

# **FRAMEWORK INDICATORS A REVIEW OF COVID-19 STATISTICS UPDATED TO OCTOBER 20, 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 20, 2021

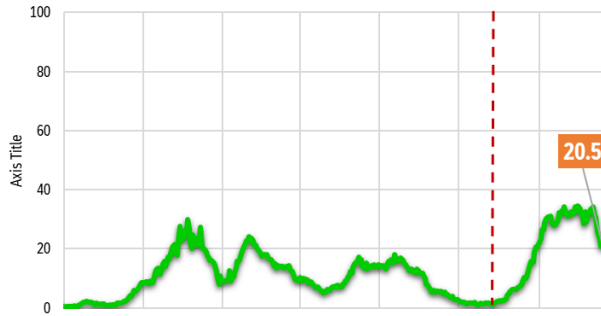
The data charts and trends on the subsequent slides.

Primary Indicator	Status as of October 20, 2021
7 Day Average Weekly Cases Per 100,000 persons	20.5
7-Day Average Test Positivity Rate (%)	9.8%
Effective Reproduction Rate (Sample Mean)	0.78
Vaccination Rates of Total Population (%)	64.2%
<b>Status</b>	<b>Orange</b>

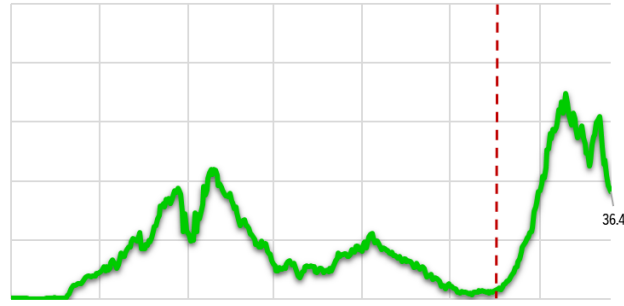
# **Primary COVID-19 Transmission Risk Indicators - Saskatoon**

**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.

**Saskatoon 7 Day Average Per Capita**



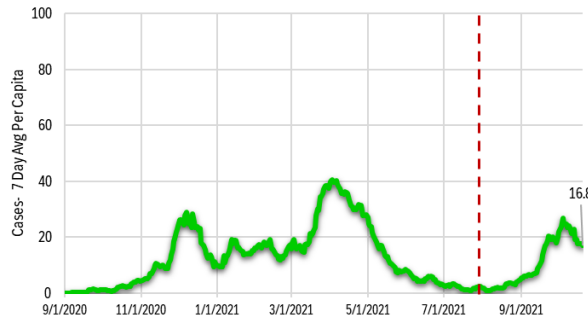
**North 7 Day Average Per Capita**



**Far North 7 Day Average Per Capita**



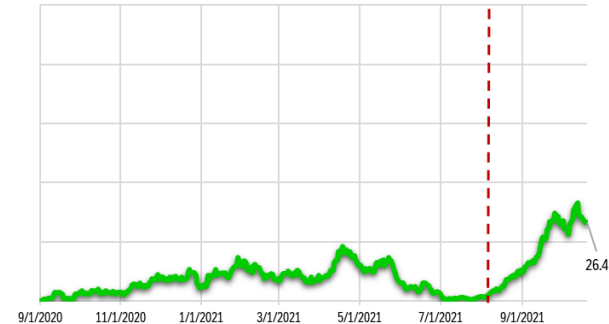
**Regina 7 Day Average Per Capita**



**South 7 Day Average Per Capita**

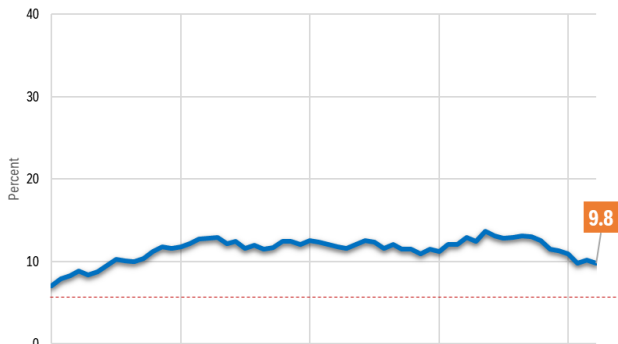


**Central 7 Day Average Per Capita**

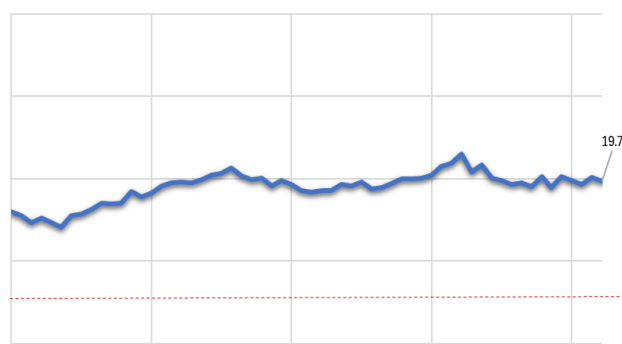


**Test Positivity Rates 7 Day Average:** This slide shows panel charts using the 7 day average the test positivity rate for each aggregate zone. It is calculated by the 7 day average of new cases divided by the 7 day average of new tests. The data starts on August 22, 2021 because there is no testing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

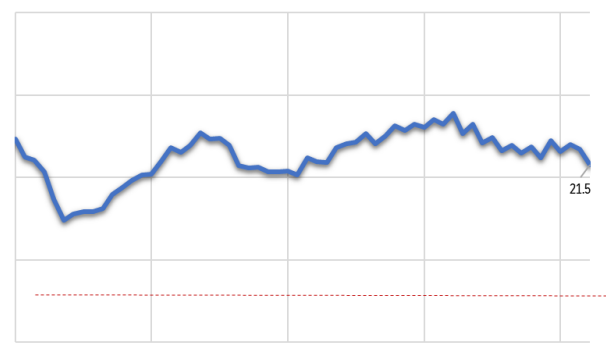
**Saskatoon Test Positivity Rate 7-Day Average**



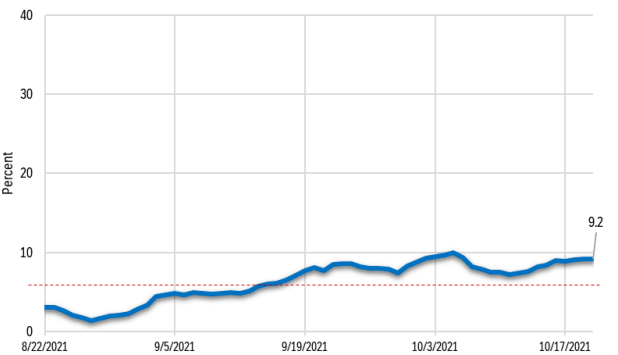
**North Test Positivity Rate 7-Day Average**



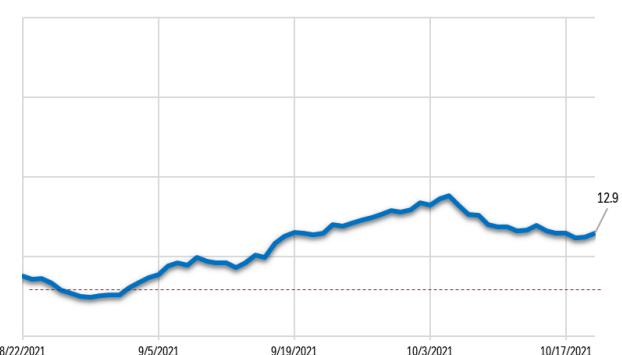
**Far North Test Positivity Rate 7-Day Average**



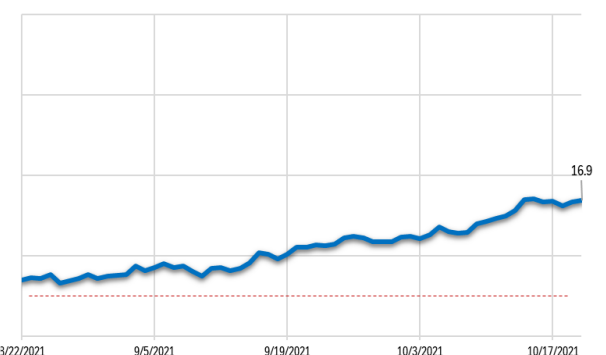
**Regina Test Positivity Rate 7-Day Average**



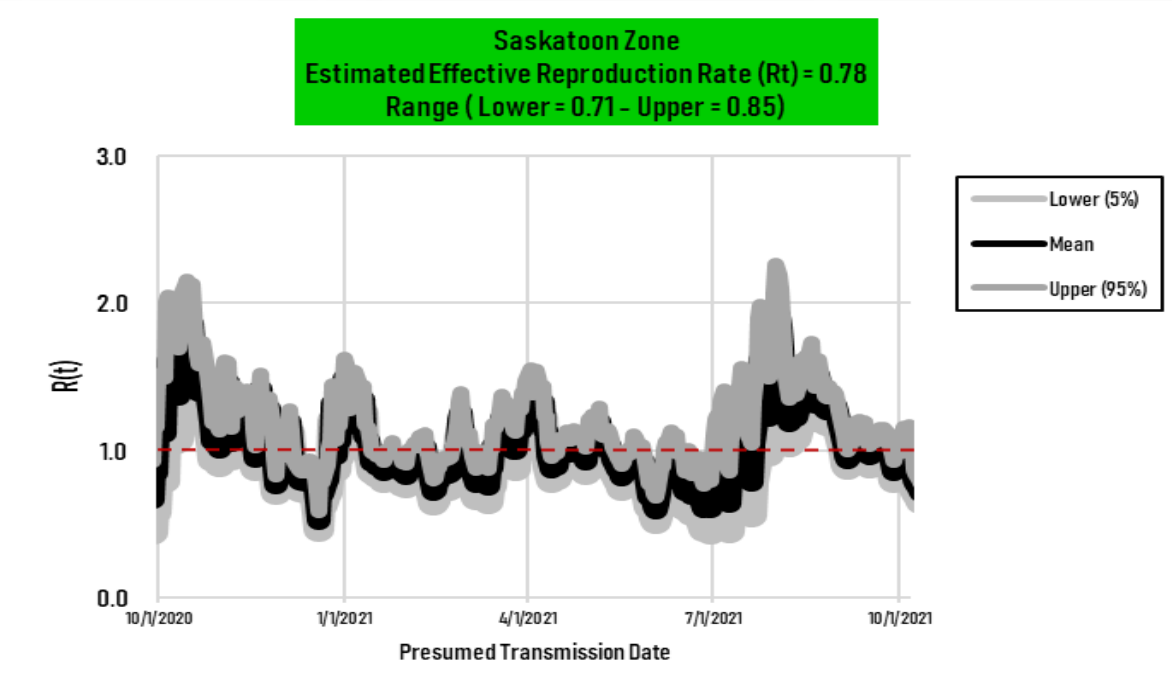
**South Test Positivity Rate 7-Day Average**



**Central Test Positivity Rate 7-Day Average**

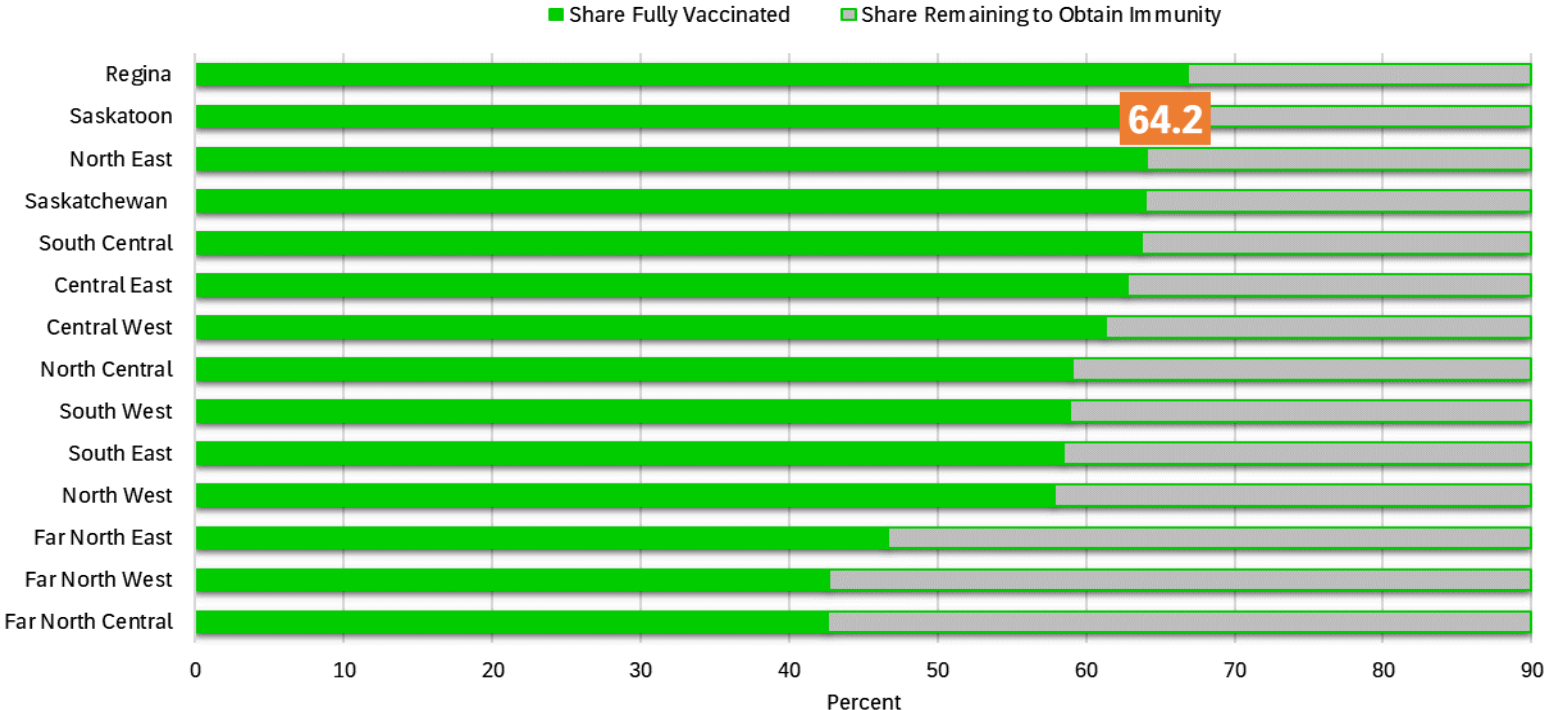


This slide estimates the Effective Reproduction Number ( $R_t$ ) for Saskatoon. A few points to note here. (1) The dates are lagged because  $R_t$  uses recent case history to estimate the infection rate that caused them, referred to as the "presumed transmission date". This date occurs about 7 days 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.



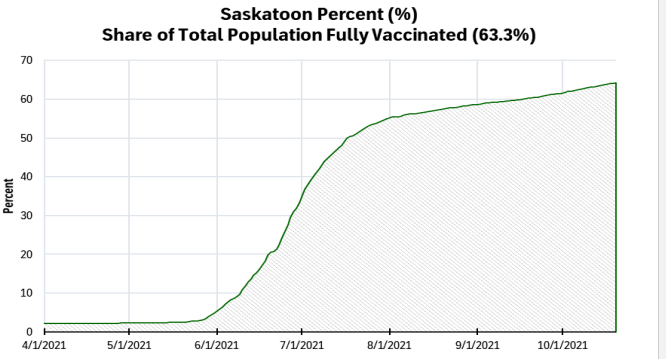
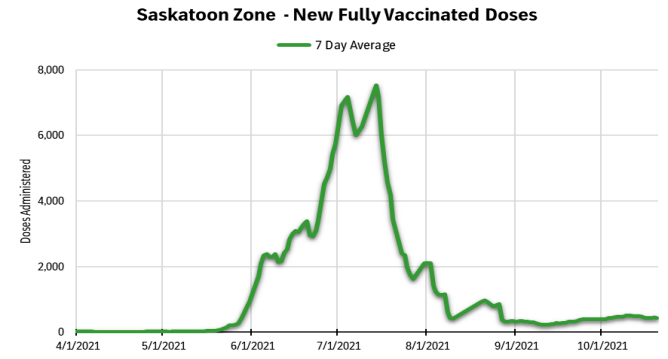
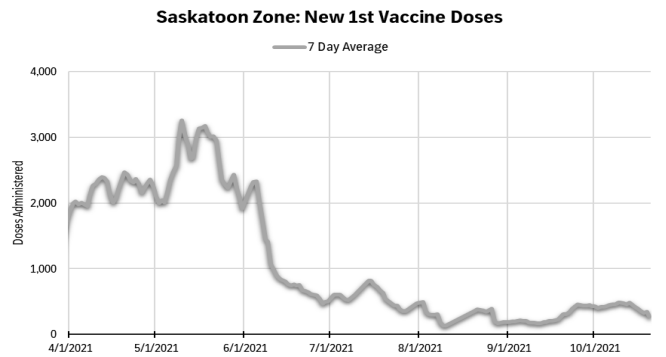
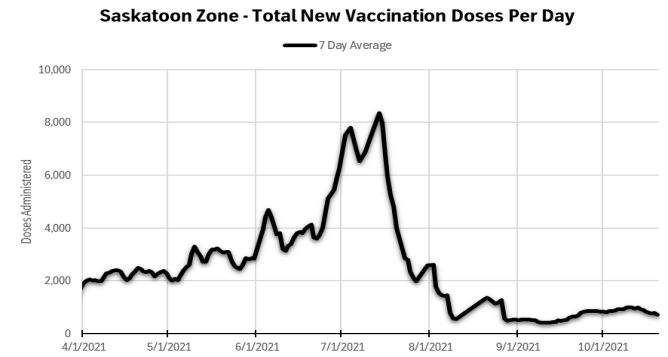
**Vaccine Progress by Zone.** This slide shows vaccinations by zone as percentage of the total population. There are about 757,000 persons fully vaccinated in Saskatchewan or 62.9%. In Saskatoon, over 217,000 persons are fully vaccinated translating into to 64.2% of the zone's total population. Saskatoon's 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%





**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, but that has fallen in the last week. Full vaccination does are above 400 per day. Finally, the fourth chart shows a time series of percent share of the Saskatoon population fully vaccinated.





# **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. This slide has been revised and now combines the overall wastewater samples and the variants of concern in the wastewater samples. The analysis reveals that the entire wastewater load is of the Delta VOC.

# Saskatoon - Current Numbers

## SARS-CoV-2



Wastewater Virus Load  
(normalized)

**80,128** /100 ml

▲ 109%\*



Delta Variant

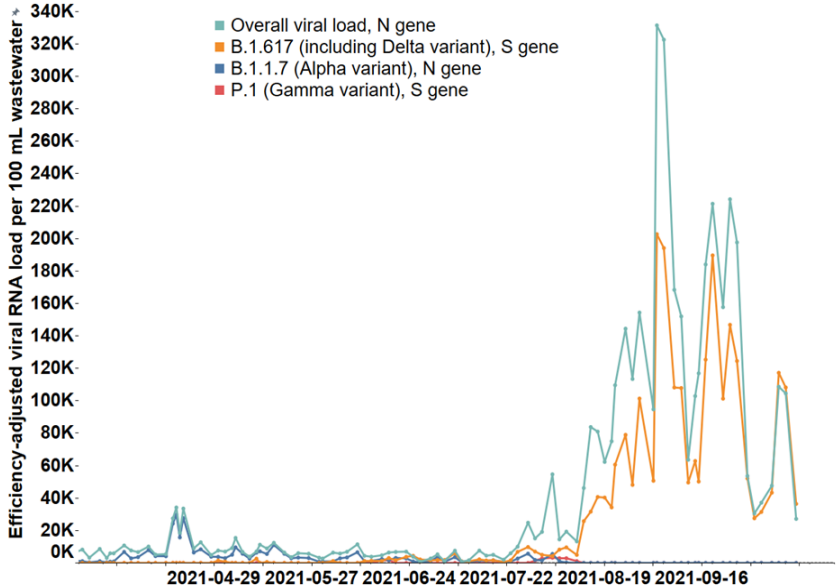
**87,281** /100 ml

▲ 156%\*

⌚ Average of 3 individual measurements from from the period October 7-13, 2021

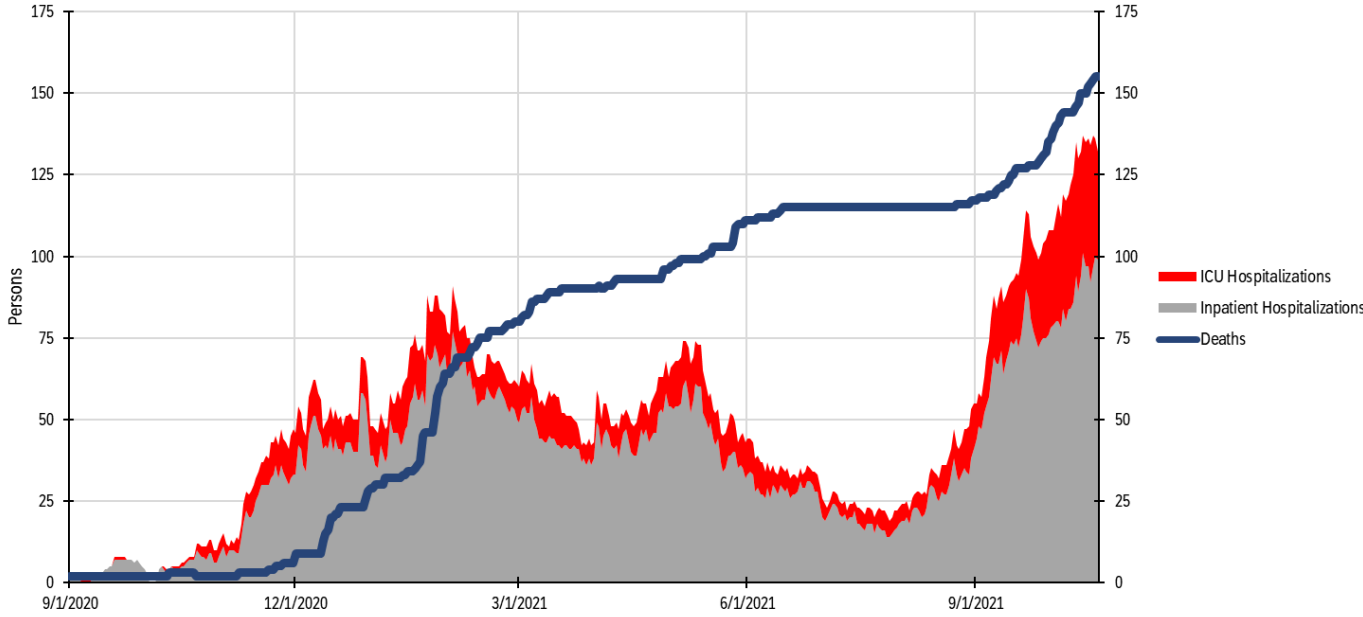
\* Percentages are relative to average of individual measurements from previous week

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 Hospitalizations & 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.

<b>Saskatchewan: Percent of Fully Vaccinated Persons 12 Years of Age and Older By Zone As of October 20, 2021</b>									
<b>Zone</b>	<b>12-17</b>	<b>18-29</b>	<b>30-39</b>	<b>40-49</b>	<b>50-59</b>	<b>60-69</b>	<b>70-79</b>	<b>80+</b>	<b>Total</b>
Far North West	42	41	46	55	62	69	79	84	<b>53</b>
Far North Central	39	45	51	60	69	80	78	73	<b>54</b>
Far North East	51	50	55	66	72	83	84	72	<b>61</b>
North West	55	55	58	71	78	83	90	97	<b>70</b>
North Central	60	61	63	67	77	82	88	92	<b>71</b>
North East	66	68	67	73	76	83	87	90	<b>75</b>
<b>Saskatoon</b>	74	70	70	75	79	86	86	85	<b>76</b>
Central West	60	60	61	66	71	83	89	94	<b>72</b>
Central East	60	61	62	68	74	82	88	91	<b>73</b>
Regina	79	71	71	77	82	89	90	90	<b>79</b>
South West	61	56	59	66	70	78	82	82	<b>68</b>
South Central	65	64	63	68	76	84	88	91	<b>74</b>
South East	59	58	58	64	72	80	86	92	<b>69</b>
<b>Saskatchewan</b>	<b>67</b>	<b>66</b>	<b>68</b>	<b>75</b>	<b>80</b>	<b>86</b>	<b>89</b>	<b>91</b>	<b>76</b>

# 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, except Hospitalizations, as of October 20, 2021)**

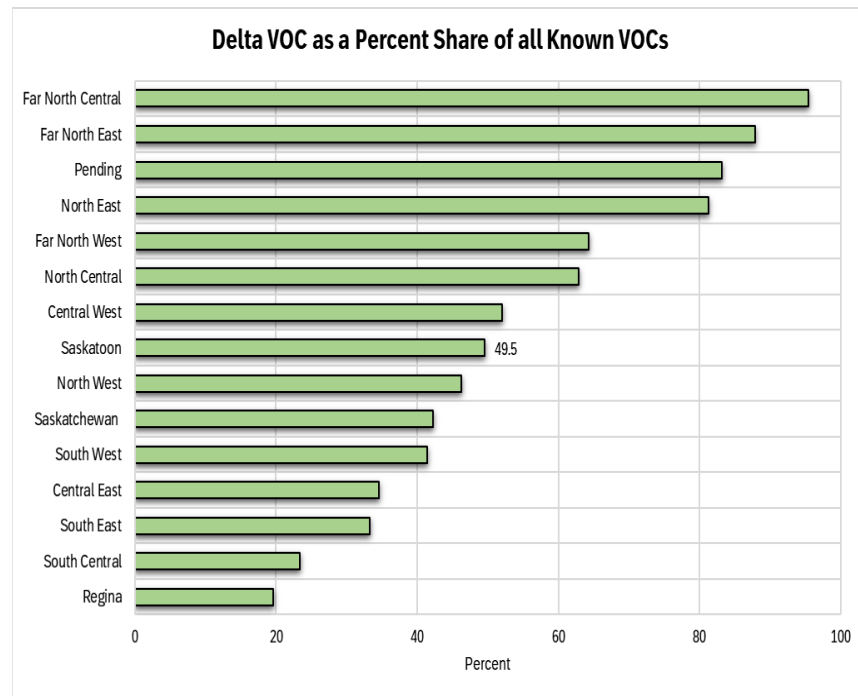
Source: Author Calculations from <https://dashboard.saskatchewan.ca/health-wellness>

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	4,165	13,970	107	358.9	7	--	4,012	46	154.3	29,650	99,453	14.0
Far North Central	2,649	0.2	541	20,423	0	0.0	0	--	536	5	188.8	2,788	105,247	19.4
Far North East	24,249	2.0	4,200	17,320	151	622.7	0	--	4,027	22	90.7	27,355	112,809	15.4
North West	82,386	6.8	8,185	9,935	452	548.6	31	3	7,628	105	127.4	64,927	78,808	12.6
North Central	88,991	7.4	7,552	8,486	322	361.8	16	5	7,150	80	89.9	79,888	89,771	9.5
North East	41,560	3.4	2,711	6,523	89	214.1	3	--	2,590	32	77.0	32,741	78,780	8.3
<b>Saskatoon</b>	<b>338,106</b>	<b>28.1</b>	<b>18,116</b>	<b>5,358</b>	<b>765</b>	<b>226.3</b>	<b>99</b>	<b>33</b>	<b>17,196</b>	<b>155</b>	<b>45.8</b>	<b>317,398</b>	<b>93,875</b>	<b>5.7</b>
Central West	36,962	3.1	1,364	3,690	57	154.2	3	--	1,296	11	29.8	21,739	58,814	6.3
Central East	98,368	8.2	3,818	3,881	300	305.0	12	7	3,482	36	36.6	72,706	73,912	5.3
Regina	273,351	22.7	14,821	5,422	475	173.8	54	28	14,163	183	66.9	244,301	89,373	6.1
South West	38,670	3.2	2,048	5,296	83	214.6	5	1	1,935	30	77.6	25,625	66,266	8.0
South Central	60,459	5.0	2,762	4,568	77	127.4	5	5	2,652	33	54.6	54,530	90,193	5.1
South East	89,294	7.4	4,276	4,789	216	241.9	6	--	4,003	57	63.8	64,945	72,732	6.6
Unassigned (Pending)	0	0.0	626	0.0	80	0.0	0	0	543	3	0.0	160,845	0	0.0
<b>Total Saskatchewan</b>	<b>1,204,858</b>	<b>100.0</b>	<b>75,185</b>	<b>6,240.2</b>	<b>3,174</b>	<b>263.4</b>	<b>241</b>	<b>82</b>	<b>71,213</b>	<b>798</b>	<b>66.2</b>	<b>1,199,438</b>	<b>99,550</b>	<b>6.3</b>

\* 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 at 50%.

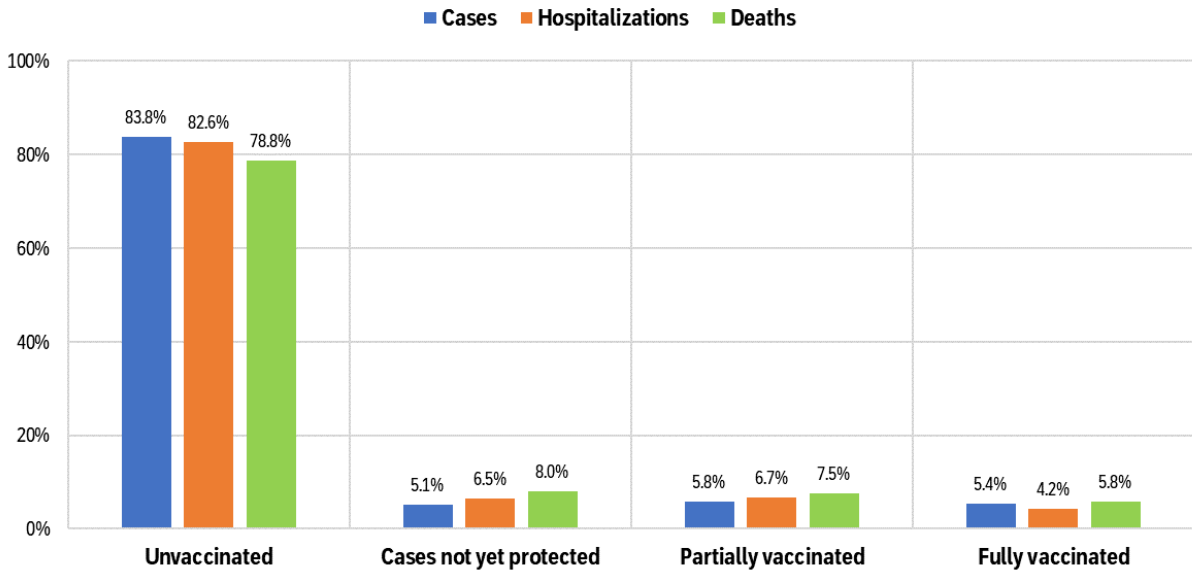
Saskatchewan Variants of Concern by Zone (October 20, 2021)				
Source: Author Calculations from <a href="https://dashboard.saskatchewan.ca/health-wellness">https://dashboard.saskatchewan.ca/health-wellness</a>				
Location	Variants of Concern			
Zone	B.1.1.7 (Alpha)	B.1.351 (Beta)	P.1 (Gamma)	B.1.617.2 (Delta)
Far North West	212		23	423
Far North Central	4			84
Far North East	56		12	496
North West	351		251	518
North Central	345	9	26	643
North East	66		2	295
<b>Saskatoon</b>	<b>1,137</b>	<b>1</b>	<b>127</b>	<b>1240</b>
Central West	107		2	118
Central East	405		5	217
Regina	2,838		5	692
South West	251		26	196
South Central	636		2	194
South East	693		1	347
Unassigned	22		2	119
<b>Total Saskatchewan</b>	<b>7,123</b>	<b>10</b>	<b>484</b>	<b>5,582</b>





**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 aged 12 and over. The data is lagged by about three weeks and the sample size (N) is about 800,000 cases.

**National COVID Cases by Vaccine Status (N= 801,278) as of October 02, 2021**  
**Cases are 12 years of age and older.**  
Source: <https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-cases.html#a9>





**QUESTIONS, COMMENTS OR  
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