SOUTH AFRICA WEEK 41 2020

NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES

Division of the National Health Laboratory Service

## **OVERVIEW OF REPORT**

This report summarises national laboratory testing for SARS-CoV-2, the virus causing COVID-19, in South Africa. This report is based on data for specimens reported up to 10 October 2020 (Week 41 of 2020).

## HIGHLIGHTS

- In the period 1 March 2020 through 10 October 2020, 3,810,698 laboratory tests for SARS-CoV-2 have been conducted nationally
- Weekly testing volumes have decreased since a peak in week 28, however the number of tests performed in week 41 were slightly higher than in recent weeks
- Free State (335 per 100,000 persons) and Northern Cape (316 per 100,000 persons) provinces had the highest testing rates in week 41
- Percentage testing positive has been decreasing weekly since the peak of 31.3% in week 29. In week 41 the percentage testing positive continued to decrease to 9.9%.
- Percentages testing positive were ≥20% in Northern Cape and Free State, between 10-19% in North West, Mpumalanga and Limpopo, and <10% in Gauteng, KwaZulu-Natal, Western Cape and Eastern Cape
- Compared to the previous week, the percentage testing positive increased in the Western Cape, decreased in Northern Cape, KwaZulu-Natal and Limpopo, and did not change in Eastern Cape, Free State, North West, Gauteng and Mpumalanga provinces
- Of the 25 sub-districts with the highest proportion testing positive in week 41, 8 were in the Free State and 7 in the Northern Cape
- Overall laboratory turnaround times in week 41 increased above 2 days (2.4 days);
   1.7 days in the public sector and 2.9 days in the private sector

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### Methods

Testing for SARS-CoV-2 began on 28 January 2020 at the NICD and after the first case was confirmed on 5th March 2020, testing was expanded to a larger network of private and NHLS laboratories. Laboratory testing was conducted for people meeting the case definition for persons under investigation (PUI). This definition was updated several times over the reporting period but at different times included (i) symptomatic individuals seeking testing, (ii) hospitalized individuals for whom testing was done, (iii) individuals in highrisk occupations, (iv) individuals in outbreak settings, and (v) individuals identified through community screening and testing (CST) programmes which were implemented in April 2020 and was discontinued from the week beginning 17th May. CST was implemented differently in different provinces, and ranged from mass screening approaches (including asymptomatic individuals) to screening of individuals in contact with a confirmed case to targeted testing of clusters of cases. Respiratory specimens were submitted to testing laboratories. Testing was performed using reverse transcriptase real-time PCR, which detects SARS-CoV-2 viral genetic material. Laboratories used any one of several in-house and commercial PCR assays to test for the presence of SARS-CoV-2 RNA. Test results were automatically fed into a data warehouse after result authorisation. We excluded specimens collected outside South Africa and duplicate test results for an individual. Date of specimen receipt in the laboratory was used when date of specimen collection was missing. Proportion testing positive (PTP) was calculated as the number of positive tests/total number of tests and presented as percentage by multiplying with 100. We used 2020 mid-year population estimates from Statistics South Africa to calculate the testing rate, expressed as tests per 100 000 persons. Patient admission status was determined for public sector tests based on the reported patient facility. Laboratory turnaround times were calculated as the mean number of days between specimen collection and reporting of the result. Categorical variables were compared using the chi-squared test, and continuous variables with the students t-test, with a P-value<0.05 considered statistically significant.

Health district and sub-district level results included only public sector data, and were mapped based on the testing facility. Estimates of overall prevalence were derived using regression techniques. Estimates were adjusted to produce district-specific positive test prevalence based on the average age profile, the average sex composition, and the average balance between clinical and CST tests across the entire public testing data for the week. This adjustment allows more accurate comparison of the proportion testing positive across districts.

The report includes tests conducted between 1 March 2020 (week 10), the week when the first case of COVID-19 was confirmed, and 10 October 2020 (week 41).

## Testing volumes and proportion testing positive

From 1 March through 10 October 2020, 3,810,698 laboratory tests for SARS-CoV-2 were performed. The number of tests performed increased to week 21, however decreased in weeks 22 and 23 due to a limited supply of extraction and testing kits. Increased volumes of tests were observed week on week from week 24 to week 28, with the highest number of tests performed in week 28 (n=272,716), but have subsequently decreased. In week 41, 100,133 tests were performed, which was slightly more tests than have been conducted in the previous few weeks. All tests for samples collected in the previous week may not yet be reflected. Reduced testing volumes were observed over weekends and public holidays (Figure 1).

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**Figure 1.** Number of laboratory tests conducted by date of specimen collection, South Africa, 1 March – 10 October 2020. Blue dotted line shows the 7-day moving average of the number of tests conducted. Grey bars highlight weekend days and public holidays.

The overall percentage testing positive from week 10 through 41 was 17.5% (Table 1). The percentage testing positive increased week on week from week 18 to a peak of 31.3% in week 29. Since week 29, there has been a 21.4% decrease in the percentage testing positive to 9.9% in week 41. The percentage testing positive in week 41 was lower than observed in the previous week (P=0.015), and is the lowest percentage testing positive observed since week 23 (beginning 31 May 2020) (Figure 2).



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Table 1. Weekly number of tests conducted and positive tests, South Africa, 1 March – 10 October 2020

| Week number | Week beginning | No. of tests n (%) | No. of positive tests | Percentage testing positive (%) |
|-------------|----------------|--------------------|-----------------------|---------------------------------|
| 10          | 01-Mar         | 410 (0.0)          | 9                     | 2.2                             |
| 11          | 08-Mar         | 2329 (0.1)         | 88                    | 3.8                             |
| 12          | 15-Mar         | 21323 (0.6)        | 826                   | 3.9                             |
| 13          | 22-Mar         | 17042 (0.4)        | 470                   | 2.8                             |
| 14          | 29-Mar         | 17387 (0.5)        | 400                   | 2.3                             |
| 15          | 05-Apr         | 24602 (0.6)        | 567                   | 2.3                             |
| 16          | 12-Apr         | 41873 (1.1)        | 1049                  | 2.5                             |
| 17          | 19-Apr         | 75904 (2.0)        | 1933                  | 2.5                             |
| 18          | 26-Apr         | 89513 (2.3)        | 2893                  | 3.2                             |
| 19          | 03-May         | 136908 (3.6)       | 5555                  | 4.1                             |
| 20          | 10-May         | 157055 (4.1)       | 7442                  | 4.7                             |
| 21          | 17-May         | 156444 (4.1)       | 10521                 | 6.7                             |
| 22          | 24-May         | 141527 (3.7)       | 11704                 | 8.3                             |
| 23          | 31-May3        | 136190 (3.6)       | 13498                 | 9.9                             |
| 24          | 07-Jun         | 156848 (4.1)       | 20508                 | 13.1                            |
| 25          | 14-Jun         | 164971 (4.3)       | 29909                 | 18.1                            |
| 26          | 21-Jun         | 222136 (5.8)       | 50522                 | 22.7                            |
| 27          | 28-Jun         | 269070 (7.1)       | 69254                 | 25.7                            |
| 28          | 05-Jul         | 272716 (7.2)       | 79694                 | 29.2                            |
| 29          | 12-Jul         | 250404 (6.6)       | 78351                 | 31.3                            |
| 30          | 19-Jul         | 236389 (6.2)       | 72488                 | 30.7                            |
| 31          | 26-Jul         | 185696 (4.9)       | 53641                 | 28.9                            |
| 32          | 02-Aug         | 149698 (3.9)       | 36886                 | 24.6                            |
| 33          | 09-Aug         | 117060 (3.1)       | 23474                 | 20.1                            |
| 34          | 16-Aug         | 109994 (2.9)       | 19101                 | 17.4                            |
| 35          | 23-Aug         | 99721 (2.6)        | 14642                 | 14.7                            |
| 36          | 30-Aug         | 90236 (2.4)        | 11420                 | 12.7                            |
| 37          | 06-Sep         | 93787 (2.5)        | 10810                 | 11.5                            |
| 38          | 13-Sep         | 97119 (2.5)        | 10913                 | 11.2                            |
| 39          | 20-Sep         | 78899 (2.1)        | 9178                  | 11.6                            |
| 40          | 27-Sep         | 97314 (2.6)        | 9952                  | 10.2                            |
| 41          | 04-Oct         | 100133 (2.6)       | 9911                  | 9.9                             |
| Total       |                | 3810698 (100.0)    | 667609                | 17.5                            |

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**Figure 2.** Percentage of laboratory tests positive for SARS-CoV-2 by date of specimen collection, South Africa, 1 March – 10 October 2020. Blue dotted line shows the 7-day moving average of the percentage testing positive. Grey bars highlight weekend days and public holidays.

### Testing in private and public sectors

From 1 March through 10 October, 1,747,588 laboratory tests were conducted in public sector laboratories, with 16.0% testing positive. Over this same period, private sector laboratories conducted 2,063,110 tests, with 18.8% testing positive (Table 2). Overall the public sector has conducted 45.9% of tests and accounted for 41.9% of positive tests. The peak percentage testing positive was observed in week 30 in the public sector (29.5%), and in week 29 in the private sector (32.8%). From week 40 to week 41, the percentage testing positive decreased by 1.1% in the public sector. In week 41 the percentage testing positive continued to be higher in the public sector (10.6%) compared to the private sector (9.4%) (P<0.001), as has been observed since week 34.

The mean turnaround time for tests conducted in week 41 was 2.4 days and had increased slightly over the past few weeks. The turnaround time in the public sector was similar to previous weeks (1.7 days), however the turnaround time in the private sector increased to 2.9 days in week 41 (Figure 3). Turnaround times for public sector tests were <2 days in all provinces except for the Northern Cape (3.3 days) (Figure 4). While the turnaround time in Northern Cape and Mpumalanga decreased in the past week, increases were observed in the Western Cape and North West. All 28 NHLS laboratories performing testing for SARS-CoV-2 had turnaround times ≤2 days (Figure 5).

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 Table 2. Weekly number of tests conducted and positive tests, by healthcare sector, South Africa, 1 March – 10 October 2020

|                |                   | Publi   | c sector       | Privat  | e sector       | Public sector | percentage of | Ratio               |
|----------------|-------------------|---------|----------------|---------|----------------|---------------|---------------|---------------------|
| Week<br>number | Week<br>beginning | Tests   | Cases<br>n (%) | Tests   | Cases<br>n (%) | Tests (%)     | Cases (%)     | of PTP <sup>a</sup> |
| 10             | 01-Mar            | 251     | 5 (2.0)        | 159     | 4 (2.5)        | 61.2          | 55.6          | 0.792               |
| 11             | 08-Mar            | 350     | 12 (3.4)       | 1979    | 76 (3.8)       | 15.0          | 13.6          | 0.893               |
| 12             | 15-Mar            | 1345    | 51 (3.8)       | 19978   | 775 (3.9)      | 6.3           | 6.2           | 0.977               |
| 13             | 22-Mar            | 3358    | 124 (3.7)      | 13684   | 346 (2.5)      | 19.7          | 26.4          | 1.460               |
| 14             | 29-Mar            | 5613    | 159 (2.8)      | 11774   | 241 (2.0)      | 32.3          | 39.8          | 1.384               |
| 15             | 05-Apr            | 11339   | 318 (2.8)      | 13263   | 249 (1.9)      | 46.1          | 56.1          | 1.494               |
| 16             | 12-Apr            | 23767   | 608 (2.6)      | 18106   | 441 (2.4)      | 56.8          | 58.0          | 1.050               |
| 17             | 19-Apr            | 54164   | 1477 (2.7)     | 21740   | 456 (2.1)      | 71.4          | 76.4          | 1.300               |
| 18             | 26-Apr            | 66215   | 2284 (3.4)     | 23298   | 609 (2.6)      | 74.0          | 78.9          | 1.320               |
| 19             | 03-May            | 92317   | 4246 (4.6)     | 44591   | 1309 (2.9)     | 67.4          | 76.4          | 1.567               |
| 20             | 10-May            | 104969  | 5102 (4.9)     | 52086   | 2340 (4.5)     | 66.8          | 68.6          | 1.082               |
| 21             | 17-May            | 95474   | 6615 (6.9)     | 60970   | 3906 (6.4)     | 61.0          | 62.9          | 1.082               |
| 22             | 24-May            | 74261   | 5947 (8.0)     | 67266   | 5757 (8.6)     | 52.5          | 50.8          | 0.936               |
| 23             | 31-May            | 60264   | 6096 (10.1)    | 75926   | 7402 (9.7)     | 44.2          | 45.2          | 1.038               |
| 24             | 07-Jun            | 60002   | 7345 (12.2)    | 96846   | 13163 (13.6)   | 38.3          | 35.8          | 0.901               |
| 25             | 14-Jun            | 56005   | 11058 (19.7)   | 108966  | 18851 (17.3)   | 33.9          | 37.0          | 1.141               |
| 26             | 21-Jun            | 82650   | 18847 (22.8)   | 139486  | 31675 (22.7)   | 37.2          | 37.3          | 1.004               |
| 27             | 28-Jun            | 97342   | 25119 (25.8)   | 171728  | 44135 (25.7)   | 36.2          | 36.3          | 1.004               |
| 28             | 05-Jul            | 108038  | 30265 (28.0)   | 164678  | 49429 (30.0)   | 39.6          | 38.0          | 0.933               |
| 29             | 12-Jul            | 101361  | 29394 (29.0)   | 149043  | 48957 (32.8)   | 40.5          | 37.5          | 0.883               |
| 30             | <u>19-Jul</u>     | 96278   | 28416 (29.5)   | 140111  | 44072 (31.5)   | 40.7          | 39.2          | 0.938               |
| 31             | 26-Jul            | 73976   | 21327 (28.8)   | 111720  | 32314 (28.9)   | 39.8          | 39.8          | 0.997               |
| 32             | 02-Aug            | 64125   | 15742 (24.5)   | 85573   | 21144 (24.7)   | 42.8          | 42.7          | 0.994               |
| 33             | 09-Aug            | 53684   | 10400 (19.4)   | 63376   | 13074 (20.6)   | 45.9          | 44.3          | 0.939               |
| 34             | 16-Aug            | 50938   | 8934 (17.5)    | 59056   | 10167 (17.2)   | 46.3          | 46.8          | 1.019               |
| 35             | 23-Aug            | 45517   | 7233 (15.9)    | 54204   | 7409 (13.7)    | 45.6          | 49.4          | 1.163               |
| 36             | 30-Aug            | 41077   | 5614 (13.7)    | 49159   | 5806 (11.8)    | 45.5          | 49.2          | 1.157               |
| 37             | 06-Sep            | 46405   | 5985 (12.9)    | 47382   | 4825 (10.2)    | 49.5          | 55.4          | 1.267               |
| 38             | 13-Sep            | 49127   | 6106 (12.4)    | 47992   | 4807 (10.0)    | 50.6          | 56.0          | 1.241               |
| 39             | 20-Sep            | 40952   | 5133 (12.5)    | 37947   | 4045 (10.7)    | 51.9          | 55.9          | 1.176               |
| 40             | 27-Sep            | 44102   | 5138 (11.7)    | 53212   | 4814 (9.0)     | 45.3          | 51.6          | 1.288               |
| 41             | 04-Oct            | 42322   | 4478 (10.6)    | 57811   | 5433 (9.4)     | 42.3          | 45.2          | 1.126               |
|                | Total             | 1747588 | 279578 (16.0)  | 2063110 | 388031 (18.8)  | 45.9          | 41.9          | 0.851               |

aRatio of percentage testing positive (PTP) in the public sector to the private sector calculated as (no. of cases/total tests in public sector)/ (no. of cases/total tests in public sector)/ (no. of cases/total tests in private sector)



**Figure 3.** Mean number of days between date of specimen collection and date of test result, by week of test result, South Africa, 13 September – 10 October 2020

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**Figure 4.** Mean number of days between date of specimen collection and date of test result, by week of test result and province, public sector, South Africa, 13 September – 10 October 2020. WC, Western Cape; EC, Eastern Cape; FS, Free State; KZN, KwaZulu-Natal; GT, Gauteng; NC, Northern Cape; NW, North West; MP, Mpumalanga; LP, Limpopo



**Figure 5.** Mean number of days between date of specimen collection and date of test result, by public sector laboratory, 20 September – 10 October 2020. The horizontal black line indicates 48-hour turnaround time (TAT).

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#### Testing by province

As observed in previous weeks Gauteng (31.5%) performed the largest number of tests in week 41, followed by Western Cape (16.5%) and KwaZulu-Natal (1.3%) provinces (Table 3). All other provinces conducted <10,000 tests in week 41. As has been observed since week 31, Free State (335 per 100,000 persons) and Northern Cape (316 per 100,000 persons) provinces had the highest testing rates in week 41 (Figure 6). Testing rates have decreased in all provinces since peak testing rates were observed between week 21 (Western Cape) and week 31 (Northern Cape) in the respective provinces. Compared to the previous two weeks, testing rates have increased slightly in Free State, Western Cape and Gauteng provinces in in week 41.

As has been observed consistently over the previous few weeks, percentages testing positive remained ≥20% in Northern Cape (25.2%) and Free State (22.2%),

between 10-19% in North West, Mpumalanga and Limpopo, and <10% in Gauteng, KwaZulu-Natal, Western Cape and Eastern Cape in week 41 (Figure 7). Compared to the previous week, the percentage testing positive increased in the Western Cape (6.9% in week 40 to 8.5% in week 41, P<0.001). The increase in the Western Cape occurred largely in individuals aged 15-19 years (8.3% in week 40 to 18.1% in week 41, P<0.001) and aged 20-24 years (7.9% to 12.0%, P=0.001). The percentage testing positive in week 41 compared to week 40 decreased in Northern Cape (P=0.012), KwaZulu-Natal (P<0.001), and Limpopo (P=0.046), and did not change in Eastern Cape (P=0.230), Free State (P=0.444), North West (P=0.487), Gauteng (P=0.104) and Mpumalanga (P=0.787) provinces. The percentage testing positive was higher than the national average, not weighted for population size, in the Northern Cape, Free State, North West, Mpumalanga and Limpopo provinces (Figure 7).



WEEK START DATE (WEEK NUMBER) OF SAMPLE COLLECTION

Figure 6. Testing rate per 100,000 persons by province and week of specimen collection, South Africa, 1 March – 10 October 2020

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Table 3. Weekly number of tests performed and positive tests, by province, South Africa, 20 September - 10 October 2020

|               |                                | 20-26 Sep       |                           | 27 S            | 27 Sep-3 Oct              |                 | 4-10 Oct                  |                                 |  |
|---------------|--------------------------------|-----------------|---------------------------|-----------------|---------------------------|-----------------|---------------------------|---------------------------------|--|
| Province      | <b>Population</b> <sup>a</sup> | No. of<br>tests | No. positive<br>tests (%) | No. of<br>tests | No. positive<br>tests (%) | No. of<br>tests | No. positive<br>tests (%) | Tests per<br>100,000<br>persons | Change in<br>percentage<br>positive <sup>b</sup> |
| Western Cape  | 7005741                        | 11179           | 837 (7.5)                 | 13897           | 963 (6.9)                 | 16480           | 1398 (8.5)                | 235                             | 1.6%   |
| Eastern Cape  | 6734001                        | 7515            | 706 (9.4)                 | 9629            | 897 (9.3)                 | 9134            | 898 (9.8)                 | 136                             | 0.5%   |
| Northern Cape | 1292786                        | 4732            | 1447 (30.6)               | 4903            | 1352 (27.6)               | 4083            | 1030 (25.2)               | 316                             | -2.3%  |
| Free State    | 2928903                        | 7229            | 1834 (25.4)               | 10145           | 2207 (21.8)               | 9823            | 2181 (22.2)               | 335                             | 0.4%   |
| KwaZulu-Natal | 11531628                       | 14589           | 918 (6.3)                 | 15541           | 822 (5.3)                 | 16367           | 672 (4.1)                 | 142                             | -1.2%  |
| North West    | 4108816                        | 3748            | 747 (19.9)                | 4618            | 828 (17.9)                | 4101            | 712 (17.4)                | 100                             | -0.6%  |
| Gauteng       | 15488137                       | 23185           | 1576 (6.8)                | 29763           | 1767 (5.9)                | 31531           | 1971 (6.3)                | 204                             | 0.3%   |
| Mpumalanga    | 4679786                        | 4054            | 611 (15.1)                | 5726            | 614 (10.7)                | 5385            | 586 (10.9)                | 115                             | 0.2%   |
| Limpopo       | 5852553                        | 2601            | 498 (19.1)                | 2934            | 493 (16.8)                | 3050            | 455 (14.9)                | 52                              | -1.9%  |
| Unknown       |                                | 67              | 4 (6.0)                   | 158             | 9 (5.7)                   | 179             | 8 (4.5)                   |                                 | -1.2%  |
| Total         | 59622350                       | 78899           | 9178 (11.6)               | 97314           | 9952 (10.2)               | 100133          | 9911 (9.9)                | 168                             | -0.3%  |

a 2020 Mid-year population Statistics SA

b Current week compared to previous weel



**Figure 7.** Weekly percentage testing positive, by province, South Africa, 20 September – 10 October 2020. The horizontal blue line shows the national mean for week 41, beginning 4 October 2020.

### Testing in the public sector

In the public sector, the percentage testing positive decreased from 11.7% in week 40 to 10.6% in week 41 (P<0.001) (Table 4). The percentage testing positive in week 41 was highest in the Northern Cape (24.9%),

Free State (23.6%), North West (23.0%) and Limpopo (21.0%) provinces. The percentage testing positive in the public sector remains higher than the national average, not weighted for population size, in the Northern Cape, Free State, North West, Mpumalanga and Limpopo provinces (Figure 8).

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**Table 4.** Weekly number of tests conducted and positive tests in the public sector, by province, South Africa, 20 September - 10October 2020

|               | 20-26 Sep    |                           | 27 Sep       | o-3 Oct                   | 4-10 Oct     |                           |  |
|---------------|--------------|---------------------------|--------------|---------------------------|--------------|---------------------------|--|
| Province      | No. of tests | No. positive<br>tests (%) | No. of tests | No. positive<br>tests (%) | No. of tests | No. positive<br>tests (%) |  |
| Western Cape  | 4979         | 415 (8.3)                 | 5796         | 388 (6.7)                 | 6088         | 469 (7.7)                 |  |
| Eastern Cape  | 5471         | 542 (9.9)                 | 6908         | 736 (10.7)                | 6330         | 649 (10.3)                |  |
| Northern Cape | 3000         | 967 (32.2)                | 2764         | 838 (30.3)                | 1999         | 498 (24.9)                |  |
| Free State    | 4292         | 1019 (23.7)               | 5245         | 1200 (22.9)               | 4842         | 1142 (23.6)               |  |
| KwaZulu-Natal | 8875         | 542 (6.1)                 | 8155         | 446 (5.5)                 | 8801         | 373 (4.2)                 |  |
| North West    | 1574         | 431 (27.4)                | 1838         | 438 (23.8)                | 1560         | 359 (23.0)                |  |
| Gauteng       | 10082        | 702 (7.0)                 | 10547        | 614 (5.8)                 | 10053        | 555 (5.5)                 |  |
| Mpumalanga    | 1534         | 257 (16.8)                | 1698         | 222 (13.1)                | 1539         | 200 (13.0)                |  |
| Limpopo       | 1145         | 258 (22.5)                | 1151         | 256 (22.2)                | 1110         | 233 (21.0)                |  |
| Unknown       | 0            | 0 (0.0)                   | 0            | 0 (0.0)                   | 0            | 0 (0.0)                   |  |
| Total         | 40952        | 5133 (12.5)               | 44102        | 5138 (11.7)               | 42322        | 4478 (10.6)               |  |



**Figure 8.** Weekly percentage testing positive in the public sector, by province, South Africa, 20 September – 10 October 2020. The horizontal blue line shows the national mean for week 41, beginning 4 October 2020.

## Public facilities with high proportions testing positive

Table 5 shows the 25 public clinics, hospitals and testing laboratories (where specimens were not tied to a particular facility), that had 25 or more specimens tested and at least five positive results in the week

of 4-10 October, with the highest proportion testing positive nationally.

This week's list is dominated by facilities in the Free State (10), with 5 facilities each in the Northern Cape and North West.

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Table 5. Public healthcare facilities with a high proportion testing positive, 4-10 October

| Facility Name | Province      | Tests | PTP (95% CI)        |
|---------------|---------------|-------|---------------------|
| Facility 1    | Eastern Cape  | 28    | 0.607 (0.426;0.788) |
| Facility 2    | North West    | 62    | 0.484 (0.359;0.608) |
| Facility 3    | Free State    | 63    | 0.460 (0.337;0.583) |
| Facility 4    | Free State    | 60    | 0.433 (0.308;0.559) |
| Facility 5    | Free State    | 28    | 0.429 (0.245;0.612) |
| Facility 6    | Eastern Cape  | 29    | 0.414 (0.235;0.593) |
| Facility 7    | Eastern Cape  | 43    | 0.395 (0.249;0.541) |
| Facility 8    | Western Cape  | 64    | 0.391 (0.271;0.510) |
| Facility 9    | Free State    | 31    | 0.387 (0.216;0.559) |
| Facility 10   | Northern Cape | 171   | 0.380 (0.307;0.453) |
| Facility 11   | Northern Cape | 216   | 0.380 (0.315;0.444) |
| Facility 12   | North West    | 38    | 0.368 (0.215;0.522) |
| Facility 13   | Limpopo       | 60    | 0.367 (0.245;0.489) |
| Facility 14   | Northern Cape | 30    | 0.367 (0.194;0.539) |
| Facility 15   | Northern Cape | 33    | 0.364 (0.200;0.528) |
| Facility 16   | Free State    | 112   | 0.357 (0.268;0.446) |
| Facility 17   | Free State    | 34    | 0.353 (0.192;0.514) |
| Facility 18   | Free State    | 250   | 0.352 (0.293;0.411) |
| Facility 19   | North West    | 38    | 0.342 (0.191;0.493) |
| Facility 20   | Free State    | 155   | 0.342 (0.267;0.417) |
| Facility 21   | North West    | 48    | 0.333 (0.200;0.467) |
| Facility 22   | North West    | 92    | 0.326 (0.230;0.422) |
| Facility 23   | Northern Cape | 44    | 0.318 (0.181;0.456) |
| Facility 24   | Free State    | 63    | 0.317 (0.203;0.432) |
| Facility 25   | Free State    | 41    | 0.317 (0.175;0.460) |

95% CI: 95% confidence interval; PTP: positive test proportion

### Public sector testing: Health districtlevel results

The results for the 25 municipalities and metropolitan health sub-districts showing the greatest proportions testing positive in the week of 4-10 October 2020 are shown in Table 6. The list of districts continues to be dominated by those in the Free State (8) and Northern Cape (7). Eight districts showed a proportion testing positive greater than 30%, and 10 showed a proportion testing positive less than 25%. Significant increases were observed in two of these 25 districts – Dihlabeng in the Free State; and Oudtshoorn in the Western Cape.

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**Table 6.** Health sub-districts with the highest proportion testing positive based on public sector data for the week of 4-10October 2020

| Health district or sub-district | Province      | PTP (95% CI)        | Previous week       |
|---------------------------------|---------------|---------------------|---------------------|
| Sol Plaatjie                    | Northern Cape | 0.350 (0.308-0.392) | 0.351 (0.315-0.388) |
| Greater Taung                   | North West    | 0.349 (0.257-0.441) | 0.278 (0.190-0.366) |
| Lephalale                       | Limpopo       | 0.346 (0.243-0.449) | 0.266 (0.158-0.375) |
| Mafikeng                        | North West    | 0.322 (0.259-0.385) | 0.342 (0.293-0.391) |
| Mafube                          | Free State    | 0.316 (0.232-0.400) | 0.344 (0.229-0.460) |
| Thembelihle                     | Northern Cape | 0.313 (0.191-0.436) | 0.315 (0.227-0.402) |
| Mantsopa                        | Free State    | 0.313 (0.166-0.460) | 0.223 (0.157-0.290) |
| Ga-Segonyana                    | Northern Cape | 0.313 (0.227-0.399) | 0.374 (0.284-0.464) |
| Nxuba                           | Eastern Cape  | 0.299 (0.200-0.397) | 0.304 (0.174-0.435) |
| Tsantsabane                     | Northern Cape | 0.296 (0.176-0.415) | 0.430 (0.342-0.518) |
| Joe Morolong                    | Northern Cape | 0.286 (0.148-0.424) | 0.269 (0.172-0.367) |
| Phokwane                        | Northern Cape | 0.277 (0.212-0.343) | 0.343 (0.276-0.410) |
| Kopanong                        | Free State    | 0.276 (0.208-0.345) | 0.272 (0.213-0.331) |
| Beaufort West                   | Western Cape  | 0.265 (0.173-0.356) | 0.219 (0.144-0.293) |
| Govan Mbeki                     | Mpumalanga    | 0.259 (0.126-0.392) | 0.218 (0.092-0.344) |
| Nala                            | Free State    | 0.246 (0.136-0.356) | 0.246 (0.143-0.350) |
| Dihlabeng                       | Free State    | 0.245 (0.187-0.302) | 0.132 (0.094-0.170) |
| Mogalakwena                     | Limpopo       | 0.244 (0.104-0.384) | 0.370 (0.252-0.488) |
| Nketoana                        | Free State    | 0.242 (0.154-0.329) | 0.259 (0.119-0.399) |
| Mangaung                        | Free State    | 0.239 (0.223-0.256) | 0.234 (0.218-0.251) |
| Setsoto                         | Free State    | 0.238 (0.160-0.317) | 0.290 (0.202-0.378) |
| Oudtshoorn                      | Western Cape  | 0.237 (0.171-0.302) | 0.091 (0.047-0.135) |
| City of Matlosana               | North West    | 0.233 (0.194-0.272) | 0.234 (0.200-0.268) |
| Siyancuma                       | Northern Cape | 0.225 (0.159-0.291) | 0.229 (0.187-0.271) |
| Camdeboo                        | Eastern Cape  | 0.225 (0.163-0.287) | 0.135 (0.086-0.183) |

95% CI: 95% confidence interval; PTP: adjusted positive test proportion; PTP marked in red or blue have current week proportions testing positive that are significantly higher or lower than the previous week, respectively.

The data for every district with a non-zero proportion testing positive or where the range of confidence interval is not more than 30% (15% either side of the point estimate) for the current week is presented graphically below.

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HEALTH SUB-DISTRICT

Figure 9. Proportions testing positive by health sub-districts in Western Cape, Eastern Cape, Gauteng, KwaZulu-Natal, North West, Free State, Limpopo, Mpumalanga and Northern Cape provinces based on public sector data for the week of 4-10 October

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HEALTH SUB-DISTRICT

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PROPORTION TESTING POSITIVE



HEALTH SUB-DISTRICT

**Figure 9.** Proportions testing positive by health sub-districts in Western Cape, Eastern Cape, Gauteng, KwaZulu-Natal, North West, Free State, Limpopo, Mpumalanga and Northern Cape provinces based on public sector data for the week of 4-10 October 2020.

The spatial pattern of adjusted proportions testing positive in public facilities by health district and subdistrict are shown for South Africa (Figure 10), Western Cape (Figure 11), Eastern Cape (Figure 12), Northern Cape (Figure 13), Free State (Figure 14), KwaZulu-Natal (Figure 15), North West (Figure 16), Gauteng (Figure 17), Mpumalanga (Figure 18) and Limpopo (Figure 19).

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**Figure 10.** Proportion testing positive by health sub-district based on public sector data for the week of 4-10 October 2020, South Africa. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.



**Figure 11.** Health sub-districts in the Western Cape province with a high proportion testing positive based on public sector data for the week of 4-10 October 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%

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**Figure 12.** Health sub-districts in the Eastern Cape province with a high proportion testing positive based on public sector data for the week of 4-10 October 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.



**Figure 13.** Health sub-districts in Northern Cape Province with a high proportion testing positive based on public sector data for the week of 4-10 October 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

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**Figure 14.** Health sub-districts in Free State Province with a high proportion testing positive based on public sector data for the week of 4-10 October 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.



**Figure 15.** Health sub-districts in KwaZulu-Natal Province with a high proportion testing positive based on public sector data for the week of 4-10 October 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

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**Figure 16.** Health sub-districts in North West Province with a high proportion testing positive based on public sector data for the week of 4-10 October 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.



**Figure 17.** Health sub-districts in Gauteng Province with a high proportion testing positive based on public sector data for the week of 4-10 October 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

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**Figure 18.** Health sub-districts in Mpumalanga Province with a high proportion testing positive based on public sector data for the week of 4-10 October 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.



**Figure 19.** Health sub-districts in Limpopo Province with a high proportion testing positive based on public sector data for the week of 4-10 October 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

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### Testing by patient admission status

In week 41, 28.2% of tests in the public sector were performed for hospitalised patients (Figure 20). The proportion of inpatient tests was highest in Northern Cape (40.8%). Comparing week 41 to the previous week, the proportion of inpatient tests increased from 25.4% to 33.0% in Limpopo, and decreased from 33.3% to 26.8% in the North West. The percentage

testing positive in week 41 remained lower among inpatients (8.1%) compared to outpatients (11.9%), with the percentage in both groups decreasing over recent weeks (Figure 21). In the public sector in week 41 the mean laboratory turnaround time continued to be lower for inpatients (1.5 days) compared to outpatients (1.8 days), and remained <2 days in both groups (Figure 22).



Figure 20. Percentage of inpatient tests performed in the public sector by province, 13 September - 10 October 2020



Figure 21. Percentage testing positive by patient admission status in the public sector, 13 September - 10 October 2020



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Figure 22. Mean number of days between date of specimen collection and date of test result, by patient admission status and date of test result in the public sector, South Africa, 13 September - 10 October 2020

### Testing by age and sex

The mean age of individuals tested in week 41 was 38.5 years, similar to the previous weeks. The mean age of individuals with a positive test in week 41 was 38.6 years, and did not differ between males (38.6 years) and females (38.8 years, P=0.978) (Table 7). The sex ratio (the

number of males per 100 females) of individuals with a positive test in week 41 was 76.5, slightly higher than the previous 3 weeks. For both sexes, the proportion testing positive in week 41 was similar to or lower than previous two weeks across all age groups, except in males aged 10-19 years where the proportion testing positive was slightly higher than the previous 2 weeks (Figure 23).

#### Table 7. Mean age and sex ratio of individuals tested, South Africa, 13 September - 10 October 2020

|                |                   | Mean age of tested (years) |         | Mean age of<br>(ye | positive tests<br>ears) | Sex ratios (males / 100<br>females) |                |
|----------------|-------------------|----------------------------|---------|--------------------|-------------------------|-------------------------------------|----------------|
| Week<br>number | Week<br>beginning | Males                      | Females | Males              | Females                 | Tested                              | Positive tests |
| 38             | 13 September      | 37.8                       | 38.4    | 39.1               | 39.1                    | 81.8                                | 73.7           |
| 39             | 20 September      | 37.4                       | 38.3    | 39.1               | 40.0                    | 82.4                                | 72.1           |
| 40             | 27 September      | 38.2                       | 38.4    | 39.1               | 39.0                    | 88.5                                | 72.6           |
| 41             | 4 October         | 38.6                       | 38.6    | 38.6               | 38.8                    | 90.7                                | 76.5           |

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Figure 23. Weekly proportion testing positive by age group and sex, South Africa, 20 September – 10 October 2020

From week 38 to week 41, the percentage testing positive decreased 1.5% in males (from 10.6% to 9.1%) and 1.0% in females (from 11.8% to 10.8%) (Table 8). In week 41 the percentage testing positive was higher

in females compared to males in the 20-39 years (P<0.001), 40-59 years (P<0.001) and 60-69 years (P<0.001) age groups, and did not differ in the other age groups.

#### Table 8. Percentage testing positive by sex and week, South Africa, 13 September – 10 October 2020

|             | 그는 행동은 것은 것은 것은 것은 것을 가려면 가지 않았다. 것은 것은 것을 받았다. |        |       |           |              |         |              |        |  |
|-------------|---|--------|-------|-----------|--------------|---------|--------------|--------|--|
| Age (years) | 13-19 Sep                                       |        | 20-2  | 20-26 Sep |              | p-3 Oct | 4-10 Oct     |        |  |
|             | Male  | Female | Male  | Female    | Male         | Female  | Male         | Female |  |
| 0-19        | 8.3%  | 10.2%  | 8.0%  | 9.6%      | 7.0%         | 9.6%    | 7.6%         | 8.4%   |  |
| 20-39       | 11.2%   | 11.9%  | 11.7% | 12.5%     | 10.3%        | 11.4%   | 10.4%        | 11.6%  |  |
| 40-59       | 12.0%   | 13.3%  | 12.4% | 14.6%     | 9.7%         | 13.1%   | 9.2%         | 12.2%  |  |
| 60-69       | 10.0%   | 11.4%  | 10.6% | 12.8%     | 8.8%         | 10.4%   | 7.5%         | 9.9%   |  |
| 70+         | 8.7%  | 10.0%  | 9.3%  | 10.7%     | 7.6%         | 8.3%    | 7.1%         | 7.0%   |  |
| Total       | 10.6%   | 11.8%  | 10.9% | 12.4%     | <b>9.2</b> % | 11.2%   | <b>9.1</b> % | 10.8%  |  |
|             |   |        |       |           |              |         |              |        |  |

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### Limitations

- A backlog in testing of samples by laboratories affects the reported numbers of tests performed. As a result, numbers tested during this period may change in subsequent reports.
- If higher-priority specimens were tested preferentially, this would likely result in an inflated proportion testing positive.
- Different and changing testing strategies (targeted vs. mass testing) used by different provinces makes percentage testing positive difficult to interpret and compare.
- Health district and sub-district level results included public-sector data only and were mapped based on the testing facility and not place of residence.
- Patient admission status was categorised based on the reported patient facility, which was only available for public sector data and may not reflect whether the patient was actually admitted to hospital.
- Province was determined based on the location of the laboratory where the specimen was registered, which may have resulted in misallocation

## CONCLUSIONS

Weekly testing volumes have been decreasing since the peak in week 28, however the number of tests performed in week 41 were slightly higher than has been observed in recent weeks. As has been observed throughout the first wave of the pandemic, Gauteng (31.5%) performed the largest number of tests in week 41, followed by Western Cape (16.5%) and KwaZulu-Natal (16.3%). Free State (335 per 100,000 persons) and Northern Cape (316 per 100,000 persons) provinces continued to have the highest testing rates in week 41. Testing rates have decreased in all provinces since peak testing rates were observed between week 21 (Western Cape) and week 31 (Northern Cape) in the respective provinces. The overall laboratory turnaround times in week 41 increased above 2 days (2.4 days); 1.7 days in the public sector and 2.9 days in the private sector.

The percentage testing positive has been decreasing weekly since the peak of 31.1% in week 29. In week 41 the percentage testing positive was 9.9%, slightly lower than the previous week. A similar percentage testing positive was last observed in week 23, beginning 31 May. As for the previous few weeks, percentages testing positive were ≥20% in Northern Cape and Free State, between 10-19% in North West, Mpumalanga and Limpopo, and <10% in Gauteng, KwaZulu-Natal, Western Cape and Eastern Cape. Compared to the previous week, the percentage testing positive increased in the Western Cape, predominantly in individuals aged 15-19 years and 20-24 years. The percentage testing positive decreased in Northern Cape, KwaZulu-Natal and Limpopo, and did not change in Eastern Cape, Free State, North West, Gauteng and Mpumalanga provinces. Of the 25 sub-districts with the highest proportion testing positive in the past week, 8 were in the Free State, and 7 in the Northern Cape.