-19 cases are in the Western Cape, followed by Gauteng with 17% (or 13 023 cases) and the Eastern Cape with 15% (or 11 039 cases).

The Western Cape also has the largest number of Covid-19 deaths (74% of all deaths), followed by the Eastern Cape (15%).

Currently, the highest case fatality rate (deaths per 100 infections) is in the Western Cape and Eastern Cape, while the highest recovery rate (67%) is also in the Western Cape.

The Cape Town, greater Johannesburg and Ekurhuleni metropolitan areas with high population densities especially in informal settlements where poverty levels, TB and HIV prevalence are high, are most at risk of rapid community transmissions.

In addition, infections are expected to spread rapidly in old-age care centres, schools, hospitals, shopping malls, etc.

### Number of Covid-19 cases and deaths by province, 16.6.2020

<table>
<thead>
<tr>
<th>Province</th>
<th>Covid-19 cases</th>
<th>Covid-19 deaths</th>
<th>Recoveries</th>
<th>Case fatality rate</th>
<th>Recovery rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number %</td>
<td>Number %</td>
<td>Number %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>11 039 14.5</td>
<td>245 15.1</td>
<td>5 475 2.2</td>
<td>49.6</td>
<td></td>
</tr>
<tr>
<td>Free State</td>
<td>578 0.8</td>
<td>9 0.6</td>
<td>222 1.6</td>
<td>38.4</td>
<td></td>
</tr>
<tr>
<td>Gauteng</td>
<td>13 023 17.1</td>
<td>87 5.4</td>
<td>3 442 0.7</td>
<td>26.4</td>
<td></td>
</tr>
<tr>
<td>KwaZulu-Natal</td>
<td>4 048 5.3</td>
<td>73 4.5</td>
<td>2 133 1.8</td>
<td>52.7</td>
<td></td>
</tr>
<tr>
<td>Limpopo</td>
<td>391 0.5</td>
<td>4 0.2</td>
<td>213 1.0</td>
<td>54.5</td>
<td></td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>343 0.4</td>
<td>1 0.06</td>
<td>138 0.3</td>
<td>40.2</td>
<td></td>
</tr>
<tr>
<td>North West</td>
<td>1 281 1.7</td>
<td>5 0.3</td>
<td>152 0.4</td>
<td>11.9</td>
<td></td>
</tr>
<tr>
<td>Northern Cape</td>
<td>211 0.3</td>
<td>1 0.06</td>
<td>52 0.5</td>
<td>24.6</td>
<td></td>
</tr>
<tr>
<td>Western Cape</td>
<td>45 357 59.4</td>
<td>1 200 73.8</td>
<td>30 236 2.6</td>
<td>66.7</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>63 0.1</td>
<td>0 0.0</td>
<td>0 1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Africa</td>
<td>76 334 100.0</td>
<td>1 625 100.0</td>
<td>42 063 2.1</td>
<td>55.1</td>
<td></td>
</tr>
</tbody>
</table>

Cumulative number of Covid-19 cases, deaths, recoveries and active cases by province, 16.6.20

[Please note that the vertical axes differ between the graphs due to the large differences in infections between the provinces]

Source: Compiled from National Health Laboratory Service, 2020.
Covid-19 tests by province, 29.5.2020

• It is argued that the main reason for the high number of Covid-19 infections in the Western Cape is the large number of tests being conducted

• In absolute numbers, Gauteng leads with 223 393 tests having been conducted as on 29.5.2020, followed by the Western Cape (153 674) and KwaZulu-Natal (113 968)

• However, relative to the population size, the Western Cape leads by far with 22 453 tests per 1m population, followed by Gauteng (14 720) and the Free State (12 511) as on 29.5.2020

• In the more rural provinces such as the Northern Cape, Limpopo, Mpumalanga and North West, the numbers of Covid-19 infections are still small, which could be as a result of low numbers of tests being conducted

Source: Compiled from BusinessTech, 29 May 2020.
Covid-19 epidemic in the Western Cape

Number of deaths as on 16 June 2020: 1205

Western Cape Covid-19 epidemic situation as on 16.6.2020 (Age distribution)

- 27% of all confirmed Covid-19 infections in the Western Cape are aged 31-40 years, followed by 21.5% aged 21-30 years and 20.4% aged 41-50 years, whereas the highest age groups have the lowest numbers of Covid-19 infections.

- However, the highest number of deaths (26.5% of all deaths) are aged 51-60 years, closely followed by those aged 61-70 (25.8%).

- Although the numbers of Covid-19 infections and Covid-19 deaths amongst the older people in the Western Cape are still relatively low, the highest case fatality rate (number of deaths per 100 infections) is amongst those aged 71-80 years (ie, 17.3%), followed by those aged >80 years (13.2%) and those aged 61-70 years (13.1%).

- How does the age distribution of Covid-19 infections compare to the age distribution of the Western Cape population?

<table>
<thead>
<tr>
<th>Age group</th>
<th>WC population</th>
<th>Covid-19 cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-30</td>
<td>17.3%</td>
<td>21.5%</td>
</tr>
<tr>
<td>31-40</td>
<td>18.2%</td>
<td>27.0%</td>
</tr>
<tr>
<td>41-50</td>
<td>12.8%</td>
<td>20.4%</td>
</tr>
<tr>
<td>51-60</td>
<td>9.7%</td>
<td>14.2%</td>
</tr>
</tbody>
</table>

Sources: Compiled from Western Cape Government Covid-19 Dashboard, 2020; StatsSA, 2019.
City of Cape Town Covid-19 epidemic situation as on 16.6.2020

- 80% of all confirmed Covid-19 cases in the Western Cape are in the City of Cape Town, home to 65% of the provincial population
- Of the 36 647 confirmed Covid-19 cases in the City of Cape Town, 17.5% are in Tygerberg, 15.0% in Khayelitsha and 13.4% in Klipfontein
- The Northern suburbs currently have the lowest number of confirmed Covid-19 infections

Covid-19 epidemic in Gauteng, 14.6.2020

<table>
<thead>
<tr>
<th>District</th>
<th>Covid-19 cases</th>
<th>Recoveries</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johannesburg</td>
<td>3 546</td>
<td>1 558</td>
<td></td>
</tr>
<tr>
<td>Ekurhuleni</td>
<td>1384</td>
<td>660</td>
<td></td>
</tr>
<tr>
<td>Tshwane</td>
<td>960</td>
<td>376</td>
<td></td>
</tr>
<tr>
<td>Sedibeng</td>
<td>162</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>West Rand</td>
<td>627</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>Unallocated</td>
<td>516</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7 195</strong></td>
<td><strong>2890</strong></td>
<td><strong>57</strong></td>
</tr>
</tbody>
</table>

- Gauteng has the second highest number of Covid-19 infections in South Africa, but only 57 deaths as on 14.6.2020
- 49% of cases in Gauteng are found in Johannesburg, followed by Ekurhuleni with 19%

Source: Compiled from Daily Maverick Daily Digest #75, 15.6.2020.
# Covid-19 epidemic in Eastern Cape, 14.6.2020

## District-wise Covid-19 cases, Recoveries, and Deaths

<table>
<thead>
<tr>
<th>District</th>
<th>Covid-19 cases</th>
<th>Recoveries</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfred Nzo</td>
<td>121</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Amathole</td>
<td>540</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Buffalo City Metro</td>
<td>2 175</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Chris Hani</td>
<td>1 251</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>Joe Gqabi</td>
<td>151</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Nelson Mandela Bay Metro</td>
<td>1 076</td>
<td></td>
<td>79</td>
</tr>
<tr>
<td>OR Tambo</td>
<td>1 364</td>
<td></td>
<td>46</td>
</tr>
<tr>
<td>Sarah Baartman</td>
<td>277</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Imported cases</td>
<td>178</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8 615</strong></td>
<td><strong>4 393</strong></td>
<td><strong>208</strong></td>
</tr>
</tbody>
</table>

- Eastern Cape has the third highest number of Covid-19 infections and the second highest number of Covid-19 deaths in South Africa as on 14.6.2020
- 25% of cases in the Eastern Cape are found in Buffalo City metro and 16% in OR Tambo district

Source: Compiled from Daily Maverick Daily Digest #75, 15.6.2020.
Hardest hit areas (hotspots) in South Africa

- Western Cape: City of Cape Town, especially areas such as Tygerberg, Khayelitsha, Klipfontein
- Gauteng: Johannesburg, especially areas such as Alexandra, Wynberg, Sandton
- Gauteng: Ekurhuleni metro
- Eastern Cape: Nelson Mandela Bay metro
- Eastern Cape: Buffalo City
- KwaZulu-Natal: eThekwini metro
- KwaZulu-Natal: iLembe District

People most at risk of Covid-19

- Older persons, especially those living in old-age homes and frail care centres
- People with pre-existing medical conditions such as diabetes, hypertension, cardiovascular disease, immune deficiencies, chronic respiratory illness, blood cancer, lung cancer
- Mortality rises with age and with underlying medical conditions
- People living in densely populated areas
More females than males in SA have Covid-19

Highest % of infections are amongst those aged 30-34 years and 35-39 years

Almost 50% of all cases are aged 25-49 years

Highest % of deaths in SA are amongst those aged 60-69 years and 50-59 years

Slightly more males than females die of Covid-19 (51% vs 49%)

Age and gender distribution of Covid-19 cases in SA, 28.5.2020

Age distribution of Covid-19 deaths in SA, 15.6.2020

Sources: Compiled from Business Tech, 29.5.2020; National Health Laboratory Service, 15 June 2020.
Covid-19 models and projections for South Africa
A team of scientific experts and the Dept of Health presented some Covid-19 projections (pessimistic and optimistic scenarios) on 19 May. The underlying assumptions are as follows:

**Two scenarios**

**Assumption:** Level 4 continues until 31 May followed by social distancing measures

**Optimistic scenario**
- Lockdown reduced transmissibility by **60%**
- Level 4 from 1 May to 31 May: **35%**
- Social distancing measures after 31 May reduces transmissibility by **20%**

**Pessimistic scenario**
- Lockdown reduced transmissibility by **40%**
- Level 4 from 1 May to 31 May: **25%**
- Social distancing measures after 31 May reduces transmissibility by **10%**

Short-term projections

- Short-term projections (for end of May):
  - number of detected Covid-19 cases: 30,433 (ranging between 18,710 and 54,540) [Actual number as on 31.5.2020: 32,683 confirmed cases]
  - number of Covid-19 deaths: 475 (ranging between 300 and 700) [Actual number as on 31.5.2020: 683 deaths]

Long-term projections (until Nov):
- number of active Covid-19 cases (optimistic scenario): peak at 1m (ranging between 0.7m and 1.2m) in Aug
- number of active Covid-19 cases (pessimistic scenario): peak at 1.2m (0.95m and 1.5m) in mid-Jul
- number of Covid-19 deaths (optimistic scenario): 40 000 by Nov
- number of Covid-19 deaths (pessimistic scenario): 48 000 by Nov

ASSA Covid-19 model

According to the Covid-19 model of the Actuarial Society of South Africa (ASSA), work still in progress and only available to actuaries, the following preliminary estimates for a range of scenarios are available:

• the number of symptomatic patients will peak between August and September, at between 588 000 and 2.3m people

• the demand for hospital beds when the outbreak is at its worst will range between 69 400 and 125 000, while intensive care unit bed demand ranges between 10 700 and 19 200

• the death toll from South Africa’s Covid-19 outbreak this year could range between 46 000 and 88 000

According to a model developed by a consortium called Panda, which includes actuaries, an economist, a medical doctor, lawyers, and data specialist:

- economically restrictive lockdown measures in South Africa may cause 29 times more deaths than the measures aim to prevent
- estimates of total years of life lost (YLL)* in South Africa as a result of lockdown could run into millions of years
- years of life lost owing to economic contraction caused by lockdown lie in the range of 14 to 34m. In contrast, the years of life lost to avoidable overburdening of health resources lie in the range of 26 800 to 473 500 (the latter should not be confused with the number of Covid-19 deaths expected, which is much lower)
- The main message of a report by Panda sent to Pres Ramaphosa is that a continued lockdown is not only damaging the economy, it promises a ‘humanitarian disaster to dwarf Covid-19’ by having a severe impact on the health and well-being of millions of South Africans

[* Years of life lost (YLL) when someone dies from some impact corresponds to that persons remaining life expectancy at the point when that impact occurs. We can sum this measure across a population to estimate the aggregate years of life lost to an impact]
Concluding remarks
• Africa, home to about 1.34bn people (or 17.4% of the world population) currently has 251 277 confirmed Covid-19 cases (or 3% of the world infected total) and 8 152 Covid-19 deaths (or 1.5% of the world total)

• Although the numbers are still small compared to the rest of the world, Covid-19 has reached every African country, and infections are rising rapidly

• The worst affected countries are South Africa and some northern African countries such as Egypt, Algeria and Morocco as well as Nigeria, Ghana and Cameroon

• Together these 7 countries account for 73% of all confirmed Covid-19 infections and 77% of all Covid-19 deaths on the continent

• The highest number of Covid-19 infections, infection rates and Covid-19 death rates are found in South Africa
• Egypt has the highest number of Covid-19 deaths, followed by South Africa, while Algeria has the highest case fatality rate

• Morocco and Algeria have the highest recovery rates (>70%), while South Africa has the highest number of tests and tests per 1m population

• The Covid-19 infection curve for Africa continues to rise rather rapidly

• The infection curves for South Africa and Egypt continue to rise rapidly, while those for Ghana, Algeria and Morocco have flattened. The infection curves for Nigeria and Cameroon are rising slowly

• It is only in South Africa where the implementation of national lockdown had an impact on the number of new Covid-19 infections, ie, declining numbers for the first 2 weeks after lockdown commenced

• BUT the infections in South Africa and elsewhere on the continent are and will continue to rise with the easing of lockdown restrictions because nobody is immune to the novel coronavirus and no vaccine or anti-virus is yet available
But why is the Covid-19 case-load in Africa still so low compared to other countries and continents? Some suggestions are:

- Low testing levels, inadequate testing facilities due to scarce resources and weak healthcare systems
- Underreporting of Covid-19 cases and Covid-19 deaths
- Young population age structure with a low proportion of older people (only 3.5% are 65+) and a median age of only 19.7 years, which means that 50% of Africa’s population is younger than 19.7 years. Older people are especially vulnerable to Covid-19 and have the highest death rates
- Low population densities in many African countries, except in densely populated metropolitan areas (the virus spreads more easily in densely populated areas)
- Climate conditions are hotter and drier in large parts of the continent. Like the flu the coronavirus is believed to be thriving in the winter months and to be less resistant to heat and dry conditions
- Low intercontinental movement or international traveling (Covid-19 was initially spread from country to country by travelers)
- Most African countries implemented strict lockdown restrictions and border closures very early on

• However, it can be expected that the virus will continue to spread throughout Africa, especially in the metropolitan areas and big cities with large informal settlements – the peak is still to come!

• A new study by the WHO Regional Office for Africa has revealed that Africa’s Covid-19 death toll could reach between 83 000 and 190 000 people and between 29m and 44m could get infected in the first year of the pandemic if containment measures fail (IOL, 2020)

• Dr Matshidiso Moeti, WHO regional director for Africa stated that ‘while Covid-19 likely won’t spread as exponentially in Africa as it has elsewhere in the world, it likely will smoulder in transmission hotspots. Covid-19 could become a fixture in our lives for the next several years unless a proactive approach is taken by many governments in the region. We need to test, trace, isolate and treat’, Moeti said (IOL, 2020)

• ‘Ultimately, the development and delivery of a safe and effective vaccine will be needed to fully interrupt transmission’ (WHO, 2020)
References


BusinessTech, 29.5.2020. The number of coronavirus tests done in every province in South Africa.

Daily Maverick, 13 Apr 2020. How do we explain the low Covid-19 caseload in Africa (so far)? https://dailymaverick.co.za


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