

COVID-19 WEEKLY EPIDEMIOLOGY BRIEF

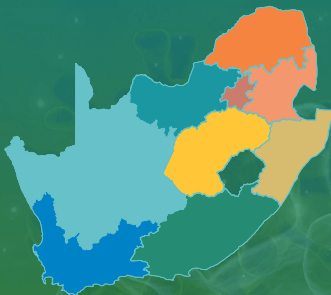


NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES

Division of the National Health Laboratory Service

SOUTH AFRICA WEEK 41 2020

CUMULATIVE DATA FROM



CASES

692 471
IN TOTAL

9 634
THIS WEEK

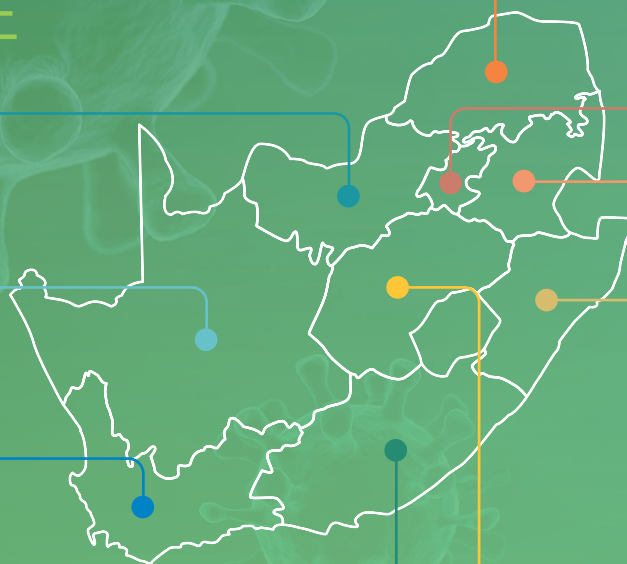


PERSONS

1161.4
INCIDENCE RISK*

39
MEDIAN AGE

PROVINCES AT A GLANCE



* 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 10 October 2020 (week 41 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

- For the first time this week, we used the recently released 2020 mid-year population estimates to calculate the incidence risks instead of the 2019 mid-year population estimates. This has led to minimal change to the trends in incidence risks reported previously.
- As of 10 October 2020, a total of 692 471 laboratory-confirmed COVID-19 cases had been detected in South Africa. Of these, 11 182 were cases reported since the last report. There was a 7.2% decrease in number of new cases detected in week 41 (9 634) compared to the number of new cases detected in week 40 (10 377).
- An additional 804 deaths were reported since the last report. The overall case-fatality ratio was 2.6% (17 780/692 471).
- To date, five provinces, Gauteng (223 005/692 471, 32.2%), KwaZulu-Natal (120 419/692 471, 17.4%), Western Cape (112 938/692 471, 16.3%), Eastern Cape (90 867/692 471, 13.1%) and Free State (50 852/692 471, 7.3%) continued to report the majority (598 081/692 471, 86.4%) of total COVID-19 cases in South Africa.
- Similar to the past two weeks, in the past week, Free State Province reported the highest number of new cases (2 139/9 634, 22.2%), followed by Gauteng Province (1 895/9 634, 19.7%), and Western Cape Province (1 402/9 634, 14.6%).
- In the past week, six provinces reported cumulative incidence risk above 1000 cases per 100 000 persons; Free State Province reported the highest cumulative incidence risk (1 736.2 cases per 100 000), followed by Western Cape Province (1 612.1 cases per 100 000 persons), Northern Cape Province (1 475.7 cases per 100 000 persons), replacing Gauteng Province (1 439.8 cases per 100 000 persons), Eastern Cape Province (1 349.4 cases per 100 000 persons), and KwaZulu-Natal Province (1 044.2 cases per 100 000 persons).
- In the past week seven provinces reported a decline in weekly incidence risk, compared to week 40; reduction ranged from 33 cases per 100 000 persons (32% reduction) in Northern Cape Province to 1 case per 100 000 persons (14% reduction in Limpopo Province, 11% reduction in Mpumalanga Province, and 10% reduction in Eastern Cape Province). There was an increase in weekly incidence risk of 5 cases per 100 000 persons in Western Cape Province (33% increase).
- In the past week, Free State Province (73 cases per 100 000 persons) followed by Northern Cape Province (71 cases per 100 000 persons) and Western Cape (20 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 41, the highest weekly incidence risk was in cases aged 50-54 years (30.3 cases per 100 000 persons), followed by cases aged 45-49 years (28.1 cases per 100 000 persons). The lowest weekly incidence risk remained in the 0-4-year age group (2.0 cases per 100 000 persons).
- To date, the majority of COVID-19 cases reported were female (58.3%, 400 042/ 686 472). This trend continued in the past week, 56.8% (5 413/9 538) of cases were female.

INCIDENCE RISK FOR WEEK 41

16.2
CASES PER
100 000
PERSONS

22.2%
OF CASES
REPORTED IN
FREE STATE IN
WEEK 41

IN WEEK 41,
THE HIGHEST
WEEKLY
INCIDENCE
RISK WAS IN
CASES AGED
50-54 YEARS
(30.3 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 mid-year population estimates from Statistics South Africa to calculate the incidence risk (cumulative or weekly incidence), expressed as cases per 100 000 persons. In reports published in epidemiologic week 10 (during the start of COVID-19 epidemic in South Africa) to week 40, 2019 mid-year population estimates were used. Following the release of 2020 mid-year population estimates at the end of July 2020, the revised 2020 population estimates are now used in reports from week 41 onwards. The incidence risk calculations have been updated to reflect the changes as a result of the increase in the 2020-mid-year population estimates (59 622 351) compared to 2019 mid-year population estimates (58 775 020). 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 10 October 2020, a total of 692 471 laboratory-confirmed COVID-19 cases were reported in South Africa. This is 11 182 more cases than the number reported in the last report. The number of new cases detected in week 41 (9 634) was lower than the number of new cases detected in week 40 (10 377), this represented a 7.2% decrease compared to the previous week. In the past week, Free State Province reported the highest percentage of new cases (2 139/9 634, 22.2%), followed by Gauteng Province (1 895/9 634, 19.7%) and Western Cape (1 402/9 634, 14.6%) (Table 1). Five provinces, Gauteng (223 005/692 471, 32.2%), KwaZulu-Natal (120 419/692 471, 17.4%), Western Cape (112 938/692 471, 16.3%), Eastern Cape (90 867/692 471, 13.1%) and Free State (50 852/692 471, 7.3%) continued to contribute the majority (598 081/692 471, 86.4%) 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 40 to week 41.

The increase in 2020 mid-year population estimates slightly decreased the overall incidence risk of COVID-19 cases. However, the difference was small and this did not change the general trend in incidence risk. The cumulative incidence risk for the country increased from 1 145.3 cases per 100 000 persons in week 40 to 1 161.4 cases per 100 000 persons in week 41. 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 (1 736.2 cases per 100 000), followed by Western Cape Province (1 612.1 cases per 100 000 persons), Northern Cape Province (1 475.7 cases per 100 000 persons), Gauteng Province (1 439.8 cases per 100 000 persons), Eastern Cape Province (1 349.4 cases per 100 000), and KwaZulu-Natal Province (1 044.2 cases per 100 000 persons). The other provinces continued to report cumulative incidence risk below 1000 cases per 100 000 persons, with

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Limpopo Province reporting the lowest cumulative incidence risk (278.9 cases per 100 000).

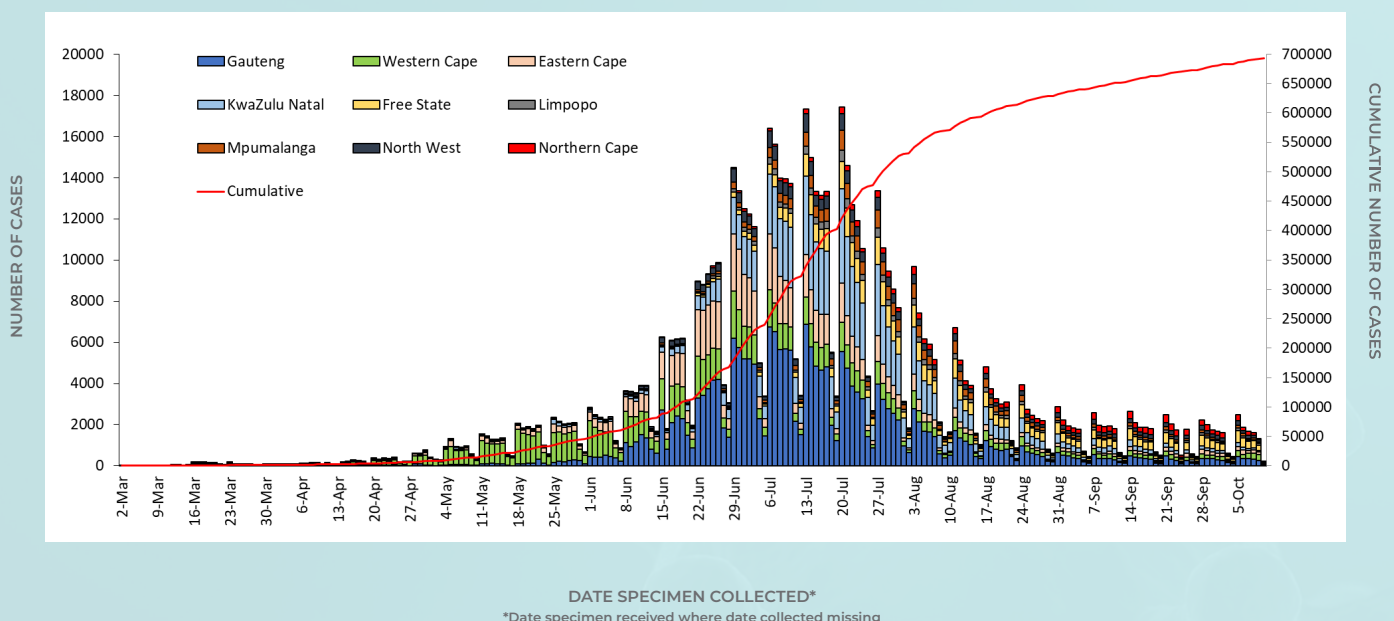
In the past week, Free State Province reported the highest weekly incidence risk (73.0 cases per 100 000 persons), replacing Northern Cape Province (70.9 cases per 100 000 persons), which has been reporting the highest weekly incidences for the past 6 weeks, and followed by Western Cape Province (20.0 cases per 100 000). The weekly incidence risk in the rest of the provinces remained below 20 cases per 100 000 persons. In the past week, seven provinces reported a decline in weekly incidence risk; Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga, North West and Northern Cape Provinces. The reduction ranged from 33 cases per 100 000 persons (32% reduction) in Northern Cape Province to 1 case per 100 000 persons (14% reduction in Limpopo Province, 11% reduction in Mpumalanga Province, and 10% reduction in Eastern Cape Province). The weekly incidence risk remained the same compared to week 40 in Gauteng Province and increased by 5 cases per 100 000 persons in Western Cape Province (33% 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 40 it decreased in all provinces except for KwaZulu-Natal. KwaZulu-Natal Province reported the longest doubling time in week 40 (617.0 days) an increase from 580.0 days (6.4% increase) in week 39 (Figure 5). In week 40, the estimated doubling time of number of cases decreased from 506.7 days to 388.0 days (23.4% decrease) in the Eastern Cape Province, from 105.4 days to 88.5 days (16.1% decrease) in the Free State Province, from 629.2 days to 519.4 days (17.4% decrease) in Gauteng Province, from 523.1 days to 443.0 days (15.3% decrease) in Western Cape Province, compared to week 39.

The case-fatality ratio was 2.6% (17 780/692 471); an additional 804 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, 804 compared to 578. 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-10 October 2020 (n=692 471)



*Date specimen received where date collected missing

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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-10 October 2020 (n=692 471)

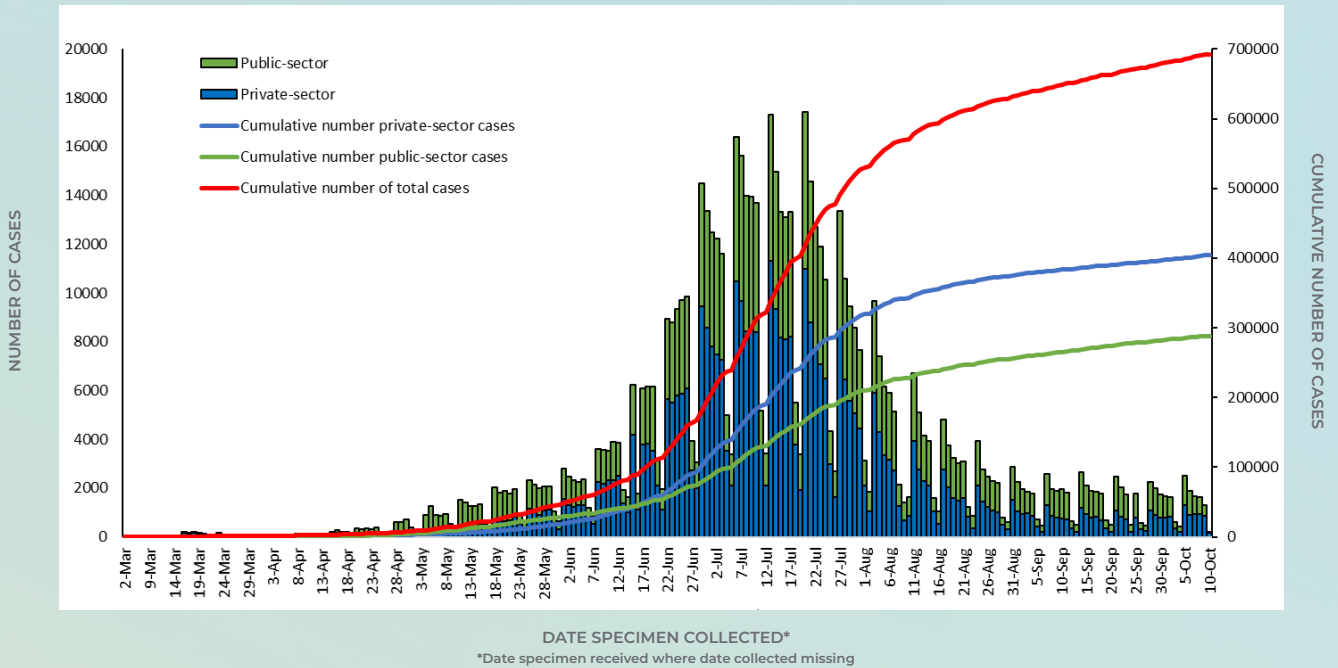


Table 1. Number and cumulative incidence risk of laboratory-confirmed cases of COVID-19 and testing per 100 000 persons by province, South Africa, 3 March-10 October 2020 (n=692 471)

Province	Cumulative cases (n) (percentage, n/ total cases in South Africa)	New cases ¹ detected in week 41 (4-10 October 2020), n (percentage ² , n/total) ^{tab}	Population in mid-2020 ³ , n	Cumulative incidence risk (cases per 100 000 persons)	Incidence risk of new cases detected in week 41 (cases/100 000 persons)	Tests ⁴ per 100 000 persons, 4-10 October 2020
Eastern Cape	90 867 (13.1)	860 (8.9)	6 734 001	1349.4	12.8	135.6
Free State	50 852 (7.3)	2 139 (22.2)	2 928 903	1736.2	73.0	335.4
Gauteng	223 005 (32.2)	1 895 (19.7)	15 488 137	1439.8	12.2	203.6
KwaZulu-Natal	120 419 (17.4)	671 (7.0)	11 531 628	1044.2	5.8	141.9
Limpopo	16 324 (2.4)	463 (4.8)	5 852 553	278.9	7.9	52.1
Mpumalanga	28 169 (4.1)	498 (5.2)	4 679 786	601.9	10.6	115.1
North West	30 819 (4.5)	789 (8.2)	4 108 816	750.1	19.2	99.8
Northern Cape	19 078 (2.8)	917 (9.5)	1 292 786	1475.7	70.9	315.8
Western Cape	112 938 (16.3)	1 402 (14.6)	7 005 741	1612.1	20.0	235.2
Unknown	0	0	0			
Total	692 471	9 634	59 622 351	1161.4	16.2	167.9

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); ³2020 Mid-year population Statistics South Africa ⁴Data on number of tests conducted sourced from COVID-19 weekly testing report of the same reporting week

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Figure 3. Cumulative incidence risk of PCR-confirmed cases of COVID-19 by province and epidemiologic week, South Africa, 3 March-10 October 2020 (n=692 471)

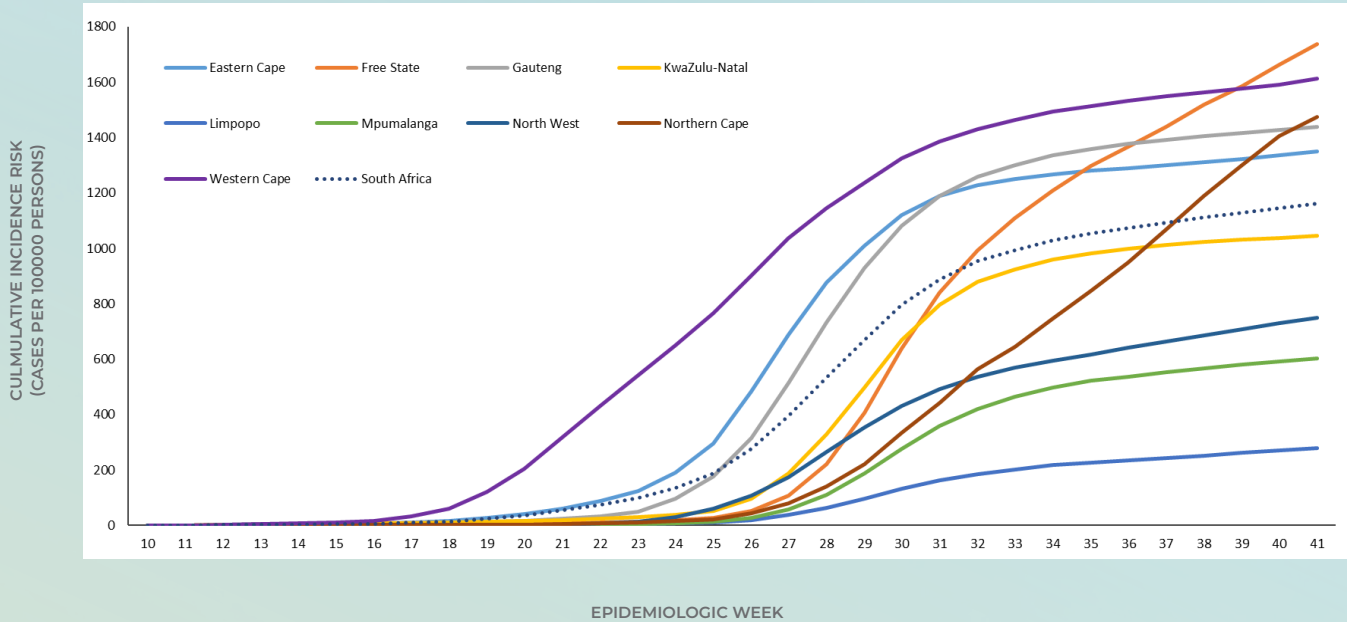


Figure 4. Weekly incidence risk of PCR-confirmed cases of COVID-19 by province and epidemiologic week, South Africa, 3 March-10 October 2020 (n=692 471)

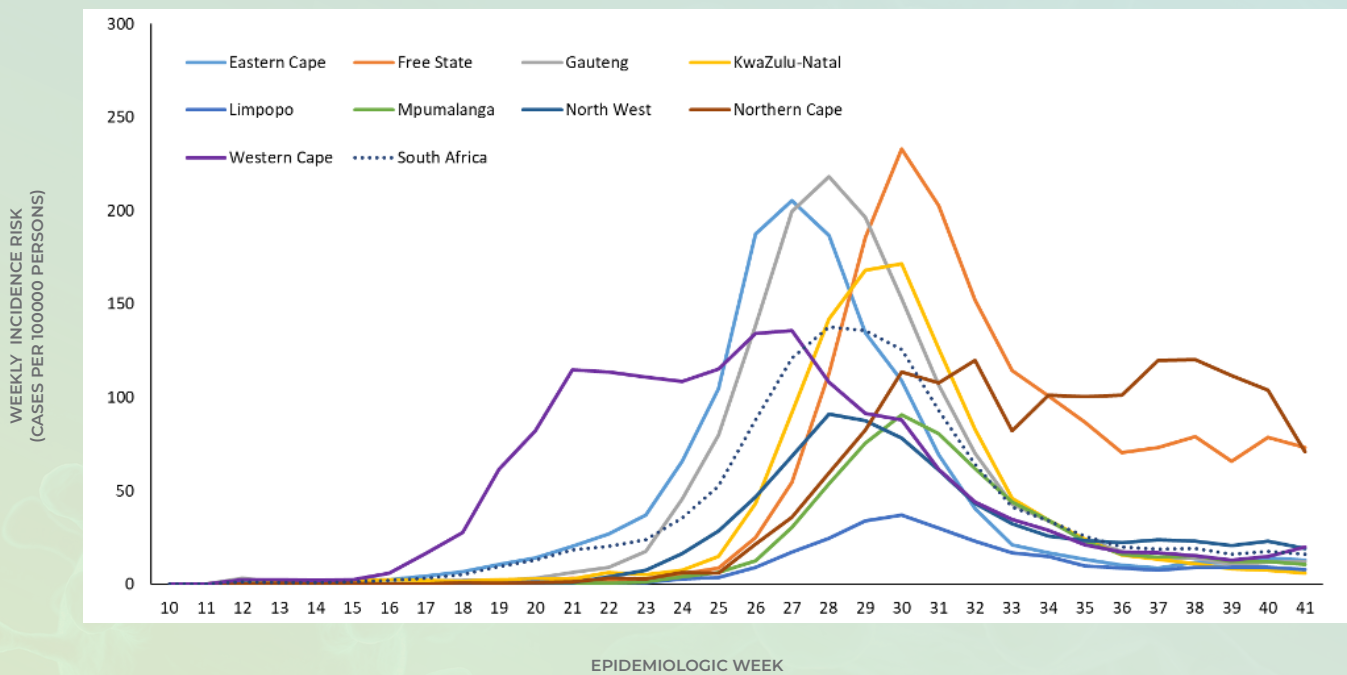
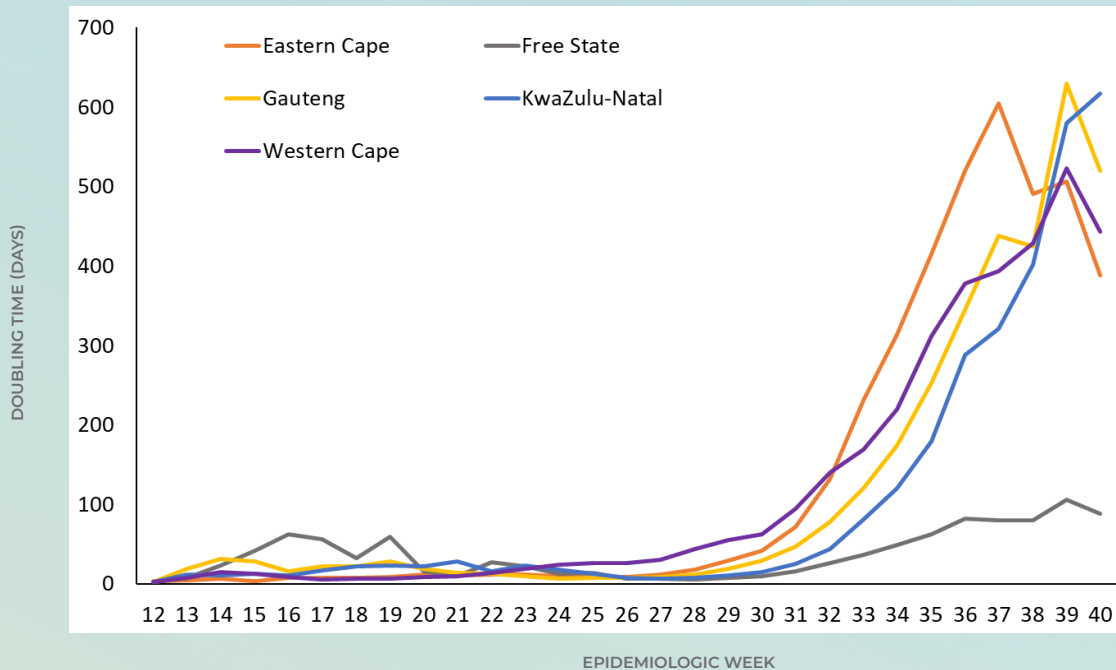


Figure 5. Doubling time of number of PCR-confirmed cases of COVID-19 by province (for 5 provinces with the majority of cases) and epidemiologic week, South Africa, 23 March-03 October 2020 (n=598 081)



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 30-52 years. The distribution of cases varied by age, with highest number of all cases to date in the 35-39-year (87 257/687 181, 12.7%) and 30-34-year (85 478/687 1891, 12.4%) age group respectively (Figure 6). Similarly, among the cases reported in the past week, the highest number of cases was in the 30-34-year age group (1 158/9 551, 12.1%) followed by the 35-39-year age group (1 055/9 551, 11.0%). The median age for cases reported in week 41 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 (2 382.2 cases per 100 000 persons), followed by 55-59 years (2 261.4 cases per 100 000 persons) and 45-49 years (2 193.1 cases per 100 000 persons). The cumulative incidence risk reported for the 45-49-year age group reported in this week's report is lower than the incidence risk reported for this age group in last week's report. This is due to the changes in 2020 estimates (2 249.1 in 2019 and 2 193.1 in 2020). The lowest cumulative incidence risk was reported in the younger age-groups, 142.6 cases per 100 000 persons and 170.7 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 41 was reported in cases aged , 50-54-years (30.3 cases

per 100 000 persons), followed by cases in the 45-49-year age group (28.1 cases per 100 000 persons) and the lowest weekly incidence risk was in the 0-4-year age group (2.0 cases per 100 000 persons).

To date, the majority of COVID-19 cases reported were female (58.3%, 400 042/ 686 472). This trend continued in the past week where 56.8% (5 413/ 9 538) of cases were female. The cumulative incidence risk has remained consistently higher among females (1 302.7 cases per 100 000 persons) than among males (976.6 cases per 100 000 persons) (Figure 7). The peak cumulative incidence risk was in the same age group in both males and females; 50-54 years (2 517.0 cases per 100 000 persons in females and 2 195.4 cases per 100 000 in males) (Figure 8 and Figure 9). In week 41, the highest incidence risk for males was in the 75-79-year age group (30.8 cases per 100 000 persons) and females in the 45-49-year age group (32.0 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.

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Figure 6. Number of laboratory-confirmed cases of COVID-19 by age group and sex, South Africa, 3 March-10 October 2020 (n=686 472, sex/age missing for 5 999)

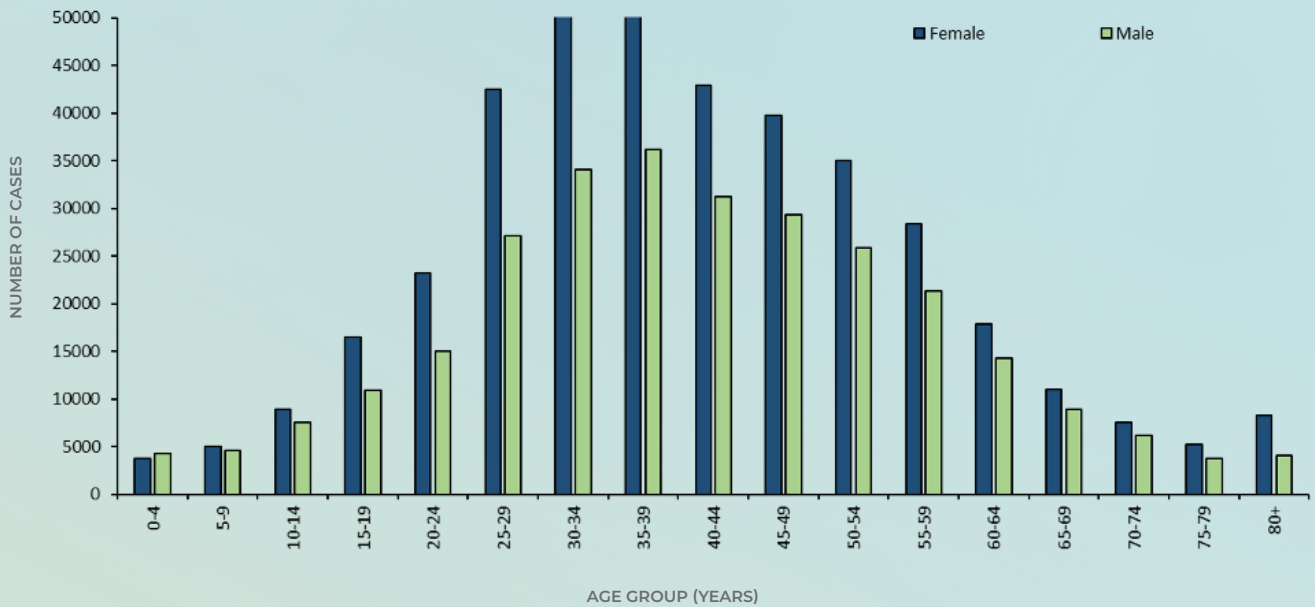
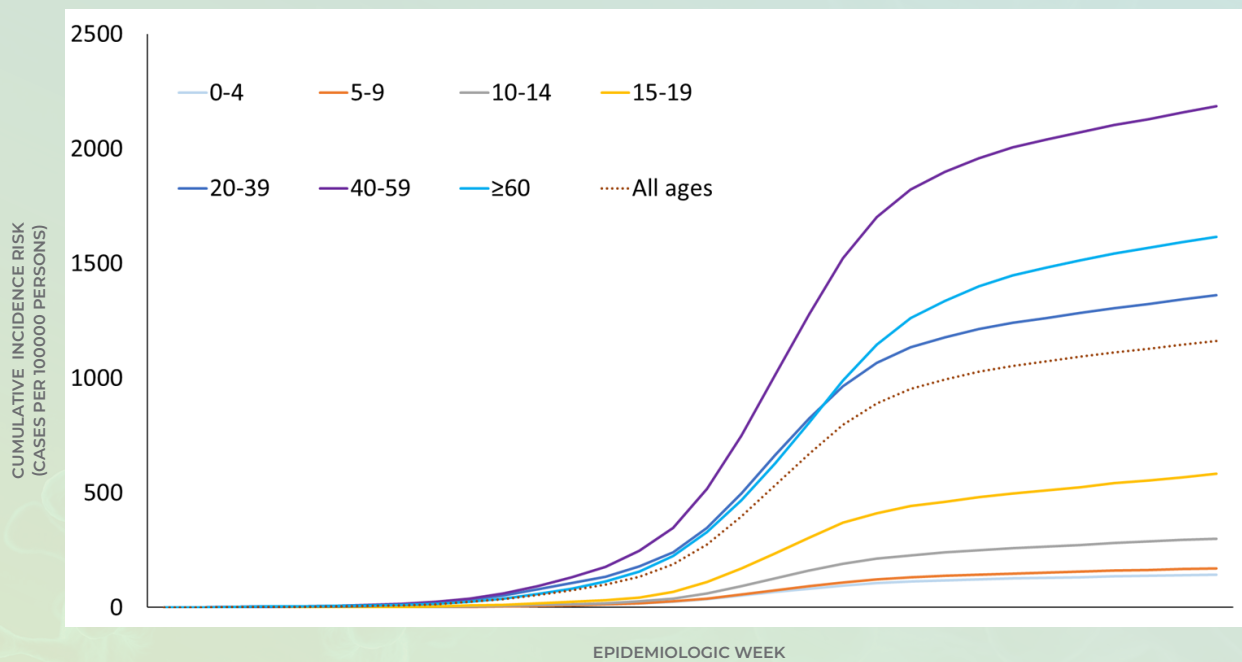


Figure 7. Cumulative incidence risk of PCR-confirmed cases of COVID-19 by age group in years and epidemiologic week, South Africa, 3 March-10 October 2020 (n= 687 181, 5 290 missing agegroup)



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Figure 8. Cumulative incidence risk by sex and epidemiological week, South Africa, 3 March-10 October 2020 (n=686 472 sex missing for 5 999)

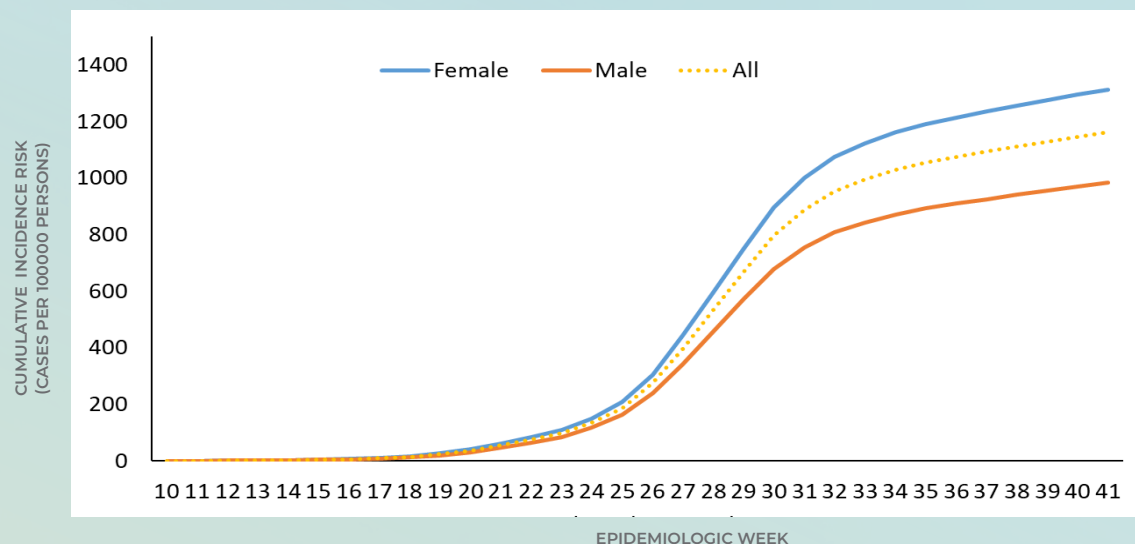
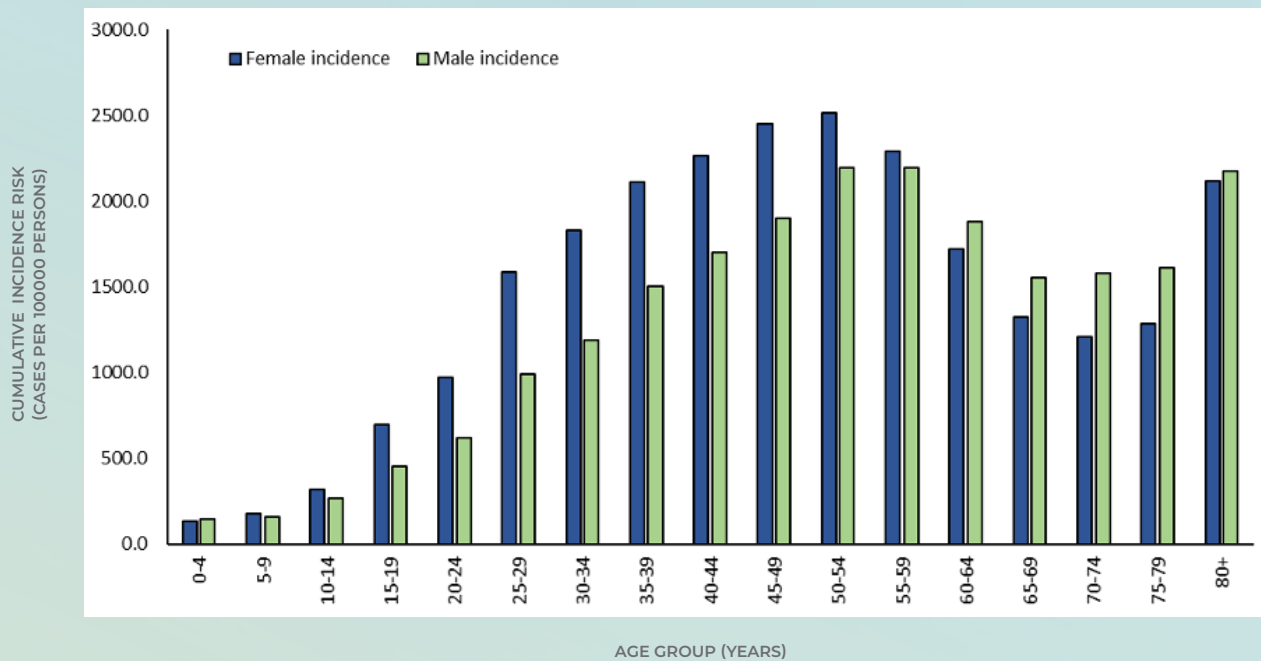


Table 2. Number of cases and cumulative/weekly incidence risk by age group, South Africa, 3 March-10 October 2020, n= 692 471

Age group (years)	Cumulative cases (n) (percentage, n/ total cases in South Africa)	New cases ¹ detected in week 41 (3-10 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 41 (cases/100 000 persons)
0-4	8 189 (1.2)	112 (1.2)	5743 450	142.6	2.0
5-9	9 758 (1.4)	163 (1.7)	5715 952	170.7	2.9
10-14	16 771 (2.4)	286 (3.0)	5591 553	299.9	5.1
15-19	27 801 (4.0)	717 (7.5)	4774 579	582.3	15.0
20-24	38 738 (5.6)	789 (8.3)	4823 367	803.1	16.4
25-29	70 231 (10.2)	988 (10.3)	5420 754	1 295.6	18.2
30-34	85 478 (12.4)	1 158 (12.1)	5641 750	1 515.1	20.5
35-39	87 257 (12.7)	1 055 (11.0)	4798 293	1 818.5	22.0
40-44	74 570 (10.9)	833 (8.7)	3733 942	1 997.1	22.3
45-49	69 512 (10.1)	892 (9.3)	3169 648	2 193.1	28.1
50-54	61 253 (8.9)	780 (8.2)	2571 263	2 382.2	30.3
55-59	50 007 (7.3)	607 (6.4)	2211 309	2 261.4	27.4
60-64	32 359 (4.7)	420 (4.4)	1796 316	1 801.4	23.4
65-69	20 079 (2.9)	266 (2.8)	1408 665	1 425.4	18.9
70-74	13 722 (2.0)	190 (2.0)	1007 174	1 362.4	18.9
75-79	9 022 (1.3)	149 (1.6)	637 062	1 416.2	23.4
≥80	12 434 (1.8)	146 (1.5)	577 273	2 153.9	25.3
Unknown	5 290	83			
Total	692 471	9 634	59 622 351	1 161.4	16.2

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); ³2020 Mid-year population Statistics South Africa

Figure 9. Cumulative incidence risk by age group and sex, South Africa, 3 March-10 October 2020 (n = 686 472, sex/age missing for 5 999)



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, 692 471 cases, including 17 780 deaths have been reported. Reporting incidence risk of COVID-19 case using the 2020 mid-year population estimates, with slightly higher numbers than the 2019 mid-year estimates used in reports published until week 40 has not changed the general trend in incidence risks of COVID-19 cases reported by province and age. The weekly incidence risk of cases per 100 000 persons continued to decrease compared to the preceding week, except for two provinces (Gauteng and Western Cape). 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.