

## EVIDENCE SYNTHESIS BRIEFING NOTE

**TOPIC:** BARRIERS VULNERABLE POPULATIONS FACE REGARDING ADHERENCE TO COVID-19 PUBLIC HEALTH MEASURES

*Information finalized as of May 24, 2020.<sup>a</sup>*

This Briefing Note was completed by the Research, Analysis, and Evaluation Branch (Ministry of Health) based on information provided by members of the COVID-19 Evidence Synthesis Network. Please refer to the [Methods](#) section for further information.

**Purpose:** This note provides a summary of preliminary evidence showing that structural inequities and the social determinants of health (SDOH) – such as race/ethnicity, indigeneity, sex/gender, socioeconomic position, occupation (i.e., precarious employment), incarceration, and homelessness – may contribute to increased risk of COVID-19 infection, hospitalization, and mortality.

### **Key Findings:**

- There is little identified research or jurisdictional information on the specific barriers to adherence to COVID-19 public health measures.
- Preliminary research demonstrates an unequal social and economic burden of COVID-19 internationally, with emerging evidence of this relationship from Ontario and Quebec.
- SDOH play an important role in risk of COVID-19 infection, particularly when they limit ability to maintain physical distancing.
- Existing social inequities in health increase risk of severe COVID-19 outcomes through increased prevalence of underlying medical conditions and/or decreased access to health care.

### **Analysis for Ontario:**

- Ontario demonstrates the impact of four SDOH on the risk of COVID-19 exposure or outcomes.
  - **Race/Ethnicity:** Ontario announced plans to begin collecting individual-level race/ethnicity and income data as part of COVID-19 surveillance.
  - **Homelessness:** COVID-19 outbreaks have been reported in shelters by public health officials in Toronto.
  - **Precarious Employment:** Low-income workers (e.g., essential worker cashiers) in Toronto reported a high exposure risk (e.g., physical proximity to others) to COVID-19 at work.
  - **Neighbourhood Deprivation:** Results from the [Ontario Laboratories Information System \(OLIS\)](#) database suggest that, as of April 30, 2020, a higher percentage of confirmed positive COVID-19 tests was observed in neighbourhood quintiles with the highest ethnic concentration, greatest material deprivation, and the lowest income compared to the least marginalized quintiles.

<sup>a</sup> This briefing note includes current available evidence as of the noted date. It is not intended to be an exhaustive analysis, and other relevant findings may have been reported since completion.

## Supporting Evidence

While the search for scientific evidence linking SDOH directly to rates of COVID-19 infection was extremely limited, preliminary evidence from international surveillance and media reports on links between SDOH and increased prevalence of underlying medical conditions and/or decreased access to health care suggest a likely relationship between SDOH and COVID-19 rates. Racialized (such as Black, Latino and other ethnic minorities) and low-income populations have disproportionately high rates of COVID-19 infection, hospitalization, and mortality in the United States and the United Kingdom. There is also emerging evidence that provides support for these relationships existing in Ontario and Quebec.

[Table 1](#) below summarizes the scientific evidence and jurisdictional experiences regarding the relationship between the SDOH (e.g., race/ethnicity, indigeneity, sex/gender, socioeconomic position, occupation [i.e., precarious employment], incarceration, and homelessness) and rates of COVID-19 infection, hospitalization and/or mortality.<sup>b</sup> In terms of information on jurisdictional experience, the majority of information presented is based on studies and national reports from Canada, the United States, and the United Kingdom. The review of the literature yielded little available research and jurisdictional information on the specific barriers to adherence to COVID-19 public health measures.

**Table 1: Evidence from International and Canadian Social Determinants of Health Data**

<b>Scientific Evidence</b>	<p><b>Indigeneity</b></p> <ul style="list-style-type: none"> <li>Many indigenous communities face health inequities associated with complex influences of colonization, residential schools and continued experiences of systemic <a href="#">racism</a>. Health inequities are well established in Indigenous populations in Canada. For example, there is a higher prevalence of <a href="#">high blood pressure</a> and <a href="#">diabetes</a> among First Nations people and higher rates of <a href="#">asthma and COPD</a> among Métis people. Also, <a href="#">geographic isolation</a> can lead to difficulty accessing medical care, including preventive medical care and advice.<sup>1</sup></li> </ul>
	<p><b>Race/Ethnicity</b></p> <ul style="list-style-type: none"> <li>Chronic <a href="#">exposure to racism</a> is associated with negative mental and physical health outcomes. Racism impacts health through economic and social deprivation, environmental and occupational health inequities, psychosocial trauma and inadequate access to health care.<sup>1</sup></li> </ul>
	<p><b>Incarceration</b></p> <ul style="list-style-type: none"> <li>Incarcerated individuals experience limited access to medical care (<a href="#">Akiyama et al.</a>) (<a href="#">Kinner et al.</a>) (<a href="#">Rubin et al.</a>) (<a href="#">Wurcel et al.</a>) (<a href="#">Yang et al.</a>). People who are incarcerated have restricted movement in crowded and confined spaces, with reduced opportunity for physical distancing and hygiene. Individuals may be reluctant to identify symptoms because of <a href="#">fear of being isolated and losing privileges</a>. Further, resource limitations and policy constraints may impact the ability of the facility to identify, prevent or respond to a COVID outbreak in some settings.<sup>1</sup></li> <li>Racialized populations and adults who identify as an <a href="#">Indigenous people are overrepresented</a> in correctional custody in Canada.<sup>1</sup></li> </ul>

<sup>b</sup> This is based on a May 24, 2020 Public Health Ontario report, [COVID-19 – What We Know So Far About... Social Determinants of Health: A Synopsis \(2020\)](#).

<p><b>Scientific Evidence</b></p>	<p><b>Homelessness</b></p> <ul style="list-style-type: none"> <li>Shelter settings are often <a href="#">crowded</a> and limit opportunities for <a href="#">proper hygiene</a> and physical distancing. Further, community-level public health measures may <a href="#">differentially impact people experiencing homelessness</a>, including reducing access to public spaces and health or social services, increasing fear of involuntary hospitalization and risk of fines or arrest.<sup>1</sup></li> <li>People experiencing homelessness have higher prevalence of <a href="#">comorbidities</a> and mortality related to <a href="#">diabetes, cardiovascular disease and respiratory diseases</a> and <a href="#">lower access to care</a>.<sup>1</sup></li> <li>Following a cluster of COVID-19 cases in a <a href="#">large shelter in Boston</a>, testing all residents found a 36% positivity rate among 147 participants, 88% of which were asymptomatic.<sup>1,2</sup> Homeless adults are being diagnosed with COVID-19 at a <a href="#">greater estimated population frequency</a> (46.3 cases/1,000 persons) compared with adults in the general population in Massachusetts (1.9 cases/1,000 persons).<sup>1</sup></li> </ul>
	<p><b>Socioeconomic Status</b></p> <ul style="list-style-type: none"> <li>Low socio-economic status (SES) is associated with <a href="#">obesity</a>, <a href="#">hypertension</a> and <a href="#">cardiovascular disease</a>, as well as <a href="#">chronic respiratory disease</a> in Canada.<sup>1</sup></li> </ul>
	<p><b>Sex/Gender</b></p> <ul style="list-style-type: none"> <li>Explanations for the sex differences in severe COVID-19 infections and deaths are unclear. A <a href="#">commentary in the Lancet</a> discusses how the emerging evidence proposes these sex-based variations are potentially due to sex-based immunological or gendered differences in risk behaviour, such as patterns and prevalence of smoking. Further examination is needed of the gendered variations in vulnerability to infection, exposure to pathogens, and treatment received. For example, risk for COVID-19 infection may be higher among women than men because of differences in the proportion of women working in front-line healthcare (socially prescribed care roles) and other occupations deemed essential that require close interaction.<sup>1</sup></li> </ul>
<p><b>International Scan</b></p>	<p><b>Race/Ethnicity</b></p> <ul style="list-style-type: none"> <li><b>US:</b> The <a href="#">Centers for Disease Control and Prevention (CDC)</a> reported that 33% (192/580) of hospitalized COVID-19 patients in March 2020 were Black compared to 18% of Black residents in the COVID-19-Associated Hospitalization Surveillance Network (COVID-NET) catchment area, representing approximately 10% of the United States population across 15 States. These results are preliminary, as race/ethnicity data was only available on 39% (580/1,482) of COVID-19 patients. Similarly, <a href="#">CDC</a> reported Black patients were overrepresented in a cohort of 305 COVID-19 hospitalizations in Georgia, where 80% of the cohort was Black compared to 47% of hospitalized patients overall during March 2020. Early reports of racial inequities in COVID-19 are summarized by <a href="#">Yancy et al.</a> For example, in <a href="#">Chicago</a>, Black (652 cases per 100,000 cases and 48 deaths per 100,000) and Latino (434 cases per 100,000 cases and 17 deaths per 100,000) residents had higher COVID-19 case and death rates compared to White (257 cases per 100,000 cases and 14 deaths per 100,000) residents. Similarly, disproportionately high mortality has been observed in Black populations in <a href="#">New York City</a> (20 vs. 10 deaths per 100,000 in Black versus White individuals), <a href="#">Louisiana</a> (56% of deaths were in Black residents who represent <a href="#">33% of the population</a>) and <a href="#">Michigan</a> (33% of cases and 40% of deaths were in Black residents who represent 14% of the <a href="#">population</a>).<sup>1</sup></li> <li><b>US:</b> As of April 17, 2020, <a href="#">Johns Hopkins University</a> noted that raced-based data on COVID-19 in the United States is being reported for testing in two states (Illinois and Kansas), for</li> </ul>

	<p>confirmed cases in 34 states and for deaths in 26 states. When reported, a substantial proportion of cases and deaths are of <a href="#">unknown or missing race/ethnicity</a> (e.g., 58% of cases on <a href="#">CDC's website</a>).<sup>1</sup></p> <ul style="list-style-type: none"> <li>● <b>UK:</b> As of April 10, 2020, the <a href="#">Office of National Statistics</a> reported the odds of COVID-19-related death were 4.2 (95% confidence interval (CI):3.8, 4.6) and 4.3 (95% CI: 3.8, 4.8) times higher in Black males and females, respectively, compared to their White counterparts after accounting for age in England and Wales. Further, the odds of COVID-19 related death was also higher for other ethnic minorities in England and Wales, among both males (Bangladeshi/Pakistani: Odds Ratio (OR) 3.6, 95% CI: 3.1,4.0; Indian: OR 2.4, 95%CI: 2.1, 2.7; Chinese: OR 1.9, 95% CI: 1.4, 2.6; and Mixed ethnicities: OR 2.7, 95% CI: 2.3, 3.1) and females (Bangladeshi/Pakistani: OR 3.4, 95% CI: 2.8, 4.0; Indian: OR 2.7, 95% CI: 2.3, 3.1; and Mixed ethnicities: OR 2.1, 95% CI: 1.7, 2.5) compared with those of White ethnicity.<sup>1</sup></li> </ul> <p><b>Incarceration</b></p> <ul style="list-style-type: none"> <li>● <b>US:</b> As of April 21, 2020, the <a href="#">CDC</a> reported COVID-19 cases across 420 correctional and detention facilities in 54 jurisdictions; 4,893 cases and 88 deaths were among incarcerated and detained persons and 2,778 cases and 15 deaths among staff members.<sup>1</sup></li> </ul> <p><b>Homelessness</b></p> <ul style="list-style-type: none"> <li>● <b>US:</b> The <a href="#">CDC</a> reported COVID-19 cases among 1,192 residents and 313 staff after testing 19 homeless shelters in five cities, with higher test-positivity in shelters with a cluster, defined as two or more cases in the two weeks preceding testing (residents: 17-66%, staff: 16-30%), as compared to those without (residents: 4-5%; staff: 1-2%).<sup>1</sup></li> </ul> <p><b>Precarious Employment</b></p> <ul style="list-style-type: none"> <li>● <b>UK:</b> <a href="#">Low-skilled workers</a>, (e.g., male security guards: 46 deaths per 100,000; male taxi drivers: 36 deaths per 100,000) have higher COVID-19 deaths compared to general population in the United Kingdom (males: 10 deaths per 100,000).<sup>1</sup></li> </ul> <p><b>Neighbourhood Deprivation</b></p> <ul style="list-style-type: none"> <li>● <b>US:</b> <a href="#">COVID-19 death rates</a> are consistently highest in the most disadvantaged compared to the least disadvantaged counties: as characterized by percent poverty (19 vs. 10 per 100,000); percent population of colour (17 vs. 3 per 100,000); and percent crowding (17 vs. 5 per 100,000).<sup>1</sup></li> <li>● <b>UK:</b> The <a href="#">age-standardized mortality rate of COVID-19 deaths</a> was higher in the most deprived areas compared to the least deprived areas (England: 55 vs. 25 deaths per 100,000; Wales: 45 vs. 23 deaths per 100,000).<sup>1</sup></li> </ul> <p><b>Sex/Gender</b></p> <ul style="list-style-type: none"> <li>● <b>International:</b> Preliminary data show approximately equal numbers of COVID-19 cases between <a href="#">men and women internationally</a>, yet report higher rates of hospitalization and mortality among men.<sup>1</sup></li> </ul>
<p><b>Canadian Scan</b></p>	<p><b>Race/Ethnicity</b></p> <ul style="list-style-type: none"> <li>● Structural factors, such as colonization, racism, social exclusion and repression of self-determination are important structural determinants of increased COVID-19 risk, for example in <a href="#">Black</a> populations in Canada. This unequal starting point acts through more proximal and intermediary pathways, for example, <a href="#">Black</a> populations are overrepresented among Canadians with low socioeconomic status (e.g., <a href="#">education and occupation</a>), a risk factor for increased risk of COVID-19.<sup>1</sup></li> </ul>

	<ul style="list-style-type: none"> <li>Following early reports of social inequities in COVID-19 outcomes <a href="#">Quebec</a> and <a href="#">Manitoba</a> have announced plans to begin collecting individual-level race/ethnicity and income data as part of COVID-19 surveillance.<sup>1</sup></li> </ul> <p><b>People Requiring Assistance</b></p> <ul style="list-style-type: none"> <li>The <a href="#">Public Health Agency of Canada</a> warns that other populations vulnerable to COVID-19 may include anyone who has difficulty reading, speaking, understanding or communicating (e.g., speaking a language other than English or French); accessing health advice; doing preventive activities; accessing transportation; has ongoing specialized medical care; needs specific medical supplies; or requires supervision to support independence. Mitigating these barriers has been raised as a <a href="#">human rights concern</a>.<sup>1</sup></li> </ul>
	<p><b>Indigeneity</b></p> <ul style="list-style-type: none"> <li><a href="#">Unsuitable housing</a> and resulting crowding can increase COVID-19 risk. Approximately 23% of First Nations people live in unsuitable housing, a figure that is as high as 52% in Inuit Nunangat, and is higher on reserve (37%) compared to off reserve (15%). Further, Indigenous families living in multigenerational households may be particularly at risk (e.g., 25% of First Nations people living on reserve vs. 6% of non-Indigenous population).<sup>2</sup></li> <li>Structural factors, such as colonization, racism, social exclusion and repression of self-determination are important structural determinants of increased COVID-19 risk, for example in <a href="#">Indigenous</a> populations in Canada.<sup>1</sup></li> </ul>
	<p><b>Incarceration</b></p> <ul style="list-style-type: none"> <li>As of May 6, 2020, <a href="#">Correctional Services Canada</a> reported 294 confirmed COVID-19 cases have been reported in Canadian federal correctional institutions, including 166 in Quebec, eight in Ontario, and 120 in British Columbia.<sup>1</sup></li> </ul>
	<p><b>Precarious Employment</b></p> <ul style="list-style-type: none"> <li>Workers deemed to be essential can be at increased risk of COVID-19 infection, particularly if they are <a href="#">unable to work from home</a> or practice physical distancing and do not have access to <a href="#">personal protective equipment</a>. This is pressing in public facing work with high proximity to others, such as sales and services occupations, where <a href="#">women, low-income</a> and <a href="#">racialized workers</a> are often overrepresented. For example, COVID-19 outbreaks of 558 confirmed cases in a <a href="#">meat-packing plant</a> and 49 confirmed cases in <a href="#">migrant farm workers</a>.<sup>1</sup></li> <li>Low-income workers in precarious employment are less likely to have <a href="#">paid sick leave</a>. These relationships are concerning given recent findings from the <a href="#">Labour Force Survey</a> that women, those with precarious employment, and low-income workers have faced greater job loss and reduced hours relative to their peers.<sup>1</sup></li> </ul>
	<p><b>Sex/Gender</b></p> <ul style="list-style-type: none"> <li>In <a href="#">Canada</a>, approximately 55% of COVID-19 cases are women. For COVID-19 cases with information on hospitalization and sex (56%), men had higher risk of hospitalization (1.4 times) and ICU admission (2.1 times) compared to women.<sup>1</sup></li> </ul>
<p><b>Ontario Scan</b></p>	<p><b>Race/Ethnicity</b></p> <ul style="list-style-type: none"> <li>Following early reports of social inequities in COVID-19 outcomes, <a href="#">Ontario</a> has announced plans to begin collect individual-level race/ethnicity and income data as part of COVID-19 surveillance. Within Ontario, <a href="#">Peel</a>, <a href="#">Toronto</a>, and London-Middlesex public health units have all announced plans to collect and use sociodemographic and race-based data.<sup>1</sup></li> </ul>



<b>Ontario Scan</b>	<p><b>Homelessness</b></p> <ul style="list-style-type: none"> <li>COVID-19 outbreaks have been reported in shelters <a href="#">by public health officials in Toronto</a>, but to date there has been no comprehensive analysis of the burden of COVID-19 within Canadian shelters.<sup>1</sup></li> </ul>
	<p><b>Precarious Employment</b></p> <ul style="list-style-type: none"> <li>An analysis of essential sales and services workers in Toronto, of which high proportion are part-time workers and are individuals 60 years of age and over, found that many low-income workers had <a href="#">a high exposure risk to COVID-19</a> at work (measured as physical proximity to others). For example, there are 94,000 essential service cashiers in Ontario, a low wage occupation (approximately \$14/hour) with high exposure to COVID-19 risk.<sup>1</sup></li> </ul>
	<p><b>Neighbourhood Deprivation and Ethnic Concentration</b></p> <ul style="list-style-type: none"> <li>As of April 30, 2020, a higher percentage of confirmed positive COVID-19 tests was observed in neighbourhood quintiles with the highest ethnic concentration (41% vs. 8%), greatest material deprivation (24% vs. 17%), and the lowest income (26% vs. 16%) compared to the least marginalized quintiles of each measure based on results from the <a href="#">Ontario Laboratories Information System</a> (OLIS) database. In <a href="#">Toronto</a>, as of April 27, 2020, the lowest income quintile had higher rates of COVID-19 cases (113 cases per 100,000) and hospitalizations (20 hospitalizations per 100,000) compared to the highest income quintile (73 cases per 100,000; 19 hospitalizations per 100,000). Similarly, quintiles with the highest percent of people from racialized communities, newcomers to Canada, people with lower education levels, and unemployed people had higher COVID-19 case and hospitalization rates compared to quintiles with the lowest percent of each. Similar findings are emerging from <a href="#">Montreal</a>, where a higher number of COVID-19 cases have been observed in low compared to high income neighbourhoods.<sup>1</sup></li> </ul>

**Methods**

The COVID-19 Evidence Synthesis Network is comprised of groups specializing in evidence synthesis and knowledge translation. The group has committed to provide their expertise to provide high-quality, relevant, and timely synthesized research evidence about COVID-19 to inform decision makers as the pandemic continues. The following members of the Network provided evidence synthesis products that were used to develop this Evidence Synthesis Briefing Note:

- Public Health Ontario. May 24, 2020. COVID-19 – [What We Know So Far About... Social Determinants of Health: A Synopsis](#).
- Research, Analysis and Evaluation Branch – Ontario Ministry of Health. 812. Infection Prevention and Control Strategies for People Experiencing Homelessness 21-MAY-2020 (MooreJ - RAE)

For more information, please contact the [Research, Analysis and Evaluation Branch \(Ministry of Health\)](#).

<sup>1</sup> Public Health Ontario (2020). COVID-19 – [What We Know So Far About... Social Determinants of Health: A Synopsis](#).

<sup>2</sup> Research, Analysis and Evaluation Branch – Ontario Ministry of Health. 812. Infection Prevention and Control Strategies for People Experiencing Homelessness 21-MAY-2020 (MooreJ - RAE)