Tracking COVID-19 Through Race-Based Data

Executive Summary

Ontario's early COVID-19 pandemic response emphasized "flattening the curve" – an approach that focussed on applying public health measures equally across regions and populations to drive down daily case counts. As it became clear that certain communities were disproportionately impacted by the pandemic, the focus shifted to mitigating inequities, with the recognition that infection control and protecting vulnerable Ontarians were mutually reinforcing public health objectives. Effectively addressing the pandemic requires understanding which populations are at highest risk and carrying out targeted interventions to protect these groups. Ontario needs to know who falls under the curve in order to "flatten" it.

This report examines race-based data collected between June 26, 2020 and April 21, 2021, by Ontario public health units. The data show that COVID-19's impact has been highly racialized. Excluding cases for which data were missing on race, the analysis found that white Ontarians had the lowest rates of COVID-19 infection. As compared to white Ontarians, other racial groupings had:

- 1.2- to 7.1-fold higher age-standardized per capita rate of infection.

- 1.7- to 9.1-fold higher age-standardized per capita rate of COVID-19-related hospitalization.

- 2.1- to 10.4-fold higher age-standardized per capita rate of COVID-19-related critical illness (ICU admission).

- 1.7- to 7.6-fold higher age-standardized per capita rate of death following COVID-19 infection.

The racialized and inequitable health outcomes generated by the pandemic are not products of the pandemic alone – they are the result of systems that produce marginalization of racialized communities. Data collection was undertaken to inform Ontario's pandemic response and help address these inequities. Completeness of these new data elements has been low across all public health units. For the period studied, 43 per cent of all cases were missing data on race. Completeness of sociodemographic and race-based data has been and continues to be driven in part by practice and protocol differences across public health units, as well as by case burden over time (with higher case burden generally coinciding with lower completeness).

This report makes three recommendations:

1. That Ontario's health and public health systems standardize the collection of sociodemographic data through health card registration and renewal.

2. That the health system apply anti-racist approaches to identify systemic causes of health inequities.

3. That the health system use race-based data to inform recovery efforts and address structural inequities.

Background

On March 17, 2020, Ontario declared a state of emergency in response to the COVID-19 pandemic.[1] A range of interventions were implemented throughout the first pandemic year to reduce the spread of COVID-19 and improve health outcomes. These interventions mirrored those implemented in other jurisdictions and have been aligned with guidelines issued by the Public Health Agency of Canada (PHAC), which states that the most effective pandemic interventions are adaptable, coordinated and implemented rapidly.[2]

Data from previous epidemics show higher burden of disease in marginalized groups. During the H1N1 influenza epidemic in Canada, certain age and racialized groups were at higher risk of infection, hospitalization and mortality. For example, for First Nations children in Manitoba, the rate of infection was five times higher than for non-First Nations children, and the rate of hospitalizations was 22 times higher.[3] Inequitable health outcomes produced by COVID-19 in Ontario align with the pre-existing maps of disadvantage, such as economic marginalization, poverty, and racial segregation. In Ontario, as elsewhere,[4] the risk of acquiring COVID-19 is connected to race, place of residence and work, and access to adequate protections and care, such as the ability to work from home or access paid sick days.[5,6,7]

In Ontario, regions with higher population density have reported more COVID-19 cases per capita. Within these areas, higher rates of COVID-19 infections have been reported in neighbourhoods with higher concentrations of racialized groups.[8] Disparities in the spread and impact of COVID-19 became visible early in the pandemic. Experts and impacted communities made calls for the collection and analysis of race-based health data to uncover inequities and guide the provincial response. Racialized communities voiced skepticism in one-size-fits-all health policies, and past failures to protect marginalized groups from infectious diseases.[9] These groups called for race-based data collection to better understand evolving inequities. Race-based data collection was systematically undertaken across the province in June 2020, after the first wave of the pandemic in Ontario.

In the absence of disaggregated data, Ontario's health system relies on small-area proxy data, which includes indices of marginalization such as racialized group concentration. While proxy data sources provide useful information on general population characteristics or trends, they do not fully capture experiences of individual groups or the complex interactions with health systems that produce particular outcomes. Specificity, detail, and nuance are needed to understand pandemic-related inequities. Unearthing and addressing drivers of health inequity requires analysis of disaggregated data alongside analysis of the contexts and conditions that produce inequity.

Health Inequities & Structural Racism:

Embedding anti-racist approaches in health care

Racism refers to beliefs, practices, and systems that maintain and perpetuate the superiority of one racial group over another.[10] Racist beliefs and practices evolve over time; they interact with other forms of oppression to control opportunity, access, power, and wealth distribution.[11,12] **Structural racism** refers to the systems and processes embedded in law, policy, practice, or norms that reinforce racial inequalities and provide advantages to racial groups deemed superior, while marginalizing, oppressing, and disadvantaging groups considered inferior.[13] **Anti-racist approaches** acknowledge the deep historical and systemic roots of these inequities and work towards changing the policies, practices and structures that create inequitable systems.[14]

Racism affects communities at both interpersonal and systemic levels; directly producing health inequities. Studies show links between racism and increased risk of poor health outcomes, including negative impacts connected to encountering racism (such as increased stress and declining mental health), underutilization of health services, mistrust of health systems, and higher rates of chronic disease.[15] For example, interpersonal racism in the form of biased health care providers contributes to the alienation of racialized people from health services, mistrust in the systems and underutilization of services. A 2019 study found that Black women are under screened for cervical cancer, due to barriers they encounter in accessing care. As a result, they may be at increased risk of worse outcomes linked to cervical cancer.[16]

In Ontario, systemic racism exists and leads to inequitable outcomes in a range of areas such as health, education, and justice for different groups. Racism takes many forms, including anti-Indigenous racism, anti-Black racism, Islamophobia and antisemitism.[17] Structural racism produces inequitable resource distribution and underinvestment in racialized communities. Health policies and interventions that do not explicitly take an anti-racist approach – by directing resources to communities experiencing disproportionate harms, and ensuring that services are safe, appropriate, and acceptable to communities – produce and reinforce structural racism. Toronto's early COVID-19 vaccine roll out campaigns illustrate this. Throughout the pandemic, the city neighbourhoods that reported the highest COVID-19 rates were also highly racialized.

Data Collection

Ontario currently collects data on race, income, household size, and language from people with test confirmed or probable cases of COVID-19. Data on Indigenous identity are not included in these data collection efforts. The Government of Ontario continues to work with Indigenous partners on the issues and considerations surrounding Indigenous data collection for COVID-19 and beyond, including data sovereignty for Indigenous communities. This work is beyond the scope of this report. The collection, analysis, and use of sociodemographic data (including race-based data) is one way that health systems document and monitor population health outcomes. Data collection across Ontario is part of the province's management and response to COVID-19.[18]

When appropriately collected, analyzed, and utilized, health data can:

• Reveal health inequities.

• Inform the evaluation of public health interventions.

• Inform the development of strategies to improve population health.

• Inform development of interventions designed to dismantle structural racism in health systems.

Since June 2020 in Ontario, COVID-19-positive individuals have been asked a series of questions on race, income and household size (see sample script). The tables and figures in this document are based on the most current information available from Ontario's case and contact management system (CCM) and other case management systems (CCM plus) as of April 21, 2021. Public health units began collecting and reporting

sociodemographic data for COVID-19 cases on June 26, 2020 using a series of five questions on race, income and language. The sociodemographic factors and the related questions asked of COVID-19 cases are listed below:

SOCIODEMOGRAPHIC FACTOR	CASE INTERVIEW QUESTION
Race	Which race category best describes you?
Income	What was your total household income before taxes in 2019?
	Including yourself, how many family members live in your household?
Language	What is the language that you first learned at home in childhood and still understand?
	In which of Canada's official languages, English or French, are you most comfortable?

Methods

Data were extracted from CCM on April 21, 2021. Cases were excluded if their case reported date preceded collection of race-based variables (June 26, 2020). CCM offers the following options for multi-selection so that cases can select the race or races with which they identify:

- Black: African, Afro-Caribbean, African-Canadian descent

- East/South-East Asian: Chinese, Korean, Japanese, Taiwanese descent/ Filipino, Vietnamese, Cambodian, Thai, Indonesian, other South-East Asian descent

- Latino: Latin American, Hispanic descent

- Middle Eastern: Arab, Persian, West Asian descent, e.g. Afghan, Egyptian, Iranian, Lebanese, Turkish, Kurdish, etc.

- South Asian: South Asian descent, e.g. East Indian, Pakistani, Bangladeshi, Sri Lankan, Indo-Caribbean, etc.

- White: European descent

- Other: Any other race category with option to specify

Since race variables in CCM are unitary (for example, the variable for RACE_BLACK has only one unique value of "YES" and is otherwise missing), it was necessary to derive a composite categorical variable for race. Cases that either indicated multiple racial identities or East-South-East Asian* were recoded to a multiracial category and were excluded from analysis (505 cases). Severe outcomes of interest were hospitalization, ICU admission, and fatality.

Denominators used to calculate population rates of infection and severe outcomes were taken from 2016 Census data on visible minorities. For each visible minority grouping, data were extracted by age group to perform direct age-standardization. Race groupings

in CCM do not match the groupings available in the 2016 Census, and were regrouped as follows:

2016 CENSUS, VISIBLE MINORITY GROUPINGS	CASE AND CONTACT MANAGEMENT SYSTEM (CCM), RACIAL IDENTITY VALUES	POPULATION (2016)
South Asian	South Asian	1,150,415
Chinese	East Asian	754,550
Black	Black	627,715
Filipino	South-East Asian	311,675
Latin American	Latino	195,950
Arab	Middle Eastern	210,435
Southeast Asian	South-East Asian	133,855
West Asian	Middle Eastern	154,670
Korean	East Asian	88,935
Japanese	East Asian	30,830
Not a visible minority	White	8,982,180*

Data source: *2016 census population*

* Population figure for "Not a visible minority" grouping has been subtracted by the number of Aboriginal-identifying people in Ontario in 2016

* There are separate East Asian and South-East Asian values in CCM

Methods

The "Not a visible minority" group in the 2016 Census includes those that self-identify as Aboriginal,* making it inaccurate to refer to this group as white. We therefore subtracted, by age group, the number of people that self-identified as Aboriginal from the number of people that were included in the "Not a visible minority" group to derive an appropriate denominator for calculating population rates for COVID-19 cases that identified as white.
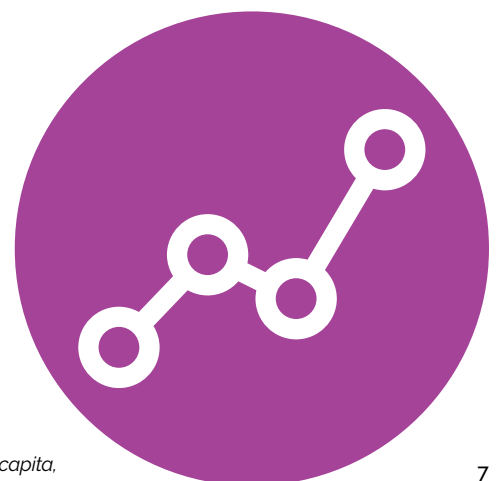
To calculate age-standardized rates, each regrouped race was decomposed into the greatest number of age groupings available in the 2016 Census for people in Ontario that self-identified as Aboriginal. This step was necessary to compute appropriate age-standardized rates for white cases (whose denominator was derived as the difference between the "Not a visible minority" group and people that self-identified as Aboriginal). COVID-19 case counts by the age groupings for the period studied are as follows:

Age-standardized rates of COVID-19 infection and severe outcomes were calculated using the age structure of the Ontario population in 2016 as the standard. To account for the unique circumstances around long-term care home related mortality in Ontario, all long-term care home resident (as identified by public health units) fatalities were excluded. Fold-differences, using white as the reference group, were calculated as a means of quantifying racial inequity.**

AGE GROUPS	COVID-19 CASES
15 to 24 years	67,869
35 to 44 years	58,611
55 to 64 years	49,652

* In 2016, 374,395 people self-identified as Aboriginal (term used in 2016)

** Fold difference quantifies the difference between any two numbers. For example, if Group A has 30 cases per capita, and Group B has 10 cases per capita, we could say Group A has a 3-fold higher per capita case rate than Group B.
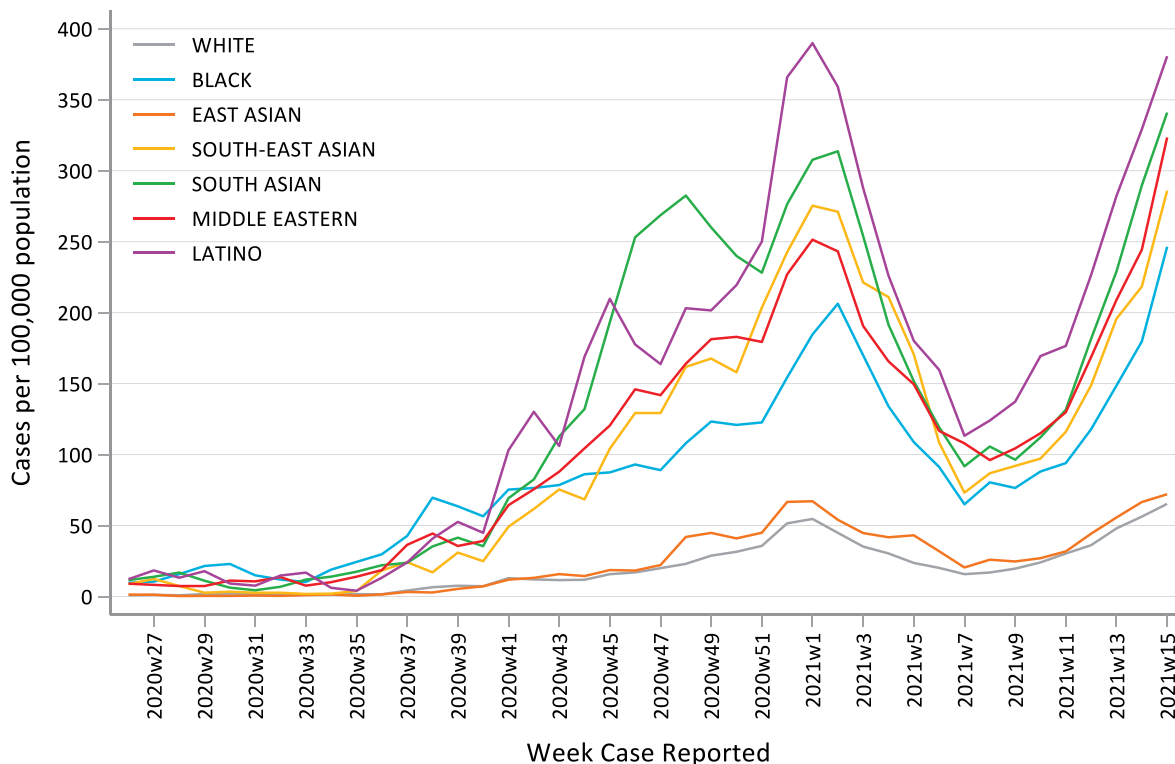
Findings

This report presents data on confirmed cases of COVID-19 infection from the start of race-based data collection (June 26, 2020) until April 21, 2021. Overall, completeness of these data elements has been low across public health units. This analysis determined that completeness of sociodemographic and race-based data was driven in part by practice and protocol differences across public health units, as well as case burden over time (with higher case burden generally coinciding with lower completeness). For the period studied, 43 per cent of all cases (171,915/ 398,651) were missing data on race, including 57 per cent of cases that required hospital admission (9,244/16,120), 56 per cent of cases that required ICU admission (1,542/2,749), and 69 per cent of all non-long-term care home resident cases that died (2,047/2,949). Given the volume of missing data, a sensitivity analysis was conducted to test the robustness of the findings.

Excluding cases for which data were missing on race, the analysis found that white Ontarians had the lowest rates of COVID-19 infection. As compared to white Ontarians, other racial groupings had:

- 1.2- to 7.1-fold higher age-standardized per capita rate of infection.

- 1.7- to 9.1-fold higher age-standardized per capita rate of COVID-19-related hospitalization.

- 2.1- to 10.4-fold higher age-standardized per capita rate of COVID-19-related critical illness (ICU admission).

- 1.7- to 7.6-fold higher age-standardized per capita rate of death following COVID-19 infection.

FIGURE 1. WEEKLY CASE COUNTS PER CAPITA BY RACE IN ONTARIO (JUNE 26, 2020 TO APRIL 21, 2021)
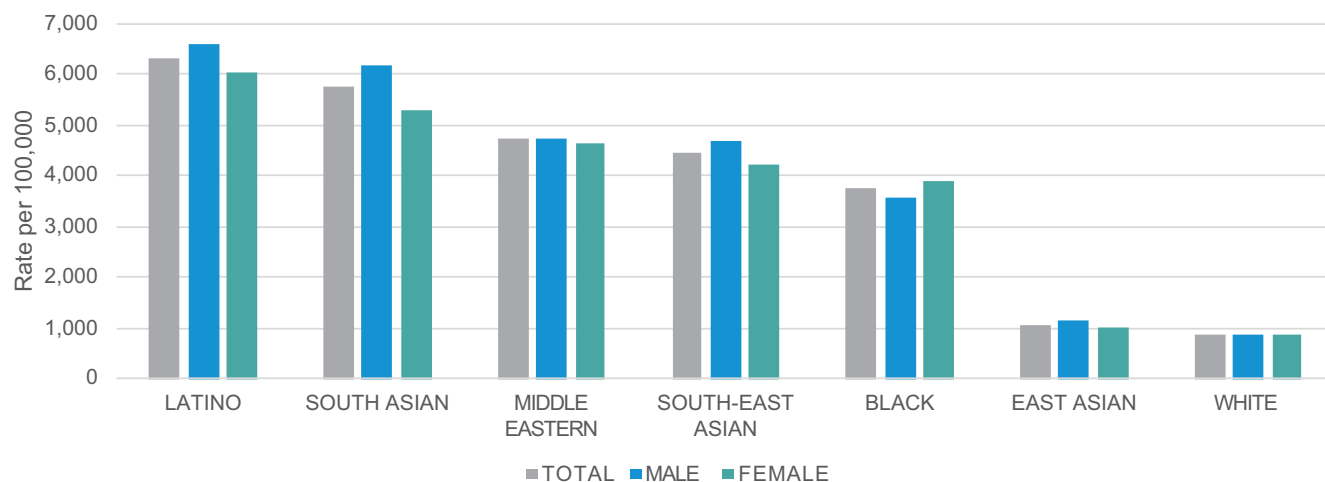

Data source: CCM plus and 2016 census population

Data note: Missing race data for 43% of all cases (171,915/ 398,651). Weekly counts smoothed as a trailing 3-week average.

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FIGURE 2. CUMULATIVE PER CAPITA INFECTION RATE BY RACE/GENDER IN ONTARIO (JUNE 26, 2020 TO APRIL 21, 2021)

Data source: CCM plus and 2016 census population

Data note: Missing race data for 43% of all cases (171,915/ 398,651). To avoid double counting, 505 cases (<1%) have been removed that indicated more than one ethnicity. While CCM does provide the option of selecting non-binary and transgender for the client gender question, the 2016 Census did not, and it is therefore not possible to present rates for non-binary and transgender COVID-19 cases. Denominators used refer to sex (not gender) and may include cases that do not in fact identify as male or female. The 2021 Census will include questions on both "sex at birth" and "gender".

For almost the entirety of the pandemic (excluding wave one, which preceded race data collection), white Ontarians have experienced the lowest crude per capita rates of COVID-19 infection (Figures 1 and 2). Latino and South Asian communities have been particularly impacted. While white Ontarians account for approximately two thirds of the population, they represent just one fifth of the cumulative cases in the period studied (Table 1). Conversely, for example, South Asian Ontarians account for just 8.6 per cent of the population but make up over 16 per cent of cumulative cases in the period studied. After age-standardization, non-white cases have experience up to over seven times the rate of infection.

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TABLE 1. SUMMARY OF CONFIRMED CASES BY RACE IN ONTARIO (JUNE 26, 2020 TO APRIL 21, 2021)

RACE	CASE COUNT	PERCENT OF ALL CASES	PERCENT OF 2016 ONTARIO POPULATION	CRUDE RATE PER 100,000 POPULATION	AGE STANDARD RATE PER 100,000 POPULATION	RATE RELATIVE TO WHITE
All	398,651	100%	100%	2,964.3	-	-
Black	23,502	5.9%	4.7%	3,744.1	3,649.4	4.6x
East Asian	9,377	2.4%	6.5%	1,072.5	982.7	1.2x
Latino	12,396	3.1%	1.5%	6,326.1	5,682.2	7.1x
Middle Eastern	17,190	4.3%	2.7%	4,708.2	4,359.8	5.4x
South Asian	66,088	16.6%	8.6%	5,744.7	5,329.0	6.7x
South-East Asian	19,754	5.0%	3.3%	4,433.8	4,093.4	5.1x
White	77,924	19.5%	66.8%	867.5	801.0	ref

Data source: *CCM plus and 2016 census population*

Data note: *Missing race data for 43% of all cases (171,915/ 398,651). To avoid double counting, 505 cases (<1%) have been removed that indicated more than one ethnicity.*

With respect to severe outcomes following infection, white Ontarians have experienced the lowest rates of hospitalization (Table 2A), ICU admission (Table 2B), and death (Table 2C). For each of these severe outcomes, the median age was in general lower among racialized Ontarians.

Latino and Middle Eastern communities have experienced the highest rates of hospitalization (186.8 and 146.2 hospitalizations per 100,000 population, respectively) over the study period. These rates are nine and seven times higher than hospitalization rates for white Ontarians (20.5 hospitalizations per 100,000 population), respectively. Latino and South-East Asian communities have experienced the highest rates of COVID-19-related critical care admissions (35.1 and 33.3 admissions per 100,000 population) over the study period. These rates are about ten times higher than for white Ontarians (3.4 intensive care unit admissions per 100,000 population), respectively.

After excluding long-term care home resident fatalities,* age-standardized mortality rates from COVID-19 infection were highest among Latino Ontarians (20.2 deaths per 100,000 population), South-East Asian Ontarians (17.5 deaths per 100,000 population), Middle Eastern Ontarians (14 deaths per 100,000 population). These rates are 7.7-, 6.6-, and 5.3 times higher than rates of mortality for white Ontarians (2.6 deaths per 100,000 population), respectively. Chart 1A (excluding cases with missing race data) and Chart 1B (sensitivity analysis) present summary results of these age-standardized rates of infection and severe outcomes by race for the study period.

It is unclear why rates of infection and severe outcomes among those identifying as East Asian have been lower than other non-White racial groupings. Qualitative study may explicate this difference.

Long-term care home residents are predominantly white, and given the uniqueness of how the pandemic has played out in that sector, their inclusion would skew the results of these analyses.

TABLE 2A. SUMMARY OF HOSPITALIZATIONS BY RACE IN ONTARIO (JUNE 26,2020 TO APRIL 21, 2021)

RACE	HOSPITALIZED	MEDIAN AGE (YEARS)	CASE HOSP. RATE	CRUDE RATE PER 100,000 POPULATION	AGE STANDARD RATE PER 100,000 POPULATION	RATE RELATIVE TO WHITE
All	16,120	70	4.0%	119.9	-	-
Data Missing	9,244	72	5.4%	-	-	-
Data Not Missing	6,876	66	3.0%	-	-	-
Black	756	60	3.2%	120.4	128.5	6.3x
East Asian	372	66	4.0%	42.5	34.9	1.7x
Latino	371	60	3.0%	189.3	186.8	9.1x
Middle Eastern	474	60	2.8%	129.8	146.2	7.1x
South Asian	1,315	63	2.0%	114.3	114.1	5.6x
South-East Asian	588	61	3.0%	132.0	131.0	6.4x
White	2,985	72	3.8%	33.2	20.5	ref

Data source: *CCM plus and 2016 census population*

Data note: *Missing race data for 57% of all hospital admissions (9,244/16,120). To avoid double counting, 15 cases (0.22%) have been removed that indicated more than one ethnicity.*

TABLE 2B. SUMMARY OF ICU ADMISSIONS BY RACE IN ONTARIO (JUNE 26,2020 TO APRIL 21, 2021)

RACE	ICU ADMISSION	MEDIAN AGE (YEARS)	CASE ICU RATE	CRUDE RATE PER 100,000 POPULATION	AGE STANDARD RATE PER 100,000 POPULATION	RATE RELATIVE TO WHITE
All	2,749	66	0.7%	20.4	-	-
Data Missing	1,542	66	0.9%	-	-	-
Data Not Missing	1,207	65	0.5%	-	-	-
Black	115	63	0.5%	18.3	20.4	6.1x
East Asian	79	70	0.8%	9.0	7.2	2.1x
Latino	65	61	0.5%	33.2	35.1	10.4x
Middle Eastern	91	63	0.5%	24.9	29.3	8.7x
South Asian	233	64	0.4%	20.3	20.9	6.2x
South-East Asian	145	62	0.7%	32.5	33.3	9.9x
White	476	68	0.6%	5.3	3.4	ref

Data source: CCM plus and 2016 census population

Data note: Missing race data for 56% of all ICU admissions (1,542/2,749). To avoid double counting, 3 cases (<1%) have been removed that indicated more than one ethnicity.

TABLE 2C. SUMMARY OF NON-LTC FATALITIES BY RACE IN ONTARIO (JUNE 26, 2020 TO APRIL 21, 2021)

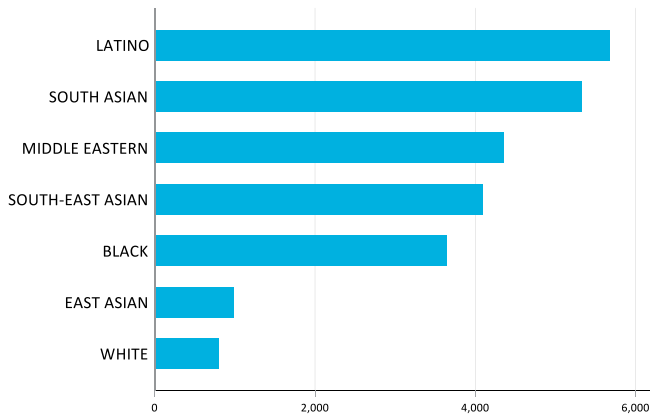| RACE	FATALITIES	MEDIAN AGE (YEARS)	CASE FATALITY RATE	CRUDE RATE PER 100,000 POPULATION	AGE STANDARD RATE PER 100,000 POPULATION	RATE RELATIVE TO WHITE
All	2,949	80	0.7%	21.9	-	-
Data Missing	2,047	81	1.2%	-	-	-
Data Not Missing	902	80	0.4%	-	-	-
Black	74	76.5	0.3%	11.8	12.1	4.6x
East Asian	54	82	0.6%	6.2	4.4	1.7x
Latino	37	75	0.3%	18.9	20.2	7.6x
Middle Eastern	42	79	0.2%	11.5	14.0	5.3x
South Asian	128	75	0.2%	11.1	10.5	4.0x
South-East Asian	78	73	0.4%	17.5	17.5	6.6x
White	489	82	0.6%	5.4	2.6	ref

Data source: CCM plus and 2016 census population

Data note: Missing race data for 69% of all non-LTCH resident fatalities (2,047/2,949). Excludes fatalities among long-term care home residents.
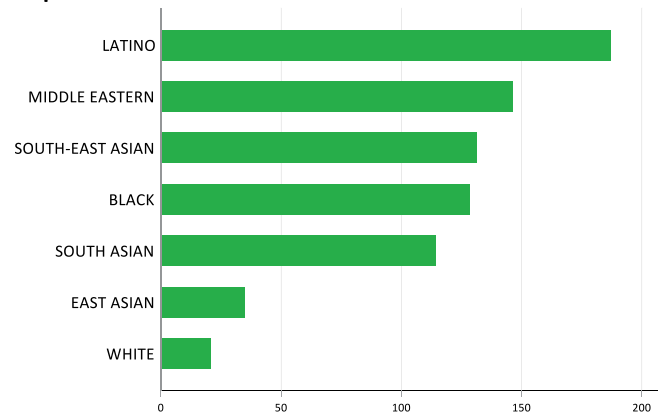
Findings

CHART 1A. AGE-STANDARDIZED PER CAPITA RATES OF INFECTION AND SUBSEQUENT SEVERE OUTCOMES BY RACE IN ONTARIO (JUNE 26, 2020 TO APRIL 21, 2021)
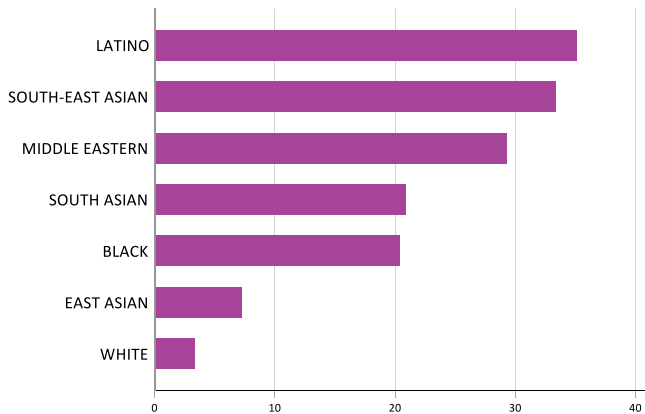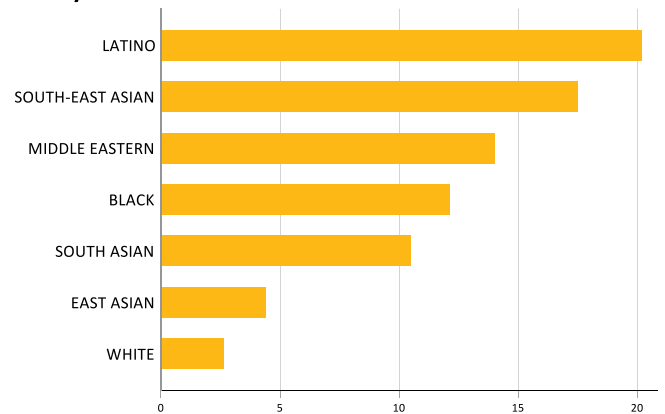
Cases

Race	Rate
LATINO	~5,700
SOUTH ASIAN	~5,300
MIDDLE EASTERN	~4,200
SOUTH-EAST ASIAN	~4,000
BLACK	~3,700
EAST ASIAN	~1,100
WHITE	~900

Hospitalizations

Race	Rate
LATINO	~188
MIDDLE EASTERN	~148
SOUTH-EAST ASIAN	~132
BLACK	~130
SOUTH ASIAN	~115
EAST ASIAN	~35
WHITE	~21

ICU admissions

Race	Rate
LATINO	~35
SOUTH-EAST ASIAN	~33
MIDDLE EASTERN	~29
SOUTH ASIAN	~21
BLACK	~20
EAST ASIAN	~7
WHITE	~3

Fatality

Race	Rate
LATINO	~20
SOUTH-EAST ASIAN	~17
MIDDLE EASTERN	~14
BLACK	~12
SOUTH ASIAN	~10
EAST ASIAN	~4
WHITE	~2.5

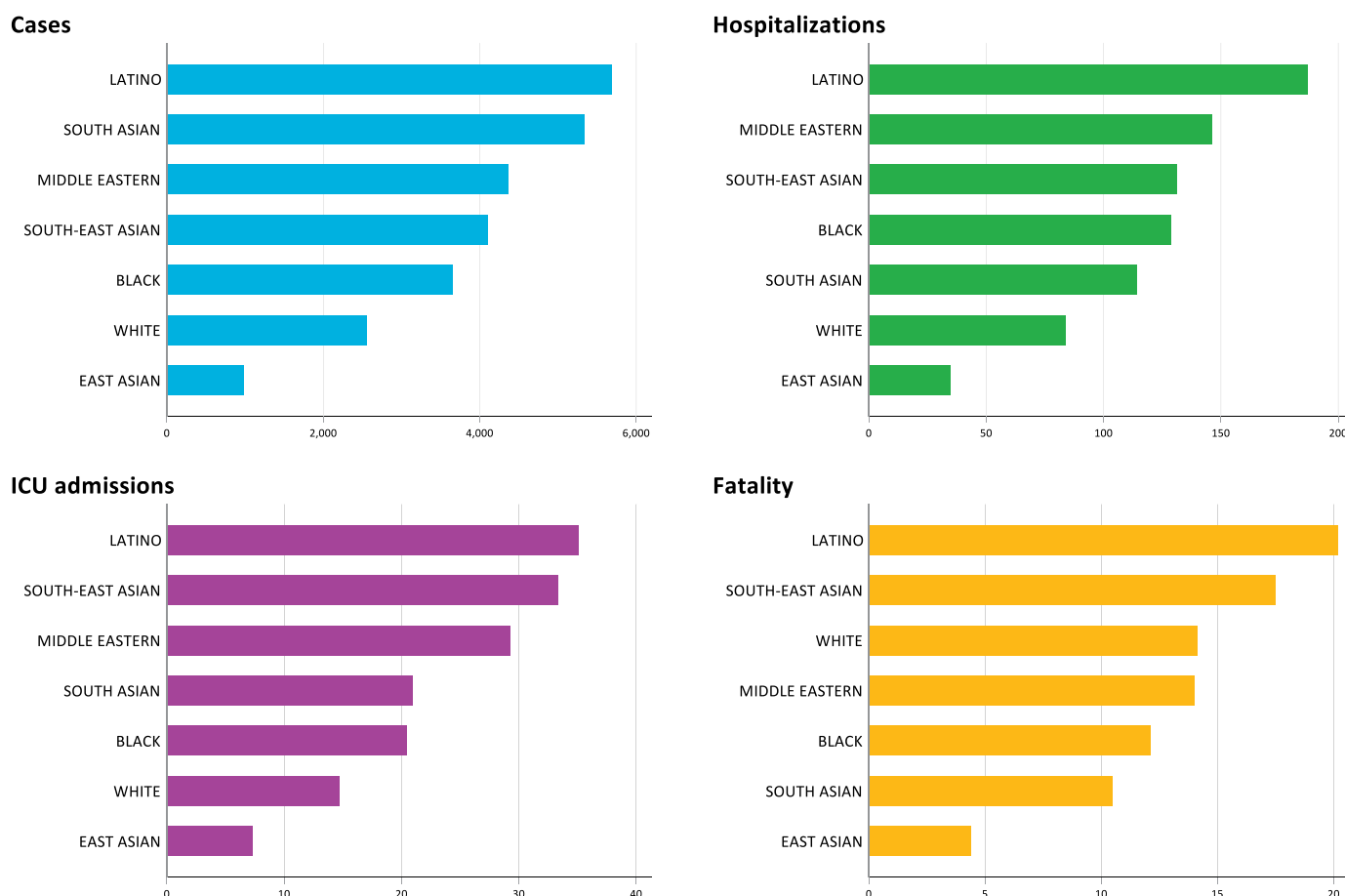**Data source:** *CCM plus and 2016 census population*

Data note: *Missing race data for 43% of all cases (171,915/ 398,651), 57% of all hospital admissions (9,244/16,120), 56% of all ICU admissions (1,542/2,749), and 69% of all non-LTCH resident fatalities (2,047/2,949). To avoid double counting, 505 cases (<1%) have been removed that indicated more than one ethnicity.*

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Sensitivity Analysis

A sensitivity analysis to assess the robustness of the findings was conducted. Although it is unlikely all cases with missing data on race are in fact white, undertaking an analysis that assumes it is so presents us with a conservative estimate of the relative difference in rates of infection and outcomes across the different racial grouping available in CCM.* After converting all missing data to white, the difference in rates between white and all other racial grouping (except East Asian) diminished considerably. However, all other racial groupings (except East Asian) exhibited higher rates of infection, hospitalization and ICU admission. Among fatal cases, after converting missing data on race (representing 69 per cent of cases) to white, population-based rates of fatality among cases that self-identified as members of South-East Asian and Latino communities remained higher than white.

CHART 1B. SENSITIVITY ANALYSIS: AGE-STANDARDIZED PER CAPITA RATES OF INFECTION AND SUBSEQUENT SEVERE OUTCOMES BY RACE IN ONTARIO (JUNE 26, 2020 TO APRIL 21, 2021)

Data source: CCM plus and 2016 census population

Data note: *To perform sensitivity analysis, all missing values for race in these charts were recoded to "WHITE." This is included missing race data for 43% of all cases (171,915/ 398,651), 57% of all hospital admissions (9,244/16,120), 56% of all ICU admissions (1,542/2,749), and 69% of all non-LTCH resident fatalities (2,047/2,949). To avoid double counting, 505 cases (<1%) have been removed that indicated more than one ethnicity.*

* CCM and CCM plus (which includes CCM, iPHIS, CORES, The COD and COVID-19 CCMtool) are dynamic disease reporting systems, which allow ongoing updates to data previously entered. As a result, data extracted from CCM represent a snapshot at the time of extraction and may differ from previous or subsequent reports.

Discussion & Recommendations

The COVID-19 pandemic has exacerbated pre-existing inequities in Ontario. The pandemic has brought to the forefront the need to address these inequities systemically and ensure that progress is made in closing, rather than widening, these gaps.

This landmark report demonstrates the importance of collecting and analyzing sociodemographic data – including race-based data – in the Ontario health system. These data identify and quantify disparities in rates of COVID-19 and rates of hospitalization for COVID-19 for different racialized groups in Ontario. Aside from those identifying as East Asian, all other racial groupings had notably higher rates of COVID-19 infection than white populations. These data offer information in addition to existing area-based analyses that can help our pandemic response and recovery focus on those most at risk. Focussing on population needs tailored to context offers better precision when making sure the health system's response and services are efficiently and effectively deployed. Similarly, the individual level sociodemographic data collected will enable future monitoring of population-based interventions.

The collection and analysis of race-based data creates an evidence base to inform the development and implementation of interventions that can reduce and eliminate health inequities based in racism. The delayed implementation of data collection and application of data to modify interventions (such as introduction of paid sick days to address workplace spread) and low rates of completion suggest current structural barriers to appropriately address health inequities. The inequitable outcomes throughout the pandemic highlight the ongoing need to take an anti-racist approach to address the structural racism embedded in the delivery of health care.

While data completeness hampers our ability to draw firm conclusions, it does not change our confidence in the overarching findings. Even in the unlikely event that all COVID-19 cases with missing race data were white, the broad conclusion remains: racialized populations in Ontario experienced higher rates of COVID-19 infection and severe outcomes.

In analyses not shown here, we have seen variations between public health units in the completeness of sociodemographic data collection. We also see that completeness of these data tends to decrease as cases surge. Nevertheless, we have also seen elsewhere that analysis and publication of data by some public health units has allowed them to improve the equity of their pandemic response.

More timely analysis using an anti-racist approach and improved completeness of data will help the health system and public health units going forward to improve their ability to respond to community needs. Taking this approach is a way to avoid ongoing harm and reinforcing systemic racism and marginalization.

Recommendations to address health inequities produced by COVID-19 are outlined below:

1. Standardize the collection of race-based data through health card registration and renewal.

This report's findings highlight the importance of race-based data collection, throughout the health and public health systems to identify and address health inequities.

The COVID-19 pandemic highlighted the absence of a systematic, provincial approach to the collection of sociodemographic data in Ontario. Data from regions in the U.S., where sociodemographic data collection at the individual level has been long-standing, suggested a higher burden of illness and death among racial and ethnic minority groups within the early weeks of the pandemic.* In the absence of a standardized, provincial mechanism to collect sociodemographic data, Ontario entered the pandemic relying on neighbourhood-level data alone.

Experts in health equity in Ontario and Canada have long called for broadening the collection of sociodemographic data at the individual level beyond age, sex and postal code (e.g. to include language, race/ethnicity, income). The gold standard is for sociodemographic data to be systematically collected as part of all patients' health records. The identification of poorly served populations can guide the targeted allocation of resources where they are most needed. For example, targeted investments in language and translation services in specific geographic sub-regions can improve access to care.

Except for a small number of individual health care organizations in Ontario that voluntarily collect these data via survey at each encounter, Ontario has an imprecise understanding of health trends based on

material deprivation and ethnic concentration at the neighbourhood level. As the above analysis showed, it is possible to collect sociodemographic data even in the midst of a pandemic and use it to guide provincial response efforts. However, the lack of a sustainable, centralized provincial data collection mechanism meant that months went by before we had a provincial picture of the impact of COVID-19 on particular groups, and that the missingness of data hampered our ability to have a precise and targeted tool to understand pandemic impact in real time. Going forward, Ontario needs to build on this experience and put in place a data collection system via health card registration and renewal such that any future crisis can be understood through a sociodemographic lens.

Moreover, by working with communities to develop comprehensive data governance standards and agreements to ensure privacy protections are in place, the health and public health systems will be able to ensure data collection does not replicate existing systems of harm.

2. Apply anti-racist approaches to identify systemic causes of health inequities

Anti-racism has been identified as a priority for Ontario Health in its Equity, Inclusion, Diversity and Anti-Racism Framework. At its core, an anti-racist approach to analysis seeks to use evidence to identify systemic racism – i.e. policies and procedures in a system that reinforce racial inequities and create barriers to racialized populations accessing care and achieving good health outcomes. Collecting race-based data across the health system will enable health system planners to undertake these analyses and inform resource allocation and service delivery decisions that will improve health care access and outcomes for racialized populations.

Centers for Disease Control and Prevention (2020). COVID-19 in racial and ethnic minority groups

The COVID-19 pandemic has demonstrated that Ontario's health care system has the capability to quickly change course when data show that systemic barriers are exacerbating health inequities for racialized populations. Higher income neighbourhoods with lower COVID-19 burden initially had higher vaccination rates and a shift from per capita allocation to a hot spot and priority population approach improved outcomes for neighbourhoods with higher concentrations of racialized people. This demonstrates progress, but because data are not yet collected at the individual level, it is unknown if individuals living within these communities in fact received equitable access to the vaccine. Ensuring that data like this are collected, and then incorporating anti-racist analysis into decision making throughout the health system will involve directly acknowledging fundamental causes of systemic racism and actively working to address them.

3. Use race-based data to inform recovery efforts

This report demonstrates the importance of a sustainable and high-quality approach to collecting and analyzing race-based health data in understanding inequities and systemic racism. As the health system recovers from the COVID-19 pandemic, understanding how existing health inequities have been exacerbated – and how it has created new ones – will be essential to developing effective and high-quality recovery efforts. Identifying, for example, which groups have decreased utilization or underutilization of preventive services

such as cancer screening, primary care, scheduled procedures, and which are in greatest need of mental health and addictions services, will be essential to taking an anti-racist approach to identifying the barriers to groups accessing care and having good health outcomes.

Technical Notes

Data caveats

- The data only represent cases reported to public health units and recorded in CCM plus. As a result, all counts are subject to varying degrees of underreporting due to a variety of factors, such as disease awareness and medical care seeking behaviours, which may depend on severity of illness, clinical practice, changes in laboratory testing, and reporting behaviours.

- Where appropriate, the number and proportion of cases with data available for analysis are presented in order to facilitate valid interpretation of the data.

- Only cases meeting the confirmed case classification as listed in the Ministry of Health COVID-19 case definition are included in the report counts from CCM plus. This includes persons with a positive detection of serum/plasma immunoglobulin G (IgG) antibodies to SARS-CoV-2, which was added to the confirmed case definition on August 6, 2020.

- Approximately 43 per cent of COVID-19 cases reported in Ontario from June 26, 2020 to April 21, 2021 do not have data on race. As a result, the findings of these analyses should be interpreted with caution.

- In some jurisdictions, census sociodemographic data are not collected from persons living in congregate care settings (e.g., long-term care homes) owing to the challenge with obtaining direct self-report and the relevance of some of the questions for this population (e.g., household size, annual income). Cases living in congregate settings were not excluded when calculating rates.

- Rates are based on 2016 population for Ontario. The presented rates should be interpreted with caution as the underlying distribution of racial groups have likely changed since the 2016 Census. This means that some racial groups may be underrepresented in the population data used to calculate rates and the comparable Ontario population. The census denominator also does not include persons living in long-term care homes. Cases residing in long-term care homes have not been excluded from these analyses (except for the analyses looking at fatality given the volume of missing data). Cases that self-reported as transgender, other or unknown were removed from analyses using the gender variable but were otherwise included in overall counts.

- Hospitalization includes all cases for which a hospital admission date was reported at the time of data extraction. It includes cases that have been discharged from hospital, as well as cases that are currently hospitalized. Emergency room visits are not included in the number of reported hospitalizations.

- ICU admission includes all cases for which an ICU admission date was reported at the time of data extraction. It is a subset of the count of hospitalized cases. It includes cases that have been treated or that are currently being treated in an ICU.

Deaths are determined by using the outcome field in CCM. Any case marked 'Fatal' is included in the deaths data, except for those cases that have a value of YES for LTCH_Resident. The CCM field Type of Death is not used to further categorize the data.

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Figure 1. Weekly case counts per capita by race in Ontario (June 26, 2020 to April 21, 2021)

WEEK	BLACK	EAST ASIAN	LATINO	MIDDLE EASTERN	SOUTH ASIAN	SOUTH-EAST ASIAN	WHITE
2020w26	9.717786	1.372503	12.24802	9.038496	11.56105	8.753619	0.8795192
2020w27	10.51433	1.258128	18.37203	8.216814	13.90802	12.34485	1.168981
2020w28	15.77149	0.3431258	13.26869	7.395133	16.86348	7.406909	0.8906524
2020w29	21.50657	0.457501	17.8617	7.395133	11.12642	2.693421	1.69224
2020w30	22.94035	0.457501	9.186017	11.22965	6.258611	3.366777	2.093033
2020w31	14.97495	0.6862515	7.655014	10.68186	4.433183	2.693421	1.836971
2020w32	11.9481	0.457501	14.79969	13.69469	6.867087	2.693421	1.736772
2020w33	10.19571	1.029377	16.84103	7.669027	11.90875	1.795614	1.358245
2020w34	18.95765	1.486878	6.124011	10.13407	13.99495	2.020066	1.44731
2020w35	24.37412	0.5718763	4.082674	13.96858	17.47196	3.81568	1.65884
2020w36	29.79059	1.486878	13.26869	18.62478	22.07899	18.40505	1.580908
2020w37	42.69453	3.202507	23.98571	36.42788	23.73057	24.24079	4.208333
2020w38	69.61758	2.859381	40.82674	44.3708	35.29161	17.05833	6.568561
2020w39	63.56388	5.375637	52.56443	35.6062	41.4633	30.97434	7.615078
2020w40	56.55433	7.205641	44.90942	39.16682	35.46546	24.91415	7.225418
2020w41	75.35267	11.89503	103.0875	64.36504	69.27935	49.15494	12.94786
2020w42	76.46783	13.15315	130.1352	75.59469	82.49197	61.72424	12.03494
2020w43	78.53883	15.78378	106.1495	87.91991	112.7419	75.41579	11.58961
2020w44	86.18561	14.41128	168.9206	104.3535	132.0393	68.45779	11.80114
2020w45	87.46008	18.64317	209.7474	120.5133	193.2346	104.1456	15.75341
2020w46	93.03585	18.30004	177.5963	145.9854	253.1261	129.2842	16.97806
2020w47	89.05315	22.1888	163.8173	141.877	268.6856	129.2842	19.97288
2020w48	108.0108	41.97572	203.113	164.0624	282.5067	161.8297	23.0345
2020w49	123.3044	44.8351	201.582	181.3177	260.08	167.6655	28.80147
2020w50	120.9147	40.94634	219.4437	182.9611	240.0004	158.0141	31.52909
2020w51	122.6671	44.94947	250.0638	179.4005	228.1785	203.5778	35.68176
2020w52	154.3694	66.68077	365.9097	227.058	276.5089	242.6324	51.5465
2021w1	184.6379	67.13828	389.8954	251.4345	307.715	275.4023	54.66379
2021w2	206.3038	54.09949	359.2753	243.2177	313.7129	271.1378	44.90001
2021w3	169.9816	44.72073	287.8285	190.6301	253.9953	221.3094	35.20303
2021w4	133.978	41.74697	226.0781	165.7057	191.4961	210.9847	30.36011
2021w5	108.8073	43.11947	180.148	149.546	151.6844	170.5833	23.66909
2021w6	91.28346	31.9107	159.7346	116.6788	119.3482	108.4102	20.16214
2021w7	64.99765	20.47317	113.2942	107.9142	91.79296	73.17128	15.77568
2021w8	80.45052	25.96318	124.0112	96.13673	105.701	86.86284	16.91126
2021w9	76.46783	24.70506	137.2799	104.3535	96.39999	92.02523	19.63889
2021w10	88.09731	26.99256	169.431	115.0354	112.1334	97.18762	24.03648
2021w11	93.9917	31.79632	176.5757	129.8257	131.6047	116.0416	30.30445
2021w12	117.8879	44.26322	226.5884	168.7186	181.5866	148.8115	36.17162
2021w13	148.6343	55.70075	282.2148	208.981	229.0478	195.722	48.0173
2021w14	179.6994	66.5664	329.1656	244.3133	289.6346	218.3916	56.28923
2021w15	246.4494	72.05641	380.7094	323.4686	341.0074	285.9516	65.28482

Figure 2. Cumulative per capita infection rate by race/gender in Ontario (June 26, 2020 to April 21, 2021)

ETHNICITY	TOTAL	MALE	FEMALE
LATINO	6326.103598	6568.423301	6017.007135
SOUTH ASIAN	5744.709518	6166.388894	5270.408163
MIDDLE EASTERN	4708.234617	4732.844841	4633.133105
SOUTH-EAST ASIAN	4433.820394	4685.863205	4196.769868
BLACK	3744.055822	3553.852904	3875.15274
EAST ASIAN	1072.496755	1128.904086	1008.615713
WHITE	867.5399513	849.7821797	874.8267838

Chart 1A. Age-standardized per capita rates of infection and subsequent severe outcomes by race in Ontario (June 26, 2020 to April 21, 2021)

Cases

RACE	CASES
WHITE	800.9753
EAST ASIAN	982.7298
BLACK	3649.445
SOUTH-EAST ASIAN	4093.357
MIDDLE EASTERN	4359.819
SOUTH ASIAN	5328.958
LATINO	5682.197

Hospitalizations

RACE	CASES
EAST ASIAN	34.92329
BLACK	128.53
MIDDLE EASTERN	146.1863

ICU Admissions

RACE	CASES
EAST ASIAN	7.239161
SOUTH ASIAN	20.89557
SOUTH-EAST ASIAN	33.34357

Fatality

RACE	CASES
EAST ASIAN	4.40325
BLACK	12.12836
SOUTH-EAST ASIAN	17.4806

Chart 1B. Sensitivity analysis: Age-standardized per capita rates of infection and subsequent severe outcomes by race in Ontario (June 26, 2020 to April 21, 2021)

Cases

RACE	CASES
EAST ASIAN	982.7298
WHITE	2556.342
BLACK	3649.445
SOUTH-EAST ASIAN	4093.357
MIDDLE EASTERN	4359.819
SOUTH ASIAN	5328.958
LATINO	5682.197

Hospitalizations

RACE	CASES
EAST ASIAN	34.92329
WHITE	83.71854
SOUTH ASIAN	114.0686
BLACK	128.53
SOUTH-EAST ASIAN	131.0473
MIDDLE EASTERN	146.1863
LATINO	186.8431

ICU Admissions

RACE	CASES
EAST ASIAN	7.239161
WHITE	14.69068
BLACK	20.42612
SOUTH ASIAN	20.89557
MIDDLE EASTERN	29.27268
SOUTH-EAST ASIAN	33.34357
LATINO	35.0829

Fatality

RACE	CASES
EAST ASIAN	4.40325
SOUTH ASIAN	10.48945
BLACK	12.12836
MIDDLE EASTERN	13.99493
WHITE	14.11236
SOUTH-EAST ASIAN	17.4806
LATINO	20.19435