



**Canadian  
Blood  
Services** BLOOD  
PLASMA  
STEM CELLS  
ORGANS  
& TISSUES

COVID-19 Seroprevalence Report  
October Survey  
2020-12-18

# **COVID-19 Seroprevalence Report**

**December 18, 2020**

**Report #3: October 2020 Survey**

## Summary

### Report 3

**October 12, 2020 - October 31, 2020 (n=16,811)**

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- Seroprevalence increased significantly in October to **0.88%** (95% CI 0.73, 1.04) (p=0.04).
- Regional variation: **Manitoba's seroprevalence rate increased to 2.96% (95% CI 1.70, 4.23), the highest in Canada.** Ontario remained stable at 0.87% (0.65, 1.08)
- **New:** Heat maps to illustrate inter-provincial variation (by economic regions)
- Disparities widen: Donors that self-identified as white (0.75%; 95% CI 0.61, 0.92) had significantly lower seroprevalence compared to **ethnic minorities (1.82%; 95% CI 1.21, 2.62)**

### Report 2

**May 9, 2020- July 21, 2020 (n=74,642)**

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- Seroprevalence was estimated at **0.70%** (95% CI 0.63, 0.77)
- Regional variation: **Ontario, 0.88% (95% CI 0.78, 0.99) had the highest seroprevalence,** very low seroprevalence in Atlantic provinces.
- Disparities: Donors that self-identified as white (0.66%; 95% CI 0.59, 0.74) had lower seroprevalence compared to **ethnic minorities (1.09%; 95% CI 0.84, 1.34)**

### Report 1

**May 9, 2020- June 18, 2020 (n=37,737)**

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- Seroprevalence estimate is 0.7% (95%CI 0.60,0.79)
- Regional variation: Ontario 1% Newfoundland 0.3%

## Introduction

SARS-CoV-2 is a novel coronavirus first identified in Wuhan, Hubei province China in late 2019. It is responsible for a respiratory illness, coronavirus infection disease (COVID-19). Some people become extremely ill and can die from complications, while others experience mild symptoms or may not be aware of their infection at all. With less than 500 confirmed cases across Canada, by March 23<sup>rd</sup>, 2020, strict physical distancing measures were implemented. As a direct result, the first wave of the epidemic peaked by the end of April and plateaued in July and August. A resurgence of infections began in late September 2020 and continues to grow across Canada. Yet, these statistics do not convey the true infection rate because some infections will not cause illness, others may not be severe enough for people to seek testing. Testing for SARS-CoV-2 antibodies is important to understand what proportion of the population have already been infected (the seroprevalence) and to monitor infection over the course of the pandemic. This information will improve mathematical models to predict the course of infection and inform public health policy.

Blood donors are reasonably representative of healthy Canadians between the ages of 17 and about 60. There are people over 60 who donate blood, although there are fewer as age increases. There are blood collection sites in all large cities and many smaller urban centres in all provinces except Quebec but people in rural areas may have less opportunity to donate. Blood donations are not collected in the northern territories.

In partnership with the Canadian Immunity Task Force, Canadian Blood Services is testing samples left over from donations for SARS-CoV-2 antibodies. **The current report summarizes the seroprevalence estimates from residual blood from donors from the end of October 2020 and compares to the previous report (Wave 1: May-July 2020).**

## Methods

### Blood donor eligibility

Before each donation blood donors must answer screening questions to ensure that they are in good health and do not have risk factors for infections that may be transmitted to blood recipients. There is no evidence that SARS-CoV-2 can be transmitted through blood transfusion, but it is important to ensure other donors and staff are safe while in the blood clinic. Donors are asked if they have had COVID-19 or been in contact with someone who has. They are deferred from donation for 2 weeks if they have been in contact with someone who was infected, and if they have had the infection deferral is for two weeks after symptoms disappear (3 weeks if hospitalized). Donors also have their temperature checked before they enter the clinic, and their hemoglobin level is checked before they can donate.

### Blood samples

Just before a donor gives their blood donation, several small tubes of blood are collected for infectious disease and other testing. An extra sample is taken, called the retention sample, in case extra testing is required. Only about 20% of these retention samples are needed. For

seroprevalence testing plasma from the 80% of retention samples not needed for operational testing was aliquoted and frozen at -20°C or colder, starting on May 9, 2020.

## Periodicity

All retention samples were tested for SARS-CoV-2 antibodies until July 21, 2020. As of August 2020, only samples from the last 2 weeks of each month are tested. **This report includes samples from October 12 until October 31<sup>st</sup> 2020.**

## SARS-CoV-2 antibody testing

All plasma samples were tested using the Abbott Architect SARS-CoV-2 IgG assay (chemiluminescent microparticle immunoassay (CMIA)). This assay was assumed to have 92.7% (90.2-94.8%) sensitivity and 99.9% (99.4 – 100%) specificity (1). Testing was conducted at Canadian Blood Services in Ottawa.

## Ethical issues

All data were de-identified by the information technology team at Canadian Blood Services by providing a random identification number. Demographic variables were extracted from the Canadian Blood Services donor database (e.g. donation date, birth year, sex, ethnic group, Forward Sortation Area of residential postal code) and linked to the test data. In the donor pamphlet “What you must know to donate blood” which donors must read before each donation, and in the pamphlet entitled “What happens to your blood donation?” donors were informed that their blood will be tested for routinely tested infectious disease markers and other tests as required. Information about the study was made available on the web-site in late June, prior to commencing testing. Donors were not informed of their results because confirmatory/supplemental testing was not carried out. This study was approved by the Canadian Blood Services Research Ethics committee.

## Data management and analysis

De-identified demographic data were analysed by the Canadian Blood Services Epidemiology & Surveillance Department. Socioeconomic status was estimated by quantiles of the Pampalon Material and Social Deprivation Indices (MSDI). MSDI was derived from 2016 Statistics Canada census, aggregated from postal codes to the dissemination area (DA) level (the smallest geographic unit available in the Canadian census, consisting of 400–700 persons). Because blood donors tend to live in areas close to a blood clinic there will be higher concentrations of donors in certain areas compared with the general population, and lower concentrations in other areas. In order to make inference to the general population, weighting factors were applied based on the donor’s residential Forward Sortation Area (FSA), age group and sex. Data were weighted based on Statistic Canada data (catalogue # 98-400-X2016008). For FSAs with few donors, several FSAs were combined, generally to include at least 500 donors. For data with no FSA recorded or if not in a province where blood is collected (0.12% of samples) weighting was based on FSA of the blood centre.

The seroprevalence was calculated as the number of positive samples divided by all samples tested. Ninety-five percent confidence intervals were calculated based on the Exact method. The adjusted seroprevalence and confidence intervals present the weighted data adjusted for sensitivity and specificity of the assay using the Rogan-Gladen equation (2). Seroprevalence was stratified by geography (regions, province, economic regions (maps) and selected metropolitan cities), sex, age groups, self-reported ethnicity and social and material deprivation indices. Temporal trends at two-week intervals were evaluated by geographical region by linear regression. Statistical comparisons between groups were carried out using logistic regression.

## Results

A total of 17,094 of samples were tested from 16,811 unique donors from Oct 12, 2020 until Oct 31, 2020. Slightly over half were from male donors, all age groups were represented however the majority were from donors 40 years and older. Due to logistical issues, no samples were collected the last week of October from Western Canada, therefore the majority of the samples from this survey are from Ontario (70%).

Table 2 shows the unadjusted and adjusted seroprevalence rates by sociodemographic variables for all Canadian provinces (except Quebec and territories). Overall seroprevalence was 0.88% (95% CI 0.73, 1.04) an increase from the previous report (wave 1) ( $p=0.04$ ) (Table A2). Donors that self-identified as white had significantly lower seroprevalence rates (0.75%; 95% CI 0.61, 0.92) compared to ethnic minorities (1.82%; 95% CI 1.21, 2.62) ( $p=0.04$ ). We found no substantial differences in seroprevalence in this survey by age groups, sex or neighbourhood-level social and material deprivation indices. Compared to wave 1, there was a significant increase in seroprevalence rates among male donors and donors 40-59 years old ( $p=0.02$  and  $0.007$ , respectively) (Table A2).

Table 3 compares seroprevalence by province. The highest adjusted rate was in Manitoba 2.96% and the lowest in Newfoundland and Prince Edward Island. Manitoba was the only province to significantly increase seroprevalence rates from the last report ( $p>0.0001$ ) (Table A3). Tables A1.1-A1.5 summarize provincial seroprevalence stratified by age and sex.

Figure 1A illustrates temporal trends of seroprevalence from May 9, 2020 until October 31, 2020 by approximately two-week intervals overall and Figure 1B displays trends by geographical regions. Because of limited numbers of samples, provinces from the prairies and Atlantic Canada were grouped together, respectively. There were no linear temporal trends by geographical regions. Figure 2A/2B illustrates inter-regional variations within each province (Table A5 lists all regional seroprevalence rates). Notably 5/7 positive Manitoba donors were from the Northern Central region which had a seroprevalence rate of 13.8% (95% CI 7.25, 20.3%). Upon further investigation, all five donors attended the same clinic (Portage La Prairie) on the same day; three males (22, 22 and 23 years old) residing in the same FSA and two were females (33 and 47 years old) residing in a nearby FSA.

Table 4 shows the seroprevalence by cities. The highest seroprevalence was observed in Vancouver 1.19% (95% CI 0.5, 1.92) and Toronto 1.16% (95% CI 0.7, 1.59). No significant change from the last report (Appendix A4).

## Conclusion

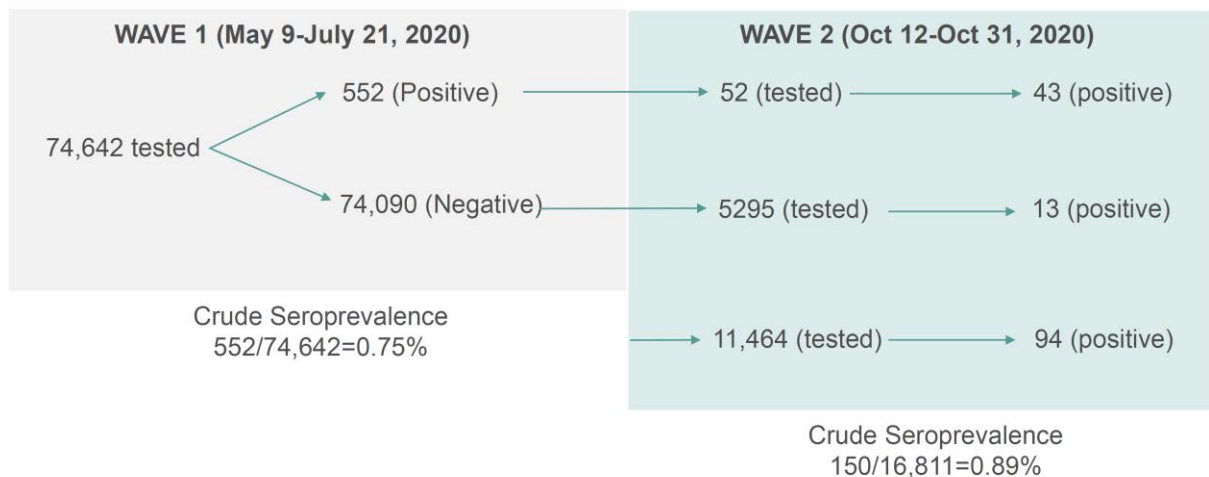
Overall seroprevalence of SARS-CoV-2 remains low in Canadian blood donors between October 12 to October 31, 2020 (less than 1%) but there is significant regional variation. Manitoba had a seroprevalence rate of almost 3%. Ethnic minorities remained more likely to have antibodies compared to white donors and the disparity had widen since the last report. While the donation selection criteria ensure blood donors are healthy, caution should be exercised in extrapolating findings to all healthy adult Canadians because blood donors self-select to be blood donors, because in some areas access to a donation clinic may be limited and because there are fewer elderly donors.

## Points for Interpretation

1. Blood donors are a healthy sub-set of the adult Canadian population. Important points to keep in mind with regard to representativeness of the sample are:
  - blood donors self-select to donate blood therefore those who choose not to donate blood for whatever reason are not included in the sample.
  - Blood donations are collected from people aged 17 years and older, however there are relatively few donations from elderly donors.
  - Blood donations are collected in larger cities and many smaller urban areas, but people in rural areas may be under-represented. Canadian Blood Services does not collect blood in the northern territories or the province of Quebec.
2. Data were weighted for age, sex and location to more closely reflect the Canadian population. However, weighting of the data had only a modest impact on the seroprevalence estimate. For example, the unweighted seroprevalence for the full sample was 0.92% (95% CI 0.78, 1.07), and after weighting factors applied it was 0.86% (95% CI 0.70, 1.01), then after the weighted seroprevalence was adjusted for sensitivity and specificity, 0.88% (95% CI 0.73, 1.04).
3. The sensitivity and specificity of the Abbott assay were obtained from a report from the United Kingdom. The manufacturer indicates higher sensitivity. A study from Denmark indicates sensitivity may be slightly lower.
4. The sensitivity and specificity of the assay are very good, but it is still possible that some true positives may be missed, and some positive results may be false. Confirmatory testing has not been performed. The seroprevalence was adjusted for sensitivity and specificity using a well-established mathematical formula. The Abbott assay used by Canadian Blood Services detects IgG antibodies to the SARS-CoV-2 nucleocapsid protein. IgG develops

during infection but may not be present early in the course of infection. Donors are deferred if they have recent COVID-19 infection, but asymptomatic early stage infections may not be detected. In some rare cases, donors may have variable antibody responses to different binding sites on the SARS-CoV-2 virus (e.g. Spike, receptor binding domain of Spike, nucleocapsid protein).

5. There is growing evidence that SARS-CoV-2 antibody levels begin to wane in some individuals by about 100 days post-infection. A mathematical modelling approach will be used to take into account waning antibody levels once enough suitable data is available.
6. In total, 17,094 samples were tested. Of these 283 (1.7%) were a donation from donors who had been tested more than once during the sampling period. None of the repeated donors were positive. Repeat tested samples were excluded from the present analysis. Analysis is presented for the 16,811 unique donors in this study period.
7. It is common for blood donors to donate multiple times over a year. The following flow diagram highlights donors that tested multiple times over the sampling period of May 9 to Oct 31, 2020. Of the 552 positive donors in wave 1, 52 were re-tested in wave 2 and 43/52 (83%) remained positive. Of the 74,090 negative donors in wave 1, 5295 were re-tested in wave 2 and 13/5295 (0.25%) became positive. Wave 2 included 11,464 naïve donors (to the seroprevalence study), of whom 94 were positive (0.82%).



8. Disclaimer: Canadian Blood Services is providing this report of the study results on an "as is" basis and makes no representations or warranties, express or implied, including with regards to the accuracy, reliability or validity of the information or its fitness for a particular purpose. The use of this report and/or any study results is the responsibility of the user. Canadian Blood Services assumes no liability resulting from any such use. This report may not be reproduced without permission from Canadian Blood Services.

## References

1. The National SARS-CoV-2 Serologic Assay Evaluation Group. Head-to-head benchmark evaluation of the sensitivity and specificity of five immunoassays for SARS-CoV-2 serology on >1500 samples. Available at: <https://doi.org/10.6084/m9.figshare.12593288.v1>.
2. Lang Z, Reiczigel J. Confidence limits for prevalence of disease adjusted for estimated sensitivity and specificity. Preventive Veterinary Medicine. 2014:113;13-22.



**Table 1.** October survey of 16,811 Canadian Blood Services donors

	Number Tested	Percentage
<b>Sex</b>		
Female	7,258	43.2
Male	9,553	56.8
<b>Age</b>		
17-24	1,491	8.9
25-39	4,535	27.0
40-59	6,446	38.3
60+	4,339	25.8
<b>Province</b>		
British Columbia	607	3.6
Alberta	1028	6.1
Saskatchewan	286	1.7
Manitoba	257	1.5
Ontario	11808	70.2
New Brunswick	994	5.9
Nova Scotia	1083	6.4
Prince Edward Island	307	1.8
Newfoundland	441	2.6
<b>Total</b>	<b>16,811</b>	

Note: 17,094 donations were tested, if multiple donations were from the same donor only the first was counted.

**Table 2.** SARS-CoV-2 Seroprevalence by Sociodemographic Variables (October Survey)

	Unweighted				Adjusted	
	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	Percent Positive	95% Confidence Interval
<b>Sex</b>						
Female	7258	54	0.74	0.56, 0.97	0.69	0.49, 0.88
Male	9553	96	1	0.81, 1.23	1.09	0.84, 1.33
<b>Age</b>						
17-24	1491	15	1.01	0.56, 1.65	1.04	0.56, 1.51
25-39	4535	39	0.86	0.61, 1.17	0.97	0.65, 1.30
40-59	6446	68	1.05	0.82, 1.34	0.99	0.71, 1.27
60+	4339	28	0.65	0.43, 0.93	0.6	0.35, 0.84
<b>Ethnicity<sup>1</sup></b>						
White	12893	97	0.75	0.61, 0.92	0.67	0.51, 0.83
Indigenous	157	0	0	0.00, 2.32	0	0.00, 0.00
Asian	598	10	1.67	0.80, 3.05	1.59	0.55, 2.62
Others	1536	28	1.82	1.21, 2.62	1.89	1.15, 2.63
<b>Social Deprivation Index<sup>2</sup></b>						
1 (least deprived)	3240	29	0.90	0.60, 1.28	0.78	0.44, 1.12
2	3242	25	0.77	0.50, 1.14	0.93	0.56, 1.30
3	3257	26	0.80	0.52, 1.17	1.03	0.65, 1.41
4	2682	24	0.89	0.57, 1.33	0.65	0.31, 0.99
5 (most deprived)	2768	27	0.98	0.64, 1.42	1.09	0.68, 1.50

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<b>Material Deprivation Index<sup>2</sup></b>						
1 (least deprived)	4043	26	0.64	0.42, 0.94	0.53	0.29, 0.77
2	3761	32	0.85	0.58, 1.20	1.11	0.74, 1.49
3	3263	31	0.95	0.65, 1.35	0.86	0.50, 1.22
4	2602	28	1.08	0.72, 1.55	1.36	0.86, 1.86
5 (most deprived)	1520	14	0.92	0.50, 1.54	0.84	0.31, 1.38
<b>Total</b>	<b>16,811</b>	<b>150</b>	<b>0.74</b>	<b>0.76, 1.05</b>	<b>0.88</b>	<b>0.73, 1.04</b>

<sup>1</sup> Self-reported ethnicity was missing for 1627 (9.68%) donors; 15 were positive, adjusted seroprevalence of those missing ethnicities was 1.34% (95% CI 0.78, 1.91)

<sup>2</sup> Postal Codes were missing for 1623 (9.65%) donors; 19 were positive, adjusted seroprevalence among missing postal codes was 1.17% (95% 0.71, 1.82)

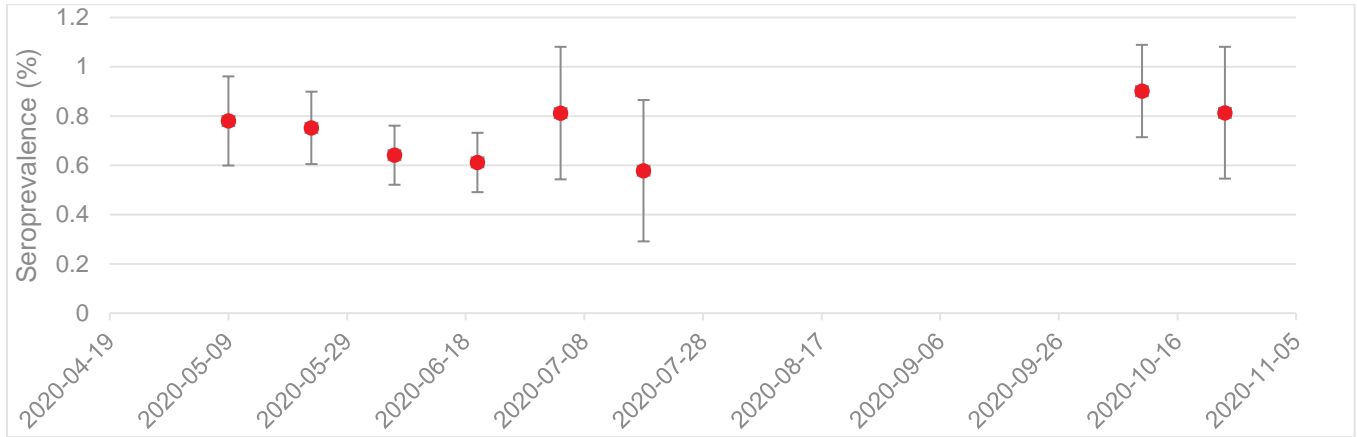
**Table 3.** SARS-CoV-2 seroprevalence by province (October Survey)

	Unweighted				Adjusted	
	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	Percent Positive	95% Confidence Interval
British Columbia	607	7	1.15	0.46, 2.36	0.86	0.50, 1.23
Alberta	1028	9	0.88	0.40, 1.66	0.76	0.38, 1.14
Saskatchewan	286	1	0.35	0.01, 1.93	0.17	0.00, 0.59
Manitoba	257	7	2.72	1.10, 5.53	2.96	1.70, 4.23
Ontario	11808	112	0.95	0.78, 1.14	0.87	0.65, 1.08
New Brunswick	994	3	0.3	0.06, 0.88	0.17	0.00, 0.66
Nova Scotia	1083	10	0.92	0.44, 1.69	0.98	0.11, 1.85
Prince Edward Island	307	0	0	0.00, 1.19	0	0.00, 0.00
Newfoundland and Labrador	441	1	0.23	0.01, 1.26	0.06	0.00, 0.52
<b>Total</b>	<b>16,811</b>	<b>150</b>	<b>0.74</b>	<b>0.76, 1.05</b>	<b>0.88</b>	<b>0.73, 1.04</b>

**Table 4.** SARS-CoV-2 seroprevalence in selected cities (October Survey)

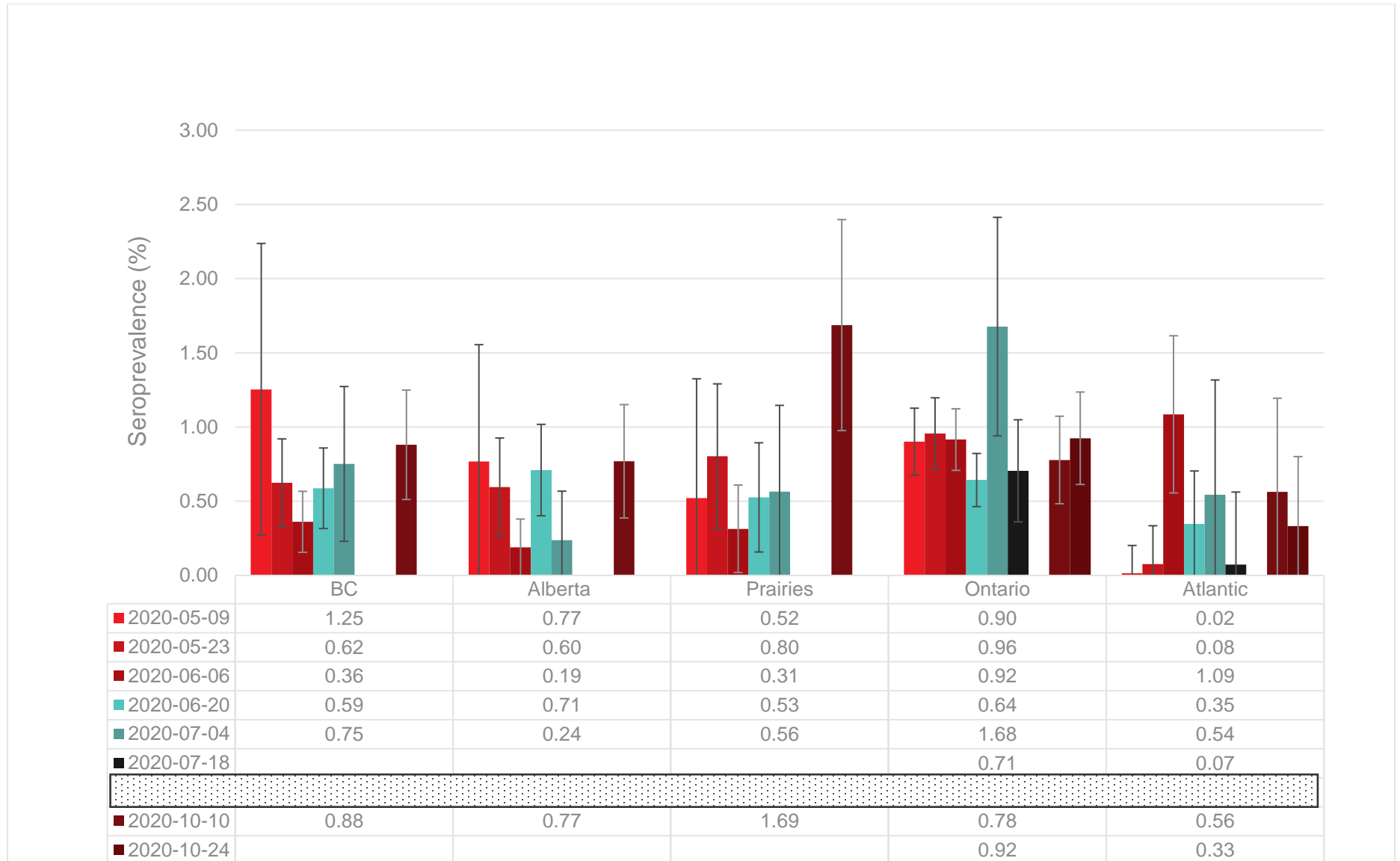
	Unweighted				Adjusted	
	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	Percent Positive	95% Confidence Interval
Vancouver	207	3	1.45	0.30, 4.18	1.19	0.5, 1.92
Calgary	371	4	1.08	0.29, 2.74	0.99	0.3, 1.72
Edmonton	445	4	0.9	0.25, 2.29	0.69	0.1, 1.24
Ottawa	1154	11	0.95	0.48, 1.70	0.93	0.2, 1.66
Toronto	3940	48	1.22	0.90, 1.61	1.16	0.7, 1.59
Winnipeg	131	1	0.76	0.02, 4.18	0.75	0.0, 1.71

**Figure 1A.** Overall temporal trends of SARS-CoV-2 seroprevalence by two-week intervals from May 9, 2020 to October 31, 2020.

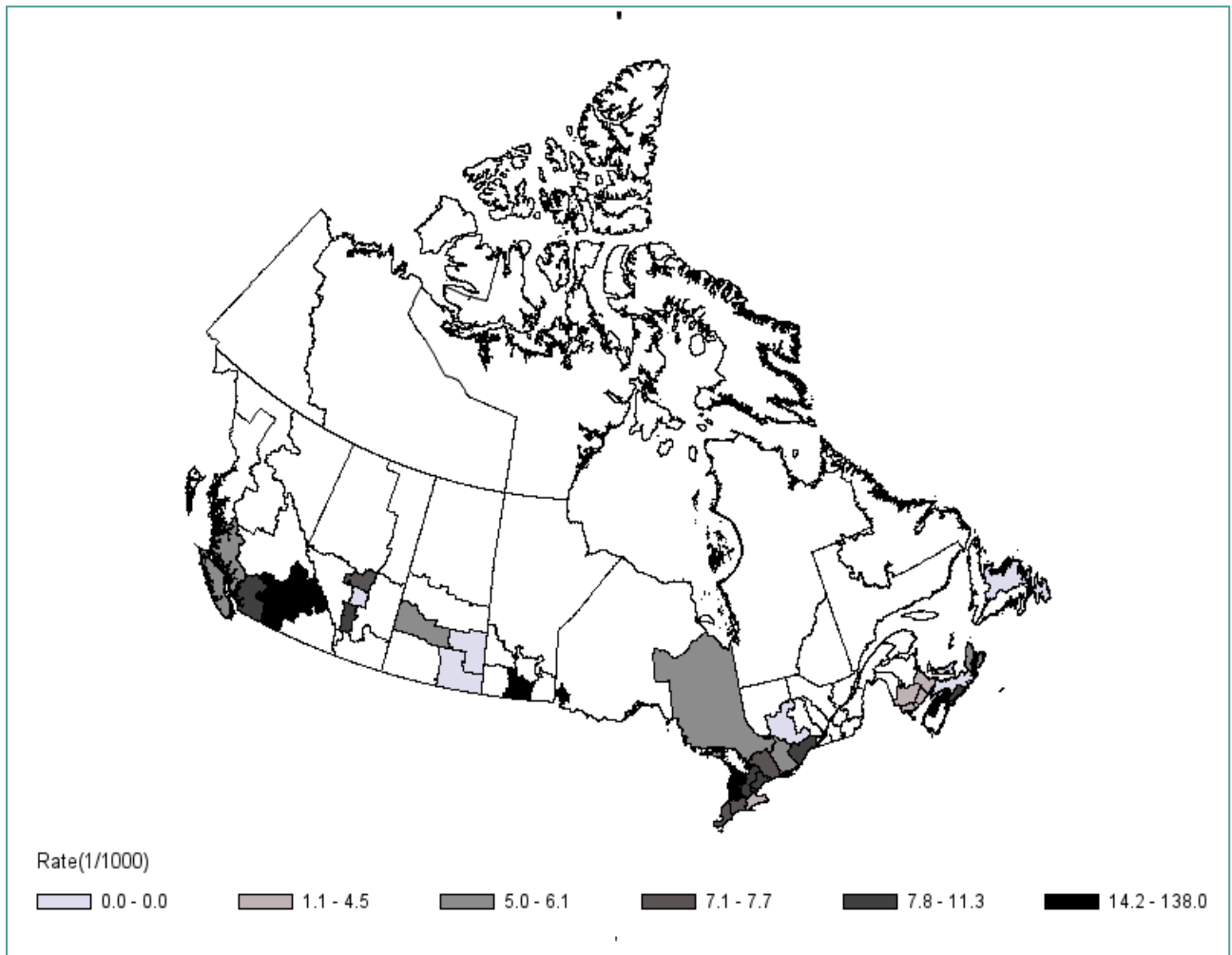


Note: Seroprevalence rates were weighted and adjusted for test characteristics. No significant linear temporal trend.

**Figure 1B.** Temporal trends of SARS-CoV-2 seroprevalence (%) by geographical region by approximate two-week intervals from May 9, 2020 to October 31, 2020.

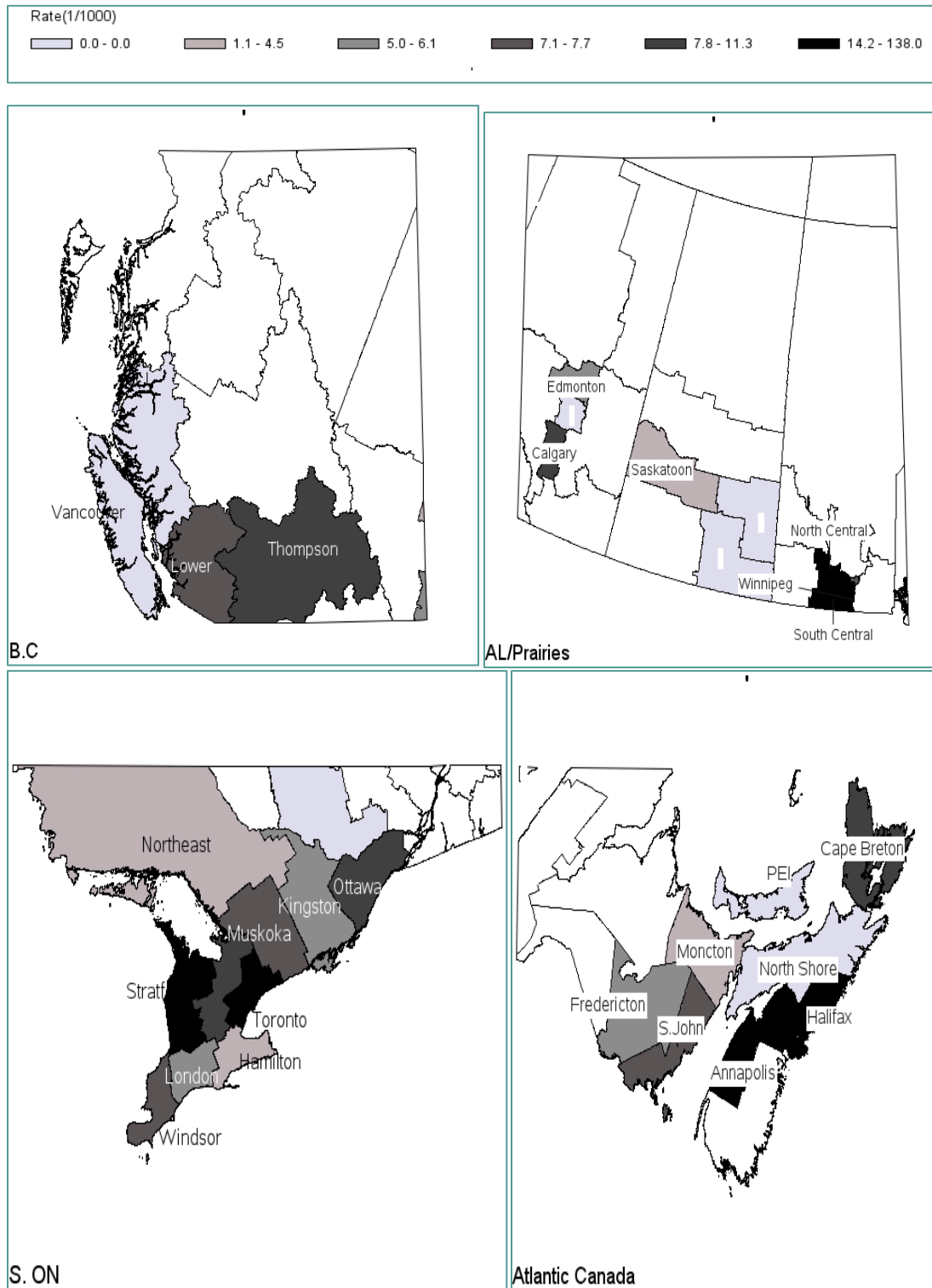


**Figure 2A.** Variation by economic regions per 1000 donors (October Survey)



The last rate category includes a wide range from 14.2-138 this is because 2 regions had a very high seroprevalence rate. Table A5 summarizes seroprevalence by economic regions.

**Figure 2B. Inter-regional variation by economic regions per 1000 donors (October Survey)**



The last rate category includes a wide range from 14.2-138 this is because 2 regions had a very high seroprevalence rate. Table A5 summarizes seroprevalence by economic regions.



Appendix - Regional SARS-CoV-2 seroprevalence by sex and age

Table A1.1 British Columbia

	Unweighted				Adjusted	
	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	Percent Positive	95% Confidence Interval
<b>Sex</b>						
Female	245	2	0.82	0.10, 2.92	0.5	0.1, 0.91
Male	362	5	1.38	0.45, 3.19	1.24	0.6, 1.86
<b>Age</b>						
17-24	39	0	0	0.00, 9.03	0	0.0, 0.00
25-39	169	3	1.78	0.37, 5.10	1.84	0.8, 2.90
40-59	207	2	0.97	0.12, 3.45	0.67	0.1, 1.23
60+	192	2	1.04	0.13, 3.71	0.69	0.1, 1.29
<b>Total</b>	<b>607</b>	<b>7</b>	<b>1.15</b>	<b>0.46, 2.36</b>	<b>0.86</b>	<b>0.50, 1.23</b>

Table A1.2 Alberta

	Unweighted				Adjusted	
	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	Percent Positive	95% Confidence Interval
<b>Sex</b>						
Female	396	2	0.51	0.06, 1.81	0.48	0.0, 0.92
Male	632	7	1.11	0.45, 2.27	1.04	0.4, 1.66
<b>Age</b>						
17-24	87	1	1.15	0.03, 6.24	0.9	0.0, 2.05
25-39	293	3	1.02	0.21, 2.96	0.88	0.1, 1.63
40-59	375	2	0.53	0.06, 1.91	0.35	0.0, 0.82
60+	273	3	1.1	0.23, 3.18	1.14	0.2, 2.10
<b>Total</b>	<b>1028</b>	<b>9</b>	<b>0.88</b>	<b>0.40, 1.66</b>	<b>0.76</b>	<b>0.38, 1.14</b>

**Table A1.3 Saskatchewan**

	Unweighted				Adjusted	
	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	Percent Positive	95% Confidence Interval
<b>Sex</b>						
Female	137	.	0	0.00, 2.66	0	0.0, 0.00
Male	149	1	0.67	0.02, 3.68	0.46	0.0, 1.31
<b>Age</b>	.	.	.		.	
17-24	21	.	0	0.00, 16.11	0	0.0, 0.00
25-39	78	.	0	0.00, 4.62	0	0.0, 0.00
40-59	104	.	0	0.00, 3.48	0	0.0, 0.00
60+	83	1	1.2	0.03, 6.53	0.9	0.0, 2.40
<b>Total</b>	<b>286</b>	<b>1</b>	<b>0.35</b>	<b>0.01, 1.93</b>	<b>0.17</b>	<b>0.00, 0.59</b>

**Table A1.4 Manitoba**

	Unweighted				Adjusted	
	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	Percent Positive	95% Confidence Interval
<b>Sex</b>						
Female	126	3	2.38	0.49, 6.80	2.6	0.9, 4.27
Male	131	4	3.05	0.84, 7.63	3.34	1.4, 5.26
<b>Age</b>	.	.	.		.	
17-24	32	3	9.38	1.98, 25.02	9.14	3.4, 14.92
25-39	73	1	1.37	0.03, 7.40	1.13	0.0, 2.74
40-59	76	3	3.95	0.82, 11.11	4.37	1.7, 6.99
60+	76	.	0	0.00, 4.74	0	0.0, 0.00
<b>Total</b>	<b>257</b>	<b>7</b>	<b>2.72</b>	<b>1.10, 5.53</b>	<b>2.96</b>	<b>1.70, 4.23</b>

Table A1.5 Ontario

	Unweighted				Adjusted	
	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	Percent Positive	95% Confidence Interval
<b>Sex</b>						
Female	5128	43	0.84	0.61, 1.13	0.75	0.5, 1.04
Male	6680	69	1.03	0.80, 1.31	0.99	0.7, 1.32
<b>Age</b>						
17-24	1094	10	0.91	0.44, 1.67	0.87	0.3, 1.48
25-39	3217	31	0.96	0.66, 1.37	0.92	0.5, 1.38
40-59	4564	54	1.18	0.89, 1.54	1.16	0.7, 1.58
60+	2933	17	0.58	0.34, 0.93	0.46	0.1, 0.77
<b>Total</b>	<b>11808</b>	<b>112</b>	<b>0.95</b>	<b>0.78, 1.14</b>	<b>0.87</b>	<b>0.65, 1.08</b>

Table A1.5 Atlantic Provinces

	Unweighted				Adjusted	
	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	Percent Positive	95% Confidence Interval
<b>Sex</b>						
Female	1226	4	0.33	0.09, 0.83	0.36	0.0, 0.85
Male	1599	10	0.63	0.30, 1.15	0.55	0.0, 1.16
<b>Age</b>						
17-24	218	1	0.46	0.01, 2.53	0.2	0.0, 1.09
25-39	705	1	0.14	0.00, 0.79	0.08	0.0, 0.58
40-59	1120	7	0.63	0.25, 1.28	0.52	0.0, 1.22
60+	782	5	0.64	0.21, 1.49	0.68	0.0, 1.49
<b>Total</b>	<b>2825</b>	<b>14</b>	<b>0.50</b>	<b>0.27, 0.83</b>	<b>0.45</b>	<b>0.06, 0.84</b>

**Table A2.** Comparison of SARS-CoV-2 seroprevalence by socio-demographic variables (Wave 1 to Wave 2)

	WAVE 1: MAY-JULY 2020				WAVE 2: OCTOBER 2020				WAVE 1 compared to WAVE 2 (p-value)
	Unadjusted		Adjusted		Unadjusted		Adjusted		
	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	
<b>Sex</b>									
Female	35,547	256	0.67	0.58, 0.76	7258	54	0.69	0.49, 0.88	0.83
Male	39,095	296	0.73	0.64, 0.83	9553	96	1.09	0.84, 1.33	<b>0.02</b>
<b>Age</b>									
17-24	7,165	61	0.76	0.57, 0.96	1491	15	1.04	0.56, 1.51	0.56
25-39	21,733	166	0.74	0.60, 0.88	4535	39	0.97	0.65, 1.30	0.50
40-59	27,777	202	0.70	0.59, 0.81	6446	68	0.99	0.71, 1.27	<b>0.007</b>
60+	17,967	123	0.63	0.51, 0.76	4339	28	0.60	0.35, 0.84	0.78
<b>Ethnicity</b>									
White	52,852	370	0.66	0.59, 0.74	12893	97	0.67	0.51, 0.83	0.53
Indigenous	778	6	0.93	0.21, 1.65	157	.	0	0.00, 0.00	0.27
Asian	3,098	33	0.93	0.60, 1.27	598	10	1.59	0.55, 2.62	0.21
Other Minorities	6,819	80	1.09	0.84, 1.34	1536	28	1.89	1.15, 2.63	<b>0.04</b>
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<b>Social Deprivation Index</b>									
1 (least deprived)	14,004	118	0.79	0.64, 0.94	3240	29	0.53	0.29, 0.77	0.77
2	13,865	90	0.65	0.51, 0.79	3242	25	1.11	0.74, 1.49	0.44
3	13,151	95	0.71	0.55, 0.86	3257	26	0.86	0.50, 1.22	0.65
4	12,341	88	0.67	0.52, 0.83	2682	24	1.36	0.86, 1.86	0.32
5 (most deprived)	13,170	101	0.70	0.54, 0.86	2768	27	0.84	0.31, 1.38	0.26
<b>Material Deprivation Index</b>									
1 (least deprived)	19,633	136	0.66	0.54, 0.79	4043	26	0.78	0.44, 1.12	0.72
2	16,457	97	0.52	0.40, 0.65	3761	32	0.93	0.56, 1.30	0.07
3	13,872	126	0.86	0.70, 1.02	3263	31	1.03	0.65, 1.41	0.82
4	10,460	77	0.79	0.61, 0.96	2602	28	0.65	0.31, 0.99	0.08
5 (most deprived)	6,109	56	0.80	0.58, 1.03	1520	14	1.09	0.68, 1.50	0.98
<b>Total</b>	<b>74,642</b>	<b>552</b>	<b>0.70</b>	<b>0.63, 0.77</b>	<b>16,811</b>	<b>150</b>	<b>0.88</b>	<b>0.73, 1.04</b>	<b>0.04</b>

**Table A3.** Comparison of SARS-CoV-2 seroprevalence by province (Wave 1 compared to Wave 2)

	WAVE 1: MAY-JULY 2020				WAVE 2: OCTOBER 2020				WAVE 1 compared to WAVE 2  (p-value)
	Unadjusted		Adjusted		Unadjusted		Adjusted		
	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	
British Columbia	10,309	62	0.56	0.41, 0.70	607	7	0.86	0.50, 1.23	0.10
Alberta	12,107	60	0.48	0.33, 0.62	1028	9	0.76	0.38, 1.14	0.11
Saskatchewan	3,050	20	0.53	0.23, 0.83	286	1	0.17	0.00, 0.59	0.53
Manitoba	3,455	20	0.59	0.30, 0.88	257	7	2.96	1.70, 4.23	<b>&gt;0.0001</b>
Ontario	37,928	355	0.88	0.78, 0.99	11808	112	0.87	0.65, 1.08	0.90
New Brunswickwa	2,595	9	0.23	0.00, 0.49	994	3	0.17	0.00, 0.66	0.83
Nova Scotia	3,408	20	0.69	0.33, 1.05	1083	10	0.98	0.11, 1.85	0.24
Prince Edward Island	703	1	0.04	0.00, 0.42	307	0	0	0.00, 0.00	0.51
Newfoundland and Labrador	1,087	5	0.44	0.04, 0.84	441	1	0.06	0.00, 0.52	0.51
<b>Total</b>	<b>74,642</b>	<b>552</b>	<b>0.70</b>	<b>0.63, 0.77</b>	<b>16,811</b>	<b>150</b>	<b>0.88</b>	<b>0.73, 1.04</b>	0.04

**Table A4.** Comparison of SARS-CoV-2 seroprevalence in selected cities (Wave 1 compared to Wave 2)

	WAVE 1: MAY-JULY 2020				WAVE 2: OCTOBER 2020				WAVE 1 compared to WAVE 2 (p-value)
	Unadjusted		Adjusted		Unadjusted		Adjusted		
	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	Number Tested	Number Positive	Percent Positive	95% Confidence Interval	
Vancouver	5,819	43	0.75	0.53, 0.96	207	3	1.19	0.5, 1.92	0.25
Calgary	4,192	25	0.55	0.27, 0.82	371	4	0.99	0.3, 1.72	0.26
Edmonton	4,404	16	0.29	0.08, 0.49	445	4	0.69	0.1, 1.24	0.09
Ottawa	3,680	32	1.08	0.74, 1.43	1154	11	0.93	0.2, 1.66	0.79
Toronto	13,203	142	0.96	0.80, 1.13	3940	48	1.16	0.7, 1.59	0.45
Winnipeg	2242	16	0.73	0.31, 1.14	131	1	0.75	0.0, 1.71	0.95

**Table A5.** Seroprevalence (from highest to lowest) by economic region per 1000 donors as illustrated in Figure 2 (October survey)

Economic Region	ID	total	Positive	Rate	(95% CI)	
<b>British Columbia/Yukon</b>						
Thompson--Okanagan	5930	85	2	1.69	(0.38	3.02)
Lower Mainland--Southwest / Lower Mainland--Sud-ouest	5920	259	3	0.91	(0.34	1.49)
Vancouver Island and Coast / Île de Vancouver et la côte	5910	235	2	0.61	(0.11	1.13)
Kootenay	5940	4	.	0	0	.
Cariboo	5950	2	.	0	0	.
Yukon	6010	3	.	0	0	.
<b>Alberta</b>						
Camrose—Drumheller	4820	6	1	23.61	(0.00	47.61)
Calgary	4830	452	4	0.78	(0.20	1.38)
Edmonton	4860	425	4	0.73	(0.16	1.31)
Lethbridge--Medicine Hat	4810	1	.	0	0	.
Banff--Jasper--Rocky Mountain House	4840	7	.	0	0	.
Red Deer	4850	61	.	0	0	.
Athabasca--Grande Prairie--Peace River	4870	8	.	0	0	.
Wood Buffalo--Cold Lake	4880	8	.	0	0	.
<b>Saskatchewan</b>						
Saskatoon—Biggar	4730	113	1	0.59	(0.00	1.65)
Regina--Moose Mountain	4710	82	.	0	0	.
Swift Current--Moose Jaw	4720	3	.	0	0	.
Yorkton—Melville	4740	67	.	0	0	.
Prince Albert	4750	9	.	0	0	.
<b>Manitoba</b>						
North Central / Centre nord*	4640	38	5	13.8	(7.25	20.37)
South Central / Centre sud	4620	68	1	1.87	(0.00	3.84)
Winnipeg	4650	127	1	0.77	(0.00	1.76)
Southeast / Sud-est	4610	1	.	0	0	.
Southwest / Sud-ouest	4630	1	.	0	0	.
Interlake	4660	11	.	0	0	.
Parklands	4670	3	.	0	0	.
North / Nord	4680	1	.	0	0	.
<b>Ontario</b>						
Stratford--Bruce Peninsula	3580	194	2	1.42	(0.00	3.52)
Toronto	3530	3795	45	1.13	(0.70	1.57)
Kitchener--Waterloo--Barrie	3540	1852	16	0.85	(0.31	1.40)
Ottawa	3510	1239	10	0.78	(0.14	1.44)
Muskoka--Kawarthas	3520	514	5	0.77	(0.00	1.74)
Windsor--Sarnia	3570	453	5	0.76	(0.00	1.81)
London	3560	897	8	0.71	(0.00	1.44)
Kingston--Pembroke	3515	610	4	0.53	(0.00	1.30)
Northeast / Nord-est	3590	331	2	0.50	(0.00	1.52)
Hamilton--Niagara Peninsula	3550	1316	7	0.45	(0.00	0.96)
Northwest / Nord-ouest	3595	5	.	0	0	.



<b>Nova Scotia</b>						
Annapolis Valley	1230	272	3	1.42	(0.00	3.47)
Halifax	1250	576	6	1.08	(0.00	2.34)
Cape Breton	1210	141	1	0.50	(0.00	2.30)
North Shore / Côte-nord	1220	45	.	0	0	.
Southern / Sud	1240	17	.	0	0	.
<b>New Brunswick</b>						
Saint John--St. Stephen	1330	251	1	0.25	(0.00	1.38)
Fredericton--Oromocto	1340	339	1	0.21	(0.00	1.13)
Moncton--Richibucto	1320	357	1	0.11	(0.00	0.82)
Campbellton--Miramichi	1310	18	.	0	0	.
Edmundston--Woodstock	1350	5	.	0	0	.
<b>Newfoundland</b>						
Avalon Peninsula	1010	319	.	0	0	.
South Coast--Burin Peninsula / Côte-sud--Burin Peninsula	1020	2	.	0	0	.
West Coast--Northern Peninsula--Labrador / Côte-ouest--Northern Peninsula--Labrador	1030	8	.	0	0	.
Notre Dame--Central Bonavista Bay	1040	98	.	0	0	.
<b>PEI</b>						
Prince Edward Island / Île-du-Prince-Édouard	1110	299	.	0	0	.

## Notes:

<sup>1</sup>All five positive donors attended the Portage La Prairie clinic on the same day; three were males (22, 22 and 23 years old) and two were females (33 and 47 years old)

<sup>2</sup>FSA from 9 positive donors could not be linked to economic regions (1 from Newfoundland and 8 from Ontario)