City of Saskatoon

"The Delta Files"
A Review of COVID-19 Statistics
Week ending September 15, 2021

Revised & Condensed version

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Table A shows various COVID statistics by Saskatchewan Health Zones. The table shows both case counts (the raw numbers as reported) and rates adjusted for 100,000 population in each zone. It also shows testing data, with rates adjusted to 100,000 persons. The reason for the adjustments is to show per capita comparisons on the various indicators and their intensity. Over the past seven days Saskatchewan reported 2,914 new cases, with over 700 in Saskatoon. The highest per capita case rate is in the Far North East at 957 new cases per 100,000 persons over the last 7 days. The following slides expand on this data and conduct trend analysis on some of the indicators. A row called "unassigned" means that some cases/tests have not been assigned a location.

Table A: Saskatchewan COVID-19 Data by Health Zone (Cumulative Data as of September 15, 2021)
Source: Author Calculations from https://dashboard.saskatchewan.ca/health-wellness

Location	Demographics		Cases						Hospitalizations		Recoveries	Fatalities		Tests		
Zone	Population Estimates (2021)	Share of Population (%)	Total Cases	Total Case Rate*	Active Cases	Active Case Rate*	Weekly Cases	Weekly Case Rate*	Inpatient	ICU	Count	Deaths	Death Rate*	Total Tests	Test Rate*	Test Positivity Rate (%)
Far North West	29,813	2.5	3,507	11,763	198	664.1	132	442.8	5	0	3,274	35	117.4	27,193	91,212	12.9
Far North Central	2,649	0.2	520	19,630	25	943.8	17	641.8	0	0	491	4	151.0	2,666	100,642	19.5
Far North East	24,249	2.0	3,457	14,256	388	1600.1	232	956.7	0	0	3,049	20	82.5	24,455	100,850	14.1
North West	82,386	6.8	5,989	7,269	593	719.8	412	500.1	28	2	5,309	87	105.6	56,614	68,718	10.6
North Central	88,991	7.4	6,090	6,843	615	691.1	385	432.6	33	5	5,405	70	78.7	71,940	80,840	8.5
North East	41,560	3.4	2,185	5,257	222	534.2	154	370.5	7	0	1,944	19	45.7	29,440	70,837	7.4
Saskatoon	**338,106**	**28.1**	**14,539**	**4,300**	**997**	**294.9**	**702**	**207.6**	**74**	**18**	**13,417**	**125**	**37.0**	**287,845**	**85,135**	**5.1**
Central West	36,962	3.1	1,069	2,892	82	221.8	62	167.7	0	0	981	6	16.2	19,778	53,509	5.4
Central East	98,368	8.2	2,794	2,840	143	145.4	110	111.8	4	3	2,632	19	19.3	65,175	66,256	4.3
Regina	273,351	22.7	12,798	4,682	235	86.0	183	66.9	17	9	12,403	160	58.5	221,212	80,926	5.8
South West	38,670	3.2	1,399	3,618	97	250.8	69	178.4	4	2	1,292	10	25.9	22,549	58,311	6.2
South Central	60,459	5.0	2,151	3,558	86	142.2	64	105.9	5	1	2,040	25	41.4	49,308	81,556	4.4
South East	89,294	7.4	3,252	3,642	165	184.8	134	150.1	7	0	3,038	49	54.9	57,900	64,842	5.6
Unassigned (Pending)	0	0.0	399	0.0	170	0.0	258	0.0	0	0	229	0	0.0	138,279	0	0.0
Total Saskatchewan	**1,204,858**	**100.0**	**60,149**	**4,992.2**	**4,016**	**333.3**	**2,914**	**241.9**	**184**	**40**	**55,504**	**629**	**52.2**	**1,074,354**	**89,169**	**5.6**

* indicates rates are per 100,000 persons

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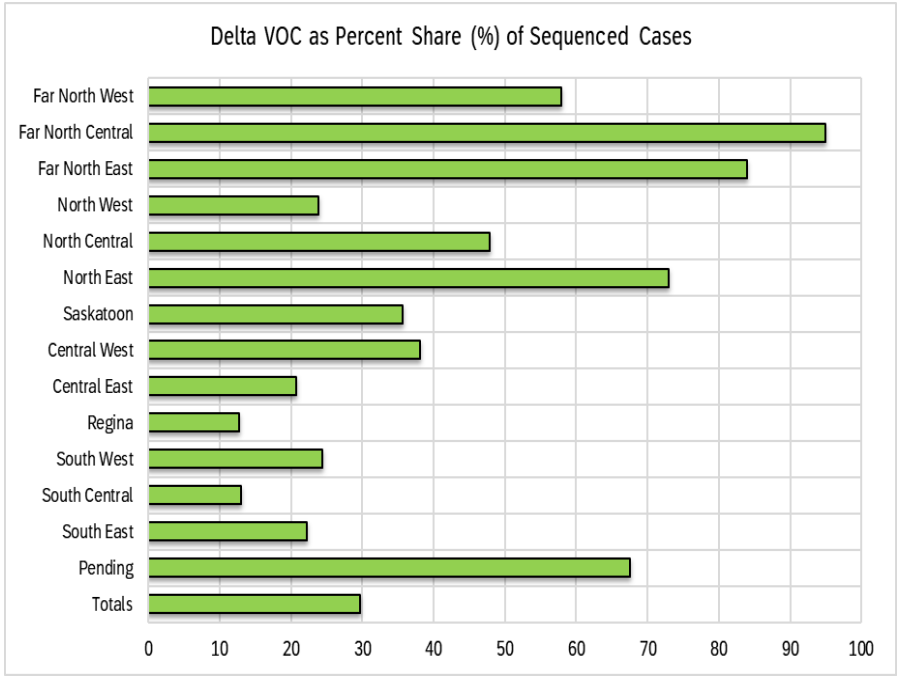
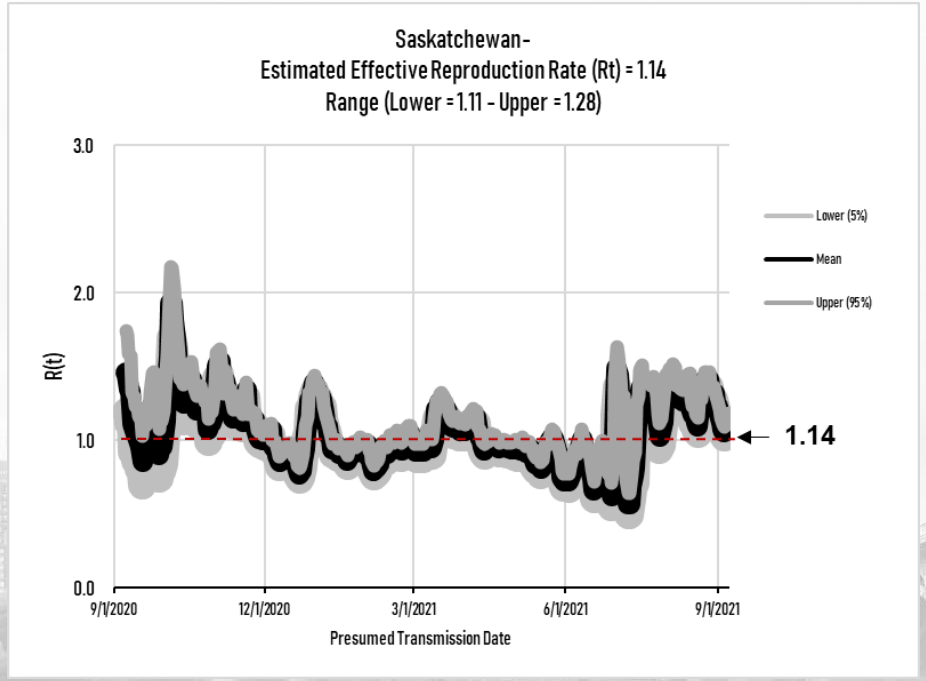
VOCs - COVID-19 Cases in Saskatchewan are being driven by Variants of Concern (VOC), especially the Delta Variant. The VOC are mutations of the COVID-19 virus and can be more contagious than the original SARS-COV2. Table B illustrates the VOC cases by various types. The chart of the right shows the percent share of the Delta Variant by zone relative to the total known VOCs. In the Far North Central and Far North East the Delta Variant comprises over 80% of all known VOC cases.

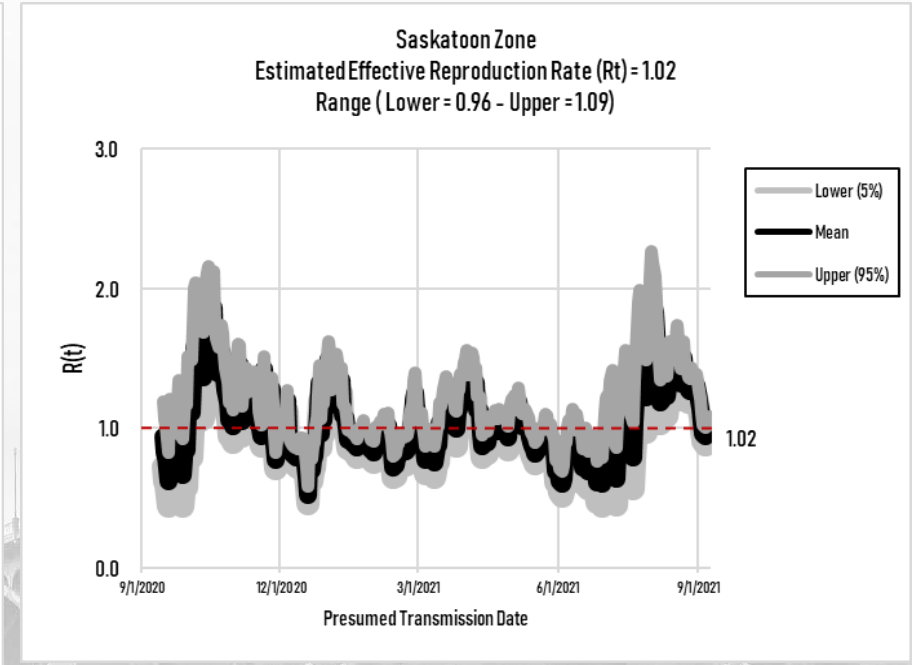
Table B: Saskatchewan Variants of Concern by Zone (September 15, 2021)
Source: Author Calculations from https://dashboard.saskatchewan.ca/health-wellness

Location	Variants of Concern			
Zone	B1.1.7 (Alpha)	B1.351 (Beta)	P.1 (Gamma)	B.1.617.2 (Delta)
Far North West	211	0	23	321
Far North Central	4	0	0	75
Far North East	56	0	12	356
North West	350	0	249	187
North Central	344	9	26	348
North East	66	0	2	184
Saskatoon	**1,135**	**1**	**125**	**700**
Central West	107	0	2	67
Central East	405	0	5	107
Regina	2,836	0	5	411
South West	251	0	26	89
South Central	636	0	2	95
South East	691	0	1	197
Unassigned	31	0	4	73
Total Saskatchewan	**7,123**	**10**	**482**	**3,210**



Given the data in the previous slide, this slide estimates the Effective Reproduction Number (Rt) for Saskatchewan (left) and Saskatoon (right). A few points to note here. (1) The dates are lagged because Rt uses recent case history to estimate the infection rate that caused them, referred to as the "presumed transmission date". This date occurs about 7 days prior to reporting of new cases. (2) An Rt above 1 means that COVID-19 is growing exponentially. An Rt below 1 means that cases will eventually die out. (3) Rt is based on the SEIR epidemiological model with assumptions. I use the Cori, et.al method to determine the Rt (described here: https://doi.org/10.1093/aje/kwt133). (4) The Rt is estimated as the mean using 95% confidence intervals.





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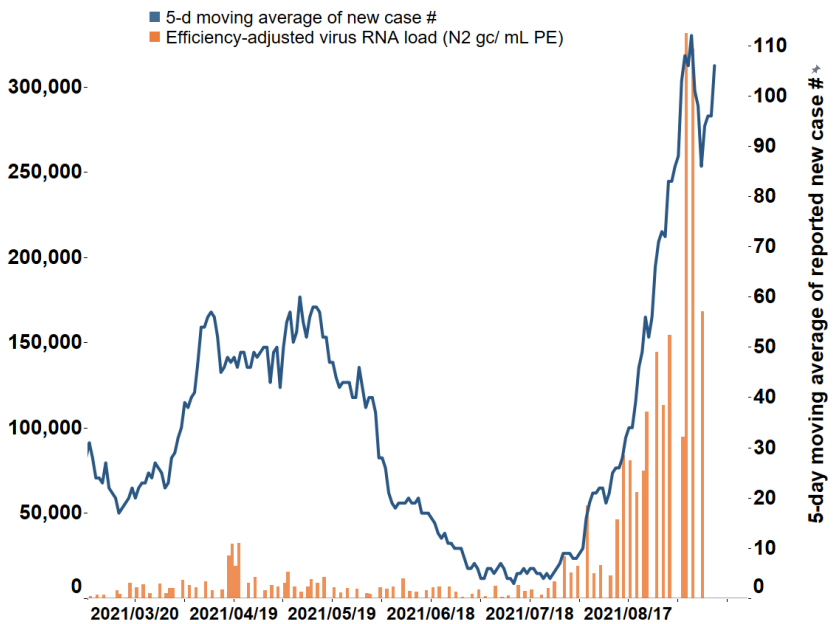
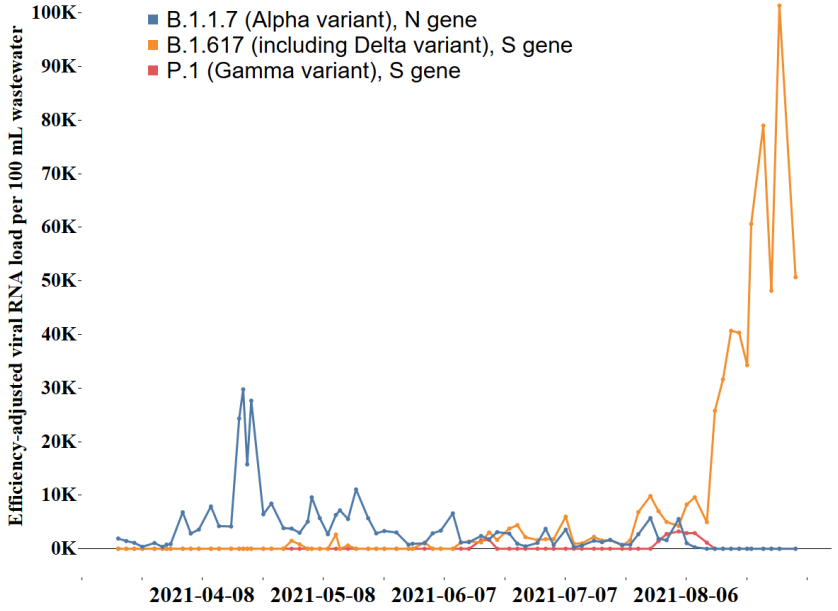
Wastewater Testing: The charts on this slide show the wastewater samples collected in Saskatoon. This is a predictive model that tests wastewater samples to determine the concentration of SARS-COV-2 and its variants. The chart on the left shows the wastewater test sample against the 5-day rolling average of new reported cases (blue line). The samples are a leading indicator of the emergence of the COVID-19 virus. The chart on the right shows the percentage of samples that contain the VOCs. As the chart shows, there is a very high concentration of the Delta VOC in the wastewater. Variant tracking data should be seen merely as an indicator of trends within one variant, rather than for comparison among variants. Due to differences in sensitivity of the underlying tests and epidemiology, comparisons of absolute viral loads among variants are not straightforward.

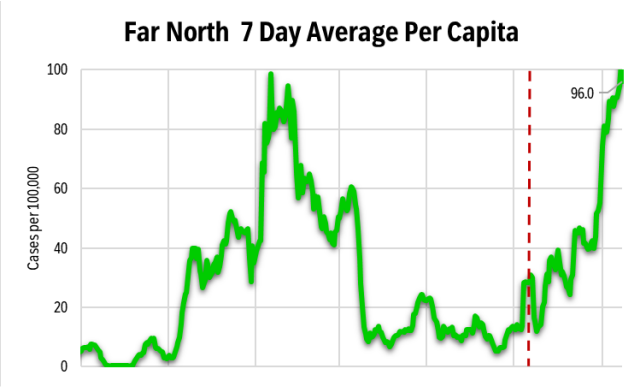
Viral RNA load of SARS-CoV-2 in wastewater, City of Saskatoon

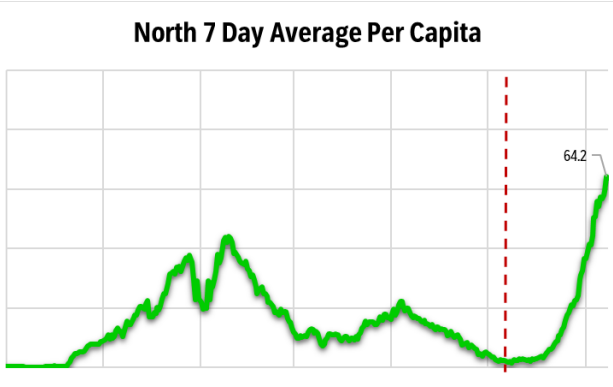


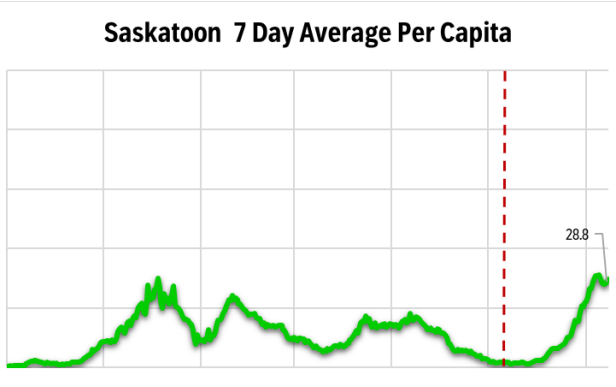
Viral RNA load of key variants in wastewater, City of Saskatoon

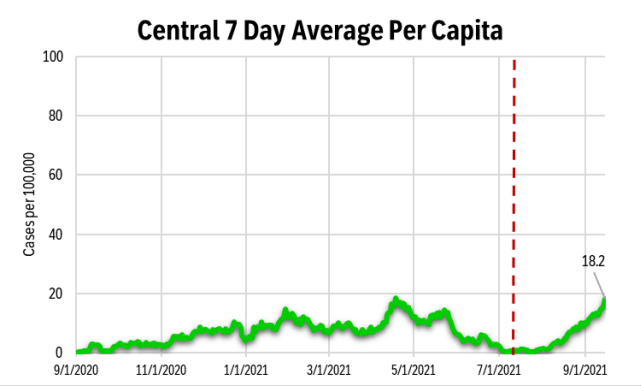


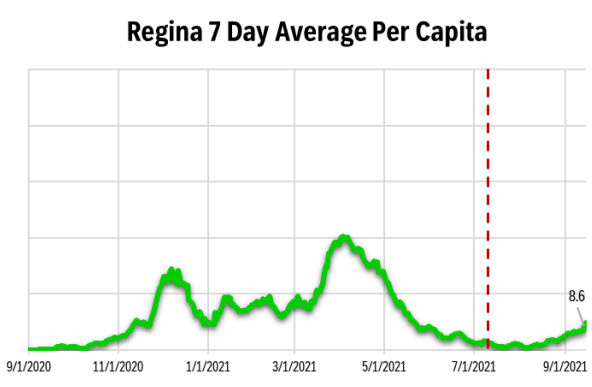
CASE COUNTS PER CAPITA: This slide shows panel charts using the 7 day average of cases adjusted for 100,000 population. It uses the same y-axis scale so that better comparisons about the COVID-19 impact on each aggregate zone can be made. Note that only the first two charts on each row have the y-axis labelled and the same scale is used on each chart. The charts are ordered in the same way as the previous tables. The Saskatoon zone has its highest per capita case rate on record. The red dotted line indicates when the provincial public health order was lifted on July 11, 2021. Clearly, Saskatoon and North zones are seeing substantial rises in new COVID cases, driven largely by the Delta VOC.

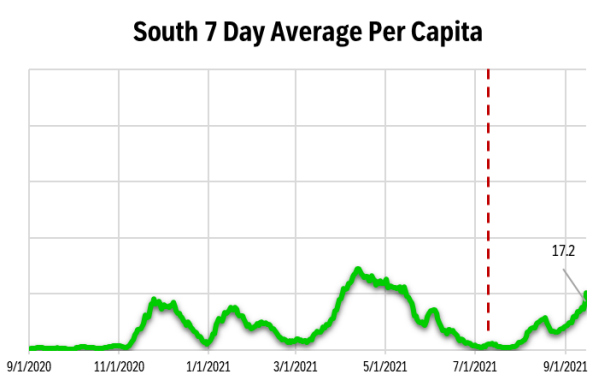




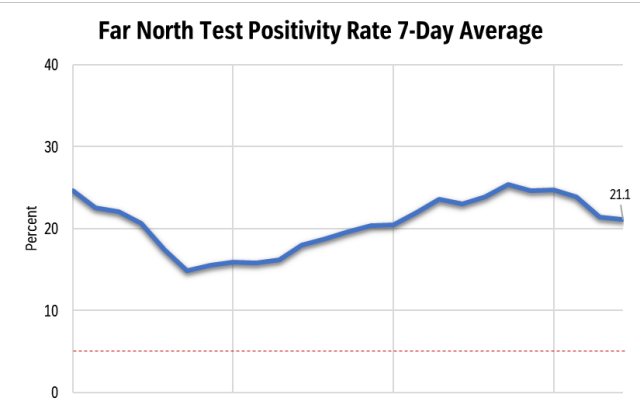


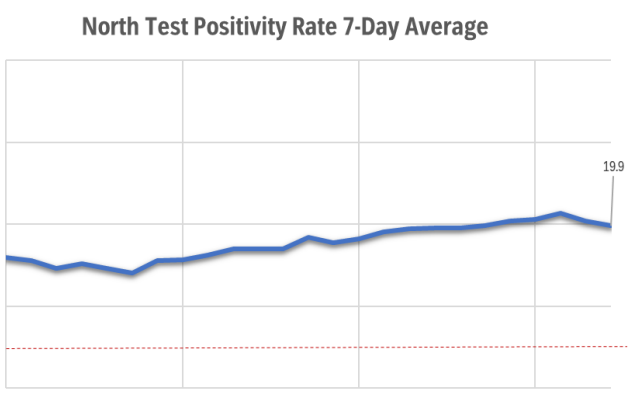


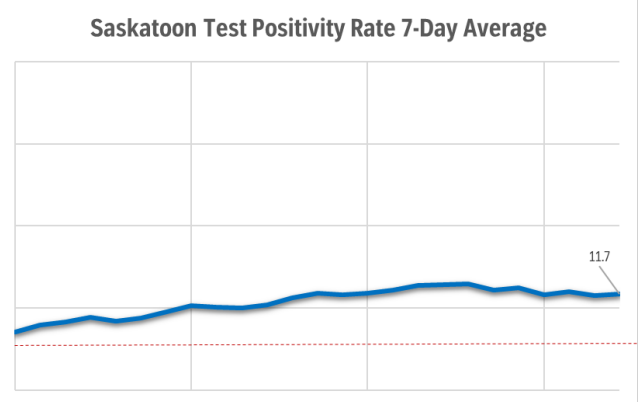


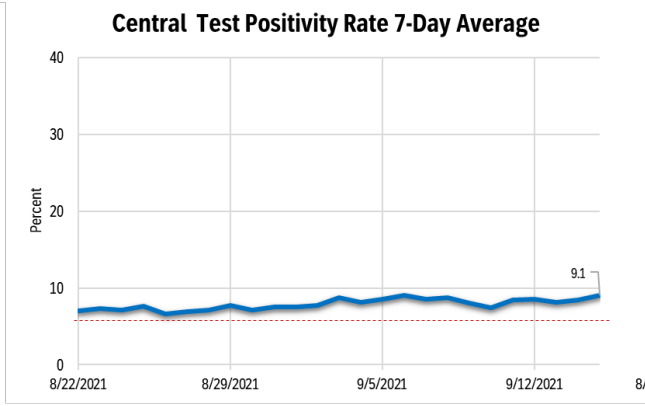


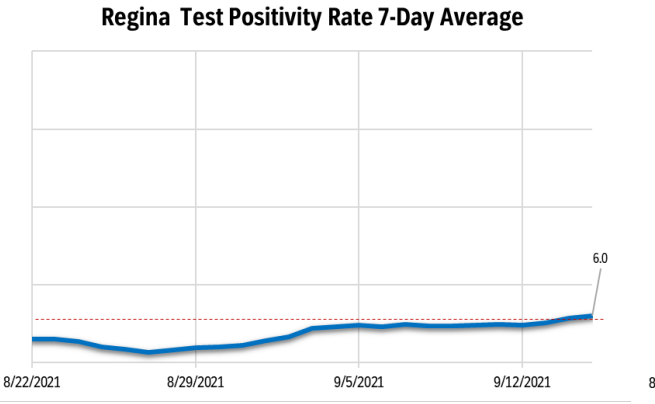
Test Positivity Rates 7 Day Average: This slide shows panel charts using the 7 day average the test positivity rate for each aggregate zone. It is calculated by the 7 day Average of new cases divided by the 7 day average of new tests. The data starts on August 22, 2021 because there is no testing data by zone for late June, all of July and the first two weeks of August. The red line indicates the World Health Organization Standard of 5% for a controlled level of positive cases. A test positivity rate of less than 5% typically means the transmission is under control.

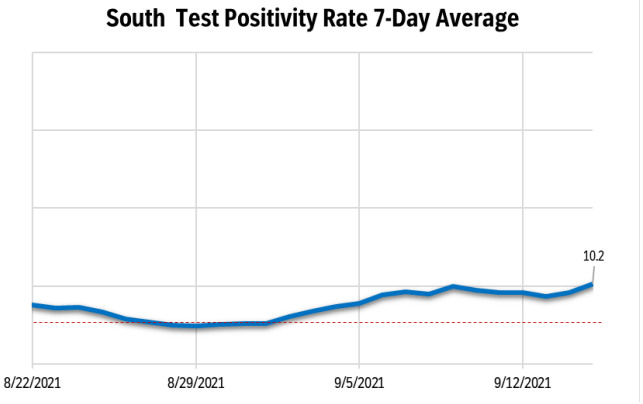




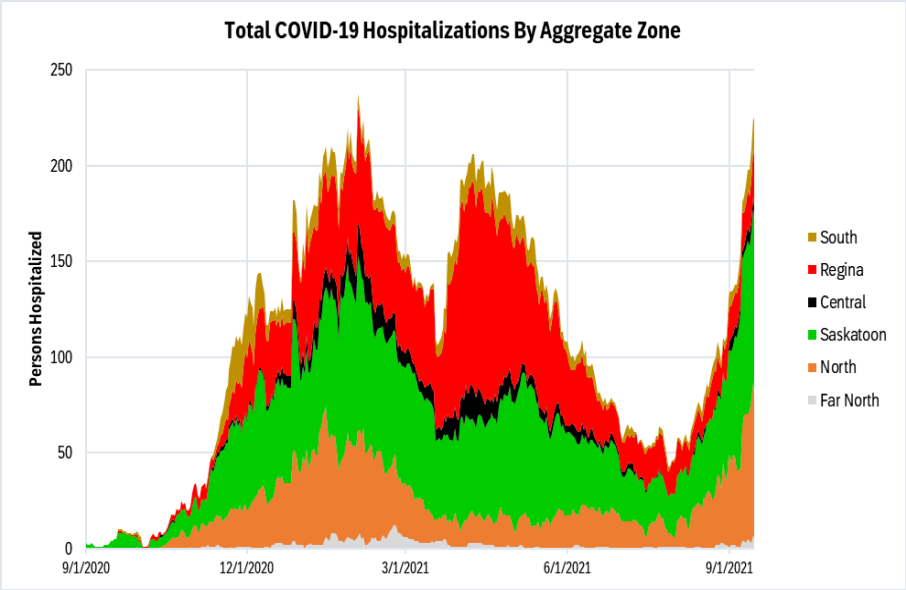


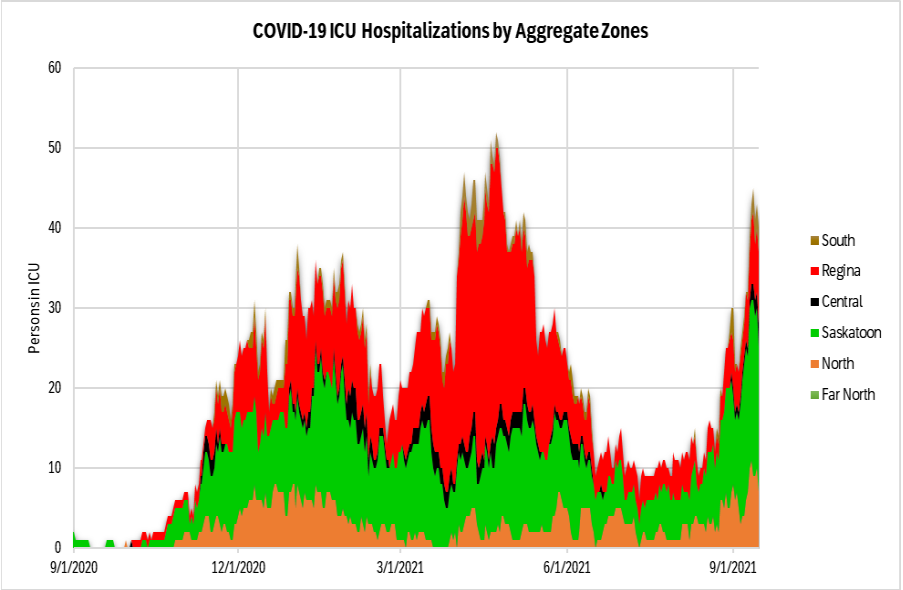






Hospitalizations. This slide shows total hospitalizations and ICU hospitalizations by aggregate zone. Total hospitalizations and ICU hospitalizations are nearing the record peaks. ICUs are about 18% of total hospitalizations for COVID-19.

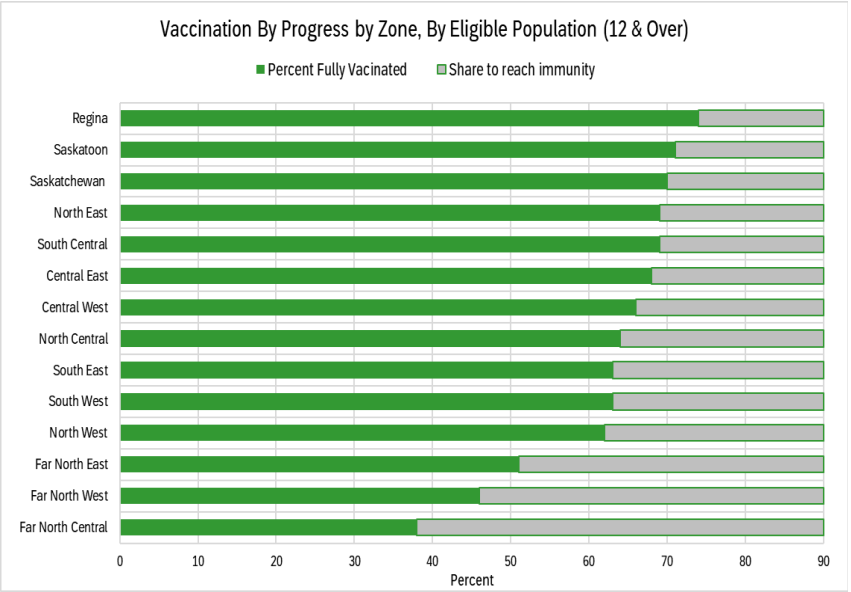




Vaccine Progress by Age. This slide shows vaccinations by zone and age group in Saskatchewan. That is, the table on the left shows the percent share of the population of those persons fully vaccinated for each age cohort in each zone. The color coding shows lower to higher rates. This is for persons 12 years of age and older, so it will show higher percentage than including the total population. The Far North has substantially lower vaccination rates that the rest of the zones. For Saskatchewan, the lowest rates are in the 12-17 and 18-29 age cohorts. The chart on the right shows the progress to reach the generally accepted immunity target of 90%, given the strength of the Delta VOC. Saskatchewan needs to fully vaccinate 20% more of the eligible population to reach that target.

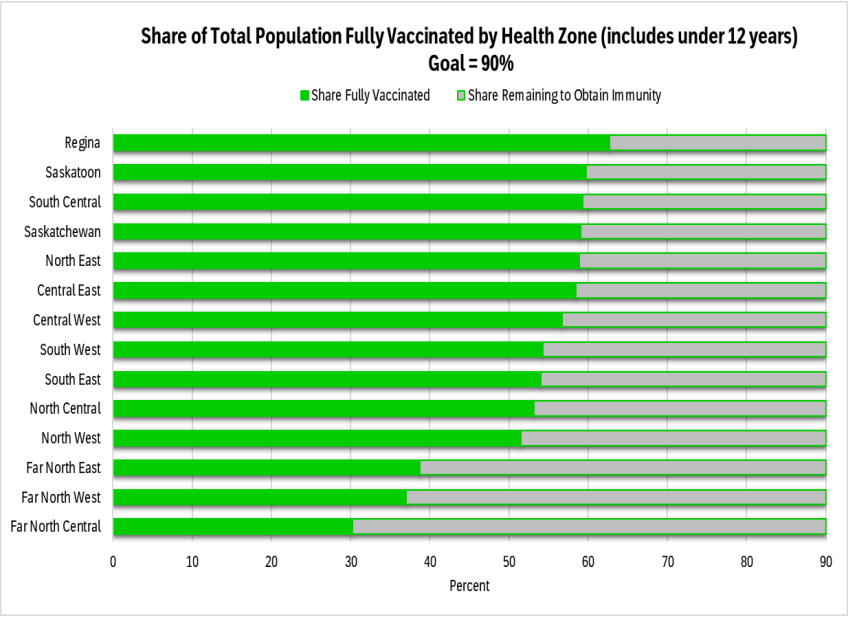
Saskatchewan: Percent of Fully Vaccinated Persons 12 Years of Age and Older By Zone
As of September 15, 2021

Zone	12-17	18-29	30-39	40-49	50-59	60-69	70-79	80+	Total
Far North West	31	32	38	48	57	65	78	81	**46**
Far North Central	15	28	35	48	58	71	71	64	**38**
Far North East	37	37	42	56	64	78	82	70	**51**
North West	43	44	49	64	73	79	87	94	**62**
North Central	48	49	54	61	73	79	87	90	**64**
North East	56	57	57	66	72	81	85	89	**69**
Saskatoon	64	61	64	71	76	83	84	83	**71**
Central West	49	50	53	61	67	81	87	93	**66**
Central East	51	52	55	62	71	80	87	90	**68**
Regina	69	62	65	73	80	87	89	89	**74**
South West	49	47	52	60	66	76	80	81	**63**
South Central	55	55	57	63	73	82	86	90	**69**
South East	48	49	51	58	69	78	85	91	**63**
Saskatchewan	**57**	**56**	**61**	**69**	**76**	**84**	**88**	**90**	**70**

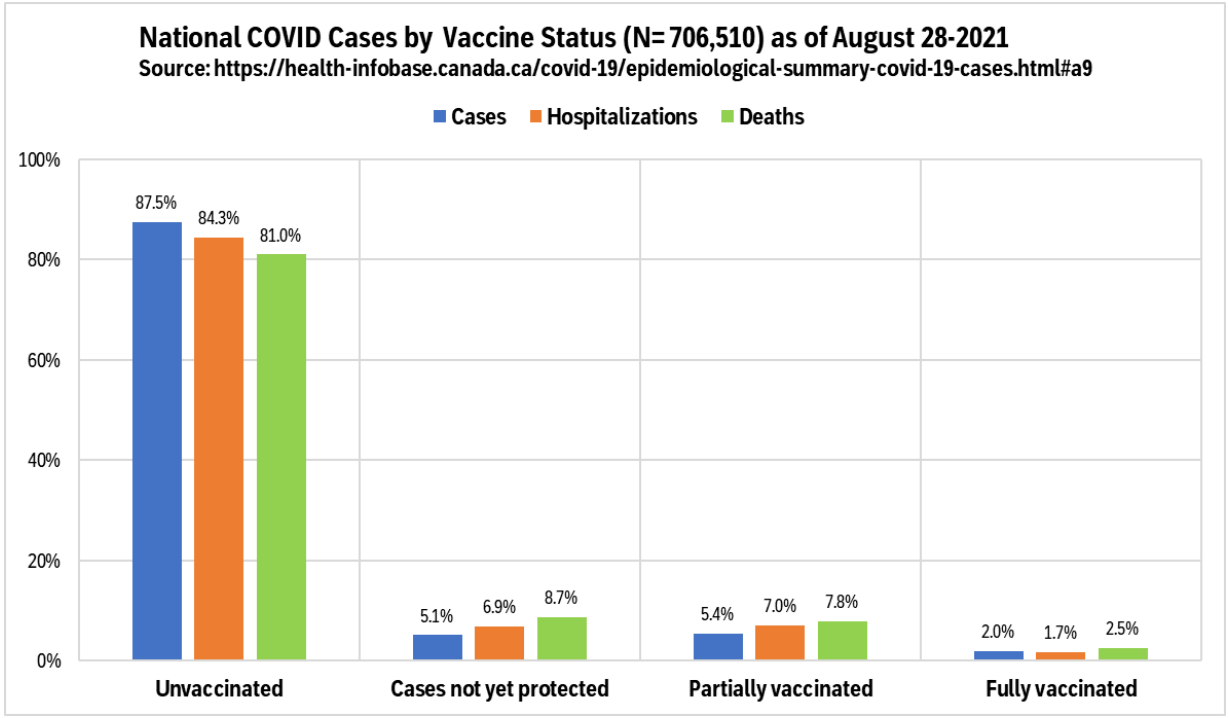


Vaccine Progress by Zone. This slide shows vaccinations by zone and relative to the total population. There are about 711,000 persons fully vaccinated in Saskatchewan or 59%. Saskatoon is slightly below 60%. The chart on the rights shows the progress to reach immunity if we included the total population. The difference between this slide and the previous one is that this one includes the population under 12 years old.

Saskatchewan Vaccine Status By Zone (September 15, 2021)					
Location	Vaccines Administered				
Zone Name	1st Dose	Fully Vaccinated	Total Doses	Share (%) of Population With 1st Vaccine	Share (%) of Population Fully Vaccinated
Far North West	13,347	11,032	24,379	44.8	37.0
Far North Central	1,115	800	1,915	42.1	30.2
Far North East	11,962	9,388	21,350	49.3	38.7
North West	52,123	42,458	94,581	63.3	51.5
North Central	53,883	47,280	101,163	60.5	53.1
North East	27,093	24,482	51,575	65.2	58.9
Saskatoon	**220,855**	**202,102**	422,957	**65.3**	**59.8**
Central West	23,023	20,950	43,973	62.3	56.7
Central East	62,720	57,469	120,189	63.8	58.4
Regina	186,525	171,362	357,887	**68.2**	62.7
South West	23,016	20,998	44,014	59.5	54.3
South Central	39,340	35,878	75,218	65.1	59.3
South East	53,108	48,197	101,305	59.5	54.0
Unassigned	26,305	18,620	44,925	N/A	N/A
Total Saskatchewan	**794,415**	**711,016**	**1,505,431**	**65.9**	**59.0**



Cases by Vaccination Status. This slide shows the composition of cases, deaths and hospitalizations by vaccine status as published by the Public Health Agency of Canada. The data clearly shows the vaccine efficacy in preventing cases and serious outcomes. About two percent of the cases, hospitalizations, and deaths in Canada recorded since early December 2020 are in fully vaccinated persons. The data is lagged by about three weeks and the sample size (N) is over 706,000 cases.



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QUESTIONS, COMMENTS OR SUGGESTIONS?

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