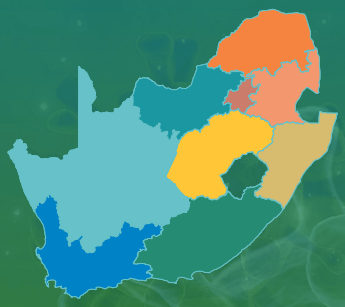
COVID-19 WEEKLY EPIDEMIOLOGY BRIEF

NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
Division of the National Health Laboratory Service

SOUTH AFRICA | WEEK **40** 2020

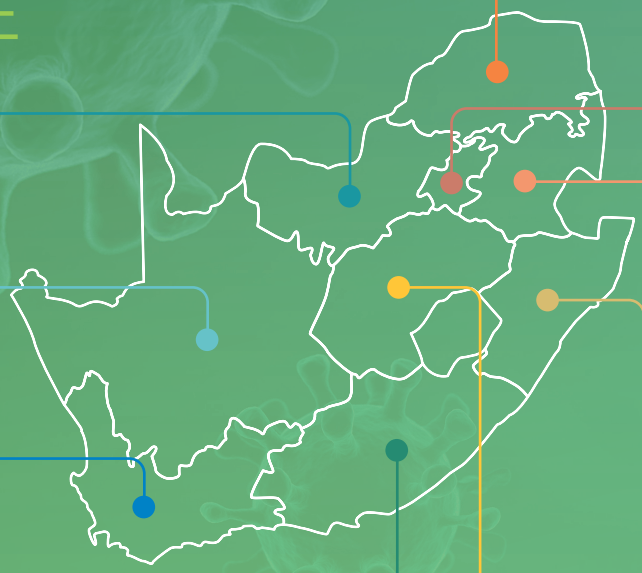
CUMULATIVE DATA FROM

31 JANUARY 2020 — 03 OCTOBER 2020



CASES	PERSONS
681 289 IN TOTAL	1 159.1 INCIDENCE RISK*
8 942 THIS WEEK	40 MEDIAN AGE

PROVINCES AT A GLANCE



NORTH WEST
CASES: 29 927 IN TOTAL | 743,1 /100,000*

NORTHERN CAPE
CASES: 17 746 IN TOTAL | 1 404,1 /100,000*

WESTERN CAPE
CASES: 111 448 IN TOTAL | 1 628,3 /100,000*

EASTERN CAPE
CASES: 89 853 IN TOTAL | 1 338,6 /100,000*

LIMPOPO
CASES: 15 803 IN TOTAL | 264,2 /100,000*

GAUTENG
CASES: 220 910 IN TOTAL | 1 455,6 /100,000*

MPUMALANGA
CASES: 27 591 IN TOTAL | 600,8 /100,000*

KWAZULU-NATAL
CASES: 119 608 IN TOTAL | 1 059,5 /100,000*

FREE STATE
CASES: 48 403 IN TOTAL | 1 676,3 /100,000*

* **Incidence risk** - cases per 100 000 persons
** based on samples collected/received in current reporting week

SUMMARY

Overview of report

Disease surveillance is a core function of the National Institute for Communicable Diseases (NICD), a division of the National Health Laboratory Service (NHLS). This report summarises data from a national laboratory-based surveillance system that is used to monitor the coronavirus disease 2019 (COVID-19) pandemic in South Africa. This report is based on data collected up to 3 October 2020 (week 40 of 2020). Note: COVID-19 is the name of the disease and SARS-CoV-2 is the name of the virus. Trends in numbers of new cases by province and age group may be affected by changes in testing practice and delays in testing of specimens. The numbers reported may change as more data becomes available.

Highlights

- As of 3 October 2020, a total of 681 289 laboratory-confirmed COVID-19 cases had been detected in South Africa. Of these, 10 523 were cases reported since the last report. There was a 6.3% decrease in number of new cases detected in week 40 (8 942) compared to the number of new cases detected in week 39 (9 544).
- An additional 578 deaths were reported since the last report. The overall case-fatality ratio was 2.5% (16 976/681 289).
- To date, five provinces, Gauteng (220 910/681 289, 32.4%), KwaZulu-Natal (119 608/681 289, 17.6%), Western Cape (111 448/681 289, 16.4%), Eastern Cape (89 853/681 289, 13.2%) and Free State (48 403/681 289, 7.1%) continued to report the majority (590 222/681 289, 86.6%) of total COVID-19 cases in South Africa.
- In the past week, Free State Province reported the highest number of new cases (2 003/8 942, 22.4%), followed by Gauteng Province (1 670/8 942, 18.7%), and Western Cape Province (975/8 942, 10.9%.)
- In the previous week, six provinces reported cumulative incidence risk above 1000 cases per 100 000 persons; Free State Province reported the highest cumulative incidence risk (1 676.3 cases per 100 000), replacing Western Cape Province (1 628.3 cases per 100 000 persons), followed by Gauteng Province (1 455.6 cases per 100 000 persons), Northern Cape Province (1 404.1 cases per 100 000 persons), replacing Eastern Cape Province (1 338.6 cases per 100 000 persons) and KwaZulu-Natal Province (1 059.5 cases per 100 000 persons).
- In the past week four provinces reported a decline in weekly incidence risk, compared to week 39; reduction ranged from 39 cases per 100 000 persons (34% reduction) in Northern Cape Province to 1 case per 100 000 persons (11% reduction) in Limpopo Province. The weekly incidence risk remained the same in Eastern Cape, Gauteng, and North West provinces. There was an increase in weekly incidence risk of 1 case per 100 000 persons in Western Cape Province (7% increase) and 3 cases per 100 000 persons in Free State Province (4% increase).
- Similar to the trend in the past six weeks, Northern Cape Province (74 cases per 100 000 persons) followed by Free State Province (69 cases per 100 000 persons) and North West Province (21 cases per 100 000 persons) reported the highest weekly incidence risk. The weekly incidence risk in all the other provinces was less than 20 cases per 100 000 persons.
- In week 40, the highest weekly incidence risk was in cases aged ≥80 years (31.5 cases per 100 000 persons), followed by cases aged 50-54 years (29.3 cases per 100 000 persons). The lowest weekly incidence risk was in the 0-4-year age group (2.3 cases per 100 000 persons)
- To date, the majority of COVID-19 cases reported were female (58.3%, 393 714/ 675 411). This trend continued in the past week, 57.8% (5 132/8 882) of cases were female.

INCIDENCE RISK FOR WEEK 40

15.2

CASES PER 100 000 PERSONS

22.4%

OF CASES REPORTED IN FREE STATE IN WEEK 40

IN WEEK 40, THE HIGHEST WEEKLY INCIDENCE RISK WAS IN CASES AGED ≥80 YEARS (31.5 CASES PER 100 000 PERSONS)

Methods

Testing for SARS-CoV-2 began on 28 January 2020 at the NICD and after the first case was confirmed in early March 2020, testing was expanded to a larger network of private and NHLS laboratories. Respiratory specimens were submitted from persons under investigation (PUI). Initially, tested individuals were those who had travelled to countries with COVID-19 transmission but the PUI definition was changed over time. Community symptom screening and referral for PCR testing was implemented in April 2020 but the strategy was changed to a more targeted approach in May 2020. Community screening was largely discontinued and testing efforts then focussed on areas identified as hot spots and on investigating clusters. Contacts of cases were traced and tested if symptomatic. In some provinces and in certain circumstances (e.g. closed settings, workplaces), asymptomatic contacts were tested. In recent weeks, testing has been prioritised for healthcare workers and hospitalised patients. Laboratories used any one of several in-house and commercial PCR assays to test for the presence of SARS-CoV-2 RNA. We excluded specimens collected outside South Africa. Date of specimen receipt in the laboratory was used when date of specimen collection was missing. A case of COVID-19 was defined as any person, resident in South Africa, with a single positive SARS-CoV-2 PCR test. We used 2019 mid-year population estimates from Statistics South Africa to calculate the incidence risk (cumulative or weekly incidence), expressed as cases per 100 000 persons. Aggregate data on the number of deaths by province were obtained from the Department of Health. Data on number of tests conducted in the past week as reported in the simultaneously-published COVID-19 weekly testing report was used to calculate tests conducted per 100 000 population. We estimated the time-varying (weekly) doubling time of the COVID-19 epidemic for the provinces with sufficient data and from weeks with sufficient number of cases and complete data (week 12 to the week before the current reporting period). The unit of analysis (epidemiological week) was defined from Sunday to the following Saturday. We first estimated the weekly growth rate of the epidemic by fitting a linear regression model to the logarithm of the daily cumulative number of laboratory-confirmed COVID-19 cases. We then estimated the doubling time for each week using the following formula log(2)/gr (where gr is the estimated weekly growth rate). An increase in the doubling time may suggest a slowing of transmission but this may also be affected by changes in testing strategy or care seeking. Until the week 29 report, new cases were defined as all cases reported since the last report, irrespective of when the sample was collected. Subsequent to the week 29 report, new cases are now defined as cases detected in the past epidemiologic week based on date of sample collection or sample receipt. It is therefore possible for numbers reported as new cases for the current reporting week not to tally with total additional cases reported since the last report. This will be the case when there was a delay in reporting of cases.

National and provincial trends of COVID-19 cases in South Africa

As of 3 October 2020, a total of 681 289 laboratory-confirmed COVID-19 cases were reported in South Africa. This is 10 523 more cases than the number reported in the last report. The number of new cases detected in week 40 (8 942) was lower than the number of new cases detected in week 39 (9 544), this represented a 6.3% decrease compared to the previous week. In the past week, Free State Province reported the highest percentage of new cases (2 003/8 942, 22.4%), followed by Gauteng Province (1 670/8 942, 18.7%) and Western Cape (975/8 942, 10.9%) replaced Northern Cape Province (941/8 942, 10.5%) as the province with the third highest percentage of cases (Table 1). Five provinces, Gauteng (220 910/ 681 289, 32.4%), KwaZulu-Natal (119 608/681 289, 17.6%), Western Cape (111 448/681 289, 16.4%), Eastern Cape (89 853/681 289, 13.2%) and Free State (48 403/681 289, 7.1%) provinces continued to contribute the majority (590 222/681 289, 86.6%) of total COVID-19 cases in South Africa. In keeping with the data reported in the previous weeks, there was minimal change in percent contribution of cases in the different provinces from week 39 to week 40.

The cumulative incidence risk for the country increased from 1 144.4 cases per 100 000 persons in week 39 to 1 159.1 cases per 100 000 persons in week 40. The cumulative incidence risk varied by province over time (Figure 3). This is partly explained by testing differences by province (Table 1). For the first time since the transmission of SARS-CoV-2 was established in South Africa, Western Cape was not a province reporting the highest cumulative incidence. The Free State Province had the highest cumulative incidence risk (1 676.3 cases per 100 000), replacing Western Cape Province (1 628.3 cases per 100 000 persons), followed by Gauteng Province (1 455.6 cases per 100 000 persons), Nothern Cape Province (1 404.1 cases per 100 000 persons), replacing Eastern Cape Province (1 338.6 cases per 100 000 persons), and KwaZulu-Natal Province (1 059.5 cases per 100 000 persons). The other provinces continued to report cumulative incidence risk below 1000 cases per 100 000 persons, with Limpopo Province reporting the lowest cumulative incidence risk (264.2 cases per 100 000), to date.

Similar to the past six weeks, in the past week, Northern Cape Province (74.5 cases per 100 000 persons) followed by Free State Province (69.4 cases per 100 000) and North West Province (21.1 cases per 100 000 persons) reported the highest weekly incidence risk. The weekly incidence risk in the rest of the provinces remained below 20 cases per 100 000 persons. In the past week, four provinces reported a decline in weekly incidence risk; KwaZulu-Natal, Limpopo, Mpumalanga, and Northern Cape provinces. The reduction ranged from 39 cases per 100 000 persons (34.5% reduction) in Northern Cape Province to 1 case per 100 000 persons (11.0% reduction) in Limpopo Province. The weekly incidence remained the same compared to week 39 in Eastern Cape, Gauteng, and North West provinces (Figure 4). Weekly incidence increased by 1 case per 100 000 persons in Western Cape Province (6.8% increase) and 3 cases per 100 000 persons in Free State Province (4.3% increase) (Figure 4). Since the peak of weekly incidence risk experienced at different levels and weeks by the different provinces (Western Cape and Eastern Cape peaked earlier in week 27 and Northern Cape peaked last in week 30) all the provinces are reporting a gradual decline in weekly incidence risk.

Among the five provinces reporting the majority of cases in South Africa to date, doubling time of number of cases varied with time and increased in all provinces in week 39. Gauteng Province reported the longest doubling time in week 39 (637.4 days), replacing Eastern Cape Province which has been reporting the longest doubling time in previous weeks (Figure 5). In week 39, the estimated doubling time of number of cases increased from 429.0 days to 637.4 days (48.6% increase) in the Gauteng Province, from 490.9 days to 507.4 days (3.4% increase) in the Eastern Cape Province, from 428.4 days to 523.4 days (22.2% increase) in Western Cape Province, from 402.0 days to 581.6 days (44.7% increase) in KwaZulu-Natal, from 80.4 days to 105.6 days (31.3% increase) in the Free State Province, compared to week 38.

The case-fatality ratio was 2.5% (16 976/681 289); an additional 578 deaths were reported since the last report. The number of deaths reported in the past week was higher than the number reported in the previous week, 578 compared to 445. A crude case-fatality ratio (CFR) calculated in this way (number of deaths/number of diagnosed cases) is subject to numerous limitations. Because deaths are delayed in relation to cases, as case numbers decrease rapidly, the crude case fatality ratio may increase as a result of a more rapid reduction in the denominator compared to the numerator. The CFR may be an underestimate because deaths are more likely to be reported if a patient with COVID-19 died in hospital and deaths out of hospital may be missed; in addition, occurrence and reporting of deaths may be delayed to several weeks after case diagnoses.

Figure 1. Number and cumulative number of laboratory-confirmed cases of COVID-19 by province and date of specimen collection, South Africa, 3 March-3 October 2020 (n=681 289)

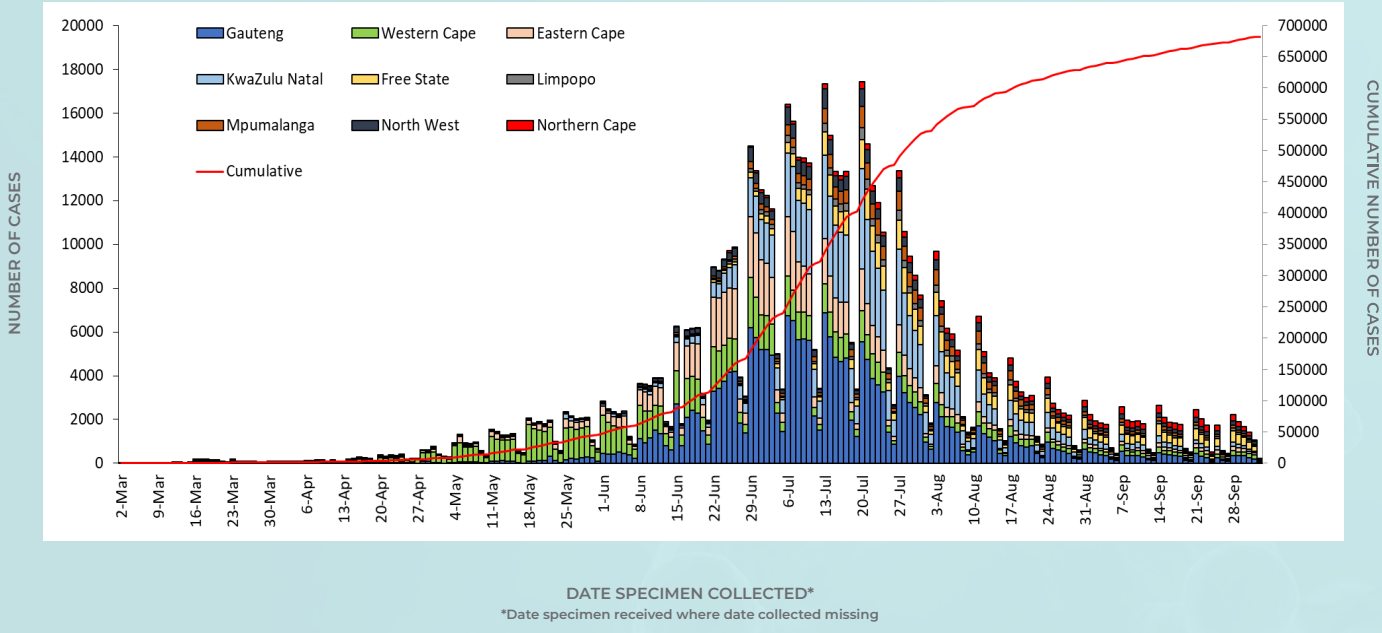


Figure 2. Number and cumulative number of laboratory-confirmed cases of COVID-19, by testing laboratory sector and date of specimen collection, South Africa, 3 March-3 October 2020 (n=681 289)

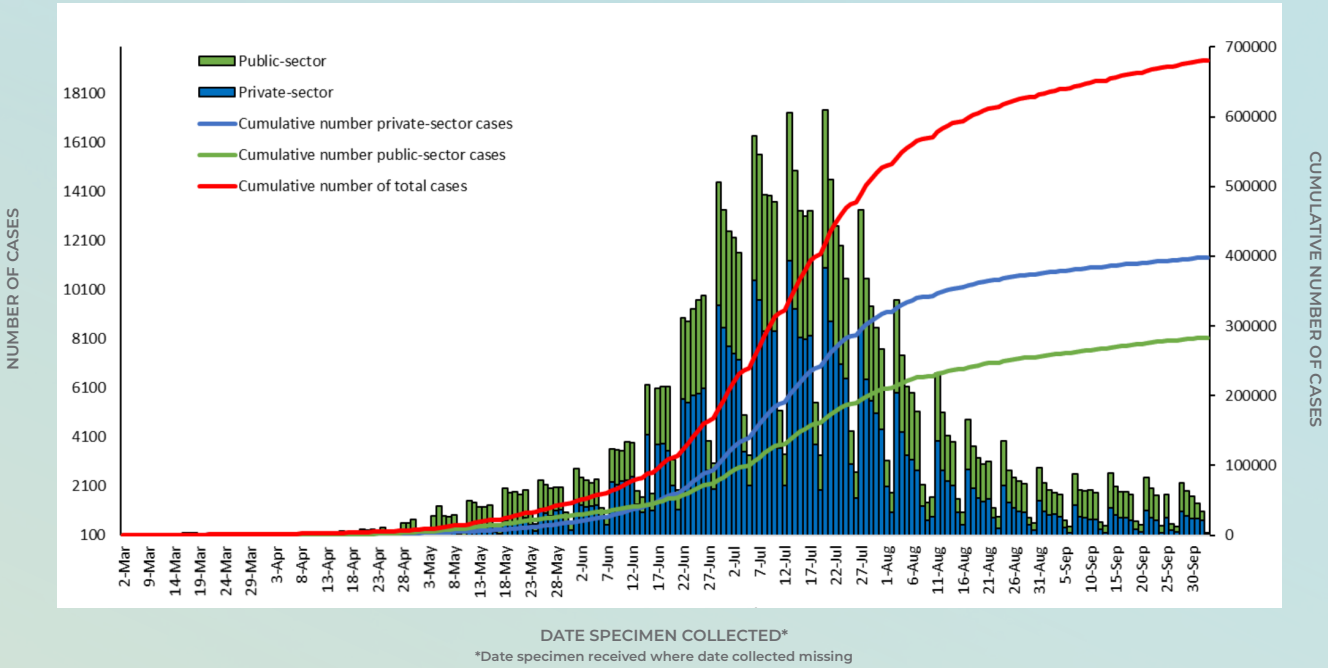


Table 1. Number and cumulative incidence risk of laboratory-confirmed cases of COVID-19 and testing per 100 000 persons by province, South Africa, 3 March-3 October 2020 (n=681 289)

Province	Cumulative cases (n) (percentage, n/ total cases in South Africa)	New cases1 detected in week 40 (27 September – 3 October 2020), n (percentage², n/total)tab	Population in mid-2019³, n	Cumulative incidence risk (cases per 100 000 persons)	Incidence risk of new cases detected in week 40 (cases/100 000 persons)	Tests4 per 100 000 persons, 27 September – 3 October 2020
Eastern Cape	89 853 (13.2)	804 (9.0)	6 712 276	1338.6	12.0	138.4
Free State	48 403 (7.1)	2 003 (22.4)	2 887 465	1676.3	69.4	340.1
Gauteng	220 910 (32.4)	1 670 (18.7)	15 176 115	1455.6	11.0	190.1
KwaZulu-Natal	119 608 (17.6)	740 (8.3)	11 289 086	1059.5	6.6	132.7
Limpopo	15 803 (2.3)	480 (5.4)	5 982 584	264.2	8.0	48.0
Mpumalanga	27 591 (4.0)	481 (5.4)	4 592 187	600.8	10.5	121.2
North West	29 927 (4.4)	848 (9.5)	4 027 160	743.1	21.1	109.6
Northern Cape	17 746 (2.6)	941 (10.5)	1 263 875	1404.1	74.5	319.5
Western Cape	111 448 (16.4)	975 (10.9)	6 844 272	1628.3	14.2	201.2
Unknown	0	0	0	-	-	
Total	**681 289**	**8 942**	**58 775 020**	**1159.1**	**15.2**	**159.5**

1New cases refer to cases whose samples were collected or received in the current reporting week 2Percentage=n/total number of new cases (specimen collected or received in current reporting week) 32019 Mid-year population Statistics South Africa 4Data on number of tests conducted sourced from COVID-19 weekly testing report of the same reporting week

Figure 3. Cumulative incidence risk of PCR-confirmed cases of COVID-19 by province and epidemiologic week, South Africa, 3 March-3 October 2020 (n=681 289)

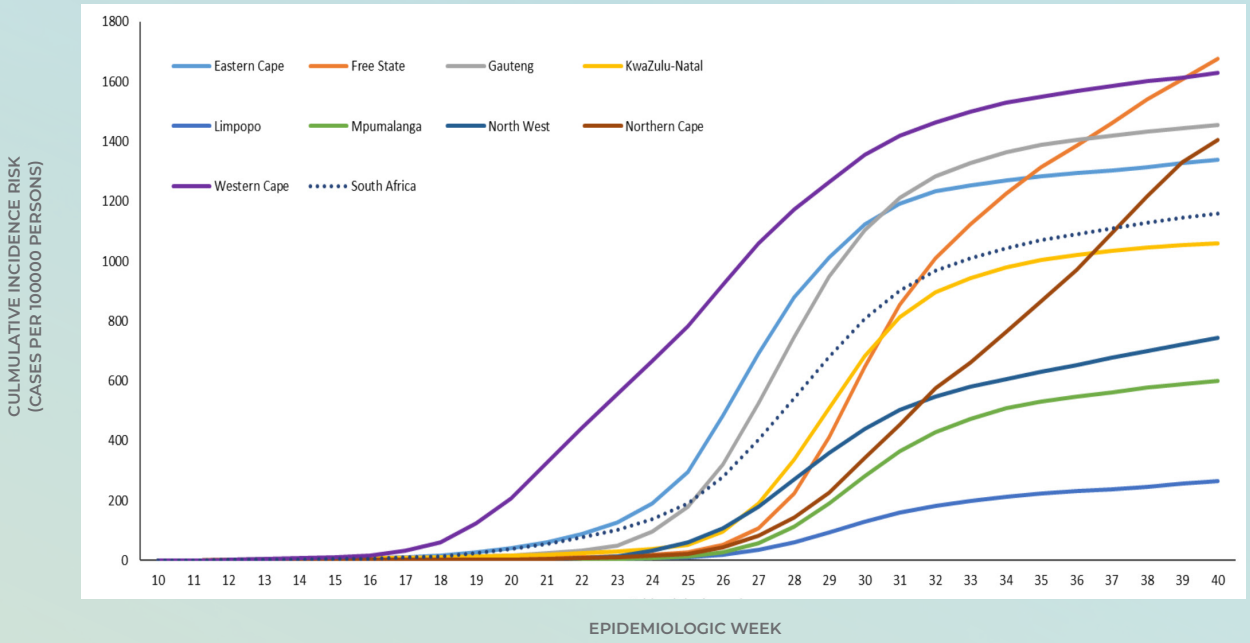


Figure 4. Weekly incidence risk of PCR-confirmed cases of COVID-19 by province and epidemiological week, South Africa, 3 March-3 October 2020 (n=681 289)

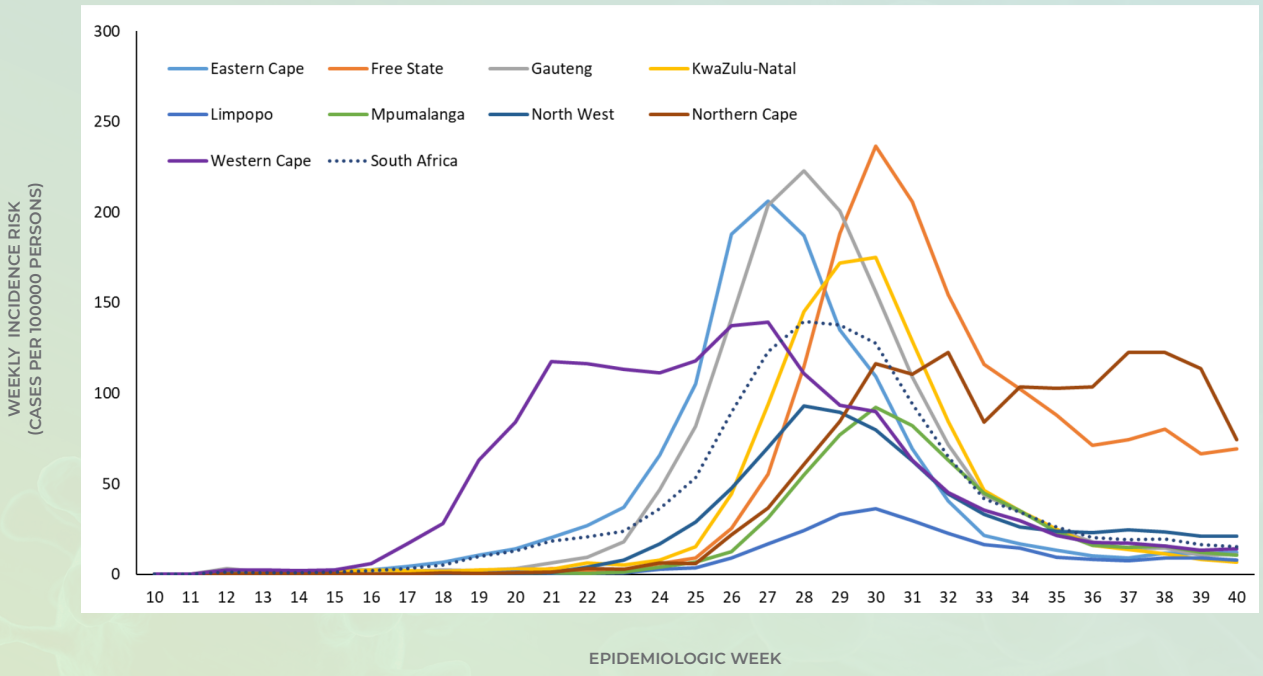
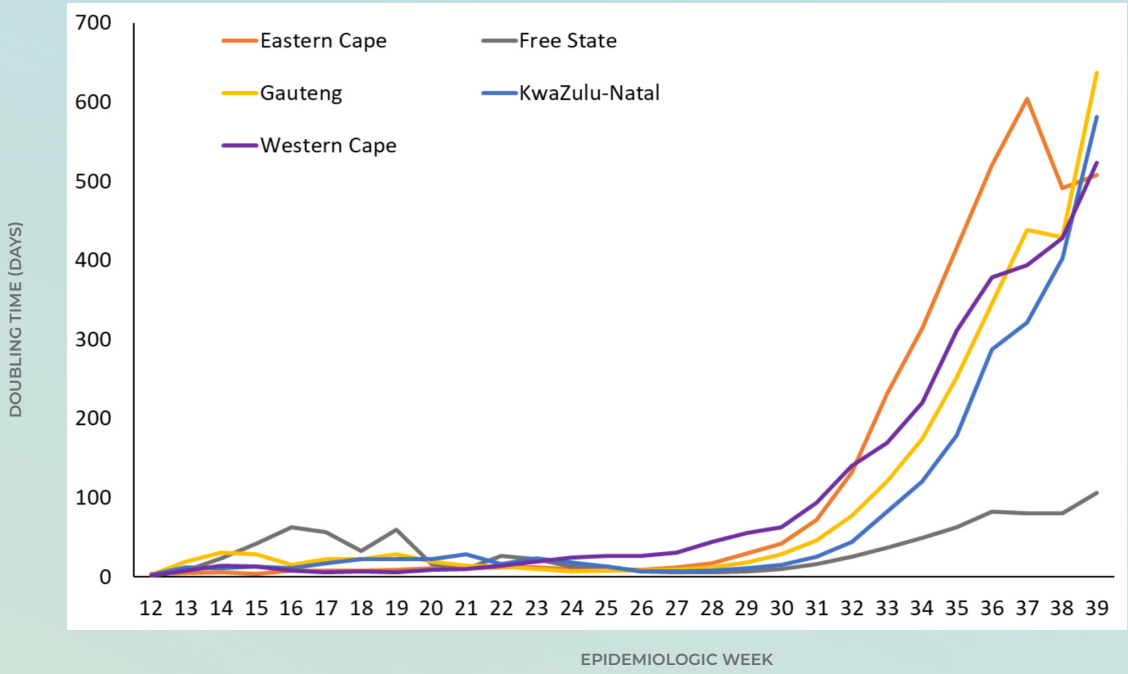


Figure 5. Doubling time of number of PCR-confirmed cases of COVID-19 by province (for 5 provinces with the majority of cases) and epidemiologic week, South Africa, 23 March-26 September 2020 (n=590 222)



Characteristics of COVID-19 cases in South Africa by age and sex

Cases of COVID-19 were reported across all age groups. The median age of COVID-19 cases in South Africa to date was 40 years with an interquartile range (IQR) of 30-52 years. The distribution of cases varied by age, with highest number of all cases to date in the 35-39-year (86 031/676 095, 12.7%) and 30-34-year (84 156/676 095, 12.4%) age group respectively (Figure 6). Similarly, among the cases reported in the past week, the highest number of cases was in the 35-39-year age group (1 032/8 876, 11.6%) followed by the 30-34-year age group (1 007/8 876, 11.3%). The median age for cases reported in week 40 was similar (38 years, IQR 27-52), to that of total cases (40 years). The highest cumulative incidence risk remained among cases aged 50-54 years (2 380.5 cases per 100 000 persons), followed by 55-59 years (2 249.8 cases per 100 000 persons) and 45-49 years (2 249.1 cases per 100 000 persons). The lowest cumulative incidence risk was reported in the younger age-groups,140.2 cases per 100 000 persons and 166.4 cases per 100 000 persons in the 0-4- and 5-9-year age groups respectively (Figure 7 and Table 2). The highest weekly incidence risk among cases detected in week 40 was reported in cases age ≥80 years (31.5 cases per 100 000 persons), followed by cases in the 50-54-year age group (29.3 cases per 100 000 persons). and the lowest weekly incidence risk was in the 0-4-year age group (2.3 cases per 100 000 persons).

To date, the majority of COVID-19 cases reported were female (58.3%, 393 714/ 675 411). This trend continued in the past week where 57.8% (5 132/ 8 882) of cases were female. The cumulative incidence risk has remained consistently higher among females (1 298.8 cases per 100 000 persons) than among males (975.8 cases per 100 000 persons) (Figure 7). However, this varied by age group with the peak cumulative incidence risk among females aged 45-49 years (2 463.4 cases per 100 000 persons) and males aged 50-54 years (2 257.4 cases per 100 000 persons) (Figure 8 and Figure 9). In week 40, the highest incidence risk for males was in the ≥ 80-year age group (39.6 cases per 100 000 persons) and females in the 50-54-year age group (30.2 cases per 100 000 persons). The high prevalence and incidence risk among females could be explained by the fact that females are likely to be more represented in occupations which put them in close proximity to others and thus exposing them to a higher risk of infection (e.g. teaching and health). This may also be partly explained by varying testing practices by age and sex (data not shown) and by different health seeking behaviour.

Figure 6. Number of laboratory-confirmed cases of COVID-19 by age group and sex, South Africa, 3 March-3 October 2020 (n=675 411, sex/age missing for 5 878)

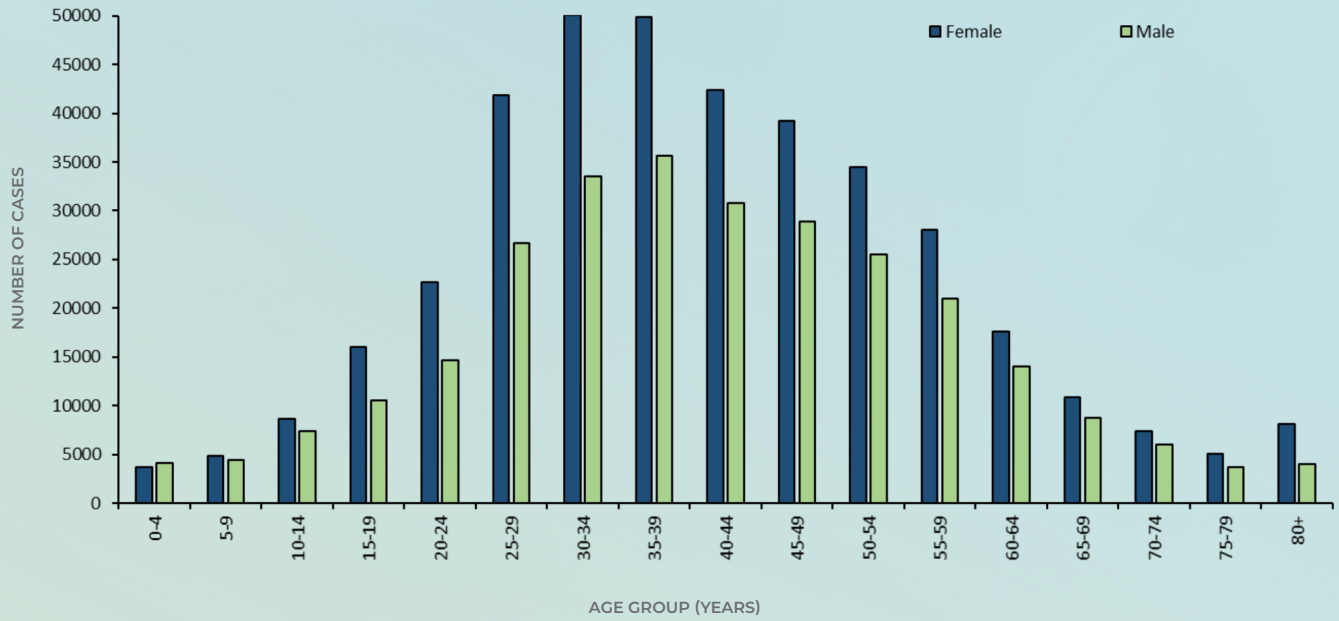


Figure 7. Cumulative incidence risk of PCR-confirmed cases of COVID-19 by age group in years and epidemiologic week, South Africa, 3 March-3 October 2020 (n= 676 095, 5 194 missing age group)

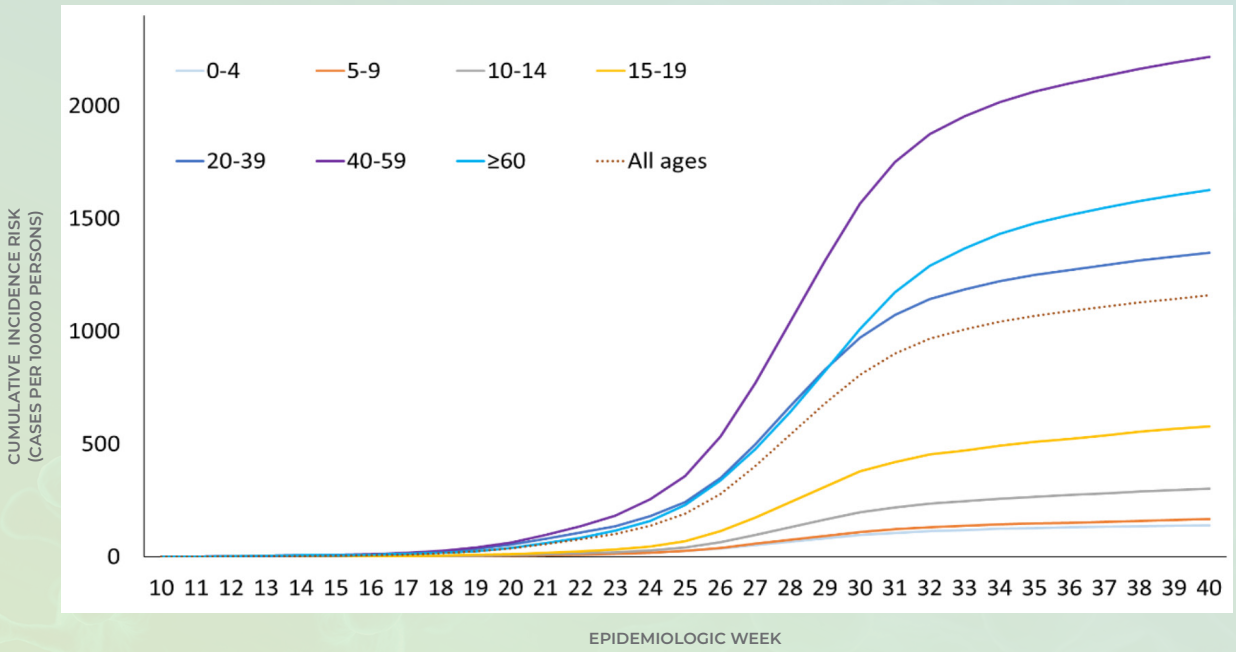


Figure 8. Cumulative incidence risk by sex and epidemiological week, South Africa, 3 March-3 October 2020 (n=675 411 sex missing for 5 878)

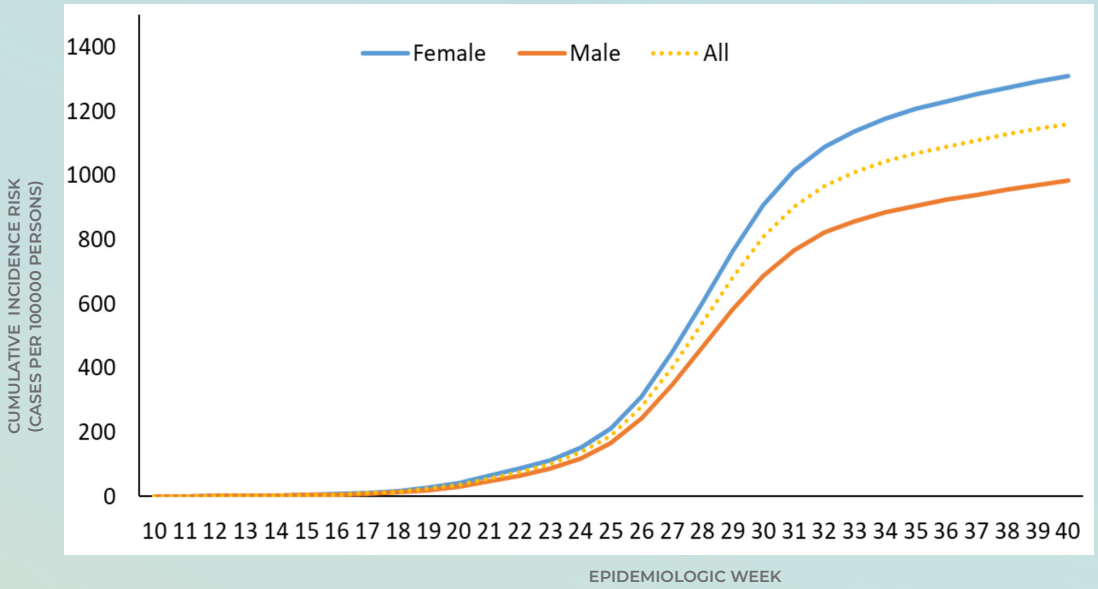
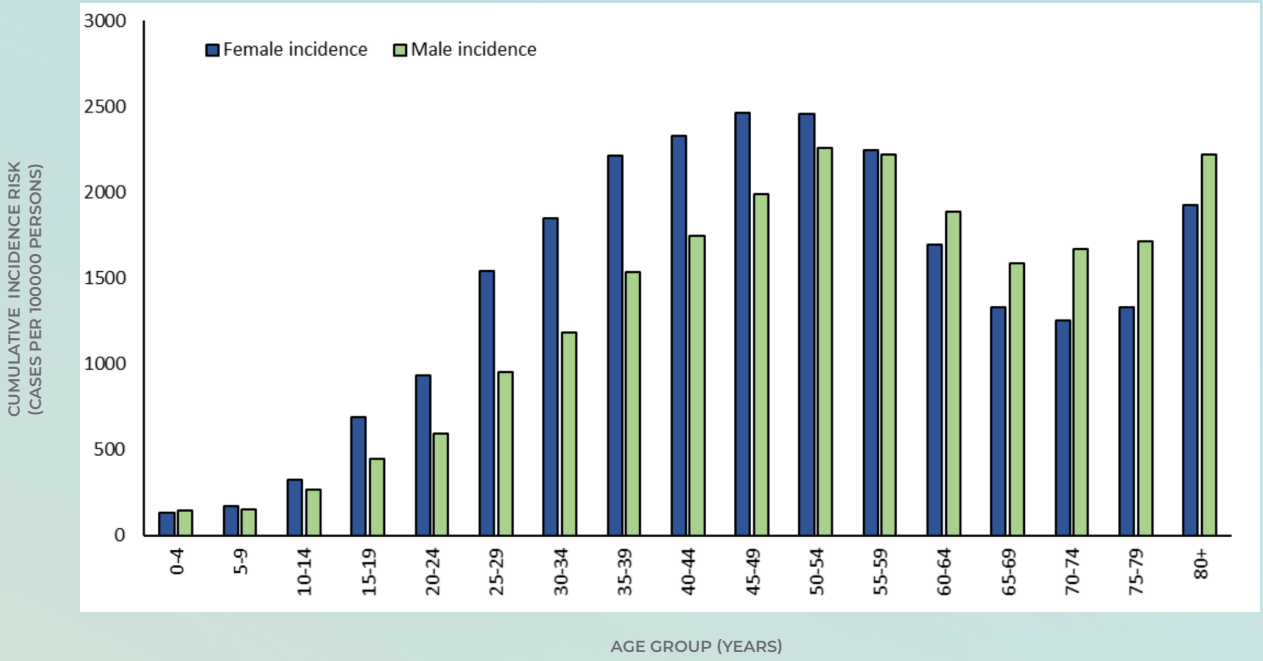


Table 2. Number of cases and cumulative/weekly incidence risk by age group, South Africa, 3 March-3 October 2020, n= 681 289

Age group (years)	Cumulative cases (n) (percentage, n/ total cases in South Africa)	New cases1 detected in week 40 (27 September – 3 October 2020), n (percentage², n/total)	Population in mid-2019³, n	Cumulative incidence risk (cases per 100 000 persons)	Incidence risk of new cases detected in week 40 (cases/100 000 persons)
0-4	8 040 (1.2)	130 (1.5)	5733 946	140.2	2.3
5-9	9 547 (1.4)	179 (2.0)	5737 439	166.4	3.1
10-14	16 408 (2.4)	354 (4.0)	5427 902	302.3	6.5
15-19	26 964 (4.0)	521 (5.9)	4660 002	578.6	11.2
20-24	37 816 (5.6)	608 (6.8)	4914 186	769.5	12.4
25-29	69 081 (10.2)	897 (10.1)	5528 571	1 249.5	16.2
30-34	84 156 (12.4)	1 007 (11.3)	5537 963	1 519.6	18.2
35-39	86 031 (12.7)	1 032 (11.6)	4571 175	1 882.0	22.6
40-44	73 612 (10.9)	801 (9.0)	3585 408	2 053.1	22.3
45-49	68 500 (10.1)	793 (8.9)	3045 617	2 249.1	26.0
50-54	60 347 (8.9)	744 (8.4)	2535 048	2 380.5	29.3
55-59	49 327 (7.3)	610 (6.9)	2192 512	2 249.8	27.8
60-64	31 867 (4.47)	410 (4.6)	1784 476	1 785.8	23.0
65-69	19 774 (2.9)	277 (3.1)	1370 121	1 443.2	20.2
70-74	13 506 (2.0)	205 (2.3)	949 812	1 422.0	21.6
75-79	8 854 (1.3)	118 (1.3)	597 874	1 480.9	19.7
≥80	12 265 (1.8)	190 (2.1)	602 969	2 034.1	31.5
Unknown	5 194	66			
Total	**681 289**	**8 942**	**58775 021**	**1 159.1**	**15.2**

[1]New cases refer to cases whose samples were collected or received in the current reporting week; [2]Percentage=n/total number of new cases (specimen collected or received in current reporting week); [3]2019 Mid-year population Statistics South Africa

Figure 9. Cumulative incidence risk by age group and sex, South Africa, 3 March-3 October 2020 (n= 675 411, sex/age missing for 5 878)



Limitations

This report is based on laboratory-based surveillance of PCR-confirmed cases. The number of reported cases is heavily dependent on testing practices. Although trends over time and comparisons by geographic area are presented in this report, changes in testing practices over time or differences by region may partially explain the results. The crude case-fatality ratio reported here is subject to numerous limitations: it is likely to be an underestimation as reporting of deaths may be delayed and deaths which occurred outside health facilities may be missed. Differences in health-seeking behaviour by age group and sex could also contribute to observed differences in case numbers between groups. The reported doubling time estimates are affected by the number of tests conducted; if fewer tests are performed, this will also increase the doubling time estimate.

Conclusions

The number of newly detected laboratory-confirmed cases of COVID-19 in South Africa continued to decrease week on week, since week 28. To date, 681 289 cases, including 16 976 deaths have been reported. The weekly incidence risk of cases per 100 000 persons continued to decrease compared to the preceeding week, except for two provinces. The sustained decline in number of cases and weekly incidence risk together with prolonged doubling time of number of cases reported from the five provinces which contribute the majority of cases may reflect a true slowing down of transmission in these provinces. In addition, changes in testing practices and/or access to testing could also contribute to changes in numbers of confirmed cases.