LIMPOPO DEPARTMENT OF HEALTH

COVID-19

Review of COVID-19 Waves, Vaccination, and Essential Health Services

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Presentation outline

- **Background and objectives**
- **Method and data sources**
- **Part 1 : Quantitative review of the 4th Wave**
- **Part 2 :COVID-19 Vaccination Programme and effectiveness of COVID-19 vaccines among 50+ years cohort.**
- **Part 3 :Impact of COVID-19 lockdowns on essential Health Services**
- **Summary**

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Background

- 13 March 2021, first case of COVID-19 was reported in Limpopo, since then Limpopo has experienced 4 COVID-19 waves.
- On 17 February 2021, the NDOH began a phase 3 trial of the J&J COVID-19 vaccine for frontline healthcare workers only.
- The LDOH's official rollout began on May 17, 2021.
- Objectives of this analysis are :

1. To conduct situational analysis to understand Limpopo's COVID-19 fourth wave
2. To describe the effect of the mass COVID-19 vaccination program on COVID-19 infections and hospital admissions among 50+ years.
3. To describe the effect of COVID-19 lockdowns on essential health services

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Methods and Data source

- Data regarding daily cases, hospitalizations, and recorded death were sourced from DATCOV and COVID-19 line list from 13 March 2020 and 21 February 2022
- Hospitalization included admissions for COVID-19 infection and for other illness in which COVID-19 infection was incidentally identified on routine screening at the time of admission (admitted for COVID-19 and of COVID-19).
- Data regarding wave excess deaths attributable to COVID-19 were defined and sourced from the South African Medical Research Council through 8 February 2022
- Data used for the analysis of essential health Services was extracted from DHIS 2 from 01 January 2019 to 31 December 2021.

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Methods and Data source

- We defined different waves as follows :
  - 1st Wave: 13 March 2020 to 31 October 2020
  - 2nd Wave: 01 November 2020 to 29 February 2021
  - 3rd Wave: 01 March 2021 to 20 November 2021
  - 4th Wave: 21 November 2021 to 21 Feb 2022.

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Part 1 : flowchart

154 245 confirmed COVID-19 cases
(13 March 2020 to 21 Feb 2022)

- **First Wave** 17 730 (11.4)
- **Second Wave** 44 767 (29.0)
- **Third Wave** 60 882 (39.5)
- **Fourth Wave** 30 866 (20.1)

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Part 1: Review of COVID-19 waves

Tab 1. Demographic characteristics of confirmed COVID-19 cases

Demographics and Outcome	Wave 1 (Wild-Type) (n=17611)	Wave 2 (Beta) (n=44568)	Wave 3 (Delta) (n=60476)	Wave 4 (Omicron) (n=30589)	p-value
Gender n(%)					
Female	9334(52,6)	25311(56.5)	3352(54.8)	17202(55.7)	<0.001
Male	8322(47.0)	19151(42.8)	27232(44.7)	13542(43.9)	
Unkown	74(0.4)	305(0.7)	298(0.5)	122(0.4)	
Age (years) Mean(sd)	39.4(16.0)	43.2(16.5)	40.0(17.3)	36.0(17.8)	
Age group n(%)					
< 10 years	560(3.2)	922(2.1)	1976(3.2)	2063(6.7)	<0.001
10-19 years	1347(7.6)	1951(4.4)	5953(9.8)	3811(12.4)	
20-29 years	2566(14.6)	5863(13.3)	8303(13.7)	5128(16.7)	
30-39 years	4402(25.0)	10443(23.4)	13904(23.0)	6956(22.7)	
40-49 years	3896(22.1)	9322(21.0)	12036(20.0)	5437(17.8)	
50-59 years	2949(16.7)	8299(18.6)	10271(17.0)	4061(13.3)	
60+ years	1662(9.4)	7091(16.0)	7324(12.1)	2858(9.3)	
No Age	229(1.3)	677(1.5)	709(1.17)	275(1.0)	
Hopsitalization n(%)					
Yes	1939(11.0)	5242(11.8)	5951(10.0)	1624(5.3)	<0.001
No	15672(89.0)	39326(88.2)	54525(90.0)	28965(94.7)	
Death n(%)					
Yes	520(3.0)	1960(4.4)	1734(2.9)	128(0.4)	<0.001
No	17091(97.0)	42608(95.6)	58742(97.1)	30461(99.4)	

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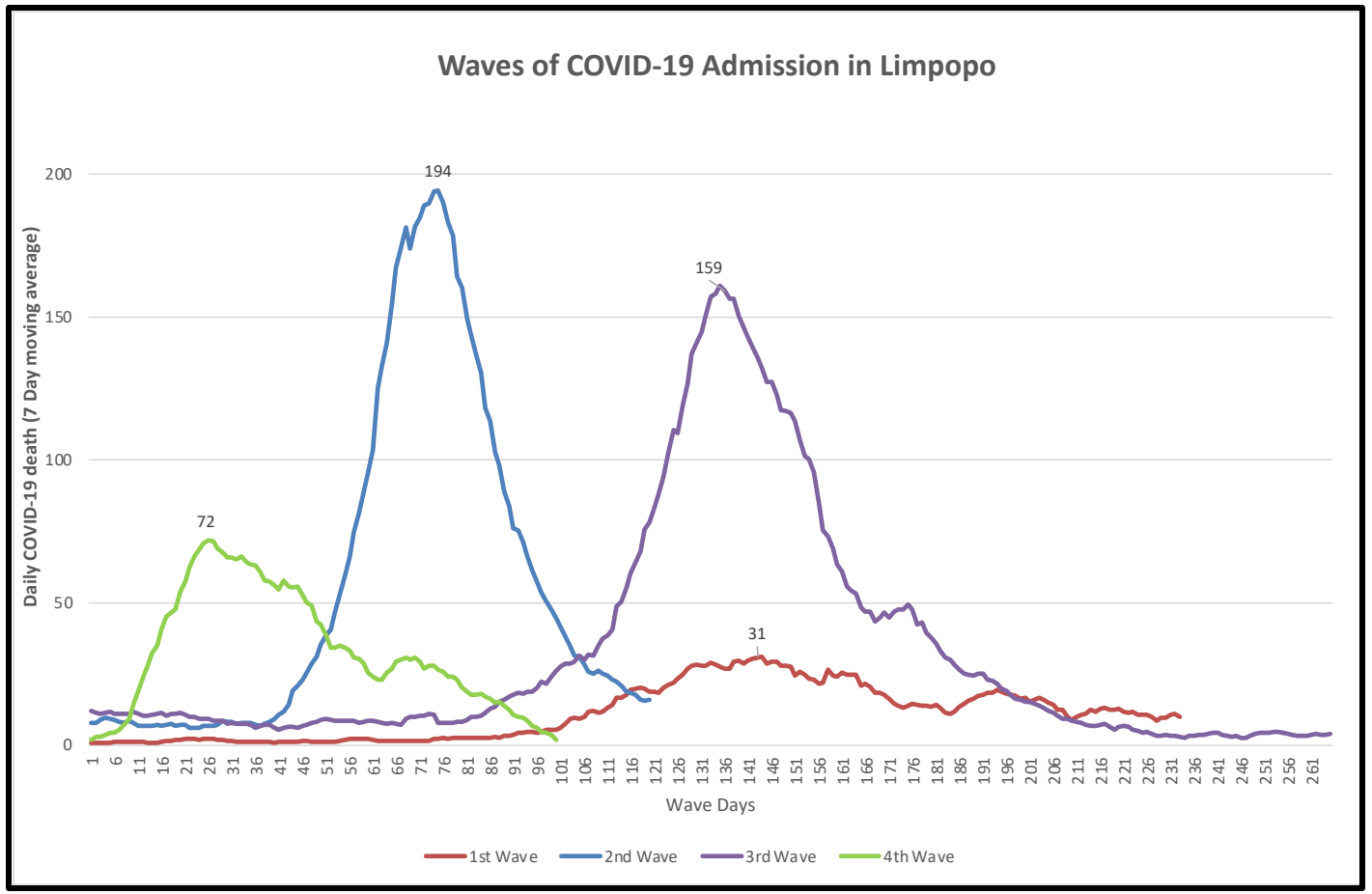
Admissions Data

Figure 1. Waves of COVID-19 admission in Limpopo



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Admissions Data

Tab 3. Demographic and clinical characteristics of patients admitted for/of COVID-19

Characteristics	Wave 1 (Wild-Type) (n=1939)	Wave 2 (Beta) (n=5242)	Wave 3 (Delta) (n=5951)	Wave 4 (Omicron) (n=1624)	p-value
Gender n(%)					
Female	1043(53.8)	2846(54.3)	3313(55.6)	1006(62.0)	<0.001
Male	892(46.0)	2376(45.3)	2624(44.1)	617(37.9)	
Unkown	4(0.2)	20(0.4)	14(0.2)	1(0.1)	
Age (years) Mean(sd)	49.3(17.4)	54.6(16.6)	52.2(19.0)	41.0(24.7)	<0.001
Age group n(%)					
< 10 years	35(1.8)	60(1.1)	202(3.4)	220(13.5)	<0.001
10-19 years	47(2.4)	62(1.8)	148(2.5)	113(7.0)	
20-29 years	151(7.8)	210(4.0)	302(5.1)	223(13.7)	
30-39 years	341(17.6)	663(12.7)	773(13.0)	278(17.1)	
40-49 years	376(19.4)	866(16.5)	985(16.5)	163(10.0)	
50-59 years	444(22.1)	1242(23.0)	1423(24.0)	202(12.4)	
60+ years	545(28.8)	2138(41.0)	2118(35.5)	425(26.3)	
No Age	0(0.0)	1(0.01)	0(0.0)	0(0.0)	
Comordities n(%)*					
Diabetes	447(23.0)	1138(21.7)	1190(20.0)	177(11.0)	<0001
Asthma	63(3.2)	99(2.0)	136(2.3)	36(2.2)	<0.001
HIV	138(7.1)	258(5.0)	373(6.2)	105(6.4)	<0.001
Hypertension	531(27.4)	1432(27.3)	1599(27.0)	264(16.2)	<0.001

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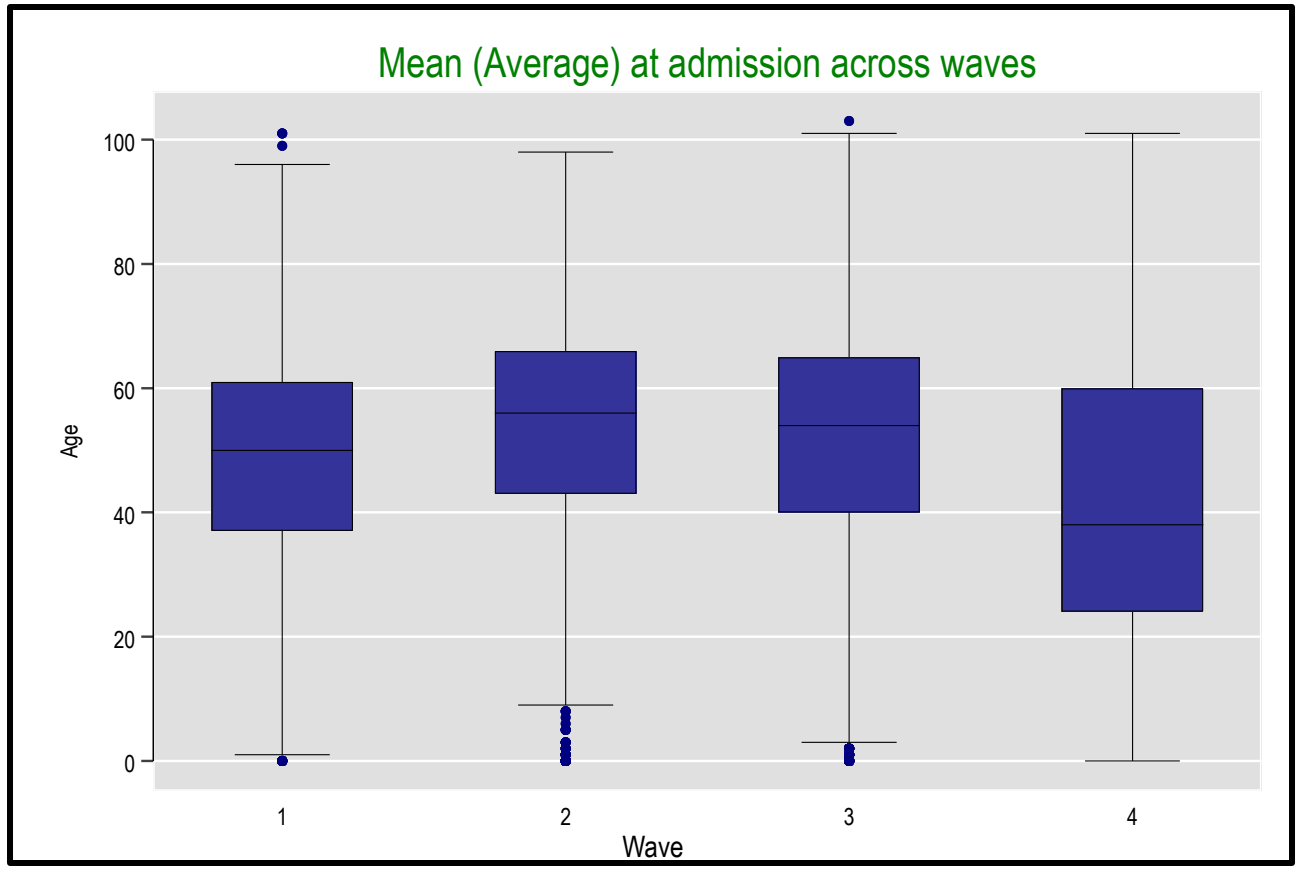
Admissions Data

Figure 2. Mean(average) age of patients admitted for/of COVID-19



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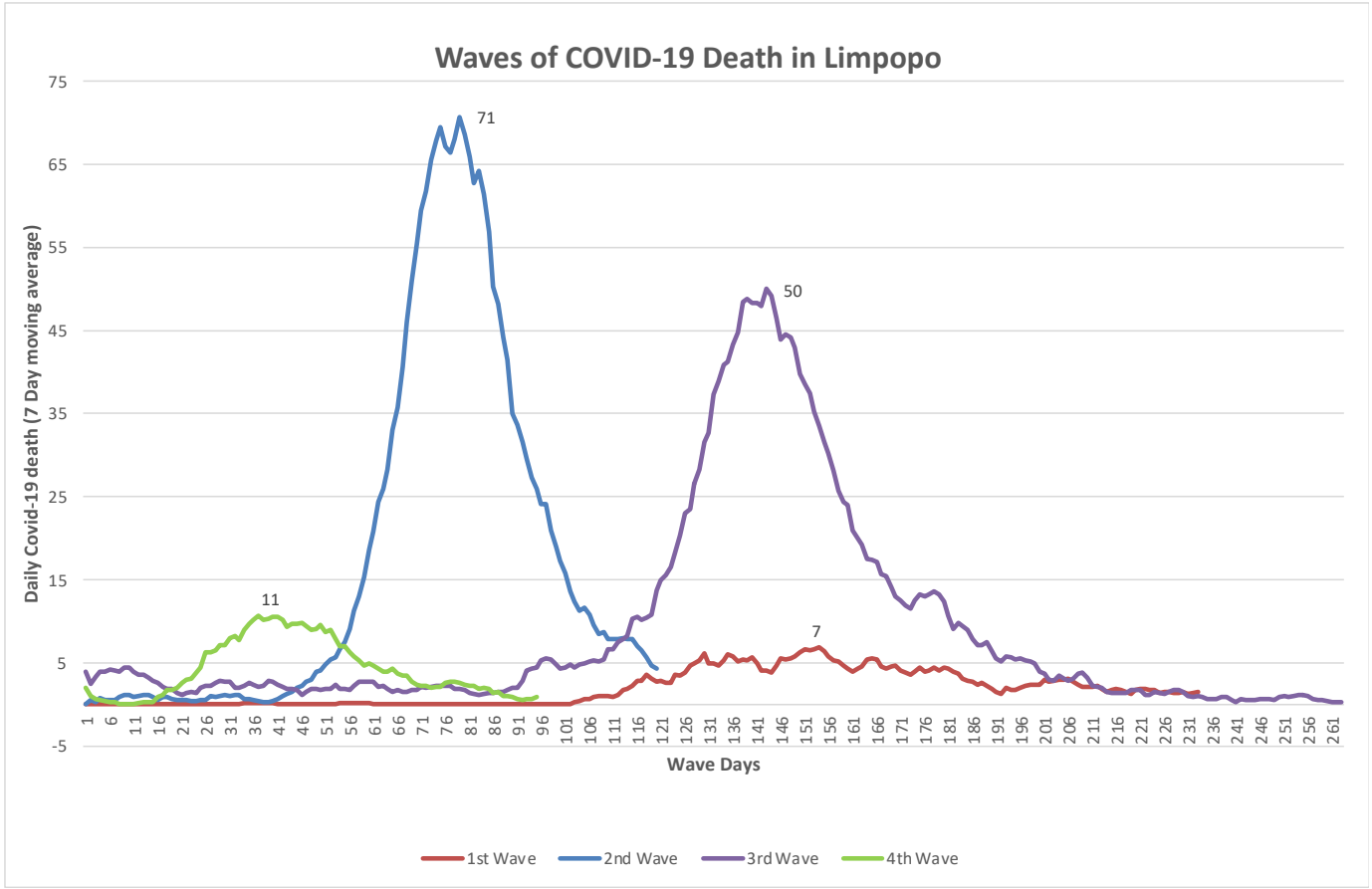
Death data

Figure 1. Waves of COVID-19 death in Limpopo



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Recorded death data

Tab 4. Demographic and clinical characteristics of Confirmed COVID-19 patients who died

Characteristics	Wave 1 (Wild-Type) (n=520)	Wave 2 (Beta) (n=1960)	Wave 3 (Delta) (n=1734)	Wave 4 (Omicron) (n=128)	p-value
Gender n(%)					<0.001
Female	217(41.7)	993(50.6)	920(53.1)	64(50.0)	
Male	303(58.3)	960(49.0)	810(46.7)	64(50.0)	
Unkown	0(0.0)	7(0.4)	4(0.2)	0(0.0)	
Age (years) Mean(sd)	59.1(18.0)	62.3(14.2)	61.7(15.5)	59.0(22.4)	<0.023
Age group n(%)					<0.001
< 10 years	8(1.5)	8(0.4)	8(0.4)	7(5.5)	
10-19 years	5(1.0)	5(0.2)	9(0.5)	1(1.0)	
20-29 years	15(3.0)	19(1.0)	27(1.5)	5(4.0)	
30-39 years	40(7.2)	96(5.0)	97(5.6)	10(7.8)	
40-49 years	64(12.3)	205(10.4)	195(11.2)	14(11.0)	
50-59 years	108(21.0)	408(20.8)	445(25.6)	24(18.7)	
60+ years	280(54.0)	1209(61.6)	953(55.0)	67(52.3)	
No Age	0(0.0)	10(0.5)	0(0.0)	0(0.0)	
Comordities n(%)*					
Diabetes	138(26.5)	550(28.0)	476(27.4)	29(22.6)	<0.001
Asthma	10(2.0)	28(1.4)	40(2.3)	66(51.5)	<0.001
HIV	41(8.0)	86(4.3)	133(7.7)	15(11.7)	<0.001
Hypertension	166(32.0)	661(33.7)	621(36.0)	34(26.5)	<0.001

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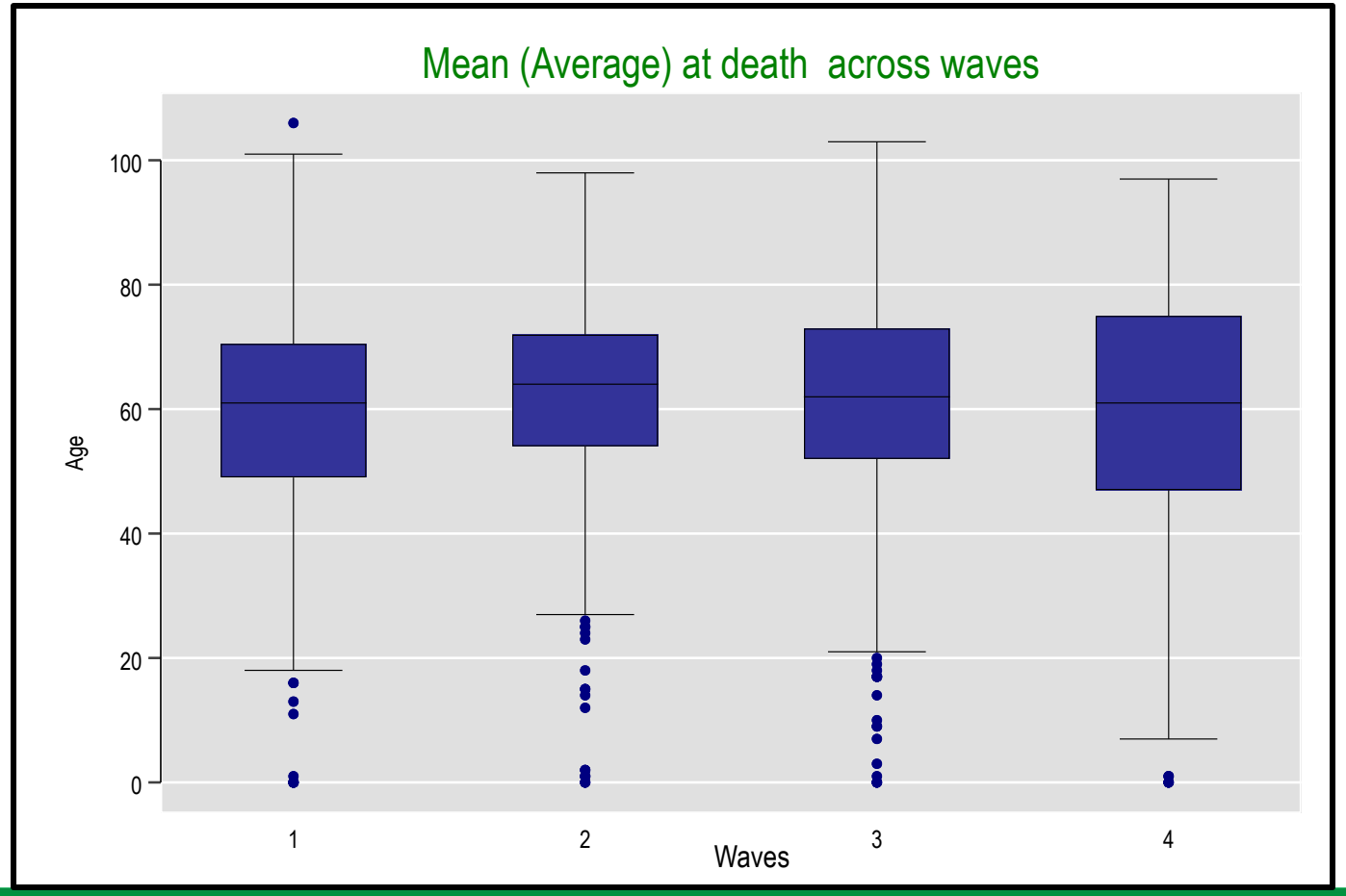
Recorded death data

Figure 3. Mean (average) age of confirmed COVID-19 patients who died



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Part 1: Overview of COVID-19 waves

Tab 2. Cumulative Reported Cases, Hospitalizations, Recorded Death, and Excess Deaths Attributable to COVDI-19 in Limpopo , according to COVID-19 wave

Outcome	Wave 1 (Wild-Type)	Wave 2 (Beta)	Wave 3 (Delta)	Wave 4 (Omicron)	Total
Cases					
Period of wave					
No	17611	44568	60476	30589	153244
No per 100 000 population	295,0	1013,1	746,6	512,4	2567,1
Hospilizations					
Period of wave					
No	1939	5242	5951	1624	14756
No per 100 000 population	32,5	87,8	99,7	27,2	247,2
Recorded deaths					
Period of wave					
No	520	1960	1734	128	4342
No per 100 000 population	8,7	32,8	29,0	2,1	72,7
Excess deaths					
Period of wave					
No	2224	12181	14207	3290	31902
No per 100 000 population	37,3	204,1	238,0	55,1	534,4

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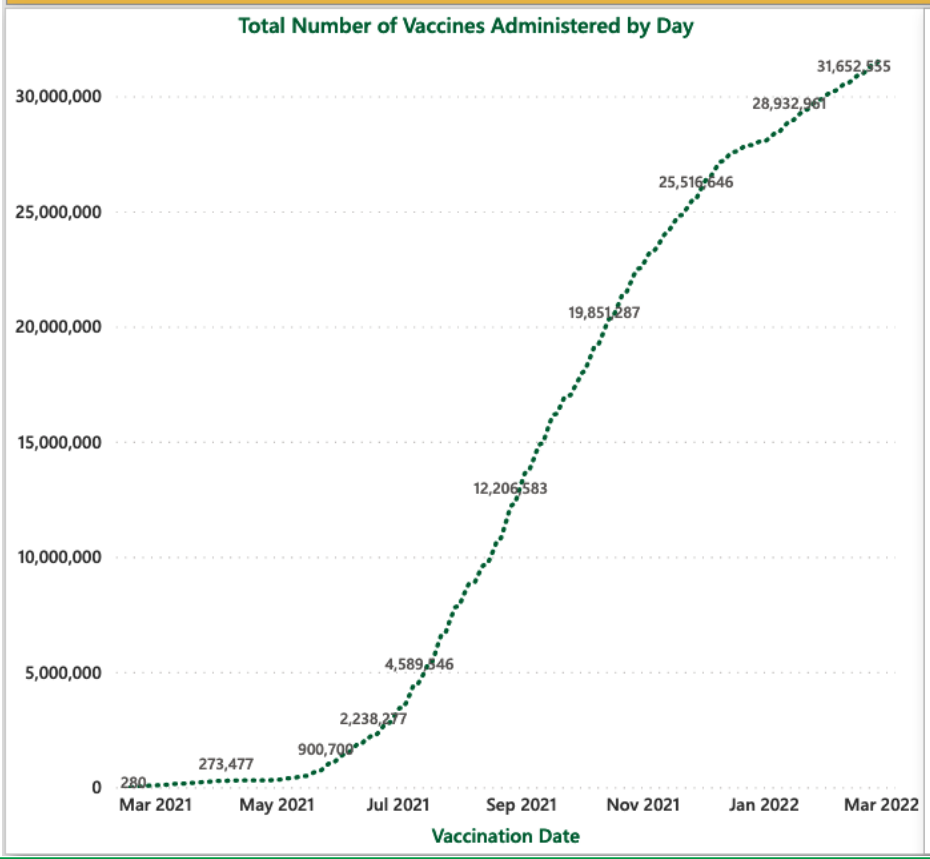
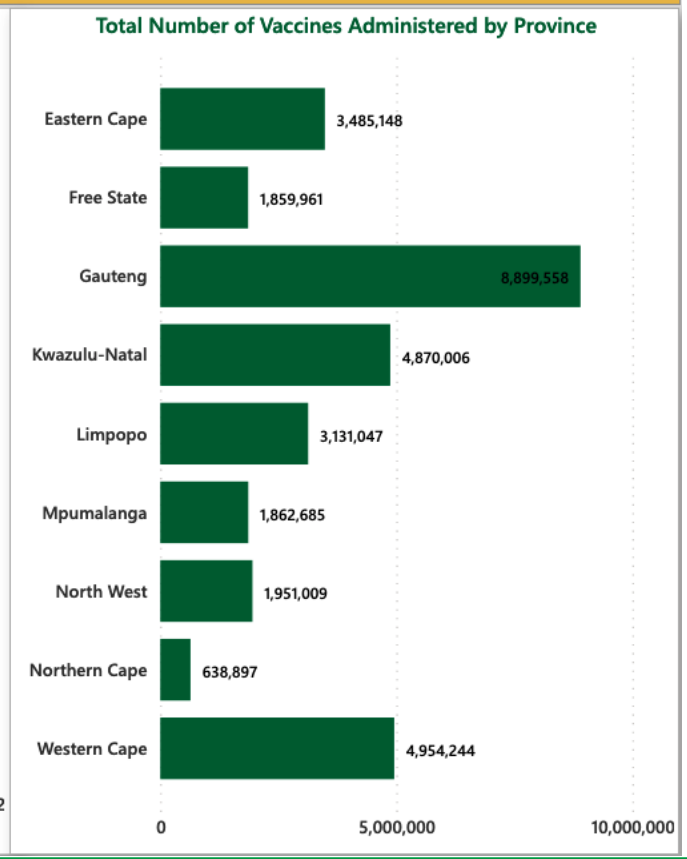
Country-wide Overview

COVID-19 Total Vaccination Summary as at 17:00 01 Mar 2022

Total Number of Vaccines Administered

31,652,555





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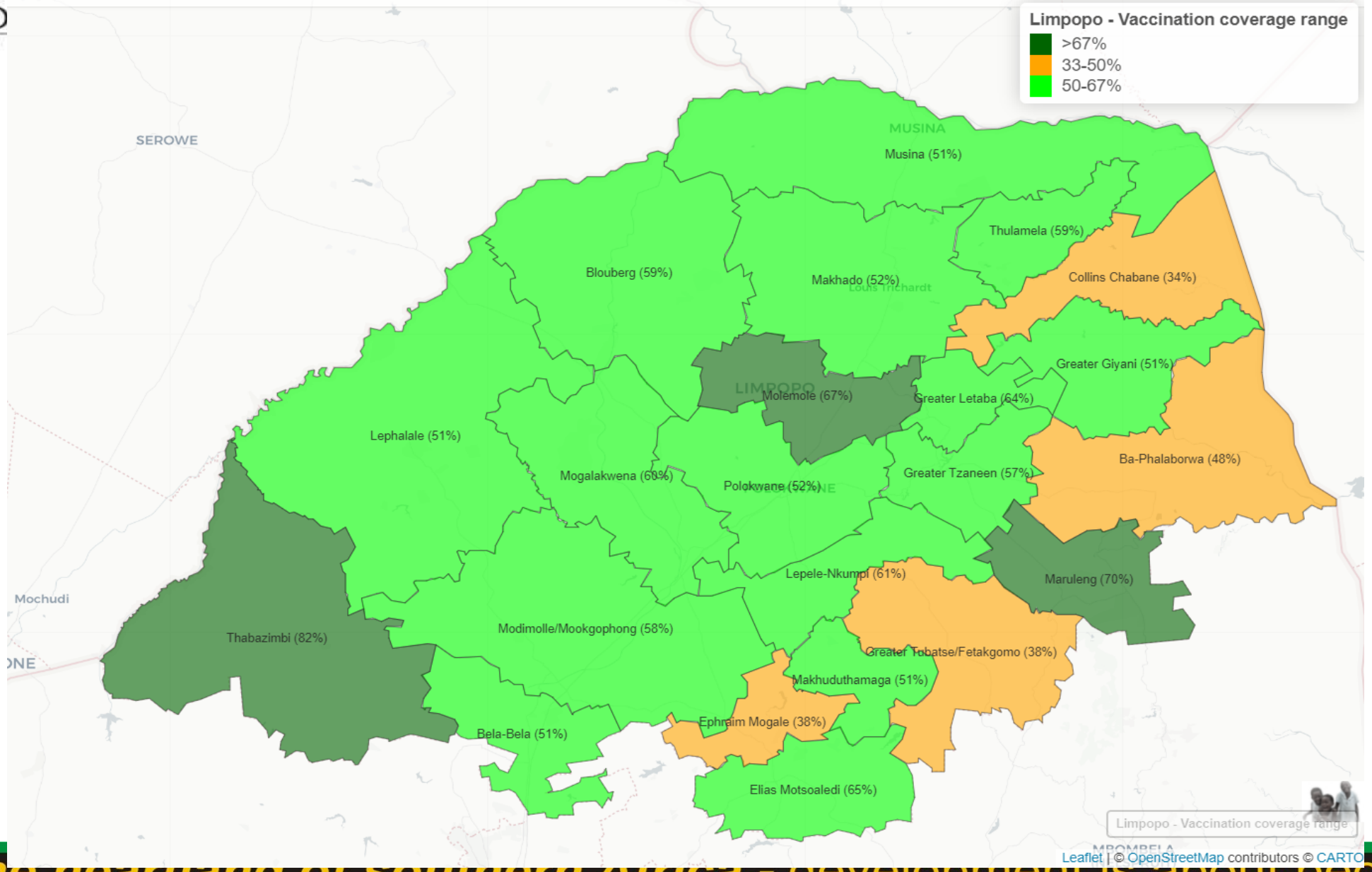
Limpopo Vaccination coverage 27 Feb 2021



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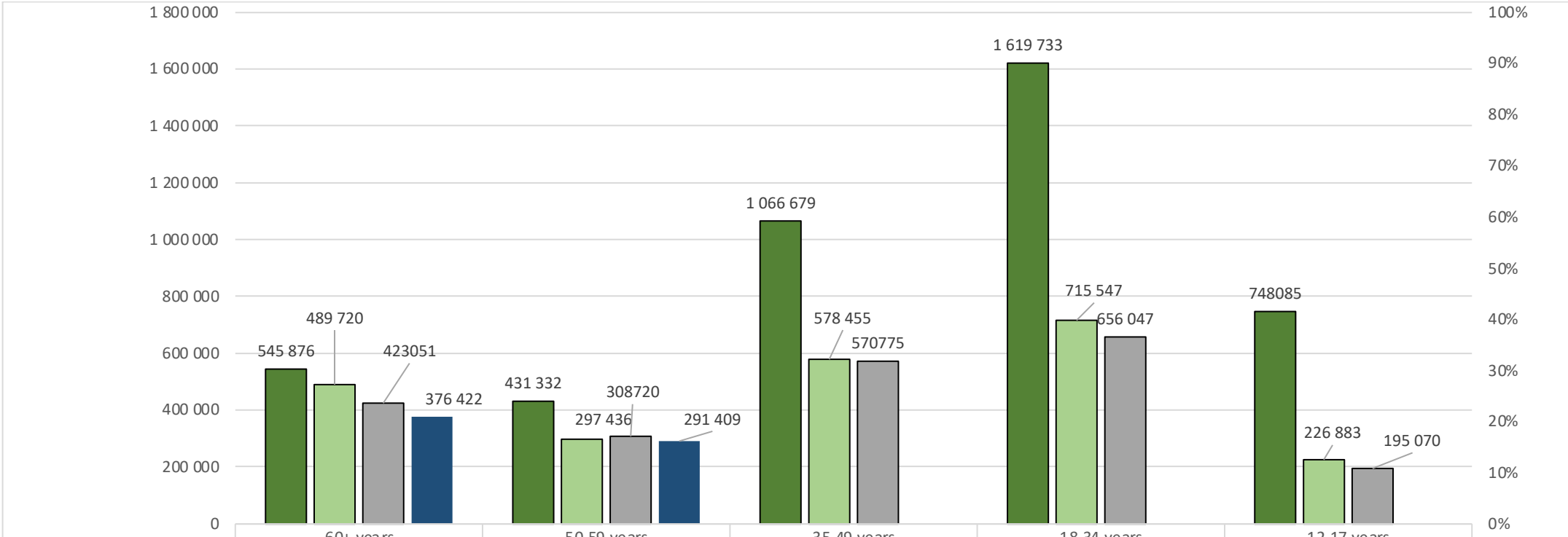
Provincial Registration and Vaccination Cascade by Age group as @ 19/02/2022



	60+ years	50-59 years	35-49 years	18-34 years	12-17 years
Population	545 876	431 332	1 066 679	1 619 733	748085
Registered	489 720	297 436	578 455	715 547	226 883
Vaccinated	423051	308720	570775	656 047	195 070
Fully Vaccinated	376 422	291 409			
Registration coverage	90%	69%	54%	44%	30%
Vaccination coverage	77%	72%	54%	41%	26%
Fully Vaccinated coverage	69%	68%			

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Cumulative booster doses by district

as 27/02/2022

District Name	SISONKE COHORT			GENERAL BOOSTER DOSES		
	Sisonke 1	Sisonke 2	Booster Coverage (%)	Pfizer	J&J	Total
Capricorn	5 565	3 462	62.2%	4 580	6 971	11 551
Mopani	5 456	3 562	65.3%	4 109	6 145	10 254
Sekhukhune	1 653	2 382	144.0%	1 729	3 218	4 947
Vhembe	9 430	3 942	41.8%	5 455	6 360	11 815
Waterberg	5 108	2 220	45.4%	2 694	3 313	6 007
Limpopo Province	**33 227**	**15 568**	**57.2%**	**18 567**	**26 007**	**44 574**

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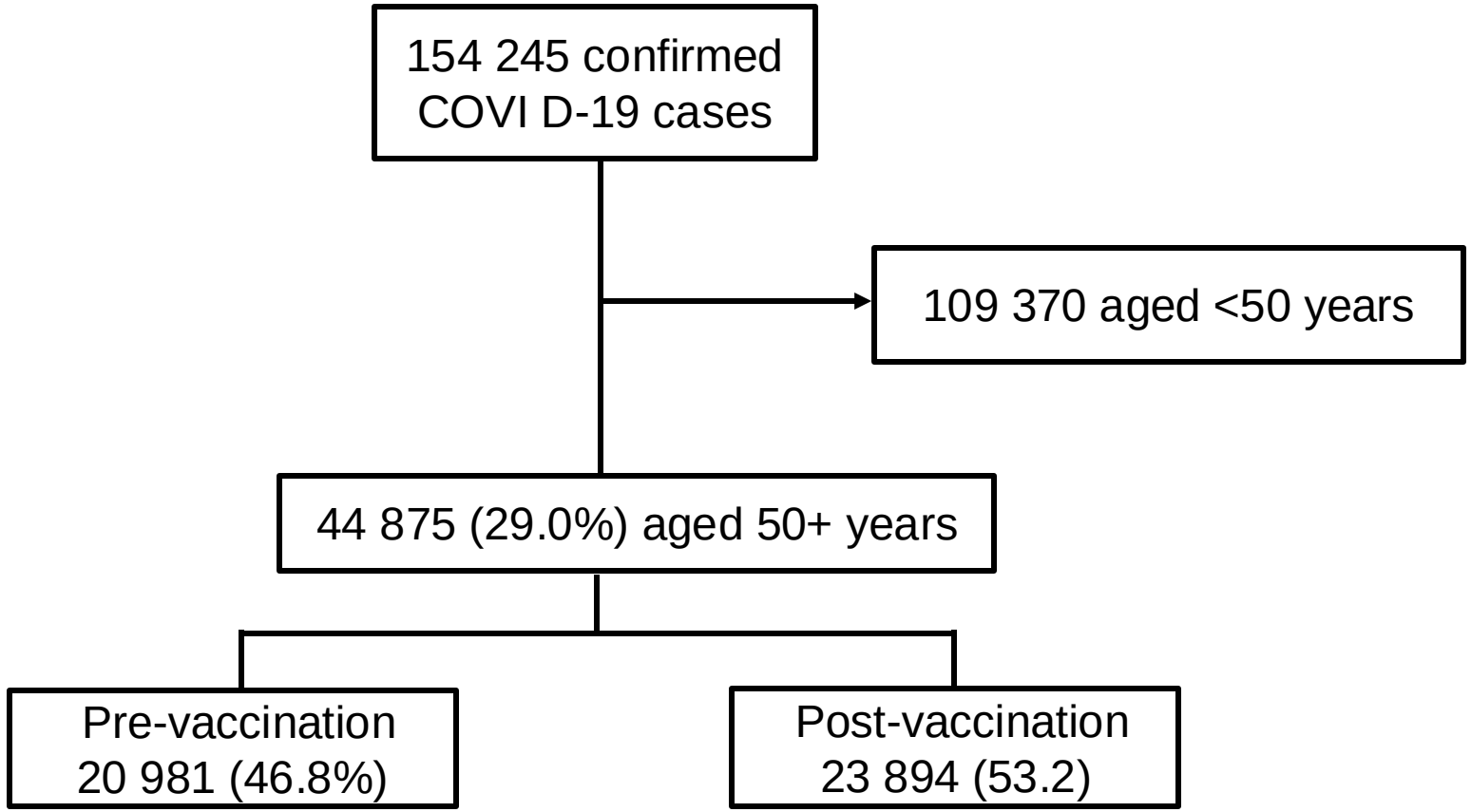
Part 2 : Effectiveness of COVID-19 Vaccine



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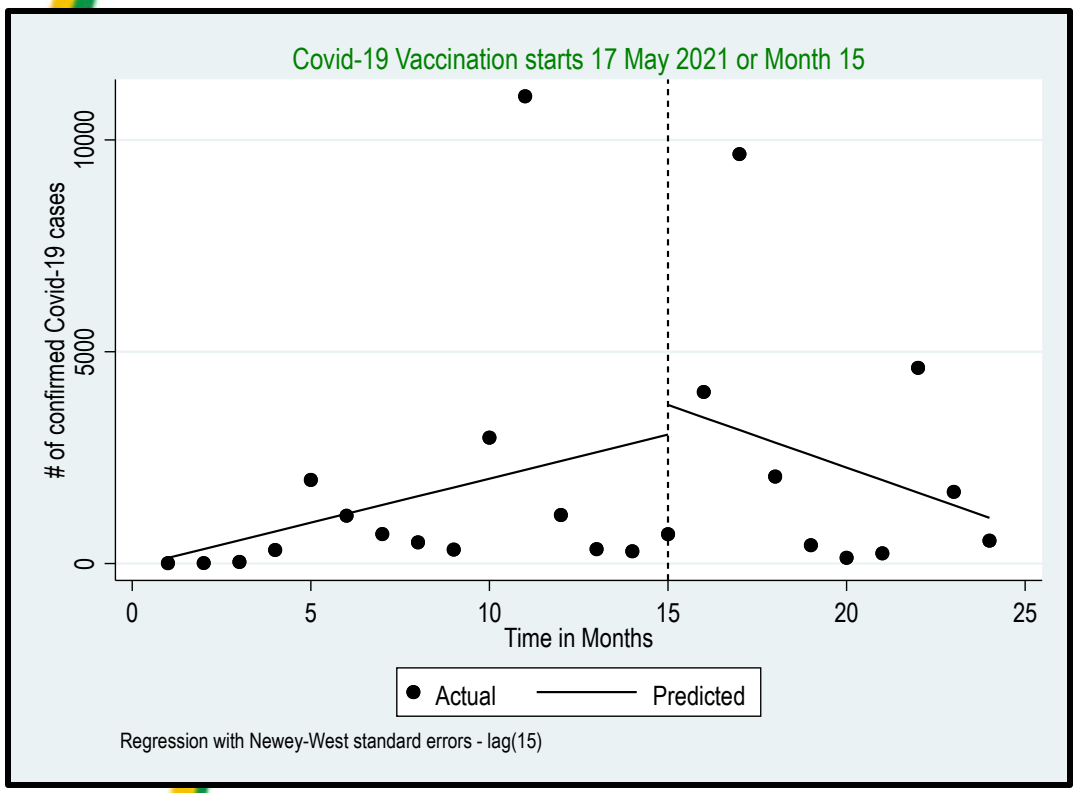
Part 2 : COVID-19 Vaccine effectiveness

Confirmed Covid-19 cases



Outcome	Number of confirmed case	95% CI	P-value
Pre-vaccination trend cases	207.9	30.5 to 305.7	<0.024
Cases at 1st month after vaccination	700.8	-1523 to 2925.4	0.519
post-vaccination trend admission	-501.0	-768.2 to –239.8	0.001
Post-vaccination trend change	-296.1	-496.5 to -95.6	0.751
F(3,20) = 8.50; p < 0.001			

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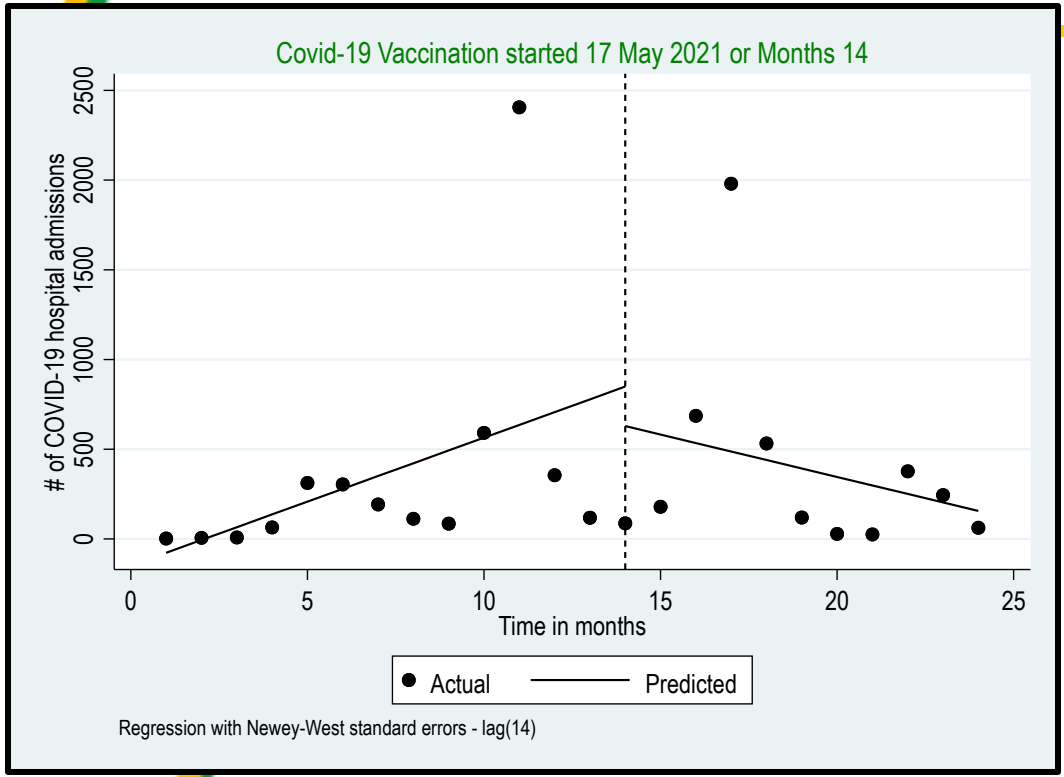
Part 2 : COVID-19 effectiveness analysis

Hospital admissions



Outcome	Number of admissions	95% CI	P-value
Pre-vaccination trend admission	71.2	37.7 to 104.8	<0.001
Admissions 1st month after vaccination	-219	-703 to 263.6	0.354
post-vaccination trend admission	-118.6	-177 to – 59.2	<0.001
Post-vaccination trend change	3.4	-3.8 to 10.7	0.344
F(3,20) = 10.34.13; p < 0.001			

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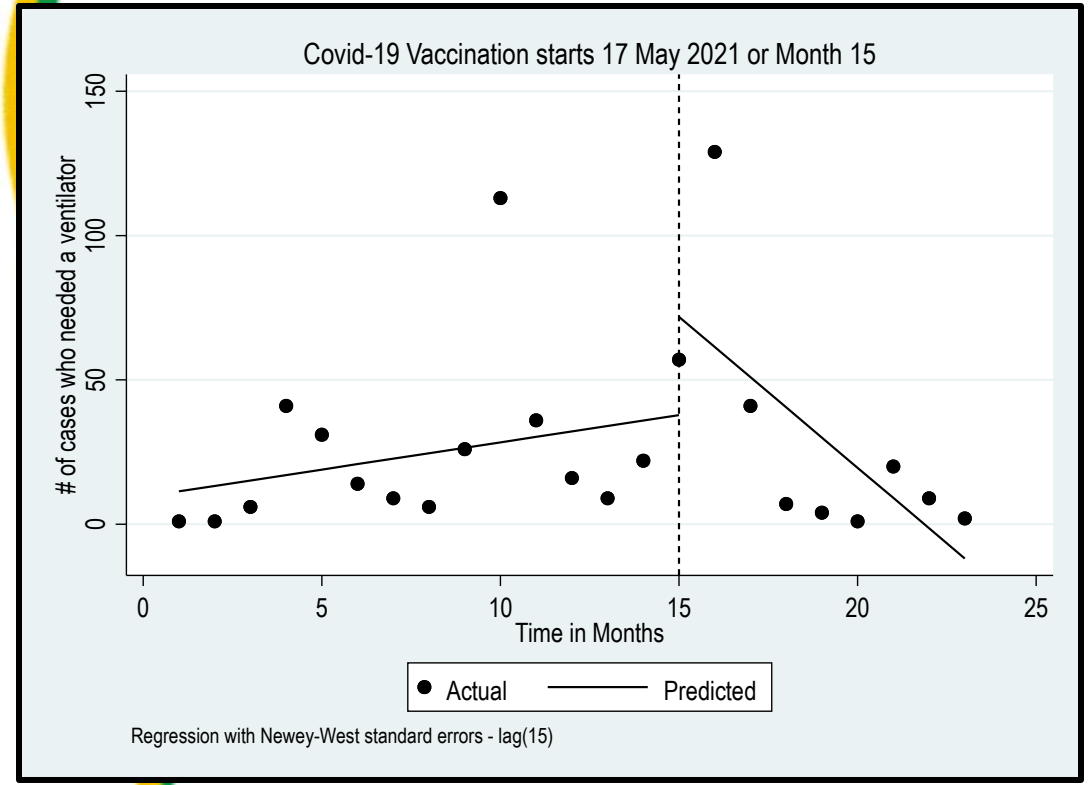
Part 2 : COVID-19 effectiveness analysis

Severe COVID-19 diseases



Outcome	Number of cases	95% CI	P-value
pre-vaccination trend	11.4	-0.64 to 23.4	0.062
1st month after vaccination	34.1	6.7 to 61.3	0.017
Post-vaccination trend	-12.3	-16.3 to – 8.4	<0.001
Post-vaccination trend change	-10.5	-0.6 to 23.4	0.062
F(3,20) = 8.50 ; p<0.001			

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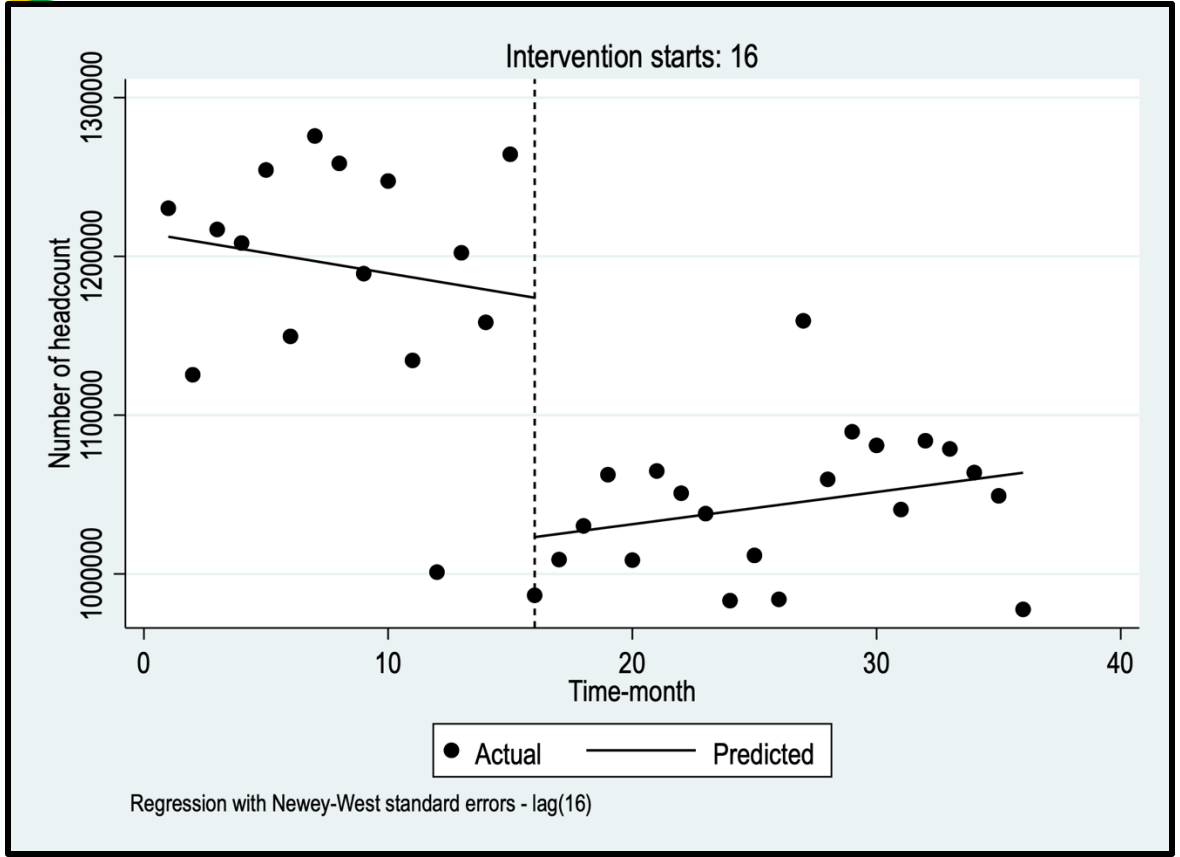
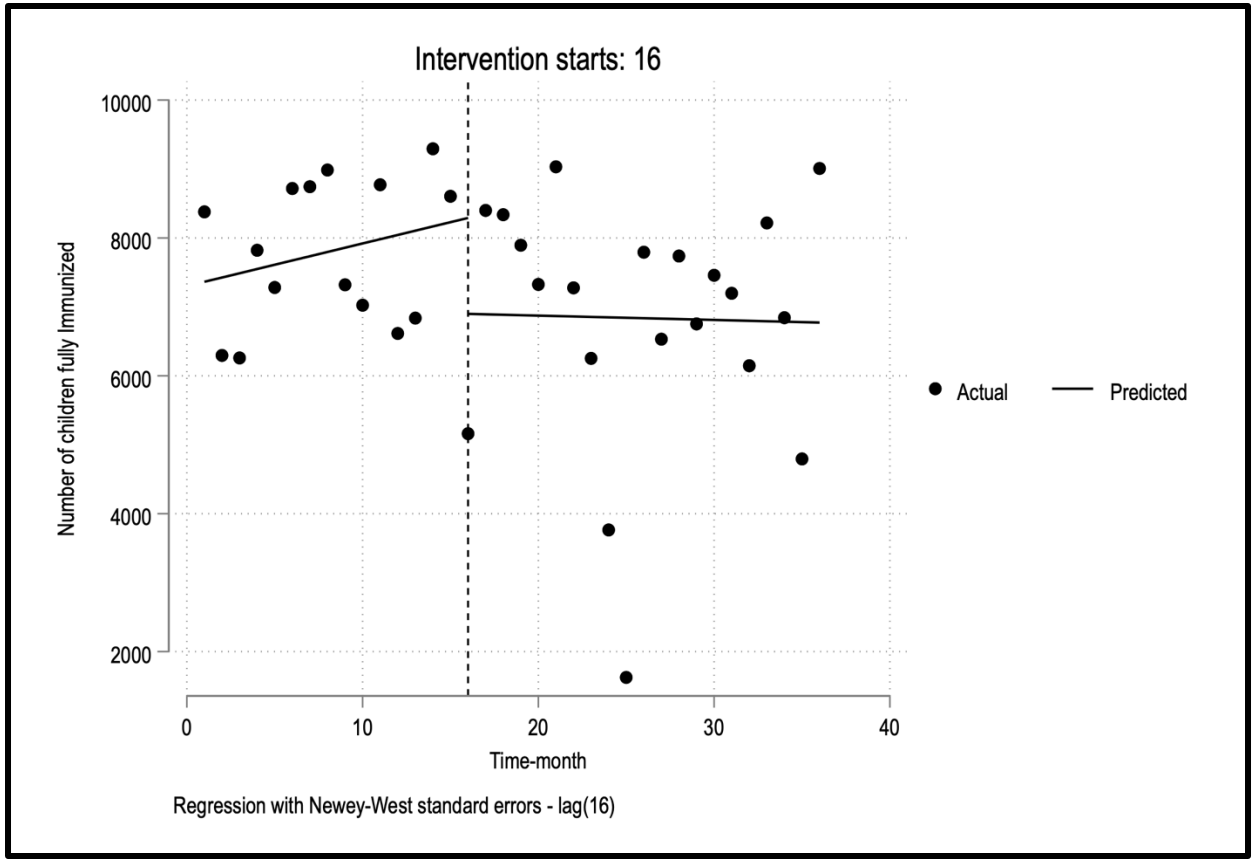
Part 3: Essential Health services

PHC headcount-January 2019-December 2021



COVID-19 era : IRR 0.86 (0.80-0.92)
Month to month change : IRR 1.0 (0.99 to 1.01)

Fully Immunized 1yr 2019-December 2021



COVID-19 era : IRR 0.85 (0.64-1.12)
Month to month change : IRR 1.0 (0.98 to 1.01)

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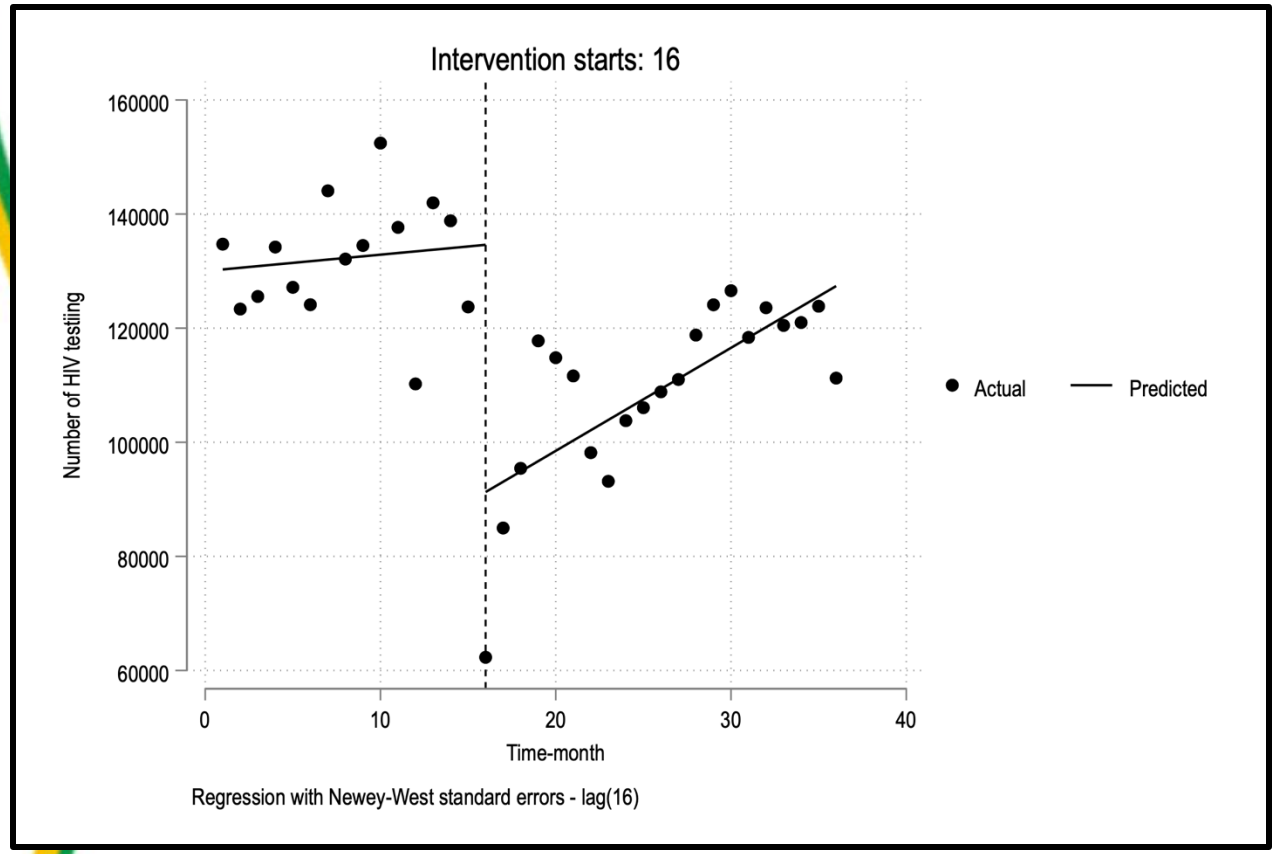
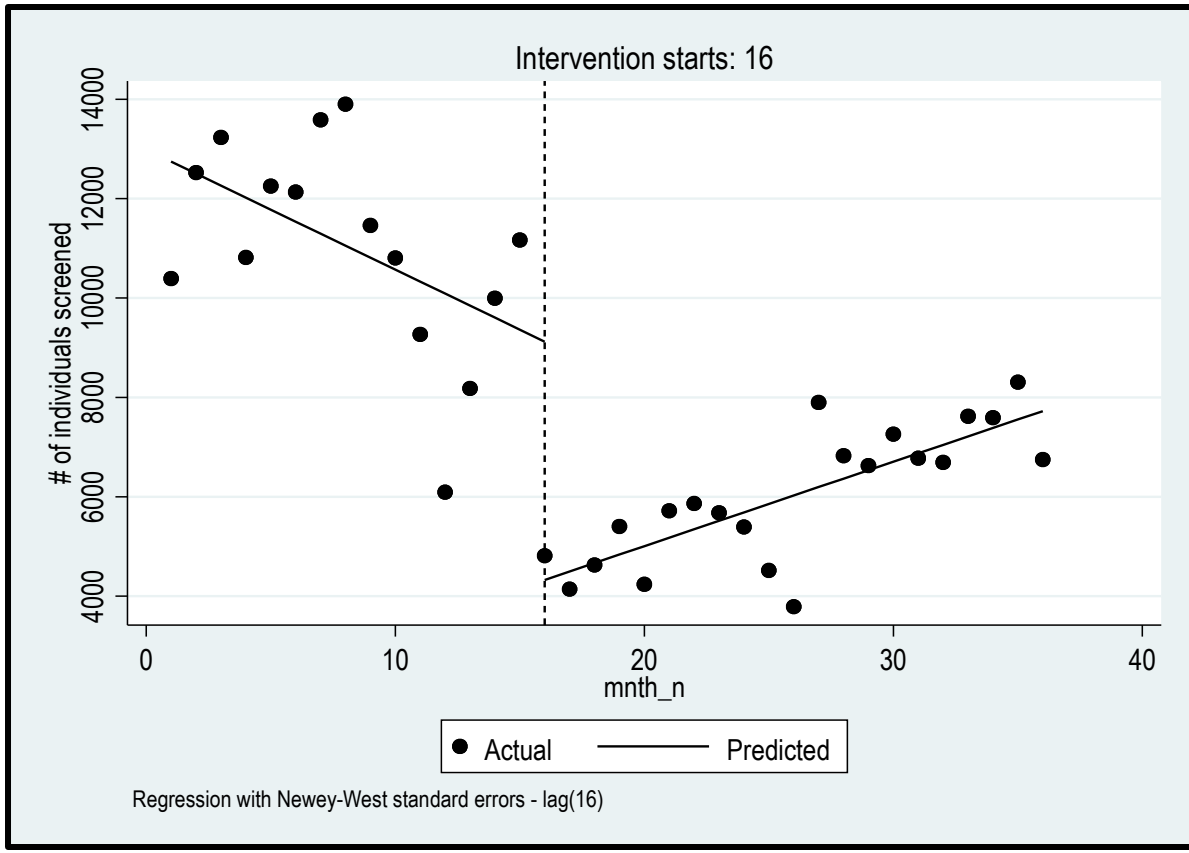
Part 3 : Essential Health services

HIV Testing-January 2019-December 2021



COVID-19 era : IRR 0.66 (0.58-0.75)
Month to month change : IRR 1.1(1.0 to 1.5)

TB Screen for TB symptoms -January 2019-Dec 2021



COVID-19 era : IRR 0.47 (0.36-0.61)
Month to month change : IRR 1.0(0.99 to 1.2)

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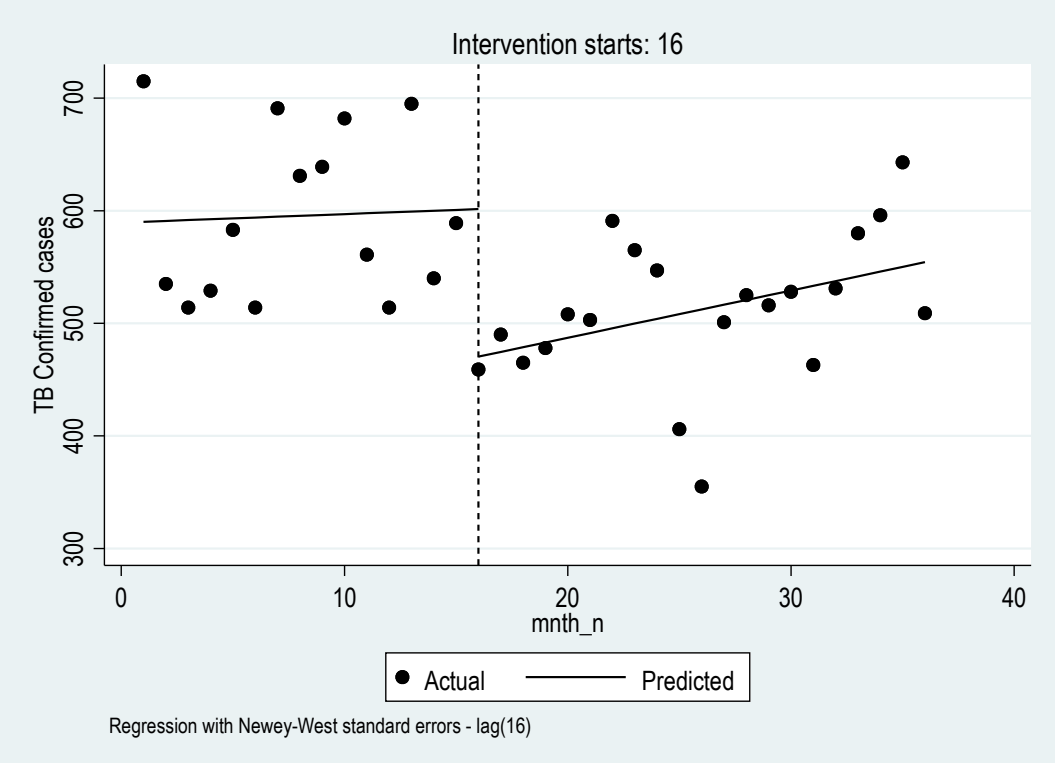
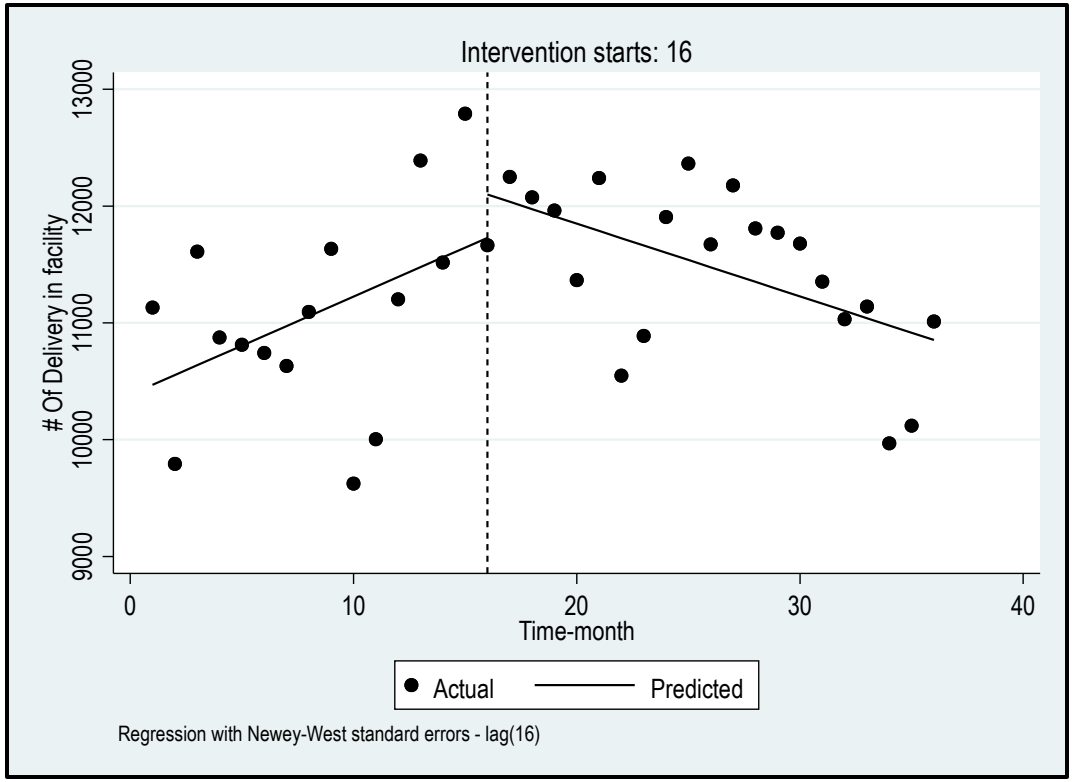
Part 3 : Essential Health services

Bacteriological confirmed -Jan 2019-Dec 2021



COVID-19 era : IRR 0.77 (0.65-0.92)
Month to month change : IRR 1.3 (0.95 to 1.2)

Delivery in health facilities -Jan 2019-Dec 2021



COVID-19 era : IRR 1.1 (0.98-1.2)
Month to month change : IRR 0.9 (0.99 to 1.01)

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Summary

- Epidemiologic data showed significant reductions in COVID-19 infections, hospitalizations and deaths in fourth wave.
- These reductions were also noted across demographic and clinical characteristics, with fewer 50-59 and 60+ years cohort being infected, hospitalized and died.
- Mass COVID-19 vaccination rollout led to downward trend in COVID-19 confirmed cases, hospital admissions, and COVID-19 diseases.
- Some of the reductions are marginal and not statistically significant. However these reductions are clinically meaningful

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Summary

- Analysis of essential health services indicators showed that Covid-19 lockdowns had a detrimental effect on essential health services.
- Resumption of essential health services or post-lockdown trends are marginally.

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Reviewed by: Dr Malatji

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Thanks