

# COVID-19 TESTING SUMMARY



NATIONAL INSTITUTE FOR  
COMMUNICABLE DISEASES

Division of the National Health Laboratory Service

SOUTH AFRICA WEEK 38 2020

## 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 19 September 2020 (Week 38 of 2020).

## HIGHLIGHTS

- In the period 1 March 2020 through 19 September 2020, 3,527,918 laboratory tests for SARS-CoV-2 have been conducted nationally
- Weekly testing volumes have decreased since a peak in week 28, and the number of tests performed in week 38 were similar to the previous two weeks
- As has been observed since week 31, Northern Cape (393 per 100,000 persons) and Free State (303 per 100,000 persons) provinces had the highest testing rates
- Percentage testing positive has been decreasing weekly since the peak of 31.4% in week 29. In week 38 the percentage testing positive was 11.1%, similar to the previous week.
- Percentages testing positive remained  $\geq 20\%$  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 decreased in two provinces (Western Cape and KwaZulu-Natal), but did not change in Eastern Cape, Northern Cape, Free State, North West, Gauteng, Mpumalanga and Limpopo provinces
- Laboratory turnaround times in week 38 were sustained at  $< 2$  days in both the private and public sectors

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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 high-risk 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 2019 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 19 September 2020 (week 38).

## Testing volumes and proportion testing positive

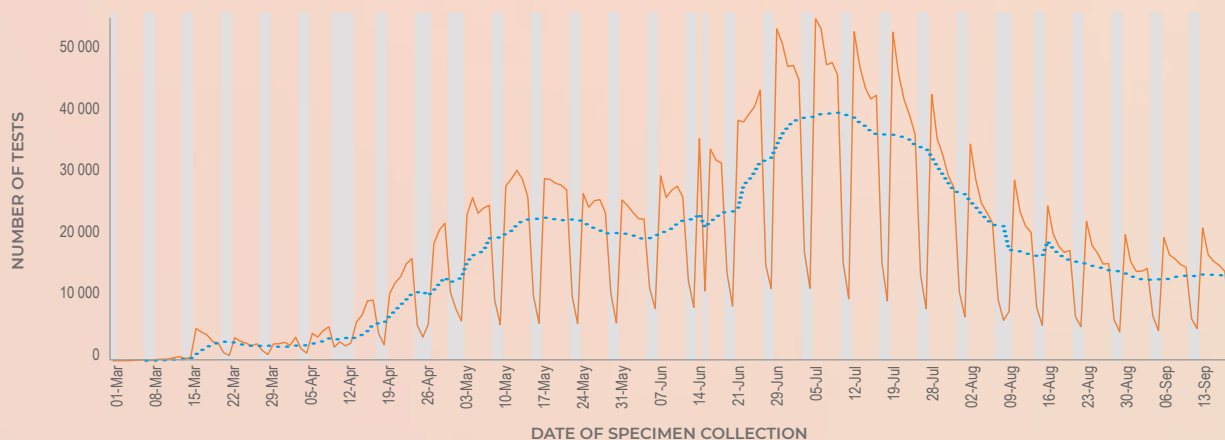
From 1 March through 19 September 2020, 3,527,918 laboratory tests for SARS-CoV-2 were performed. The number of tests performed increased to week 21, however decreased in weeks 22 and 23 due to a limited supply of extraction and testing kits. Increased volumes of tests were observed week on week from week 24 to week 28, with the highest number of tests performed in week 28 (n=272,729), but have subsequently decreased. In week 38, 93,070 tests were performed, similar to the previous two 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 – 19 September 2020. Blue dotted line shows the 7-day moving average of the number of tests conducted. Grey bars highlight weekend days and public holidays.

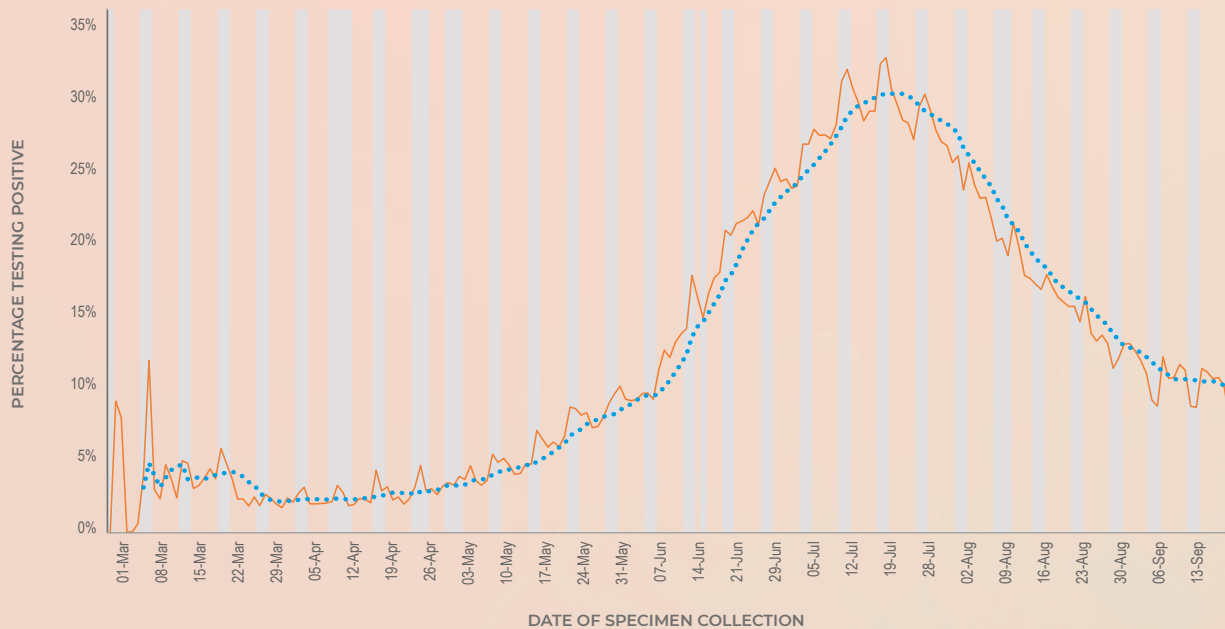
The overall percentage testing positive from week 10 through 38 was 18.1% (Table 1). The percentage testing positive increased week on week from week 18 to a peak of 31.3% in week 29. Since week 29, there has been a 20.2% decrease in the percentage testing positive, with the percentage testing positive decreasing slightly from 11.5% in week 37 to 11.1% in week 38 (P=0.001) (Figure 2).

**Table 1.** Weekly number of tests conducted and positive tests, South Africa, 1 March – 19 September 2020

Week number	Week beginning	No. of tests n (%)	No. of positive tests	Percentage testing positive (%)
10	01-Mar	409 (0.0)	9	2.2
11	08-Mar	2328 (0.1)	88	3.8
12	15-Mar	21325 (0.6)	826	3.9
13	22-Mar	17042 (0.5)	468	2.7
14	29-Mar	17382 (0.5)	395	2.3
15	05-Apr	24606 (0.7)	567	2.3
16	12-Apr	41876 (1.2)	1044	2.5
17	19-Apr	75914 (2.2)	1934	2.5
18	26-Apr	89502 (2.5)	2896	3.2
19	03-May	136920 (3.9)	5550	4.1
20	10-May	157033 (4.5)	7446	4.7
21	17-May	156418 (4.4)	10535	6.7
22	24-May	141422 (4.0)	11711	8.3
23	31-May	135753 (3.8)	13500	9.9
24	07-Jun	156464 (4.4)	20525	13.1
25	14-Jun	164982 (4.7)	29945	18.2
26	21-Jun	221589 (6.3)	50578	22.8
27	28-Jun	268923 (7.6)	69326	25.8
28	05-Jul	272729 (7.7)	79786	29.3
29	12-Jul	250525 (7.1)	78462	31.3
30	19-Jul	236454 (6.7)	72588	30.7
31	26-Jul	185682 (5.3)	53709	28.9
32	02-Aug	149602 (4.2)	36946	24.7
33	09-Aug	116307 (3.3)	23489	20.2
34	16-Aug	109792 (3.1)	19138	17.4
35	23-Aug	99896 (2.8)	14690	14.7
36	30-Aug	90185 (2.6)	11453	12.7
37	06-Sep	93788 (2.7)	10817	11.5
38	13-Sep	93070 (2.6)	10296	11.1
<b>Total</b>		<b>3527918 (100.0)</b>	<b>638717</b>	<b>18.1</b>

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**Figure 2.** Percentage of laboratory tests positive for SARS-CoV-2 by date of specimen collection, South Africa, 1 March – 19 September 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 19 September, 1,616,979 laboratory tests were conducted in public sector laboratories, with 16.4% testing positive. Over this same period, private sector laboratories conducted 1,910,939 tests, with 19.6% testing positive (Table 2). Overall the public sector has conducted 45.8% of tests and accounted for 41.4% 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 (32.9%). From week 37 to week 38, the percentage testing positive decreased by 0.9% in the public sector but did not change in the private sector. In week 38 the percentage testing positive continued

to be higher in the public sector (12.0%) compared to the private sector (10.1%) ( $P < 0.001$ ), as has been observed since week 35.

The mean turnaround time for tests conducted in week 38 increased slightly compared to the previous week, but remained  $< 2$  days (1.8 days overall; 1.7 days in the public sector and 1.8 days in the private sector) (Figure 3). Turnaround times for public sector tests were  $< 2$  days in all provinces except for the Northern Cape (3.3 days) and Mpumalanga (2.2 days) (Figure 4). The turnaround time in Northern Cape increased from 2.2 days to 3.3 days in the past week. Of the 28 NHLS laboratories performing testing for SARS-CoV-2, 25 (89%) had turnaround times  $\leq 2$  days (Figure 5).

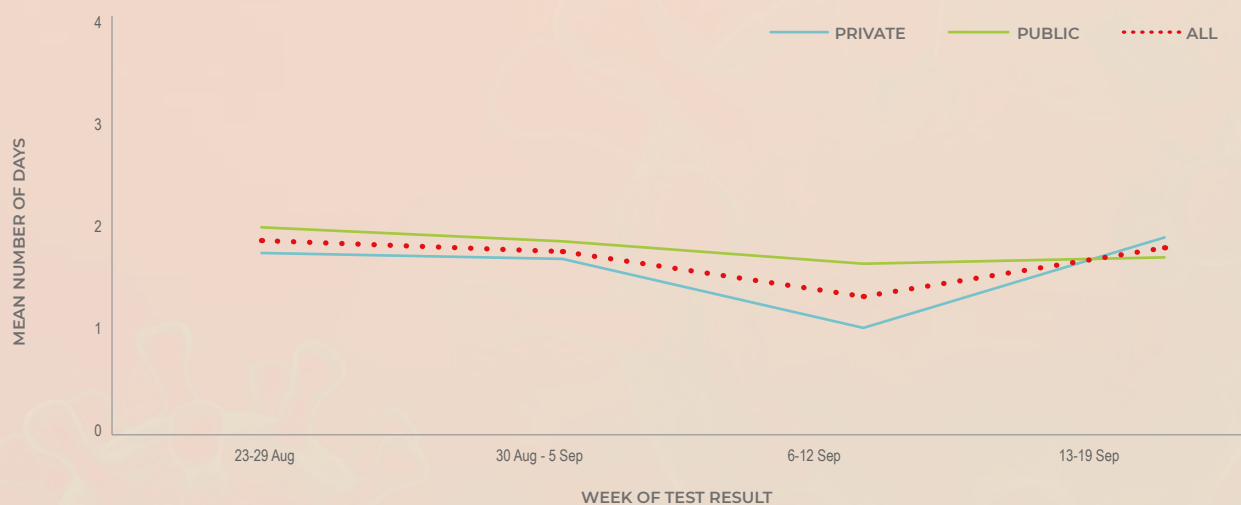
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**Table 2.** Weekly number of tests conducted and positive tests, by healthcare sector, South Africa, 1 March – 19 September 2020

Week number	Week beginning	Public sector		Private sector		Public sector percentage of		Ratio of PTP <sup>a</sup>
		Tests	Cases n (%)	Tests	Cases n (%)	Tests (%)	Cases (%)	
10	01-Mar	251	5 (2.0)	158	4 (2.5)	61.4	55.6	0.787
11	08-Mar	349	12 (3.4)	1979	76 (3.8)	15.0	13.6	0.895
12	15-Mar	1344	51 (3.8)	19981	775 (3.9)	6.3	6.2	0.978
13	22-Mar	3358	124 (3.7)	13684	344 (2.5)	19.7	26.5	1.469
14	29-Mar	5610	159 (2.8)	11772	236 (2.0)	32.3	40.3	1.414
15	05-Apr	11336	319 (2.8)	13270	248 (1.9)	46.1	56.3	1.506
16	12-Apr	23777	608 (2.6)	18099	436 (2.4)	56.8	58.2	1.061
17	19-Apr	54177	1477 (2.7)	21737	457 (2.1)	71.4	76.4	1.297
18	26-Apr	66227	2288 (3.5)	23275	608 (2.6)	74.0	79.0	1.323
19	03-May	92344	4254 (4.6)	44576	1296 (2.9)	67.4	76.6	1.584
20	10-May	104942	5104 (4.9)	52091	2342 (4.5)	66.8	68.5	1.082
21	17-May	95445	6625 (6.9)	60973	3910 (6.4)	61.0	62.9	1.082
22	24-May	74277	5955 (8.0)	67145	5756 (8.6)	52.5	50.8	0.935
23	31-May	60272	6100 (10.1)	75481	7400 (9.8)	44.4	45.2	1.032
24	07-Jun	60024	7357 (12.3)	96440	13168 (13.7)	38.4	35.8	0.898
25	14-Jun	56030	11076 (19.8)	108952	18869 (17.3)	34.0	37.0	1.141
26	21-Jun	82691	18873 (22.8)	138898	31705 (22.8)	37.3	37.3	1.000
27	28-Jun	97386	25145 (25.8)	171537	44181 (25.8)	36.2	36.3	1.002
28	05-Jul	108082	30293 (28.0)	164647	49493 (30.1)	39.6	38.0	0.932
29	12-Jul	101401	29427 (29.0)	149124	49035 (32.9)	40.5	37.5	0.883
30	19-Jul	96320	28448 (29.5)	140134	44140 (31.5)	40.7	39.2	0.938
31	26-Jul	74003	21352 (28.9)	111679	32357 (29.0)	39.9	39.8	0.996
32	02-Aug	64158	15758 (24.6)	85444	21188 (24.8)	42.9	42.7	0.990
33	09-Aug	53717	10419 (19.4)	62590	13070 (20.9)	46.2	44.4	0.929
34	16-Aug	50966	8952 (17.6)	58826	10186 (17.3)	46.4	46.8	1.014
35	23-Aug	45553	7251 (15.9)	54343	7439 (13.7)	45.6	49.4	1.163
36	30-Aug	41002	5627 (13.7)	49183	5826 (11.8)	45.5	49.1	1.159
37	06-Sep	46353	5968 (12.9)	47435	4849 (10.2)	49.4	55.2	1.259
38	13-Sep	45584	5486 (12.0)	47486	4810 (10.1)	49.0	53.3	1.188
	<b>Total</b>	<b>1616979</b>	<b>264513 (16.4)</b>	<b>1910939</b>	<b>374204 (19.6)</b>	<b>45.8</b>	<b>41.4</b>	<b>0.835</b>

<sup>a</sup>Ratio 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 private sector)

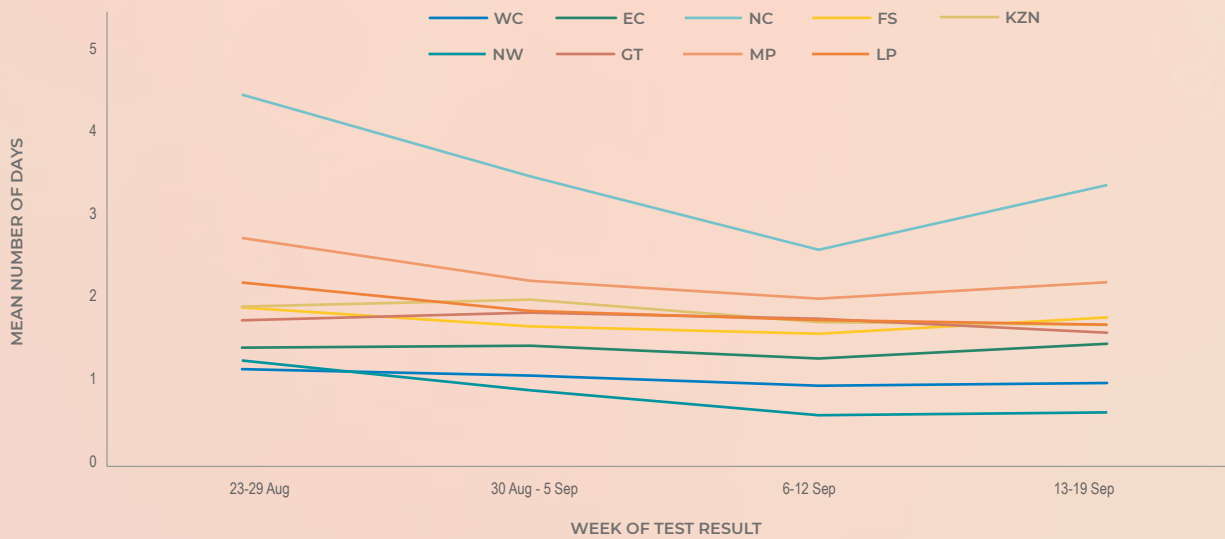


**Figure 3.** Mean number of days between date of specimen collection and date of test result, by week of test result, South Africa, 23 August – 19 September 2020

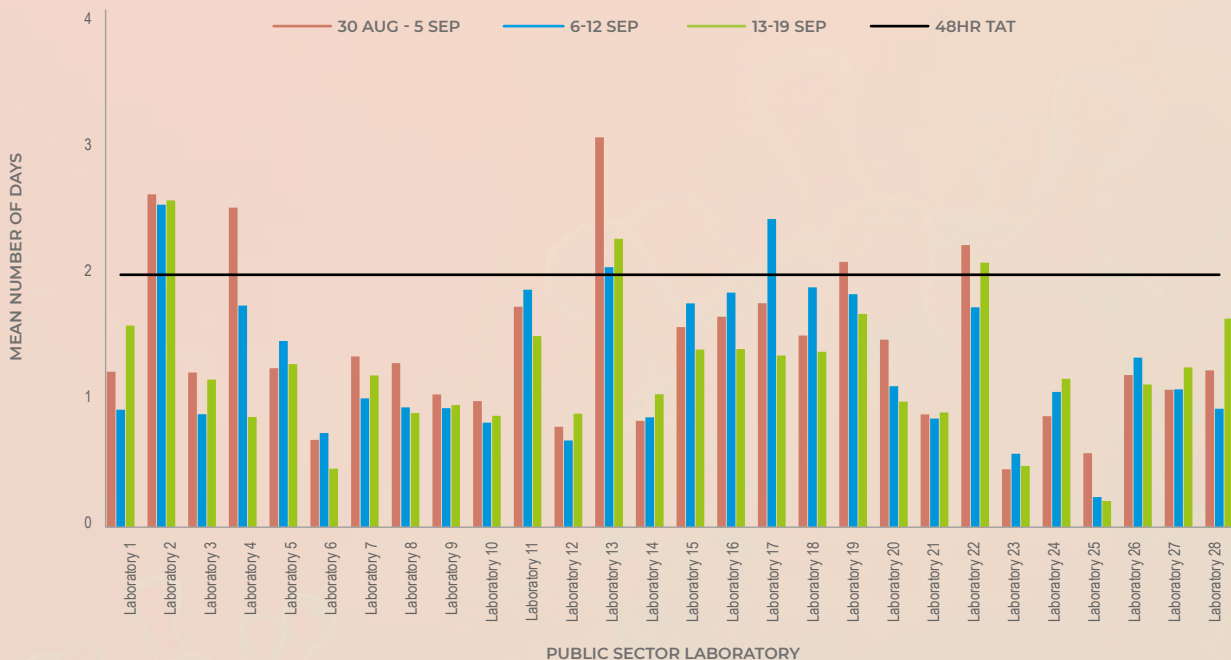
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**Figure 4.** Mean number of days between date of specimen collection and date of test result, by week of test result and province, public sector, South Africa, 23 August – 19 September 2020. WC, Western Cape; EC, Eastern Cape; FS, Free State; KZN, 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, 30 August–19 September 2020. The horizontal black line indicates 48-hour turnaround time (TAT).

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## Testing by province

As in the previous weeks, Gauteng (30.8%), KwaZulu-Natal (18.0%) and Western Cape (15.7%) provinces performed the largest number of tests in week 38 (Table 3). All other provinces conducted <10,000 tests in week 38. As has been observed since week 31, Northern Cape (393 per 100,000 persons) and Free State (303 per 100,000 persons) provinces had the highest testing rates in week 38 (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. Testing rates in week 38 were similar to the previous two weeks.

Percentages testing positive remained  $\geq 20\%$  in Northern Cape (27.9%) and Free State (23.4%), between 10-19% in North West, Mpumalanga and Limpopo, and <10% in Gauteng, KwaZulu-Natal, Western Cape and Eastern Cape in week 38 (Figure 7). Compared to the previous week, the percentage testing positive decreased in two provinces (Western Cape ( $P=0.002$ ) and KwaZulu-Natal ( $P<0.001$ )). The percentage testing positive in week 38 compared to week 37 did not change in Eastern Cape ( $P=0.112$ ), Northern Cape ( $P=0.777$ ), Free State ( $P=0.283$ ), North West ( $P=0.433$ ), Gauteng ( $P=0.524$ ), Mpumalanga ( $P=0.425$ ) and Limpopo ( $P=0.093$ ) 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).

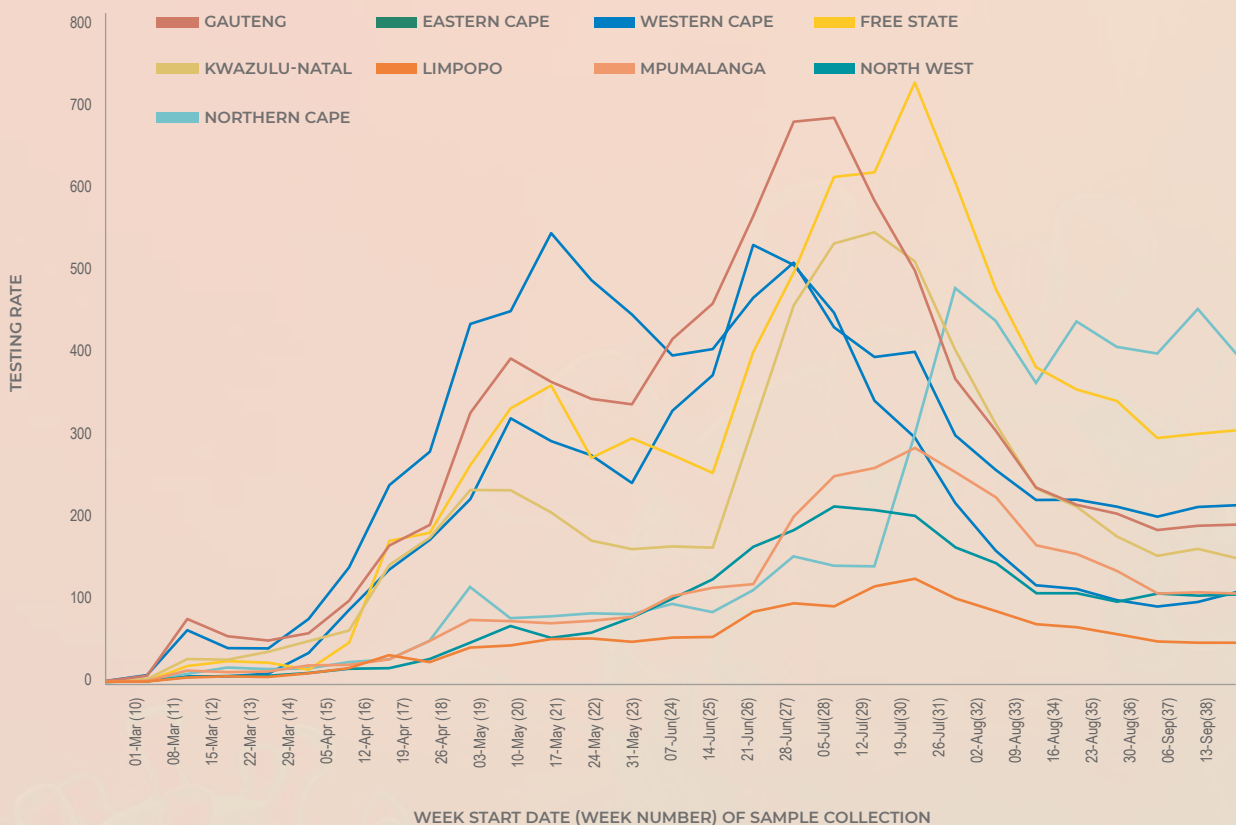


Figure 6. Testing rate per 100,000 persons by province and week of specimen collection, South Africa, 1 March – 19 September 2020

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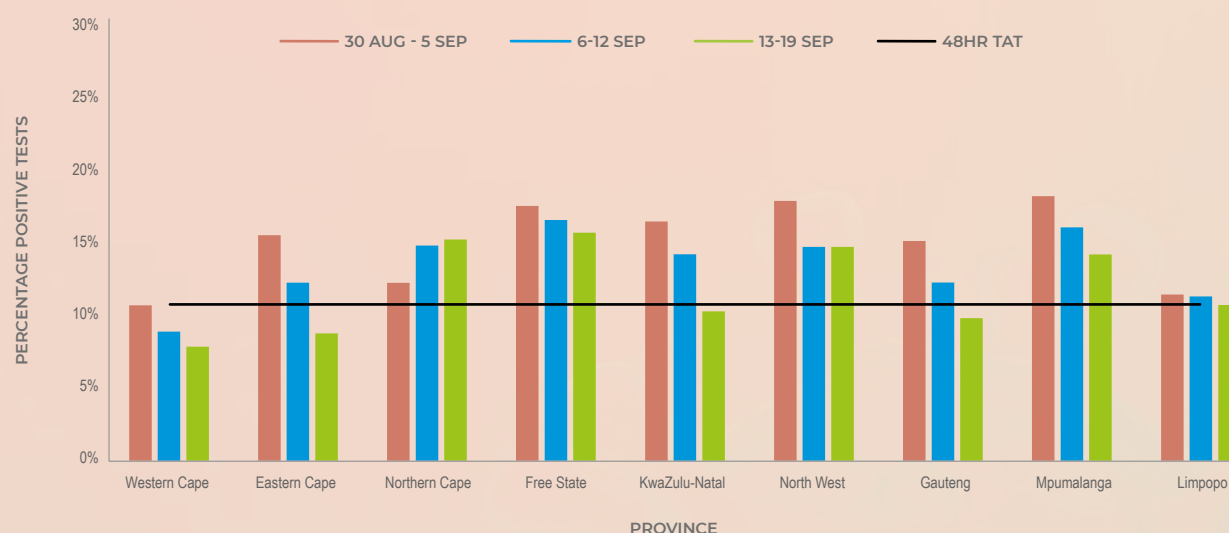
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**Table 3.** Weekly number of tests performed and positive tests, by province, South Africa, 30 August – 19 September 2020

Province	Population <sup>a</sup>	30 Aug-5 Sep		6-12 Sep		13-19 Sep		Tests per 100,000 persons	Change in percentage positive <sup>b</sup>
		No. of tests	No. positive tests (%)	No. of tests	No. positive tests (%)	No. of tests	No. positive tests (%)		
Western Cape	6844272	13611	1124 (8.3)	14397	1103 (7.7)	14567	981 (6.7)	213	-0.9%
Eastern Cape	6712276	6092	616 (10.1)	6453	537 (8.3)	7273	661 (9.1)	108	0.8%
Northern Cape	1263875	5003	1325 (26.5)	5681	1573 (27.7)	4965	1387 (27.9)	393	0.2%
Free State	2887465	8469	1979 (23.4)	8626	2081 (24.1)	8749	2050 (23.4)	303	-0.7%
KwaZulu-Natal	11289086	17103	1722 (10.1)	18080	1513 (8.4)	16748	1189 (7.1)	148	-1.3%
North West	4027160	4276	797 (18.6)	4182	829 (19.8)	4241	812 (19.1)	105	-0.7%
Gauteng	15176115	27719	2659 (9.6)	28521	2052 (7.2)	28707	2026 (7.1)	189	-0.1%
Mpumalanga	4592187	4881	782 (16.0)	4944	710 (14.4)	4876	728 (14.9)	106	0.6%
Limpopo	5982584	2905	440 (15.1)	2818	410 (14.5)	2815	455 (16.2)	47	1.6%
Unknown		126	9 (7.1)	86	9 (10.5)	129	7 (5.4)		-5.0%
<b>Total</b>	<b>58750220</b>	<b>90185</b>	<b>11453 (12.7)</b>	<b>93788</b>	<b>10817 (11.5)</b>	<b>93070</b>	<b>10296 (11.1)</b>	<b>158</b>	<b>-0.5%</b>

<sup>a</sup> 2019 Mid-year population Statistics SA

<sup>b</sup> Current week compared to previous week



**Figure 7.** Weekly percentage testing positive, by province, South Africa, 30 August – 19 September 2020. The horizontal black line shows the national mean for week 38, beginning 13 September 2020.

## Testing in the public sector

In the public sector, the percentage testing positive continued to decrease from 12.9% in week 37 to 12.0% in week 38 ( $P < 0.001$ ) (Table 4). The percentage testing positive in week 38 was highest in Northern

Cape (31.1%), North West (25.4%) and Free State (22.9%) 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).

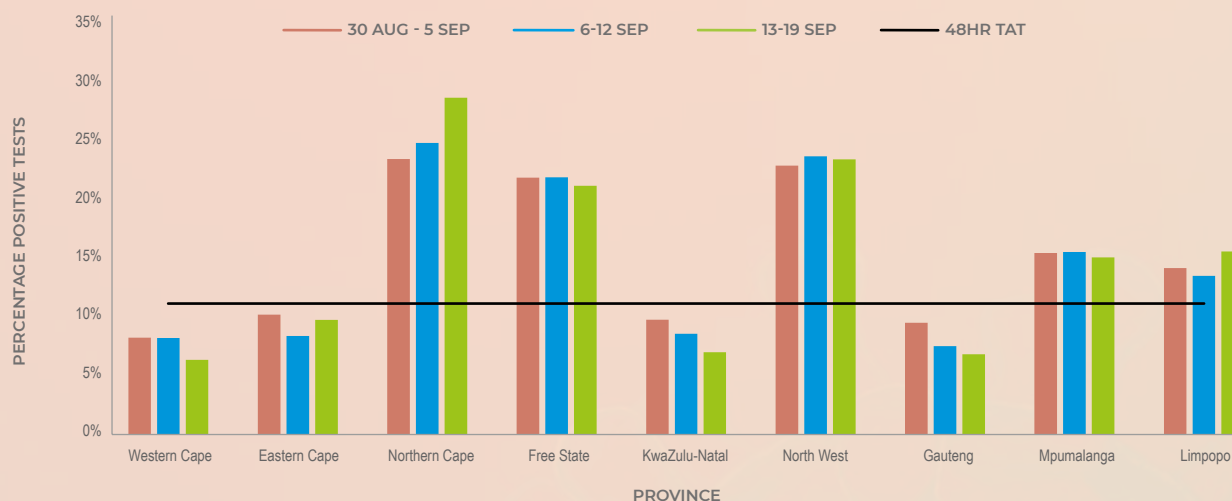


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**Table 4.** Weekly number of tests conducted and positive tests in the public sector, by province, South Africa, 30 August – 19 September 2020

Province	30 Aug-5 Sep		6-12 Sep		13-19 Sep	
	No. of tests	No. positive tests (%)	No. of tests	No. positive tests (%)	No. of tests	No. positive tests (%)
Western Cape	5985	532 (8.9)	6758	599 (8.9)	6973	477 (6.8)
Eastern Cape	3637	401 (11.0)	4275	387 (9.1)	4889	515 (10.5)
Northern Cape	2860	726 (25.4)	3505	942 (26.9)	2763	858 (31.1)
Free State	4556	1078 (23.7)	5089	1206 (23.7)	5116	1172 (22.9)
KwaZulu-Natal	9296	981 (10.6)	10386	961 (9.3)	9708	733 (7.6)
North West	1663	412 (24.8)	1864	478 (25.6)	1633	414 (25.4)
Gauteng	10212	1048 (10.3)	11634	944 (8.1)	11773	866 (7.4)
Mpumalanga	1526	255 (16.7)	1643	276 (16.8)	1631	266 (16.3)
Limpopo	1267	194 (15.3)	1199	175 (14.6)	1098	185 (16.8)
Unknown	0	0 (0.0)	0	0 (0.0)	0	0 (0.0)
<b>Total</b>	<b>41002</b>	<b>5627 (13.7)</b>	<b>46353</b>	<b>5968 (12.9)</b>	<b>45584</b>	<b>5486 (12.0)</b>



**Figure 8.** Weekly percentage testing positive in the public sector, by province, South Africa, 30 August – 19 September 2020. The horizontal black line shows the national mean for week 38, beginning 13 September 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

13 - 19 September, with the highest proportion testing positive nationally.

This week's list is dominated by facilities in the Northern Cape (8), North West (6) and Free State (6). There are three facilities in Mpumalanga and one each in the Western and Eastern Cape.

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**Table 5.** Public healthcare facilities with a high proportion testing positive, 13-19 September 2020

Facility Name	Province	Tests	PTP (95% CI)
Facility 1	Northern Cape	59	0.780 (0.674;0.885)
Facility 2	Northern Cape	53	0.623 (0.492;0.753)
Facility 3	Northern Cape	319	0.498 (0.444;0.553)
Facility 4	Northern Cape	29	0.483 (0.301;0.665)
Facility 5	North West	34	0.441 (0.274;0.608)
Facility 6	Free State	41	0.439 (0.287;0.591)
Facility 7	North West	126	0.429 (0.342;0.515)
Facility 8	Northern Cape	262	0.424 (0.364;0.483)
Facility 9	Mpumalanga	29	0.379 (0.203;0.556)
Facility 10	Northern Cape	64	0.375 (0.256;0.494)
Facility 11	Free State	246	0.374 (0.314;0.434)
Facility 12	Free State	51	0.373 (0.240;0.505)
Facility 13	North West	43	0.372 (0.228;0.517)
Facility 14	KwaZulu-Natal	30	0.367 (0.194;0.539)
Facility 15	North West	30	0.367 (0.194;0.539)
Facility 16	Northern Cape	155	0.361 (0.286;0.437)
Facility 17	Northern Cape	97	0.361 (0.265;0.456)
Facility 18	Eastern Cape	34	0.353 (0.192;0.514)
Facility 19	North West	51	0.353 (0.222;0.484)
Facility 20	Mpumalanga	35	0.343 (0.186;0.500)
Facility 21	Free State	59	0.339 (0.218;0.460)
Facility 22	Mpumalanga	74	0.338 (0.230;0.446)
Facility 23	Free State	69	0.333 (0.222;0.445)
Facility 24	North West	64	0.328 (0.213;0.443)
Facility 25	Free State	58	0.328 (0.207;0.448)

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

## Public sector testing: Health district-level results

The results for the 25 municipalities and metropolitan health sub-districts showing the greatest proportions testing positive in the week of 13-19 September 2020 are shown in Table 6. The list of districts continues to be dominated by those in the Northern Cape (9), North West (5), and four in the Free State, and three in Mpumalanga.

Two districts (both in the Northern Cape) showed a proportion testing positive greater than 40%, with a further 9 having a proportion testing positive greater than 30%. Significant increases were observed in three of these 25 districts – Siyancuma and Emthanjeni in the Northern Cape, and Mtubatuba in KwaZulu-Natal.

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**Table 6.** Health sub-districts with the highest proportion testing positive based on public sector data for the week of 13-19 September 2020

Health district or sub-district	Province	PTP (95% CI)	Previous week
Siyancuma	Northern Cape	<b>0.602 (0.476-0.727)</b>	0.314 (0.212-0.417)
Sol Plaatjie	Northern Cape	0.478 (0.441-0.515)	0.296 (0.267-0.326)
Kareeberg	Northern Cape	0.391 (0.249-0.532)	0.464 (0.323-0.605)
Setsoto	Free State	0.384 (0.280-0.487)	0.325 (0.239-0.410)
Tsantsabane	Northern Cape	0.348 (0.262-0.435)	0.246 (0.201-0.290)
Mafikeng	North West	0.341 (0.273-0.408)	0.345 (0.282-0.409)
Ramotshere Moiloa	North West	0.336 (0.250-0.422)	0.393 (0.295-0.491)
Phokwane	Northern Cape	0.332 (0.267-0.397)	0.380 (0.310-0.449)
Tokologo	Free State	0.321 (0.223-0.419)	0.195 (0.109-0.282)
Maquassi Hills	North West	0.313 (0.233-0.393)	0.316 (0.239-0.394)
Ba-Phalaborwa	Limpopo	0.307 (0.214-0.401)	0.237 (0.145-0.329)
Emthanjeni	Northern Cape	<b>0.288 (0.233-0.343)</b>	0.163 (0.108-0.218)
Umsobomvu	Northern Cape	0.278 (0.158-0.398)	0.209 (0.145-0.273)
Nketoana	Free State	0.274 (0.191-0.357)	0.380 (0.245-0.515)
Mtubatuba	KwaZulu-Natal	<b>0.273 (0.126-0.420)</b>	0.069 (0.019-0.120)
Lepele-Nkumpi	Limpopo	0.270 (0.125-0.415)	0.259 (0.119-0.398)
Beaufort West	Western Cape	0.269 (0.201-0.337)	0.276 (0.191-0.360)
Naledi	North West	0.268 (0.171-0.365)	0.192 (0.107-0.277)
Tswelopele	Free State	0.264 (0.171-0.357)	0.313 (0.218-0.408)
Emalahleni	Mpumalanga	0.263 (0.153-0.374)	...
Siyathemba	Northern Cape	0.258 (0.175-0.341)	0.177 (0.105-0.248)
Steve Tshwete	Mpumalanga	0.257 (0.176-0.339)	0.214 (0.140-0.288)
Msukaligwa	Mpumalanga	0.251 (0.174-0.329)	0.265 (0.192-0.337)
Thembelihle	Northern Cape	0.244 (0.174-0.314)	0.349 (0.258-0.439)
Tlokwe City Council	North West	0.242 (0.158-0.327)	0.260 (0.176-0.343)

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

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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.

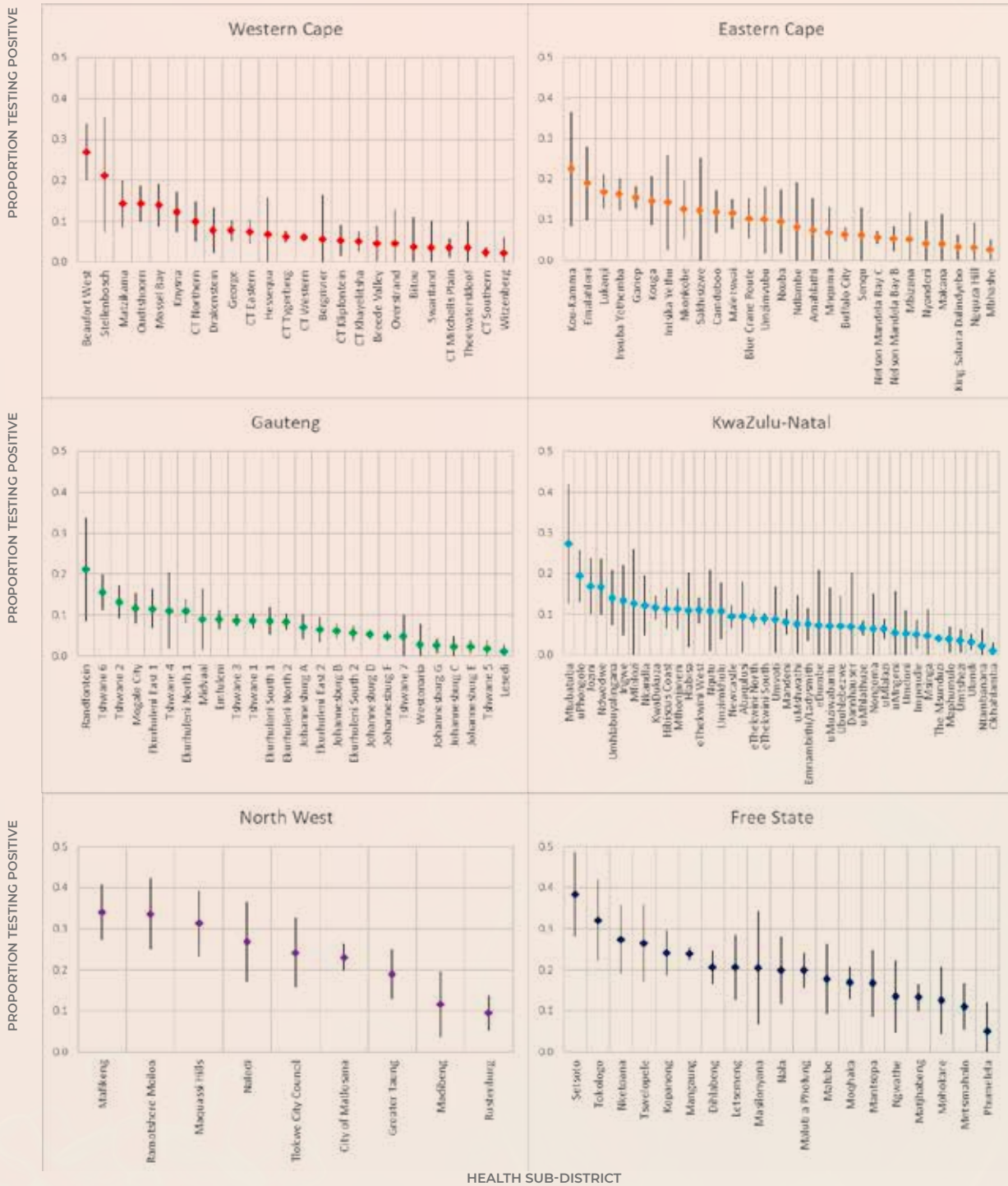
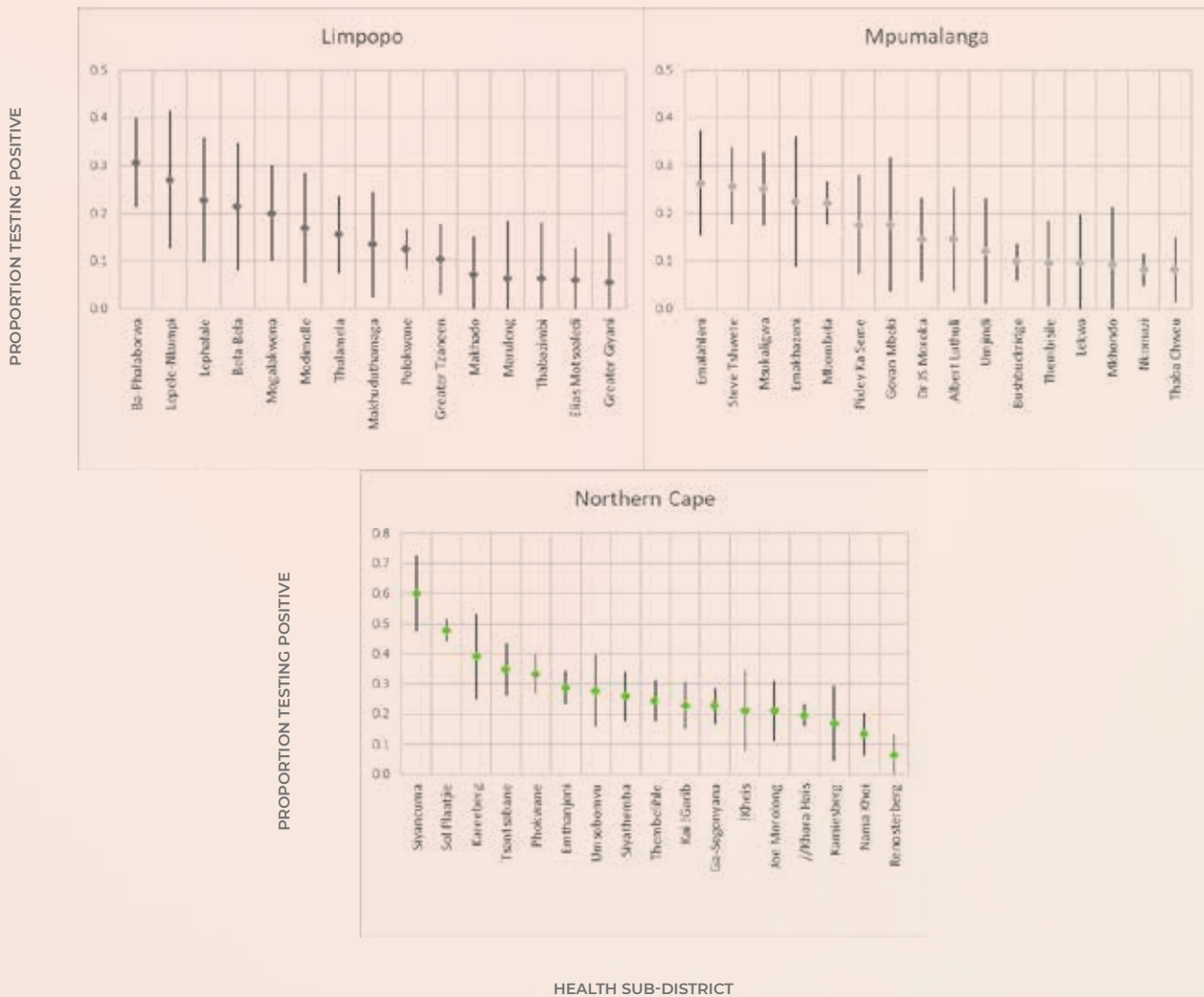


Figure 9. Proportions testing positive by health sub-districts in Western Cape, Eastern Cape, Gauteng, KwaZulu-Natal, North West, Free State, Limpopo, Mpumalanga and Northern Cape provinces based on public sector data for the week of 13-19 September 2020.

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**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 13-19 September 2020.

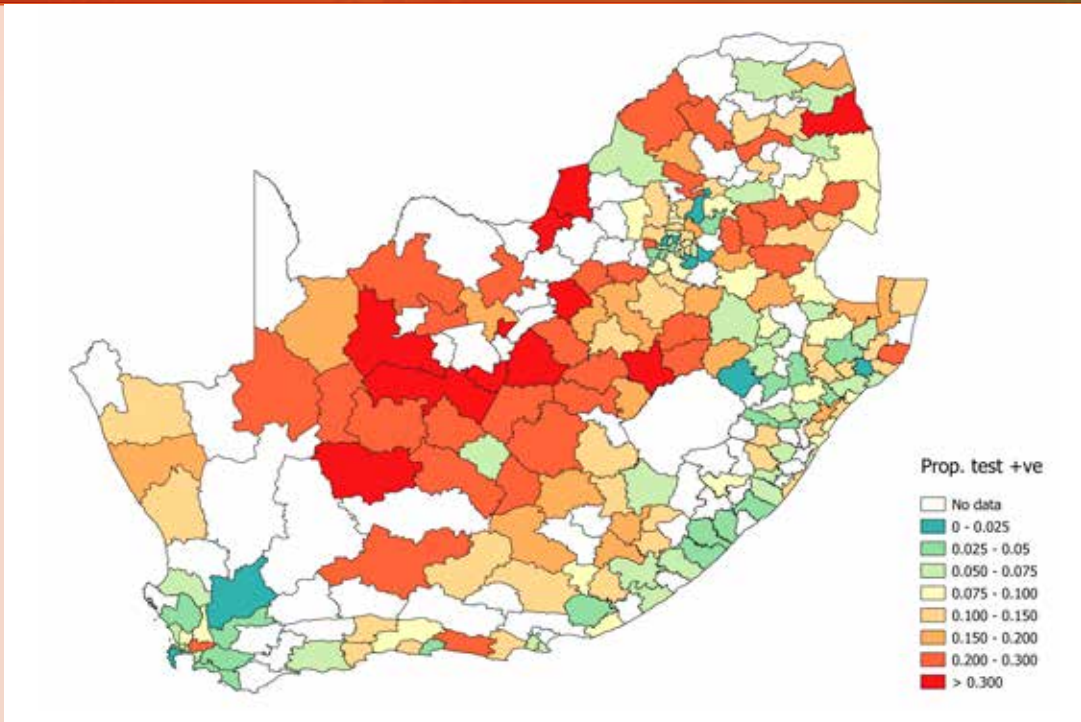
The spatial pattern of adjusted proportions testing positive in public facilities by health district and sub-district are shown for South Africa (Figure 10), Western Cape (Figure 11), Eastern Cape (Figure 12),

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).

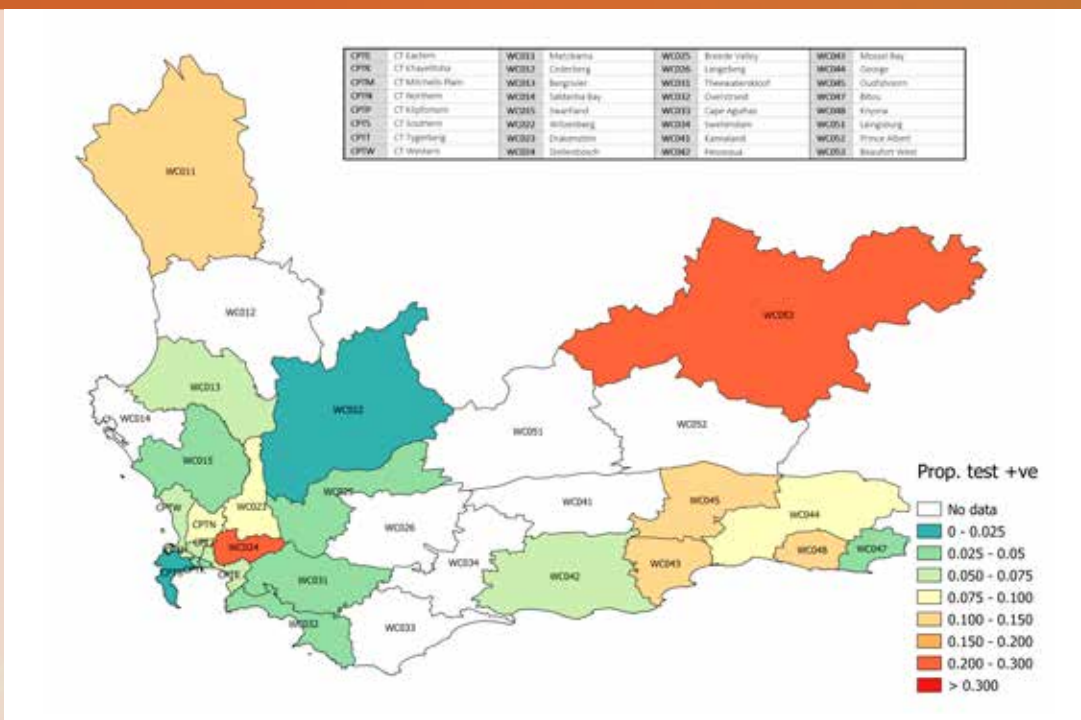
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**Figure 10.** Proportion testing positive by health sub-district based on public sector data for the week of 13-19 September 2020, South Africa. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

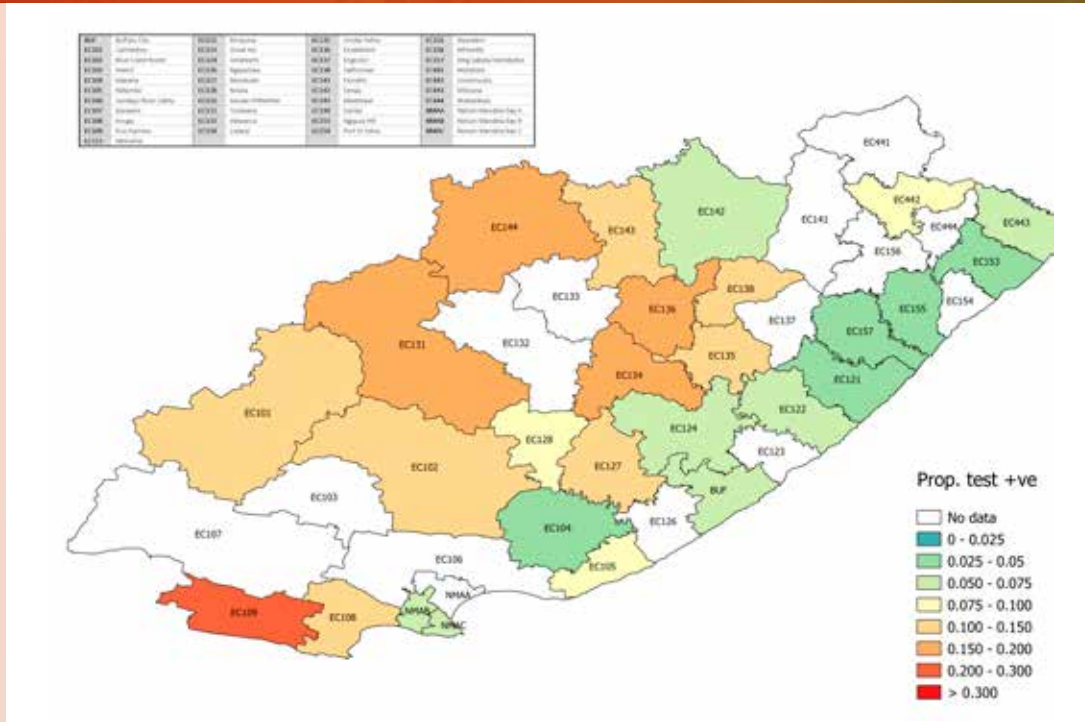


**Figure 11.** Health sub-districts in the Western Cape province with a high proportion testing positive based on public sector data for the week of 13-19 September 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

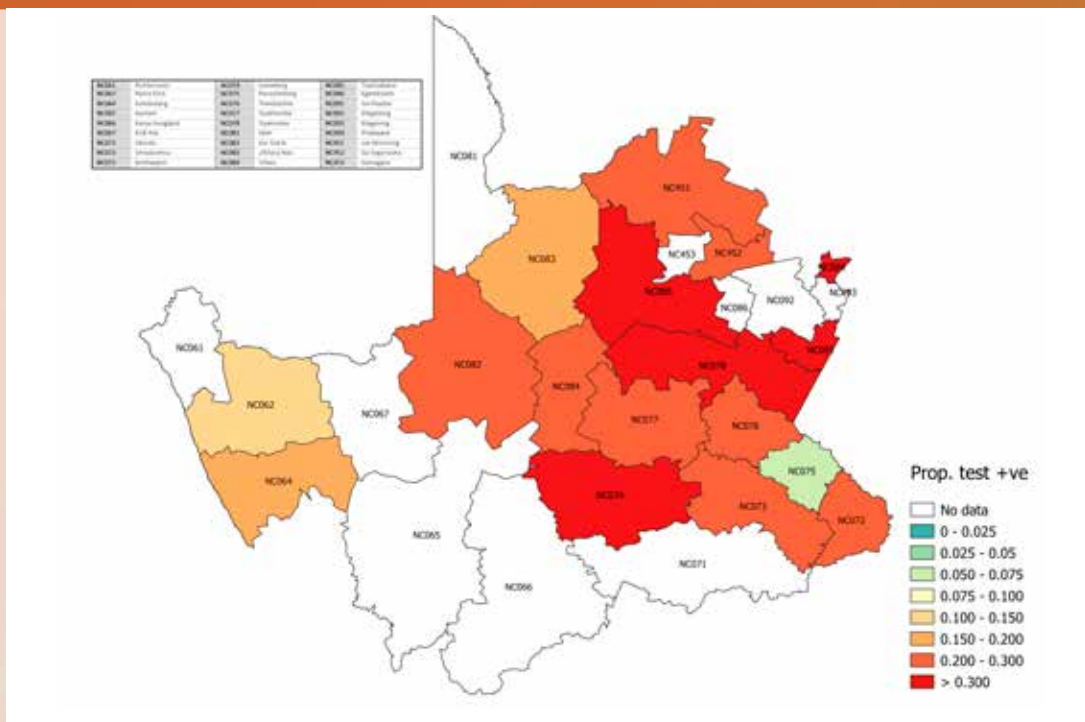
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**Figure 12.** Health sub-districts in the Eastern Cape province with a high proportion testing positive based on public sector data for the week of 13-19 September 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

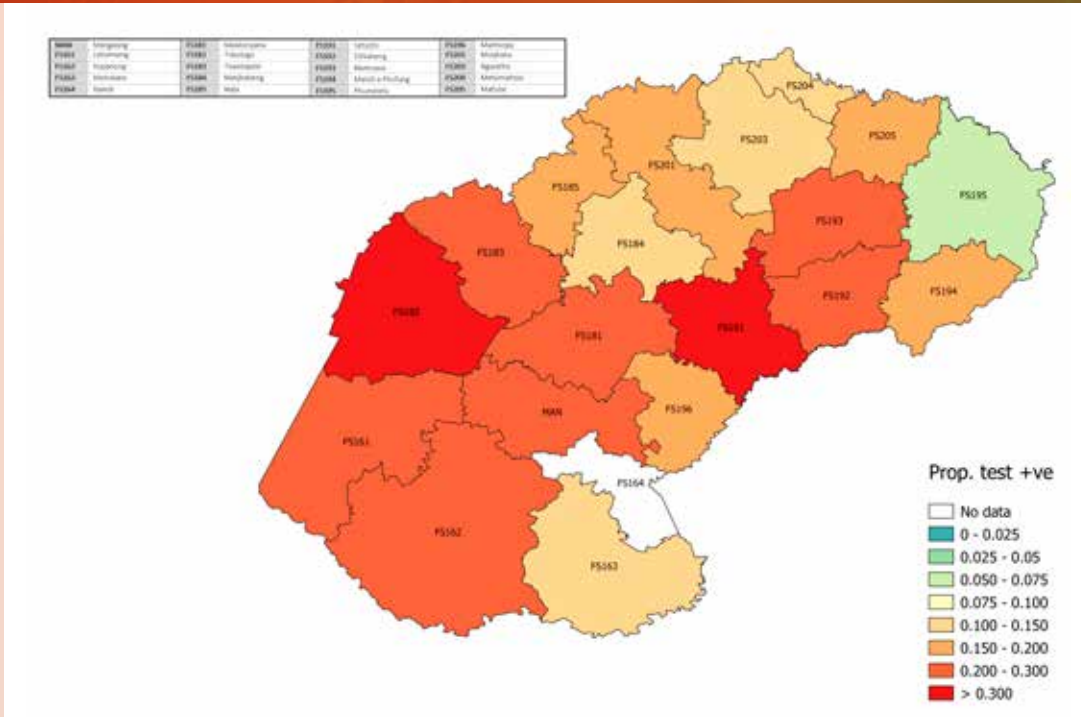


**Figure 13.** Health sub-districts in Northern Cape Province with a high proportion testing positive based on public sector data for the week of 13-19 September 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

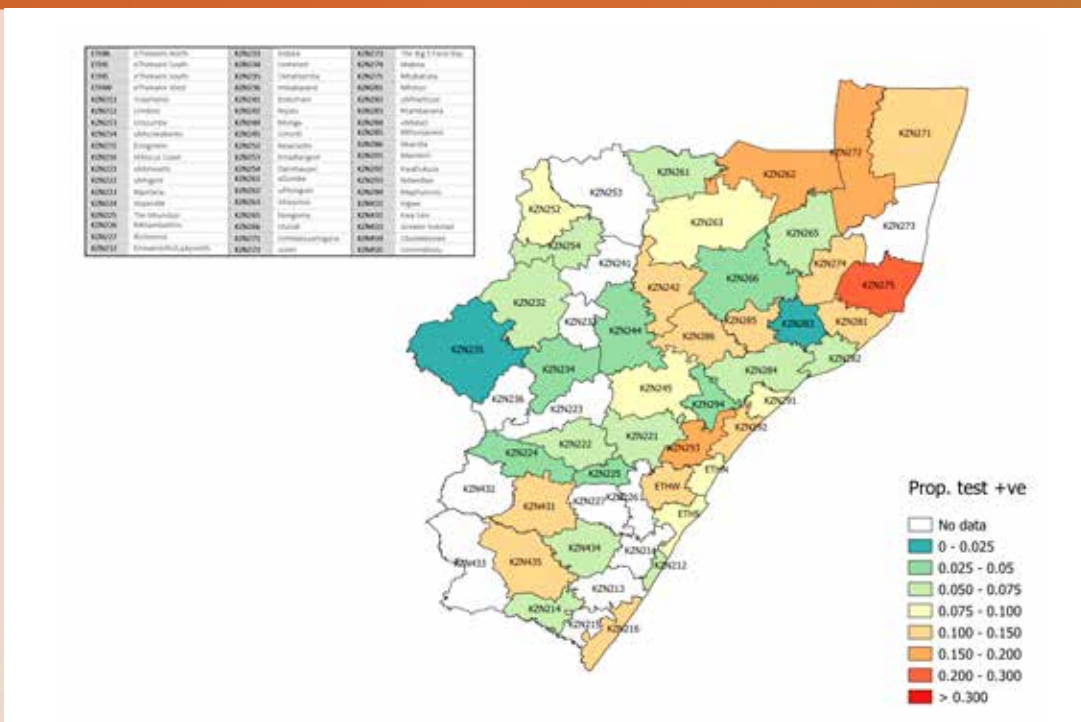
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**Figure 14.** Health sub-districts in Free State Province with a high proportion testing positive based on public sector data for the week of 13-19 September 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.



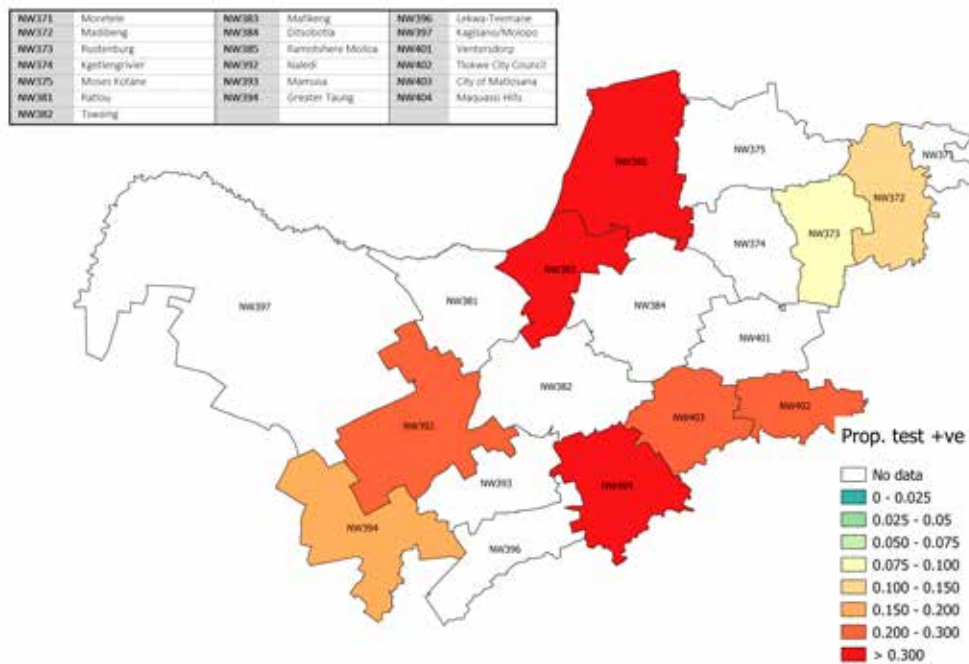
**Figure 15.** Health sub-districts in KwaZulu-Natal Province with a high proportion testing positive based on public sector data for the week of 13-19 September 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.



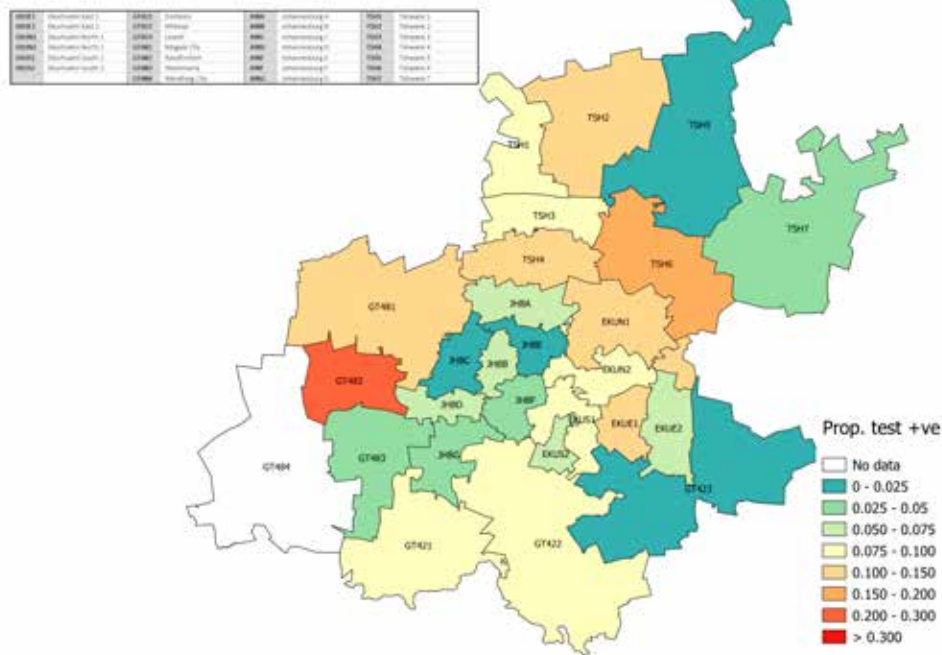
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**Figure 16.** Health sub-districts in North West Province with a high proportion testing positive based on public sector data for the week of 13-19 September 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

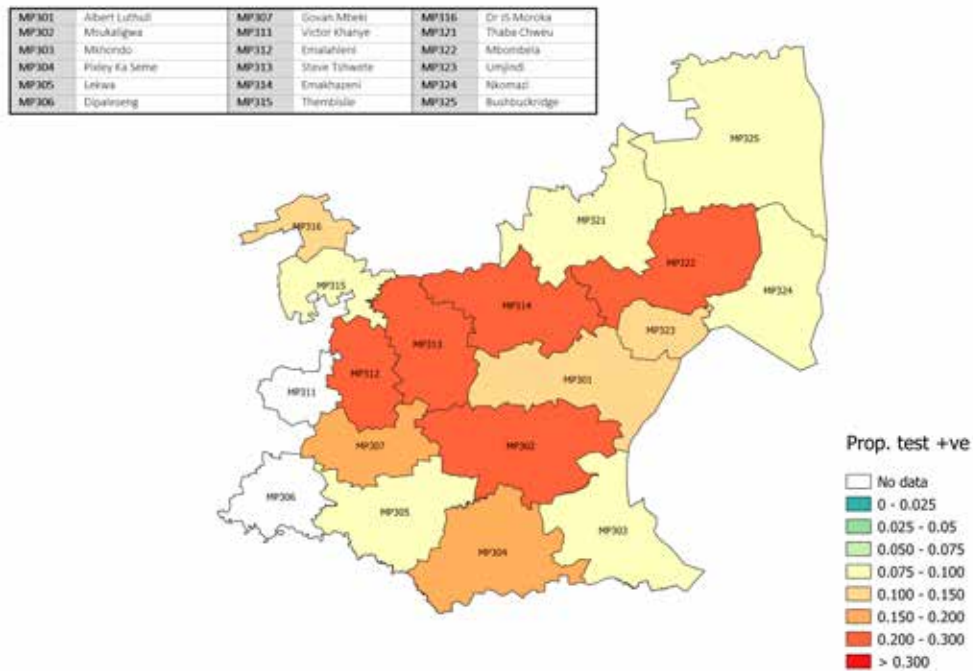


**Figure 17.** Health sub-districts in Gauteng Province with a high proportion testing positive based on public sector data for the week of 13-19 September 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

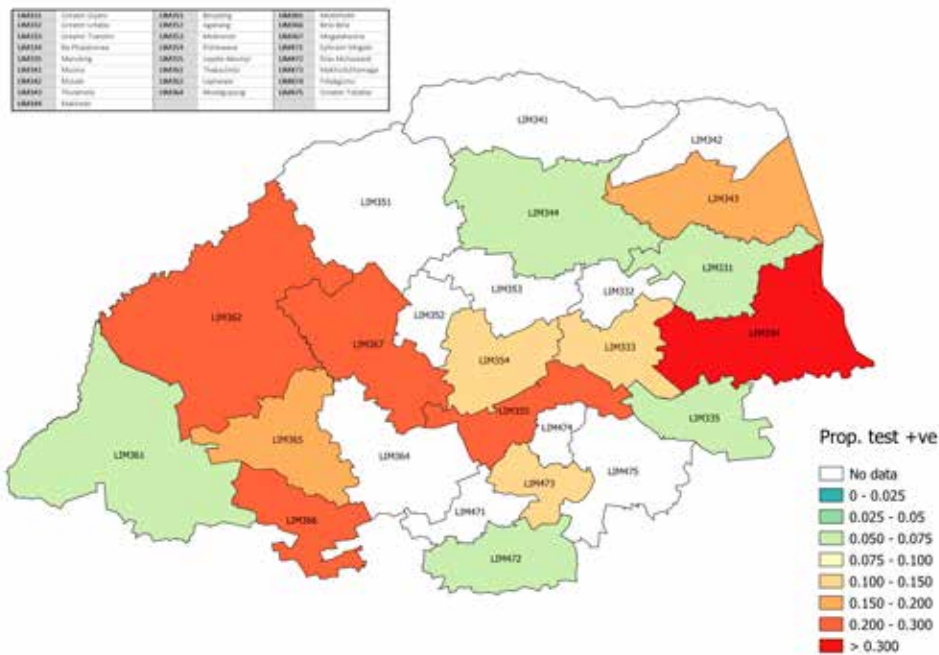
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**Figure 18.** Health sub-districts in Mpumalanga Province with a high proportion testing positive based on public sector data for the week of 13-19 September 2020. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.



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## Testing by patient admission status

In week 38, 29.5% of tests in the public sector were performed for hospitalised patients (Figure 20). The proportion of inpatient tests was highest in Northern Cape (41,7%), and had increased in this province from 32.1% in week 37.

The proportion of inpatient tests also increased in the past week in KwaZulu-Natal and Limpopo.

The percentage testing positive in week 38 remained lower among inpatients (10.2%) compared to outpatients (13.2%), with the percentage in both groups continuing to decrease in the past week (Figure 21).

In the public sector in week 38 the mean laboratory turnaround time was lower for inpatients (1.5 days) compared to outpatients (1.9 days) but remained <2 days in both groups (Figure 22).

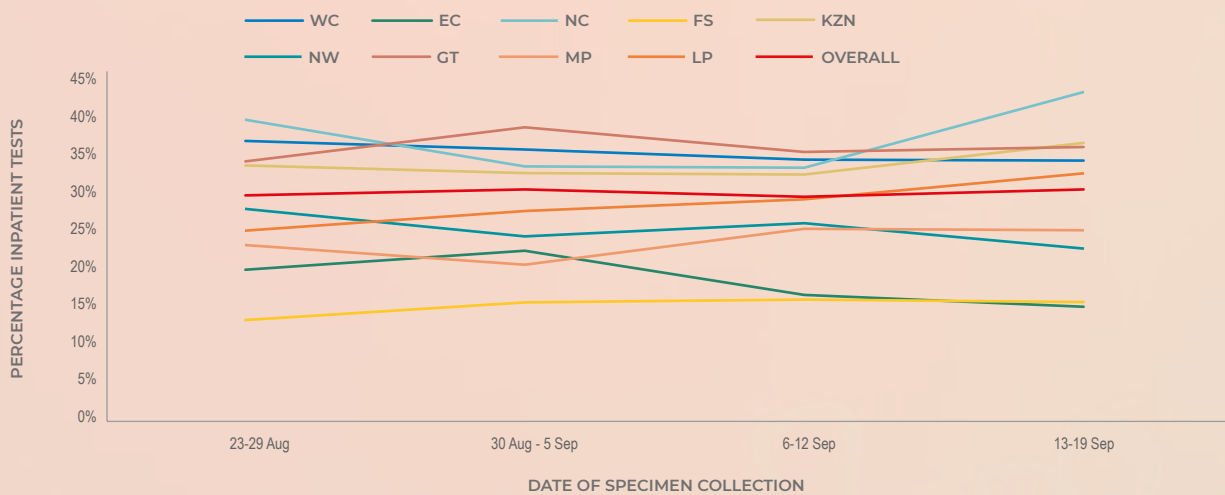


Figure 20. Percentage of inpatient tests performed in the public sector by province, 23 August - 19 September 2020

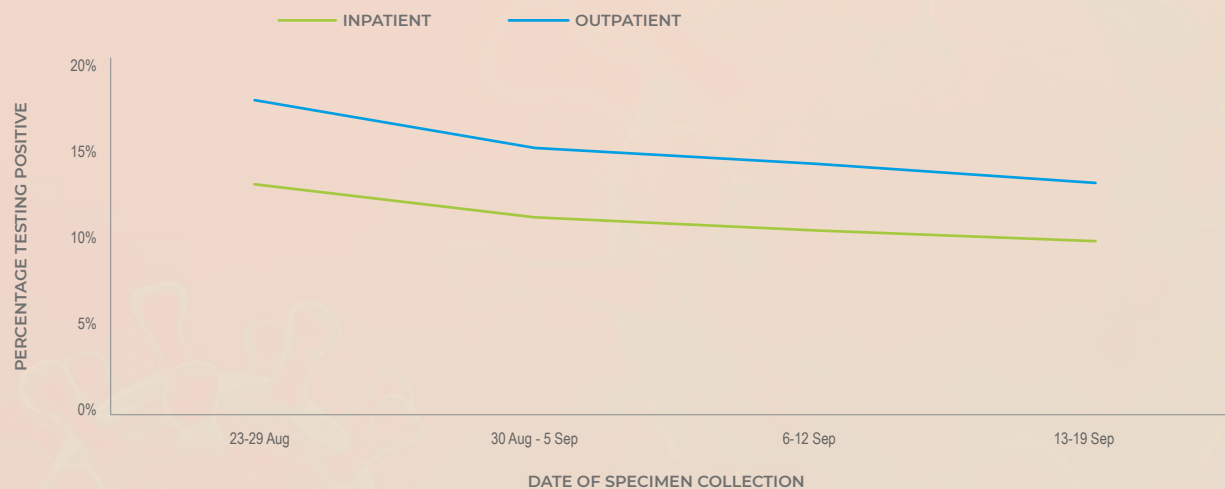
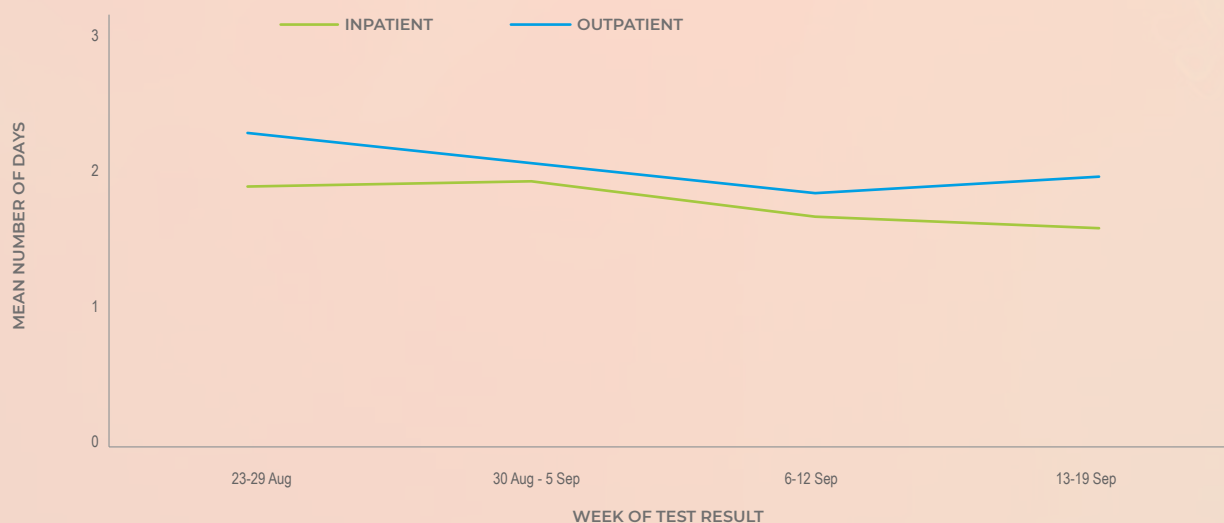


Figure 21. Percentage testing positive by patient admission status in the public sector, 23 August - 19 September 2020

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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, 23 August - 19 September 2020

## Testing by age and sex

The mean age of individuals tested in week 38 was 38.2 years, similar to the previous weeks. The mean age of individuals with a positive test in week 38 was 39.2 years, and was similar in males (39.1 years) and females (39.3 years,  $P=0.767$ ) (Table 7).

The sex ratio (the number of males per 100 females) of individuals with a positive test increased compared to previous weeks and was 74.4 in week 38.

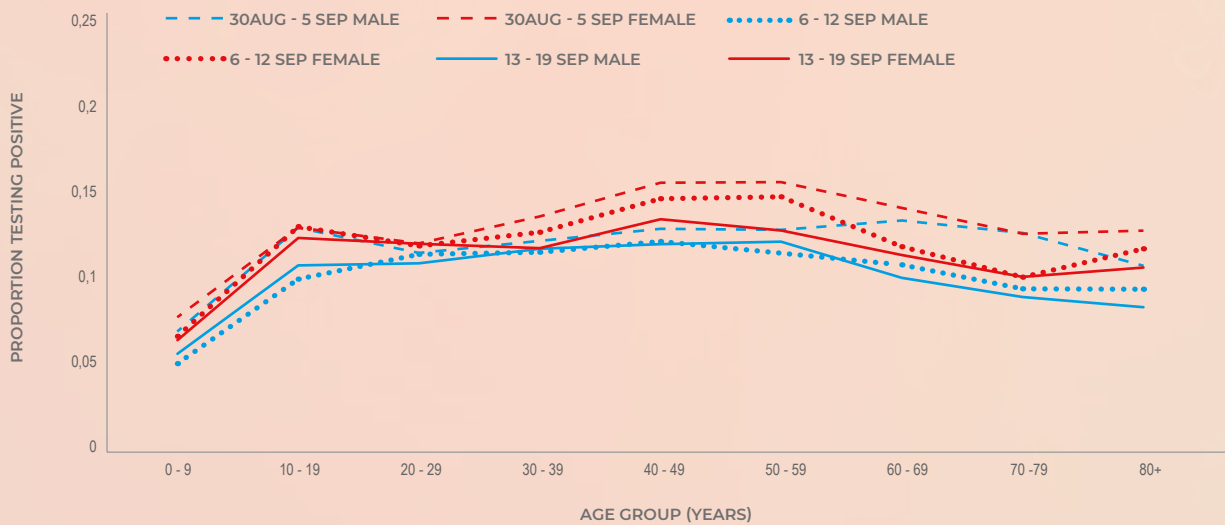
For both sexes, the proportion testing positive in week 38 was similar to or lower than the previous week across all age groups (Figure 23).

**Table 7.** Mean age and sex ratio of individuals tested, South Africa, 23 August - 19 September 2020

Week number	Week beginning	Mean age of tested (years)		Mean age of positive tests (years)		Sex ratios (males / 100 females)	
		Males	Females	Males	Females	Tested	Cases
35	23 August	39.3	40.0	41.3	41.8	79.7	71.3
36	30 August	39.3	39.7	40.9	41.2	82.7	73.3
37	6 September	38.4	39.3	40.2	40.4	81.3	68.5
38	13 September	37.9	38.5	39.1	39.3	82.1	74.4

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**Figure 23.** Weekly proportion testing positive by age group and sex, South Africa, 30 August-19 September 2020

From week 35 to week 38, the percentage testing positive decreased 3.3% in males (from 13.8% to 10.5%) and 3.9% in females (from 15.5% to 11.6%) (Table 8). In week 38 the percentage testing positive was

higher in females compared to males in the 0-19 years ( $P < 0.001$ ), 40-59 years ( $P = 0.006$ ) and  $\geq 70$  years ( $P = 0.027$ ) age groups, and did not differ in the other age groups.

**Table 8.** Percentage testing positive by sex and week, South Africa, 23 August – 19 September 2020

Age (years)	23-29 Aug		30 Aug-5 Sep		6-12 Sep		13-19 Sep	
	Male	Female	Male	Female	Male	Female	Male	Female
0-19	11.1%	12.4%	9.9%	10.8%	7.3%	10.5%	8.1%	9.9%
20-39	13.2%	14.6%	11.7%	12.8%	11.3%	12.2%	11.2%	11.7%
40-59	15.4%	17.5%	12.7%	15.6%	11.8%	14.7%	11.9%	13.0%
60-69	15.2%	16.5%	13.3%	13.8%	10.6%	11.7%	9.8%	11.2%
70+	14.0%	16.0%	11.9%	12.5%	9.1%	10.4%	8.4%	10.0%
<b>Total</b>	<b>13.8%</b>	<b>15.5%</b>	<b>11.9%</b>	<b>13.4%</b>	<b>10.5%</b>	<b>12.5%</b>	<b>10.5%</b>	<b>11.6%</b>

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## Limitations

- The backlog in testing of samples by public 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 of tests if the sample was registered in a different province to the patient residence.

## CONCLUSIONS

Weekly testing volumes have decreased since a peak in week 28, and the number of tests performed in week 38 were similar to the previous two weeks. Gauteng (30.8%), KwaZulu-Natal (18.0%) and Western Cape (15.7%) provinces performed the largest number of tests in the past week. As has been observed since week 31, Northern Cape (393 per 100,000 persons) and Free State (303 per 100,000 persons) provinces had the highest testing rates in week 38. 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. Laboratory turnaround times in week 38 were sustained at <2 days in both the private and public sectors.

The percentage testing positive has been decreasing weekly since the peak of 31.4% in week 29. In week 38 the percentage testing positive was 11.1%, similar to the previous week. Percentages testing positive remained  $\geq 20\%$  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 decreased in two provinces (Western Cape and KwaZulu-Natal), but did not change in Eastern Cape, Northern Cape, Free State, North West, Gauteng, Mpumalanga and Limpopo provinces. Of the 25 sub-districts with the highest proportion testing positive in the past week, 9 were in the Northern Cape and 5 in the North West provinces.