

Evidence with Impact

A selection of recent projects that illustrate the combination of ideas, insight and rigour driving ICES research.



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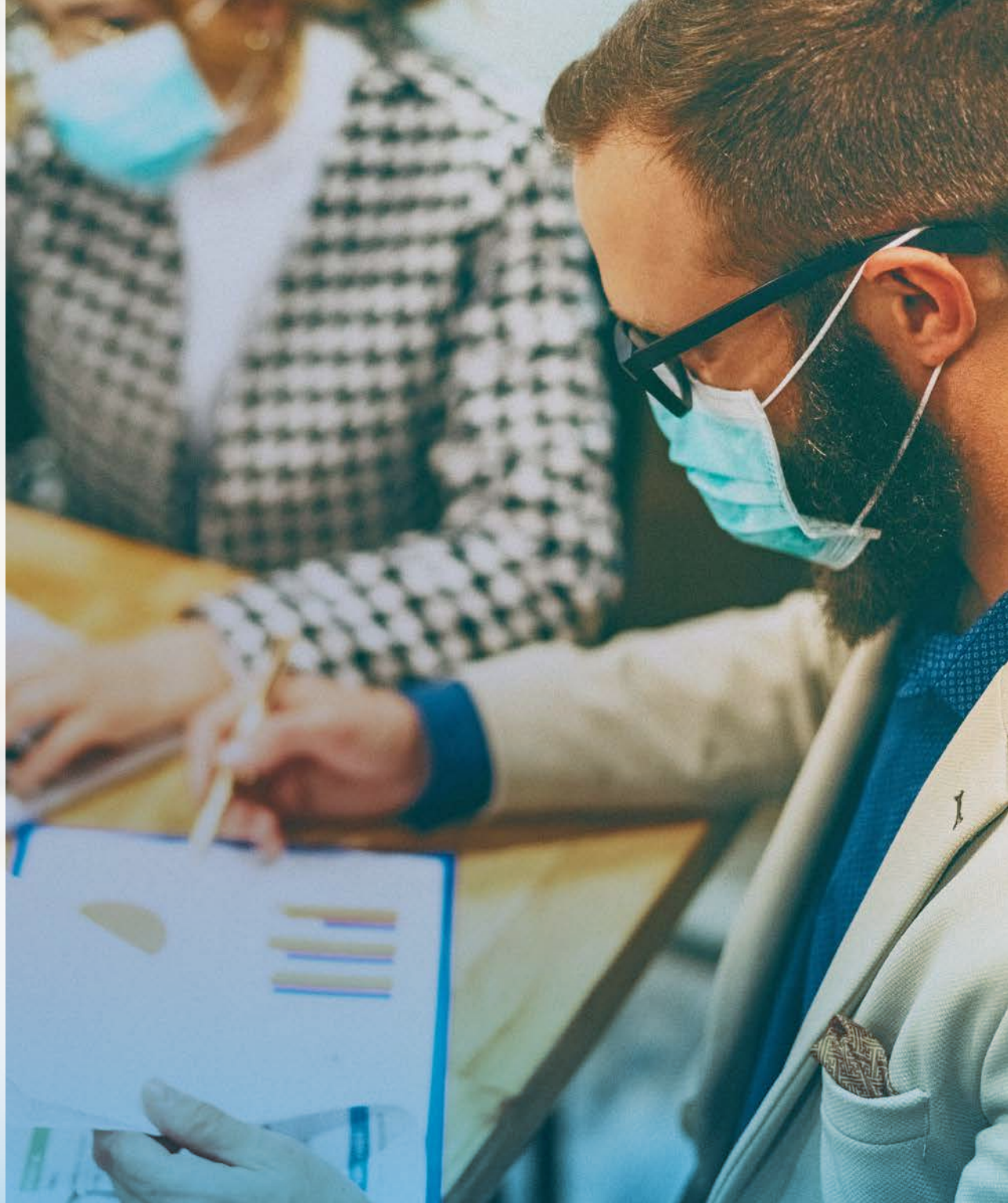


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Near-real-time data changed the way COVID-19 vaccines were allocated and reported on across Ontario

Background

By the time Ontario was experiencing the second wave of COVID-19 in September 2020, ICES scientists and staff were already making great strides in providing real-time data on COVID-19 testing and infection rates in long-term care and retirement homes to the provincial government, the COVID-19 Science Advisory Table and public health units. That work evolved into providing weekly reports to public health units on neighbourhood-level testing and COVID-19 test positivity rates for all Ontarians. The granular nature of the data, which was updated on the ICES COVID-19 dashboard on a weekly basis, allowed for the delivery of neighbourhood-level analytics that helped to inform the province-wide response to the pandemic and make residents aware of local transmission rates.



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In November 2020, ICES began to provide COVID-19 case and percent positivity rates by neighbourhood based on forward sortation areas (FSAs), which are geographical areas based on the first three characters in a postal code. These data were shared with public health units and posted on the ICES website, and helped public health units better target communities in their catchment areas for testing.

ICES' work with FSAs also had real-time impact on the way the government rolled out its vaccination strategy. When vaccination data became available at ICES near the end of March 2021, the first report showed how vaccine uptake varied across neighbourhoods with higher and lower levels of COVID-19 infection rates. Neighbourhoods with higher rates of infection had lower rates of vaccine uptake, and these data informed the strategy to increase vaccine supply to these hardest hit neighbourhoods and address this important inequity. Not only was the COVID-19 testing and positivity work informing policy on a near-daily basis, the data posted on the ICES COVID-19 dashboard were being leveraged by service providers, media and the public to support more transparent, efficient and equitable vaccination delivery.

ICES published downloadable aggregated data files reporting weekly FSA-level COVID-19 percent positivity rates and the cumulative incidence of COVID-19 cases, hospitalizations, deaths and vaccinations; the files were downloaded 2,486 times as of August 26, 2021. The data were used by local and national media as well as by researchers and citizens, who were then able to create additional data visualizations and perform secondary analyses to raise public awareness.

How this work is having impact

- ICES scientists published 32 studies about COVID-19 in 2020/21.
- Through data partnerships at the provincial and national levels, ICES rapidly added near-real-time COVID-19-relevant data sets to its collection of linked health data.
- During 2020/21, 27 COVID-related Applied Health Research Questions (AHRQs) were answered by ICES scientists and staff.
- The ICES COVID-19 dashboard was visited 112, 095 times from April 1, 2020 to March 31, 2021.
- According to Homer Tien, head of Ontario's COVID-19 Vaccine Distribution Task Force, ICES' modelling of hotspots influenced the task force's planning and recommendations to Ontario government ministers and Canada's premiers.
- Dr. David Williams, Ontario's Chief Medical Officer of Health, used the weekly testing reports to monitor the province's reopening plans.

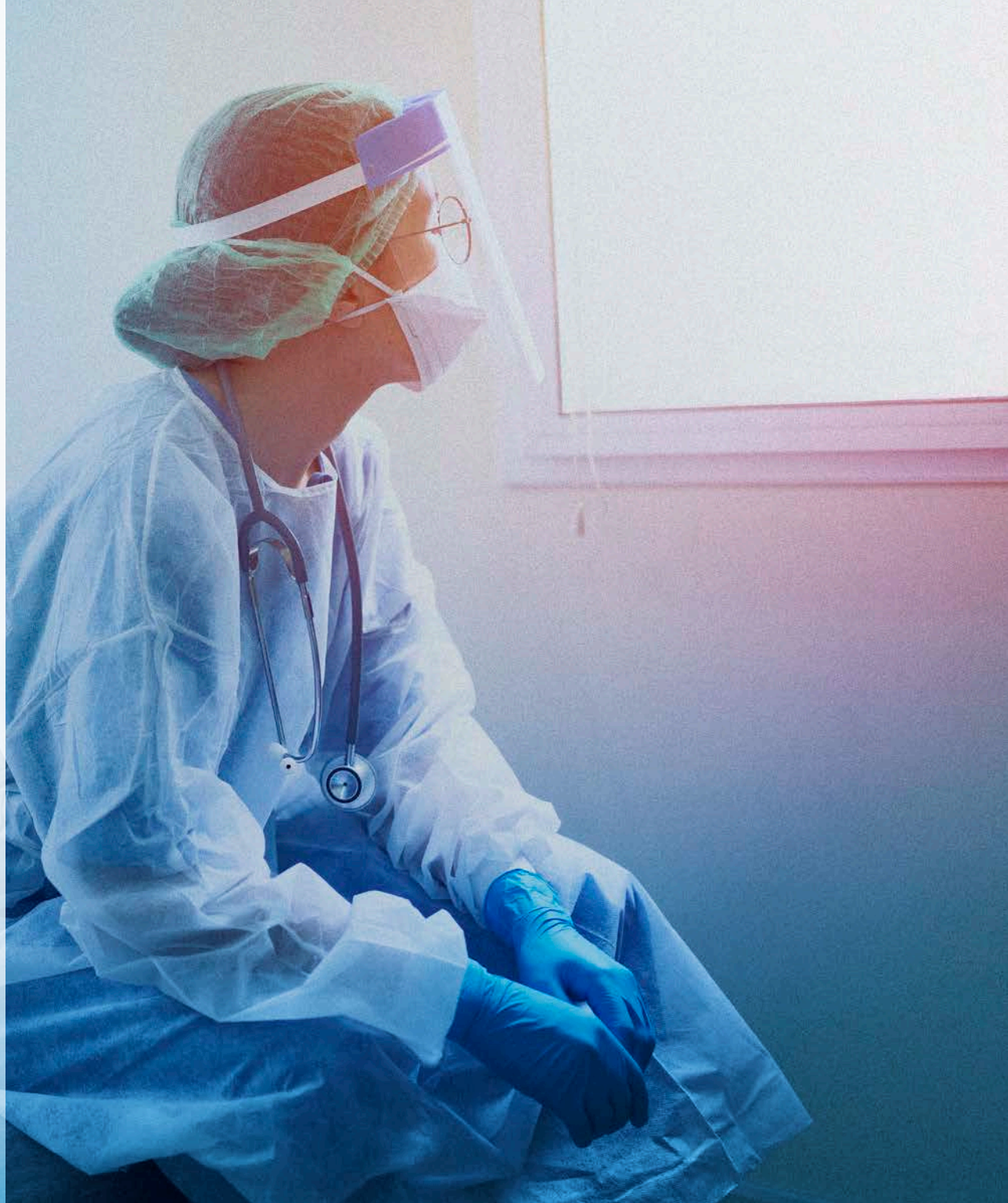
"ICES data have been central to a number of stories at The Local about the vaccine rollout across Toronto and Peel region. On April 6, The Local broke the story about how the vaccine rollout was missing Toronto's hardest-hit areas, all using ICES data just hours after they were released publicly. The ICES vaccination data set, updated weekly, was core to several stories in our Vaccinating Toronto series, including our Hot Spot Tracker. These stories were widely read by citizens to stay informed and by policy-makers and vaccine teams to target pop-up clinics in hard-hit and undervaccinated neighbourhoods,"

Tai Huynh, editor-in-chief, The Local

The impact of COVID-19 on Ontario's health care system

Background

The impact of the COVID-19 pandemic has been felt worldwide, with hospitalization, death and the long-term effects of infection being its immediate and enduring consequences. The virus and subsequent efforts to stop its rapid spread have altered the way health care systems operate. Everyone, including patients, have been told to limit their activities outside their homes, and health systems have had to rapidly adapt their delivery of patient care to include a shift to virtual care and coping with delays in diagnostic screening, childhood immunization, and surgery. The pandemic's long-term impacts on the delivery of health care likely won't be fully realized for years to come.



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ICES Research

A March 2021 [study](#) led by ICES scientists Drs. Rick Glazier and Tara Kiran found an 80% decrease in primary care office visits in Ontario in the first four months of the pandemic; this was accompanied by a shift to virtual care visits that represented nearly two-thirds of all physician visits. While telemedicine had been available in rural and remote communities for several years before the start of the pandemic, a January 2021 ICES [study](#) led by Dr. Sacha Bhatia found there wasn't a significant uptake in its use until government-ordered lockdowns and travel restrictions highlighted its role. That study's findings provide some reassurance that groups with the greatest care needs, including older adults and those with higher levels of morbidity, continued to receive relatively high levels of care overall.

Patients weren't just avoiding doctors' offices during the first wave of the pandemic. Emergency department visits declined significantly for common conditions such as appendicitis, miscarriage, gallbladder attacks and ectopic pregnancy. But again, patient outcomes didn't worsen.

In Ontario hospitals, the reallocation of resources such as beds, ventilators and medical staff to manage the surge in COVID-19 admissions resulted in an immediate cancellation of 60% of cancer surgeries. A March 2021 [study](#) led by ICES scientists Drs. Antoine Eskander and Rinku Sutradhar showed a significant cancer surgery backlog, which the Ontario COVID-19 Science Advisory Table characterized as an [enormous challenge](#) for the post-pandemic recovery phase in the province.

How this work is having impact

- To date, ICES has conducted more than 40 studies on COVID's effect on medical conditions and service delivery.
- The Ontario Ministry of Health introduced temporary billing codes for physician visits conducted by telephone or video conferencing and is assessing their permanent adoption.
- In January 2021, the Ministry of Health introduced its [Digital First for Health](#) Strategy, which enables patients to access more virtual-care options.
- Dr. Eskander presented his ideas for using data to increase the efficiency of cancer care to the federal government's [Parliamentary Health Research](#) Caucus in May 2021.
- In July 2021, the Ontario government and the Ministry of Health announced [additional funding](#) to reduce wait times for diagnostic imaging and surgery.
- Cancer Care Ontario has used ICES data to inform its models on measuring the surgery backlog.

"The value of ICES data isn't just the data. It's the expertise held within the organization by people who are used to working with the data, who meticulously, honestly and comprehensively answer some of the most pressing questions facing our health care system. This has been especially true during the COVID-19 pandemic. The research team that completed this work has had a long history of working with data and understands its strengths and weaknesses. The data alone is not powerful; it's the team that brings it to life and allows us to tell the real story."

Dr. Antoine Eskander, ICES adjunct scientist and surgical oncologist

Immigrants and refugees have been disproportionately affected by COVID-19 in Ontario

Background

Disadvantaged communities face disproportionate risks of becoming infected with COVID-19, suggesting inequities in the burden of the virus. Recent immigrants and refugees, many of whom have low income and are more likely to live in overcrowded housing or multigenerational households, are at increased risk of infection, this despite [research](#) that shows Ontario newcomers are healthier than long-term and Canadian-born residents. Recent immigrants and refugees are also more likely to be employed in settings that put them at greater risk of infection, such as hospitals or nursing homes, or that don't offer sick leave, such as hotels and restaurants. Lower language proficiency may also make it more difficult for them to follow public health directives that are important in reducing the risk of COVID-19 infection.

Immigrants and refugees have higher case rates, lower rates of COVID-testing and a higher percentage of positive COVID-19 tests than other Ontarians. And while the province's COVID-19 vaccination strategy has prioritized some high-risk communities, immigrants and

refugees still have much lower rates of vaccine coverage. An enhanced effort focused on reducing barriers to vaccination and directing vaccines to the highest-risk communities is needed to ensure vaccine equity for immigrant and refugee communities in Ontario.



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ICES Research

In September 2020, a team of ICES investigators led by Dr. Astrid Guttman released a [report](#) comparing patterns of COVID-19 testing and test results among immigrants and refugees in Ontario with those of Canadian-born and long-term residents. The study found that of all Canadian-born and long-term residents tested for COVID-19 between mid-January and mid-June 2020, 2.9% tested positive. Of the people tested who identified as immigrants or refugees, 8.1% received a positive diagnosis. The report highlighted the toll the virus was taking on those living in low-income neighbourhoods and on immigrant, racialized women, particularly those employed as health care and personal support workers. The report was presented widely, including to all Ontario medical officers of health and to Immigration, Refugees and Citizenship Canada.

Individual reports using data through to November 2020 were produced by the ICES team for the three public health units in Ontario serving the largest immigrant populations. The team also co-wrote a [briefing note](#) with Toronto Public Health for community partners, including those providing settlement services.

A [follow-up report](#) released by ICES in April 2021 compared vaccine coverage among immigrants, refugees, other newcomers and Canadian-born and long-term residents in Ontario. The study showed that immigrants and refugees, particularly the elderly among them, were less likely to be vaccinated for COVID-19. Detailed reports have been produced regularly for the three public health units in Ontario serving large immigrant populations and have helped to inform their local vaccination strategy.

How this work is having impact

- These findings have helped to inform targeted public health efforts to minimize COVID-19 infection among immigrants and refugees, including the provision of mobile testing units in at-risk communities.
- Lorna Jantzen, assistant director for Immigration, Refugees and Citizenship Canada (IRCC) said the partnership with ICES helped the Government of Canada leverage IRCC data to bring out important results that would not otherwise have been possible and to fill key information gaps that benefit all Canadians, by allowing other provinces to learn from the experience of Ontario.
- In April 2021, the Toronto-based Wellesley Institute released a [paper quantifying inequities in vaccination across Ontario](#), using data downloaded from ICES' COVID-19 dashboard.
- ICES data, including more granular information on specific groups of immigrants, has informed local strategies to address low vaccination rates among older immigrants and refugees who are at high risk of severe disease and provided continued surveillance on progress.
- The vaccine report was presented by Dr. Guttman to IRCC, and the Privy Council of Canada has been using ICES dashboard data for federal presentations and briefings.

“The findings should be a call to action to address systemic inequities by allowing people to leave work to be tested, protecting people in their workplaces, providing paid sick leave so people who are precariously employed don’t lose income in order to protect themselves and their families while ill, and supporting those who can’t safely quarantine within their own crowded households.”

Dr. Astrid Guttman, Chief Science Officer, ICES

How a data-driven approach helped protect people experiencing homelessness in Ontario

Background

One in 20 Canadians [has experienced](#) homelessness at some point in their life. This is concerning as unhoused or insecurely housed people are particularly vulnerable to health concerns, including infection and illness from the COVID-19 virus. They often reside in crowded living spaces that make physical distancing or self-isolation difficult or impossible.

Homelessness is associated with high rates of chronic health conditions and relative difficulty accessing health care, and it was thought that this population would have poorer outcomes after being infected with COVID-19. However, our understanding of this is limited because of the unique challenges of measuring and conducting research on homelessness.



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ICES Research

An ICES Western team led by Lucie Richard and [Dr. Salimah Shariff](#) conducted a [study](#) that assessed the impact of COVID-19 infection on individuals with a history of homelessness in Ontario. Using an [algorithm](#) that leverages administrative health data available at ICES, the team identified nearly 30,000 recently unhoused individuals. The team followed this group during the first wave of the pandemic in 2020 to determine how many individuals tested positive for COVID-19 and experienced complications from infection, which included hospitalization, intensive care unit admission and death.

In comparison to the community-dwelling Ontario population, individuals with a recent history of homelessness were 76% more likely to test positive for COVID-19. They were 20 times as likely to be hospitalized, more than 10 times as likely to require intensive care, and more than 5 times as likely to die within 21 days of a positive test.

This study confirms the vulnerability of people experiencing homelessness during public health crises and provides evidence to support new policies aimed at better protecting them. Given the large number of Canadians who experience homelessness during their lifetime, this work is pivotal to Canada's response to the COVID-19 pandemic and the challenge of protecting this population from the virus.

How this work is having impact

- Advocates [highlighted](#) this study as evidence of the need for additional measures to protect individuals experiencing homelessness during the pandemic, such as sheltering in motels or other private accommodations and granting priority vaccination status.
- In February 2021, Dr. Naheed Dosani brought the study to the attention of Prime Minister Justin Trudeau during a [virtual roundtable](#), advocating for additional measures to protect this vulnerable population.
- Citing this study's findings, the City of Toronto modified its [vaccination plan](#) in February 2021 to prioritize individuals with a recent history of homelessness. Other jurisdictions across the province quickly followed suit.
- The research team is now conducting a related study examining the indirect consequences of the COVID-19 pandemic, such as change in rate of overdoses and other health care utilization, on individuals experiencing homelessness.
- The research team's future work in this area will include assessing the extent of vaccine uptake in this population and determining the efficacy of vaccination on infection and complications.

"Everyone knew people experiencing homelessness would be more vulnerable to COVID-19 when the pandemic began. Hard data measuring this is very hard to come by, but vital. Communicating the fact that this group is five, ten, twenty times more at risk is far more compelling than just saying they are likely, probably at higher risk. Data like this acts as a catalyst for social change."

Naheed Dosani, palliative care and family physician at William Osler Health System and Inner City Health Associates