

Social Determinants of Health During the COVID-19 Pandemic



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Background

Social determinants of health (SDOH), including gender, income, employment and working conditions, race, and Indigenous identity, play a key role in the health of individuals and communities. The importance of SDOH have been highlighted throughout the course of the COVID-19 pandemic¹. As cases of COVID-19 increase, evidence shows that SDOH play a role in the risk of COVID-19 infection and severe outcomes. Therefore, incorporating SDOH into a pandemic response helps to identify existing inequities, and allows for a better understanding of those at heightened risk of becoming infected with COVID-19 and experiencing severe outcomes associated with COVID-19 infection. Additionally, once inequities are identified, interventions to reduce the disproportionate impact of the pandemic can be employed.

Throughout the course of the COVID-19 pandemic, MLHU has utilized health equity interventions to support various at-risk groups in the community including the following:

- Establishing a priority population liaison team to support pandemic planning for agencies and organizations including homeless, developmental, Indigenous, and other group living settings.
- Supporting Indigenous partners, including the Oneida Nation of the Thames Health Centre, Chippewa of the Thames First Nation Health Centre, and Southwest Ontario Aboriginal Health Access Centre (SOAHAC) to conduct their own testing, including providing medical directives, swab training, and providing swabs.
- Working with the City of London, London Intercommunity Health Centre, and other partners in the homeless sector to develop an alternate testing and isolation system, that was accessible, safe, and effective for homeless and underhoused in the MLHU community.
- Working with community partners including the Cross Cultural Learner Centre and the London Intercommunity Health Centre to develop culturally grounded health promotion campaigns, ensuring populations experiencing outbreaks have access to culturally appropriate information.

In April 2020, the Middlesex-London Health Unit (MLHU) was one of the first public health agencies in Canada to initiate the voluntary collection of race and socio-economic data from laboratory confirmed COVID-19 cases. At the end of June 2020, the Ministry of Health required the collection of information on race, income level, language, and household size for all individuals who test positive for COVID-19. As part of follow-up with confirmed COVID-19 cases, MLHU staff continue to collect information for the following indicators:

- Race
- Total family income
- Household size
- Language
- Occupation
- Homeless/underhoused
- Indigenous identity

It is important to note that data available and included in this analysis was limited to what was collected by COVID-19 case investigators. Some health equity data, including race and income, was not collected

¹ Ontario Agency for Health Protection and Promotion (Public Health Ontario). COVID-19 – What we know so far about... social determinants of health. Toronto, ON. Queen's Printer for Ontario. 2020.

early in the pandemic. Additionally, as the volume of cases and subsequent contacts per day increased, there was decreased capacity for case investigators to collect health equity data. Therefore, a case may not have provided health equity information for two reasons: 1) a case refused to share the information; or 2) they were not asked.

Another important consideration is whether the gender of the case or sex of the case was recorded. Based on consultation with the COVID-19 case and contact management team, the “gender” of the case is pulled directly from the lab result and not confirmed by the client (in most cases). Lab results either refer to the gender (e.g., lab reports from Ontario Agency for Health Protection and Promotion) or sex (e.g., lab reports from London Health Science Centre) of the case. It is unclear whether the lab requisitions that indicate gender, truly report the gender identity of the case, or rather the case’s biological sex. Therefore, it is likely that the gender field in CCM uses a mix of both sex and gender as captured by the lab report, and thus is more appropriately referred to as the biological sex of the case.

Additionally, the categories of severe outcomes (hospitalization, ICU, death) are not mutually exclusive. Therefore, a laboratory confirmed case could potentially fall into one or multiple severe outcome categories.

Overall, these data help identify where inequities exist and further inform MLHU’s response to the COVID-19 pandemic. This highlights the need to incorporate a health equity approach to pandemic preparedness, response, and recovery. The collection, analysis, and dissemination of data on the social determinants of health, especially throughout the course of a pandemic, can influence and inform actions to address and potentially mitigate health inequities.

Data Findings

Summary

Between January 24 and October 31, 2020, a total of 1,145 confirmed cases of COVID-19 were reported among residents of Middlesex County and the City of London. Descriptive analysis indicates that among confirmed cases reported as of Saturday, October 31, 2020:

- 55.6% of cases were female.
- Cases ranged in age from 2 years old to 102 years old, with a mean age of 44 years.
 - The highest proportion of cases fell within the 20-29 year age group.
- Severe outcomes related to COVID-19 disproportionately affected laboratory confirmed COVID-19 cases falling within the higher age groups (i.e., 50 years of age and older).
 - The mean age for severe outcomes was higher than the mean age for all cases.
 - The mean age of those hospitalized was 69 years old, of those requiring an ICU stay was 65 years old, and of those who died with COVID-19 as the primary cause of death was 82 years old.
- 88.5% of cases had family income data recorded. Of these, 23.1% preferred not to answer, and 25.7% stated they do not know their family income.
 - Of cases with family income data reported, 15.4% reported a total household income before taxes in 2019 below \$30,000. Families of 2 or more earning less than \$30,000 before taxes would fall below the poverty line based on the Market Basket Measure, Canada’s new official poverty line. In 2015, the percent of the Middlesex-London

population living below the poverty line based on the Market Basket Measure was 15.0%.

- 89.9% of cases had race data recorded. Of these, 8.6% preferred not to answer, and 4.6% stated they do not know their race.
 - Of cases with race data recorded, 32.4% identified as a visible minority. A visible minority refers to whether a person belongs to a visible minority group as defined by the Employment Equity Act, 1995. The Employment Equity Act defines visible minorities as persons, other than Indigenous peoples, who are non-white in race or colour. As of 2016, the visible minority population of Middlesex-London represented 17.0% of the total population.

Health outcomes within sociodemographic groups

There is emerging evidence that COVID-19 health outcomes differ by sociodemographic factors. This has also been highlighted at the Federal level, in the Chief Public Health Officer of Canada’s Report on the State of Public Health in Canada². Data below include laboratory confirmed cases of COVID-19 reported to the MLHU between January 24 and October 31, 2020.

Sex

Overall, 55.6% of laboratory confirmed COVID-19 cases were female, while 44.4% were male. Table 1 presents the data for severe COVID-19 outcomes within each sex group. The proportion of male cases hospitalized was slightly higher than the proportion of female cases. Of all male cases, 12.4% were hospitalized, while 10.7% of all female cases were hospitalized. In contrast, the proportion of laboratory confirmed COVID-19 cases requiring an ICU stay was slightly higher for females than males. Of all female cases, 3.0% required an ICU stay, while 2.8% of all male cases required an ICU stay. Additionally, the proportion of laboratory confirmed COVID-19 male cases who died from COVID-19 was slightly higher at 5.7%, than the proportion of female cases at 5.2%.

It is important to note that although the field in the MLHU case and contact management (CCM) tool refers to gender, it is likely referring to the case’s biological sex.

Table 1: COVID-19 health outcomes within sex group, Middlesex-London, 2020

Sex	Hospitalized (%)*	ICU stay (%)*	Death (%)*
Female (n=637)	10.7	3.0	5.2
Male (n=508)	12.4	2.8	5.7
Overall (N=1145)	11.4%	2.9%	5.4%

* Denominator is the number of cases in each gender group. Refer to Appendix A for details.

Shading indicates health outcome proportions within groups that exceeded the overall proportion for each health outcome.

Age

Laboratory confirmed COVID-19 cases ranged in age from 2 years old to 102 years old, with a mean age of 44 years. Overall, the highest proportion of cases fell within the 20-29 year age group. However, severe outcomes related to COVID-19 disproportionately affected laboratory confirmed COVID-19 cases in the older age groups (i.e., 50 years of age and older). Additionally, the mean age for severe outcomes

²Public Health Agency of Canada. From Risk to Resilience: An Equity Approach to COVID-19. Ottawa, ON. 2020.

was higher than the mean age for all cases. The mean age of those hospitalized was 69 years old, for those requiring an ICU stay was 65 years old, and for those who died with COVID-19 as the primary cause of death was 82 years old. Table 2 presents the data for severe COVID-19 outcomes within each age group.

The proportion of laboratory confirmed COVID-19 cases hospitalized within each age group was highest above 60 years of age. The proportions of cases who were hospitalized in each of these age groups were higher than the overall proportion of laboratory-confirmed COVID-19 cases who had been hospitalized. This proportion was highest in the 70-79 age group, with 47.0% of cases within this age group hospitalized. This was followed by the 80+ age group, where 36.4% of cases within this age group hospitalized, and the 60-69 age group, where 19.1% of cases within this age group hospitalized.

The proportion of laboratory confirmed COVID-19 cases requiring an ICU stay was highest for cases between 50 and 79 years of age. The proportions of cases who required an ICU stay in each of these age groups were higher than the overall proportion of laboratory-confirmed COVID-19 cases who required an ICU stay. This proportion was highest in the 70-79 age group, with 16.7% of cases within this age group required an ICU stay. This was followed by the 60-69 age group, where 7.0% of cases within this age group required an ICU stay, and the 50-59 age group, where 4.4% of cases within this age group required an ICU stay.

Similar to hospitalizations, the proportion of laboratory confirmed COVID-19 cases who died with COVID-19 as the primary cause of death was highest above 60 years of age. The proportions of cases who died in each of these age groups were higher than the overall proportion of laboratory-confirmed COVID-19 cases who had died. This proportion was highest in the 80+ age group, where 33.0% of cases had died from COVID-19. This was followed by the 70-79 age group, where 18.2% of cases died from COVID-19, and the 60-69 age group, where 6.1% of cases died. No deaths were reported in the 0-39 age groups.

Table 2: COVID-19 health outcomes within age group, Middlesex-London, 2020

Age Group (years)	Hospitalized (%)*	ICU stay (%)*	Death (%)*
0-19 (n=146)	0.7	0	0
20-29 (n=278)	1.1	0.4	0
30-39 (n=148)	2.7	0	0
40-49 (n=115)	7.8	2.6	0.9
50-59 (n=159)	11.3	4.4	1.9
60-69 (n=115)	19.1	7.0	6.1
70-79 (n=66)	47.0	16.7	18.2
80+ (n=118)	36.4	2.5	33.0
Overall (N=1145)	11.4%	2.9%	5.4%

* Denominator is the number of cases in each age group. Refer to Appendix A for details.

Shading indicates health outcome proportions within groups that exceed the overall proportion for each health outcome.

Annual Household Income

Overall, 88.5% of cases had family income data recorded. Of these, 23.1% preferred not to answer, and 25.7% stated they do not know their family income. The limitations of the data available made

meaningful comparisons between income groups difficult. Of the cases with family income data reported, 15.4% reported a total household income before taxes in 2019 below \$30,000. All families of 2 or more earning less than \$30,000 before taxes would fall below the poverty line based on the Market Basket Measure, Canada's new official poverty line. Unfortunately, a small subset (35.7%) of cases had household size recorded, limiting the ability to determine how many confirmed COVID cases fell below the poverty line. Additionally, it is important to consider the value that a person reports for family income does not necessarily indicate whether someone is living in poverty (e.g., post-secondary students, retired seniors). In 2015, the percent of the Middlesex-London population living below the poverty line based on the Market Basket Measure was 15.0%. Table 3 presents the data for severe COVID-19 outcomes within each income group.

Further, 6 confirmed COVID-19 cases (0.5%) identified as homeless or underhoused (see Appendix A). It is important to understand how MLHU's partnership with the homeless sector throughout the pandemic has been successful at preventing outbreaks within the homeless community.

Table 3: COVID-19 health outcomes within annual household income group, Middlesex-London, 2020

Annual household income	Hospitalized (%)*	ICU stay (%)*	Death (%)*
\$0 - \$29,999 (n=156)	9.6	1.9	2.6
\$30,000 or more (n=363)	8.5	1.6	0.3
Do not know (n=260)	14.2	3.5	11.2
Prefer not to answer (n=234)	5.6	1.3	1.7
Income not provided (n=132)	26.5	9.1	18.2
Overall (N=1145)	11.4%	2.9%	5.4%

* Denominator is the number of cases in each annual household income group. Refer to Appendix A for details.

Shading indicates health outcome proportions within groups that exceed the overall proportion for each health outcome.

Race

Overall, 89.9% of laboratory-confirmed COVID-19 cases had race data recorded. Of these, 8.6% preferred not to answer, and 4.6% stated they do not know their race. Additionally, race was not provided for 10.1% of cases.

Based on the data available, some race categories were collapsed if counts were too small for meaningful interpretation. Additionally, severe outcome data for the Indigenous category has been suppressed because of small case counts. Limitations of the data available, including the small number of cases within racial groups as well as the number of cases without race data provided, made meaningful comparisons between groups difficult. Table 4 presents the data for severe COVID-19 outcomes within each race group.

Of the cases with race data recorded, 32.4% identified as a visible minority. A visible minority refers to whether a person belongs to a visible minority group as defined by the Employment Equity Act, 1995. The Employment Equity Act defines visible minorities as persons, other than Indigenous peoples, who are non-white in race or colour. As of 2016, the visible minority population of Middlesex-London represented 17.0% of the total population.

Table 4: COVID-19 health outcomes within race group, Middlesex-London, 2020

Race	Hospitalized (%)*	ICU stay (%)*	Death (%)*
Asian (n=155)	5.8	1.9	0
Black (n=46)	4.4	0	0
Indigenous (n=7)	Suppressed	Suppressed	0
Latin American (n=55)	9.1	1.8	1.8
Middle Eastern (n=77)	2.6	1.3	0
Mixed heritage/Other (n=21)	0	0	0
White/European (n=532)	11.3	2.3	4.1
Do not know (n=47)	23.4	4.3	34.0
Prefer not to answer (n=89)	5.6	0	1.1
Race not provided (n=116)	29.3	10.3	19.0
Overall (N=1145)	11.4%	2.9%	5.4%

* Denominator is the number of cases in each race group. Refer to Appendix A for details.

Shading indicates health outcome proportions within groups that exceed the overall proportion.

Conclusions

The COVID-19 pandemic has exposed and exacerbated existing health inequities, highlighting the need to prioritize the collection of health equity information to assess and modify our response to health crises and protect the health of all individuals. The findings included in this report suggest that inequities exist related to who is infected and experiencing severe outcomes related to COVID-19 infection. These findings should inform MLHU's COVID-19 response and priorities as the pandemic continues.

Next Steps

Much of the data collected is incomplete (i.e., non-response to health equity questions). To understand disparities further, it is essential that the MLHU continues to collect health equity data from laboratory confirmed cases of COVID-19. Additional data will especially help clarify the relationships between race and income with COVID-19 infection. Overall, health equity considerations should be included in pandemic planning, response, recovery, and beyond. It would be worthwhile to consider collecting health equity information across all MLHU's public health programs and services, where the capacity to do so exists.

Appendix A – Cases by Sociodemographic group

Count of laboratory-confirmed COVID-19 cases by sociodemographic group, Middlesex-London, 2020

	Count	Percent
Number of confirmed cases	1145	100%
Sex		
Female	637	55.6
Male	508	44.4
Age (years)		
0-19	146	12.8
20-29	278	24.3
30-39	148	12.9
40-49	115	10.0
50-59	159	13.9
60-69	115	10.0
70-79	66	5.8
80+	118	10.3
Annual household income		
\$0 - \$29,999	156	13.6
\$30,000 or more	363	31.7
Do not know	260	22.7
Prefer not to answer	234	20.4
Income not provided	132	11.5
Homeless/underhoused		
Yes	6	0.5
No	1113	97.2
Unknown/Not reported/ Blank	26	2.3
Race		
Asian – East	16	1.4
Asian – South	115	10.0
Asian – South East	24	2.1
Black – Africa	32	2.8
Black – Caribbean region	9	0.8
Black - North America	5	0.4
Indigenous	7	0.6
Latin American	55	4.8
Middle Eastern	77	6.7
Mixed heritage	10	0.9
White/European	532	46.5
Other(s)	11	1.0
Do not know	47	4.1
Prefer not to answer	89	7.8
Race not provided	116	10.1

Appendix B - Figures

Figure 1: Percent and count of laboratory-confirmed COVID-19 cases by sex, Middlesex-London, January-October 2020

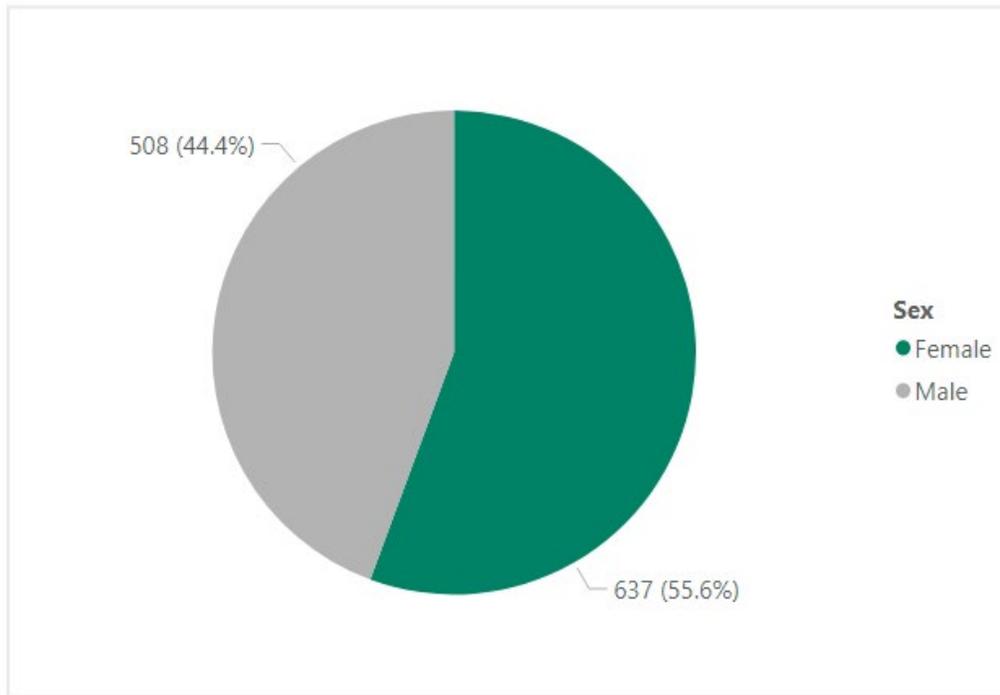


Figure 2: Percent of laboratory-confirmed COVID-19 cases by age group, Middlesex-London, January-October 2020

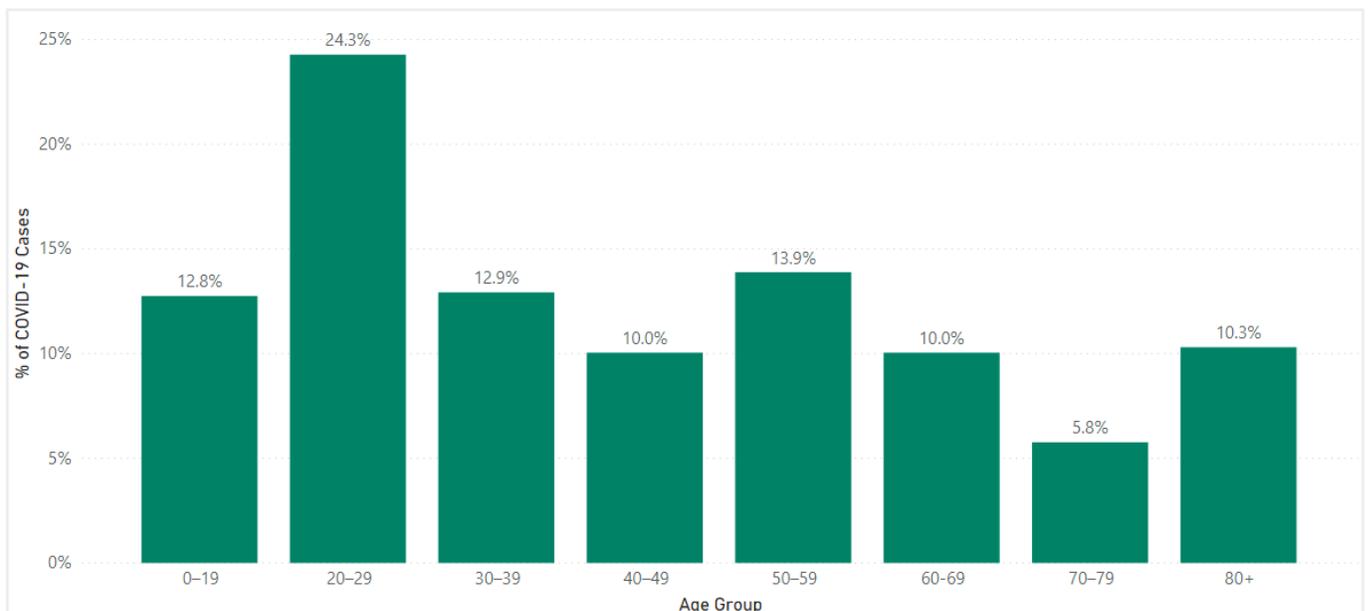


Figure 3: Percent of laboratory-confirmed COVID-19 cases by annual household income group, Middlesex-London, January-October 2020

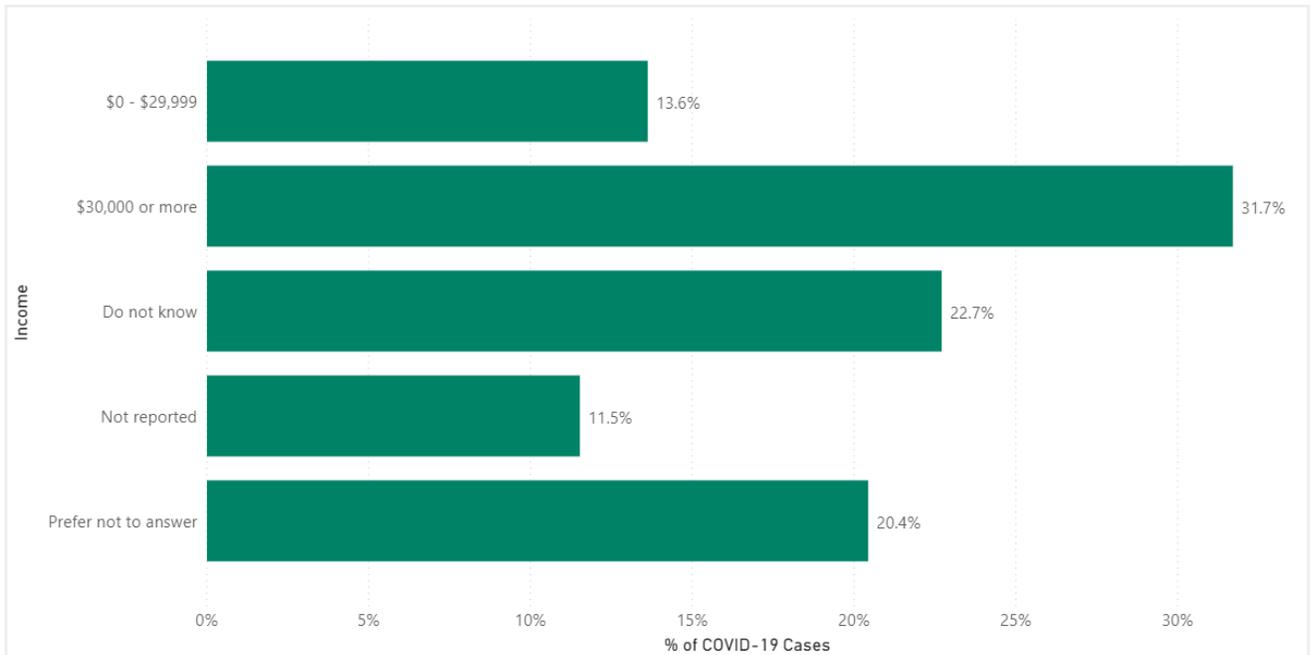


Figure 4: Percent and count of laboratory-confirmed COVID-19 cases identifying as a visible minority, Middlesex-London, January-October 2020

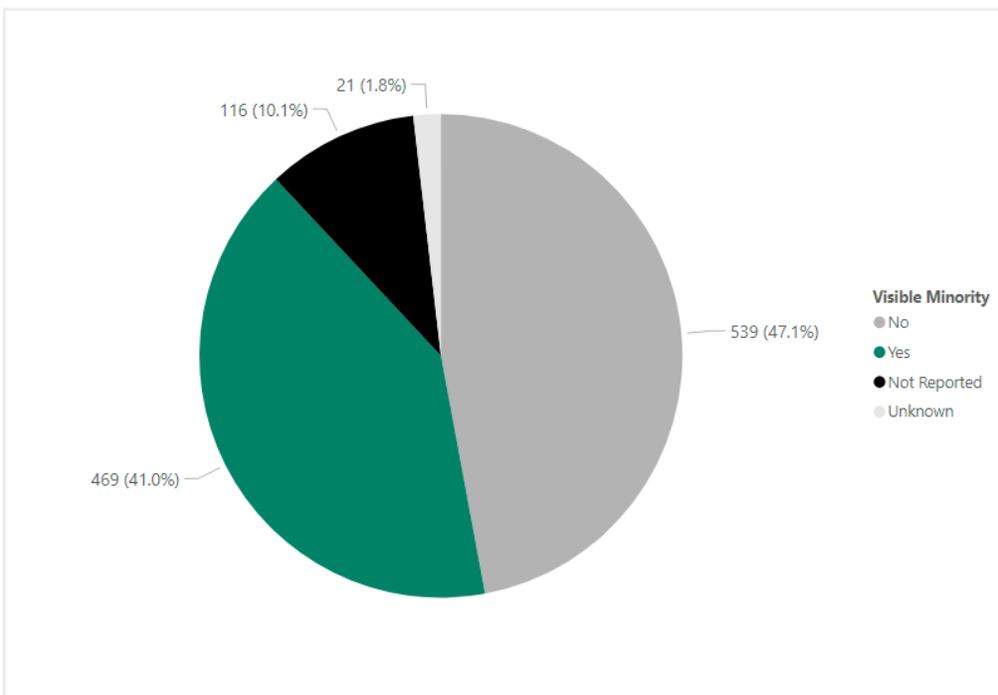


Figure 5: Percent of laboratory-confirmed COVID-19 cases by race group, Middlesex-London, January-October 2020

