

FRAMEWORK INDICATORS A REVIEW OF COVID -19 STATISTICS UPDATED TO OCTOBER 13, 2021

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Risk Indicators for Monitoring COVID-19 Transmission in Saskatoon

Indicator	Green Minimal Risk	Yellow- Caution	Orange High Risk	Red Critical
7 Day Average Weekly Cases Per 100,000 persons	0 to 10	11 to 20	21 to 30	Greater than 30
7-Day Average Test Positivity Rate (%)	0 to 3.0%	3.1 to 6.0 %	6.1% to 10%	Greater than 10%
Effective Reproduction Rate	Less Than 1.0	1.01 to 1.2	1.21 to 1.4	Greater than 1.4
Vaccination Rates of Total Population (%)	90% or greater	75 to 90%	60 to 75 %	Less than 60%

Saskatoon's Status as of October 13, 2021

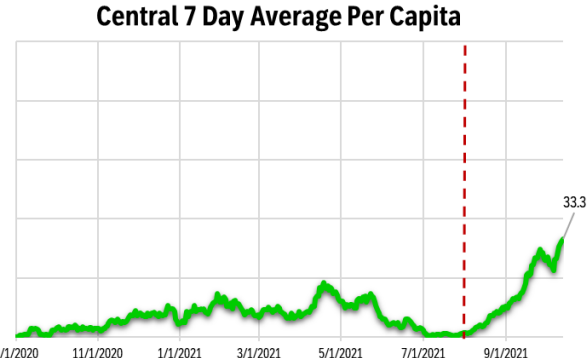
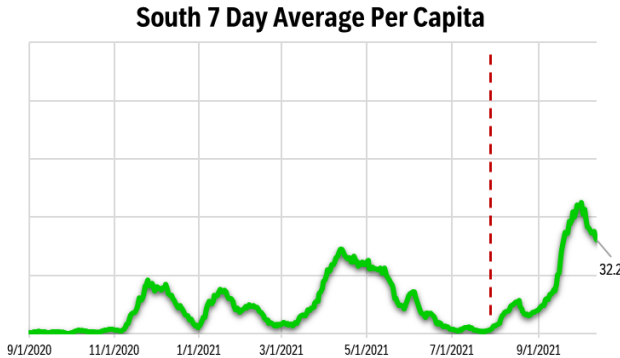
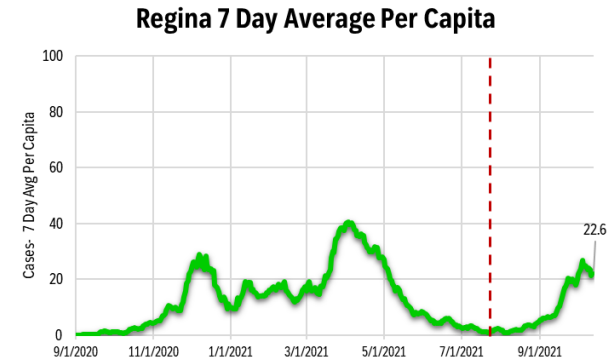
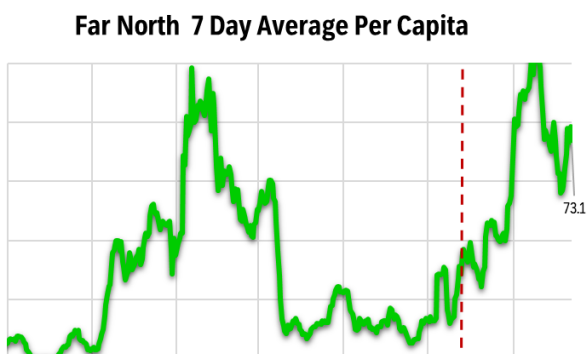
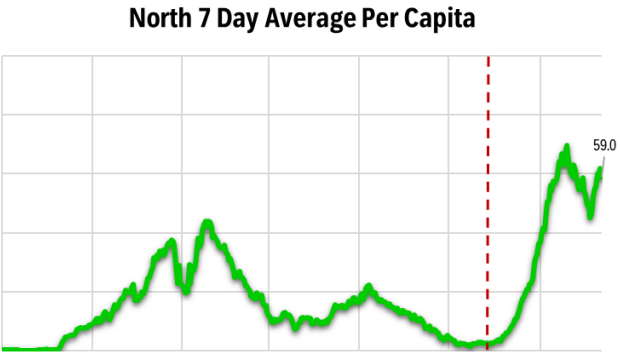
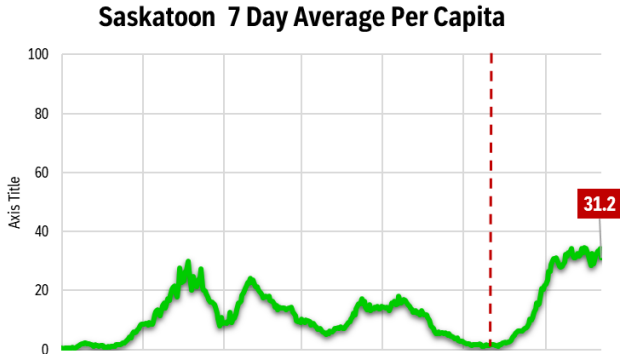
The data charts and trends on the subsequent slides.

Primary Indicator	Status as of October 13, 2021
7 Day Average Weekly Cases Per 100,000 persons	31.2
7-Day Average Test Positivity Rate (%)	13.0%
Effective Reproduction Rate (Sample Mean)	0.98
Vaccination Rates of Total Population (%)	63.3%
Status	Orange



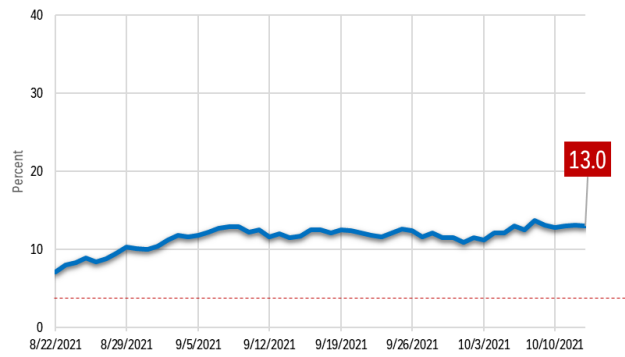
Primary COVID-19 Transmission Risk Indicators - Saskatoon

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 (to a maximum of 100). All zones are experiencing high per capita case counts. The red dotted line indicates when the provincial public health order was lifted on July 11, 2021. Note that the charts are reordered relative to previous versions.

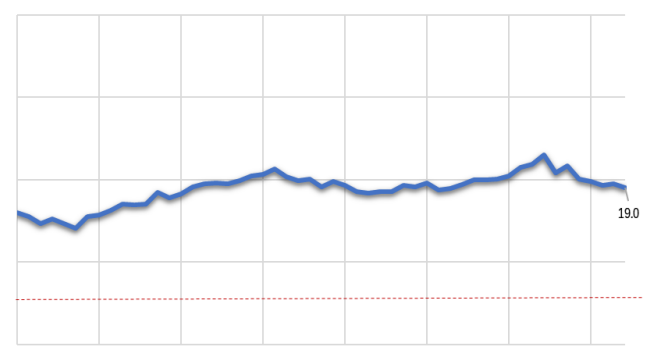


Test Positivity Rates 7 Day Average: This slide shows panel charts using the 7 day average the test positivity rate for each aggregate zone. It is calculated by the 7 day average of new cases divided by the 7 day average of new tests. The data starts on August 22, 2021 because there is no testing data 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.

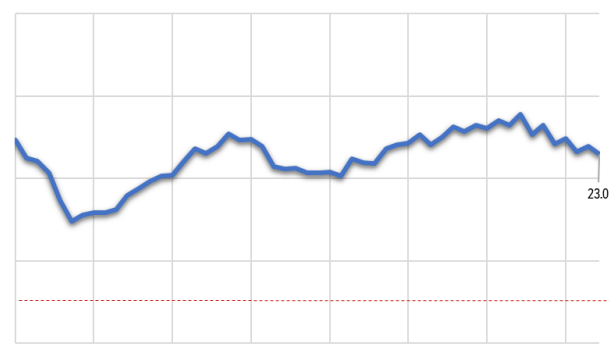
Saskatoon Test Positivity Rate 7-Day Average



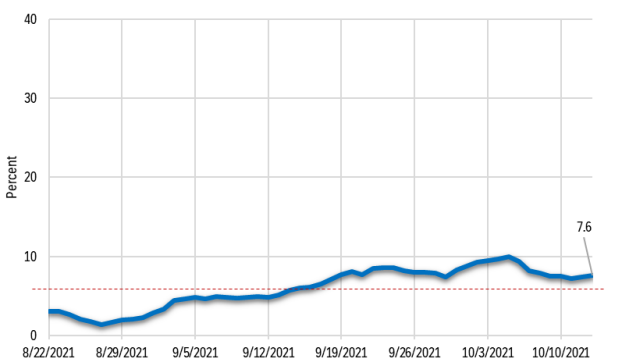
North Test Positivity Rate 7-Day Average



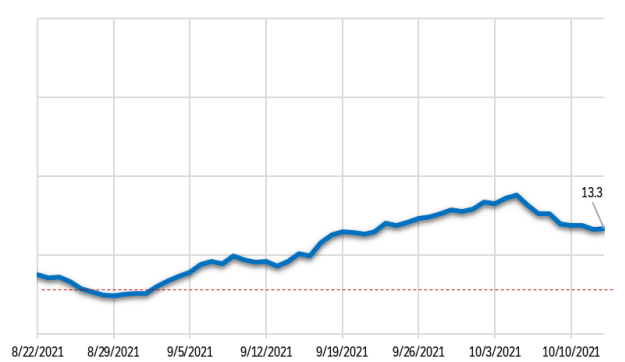
Far North Test Positivity Rate 7-Day Average



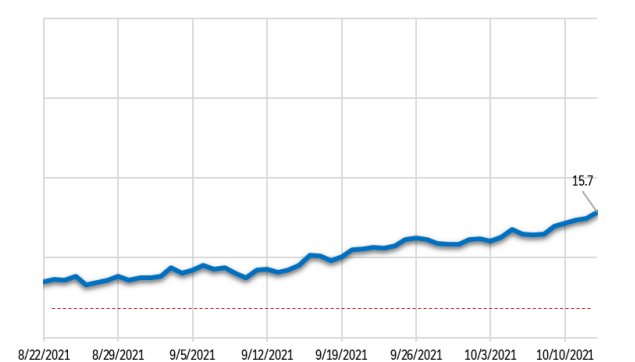
Regina Test Positivity Rate 7-Day Average



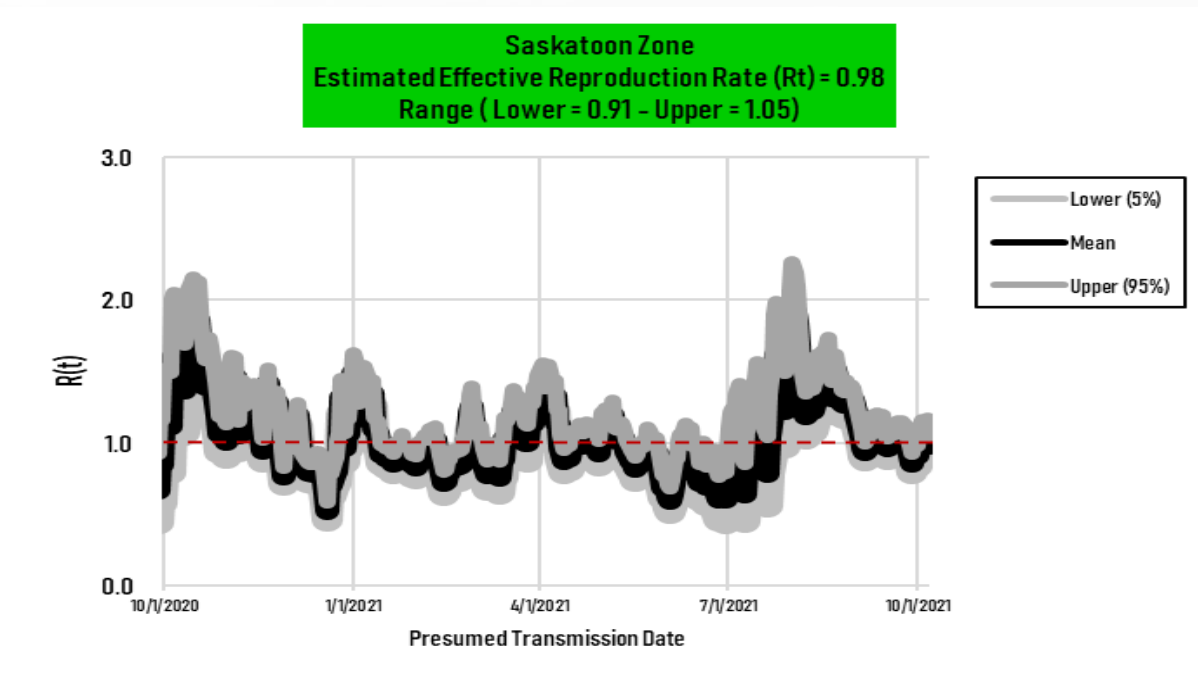
South Test Positivity Rate 7-Day Average



Central Test Positivity Rate 7-Day Average



This slide estimates the Effective Reproduction Number (R_t) for Saskatoon. A few points to note here. (1) The dates are lagged because R_t 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 R_t above 1 means that COVID-19 is growing exponentially. An R_t below 1 means that cases will eventually die out. (3) R_t is based on the SEIR epidemiological model with assumptions. I use the Cori, et.al method to determine the R_t (described here: <https://doi.org/10.1093/aje/kwt133>). (4) The R_t is estimated as the mean using 95% confidence intervals.

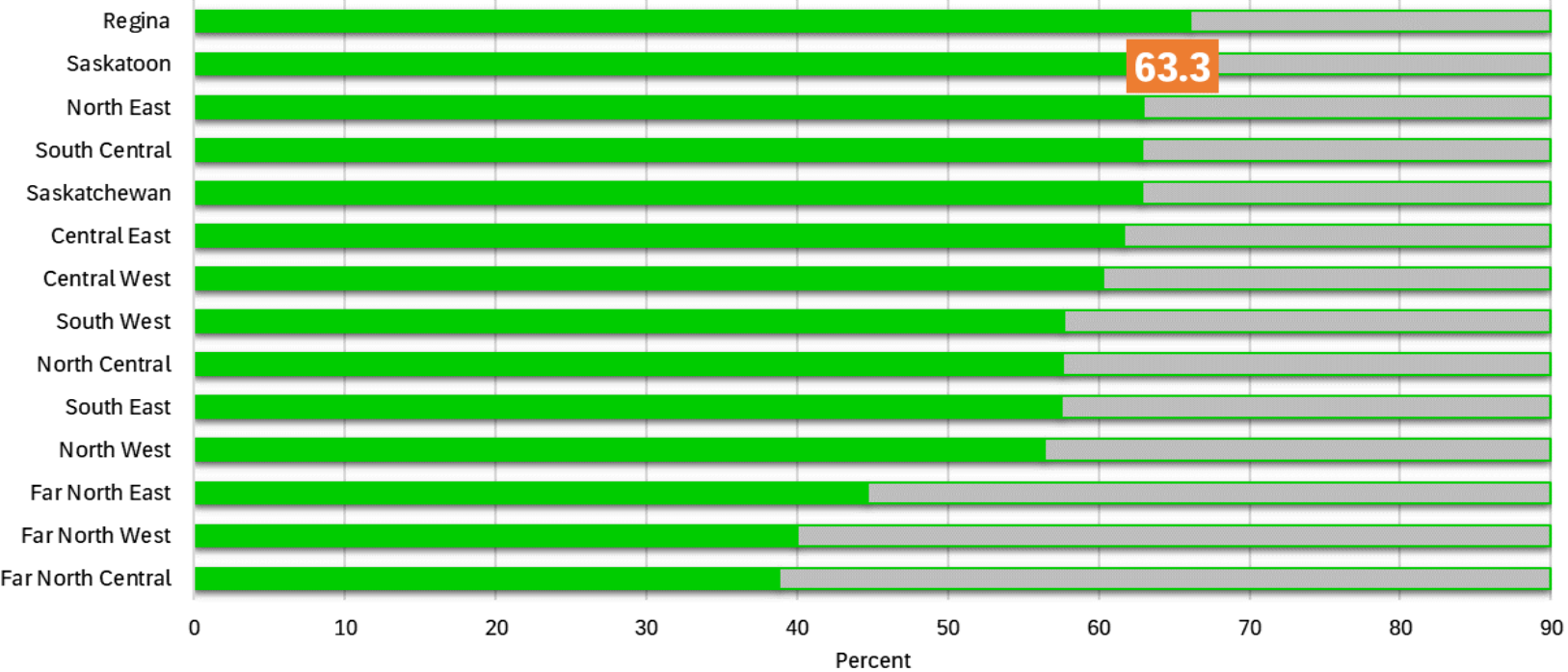


Vaccine Progress by Zone. This slide shows vaccinations by zone as percentage of the total population. There are about 757,000 persons fully vaccinated in Saskatchewan or 62.9%. In Saskatoon, over 214,000 persons are fully vaccinated or slightly above 63.3%. Saskatoon's vaccination rate has been growing by one percentage point per week. The chart on this slide shows the progress to reach immunity, which is suggested to be 90%, given the transmissibility of the Delta Variant of Concern.

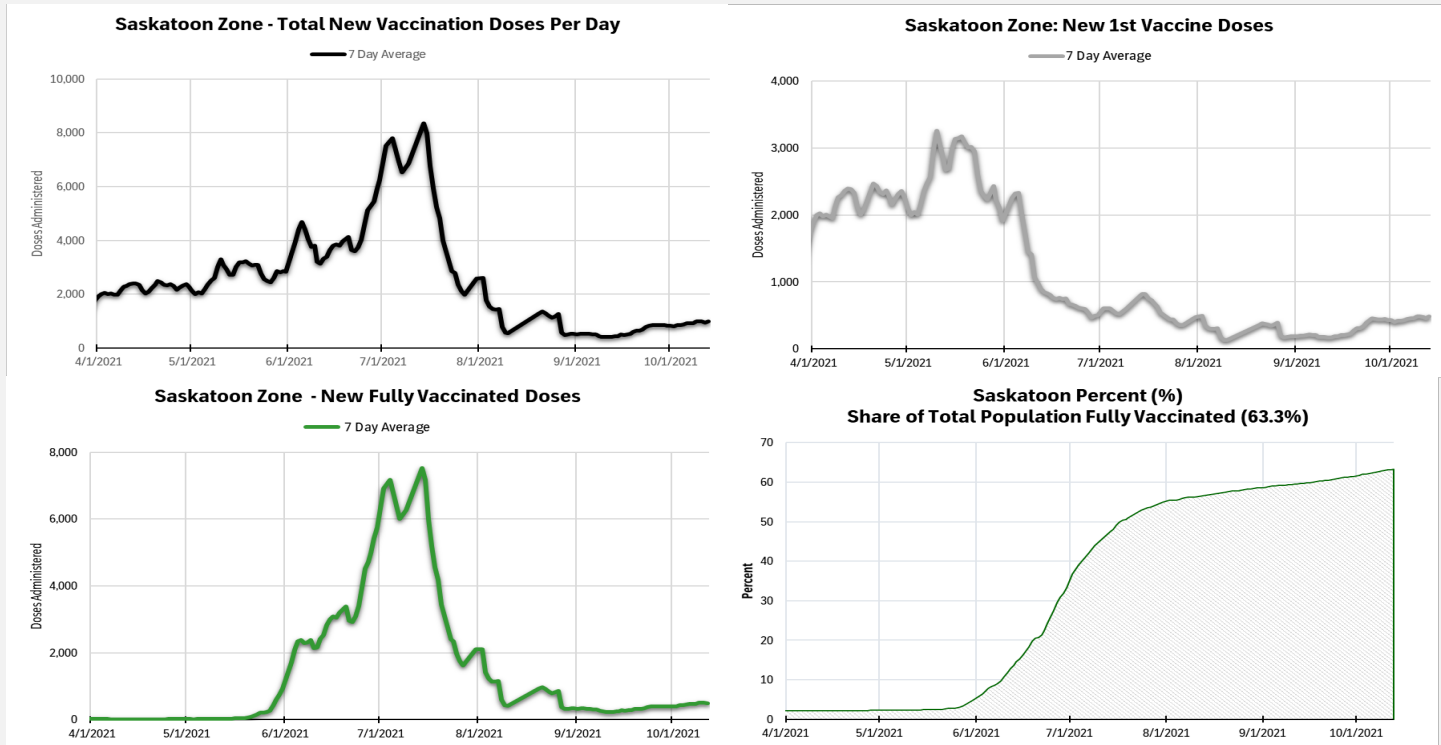
Share of Total Population Fully Vaccinated by Health Zone (includes under 12 years)

Goal = 90%

■ Share Fully Vaccinated ■ Share Remaining to Obtain Immunity



Vaccines progress Saskatoon Zone. This slide shows vaccinations for the Saskatoon zone in a few different ways, since April 2021. The line charts use 7-day averages for vaccination doses. The first chart shows new total vaccination doses. The second chart shows new first vaccination doses and the third chart shows fully vaccinated doses. There is a noticeable uptick in the first dose vaccines in late September. Full vaccination doses are slightly above 400 per day. Finally, the fourth chart shows a time series of percent share of the Saskatoon population fully vaccinated. Saskatoon's vaccination rate is growing on average by one percentage point per week.

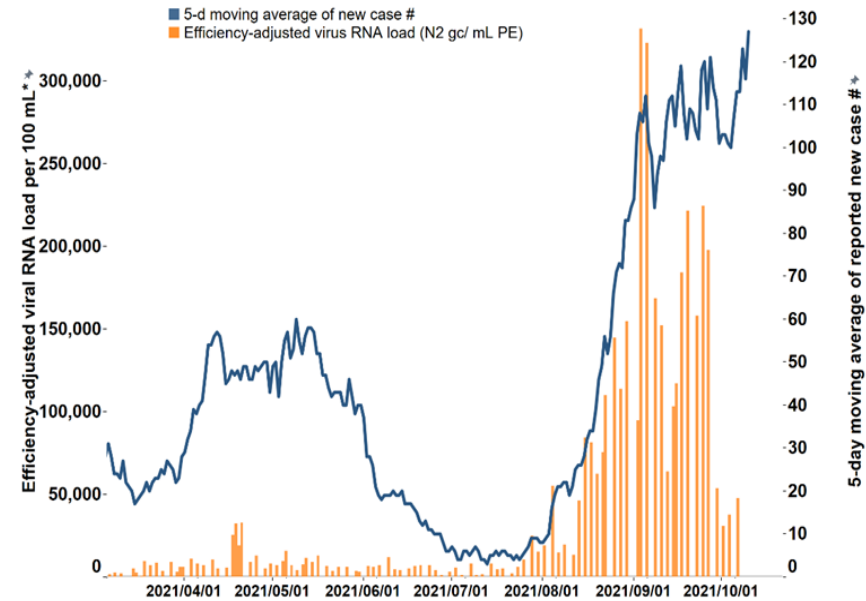




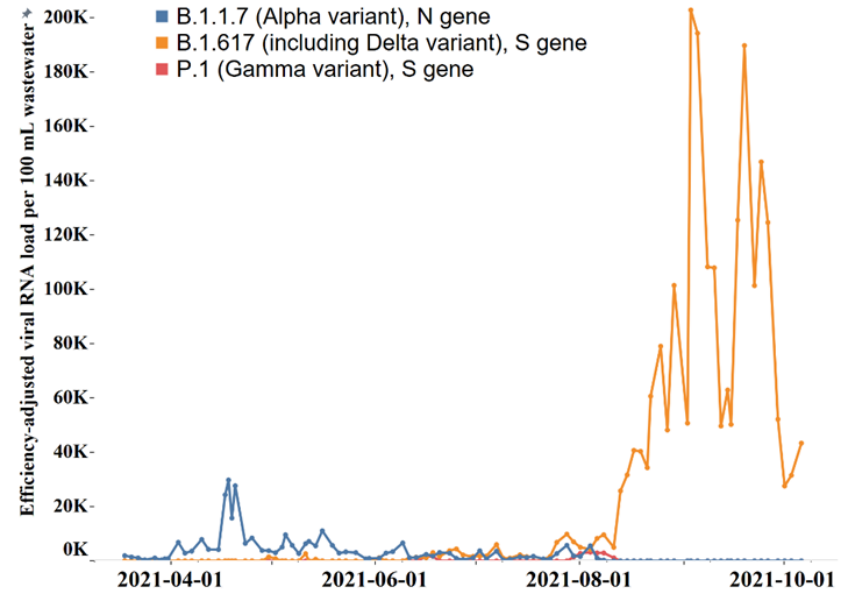
Secondary COVID-19 Transmission Risk Indicators - Saskatoon

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, the concentration of the Delta VOC in the wastewater has fallen sharply relative to previous dates. Variant tracking data should be seen merely as an indicator of trends within one variant, rather than a comparison among variants. In both charts, pay attention to the patterns in the lines rather than their absolute values.

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



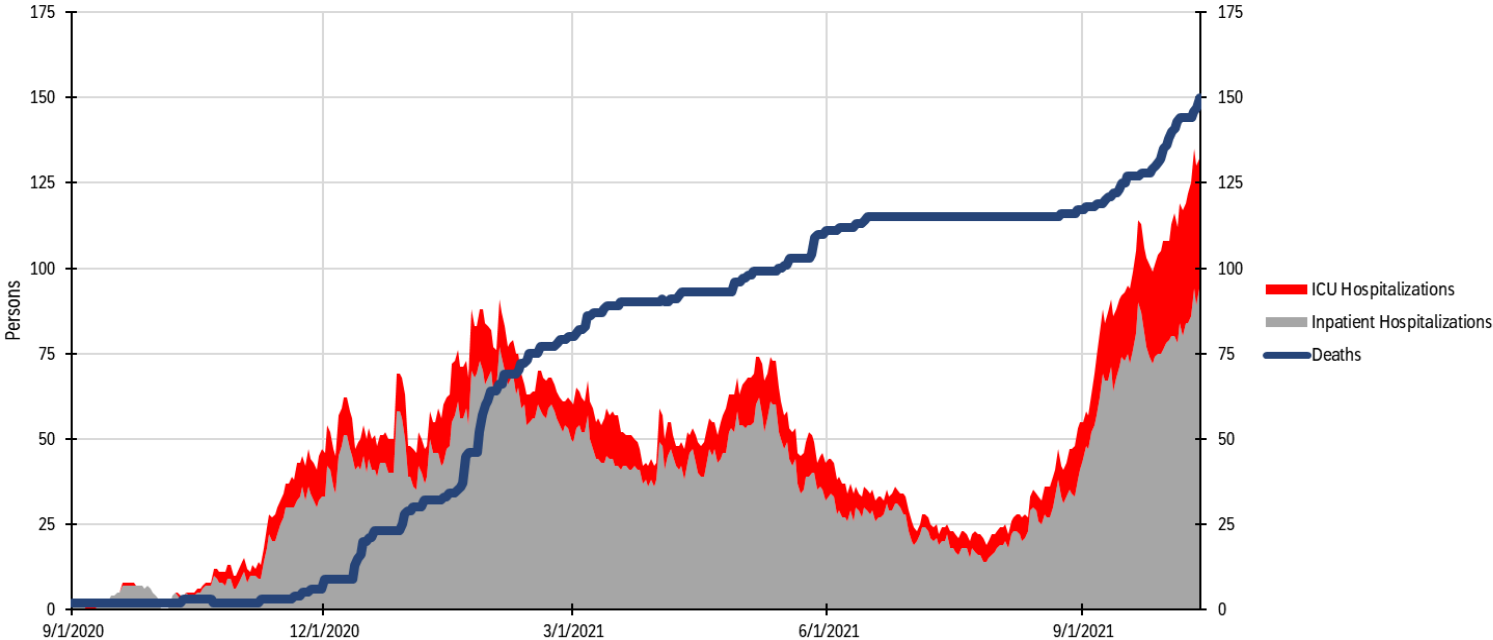
Viral RNA load of key variants in wastewater, City of Saskatoon



Hospitalizations & Deaths. This slide shows total hospitalizations and ICU hospitalizations for the Saskatoon zone. Total hospitalizations and ICU hospitalizations are at record peaks. ICUs are about 29% of total hospitalizations for Saskatoon. Fatalities tend to follow an increase in ICU hospitalizations as shown by the blue line on the chart, but lagged by a one-two weeks

Saskatoon Zone Hopsitalizations & Deaths - As reported on October 13, 2021

Source: <https://dashboard.saskatchewan.ca/health-wellness/covid-19/cases>



Vaccine Progress by Age. The table on this slide shows vaccinations by zone and age group in Saskatchewan for persons aged 12 and over (vaccine eligible population). It shows the percent share of the population of those persons fully vaccinated for each age cohort in each zone. The color coding illustrates lower to higher rates with green being highest and red being lowest. For Saskatoon, the lowest rates are in the 18-29 and 30-39 age cohorts.

Saskatchewan: Percent of Fully Vaccinated Persons 12 Years of Age and Older By Zone As of October 13, 2021									
Zone	12-17	18-29	30-39	40-49	50-59	60-69	70-79	80+	Total
Far North West	39	39	44	53	61	69	79	84	52
Far North Central	34	39	46	56	66	77	78	68	49
Far North East	48	47	51	64	70	82	84	71	58
North West	52	52	56	69	77	82	89	97	68
North Central	57	58	61	66	76	82	87	91	69
North East	63	66	65	71	75	83	87	90	74
Saskatoon	72	68	68	74	78	85	85	85	75
Central West	58	58	59	65	71	83	88	93	70
Central East	58	59	60	67	73	81	87	91	71
Regina	78	69	69	76	82	89	90	90	78
South West	58	54	57	64	69	77	82	82	67
South Central	63	63	62	67	75	83	88	91	73
South East	57	56	56	62	71	79	86	92	68
Saskatchewan	65	64	66	73	79	86	89	91	74

General Monitoring Statistics

Table A shows various COVID statistics by Saskatchewan Health Zones to show the incidence of COVID in various parts of Saskatchewan. 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 and the cumulative test positivity rate. The reason for the adjustments is to show per capita comparisons on the various indicators and their intensity. 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 October 13, 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*	Inpatient	ICU	Count	Deaths	Death Rate*	Total Tests	Test Rate*	Test Positivity Rate (%)
Far North West	29,813	2.5	4,087	13,709	183	613.8	4	--	3,861	43	144.2	29,315	98,330	13.9
Far North Central	2,649	0.2	541	20,423	3	113.3	0	--	533	5	188.8	2,781	104,983	19.5
Far North East	24,249	2.0	4,096	16,891	231	952.6	0	--	3,844	21	86.6	26,972	111,229	15.2
North West	82,386	6.8	7,862	9,543	691	838.7	32	3	7,070	101	122.6	63,712	77,334	12.3
North Central	88,991	7.4	7,317	8,222	377	423.6	24	5	6,862	78	87.6	78,853	88,608	9.3
North East	41,560	3.4	2,656	6,391	134	322.4	10	--	2,490	32	77.0	32,243	77,582	8.2
Saskatoon	338,106	28.1	17,625	5,213	1,078	318.8	94	38	16,397	150	44.4	312,456	92,414	5.6
Central West	36,962	3.1	1,323	3,579	62	167.7	3	--	1,250	11	29.8	21,535	58,263	6.1
Central East	98,368	8.2	3,603	3,663	338	343.6	8	6	3,231	34	34.6	71,430	72,615	5.0
Regina	273,351	22.7	14,479	5,297	597	218.4	63	20	13,707	175	64.0	240,805	88,094	6.0
South West	38,670	3.2	1,995	5,159	172	444.8	10	1	1,796	27	69.8	25,275	65,361	7.9
South Central	60,459	5.0	2,709	4,481	99	163.7	6	3	2,578	32	52.9	53,915	89,176	5.0
South East	89,294	7.4	4,114	4,607	306	342.7	7	--	3,756	52	58.2	63,932	71,597	6.4
Unassigned (Pending)	0	0.0	650	0.0	152	0.0	0	0	495	3	0.0	157,344	0	0.0
Total Saskatchewan	1,204,858	100.0	73,057	6,063.5	4,423	367.1	261	76	67,870	764	63.4	1,180,568	97,984	6.2

* indicates rates are per 100,000 persons

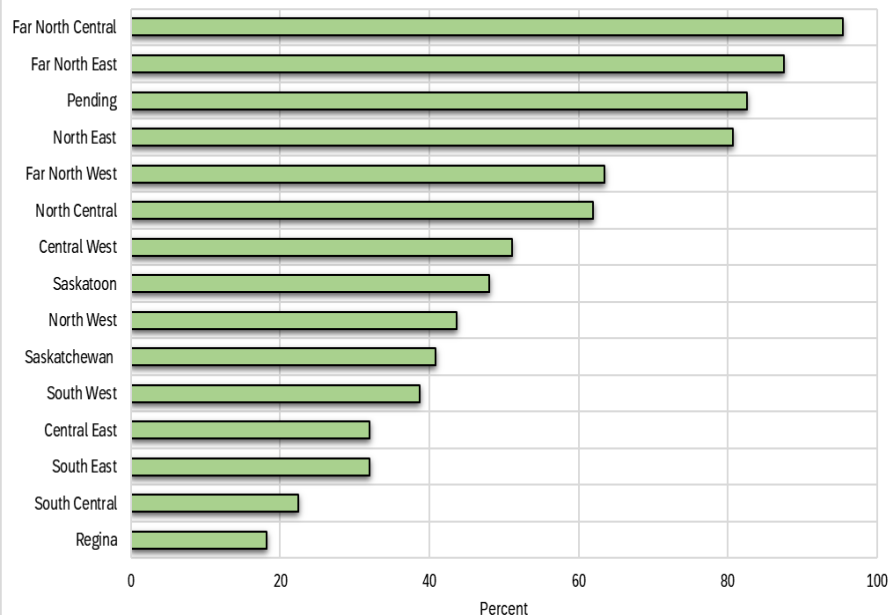
VOCs – Recent COVID-19 cases in Saskatchewan are being driven by Variants of Concern (VOC), especially the Delta Variant. The VOC are mutations of the COVID-19 virus and can be more contagious than the original SARS-COV2. The table shows the VOC cases by various types in each zone. The chart on the right shows the percent share of the Delta Variant by zone relative to the total known VOCs. In the Far North Zones, the Delta Variant comprises over 60% of all known VOC cases, in Saskatoon it is almost 50%.

Saskatchewan Variants of Concern by Zone (October 13, 2021)

Source: Author Calculations from <https://dashboard.saskatchewan.ca/health-wellness>

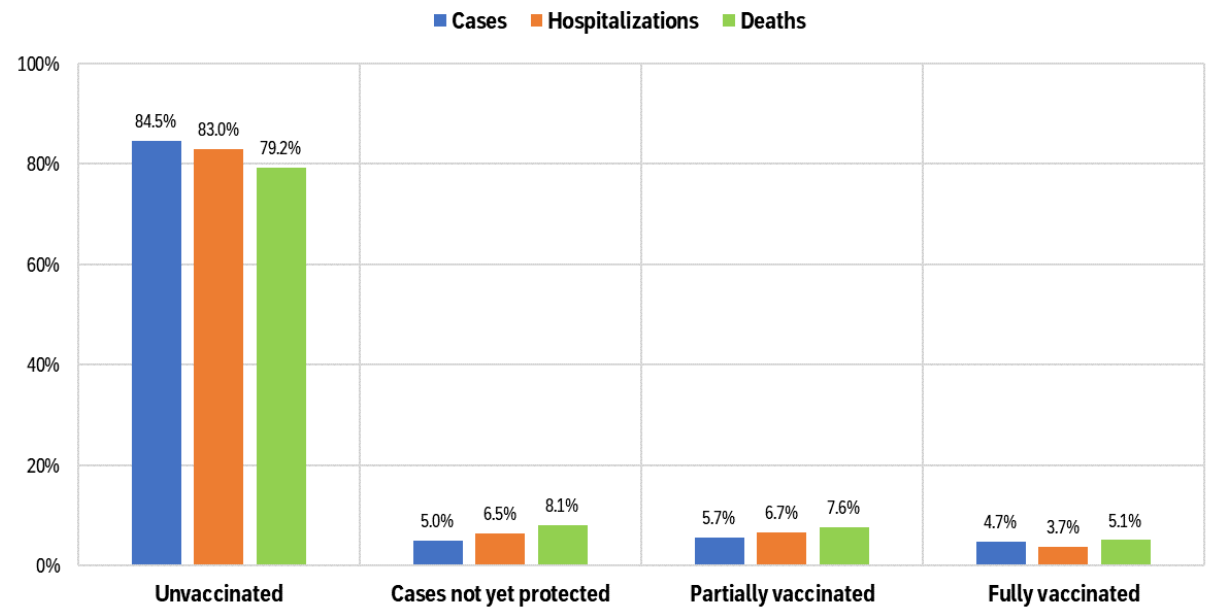
Location	Variants of Concern			
Zone	B.1.1.7 (Alpha)	B.1.351 (Beta)	P.1 (Gamma)	B.1.617.2 (Delta)
Far North West	212		23	408
Far North Central	4			84
Far North East	56		12	479
North West	351		251	466
North Central	345	9	26	618
North East	66		2	284
Saskatoon	1,137	1	127	1171
Central West	107		2	114
Central East	405		5	193
Regina	2,838		5	631
South West	251		26	175
South Central	636		2	184
South East	693		1	326
Unassigned	22		2	114
Total Saskatchewan	7,123	10	484	5,247

Delta VOC as a Percent Share of all Known VOCs



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 five 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 about 785,000 cases.

National COVID Cases by Vaccine Status (N= 784,529) as of September 25, 2021
Source: <https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-cases.html#a9>





**QUESTIONS, COMMENTS OR
SUGGESTIONS?**
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