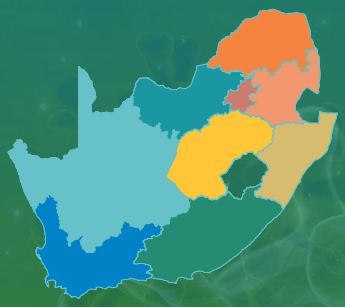
COVID-19 WEEKLY EPIDEMIOLOGY BRIEF

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

SOUTH AFRICA | WEEK **42** 2020

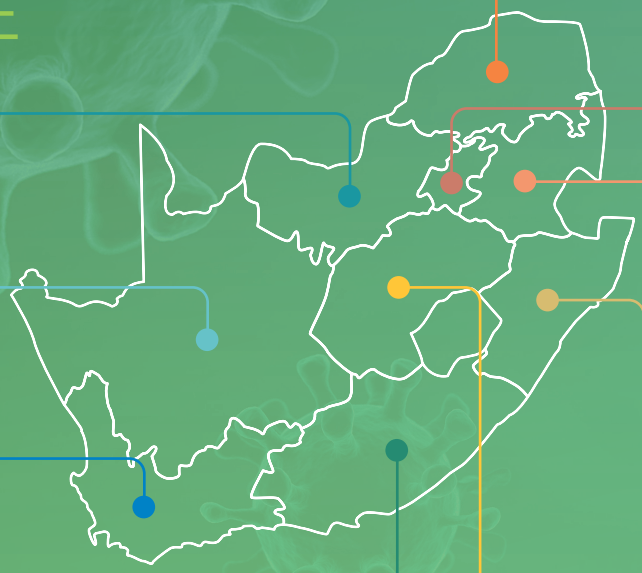
CUMULATIVE DATA FROM

31 JANUARY 2020 — 17 OCTOBER 2020



CASES	PERSONS
703 793 IN TOTAL	1180.4 INCIDENCE RISK*
9 707 THIS WEEK	39 MEDIAN AGE

PROVINCES AT A GLANCE



NORTH WEST
CASES: 31 783 IN TOTAL | 773,5 /100,000*

NORTHERN CAPE
CASES: 20 159 IN TOTAL | 1 559,3 /100,000*

WESTERN CAPE
CASES: 114 407 IN TOTAL | 1 633,0 /100,000*

EASTERN CAPE
CASES: 92 006 IN TOTAL | 1 366,3 /100,000*

LIMPOPO
CASES: 16 777 IN TOTAL | 286,7 /100,000*

GAUTENG
CASES: 225 181 IN TOTAL | 1 453,9 /100,000*

MPUMALANGA
CASES: 28 752 IN TOTAL | 614,4 /100,000*

KWAZULU-NATAL
CASES: 121 344 IN TOTAL | 1 052,3 /100,000*

FREE STATE
CASES: 53 384 IN TOTAL | 1 822,7 /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 17 October 2020 (week 42 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 become available.

Highlights

- As of 17 October 2020, a total of 703 793 laboratory-confirmed COVID-19 cases had been detected in South Africa. Of these, 11 322 were cases reported since the last report. There was a 13.0% decrease in number of new cases detected in week 42 (9 707) compared to the number of new cases detected in week 41 (11 156).
- An additional 651 deaths were reported since the last report. The overall case-fatality ratio was 2.6% (18 431/703 793).
- To date, five provinces, Gauteng (225 181/703 793, 32.0%), KwaZulu-Natal (121 344/703 793, 17.2%), Western Cape (114 407/703 793, 16.3%), Eastern Cape (92 006/703 793, 13.1%) and Free State (53 384/703 793, 7.6%) continued to report the majority (606 322/703 793, 86.2%) of total COVID-19 cases in South Africa.
- In the past week, Free State Province reported the highest number of new cases (2 105/9 707, 21.7%), followed by Gauteng Province (1 978/9 707, 20.4%), and Western Cape Province (1 375/9 707, 14.2%).
- 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 (1 822.7 cases per 100 000 persons), followed by Western Cape Province (1 633.0 cases per 100 000 persons), Northern Cape Province (1 559.3 cases per 100 000 persons), Gauteng Province (1 453.9 cases per 100 000 persons), Eastern Cape Province (1 366.3 cases per 100 000 persons) and KwaZulu-Natal Province (1 052.3 cases per 100 000 persons).
- In the past week all provinces, except KwaZulu-Natal Province reported a decline in weekly incidence risk, compared to week 41; reduction ranged from 37 cases per 100 000 persons (39.1% reduction) in Northern Cape Province to 1 case per 100 000 persons (5.2% reduction in Gauteng Province and 3.7% reduction in Eastern Cape Province). There was an increase in weekly incidence risk of 1 case per 100 000 persons in KwaZulu-Natal Province (10.4% increase).
- In the past week, Free State Province (72 cases per 100 000 persons) followed by Northern Cape Province (57 cases per 100 000 persons), Western Cape Province (19.6 cases per 100 000 persons), and North West Province (19.9 cases per 100 000 persons) reported the highest weekly incidence risk. The weekly incidence risk in all the other provinces was less than 15 cases per 100 000 persons.
- In week 42, the highest weekly incidence risk was in cases aged 50-54 years (30.4 cases per 100 000), followed by cases aged 55-59 years (28.3 cases per 100 000 persons). The lowest weekly incidence risk was in the 0-4-year age group (1.9 cases per 100 000 persons).
- To date, the majority of COVID-19 cases reported were female (58.2%, 406 401/697 717). This trend continued in the past week, 56.4% (5441/ 9 645) of cases were female.

INCIDENCE RISK FOR WEEK 42

16.3

CASES PER 100 000 PERSONS

21.7%

OF CASES REPORTED IN FREE STATE IN WEEK 42

IN WEEK 42, THE HIGHEST WEEKLY INCIDENCE RISK WAS IN CASES AGED 50-54 YEARS (30.4 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. For reports published from week 41 onwards we used mid-year population estimates from Statistics South Africa for 2020 to calculate the incidence risk (cumulative or weekly incidence), expressed as cases per 100 000 persons. In historical reports published from epidemiologic week 10 (during the start of COVID-19 epidemic in South Africa) to week 40, 2019 mid-year population estimates were used. 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 17 October 2020, a total of 703 793 laboratory-confirmed COVID-19 cases were reported in South Africa. This is 11 322 more cases than the number reported in the last report. The number of new cases detected in week 42 (9 707) was lower than the number of new cases detected in week 41 (11 156), this represented a 13.0% decrease compared to the previous week. In the past week, Free State Province reported the highest percentage of new cases (2 105/9 707, 21.7%), followed by Gauteng Province (1 978/9 707, 20.4%) and Western Cape Province (1 375/9 707, 14.2%) (Table 1). Five provinces, Gauteng (225 181/703 793, 32.0%), KwaZulu-Natal (121 344/703 793, 17.2%), Western Cape (114 407/703 793, 16.3%), Eastern Cape (92 006/703 793, 13.1%) and Free State (53 384/703 793, 7.6%) continued to contribute the majority (606 322/703 793, 86.2%) 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 41 to week 42.

The cumulative incidence risk for the country increased from 1 164.1 cases per 100 000 persons in week 41 to 1 180.4 cases per 100 000 persons in week 42. The cumulative incidence risk varied by province over time (Figure 3). This is partly explained by testing differences by province (Table 1). The Free State Province had the highest cumulative incidence risk (1 822.7 cases per 100 000 persons), followed by Western Cape Province (1 633.0 cases per 100 000 persons), Northern Cape Province (1 559.3 cases per 100 000 persons), Gauteng Province (1 453.9 cases per 100 000 persons), Eastern Cape Province (1 366.3 cases per 100 000 persons), and KwaZulu-Natal Province (1 052.3 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 (286.7 cases per 100 000).

In the past week, Free State Province reported the highest weekly incidence risk (71.9 cases per 100 000 persons), followed by Northern Cape Province (57.5 cases per 100 000 persons), Western Cape Province and North West Province reported similar weekly incidence (19.6 and 19.9 cases per 100 000 persons, respectively). The weekly incidence risk in the rest of the provinces were below 15 cases per 100 000 persons. In the past week, eight provinces reported a decline in weekly incidence risk; Eastern Cape, Free State, Gauteng, Limpopo, Mpumalanga, North West, Northern Cape and Western Cape provinces. The reduction ranged from 37 cases per 100 000 persons in Northern Cape Province (39.1% reduction), to 1 case per 100 000 persons in Gauteng Province (5.2% reduction) and Eastern Cape Province (3.7% reduction). There was an increase in weekly incidence risk of 1 case per 100 000 persons in KwaZulu-Natal Province (10.4% 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, in week 41 it decreased in all provinces except for KwaZulu-Natal. KwaZulu-Natal Province reported the longest doubling time in week 41 (732.8 days) an increase from 616.2 days (18.9% increase) in week 40 (Figure 5). In week 41, the estimated doubling time of number of cases decreased from 388.0 days to 363.5 days (6.3% decrease) in the Eastern Cape Province, from 88.5 days to 82.6 days (6.6% decrease) in the Free State Province, from 512.8 days to 455.7 days (11.1% decrease) in Gauteng Province, from 443.9 days to 312.8 days (29.5% decrease) in Western Cape Province, compared to week 40.

The case-fatality ratio was 2.6% (18 431/703 793); an additional 651 deaths were reported since the last report. The number of deaths reported in the past week was lower than the number reported in the previous week, 651 compared to 804. 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-17 October 2020 (n=703 793)

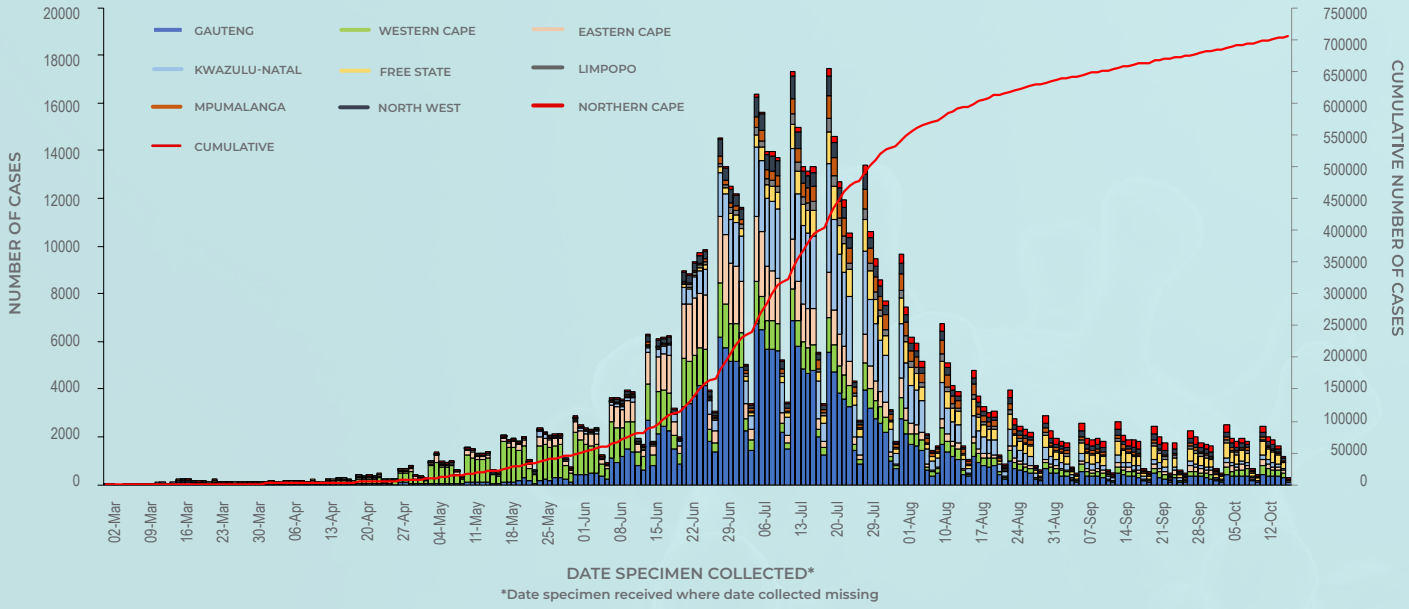


Figure 2. Number and cumulative number of laboratory-confirmed cases of COVID-19, by testing laboratory sector and date of specimen collection, South Africa, 3 March-17 October 2020 (n=703 793)

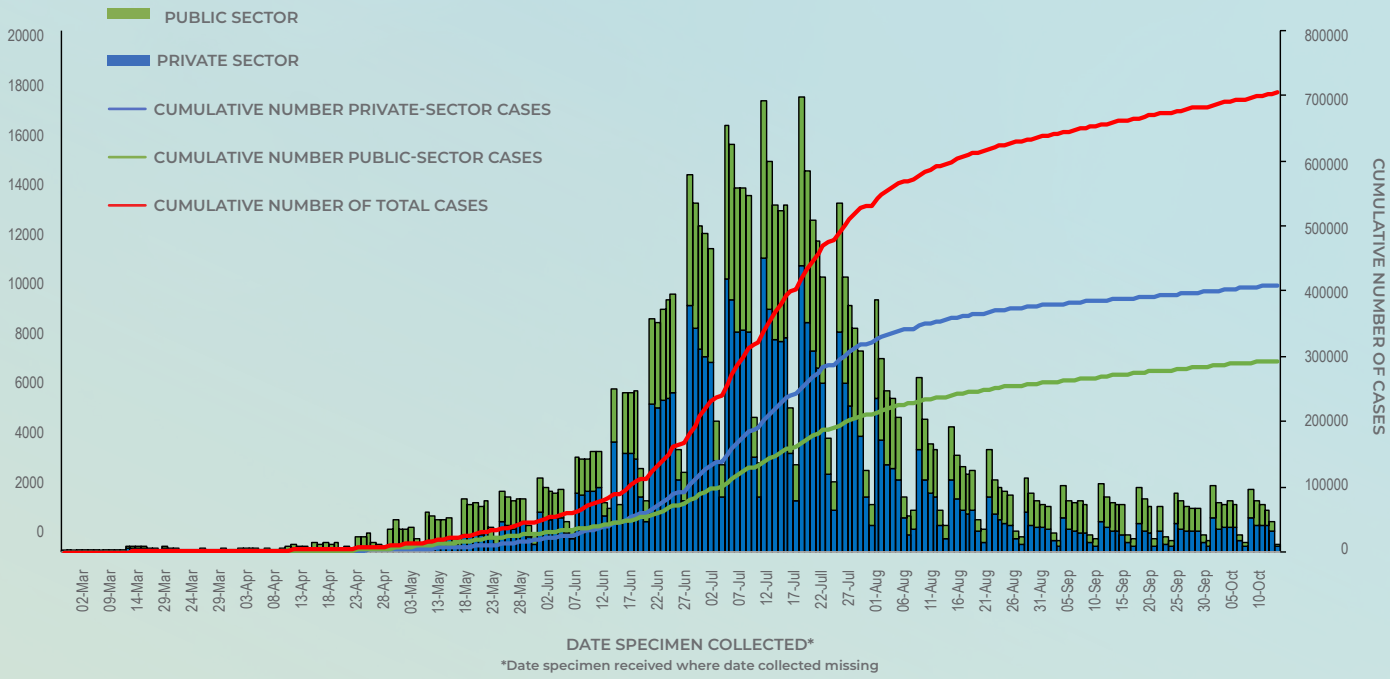


Table 1. Number and cumulative incidence risk of laboratory-confirmed cases of COVID-19 and testing per 100 000 persons by province, South Africa, 3 March-17 October 2020 (n=703 793)

Province	Cumulative cases (n) (percentage, n/ total cases in South Africa)	New cases[1] detected in 42 (11-17 October 2020), n (percentage[2], n/ total)	Population in mid-2020[3], n	Cumulative incidence risk (cases per 100 000 persons)	Incidence risk of new cases detected in week 42 (cases/100 000 persons)	Tests[4] per 100 000 persons, 11-17 October 2020
Eastern Cape	92 006 (13.1)	980 (10.1)	6 734 001	1366.3	14.6	140.1
Free State	53 384 (7.6)	2 105 (21.7)	2 928 903	1822.7	71.9	340.3
Gauteng	225 181 (32.0)	1 978 (20.4)	15 488 137	1453.9	12.8	213.6
KwaZulu-Natal	121 344 (17.2)	837 (8.6)	11 531 628	1052.3	7.3	142.1
Limpopo	16 777 (2.4)	386 (4.0)	5 852 553	286.7	6.6	52.6
Mpumalanga	28 752 (4.1)	484 (5.0)	4 679 786	614.4	10.3	113.6
North West	31 783 (4.5)	819 (8.4)	4 108 816	773.5	19.9	113.6
Northern Cape	20 159 (2.9)	743 (7.7)	1 292 786	1559.3	57.5	317.8
Western Cape	114 407 (16.3)	1 375 (14.2)	7 005 741	1633.0	19.6	264.1
Unknown	0	0	0			
Total	**703 793**	**9 707**	**59 622 351**	**1180.4**	**16.3**	**175.4**

[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]2020 Mid-year population Statistics South Africa [4]Data 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-17 October 2020 (n=703 793)

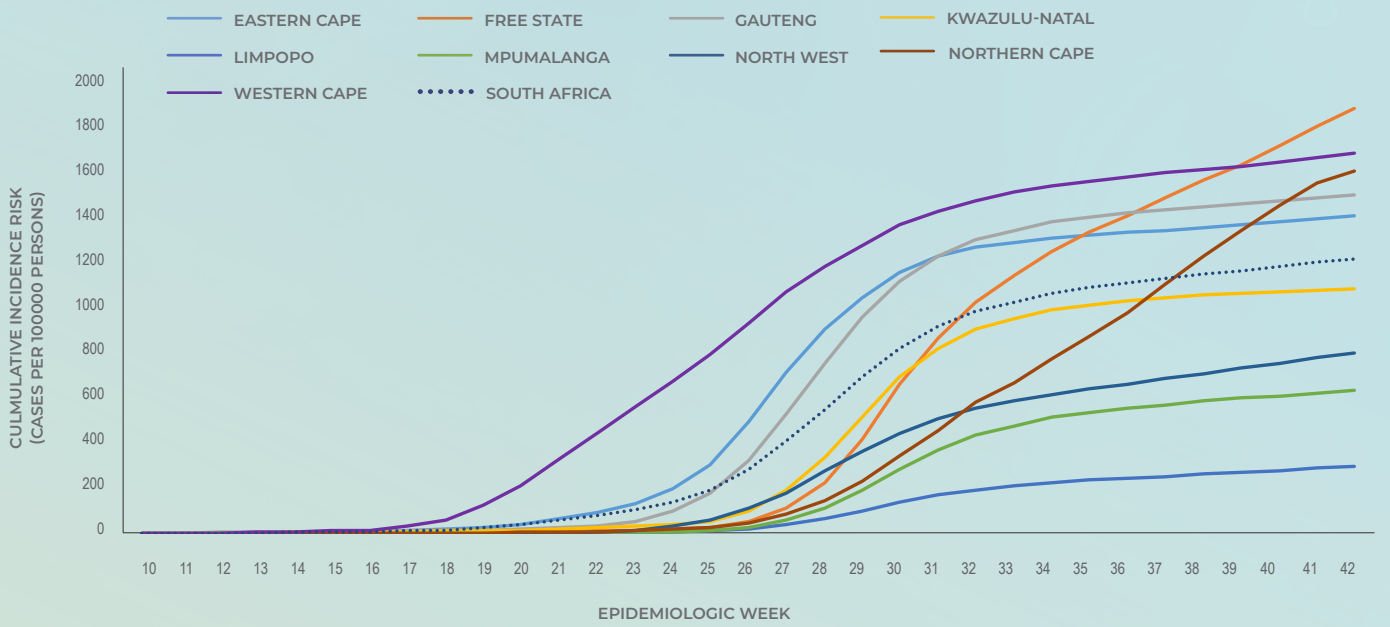


Figure 4. Weekly incidence risk of PCR-confirmed cases of COVID-19 by province and epidemiologic week, South Africa, 3 March-17 October 2020 (n=703 793)

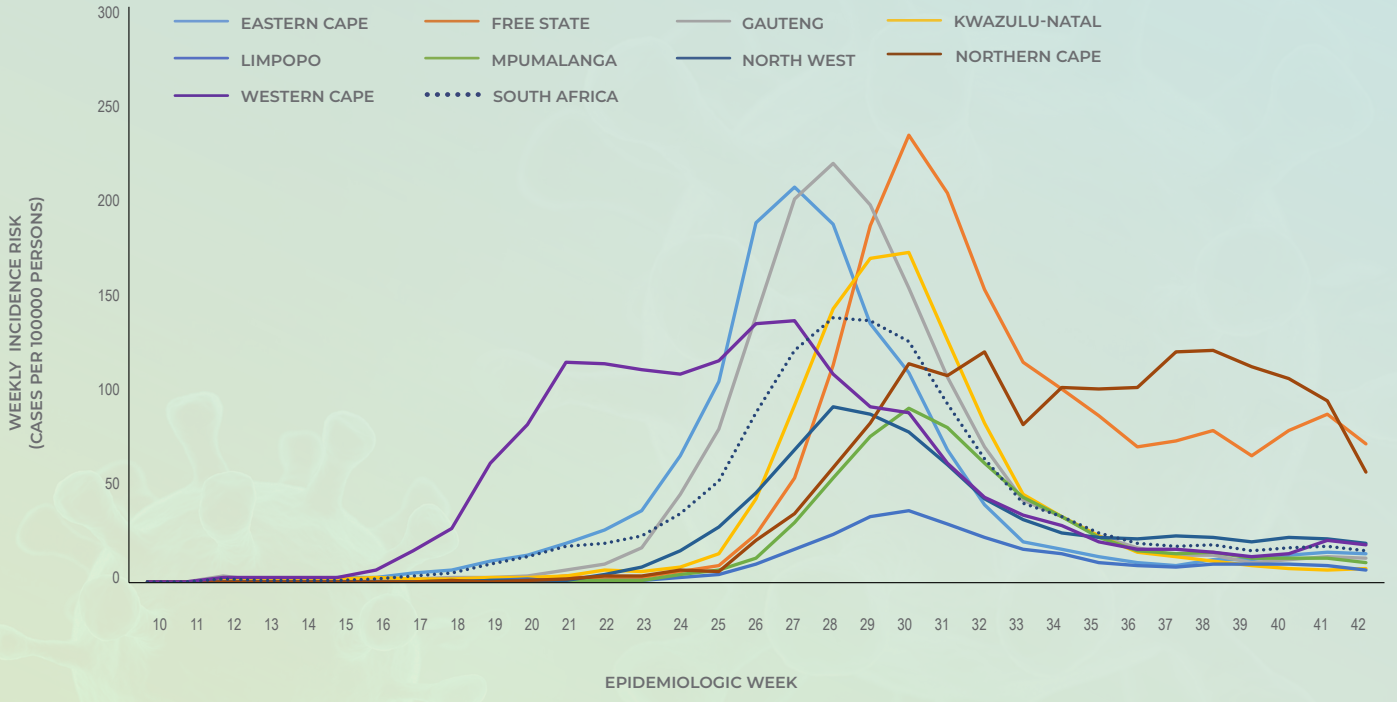
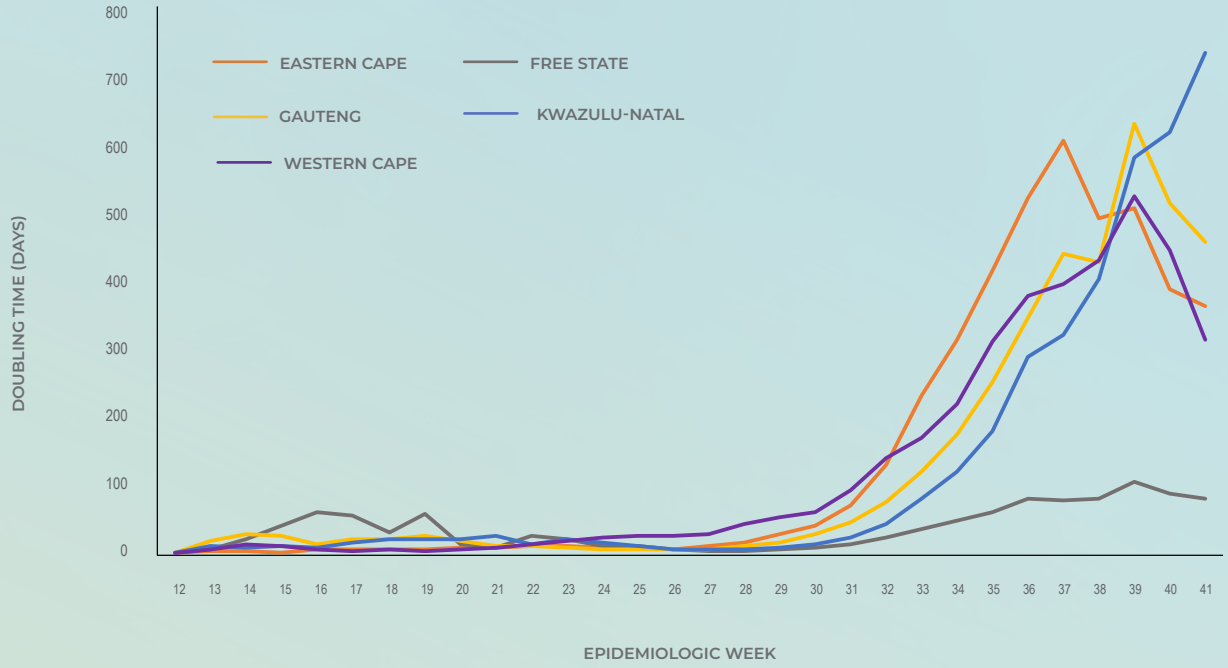


Figure 5. Doubling time of number of PCR-confirmed cases of COVID-19 by province (for 5 provinces with the majority of cases) and epidemiologic week, South Africa, 23 March-10 October 2020 (n=606 322)



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 39 years with an interquartile range (IQR) of 29-52 years. The distribution of cases varied by age, with highest number of all cases to date in the 35-39-year (88 503/ 698,414, 12.7%) and 30-34-year (86 731/698 414, 12.4%) age groups (Figure 6). Similarly, among the cases reported in the past week, the highest number of cases was in the 35-39-year age group (1 083/9 634, 11.2%) followed by the 30-34-year age group (1 073/9 634, 11.1%). The median age for cases reported in week 42 was similar (37 years, IQR 26-51), to that of total cases (39 years). The highest cumulative incidence risk remained among cases aged 50-54 years (2 416.7 cases per 100 000 persons), followed by 55-59 years (2293.8 cases per 100 000 persons) and 45-49 years (2 222.7 cases per 100 000 persons). The lowest cumulative incidence risk was reported in the younger age-groups, 144.9 cases per 100 000 persons and 174.2 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 42 was reported in cases aged, 50-54-years (30.4 cases per 100 000 persons), followed by cases in the 55-59-year age group (28.3 cases per 100 000 persons) and the lowest weekly incidence risk was in the 0-4-year age group (1.9 cases per 100 000 persons).

To date, the majority of COVID-19 cases reported were female (58.2%, 406 401/ 697 717). This trend continued in the past week where 56.4%, (5 441/9 645) of cases were female. The cumulative incidence risk has remained consistently higher among females (1323.5 cases per 100 000 persons) than among males (993.3 cases per 100 000 persons) (Figure 8). The peak cumulative incidence risk was in the same age group in both males and females; 50-54 years (2552.7 cases per 100 000 persons in females and 2228.1 cases per 100 000 persons in males) (Figure 9). In week 42, the highest incidence risk for males was in individuals aged ≥80 years (32.8 cases per 100 000 persons) and females in the 50-54-year age group (31.5 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-17 October 2020 (n=697 717, sex/age missing for 6 076)

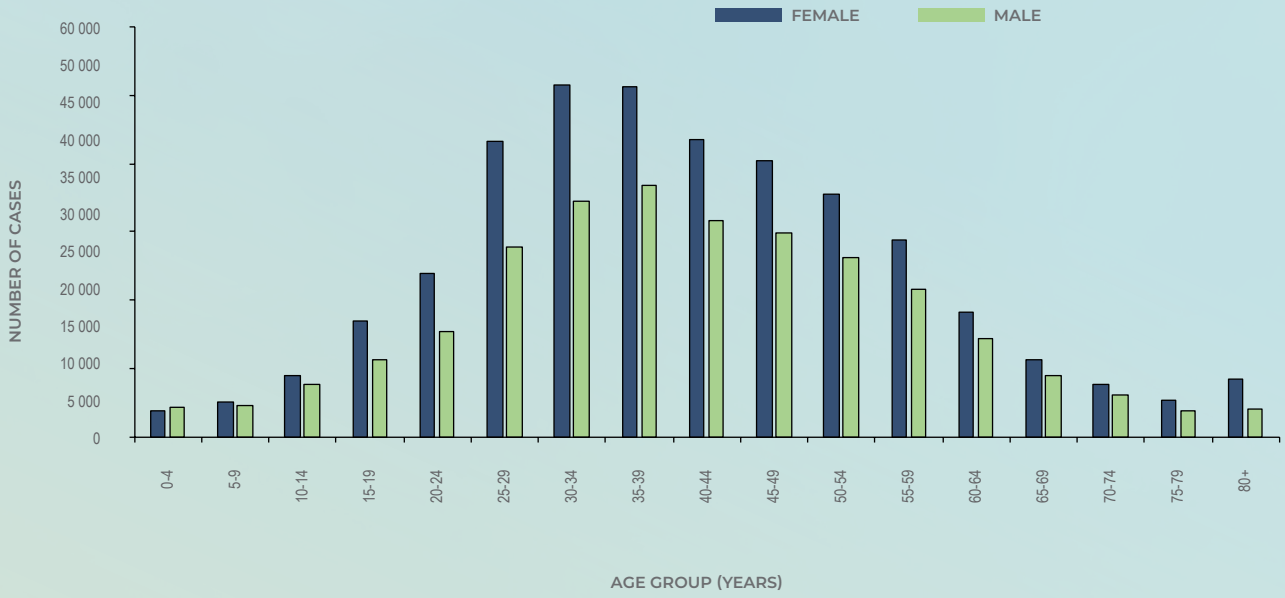


Figure 7. Cumulative incidence risk of PCR-confirmed cases of COVID-19 by age group in years and epidemiologic week, South Africa, 3 March-17 October 2020 (n= 698 414, 5 379 missing age)

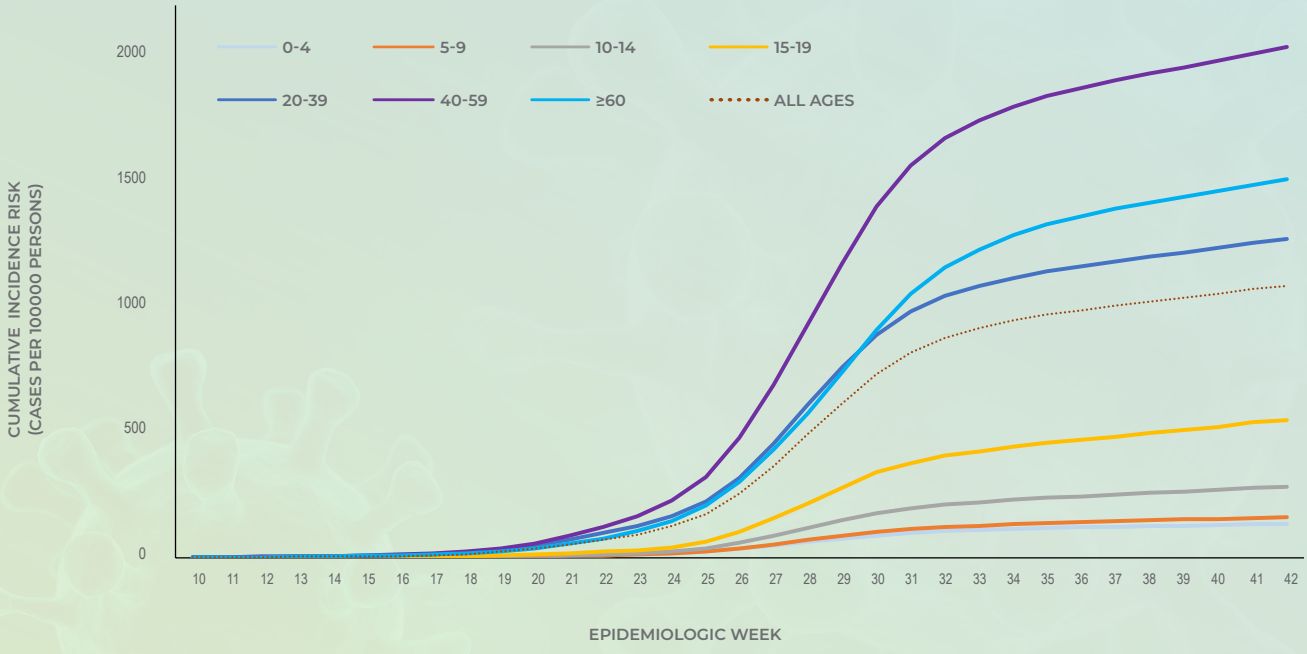


Figure 8. Cumulative incidence risk by sex and epidemiologic week, South Africa, 3 March-17 October 2020 (n=697 717 sex missing for 6 076)

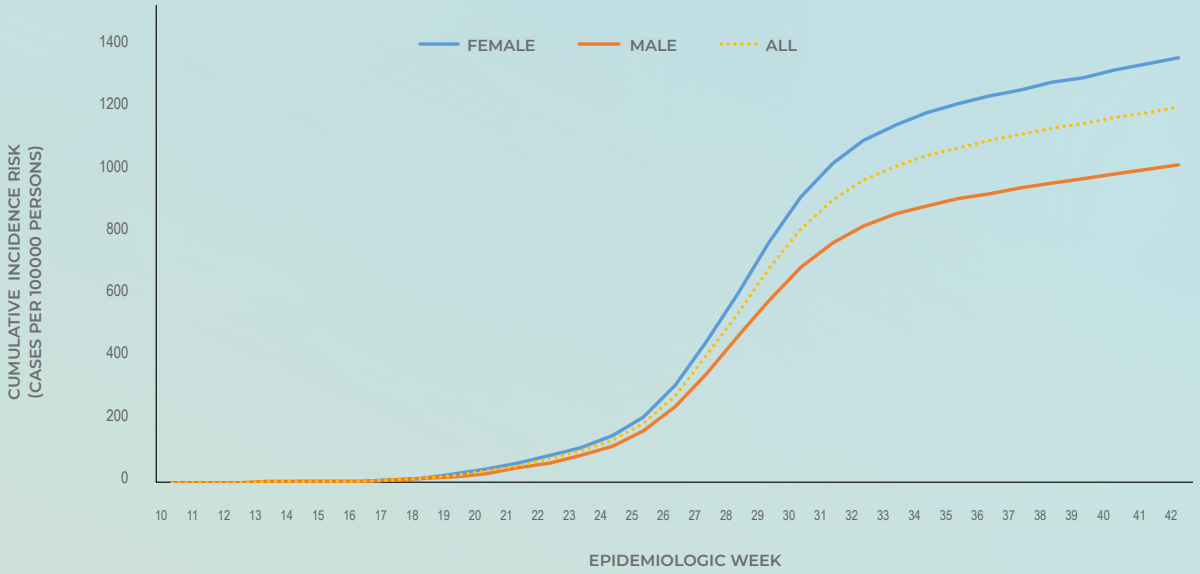
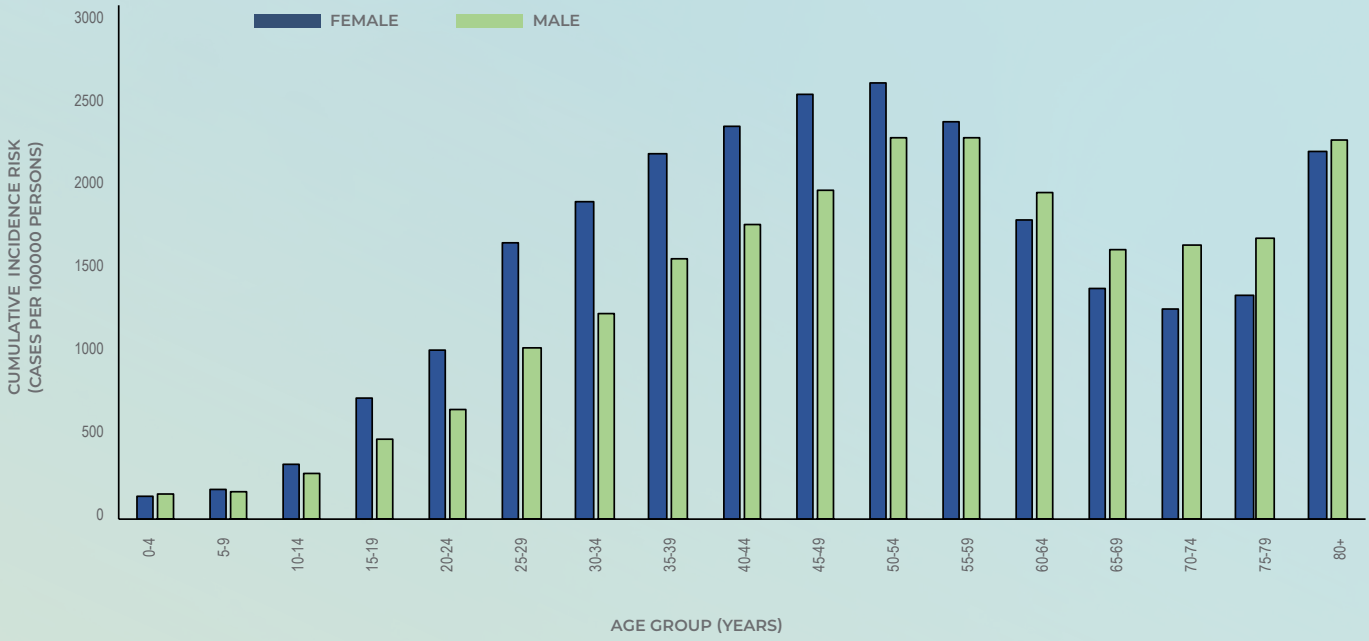


Table 2. Number of cases and cumulative/weekly incidence risk by age group, South Africa, 3 March-17 October 2020, n= 703 793

Age group (years)	Cumulative cases (n) (percentage, n/ total cases in South Africa)	New cases1 detected in 42 (11-17 October 2020), n (percentage[2], n/total)	Population in mid-2020[3], n	Cumulative incidence risk (cases per 100 000 persons)	Incidence risk of new cases detected in week 42 (cases/100 000 persons)
0-4	8 325 (1.2)	107 (1.1)	5743 450	144.9	1.9
5-9	9 958 (1.4)	151 (1.6)	5715 952	174.2	2.6
10-14	17 147 (2.5)	302 (3.1)	5591 553	306.7	5.4
15-19	28 551 (4.1)	600 (6.2)	4774 579	598.0	12.6
20-24	39 809 (5.7)	919 (9.5)	4823 367	825.3	19.1
25-29	71 444 (10.2)	1 054 (10.9)	5420 754	1318.0	19.4
30-34	86 731 (12.4)	1 073 (11.1)	5641 750	1537.3	19.0
35-39	88 503 (12.7)	1 083 (11.2)	4798 293	1844.5	22.6
40-44	75 583 (10.8)	883 (9.2)	3733 942	2024.2	23.6
45-49	70 453 (10.1)	824 (8.6)	3169 648	2222.7	26.0
50-54	62 139 (8.9)	782 (8.1)	2571 263	2416.7	30.4
55-59	50 722 (7.3)	625 (6.5)	2211 309	2293.8	28.3
60-64	32 880 (4.7)	440 (4.6)	1796 316	1830.4	24.5
65-69	20 412 (2.9)	285 (3.0)	1408 665	1449.0	20.2
70-74	13 977 (2.0)	225 (2.3)	1007 174	1387.7	22.3
75-79	9 161 (1.3)	122 (1.3)	637 062	1438.0	19.2
≥80	12 619 (1.8)	159 (1.7)	577 273	2186.0	27.5
Unknown	5 379	73			
Total	**703 793**	**9707**	**59 622 350**	**1180.4**	**16.3**

[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]2020 Mid-year population Statistics South Africa

Figure 9. Cumulative incidence risk by age group and sex, South Africa, 3 March-17 October 2020 (n= 697 717, sex/age missing for 6 076)



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, 703 793 cases, including 18 431 deaths have been reported. The weekly incidence risk of cases per 100 000 persons continued to decrease compared to the preceding week, except for KwaZulu-Natal Province. The sustained decline in number of cases and weekly incidence risk may reflect a true slowing down of viral transmission, however the decreased doubling time of number of cases reported from four of the five provinces which contribute the majority of cases may indicate continued viral transmission within provinces. In addition, changes in testing practices and/or access to testing could also contribute to changes in numbers of confirmed cases.