COVID-19 TESTING SUMMARY

SOUTH AFRICA | WEEK 1 2021

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 9 January 2021 (Week 1 of 2021).

HIGHLIGHTS

- In the period 1 March 2020 through 9 January 2021, 5,951,581 laboratory tests for SARS-CoV-2 have been conducted nationally.
- The number of tests performed in week 1 of 2021 (n=314,516) were higher than the weekly number of tests performed since testing began.
- KwaZulu-Natal (672 per 100,000 persons), Gauteng (667 per 100,000 persons), Western Cape (657 per 100,000 persons) and Northern Cape (493 per 100,000 persons) provinces had the highest testing rates in week 1 of 2021.
- In week 1 of 2021 the percentage testing positive was 34.7%, the second highest observed since testing began, but lower than observed in the previous week (39.0%).
- Percentage testing positive remained highest in the Limpopo (51.8%), Western Cape (39.0%), North West (37.9%) and KwaZulu-Natal (36.7%) provinces. Percentages testing positive were between 21.8%-34.4% in Eastern Cape, Northern Cape, Free State, Gauteng and Mpumalanga.
- In week 1 of 2021, compared to the previous week, the percentage testing positive increased in Northern Cape and Free State, decreased in Western Cape, Eastern Cape, KwaZulu-Natal, Gauteng and Mpumalanga provinces and was unchanged in North West and Limpopo provinces
- Mean laboratory turnaround time in week 1 of 2021 was 1.8 days; 2.7 days in the public sector and 1.1 days in the private sector.

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) hospitalised 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. Testing for SARS-CoV-2 using rapid antigen-based tests was implemented during November 2020. Results of reported rapid antigen-based tests are included in this report.

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. From week 48 of 2020 onwards, test data was reported from the Notifiable Medical Conditions Surveillance System (NMCSS). 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 (in the metros) level results were mapped based on geo-locatable public and private sector testing facilities. Estimates of overall prevalence were derived using regression techniques. Estimates were adjusted to produce district-specific positive test prevalences based on the national average age and sex profile of testing for that 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 of 2020), the week when the first case of COVID-19 was confirmed, and 9 January 2021 (week 1 of 2021).

Testing volumes and proportion testing positive

From 1 March 2020 through 9 January 2021, 5,951,581 laboratory tests for SARS-CoV-2 were performed. The number of tests performed increased weekly from week 10 of 2020, with the highest number of tests performed during the first wave occurring in week 28 of 2020 (n=268,180), and subsequently decreased. Weekly testing volumes increased again from week 41 (beginning 4 October 2020). In week 1 of 2021, 314,516 tests were performed which was the highest weekly number of tests performed since testing began. 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).

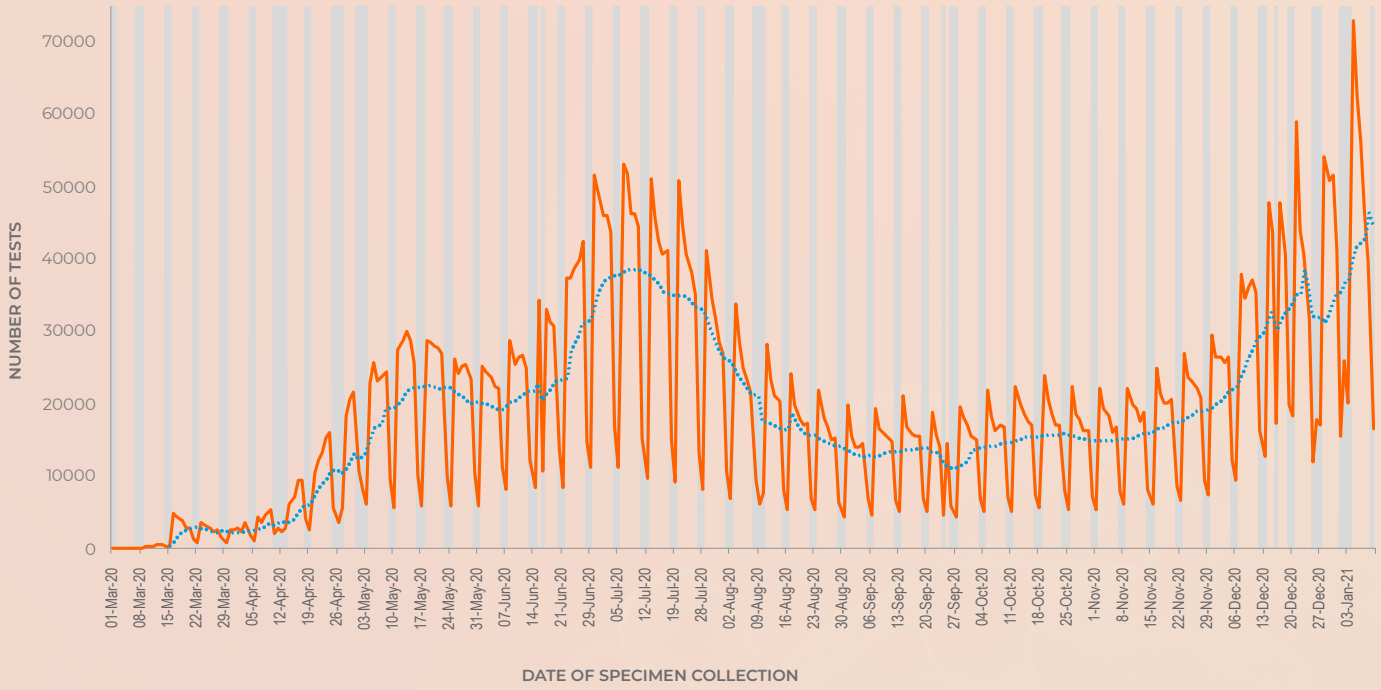

Figure 1. Number of laboratory tests conducted by date of specimen collection, South Africa, 1 March 2020 – 9 January 2021. Blue dotted line shows the 7-day moving average of the number of tests conducted. Grey bars highlight weekend days and public holidays.

The overall percentage testing positive from week 10 of 2020 through week 1 of 2021 was 19.1% (Table 1). The percentage testing positive increased week on week from week 18 to a peak of 30.3% in week 29 of 2020, and subsequently decreased to 9.4% in week 43 of 2020. The percentage testing positive in week 1 of 2021 was 34.7%, the second highest observed since testing began but lower than observed in the previous week (39.0%) (Figure 2).

Table 1. Weekly number of tests conducted and positive tests, South Africa, 1 March 2020 – 9 January 2021

Week number	Week beginning	No. of tests n (%)	No. of positive tests	Percentage testing positive (%)
10	01-Mar-20	409 (0.0)	8	2.0
11	08-Mar-20	2276 (0.0)	72	3.2
12	15-Mar-20	20884 (0.4)	647	3.1
13	22-Mar-20	16796 (0.3)	404	2.4
14	29-Mar-20	17176 (0.3)	373	2.2
15	05-Apr-20	24455 (0.4)	521	2.1
16	12-Apr-20	41570 (0.7)	977	2.4
17	19-Apr-20	75513 (1.3)	1844	2.4
18	26-Apr-20	89142 (1.5)	2768	3.1
19	03-May-20	136226 (2.3)	5262	3.9
20	10-May-20	156457 (2.6)	7083	4.5
21	17-May-20	155656 (2.6)	9985	6.4
22	24-May-20	140932 (2.4)	10954	7.8
23	31-May-20	135230 (2.3)	12636	9.3
24	07-Jun-20	152926 (2.6)	18635	12.2
25	14-Jun-20	162321 (2.7)	27762	17.1
26	21-Jun-20	218892 (3.7)	47699	21.8
27	28-Jun-20	264684 (4.4)	65897	24.9
28	05-Jul-20	268180 (4.5)	75935	28.3
29	12-Jul-20	245799 (4.1)	74444	30.3
30	19-Jul-20	232181 (3.9)	69056	29.7
31	26-Jul-20	181835 (3.1)	50932	28.0
32	02-Aug-20	148227 (2.5)	35070	23.7
33	09-Aug-20	115606 (1.9)	22211	19.2
34	16-Aug-20	109156 (1.8)	18133	16.6
35	23-Aug-20	99008 (1.7)	13952	14.1
36	30-Aug-20	89544 (1.5)	10802	12.1
37	06-Sep-20	93322 (1.6)	10299	11.0
38	13-Sep-20	96850 (1.6)	10452	10.8
39	20-Sep-20	78542 (1.3)	8735	11.1
40	27-Sep-20	97001 (1.6)	9530	9.8
41	04-Oct-20	102946 (1.7)	10232	9.9
42	11-Oct-20	108240 (1.8)	10396	9.6
43	18-Oct-20	110708 (1.9)	10431	9.4
44	25-Oct-20	104328 (1.8)	9912	9.5
45	01-Nov-20	105940 (1.8)	10451	9.9
46	08-Nov-20	112172 (1.9)	12878	11.5
47	15-Nov-20	122206 (2.1)	16472	13.5
48	22-Nov-20	132929 (2.2)	19116	14.4
49	29-Nov-20	154294 (2.6)	26566	17.2
50	06-Dec-20	206519 (3.5)	46221	22.4
51	13-Dec-20	229666 (3.9)	59287	25.8
52	20-Dec-20	223950 (3.8)	71091	31.7
53	27-Dec-20	256371 (4.3)	100017	39.0
1	03-Jan-21	314516 (5.3)	109088	34.7
Total		**5951581 (100.0)**	**1135236**	**19.1**

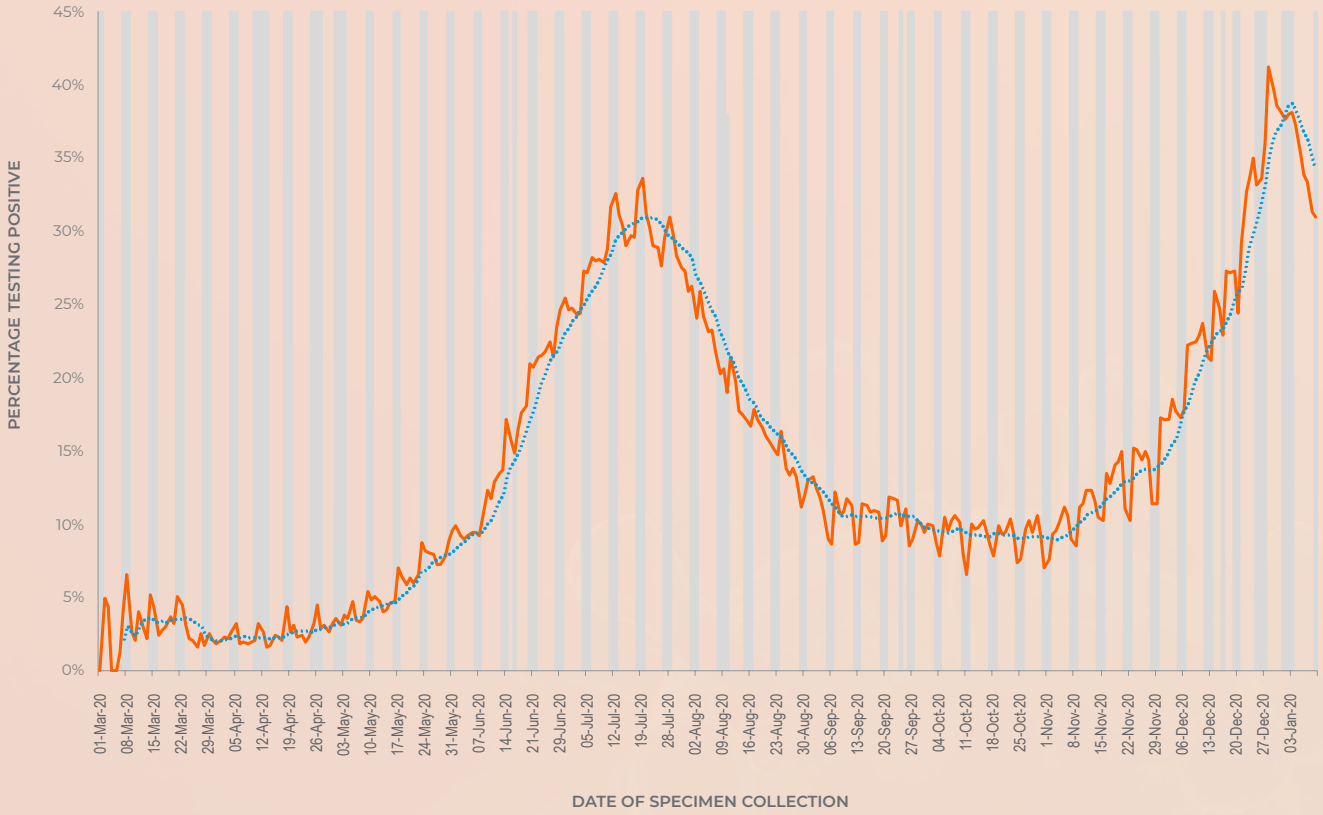

Figure 2. Percentage of laboratory tests positive for SARS-CoV-2 by date of specimen collection, South Africa, 1 March 2020 – 9 January 2021. Blue dotted line shows the 7-day moving average of the percentage testing positive. Grey bars highlight weekend days and public holidays.

Testing in private and public sectors

From 1 March 2020 through 9 January 2021, 2,741,547 laboratory tests were conducted in public sector laboratories, with 18.8% testing positive. Over this same period, private sector laboratories conducted 3,210,034 tests, with 19.3% testing positive (Table 2). Overall the public sector has conducted 46.1% of tests and accounted for 45.4% of positive tests. In the first wave of infections the peak percentage testing positive was observed in week 30 of 2020 in the public sector (29.5%), and in week 29 of 2020 in the private sector (31.3%). From week 53 of 2020 to week 1 of 2021, the percentage testing positive decreased by 5.2% in the public sector (37.9% to 32.7%, P<0.001), and decreased by 3.9% (40.1% to 36.2%, P<0.001) in the private sector. In week 1 of 2021 the percentage testing positive was higher in the private sector (36.2%) compared to the public sector (32.7%) (P<0.001).

The mean turnaround time for tests conducted in week 1 of 2021 was 1.8 days. Turnaround time stayed the same in the public sector (2.7 days) and increased slightly in the private sector (1.1 days) (Figure 3). Turnaround times for public sector tests were >2 days in Mpumalanga (5.5 days), Limpopo (3.6 days), KwaZulu-Natal (2.9 days), Eastern Cape (2.5 days), Free State (2.4 days), Gauteng (2.3 days), Western Cape (2.2 days) and Northern Cape (2.1 days) (Figure 4). Seven of the 28 (25.0%) NHLS laboratories performing testing for SARS-CoV-2 had turnaround times ≤2 days (Figure 5).

Table 2. Weekly number of tests conducted and positive tests, by healthcare sector, South Africa, 1 March 2020 – 9 January 2021

		Public sector		Private sector		Public sector percentage of		Ratio of PTP[a]
Week number	Week beginning	Tests	Cases n (%)	Tests	Positive tests n (%)	Tests (%)	Positive tests (%)	
10	01-Mar-20	251	5 (2.0)	158	3 (1.9)	61.4	62.5	1.049
11	08-Mar-20	354	13 (3.7)	1922	59 (3.1)	15.6	18.1	1.196
12	15-Mar-20	1344	51 (3.8)	19540	596 (3.1)	6.4	7.9	1.244
13	22-Mar-20	3356	127 (3.8)	13440	277 (2.1)	20.0	31.4	1.836
14	29-Mar-20	5627	174 (3.1)	11549	199 (1.7)	32.8	46.6	1.795
15	05-Apr-20	11316	328 (2.9)	13139	193 (1.5)	46.3	63.0	1.973
16	12-Apr-20	23723	610 (2.6)	17847	367 (2.1)	57.1	62.4	1.250
17	19-Apr-20	54071	1470 (2.7)	21442	374 (1.7)	71.6	79.7	1.559
18	26-Apr-20	66160	2280 (3.4)	22982	488 (2.1)	74.2	82.4	1.623
19	03-May-20	92189	4199 (4.6)	44037	1063 (2.4)	67.7	79.8	1.887
20	10-May-20	104825	5041 (4.8)	51632	2042 (4.0)	67.0	71.2	1.216
21	17-May-20	95291	6550 (6.9)	60365	3435 (5.7)	61.2	65.6	1.208
22	24-May-20	74122	5888 (7.9)	66810	5066 (7.6)	52.6	53.8	1.048
23	31-May-20	60083	6013 (10.0)	75147	6623 (8.8)	44.4	47.6	1.136
24	07-Jun-20	59817	7244 (12.1)	93109	11391 (12.2)	39.1	38.9	0.990
25	14-Jun-20	55771	10920 (19.6)	106550	16842 (15.8)	34.4	39.3	1.239
26	21-Jun-20	82233	18590 (22.6)	136659	29109 (21.3)	37.6	39.0	1.061
27	28-Jun-20	97036	24921 (25.7)	167648	40976 (24.4)	36.7	37.8	1.051
28	05-Jul-20	107684	30020 (27.9)	160496	45915 (28.6)	40.2	39.5	0.974
29	12-Jul-20	101041	29182 (28.9)	144758	45262 (31.3)	41.1	39.2	0.924
30	19-Jul-20	95977	28280 (29.5)	136204	40776 (29.9)	41.3	41.0	0.984
31	26-Jul-20	73753	21302 (28.9)	108082	29630 (27.4)	40.6	41.8	1.054
32	02-Aug-20	64001	15714 (24.6)	84226	19356 (23.0)	43.2	44.8	1.068
33	09-Aug-20	53585	10373 (19.4)	62021	11838 (19.1)	46.4	46.7	1.014
34	16-Aug-20	50820	8905 (17.5)	58336	9228 (15.8)	46.6	49.1	1.108
35	23-Aug-20	45431	7220 (15.9)	53577	6732 (12.6)	45.9	51.7	1.265
36	30-Aug-20	40997	5603 (13.7)	48547	5199 (10.7)	45.8	51.9	1.276
37	06-Sep-20	46334	5974 (12.9)	46988	4325 (9.2)	49.6	58.0	1.401
38	13-Sep-20	49045	6105 (12.4)	47805	4347 (9.1)	50.6	58.4	1.369
39	20-Sep-20	40863	5112 (12.5)	37679	3623 (9.6)	52.0	58.5	1.301
40	27-Sep-20	44153	5187 (11.7)	52848	4343 (8.2)	45.5	54.4	1.430
41	04-Oct-20	45544	5267 (11.6)	57402	4965 (8.6)	44.2	51.5	1.337
42	11-Oct-20	48192	5287 (11.0)	60048	5109 (8.5)	44.5	50.9	1.289
43	18-Oct-20	50167	5586 (11.1)	60541	4845 (8.0)	45.3	53.6	1.391
44	25-Oct-20	45573	5302 (11.6)	58755	4610 (7.8)	43.7	53.5	1.483
45	01-Nov-20	47080	5554 (11.8)	58860	4897 (8.3)	44.4	53.1	1.418
46	08-Nov-20	52598	7434 (14.1)	59574	5444 (9.1)	46.9	57.7	1.547
47	15-Nov-20	59888	9740 (16.3)	62318	6732 (10.8)	49.0	59.1	1.506
48	22-Nov-20	65743	11130 (16.9)	67186	7986 (11.9)	49.5	58.2	1.424
49	29-Nov-20	71582	14270 (19.9)	82712	12296 (14.9)	46.4	53.7	1.341
50	06-Dec-20	94526	22532 (23.8)	111993	23689 (21.2)	45.8	48.7	1.127
51	13-Dec-20	102748	27281 (26.6)	126918	32006 (25.2)	44.7	46.0	1.053
52	20-Dec-20	96131	31335 (32.6)	127819	39756 (31.1)	42.9	44.1	1.048
53	27-Dec-20	126143	47848 (37.9)	130228	52169 (40.1)	49.2	47.8	0.947
1	03-Jan-21	134379	43904 (32.7)	180137	65184 (36.2)	42.7	40.2	0.903
	Total	**2741547**	**515871 (18.8)**	**3210034**	**619365 (19.3)**	**46.1**	**45.4**	**0.975**

[a]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)

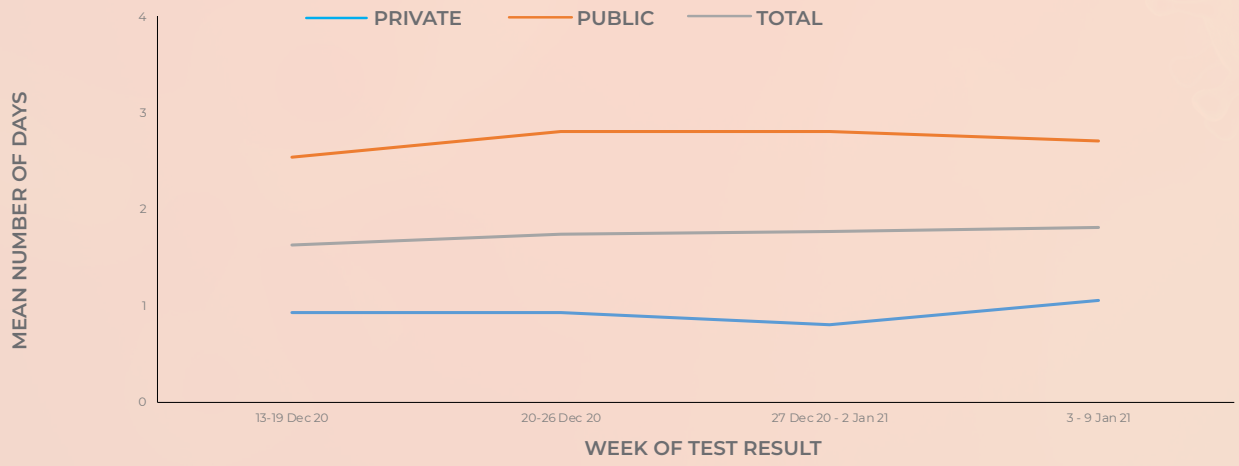

Figure 3. Mean number of days between date of specimen collection and date of test result, by week of test result, South Africa, 13 December 2020 – 9 January 2021

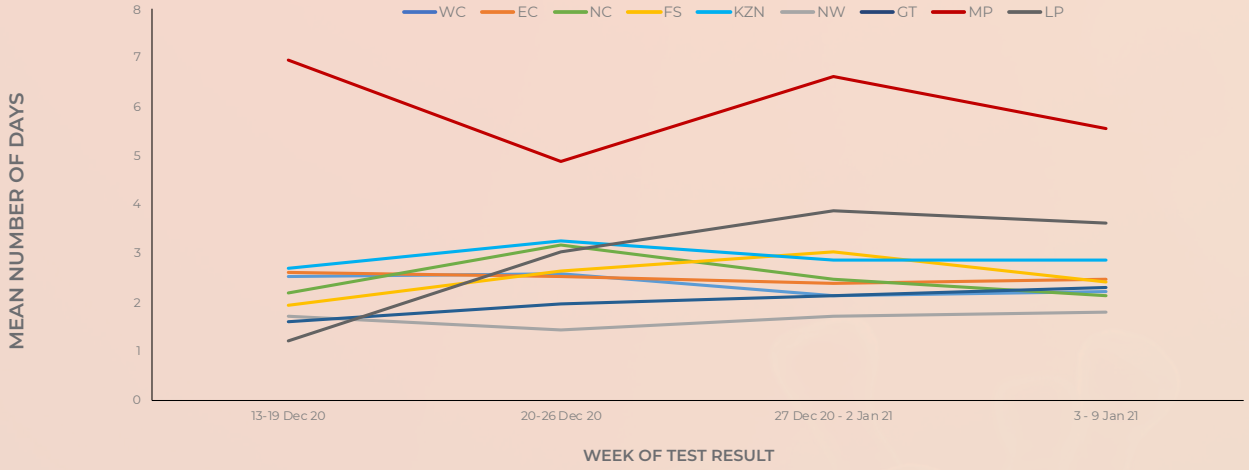

Figure 4. Mean number of days between date of specimen collection and date of test result, by week of test result and province, public sector, South Africa, 13 December 2020 – 9 January 2021. WC, Western Cape; EC, Eastern Cape; FS, Free State; KZN, KwaZulu-Natal; GT, Gauteng; NC, Northern Cape; NW, North West; MP, Mpumalanga; LP, Limpopo

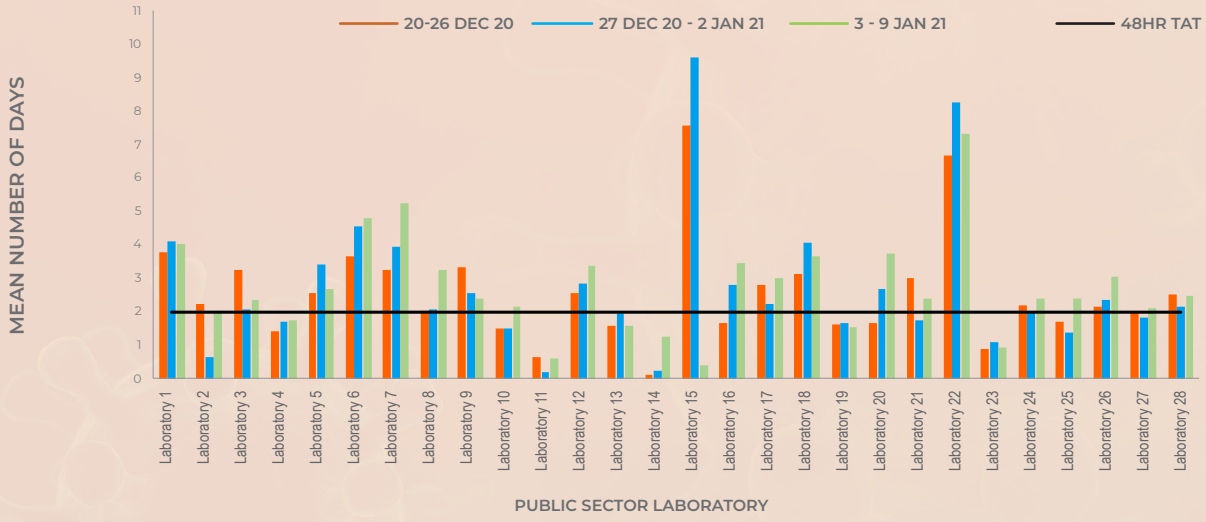

Figure 5. Mean number of days between date of specimen collection and date of test result, by public sector laboratory, 20 December 2020 – 9 January 2021. The horizontal black line indicates 48-hour turnaround time (TAT).

Testing by province

Gauteng (32.8%) performed the largest number of tests in week 1 of 2021, followed by KwaZulu-Natal (24.6%), Western Cape (14.6%) and Eastern Cape (8.3%) provinces (Table 3). KwaZulu-Natal (672 per 100,000 persons), Gauteng (667 per 100,000 persons) and Western Cape (657 per 100,000 persons) provinces had the highest testing rates in week 1 of 2021 (Figure 6). Over recent weeks, testing rates have increased in all provinces.

The percentage testing positive in week 1 of 2021 was highest in Limpopo (51.8%), Western Cape (39.0%), North West (37.9%) and KwaZulu-Natal (36.7%). Percentages testing positive were between 21.8%-34.4% in Eastern Cape, Northern Cape, Free State, Gauteng and Mpumalanga in week 1 of 2021 (Figure 7). Compared to the previous week, the percentage testing positive in week 1 of 2021 increased in two provinces: 5.0% in the Northern Cape (25.6% to 30.6%, P<0.001) and 4.3% in the Free State (24.9% to 29.3%, P<0.001). The percentage testing positive decreased by 5.6% in Western Cape (44.7% to 39.0%, P<0.001), 9.8% in Eastern Cape (31.6% to 21.8%, P<0.001), 5.0% in KwaZulu-Natal (41.8% to 36.7%, P<0.001), 2.4% in Gauteng (35.1% to 32.7%, P<0.001) and 1.5% in Mpumalanga (35.8% to 34.4%, P=0.005). The percentage testing positive did not change in the North West (P=0.071) and Limpopo (P=0.125). The percentage testing positive was higher than the national average, not weighted for population size, in the Western Cape, KwaZulu-Natal, North West and Limpopo provinces (Figure 7).

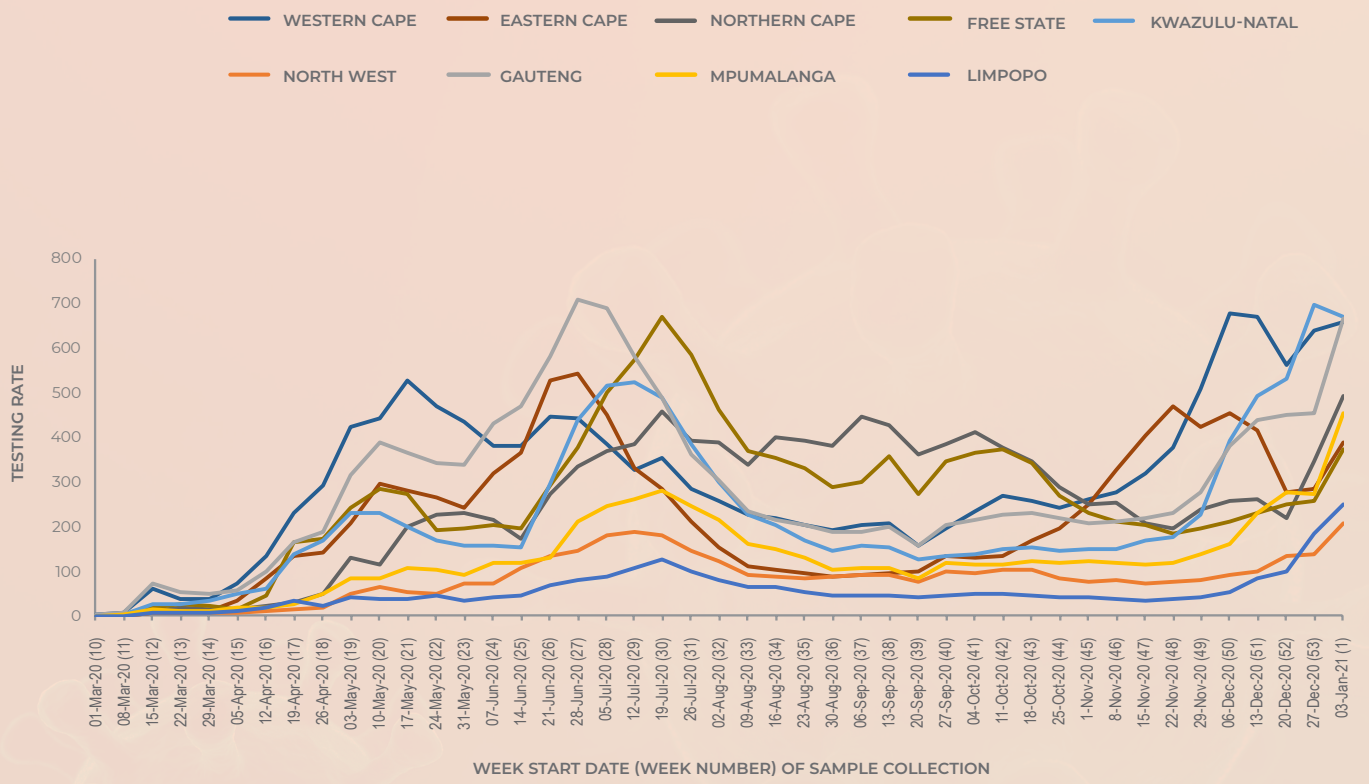

Figure 6. Testing rate per 100,000 persons by province and week of specimen collection, South Africa, 1 March 2020 – 9 January 2021

Table 3. Weekly number of tests performed and positive tests, by province, South Africa, 20 December 2020 – 9 January 2021

		20-26 Dec 20		27 Dec 20 – 2 Jan 21		3 – 9 Jan 21			
Province	**Population[a]**	**No. of tests**	**No. positive tests (%)**	**No. of tests**	**No. positive tests (%)**	**No. of tests**	**No. positive tests (%)**	**Tests per 100,000 persons**	**Change in percentage positive[b]**
Western Cape	7005741	39385	17204 (43.7)	44729	19985 (44.7)	46049	17979 (39.0)	657	-5.6%
Eastern Cape	6734001	18662	6020 (32.3)	19244	6088 (31.6)	26192	5712 (21.8)	389	-9.8%
Northern Cape	1292786	2835	558 (19.7)	4453	1138 (25.6)	6376	1951 (30.6)	493	5.0%
Free State	2928903	7369	1139 (15.5)	7589	1893 (24.9)	10969	3209 (29.3)	375	4.3%
KwaZulu-Natal	11531628	61500	23643 (38.4)	80572	33648 (41.8)	77455	28435 (36.7)	672	-5.0%
North West	4108816	5449	1295 (23.8)	5667	2232 (39.4)	8469	3208 (37.9)	206	-1.5%
Gauteng	15488137	69938	17059 (24.4)	70491	24726 (35.1)	103268	33787 (32.7)	667	-2.4%
Mpumalanga	4679786	12984	2033 (15.7)	12754	4572 (35.8)	21196	7281 (34.4)	453	-1.5%
Limpopo	5852553	5820	2138 (36.7)	10862	5732 (52.8)	14514	7518 (51.8)	248	-1.0%
Unknown		8	2 (25.0)	10	3 (30.0)	28	8 (28.6)		-1.4%
Total	**59622350**	**223950**	**71091 (31.7)**	**256371**	**100017 (39.0)**	**314516**	**109088 (34.7)**	**528**	**-4.3%**

[a] 2020 Mid-year population Statistics SA

[b] Current week compared to previous week

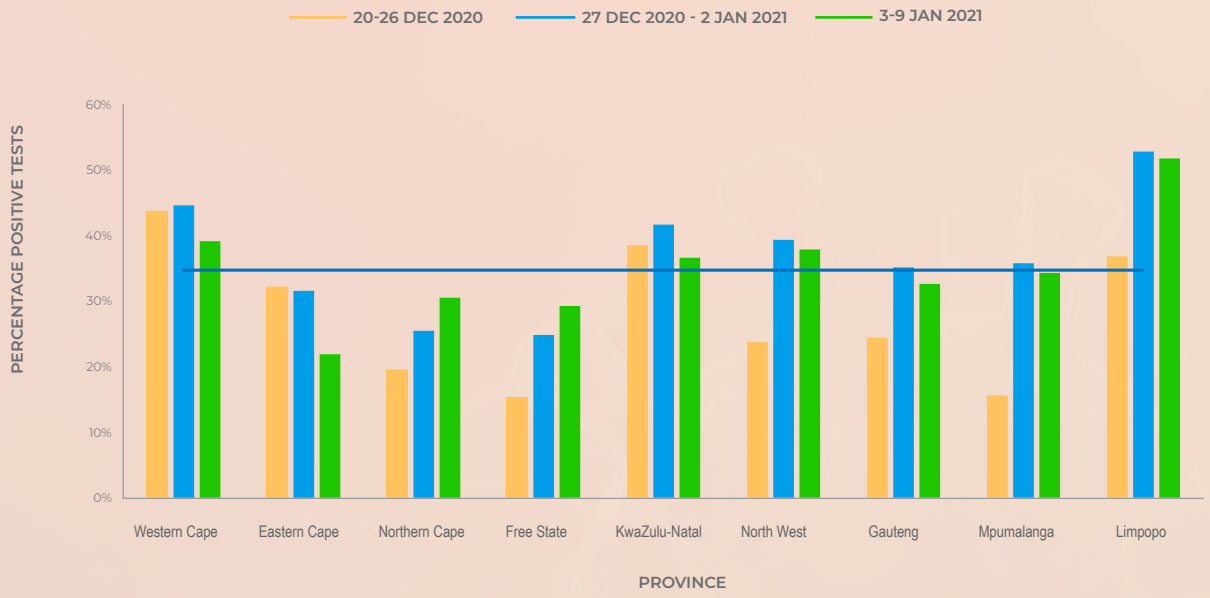

Figure 7. Weekly percentage testing positive, by province, South Africa, 20 December 2020 – 9 January 2021. The horizontal blue line shows the national mean for week 1, beginning 3 January 2021.

Testing in the public sector

In the public sector, the percentage testing positive decreased in the past week (37.9% in week 53 of 2020 to 32.7% in week 1 of 2021, P<0.001) (Table 4). The percentage testing positive in week 1 of 2021 was highest in Limpopo (57.5%), Mpumalanga (42.7%) and KwaZulu-Natal (41.6%). The percentage testing positive in the public sector remains higher than the national average, not weighted for population size, in the Western Cape, KwaZulu-Natal, North West, Mpumalanga and Limpopo provinces (Figure 8).

Table 4. Weekly number of tests conducted and positive tests in the public sector, by province, South Africa, 20 December 2020 – 9 January 2021

	20-26 Dec 2020		27 Dec 2020 - 2 Jan 2021		3 - 9 Jan 2021	
Province	**No. of tests**	**No. positive tests (%)**	**No. of tests**	**No. positive tests (%)**	**No. of tests**	**No. positive tests (%)**
Western Cape	15234	7438 (48.8)	18779	9138 (48.7)	18069	7511 (41.6)
Eastern Cape	13914	4091 (29.4)	14437	4149 (28.7)	20130	3703 (18.4)
Northern Cape	1924	331 (17.2)	3153	745 (23.6)	4051	1187 (29.3)
Free State	3496	496 (14.2)	4828	1100 (22.8)	6801	1954 (28.7)
KwaZulu-Natal	31811	11686 (36.7)	45793	18393 (40.2)	38452	12905 (33.6)
North West	1972	620 (31.4)	3116	1220 (39.2)	4119	1461 (35.5)
Gauteng	19076	5023 (26.3)	24680	8591 (34.8)	33140	10489 (31.7)
Mpumalanga	6211	904 (14.6)	6635	2170 (32.7)	5647	2412 (42.7)
Limpopo	2493	746 (29.9)	4722	2342 (49.6)	3970	2282 (57.5)
Unknown	0	0 (0.0)	0	0(0.0)	0	0(0.0)
Total	**96131**	**31335 (32.6)**	**126143**	**47848 (37.9)**	**134379**	**43904 (32.7)**

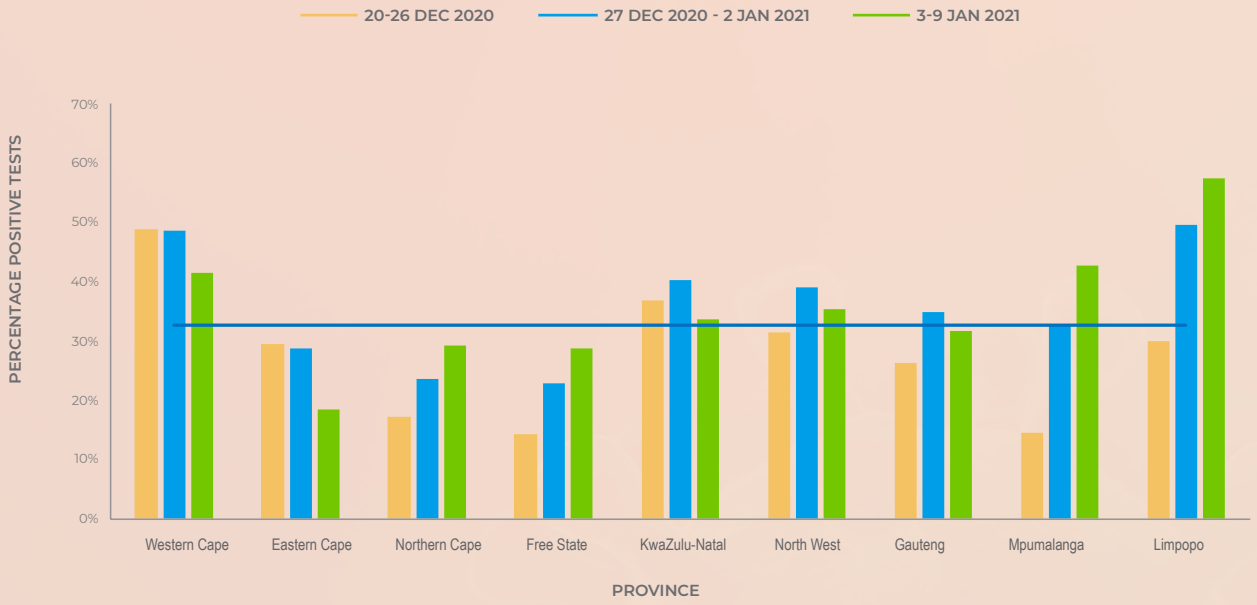

Figure 8. Weekly percentage testing positive in the public sector, by province, South Africa, 20 December 2020 – 9 January 2021. The horizontal blue line shows the national mean for week 1 of 2021, beginning 3 January 2021.

Facilities with high proportions testing positive

Table 5.1 shows the 25 public sector 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 3 – 9 January 2021, with the highest proportion testing positive nationally. This week's list is dominated by facilities in Limpopo (18).

Table 5.1 Public sector healthcare facilities with a high proportion testing positive, 3 – 9 January 2021

Facility Name	Province	Tests	PTP (95% CI)
Facility 1	Western Cape	43	1.000 (1.000;1.000)
Facility 2	Limpopo	43	0.860 (0.757;0.964)
Facility 3	Limpopo	37	0.838 (0.719;0.957)
Facility 4	Free State	30	0.833 (0.700;0.967)
Facility 5	Limpopo	35	0.829 (0.704;0.953)
Facility 6	North West	28	0.821 (0.680;0.963)
Facility 7	Limpopo	50	0.820 (0.714;0.926)
Facility 8	Limpopo	27	0.815 (0.668;0.961)
Facility 9	Mpumalanga	32	0.813 (0.677;0.948)
Facility 10	Limpopo	41	0.805 (0.684;0.926)
Facility 11	Limpopo	33	0.788 (0.648;0.927)
Facility 12	Northern Cape	44	0.773 (0.649;0.897)
Facility 13	Limpopo	105	0.771 (0.691;0.852)
Facility 14	Limpopo	74	0.757 (0.659;0.855)
Facility 15	Limpopo	57	0.754 (0.643;0.866)
Facility 16	Limpopo	28	0.750 (0.590;0.910)
Facility 17	Limpopo	158	0.741 (0.672;0.809)
Facility 18	Free State	42	0.738 (0.605;0.871)
Facility 19	Limpopo	34	0.735 (0.587;0.884)
Facility 20	Limpopo	26	0.731 (0.560;0.901)
Facility 21	Limpopo	36	0.722 (0.576;0.869)
Facility 22	Limpopo	34	0.706 (0.553;0.859)
Facility 23	Limpopo	78	0.705 (0.604;0.806)
Facility 24	Northern Cape	44	0.705 (0.570;0.839)
Facility 25	Limpopo	114	0.702 (0.618;0.786)

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

Table 5.2 shows the 25 private sector 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 3 – 9 January 2021, with the highest proportion testing positive nationally. Private-sector facilities with high proportions testing positive are concentrated in KwaZulu-Natal (9) and Gauteng (7), with three each in the Western Cape, North West and Limpopo.

Table 5.2 Private sector healthcare facilities with a high proportion testing positive, 3 – 9 January 2021

Facility Name	Province	Tests	PTP (95% CI)
Facility 1	Gauteng	45	0.822 (0.711;0.934)
Facility 2	KwaZulu-Natal	25	0.800 (0.643;0.957)
Facility 3	Gauteng	50	0.700 (0.573;0.827)
Facility 4	KwaZulu-Natal	68	0.691 (0.581;0.801)
Facility 5	KwaZulu-Natal	38	0.684 (0.536;0.832)
Facility 6	Gauteng	66	0.682 (0.569;0.794)
Facility 7	North West	34	0.676 (0.519;0.834)
Facility 8	Western Cape	79	0.671 (0.567;0.775)
Facility 9	KwaZulu-Natal	48	0.667 (0.533;0.800)
Facility 10	Limpopo	240	0.667 (0.607;0.726)
Facility 11	Limpopo	567	0.661 (0.622;0.700)
Facility 12	North West	107	0.654 (0.564;0.744)
Facility 13	KwaZulu-Natal	45	0.644 (0.505;0.784)
Facility 14	KwaZulu-Natal	41	0.634 (0.487;0.782)
Facility 15	Western Cape	78	0.628 (0.521;0.735)
Facility 16	North West	88	0.625 (0.524;0.726)
Facility 17	KwaZulu-Natal	82	0.622 (0.517;0.727)
Facility 18	Limpopo	366	0.620 (0.570;0.670)
Facility 19	Gauteng	67	0.612 (0.495;0.729)
Facility 20	Gauteng	46	0.609 (0.468;0.750)
Facility 21	KwaZulu-Natal	365	0.608 (0.558;0.658)
Facility 22	Gauteng	138	0.601 (0.520;0.683)
Facility 23	Western Cape	549	0.599 (0.558;0.640)
Facility 24	KwaZulu-Natal	32	0.594 (0.424;0.764)
Facility 25	Gauteng	54	0.593 (0.462;0.724)

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

Health district-level results

The data from geolocatable public testing (almost every public sector facility in the country) and private testing (approximately 82% of private testing facilities) in the week from 3-9 January 2021 have been located within the spatial framework of the health districts and health sub-districts (in the metros).

The results, for the 25 municipalities and metropolitan health sub-districts showing the greatest proportions testing positive (PTP) are shown in the table below. Districts showing the greatest proportions testing positive are concentrated in Limpopo (11 districts), the Western Cape (4), KwaZulu-Natal (3), Mpumalanga (3), North West (2), Northern Cape (1) and Gauteng (1).

All 25 districts with the highest proportion testing positive in the week from 3-9 January 2021 showed a proportion testing positive greater than 50%. In eight districts, the proportion testing positive was greater than 60%. A significant increase over the previous week was observed in 7 of the 25 districts.

Table 6. Health sub-districts with the highest proportion testing positive based on public and private sector data for the week of 3 – 9 January 2021

Health district or sub-district	Province	PTP (95% CI)	Previous week
Ntambanana	KwaZulu-Natal	0.922 (0.816-1.000)	0.338 (0.202-0.473)
Aganang	Limpopo	0.915 (0.804-1.000)	...
Richtersveld	Northern Cape	0.725 (0.639-0.811)	...
Greater Letaba	Limpopo	0.705 (0.606-0.804)	...
Makhado	Limpopo	0.632 (0.602-0.663)	0.432 (0.377-0.487)
Greater Giyani	Limpopo	0.631 (0.589-0.674)	0.362 (0.259-0.464)
Fetakgomo	Limpopo	0.618 (0.469-0.766)	...
Bela-Bela	Limpopo	0.608 (0.482-0.734)	...
Umjindi	Mpumalanga	0.589 (0.472-0.705)	0.206 (0.069-0.343)
Swellendam	Western Cape	0.568 (0.513-0.624)	0.620 (0.558-0.682)
Ditsobotla	North West	0.568 (0.466-0.670)	...
Greater Tzaneen	Limpopo	0.560 (0.534-0.586)	0.364 (0.323-0.405)
Victor Khanye	Mpumalanga	0.559 (0.447-0.671)	...
Elias Motsoaledi	Limpopo	0.559 (0.502-0.616)	0.418 (0.324-0.513)
Lepele-Nkumpi	Limpopo	0.546 (0.494-0.599)	0.503 (0.432-0.574)
Thulamela	Limpopo	0.525 (0.500-0.550)	0.457 (0.411-0.503)
Greater Kokstad	KwaZulu-Natal	0.525 (0.484-0.566)	0.591 (0.542-0.640)
Cederberg	Western Cape	0.522 (0.409-0.634)	...
Tshwane 5	Gauteng	0.517 (0.457-0.578)	0.394 (0.320-0.469)
Makhuduthamaga	Limpopo	0.516 (0.446-0.587)	0.440 (0.314-0.566)
Vulamehlo	KwaZulu-Natal	0.516 (0.403-0.630)	...
Drakenstein	Western Cape	0.516 (0.494-0.538)	0.501 (0.475-0.528)
Cape Agulhas	Western Cape	0.514 (0.432-0.596)	0.611 (0.521-0.701)
Bushbuckridge	Mpumalanga	0.507 (0.469-0.546)	0.207 (0.151-0.263)
Maquassi Hills	North West	0.503 (0.432-0.574)	0.186 (0.098-0.274)

95% CI: 95% confidence interval; PTP: adjusted positive test proportion; Elements marked in red have current week proportions testing positive that are higher than, and CIs that do not overlap with, the previous week proportions and CIs. Elements marked in blue have current week proportions testing positive that are lower than, and CIs that do not overlap with, the previous week proportions and CIs.

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.

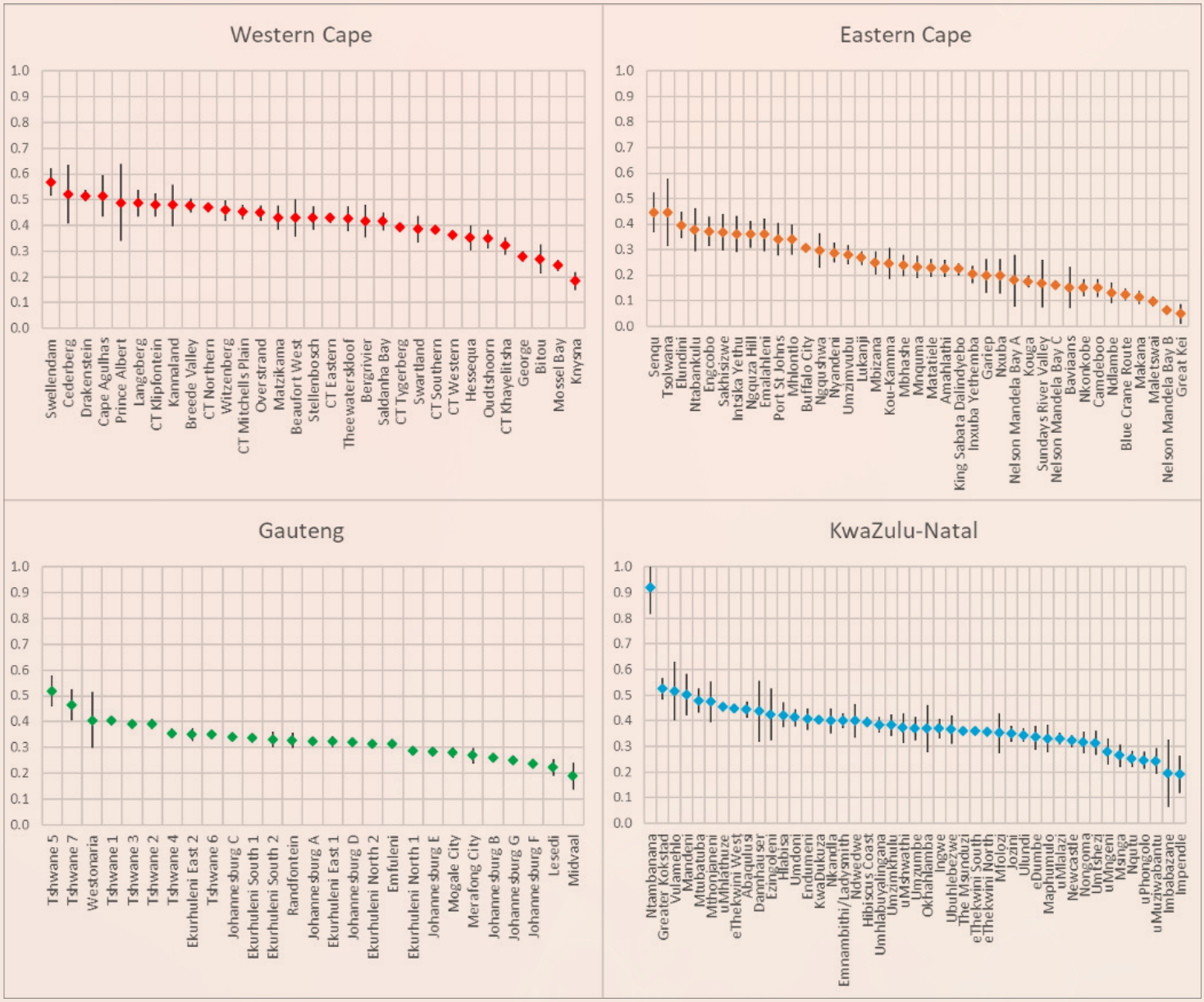

Figure 9.1 Proportions testing positive by health sub-district in the Western Cape, Eastern Cape, Gauteng and KwaZulu-Natal provinces based on public and private sector data for the week of 3 – 9 January 2021.

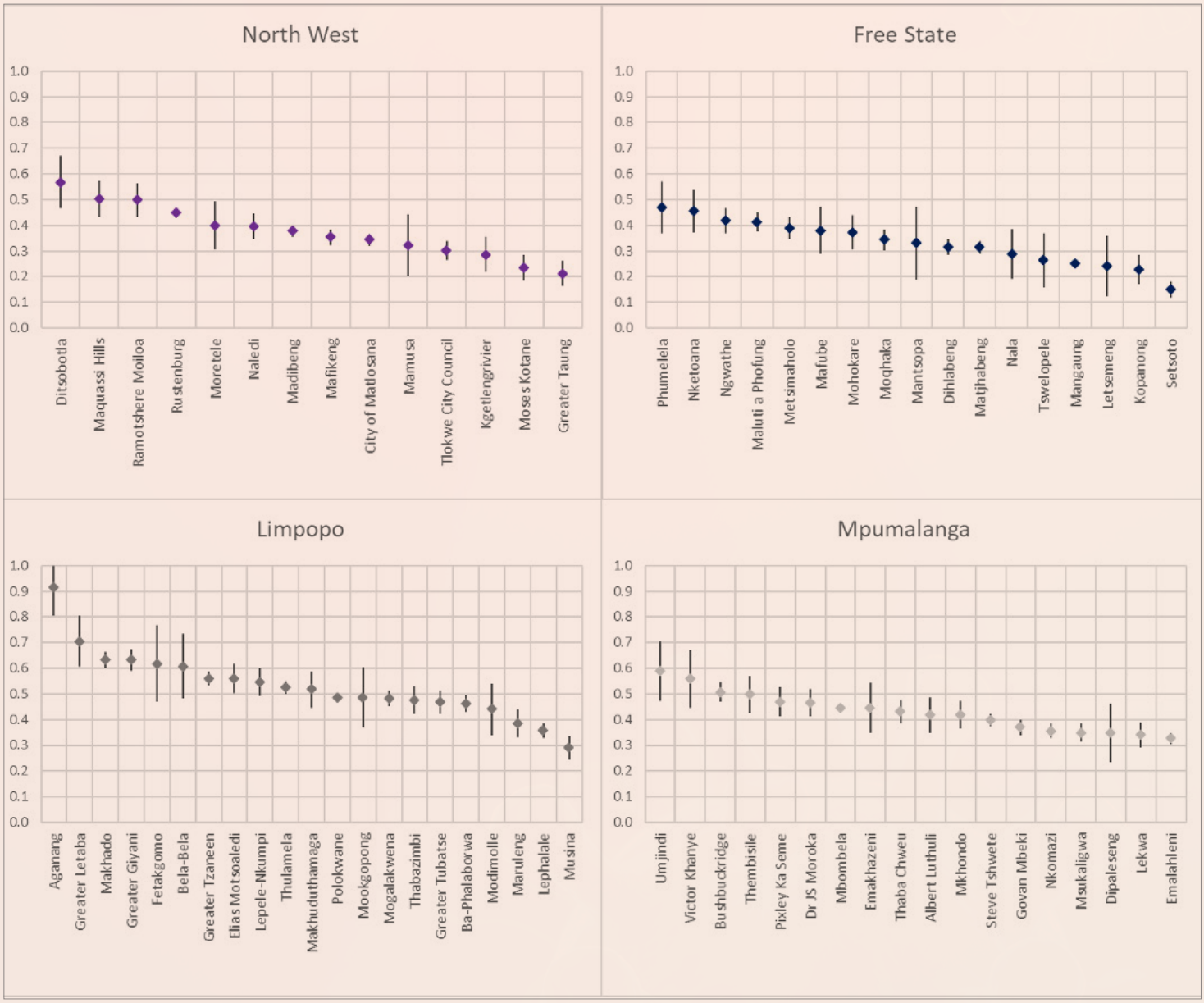

Figure 9.2 Proportions testing positive by health sub-district in the North West, Free State, Limpopo and Mpumalanga provinces based on public and private sector data for the week of 3 – 9 January 2021.

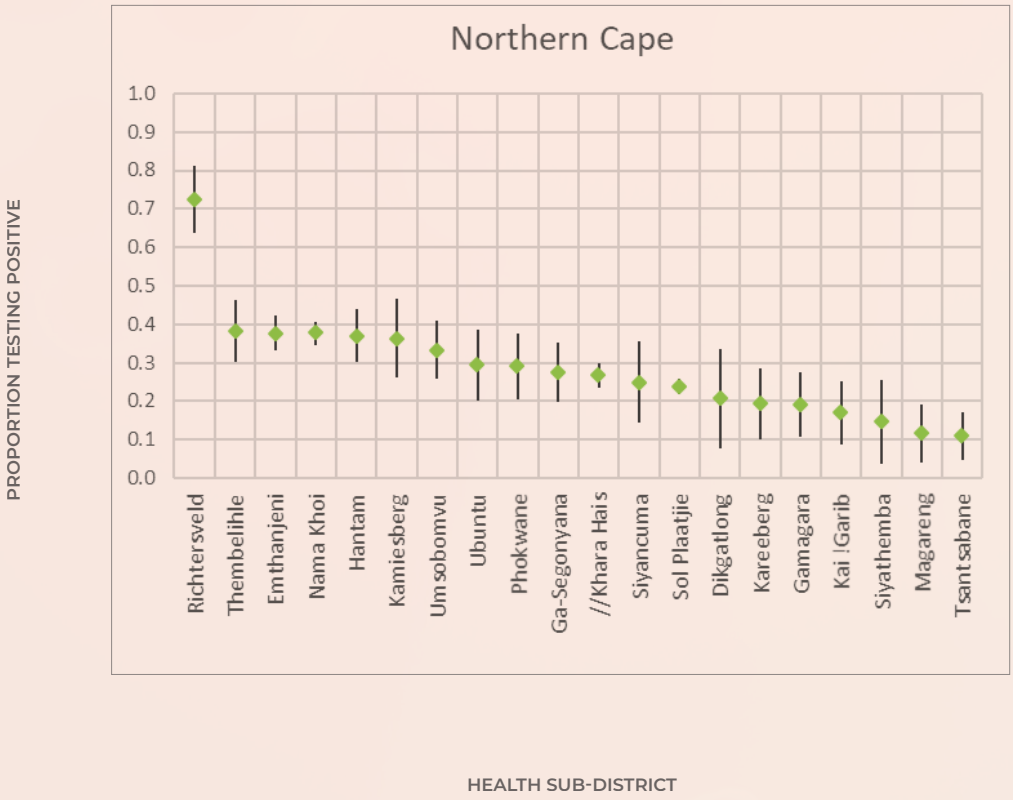

Figure 9.3 Proportions testing positive by health sub-districts in the Northern Cape Province based on public and private sector data for the week of 3 – 9 January 2021.

The spatial pattern of adjusted proportions testing positive, including both public and private sector data, 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).

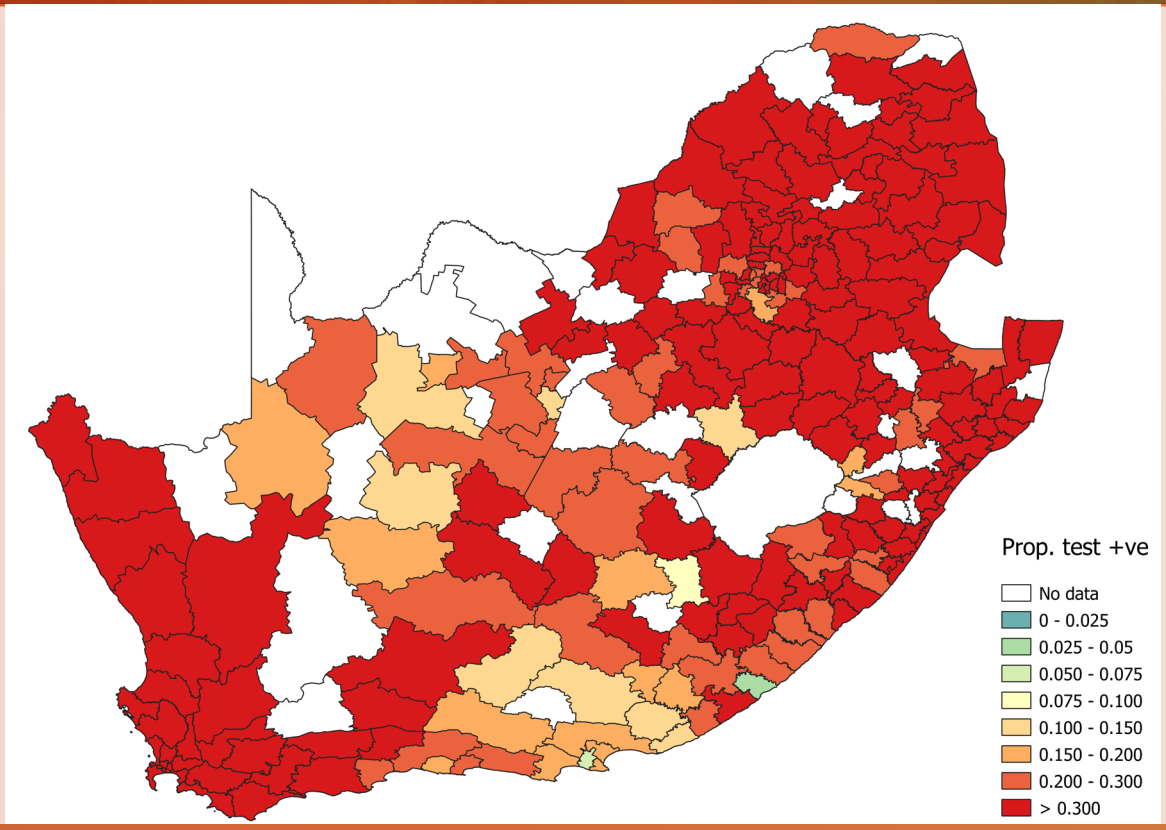

Figure 10. Proportion testing positive by health sub-district in South Africa for the week of 3 – 9 January 2021. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

CPTE	CT Eastern	WC011	Matzikama	WC025	Breede Valley	WC043	Mossel Bay
CPTK	CT Khayelitsha	WC012	Cederberg	WC026	Langeberg	WC044	George
CPTM	CT Mitchells Plain	WC013	Bergrivier	WC031	Theewaterskloof	WC045	Oudtshoorn
CPTN	CT Northern	WC014	Saldanha Bay	WC032	Overstrand	WC047	Bitou
CPTP	CT Klipfontein	WC015	Swartland	WC033	Cape Agulhas	WC048	Knysna
CPTS	CT Southern	WC022	Witzenberg	WC034	Swellendam	WC051	Laingsburg
CPTT	CT Tygerberg	WC023	Drakenstein	WC041	Kannaland	WC052	Prince Albert
CPTW	CT Western	WC024	Stellenbosch	WC042	Hessequa	WC053	Beaufort West

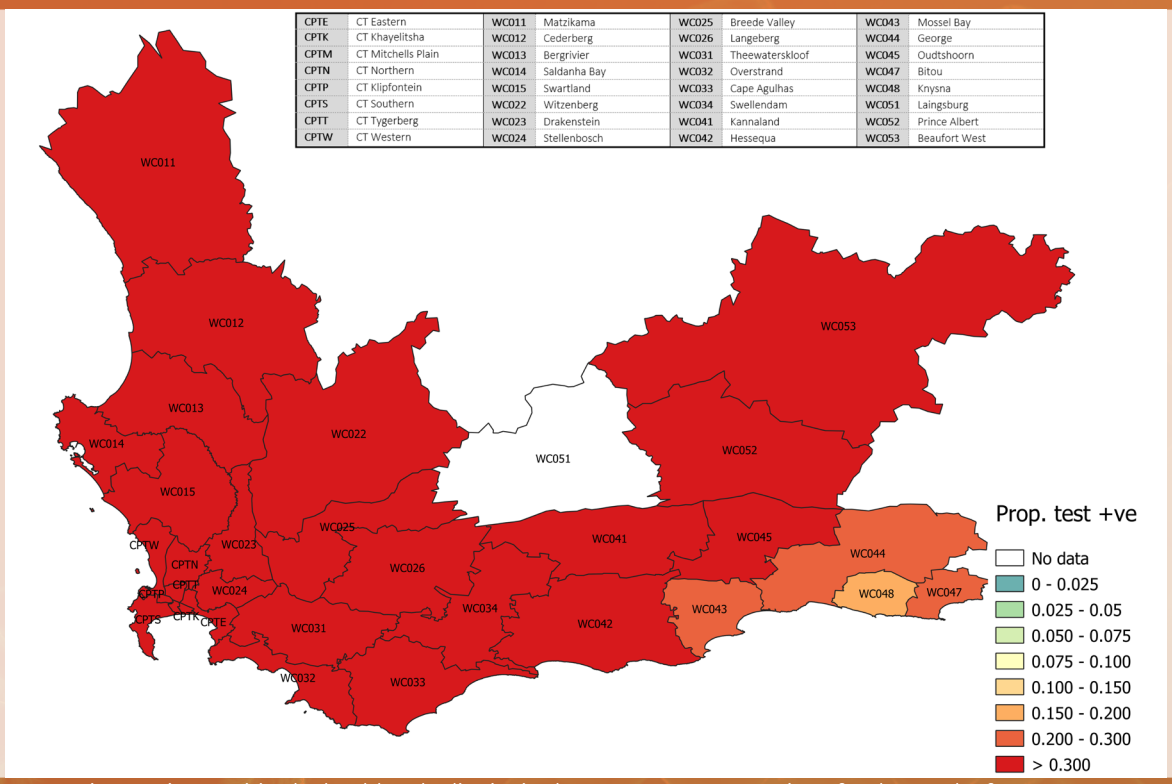

Figure 11. Proportion testing positive by health sub-district in the Western Cape province for the week of 3 – 9 January 2021. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%

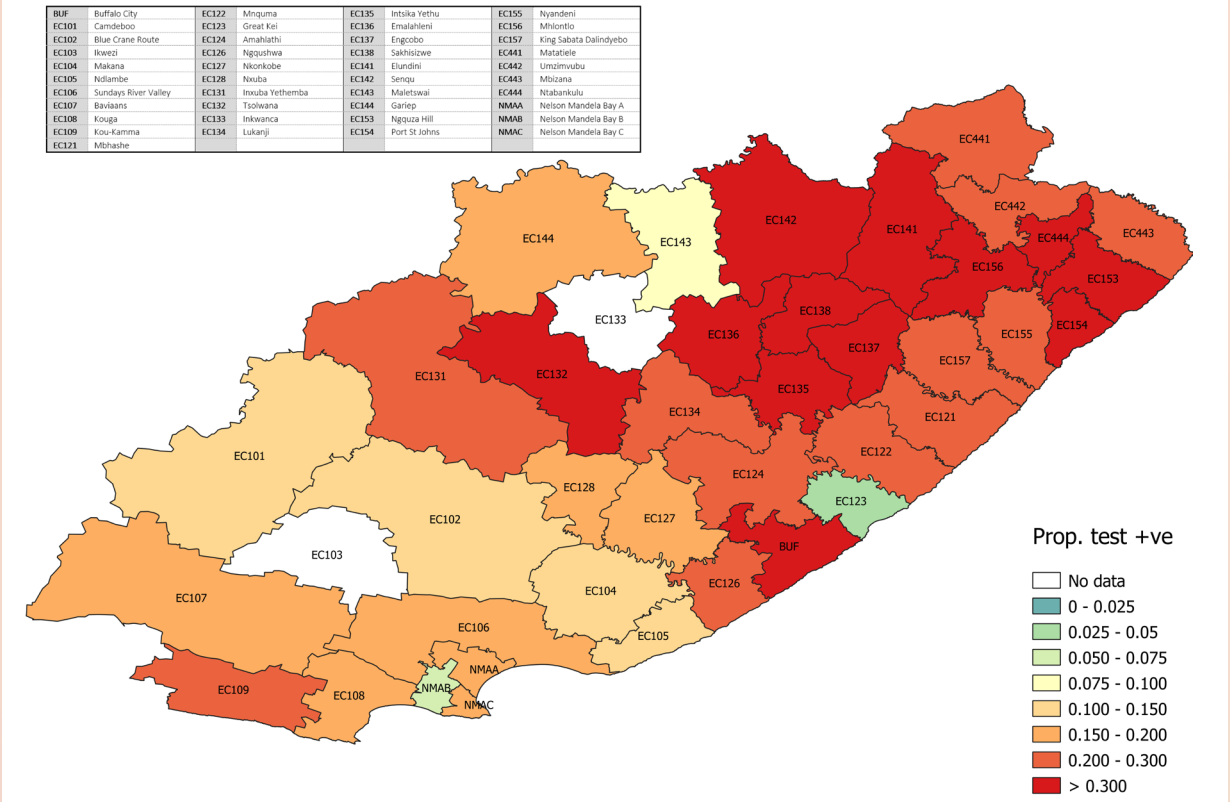

Figure 12. Proportion testing positive by health sub-district in the Eastern Cape province for the week of 3 – 9 January 2021. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

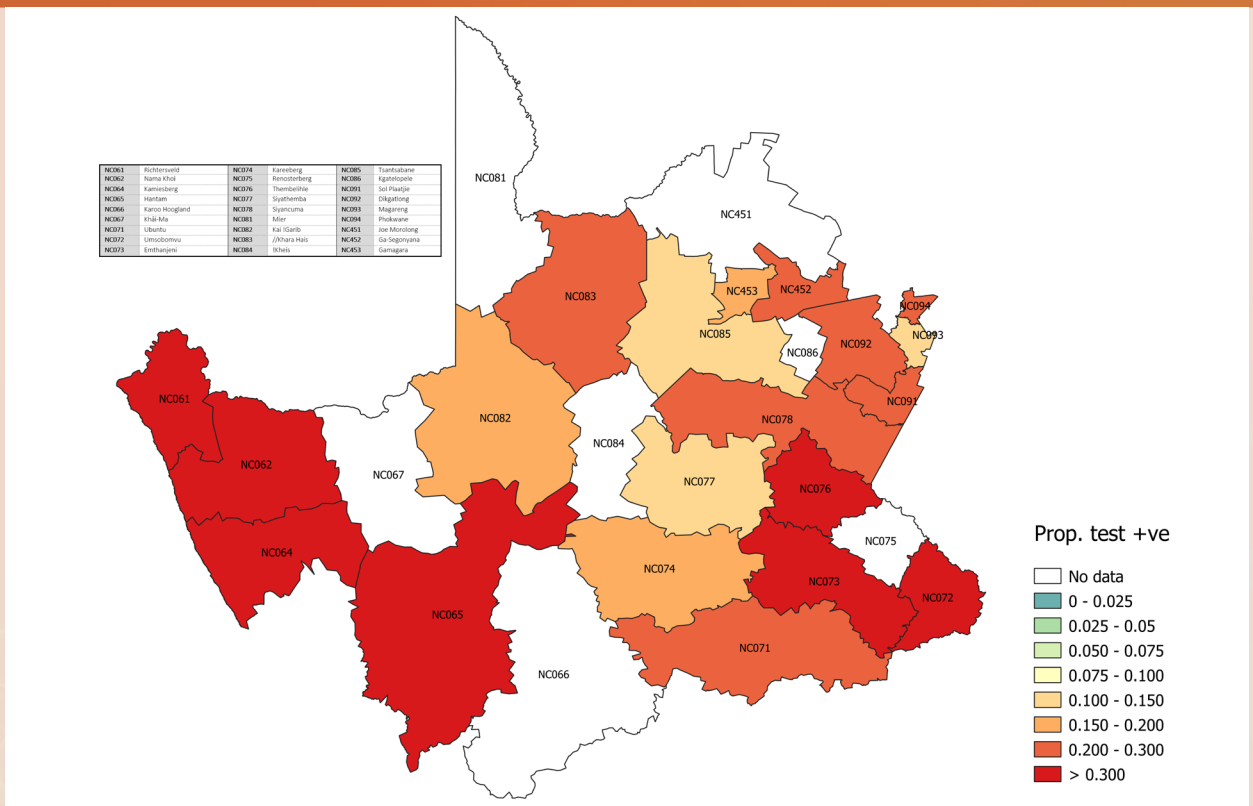

Figure 13. Proportion testing positive by health sub-district in Northern Cape Province for the week of 3 – 9 January 2021. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

MAN	Mangaung	FS181	Masilonyana	FS191	Setsoto	FS196	Mantsopa
FS161	Letsemeng	FS182	Tokologo	FS192	Dihlabeng	FS201	Moqhaka
FS162	Kopanong	FS183	Tswelopele	FS193	Nketoana	FS203	Ngwathe
FS163	Mohokare	FS184	Matjhabeng	FS194	Maluti a Phofung	FS204	Metsimaholo
FS164	Naledi	FS185	Nala	FS195	Phumelela	FS205	Mafube

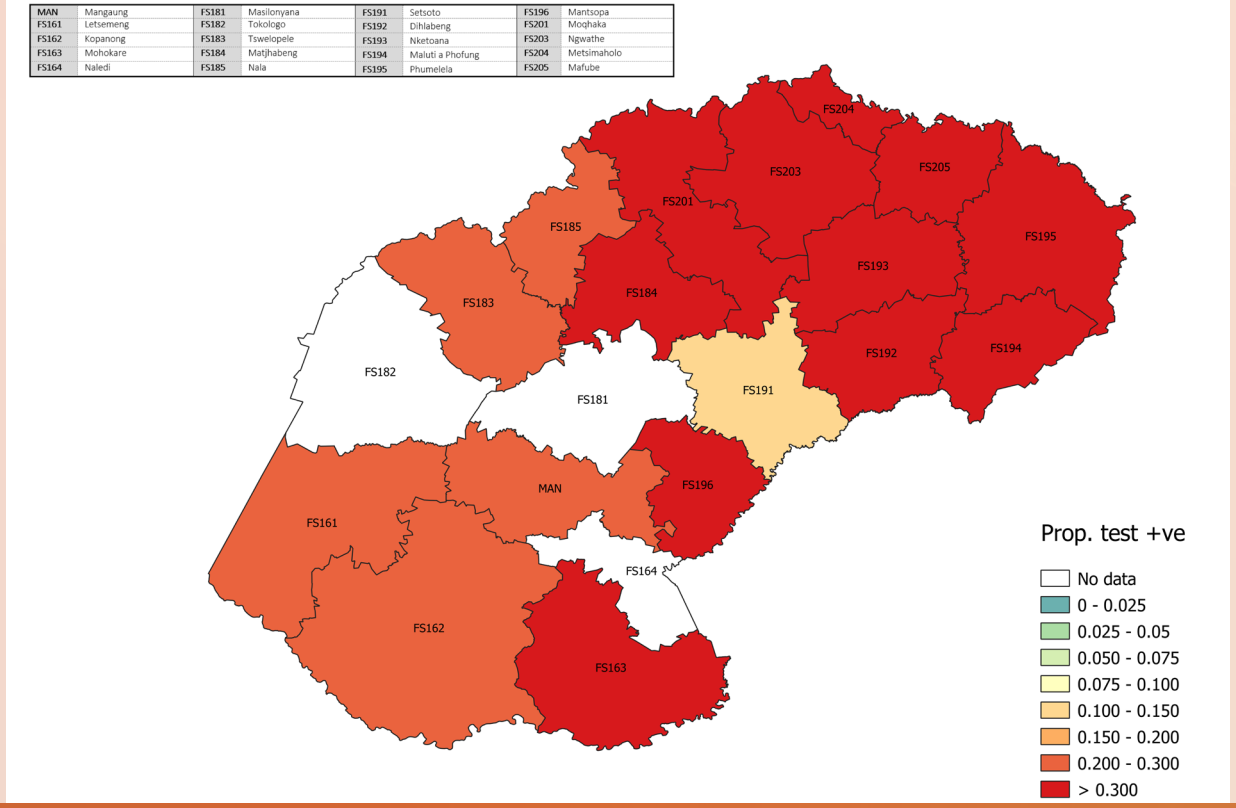

Figure 14. Proportion testing positive by health sub-district in Free State Province for the week of 3 – 9 January 2021. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

ETHN	eThekwini North	KZN233	Indaka	KZN273	The Big 5 False Bay
ETHS	eThekwini South	KZN234	Umtshezi	KZN274	Hlabisa
ETHS	eThekwini South	KZN235	Okhahlamba	KZN275	Mtubatuba
ETHW	eThekwini West	KZN236	Imbabazane	KZN281	Mfolozi
KZN211	Vulamehlo	KZN241	Endumeni	KZN282	uMhlathuze
KZN212	Umdoni	KZN242	Nqutu	KZN283	Ntambanana
KZN213	Umzumbe	KZN244	Msinga	KZN284	uMlalazi
KZN214	uMuziwabantu	KZN245	Umvoti	KZN285	Mthonjaneni
KZN215	Ezingoleni	KZN252	Newcastle	KZN286	Nkandla
KZN216	Hibiscus Coast	KZN253	Emadlangeni	KZN291	Mandeni
KZN221	uMshwathi	KZN254	Dannhauser	KZN292	KwaDukuza
KZN222	uMngeni	KZN261	eDumbe	KZN293	Ndwedwe
KZN223	Mpofana	KZN262	uPhongolo	KZN294	Maphumulo
KZN224	Impendle	KZN263	Abaqulusi	KZN431	Ingwe
KZN225	The Msunduzi	KZN265	Nongoma	KZN432	Kwa Sani
KZN226	Mkhambathini	KZN266	Ulundi	KZN433	Greater Kokstad
KZN227	Richmond	KZN271	Umhlabuyalingana	KZN434	Ubuhlebezwe
KZN232	Emnambithi/Ladysmith	KZN272	Jozini	KZN435	Umzimkhulu

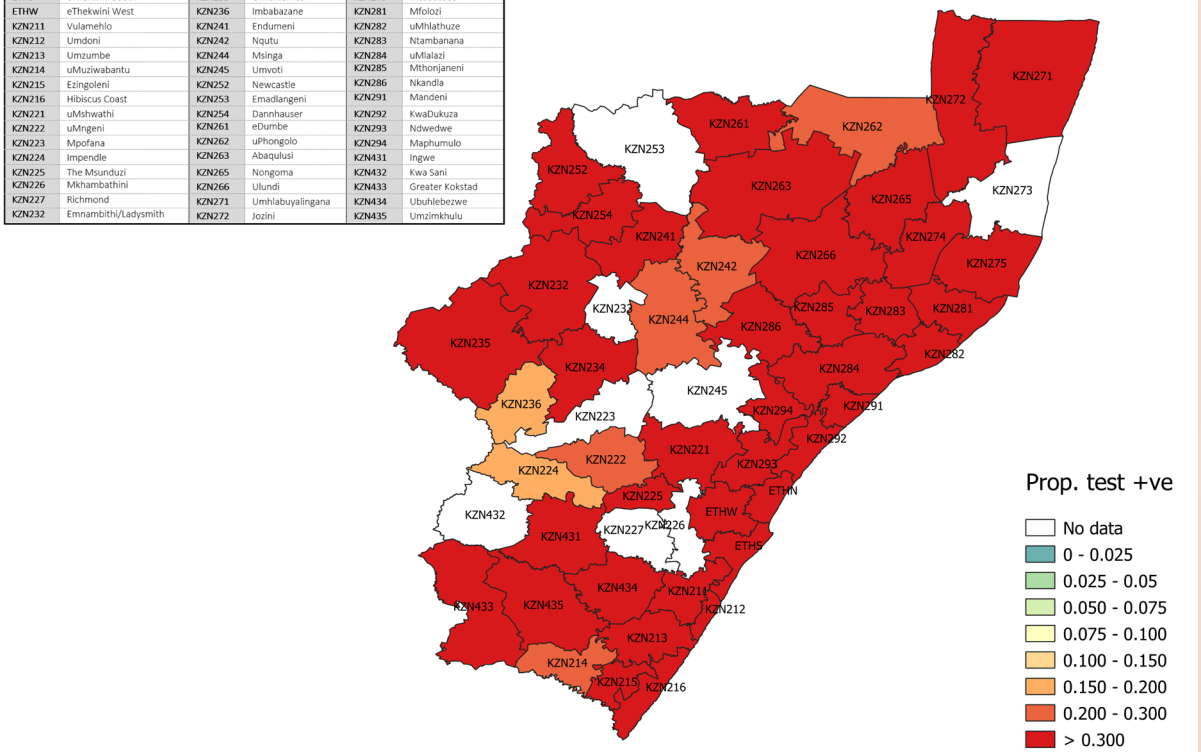

Figure 15. Proportion testing positive by health sub-district in KwaZulu-Natal Province for the week of 3 – 9 January 2021. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

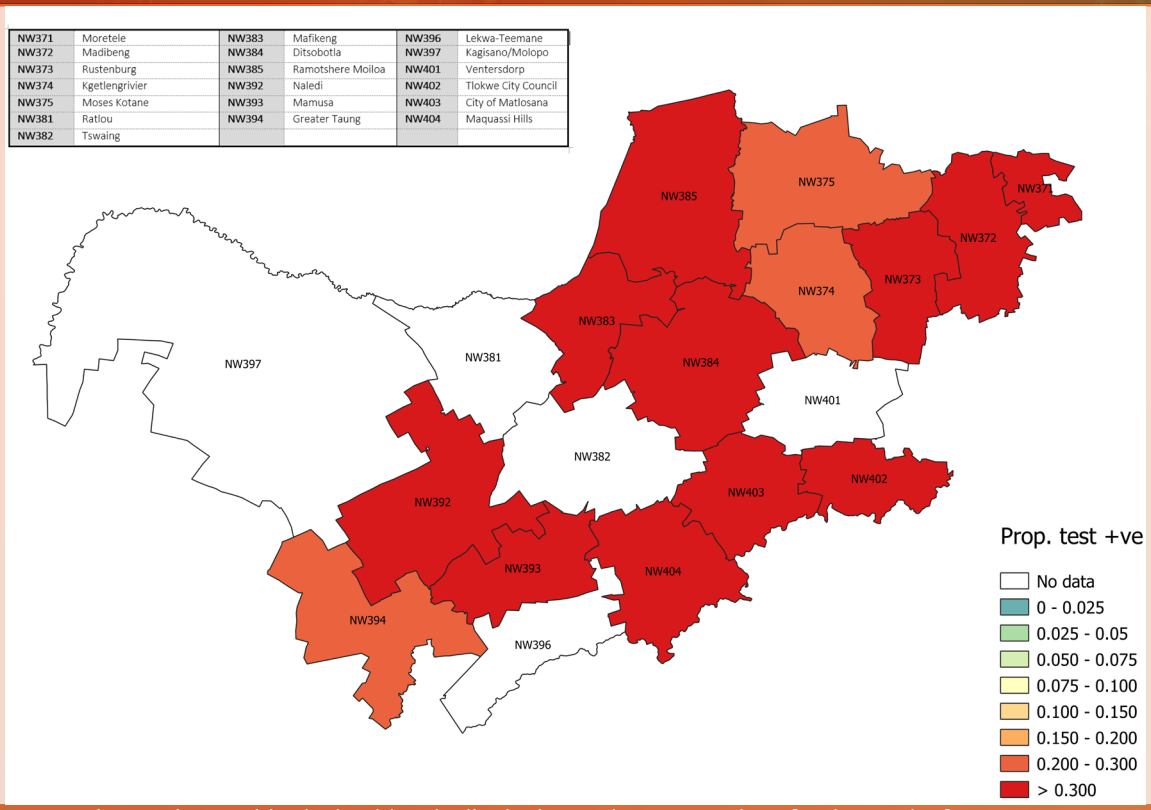

Figure 16. Proportion testing positive by health sub-district in North West Province for the week of 3 – 9 January 2021. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

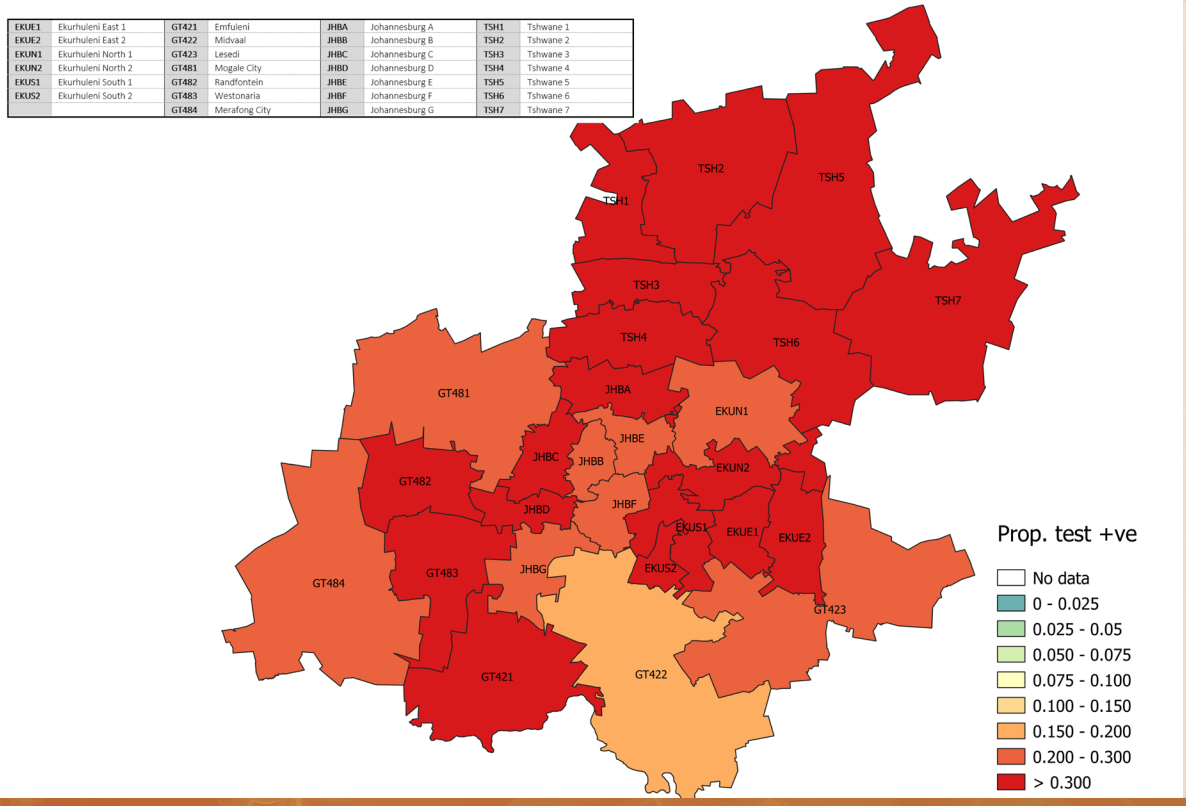

Figure 17. Proportion testing positive by health sub-district in Gauteng Province for the week of 3 – 9 January 2021. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

MP301	Albert Luthuli	MP307	Govan Mbeki	MP316	Dr JS Moroka
MP302	Msukaligwa	MP311	Victor Khanye	MP321	Thaba Chweu
MP303	Mkhondo	MP312	Emalahleni	MP322	Mbombela
MP304	Pixley Ka Seme	MP313	Steve Tshwete	MP323	Umjindi
MP305	Lekwa	MP314	Emakhazeni	MP324	Nkomazi
MP306	Dipaleseng	MP315	Thembisile	MP325	Bushbuckridge

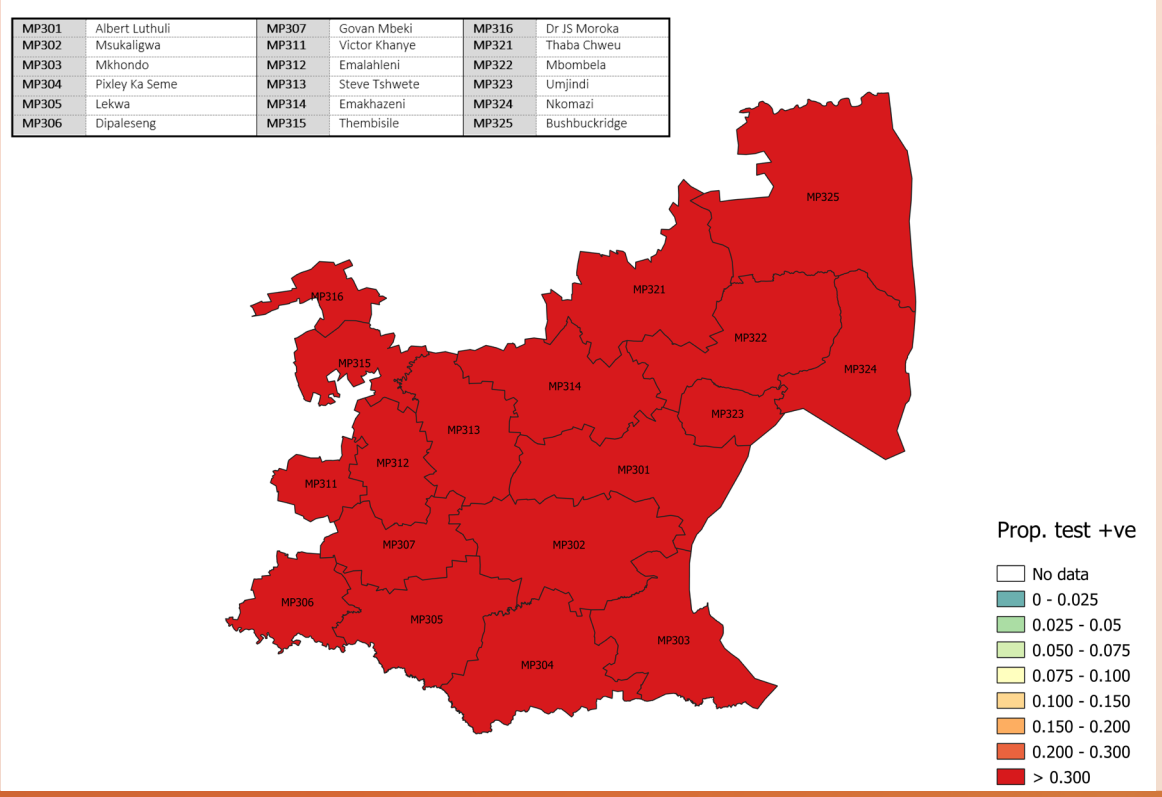

Figure 18. Proportion testing positive by health sub-district in Mpumalanga Province for the week of 3 – 9 January 2021. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

LIM331	Greater Giyani	LIM351	Blouberg	LIM365	Modimolle
LIM332	Greater Letaba	LIM352	Aganang	LIM366	Bela-Bela
LIM333	Greater Tzaneen	LIM353	Molemole	LIM367	Mogalakwena
LIM334	Ba-Phalaborwa	LIM354	Polokwane	LIM471	Ephraim Mogale
LIM335	Maruleng	LIM355	Lepele-Nkumpi	LIM472	Elias Motsoaledi
LIM341	Musina	LIM361	Thabazimbi	LIM473	Makhuduthamaga
LIM342	Mutale	LIM362	Lephalale	LIM474	Fetakgomo
LIM343	Thulamela	LIM364	Mookgopong	LIM475	Greater Tubatse
LIM344	Makhado				

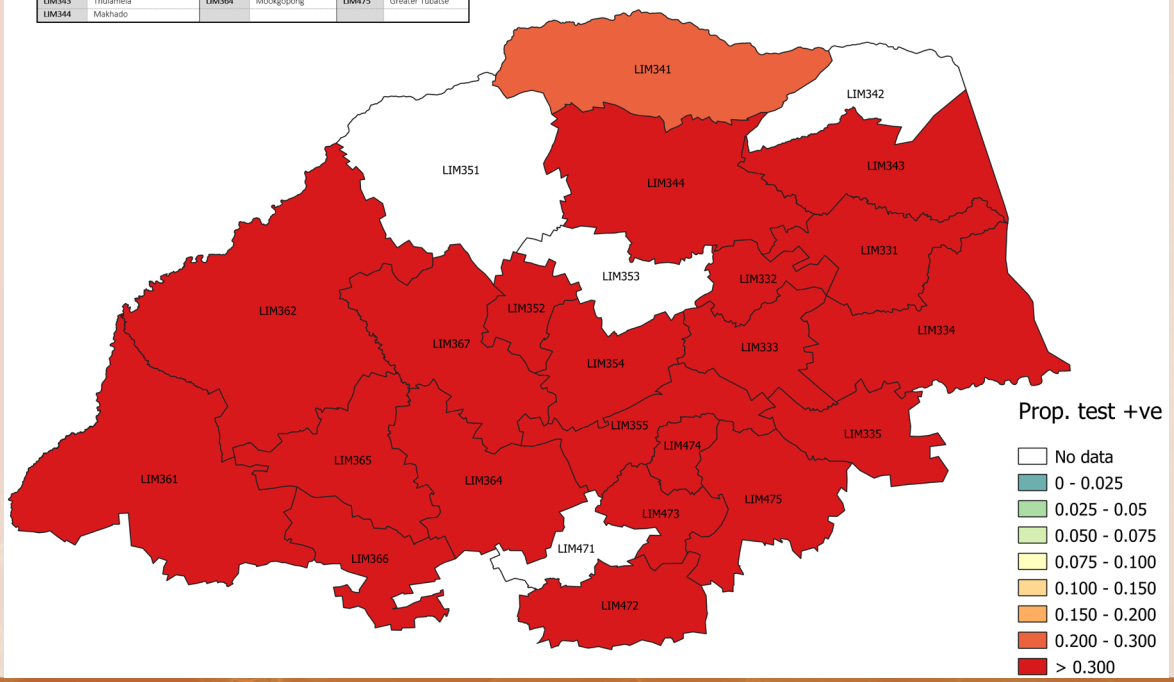

Figure 19. Proportion testing positive by health sub-district in Limpopo Province for the week of 3 – 9 January 2021. Areas shaded white represent districts in which either (i) no tests were conducted, (ii) all tests were negative, or (iii) the confidence interval exceeded 30%.

Testing by patient admission status

In week 1 of 2021, 40.3% of tests in the public sector were performed for hospitalised patients (Figure 20). The proportion of inpatient tests was highest in North West (65.1%), Limpopo (57.2%) and KwaZulu-Natal (55.9%) provinces. Comparing week 1 of 2021 to the previous week, the proportion of inpatient tests increased in four provinces: Western Cape, KwaZulu-Natal, Mpumalanga and Limpopo. The percentage testing positive in week 1 of 2021 was lower among outpatients (33.3%) compared to inpatients (36.9%), and decreased among both inpatients (39.5% to 36.9%) and outpatients (41.2 to 33.3%) (Figure 21). In the public sector in week 1 of 2021 the mean laboratory turnaround time continued to be lower for inpatients (2.4 days) compared to outpatients (3.6 days) (Figure 22).

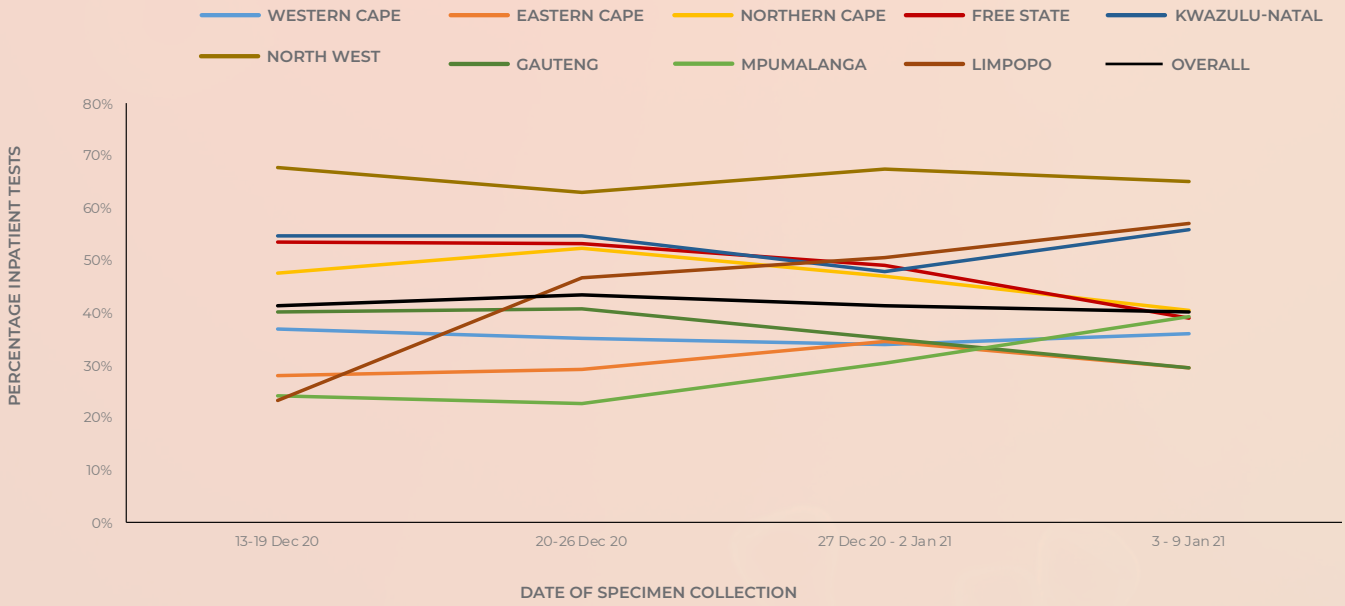

Figure 20. Percentage of inpatient tests performed in the public sector by province, 13 December 2020 – 9 January 2021

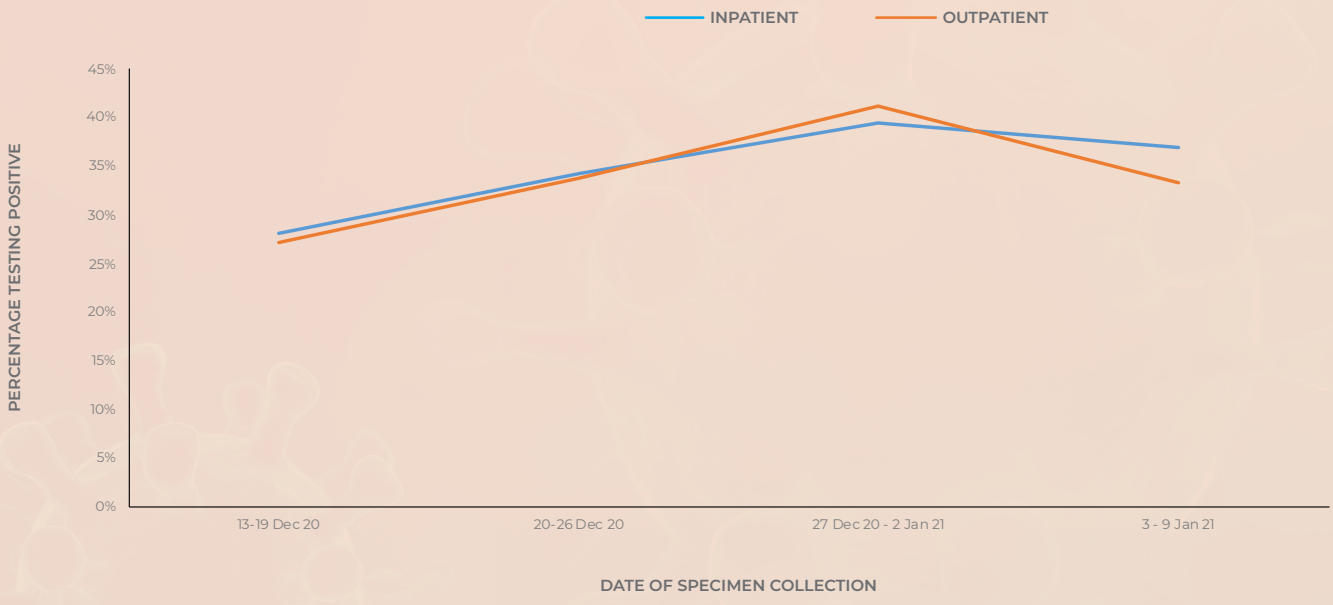

Figure 21. Percentage testing positive by patient admission status in the public sector, 13 December 2020 – 9 January 2021

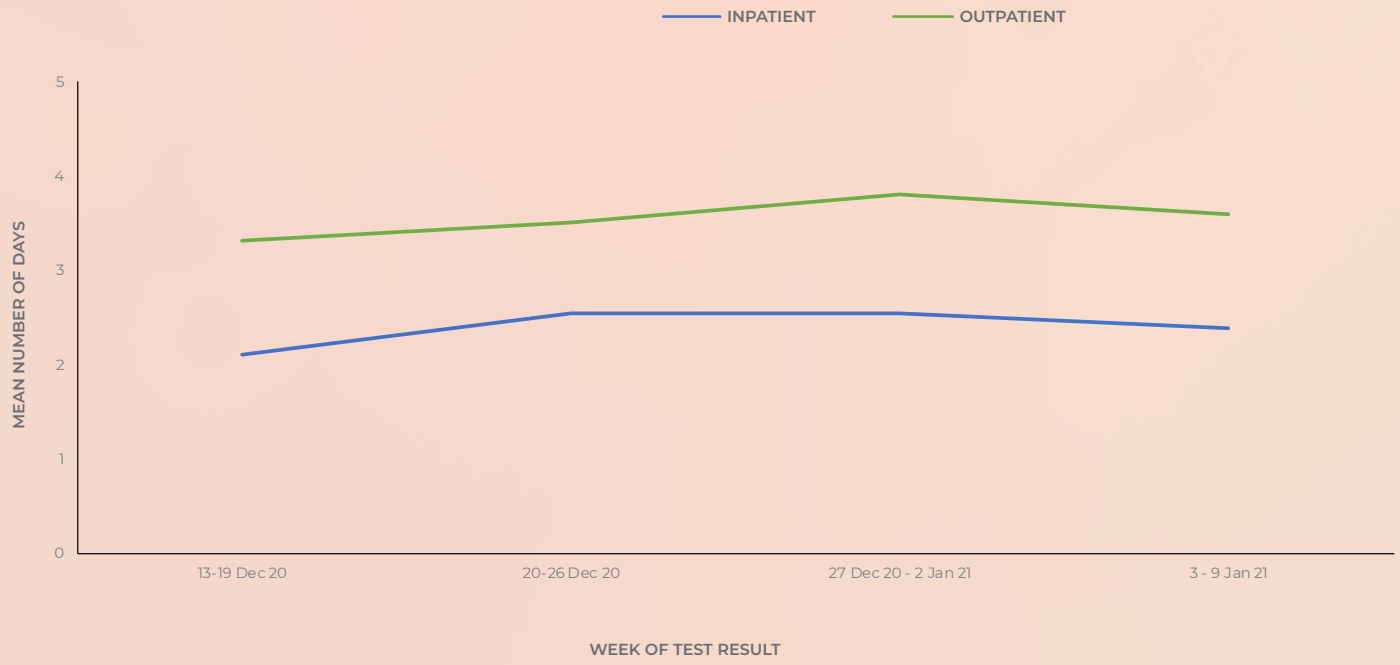

Figure 22. Mean number of days between date of specimen collection and date of test result, by patient admission status and date of test result in the public sector, South Africa, 13 December 2020 – 9 January 2021

Testing by age and sex

The mean age of individuals tested in week 1 of 2021 was 39.3 years, similar to the previous week's (39.0 years). The mean age of individuals with a positive test in week 1 of 2021 was 42.1 years, similar to the previous week's (42.1 years). The mean age of individuals with a positive test in week 1 of 2021 was slightly lower in males (42.0 years) compared to females (42.3 years, P<0.001) (Table 7). The sex ratio (the number of males per 100 females) of individuals with a positive test in week 1 of 2021 was 76.0. In both sexes the proportion testing positive in week 1 of 2021 was lower than or similar to the previous week in all age groups (Figure 23).

Table 7. Mean age and sex ratio of individuals tested, South Africa, 13 December 2020 – 9 January 2021

		Mean age of tested (years)		Mean age of positive tests (years)		Sex ratios (males / 100 females)	
Week number	Week beginning	Males	Females	Males	Females	Tested	Positive tests
51	13 December 20	37.9	38.9	41.3	42.3	91.8	76.2
52	20 December 20	39.2	39.2	42.4	42.8	98.0	79.5
53	27 December 20	38.6	39.4	42.0	42.2	80.6	73.0
1	3 January 21	39.0	39.7	42.0	42.3	86.2	76.0

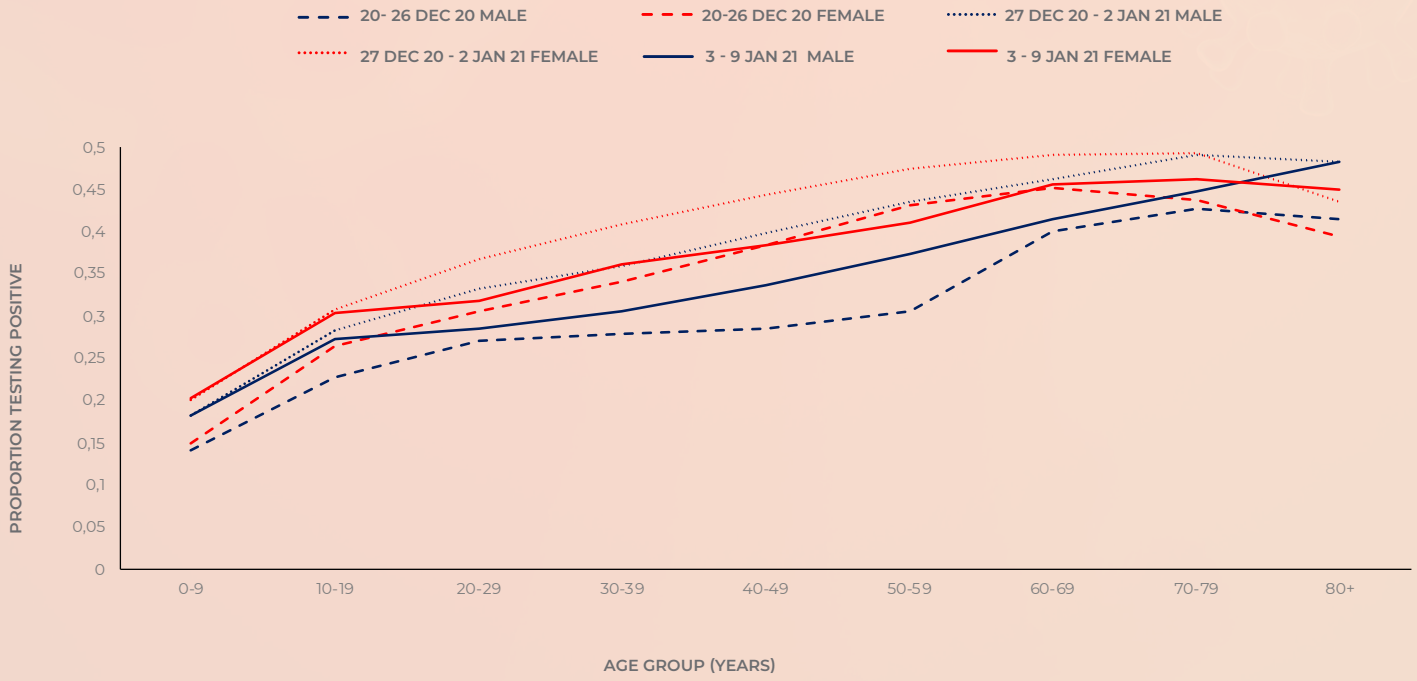

Figure 23. Weekly proportion testing positive by age group and sex, South Africa, 20 December 2020 – 9 January 2021

From week 51 of 2020 to week 1 of 2021, the percentage testing positive increased by 9.0% in males (from 23.5% to 32.5%) and increased by 8.5% in females (from 28.3% to 36.8%) (Table 8). In week 1 of 2021, the percentage testing positive was higher in females compared to males in the 0-19 years (P<0.001), 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 individuals aged ≥70 years (P=0.750).

Table 8. Percentage testing positive by sex and week, South Africa, 13 December 2020 – 9 January 2021

Age (years)	13-19 Dec 20		20-26 Dec 20		27 Dec 20 - 2 Jan 21		3 - 9 Jan 21	
	Male	Female	Male	Female	Male	Female	Male	Female
0-19	15.2%	17.4%	19.0%	22.0%	24.0%	26.8%	23.4%	26.7%
20-39	22.7%	26.4%	27.5%	32.5%	34.8%	39.0%	29.7%	34.3%
40-59	25.2%	32.6%	29.3%	40.6%	41.5%	45.7%	35.3%	39.6%
60-69	32.5%	35.8%	40.1%	45.1%	46.2%	49.0%	41.4%	45.6%
70+	31.8%	33.3%	42.4%	42.4%	48.9%	47.4%	45.6%	45.8%
All	**23.5%**	**28.3%**	**28.7%**	**35.3%**	**37.1%**	**41.0%**	**32.5%**	**36.8%**

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 were mapped based on the testing facility and not place of residence.
- Patient admission status was categorised based on the reported patient facility and may not reflect whether the patient was actually admitted to hospital.

CONCLUSIONS

Weekly testing volumes peaked in the first wave of infections in week 28 (beginning 5 July 2020), decreased weekly to week 39 (beginning 20 September 2020) and have subsequently increased in the second wave of infections. The number of tests performed in week 1 of 2021 was higher than the number of weekly tests performed since testing began. Gauteng (32.8%), KwaZulu-Natal (24.6%), Western Cape (14.6%) and Eastern Cape (8.3%) provinces performed the majority of tests in the past week. KwaZulu-Natal (672 per 100,000 persons), Gauteng (667 per 100,000 persons), Western Cape (657 per 100,000 persons) and Northern Cape (493 per 100,000 persons) provinces had the highest testing rates in week 1 of 2021. The overall laboratory turnaround time in week 1 of 2021 was 1.8 days; 2.7 days in the public sector and 1.1 days in the private sector.

The percentage testing positive decreased from a peak of 30.3% in week 29 of 2020 to 9.4% in week 43 of 2020, then subsequently increased again. In week 1 of 2021 the percentage testing positive was 34.7%, the second highest observed since testing began but lower than observed in the previous week (39.0%). The percentage testing positive was highest in Limpopo (51.8%), Western Cape (39.0%), North West (37.9%) and KwaZulu-Natal (36.7%). Percentages testing positive were between 21.8% -34.4% in Eastern Cape, Northern Cape, Free State, Gauteng and Mpumalanga. In week 1 of 2021, compared to the previous week, the percentage testing positive increased in the Northern Cape and Free State provinces. Of the 25 districts with the highest proportions testing positive in week 1 of 2021, 11 were in Limpopo, 4 in Western Cape, 3 each in KwaZulu-Natal and Mpumalanga, 2 in North West, 1 in Northern Cape and 1 in Gauteng.