The Canadian Partnership for Tomorrow's Health

Philip Awadalla, National Scientific Director

CanPath

Canadian Partnership for Tomorrow's Health

Partenariat canadien pour la santé de demain

Canada's largest population health research platform

CanPath

Canadian Partnership for Tomorrow's Health

CanPath is Canada's largest population health study and a national platform for health research.

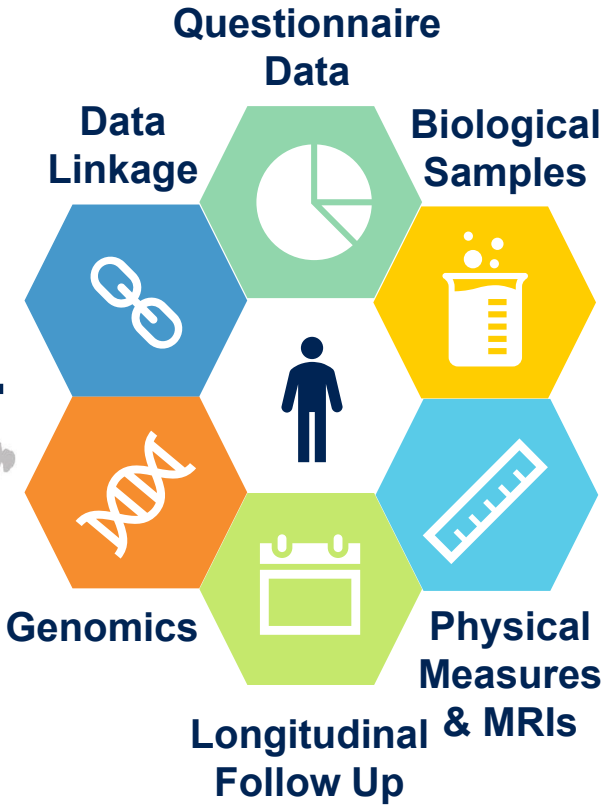
By studying the biology, behaviour and environments of over 330,000 Canadians for many years, CanPath is revealing hidden **causes** of common and rare chronic diseases and cancer.

Canada's largest population health research platform

330,000+ Canadians

+

+



Nationally harmonized data and biosamples are made available to researchers.

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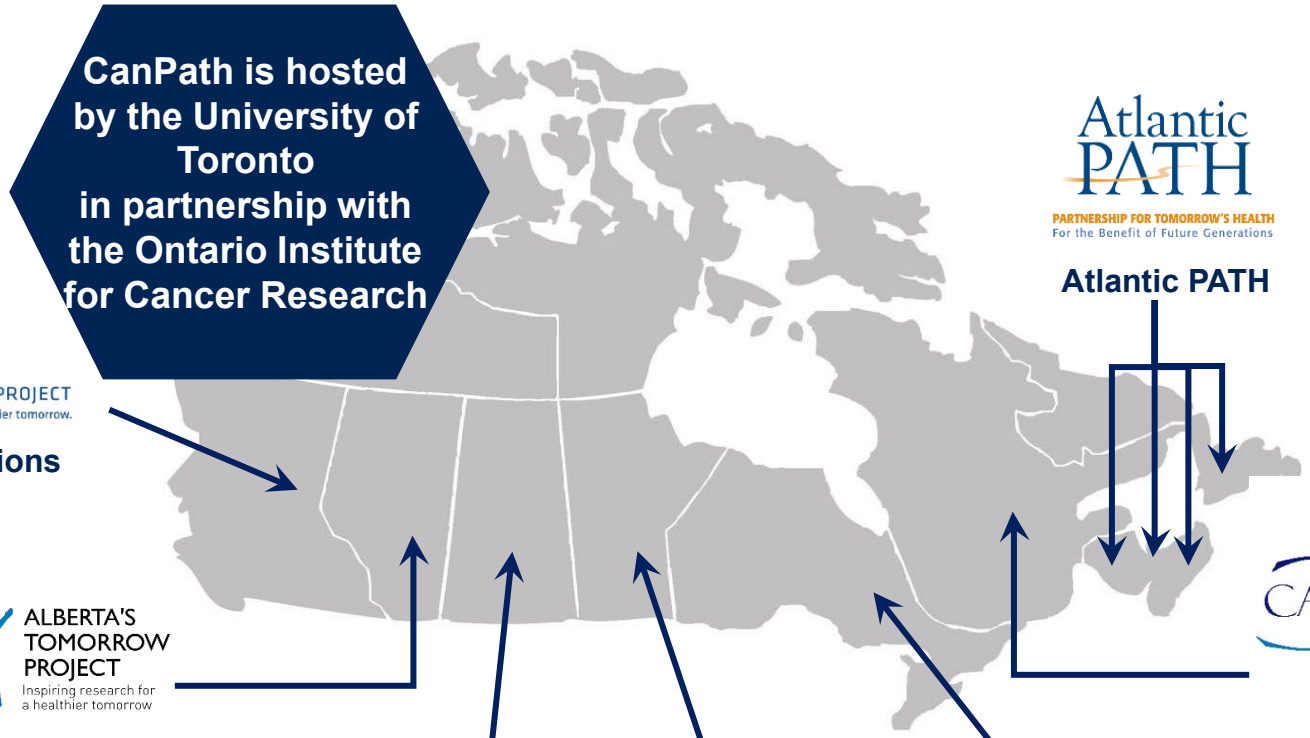
CanPath brings together seven cohorts across ten provinces



National Leadership Team

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SUPPORT-Canada

SUPPORT-Canada: A national COVID-19 serological surveillance study

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Canadian Partnership for Tomorrow's Health

CIHR IRSC
Canadian Institutes of Health Research
Instituts de recherche en santé du Canada

Public Health Agency of Canada
Agence de la santé publique du Canada

COVID-19 IMMUNITY TASK FORCE

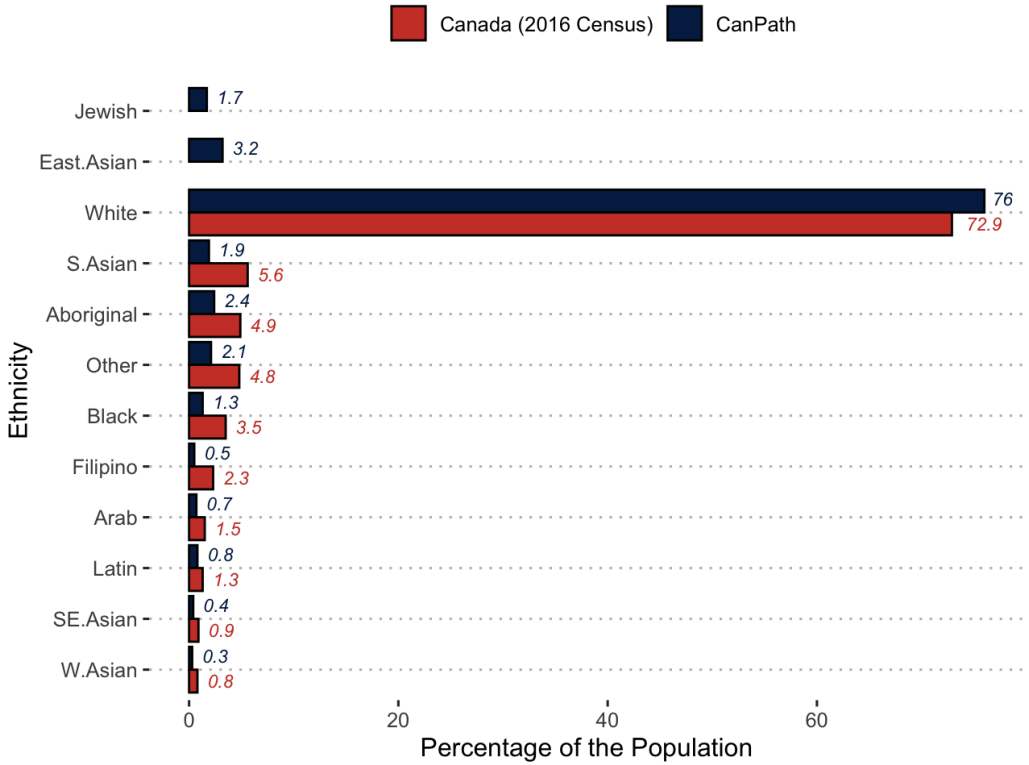
Collection of COVID-19 related data and outcomes from over 100,000 Canadians

Longitudinal serological surveillance of SARS-CoV-2 antibodies in diagnosed, symptomatic, asymptomatic and susceptible Canadians

Supporting pre- and post-vaccine immune profiling

CanPath is well-positioned to study the serology of COVID-19 in high-risk groups

Demographic breakdown of CanPath in relation to Canadian Population



*East Asian and Jewish were not captured as unique categories in the Canadian census

Priority populations (n=20,000)

- High prevalence regions
- Newcomers to Canada
- Self-declared Indigenous
  *With guidance from CITF Indigenous Advisory Circle
- Long term care residents

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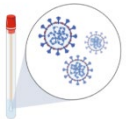
CanPath baseline COVID-19 questionnaire designed to align with international efforts



COVID-19 test result/ suspected infection

Symptoms experienced (if any)

Participant hospitalized or received medical care

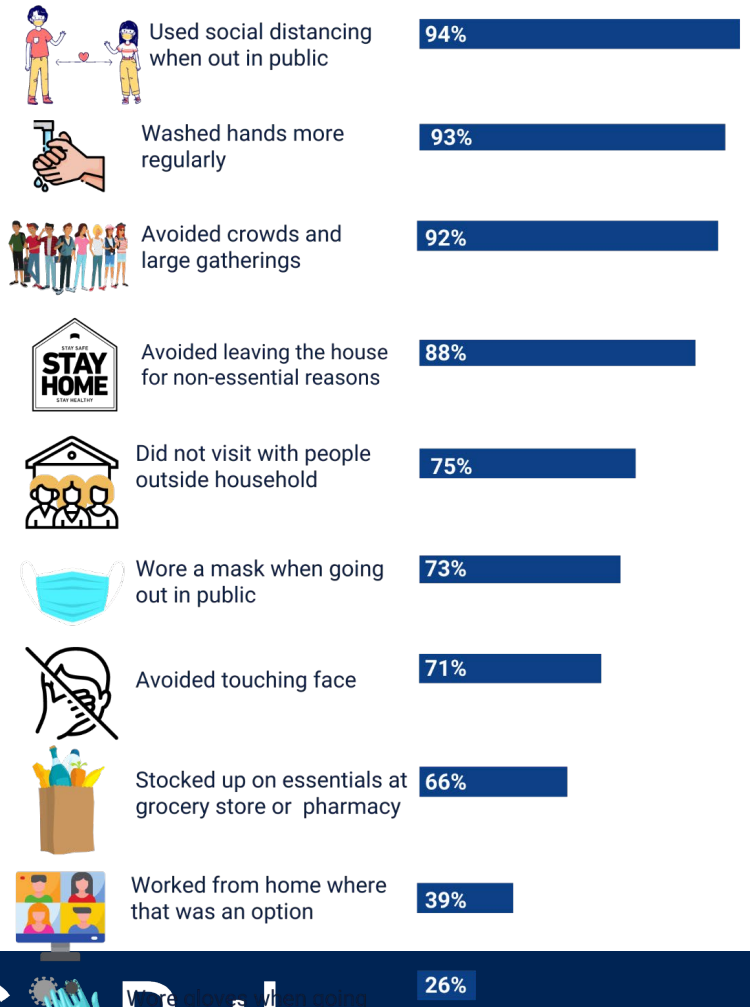
Current health status and risk factors for COVID-19

Potential source of exposure

Impact of pandemic on job status

Impact of the pandemic on mental, emotional, social and financial wellbeing

Behavioral response to public health best practices (guidelines vary over qx)



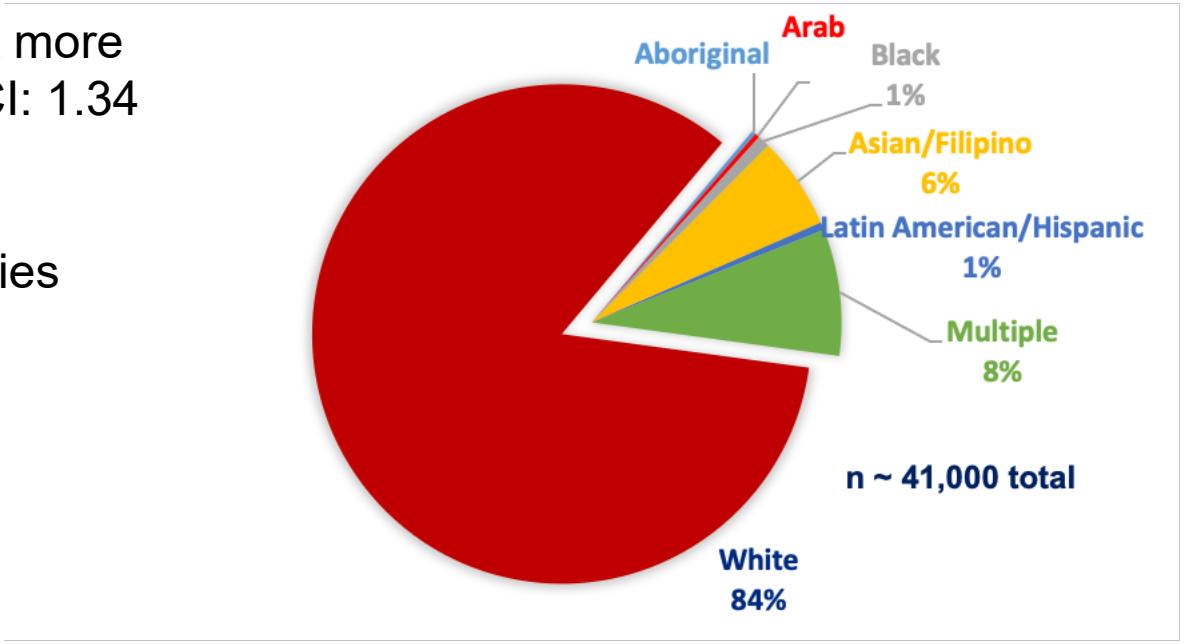
Some precautions vary by groups:

Women are more likely to:

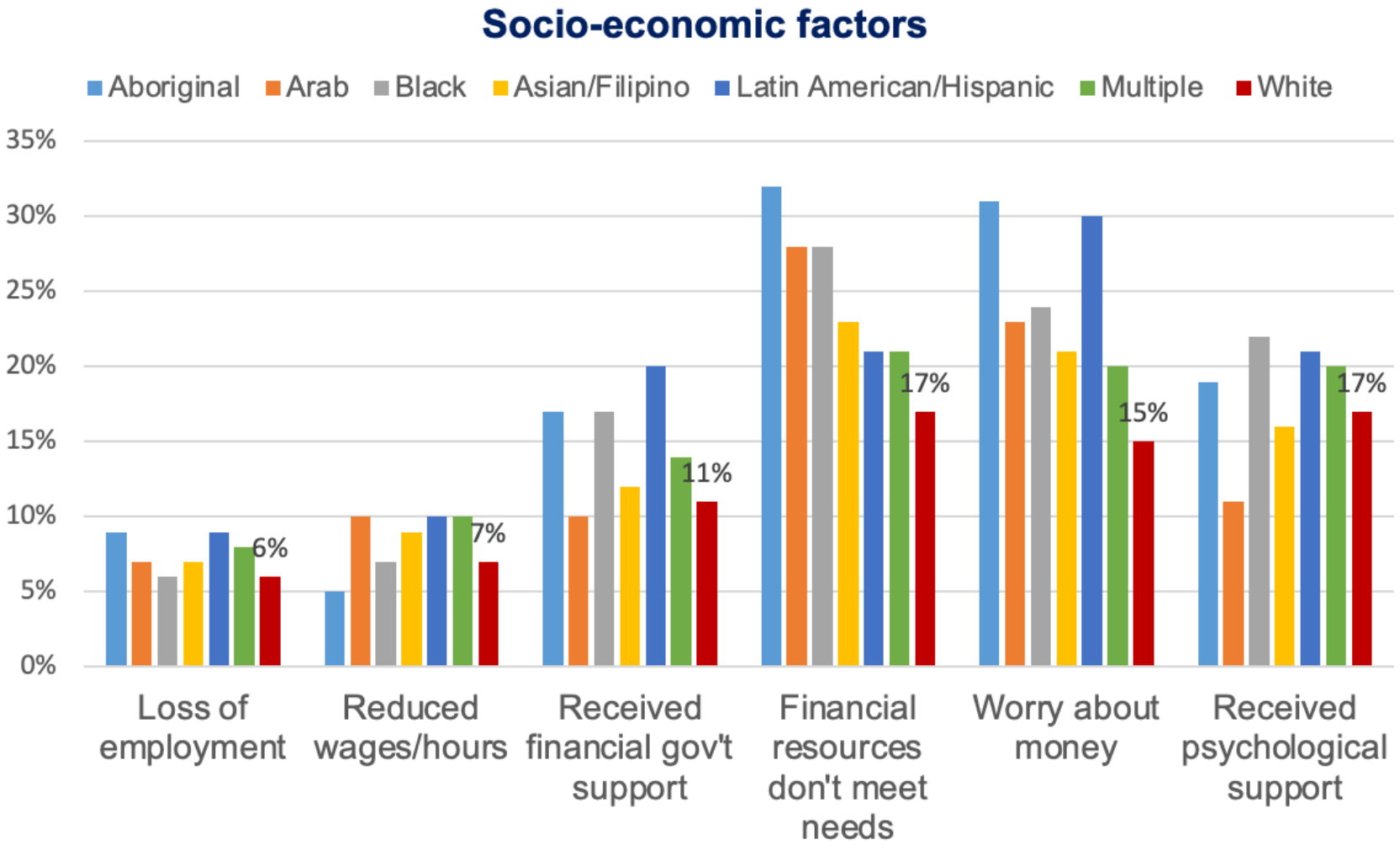
- wear masks (75% vs 69%)
- stay home (90% vs 84%)
- stock-up on essentials (69% vs 61%)
- avoid visiting with people outside the home (77% vs 71%)

Racial inequities of COVID-19

- Ethnic minorities were **2.1x** more likely to be infected (95% CI: 1.34 – 3.14)
- Proportion of ethnic minorities responding to COVID-19 questionnaire is reduced in comparison to cohort demographics



Racial inequities of COVID-19



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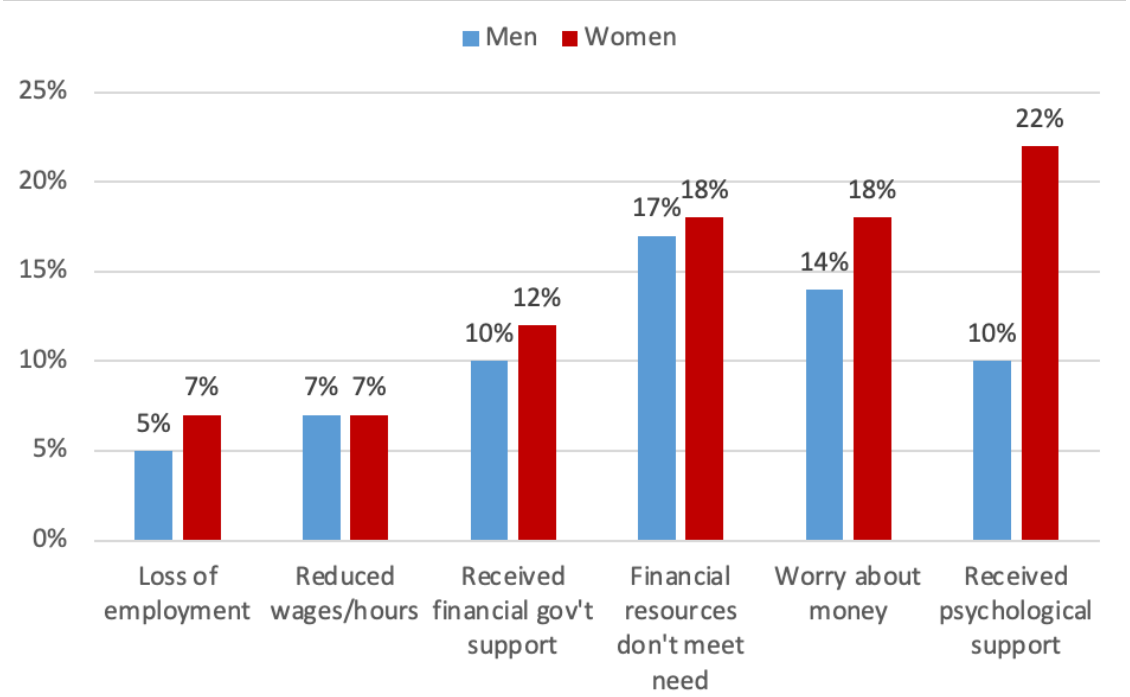
Gender Gaps in COVID-19 impact

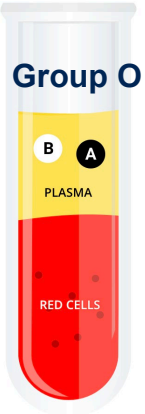


- Nationwide women are overrepresented in industries — hospitality and food services, retail trade, educational services, health care and social assistance — most affected by closures, earnings losses and layoffs
- 61% of the essential workers are women
- Men and women have similar odds of contracting the virus: $OR_{\text{women vs. men}}$ = 1.2 (95% CI: 0.82 – 1.85) but men face a higher risk of death, across the globe

Blood type and COVID-19 susceptibility

- Current body of evidence suggests that O and Rh- blood types may protect against infection, and possibly, severe COVID-19 illness
- SARS-CoV-2 may be reacting differently to surface factors and antibodies

Blood type	N	%	Odds Ratio (95% CI)	
			Infection	Hospitalization
A	9651	35%	1.12 (0.66 - 1.92)	0.66 (0.14 - 3.07)
AB	1678	6%	0.48 (0.27 - 0.60)	-
B	3793	14%	1.60 (0.85 - 3.03)	0.39 (0.04 - 3.51)
O	12549	45%	Referent	Referent



- Effect size seen in other studies is small and shouldn't undermine importance of other public health and therapeutic measures

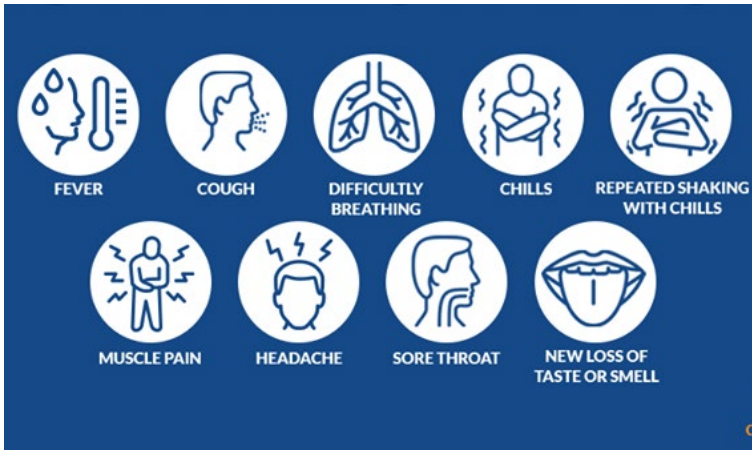
Risk factors for severe COVID-19

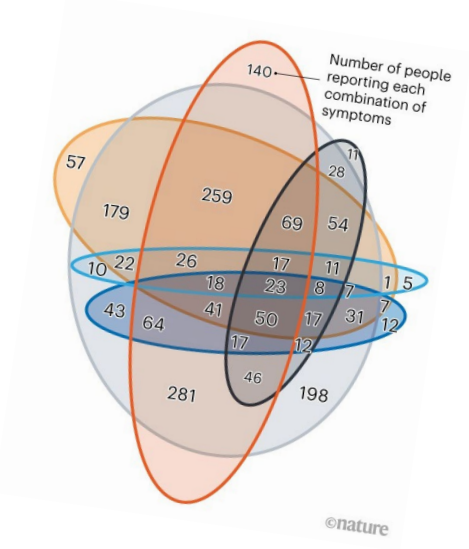
Risk factors	N	%	Odds Ratio (95% CI) Hospitalization
Older age (≧ 65 years)	18021	43&	2.19 (0.64 - 7.43)
CVD	11598	28%	3.66 (1.05 - 12.81)
Obesity (BMI ≧ 30.0)	9204	25%	3.50 (1.00 - 12.21)

- **Immune** response to the viral infection key and **immune function** declines with age
- **Chronic health** conditions have been associated with increased risk
- **Obesity** is the most significant risk factor, after only older age, for being hospitalized

Symptoms, exposures and COVID-19 positivity

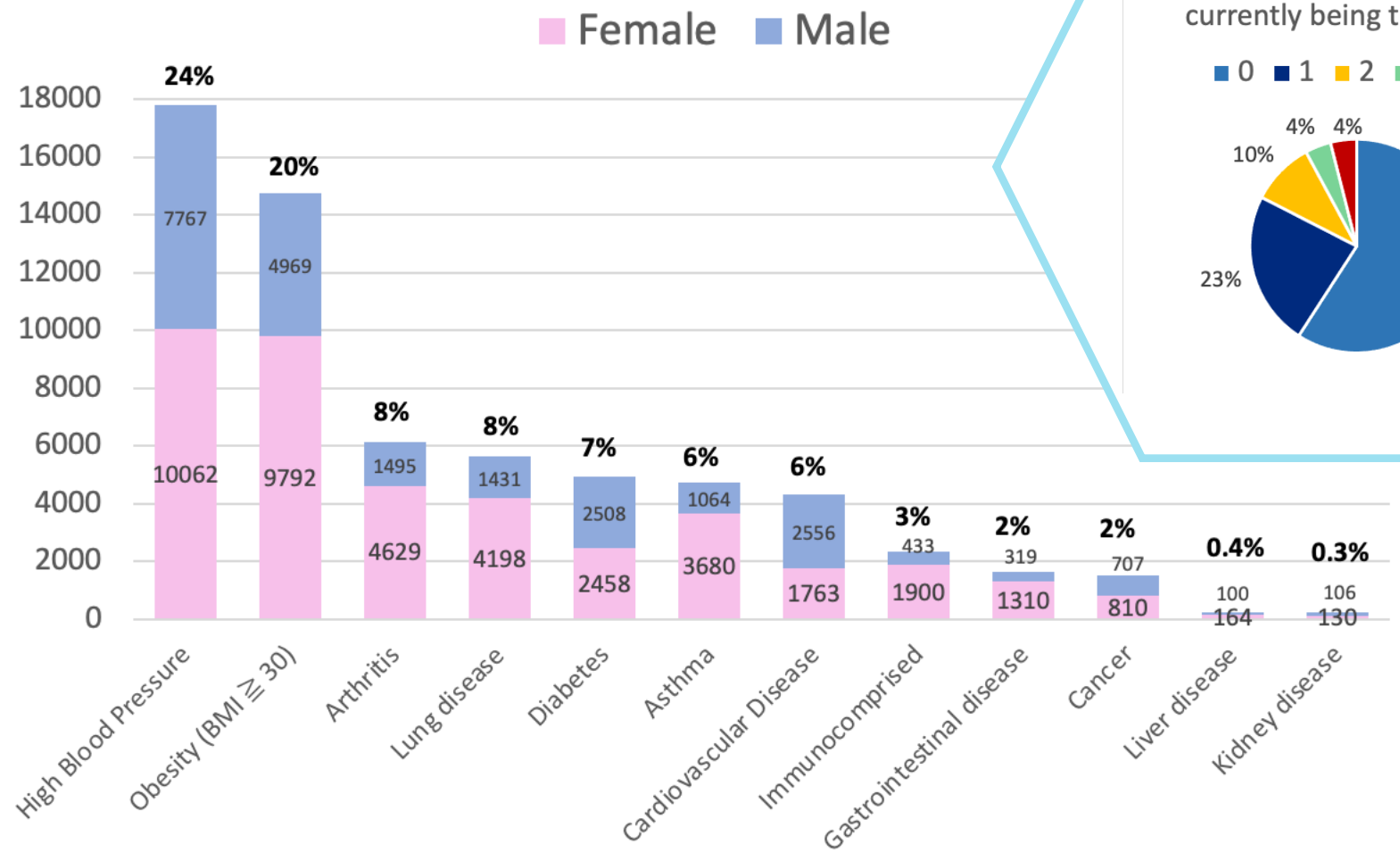
Covid +ve:
86% fatigue
83% shortness of breath
82% loss of taste
80% fever
80% headache
78% loss of smell
60% dry cough

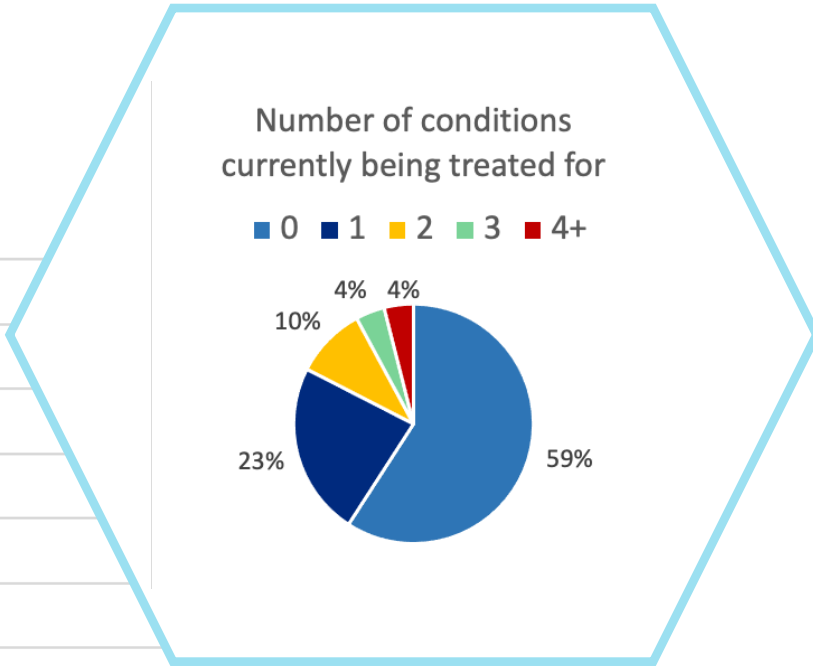




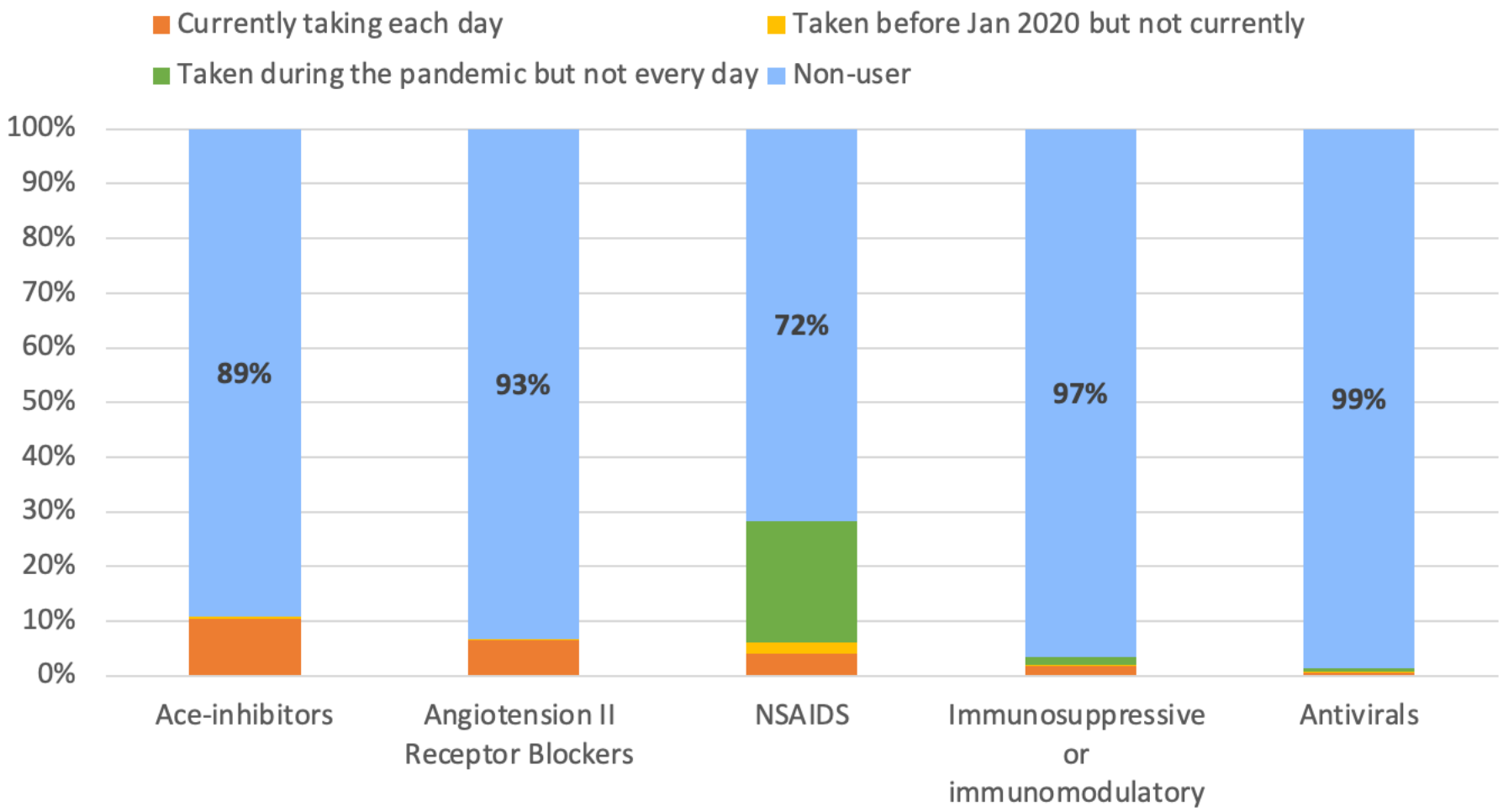
Symptom or Exposure n= 4,703 (11.2%) tested in OHS and 102 (2.2%) were positive	Odds Ratio (95% CI) Infection (+ve test)
Loss of smell (ref: no loss of smell, no fever, no headache)	78.3 (42.20 - 145.10)
Loss of smell & headache (ref: no loss of smell, no fever)	101.80 (54.63 - 189.69)
Loss of taste	27.35 (3.5 - 212.92)
Fever (ref: no loss of smell, no headache)	12.0 (6.12 - 23.41)
Contact with a COVID-19 case	41.74 (27.81 - 62.67)
Medical worker	6.50 (4.20 - 10.0)

Chronic Comorbidities



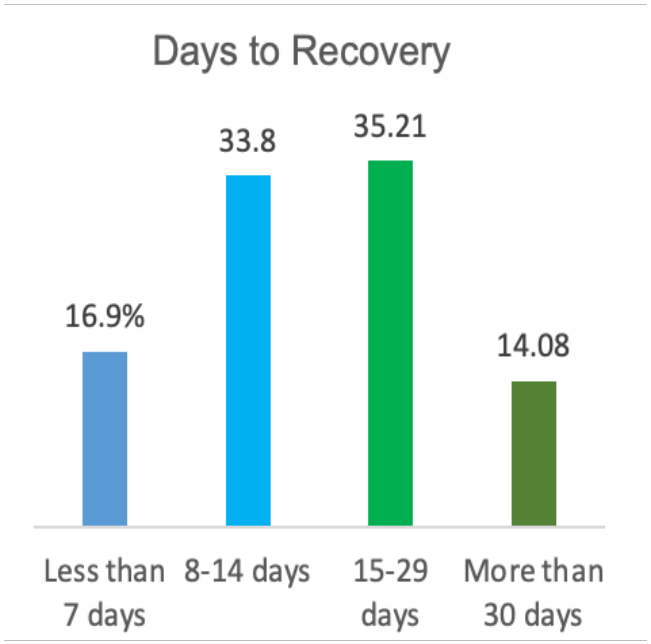


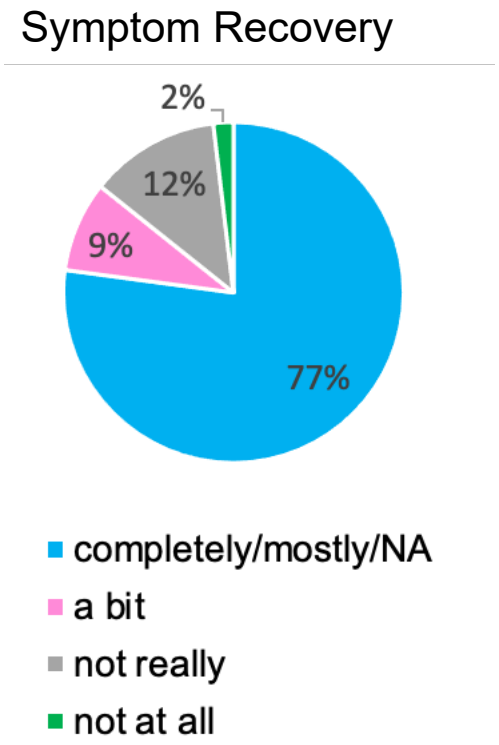
Medication Use



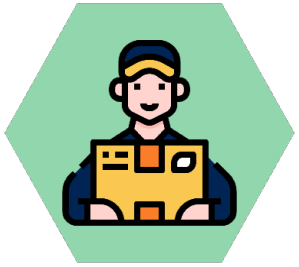
Long-term effects of COVID-19 infection

- Most recover completely within a few weeks
  - 77% recovered mostly or completely
  - those not fully recovered reported persistent difficulties, some for more than 30 days, with 2-16 symptoms





CanPath serology COVID-19 questionnaire built off baseline COVID-19 questionnaire



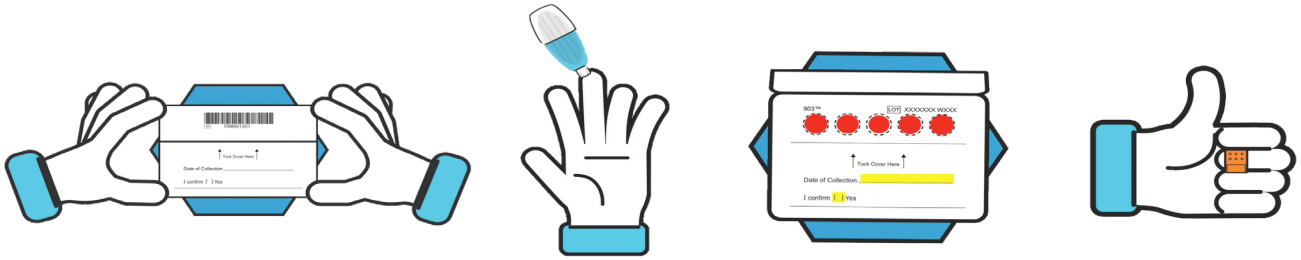
Unique variables not collected in initial COVID-19 Questionnaire

- More detailed **job classifications** for front-line workers likely to have occupational exposures:
  - Passenger and delivery drivers, including taxi/uber drivers, restaurant and package delivery drivers
  - Services requiring entry into private homes, including Personal Support Workers, nurses, community aid/shelter workers, tradespeople, movers and cleaners

- **COVID-19 Vaccines:**
  - Participant vaccination status (which one and date), vaccine availability, and willingness to receive COVID-19 vaccine

CanPath COVID-19 Serological Studies

The study is collecting dried blood spots using kits mailed to participants.



Target populations (n=20,000, 90% participation rates!)

Residents of long-term care homes

Areas with a high prevalence of COVID-19

People living in under-served urban and rural communities

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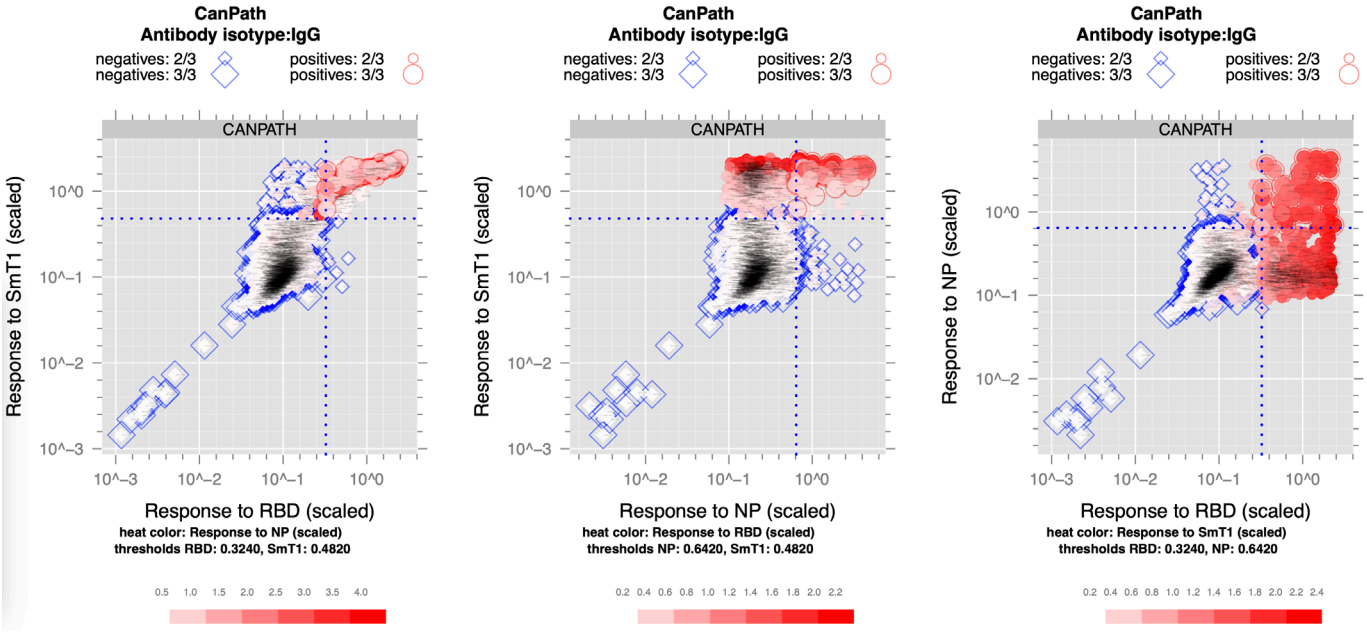
Antibodies are steadily increasing with vaccinations across Canada



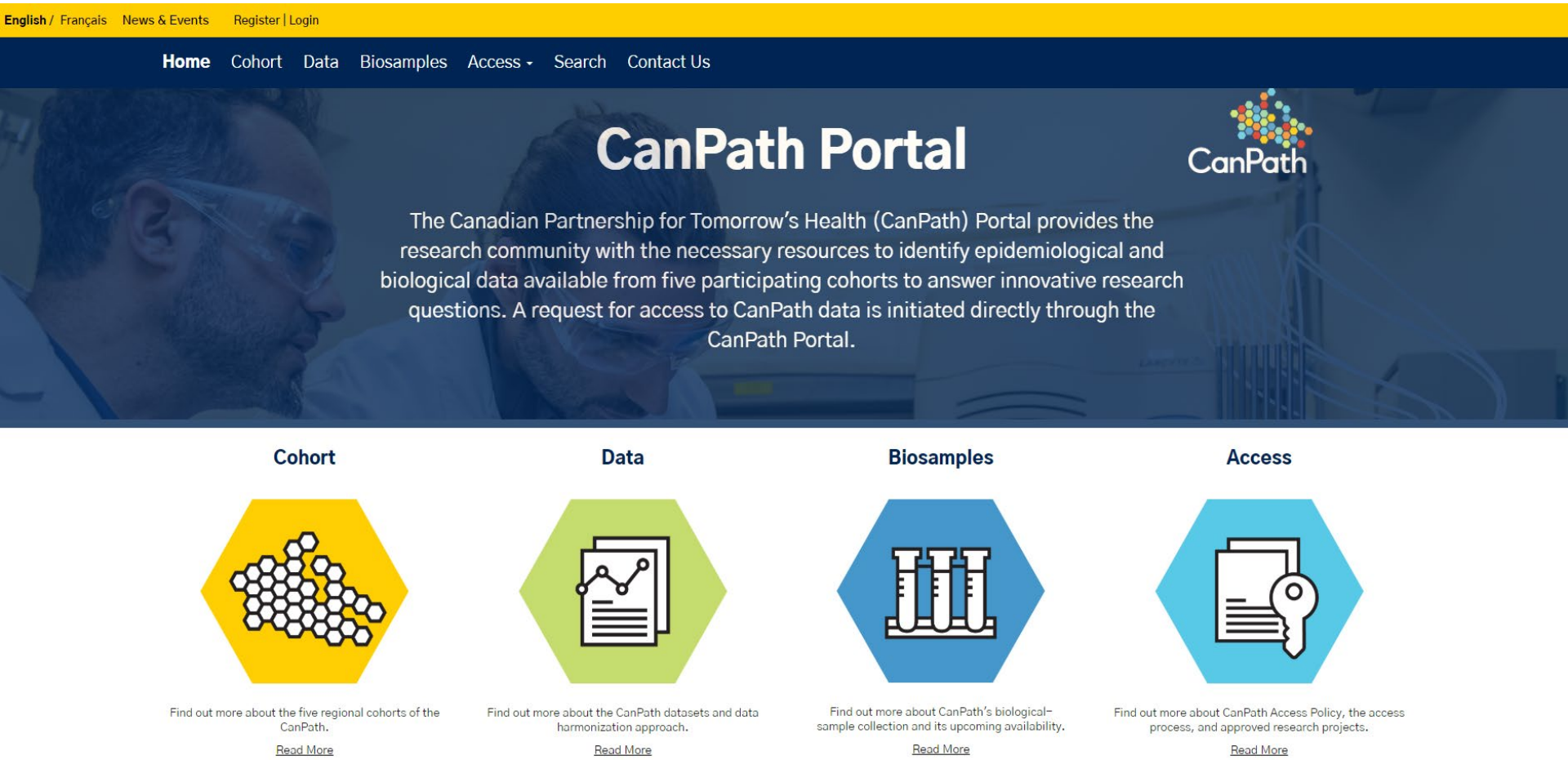
68% of CanPath now has at least one dose of Pfizer, Moderna or Astra Zeneca

As of March26th (8 week lag between invitation to test), 20% show antibodies across 3 antibody tests (RBD, NP and SmT1)

NP (viral specific) is waning with time.

Accessing CanPath Data

portal.canpath.ca



National Coordinating Centre

Based at the Dalla Lana School of Public Health, University of Toronto

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Hosted by:

UNIVERSITY OF TORONTO
DALLA LANA SCHOOL OF PUBLIC HEALTH

National Funder

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PARTNERSHIP FOR TOMORROW'S HEALTH
For the Benefit of Future Generations

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DALHOUSIE UNIVERSITY

Thank you to CanPath participants across the regional cohorts who generously donate their time, information and biological samples. **CanPath is a success because of the participants' ongoing commitment.**