

Canadian Longitudinal Study on Aging (CLSA) as a Platform for Research on Healthy Aging

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on behalf of the CLSA Research Team

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Overview

- CLSA Research Platform
- COVID-19 Studies
- Data Access

National CLSA Leads



Christina Wolfson
Co-principal
Investigator
McGill University



Parminder Raina
Lead Principal
Investigator
McMaster University



Susan Kirkland
Co-principal
Investigator
Dalhousie University

What is the CLSA?

A research platform –
Infrastructure to enable
state-of-the-art, interdisciplinary
population-based **research**
and **evidenced-based**
decision-making that will lead
to better health and quality of
life for Canadians.



Key Points about the CLSA

- Major strategic initiative of CIHR; on Canadian research agenda since 2001
- More than 160 researchers and collaborators – 26 institutions
- Multidisciplinary – biology, genetics, medicine, psychology, sociology, demography, economics, epidemiology, nutrition, health services
- Largest research platform of its kind in Canada for breadth & depth
- Following 50,000+ Canadians aged 45-85 at baseline for 20 years



CLSA Network of Collaborating Institutions



UNIVERSITY OF
CALGARY

SFU

SIMON FRASER UNIVERSITY
ENGAGING THE WORLD



UNIVERSITY
OF MANITOBA



McGill

Institut de
recherche
Centre universitaire
de santé McGill



Research
Institute
McGill University
Health Centre

SOINS CONTINUS
Bruyère
CONTINUING CARE



INSTITUT DE RECHERCHE
BRUYÈRE
RESEARCH INSTITUTE
Affilié à l'Université d'Ottawa
Affiliated with the University of Ottawa



uOttawa



a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA



University
of Victoria



UNIVERSITÉ DE
SHERBROOKE



Participants

- **Tracking Cohort**

- Target - 20,000 participants from all 10 provinces, followed through Computer-Assisted Telephone Interviews (~1 hour at baseline)
- **21,241 recruited**

- **Comprehensive Cohort**

- Target - 30,000 participants living within 25 km (or 50 km) of a CLSA Data Collection Site (DCS)
- Followed through in-home interviews (~1 hour) and further assessments (~2-3 hours) at a DCS
- **30,097 recruited**

CLSA Infrastructure

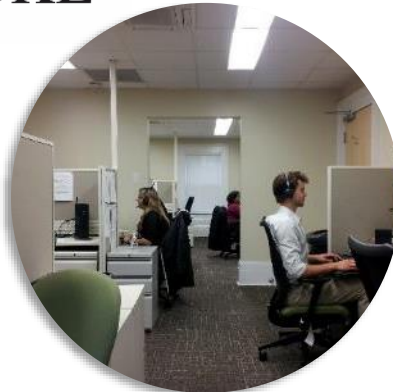
Computer-Assisted Telephone Interview (CATI) Centres



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DALHOUSIE
UNIVERSITY
Inspiring Minds



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CLSA Data Collection

Data Collection Sites

Interviews/ Physical Assessments

- Height, Weight, BMI
- Bone Density, Body Composition, Aortic Calcification
- Blood Pressure
- ECG
- Carotid Intima-Media Thickness
- Pulmonary Function
- Vision & Hearing
- Performance testing

Biospecimen Collection

- Blood
- Urine

Cognitive Assessments

- Memory
- Executive function
- Reaction time

CLSA Infrastructure

Enabling Units



National Coordinating Centre (NCC)

Director: Parminder Raina

Alberta Precision Laboratories



Biorepository and Bioanalysis Centre (BBC)

Director: Cynthia Balion



Data Curation Centre (DCC)

Director: Christina Wolfson

Biorepository and Bioanalysis Centre (BBC)

- Central location for storage & analysis of the blood and urine samples
 - 31 nitrogen freezers (-190°C)
 - Storage for 5 million samples
 - Dry storage, humidity controlled, room temperature
- Research laboratory dedicated to detailed sample analysis
 - Robotic platform for biomarker analysis



CLSA Research Platform

50,000 participants aged 45 - 85 at baseline

Target: 20,000
Actual: 21,241
Randomly selected within
provinces

Target: 30,000
Actual: 30,097
Randomly selected
within 25-50 km of 11 sites

Questionnaire
By telephone (CATI)

Questionnaire
In person (CAPI)

2010 - 2015

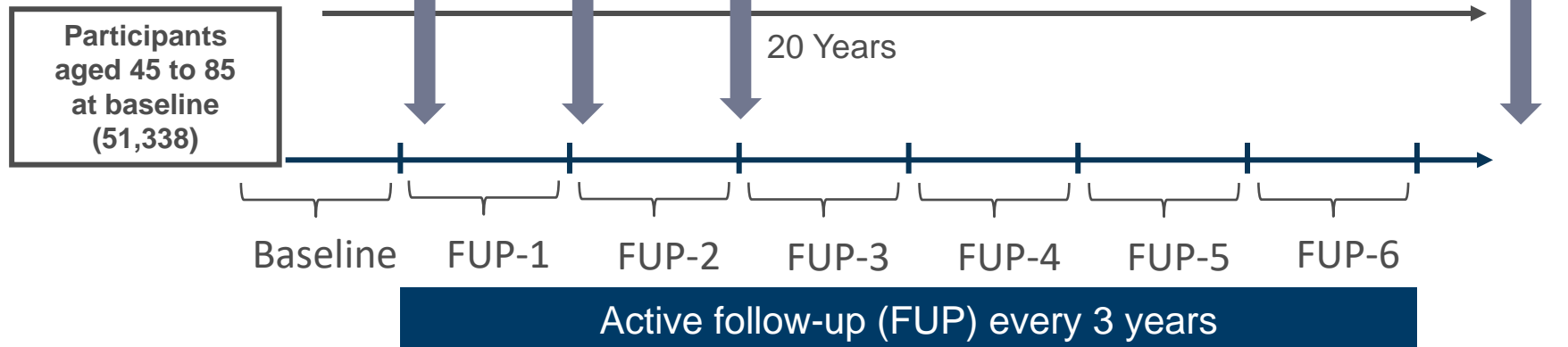
2015

2018

2021

Clinical/physical tests
Blood, urine
@ Data Collection Site

2033



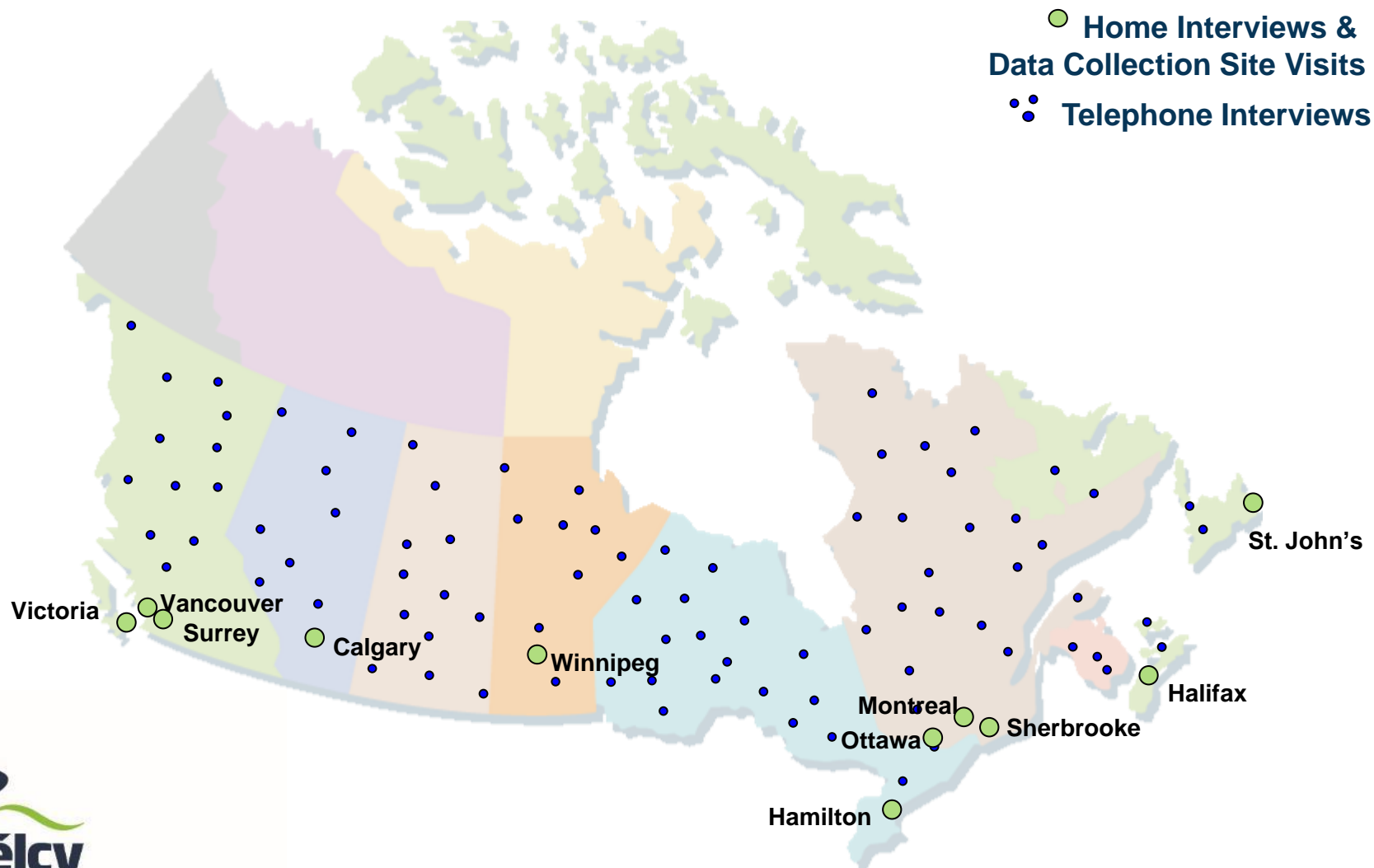
Recruitment Sampling Frame

- Partnered with Statistics Canada
 - CCHS 4.2 Healthy Aging Survey
 - 2006 census as an area frame to select households
 - Agreed to share contact information
- Partnered with provincial Ministries of Health
 - Health Card Registration databases
 - Mailouts, return Consent to Contact form
- Supplemented with Random Digit Dialing
 - Pre-recruitment, agree to recontact
 - Done in Alberta

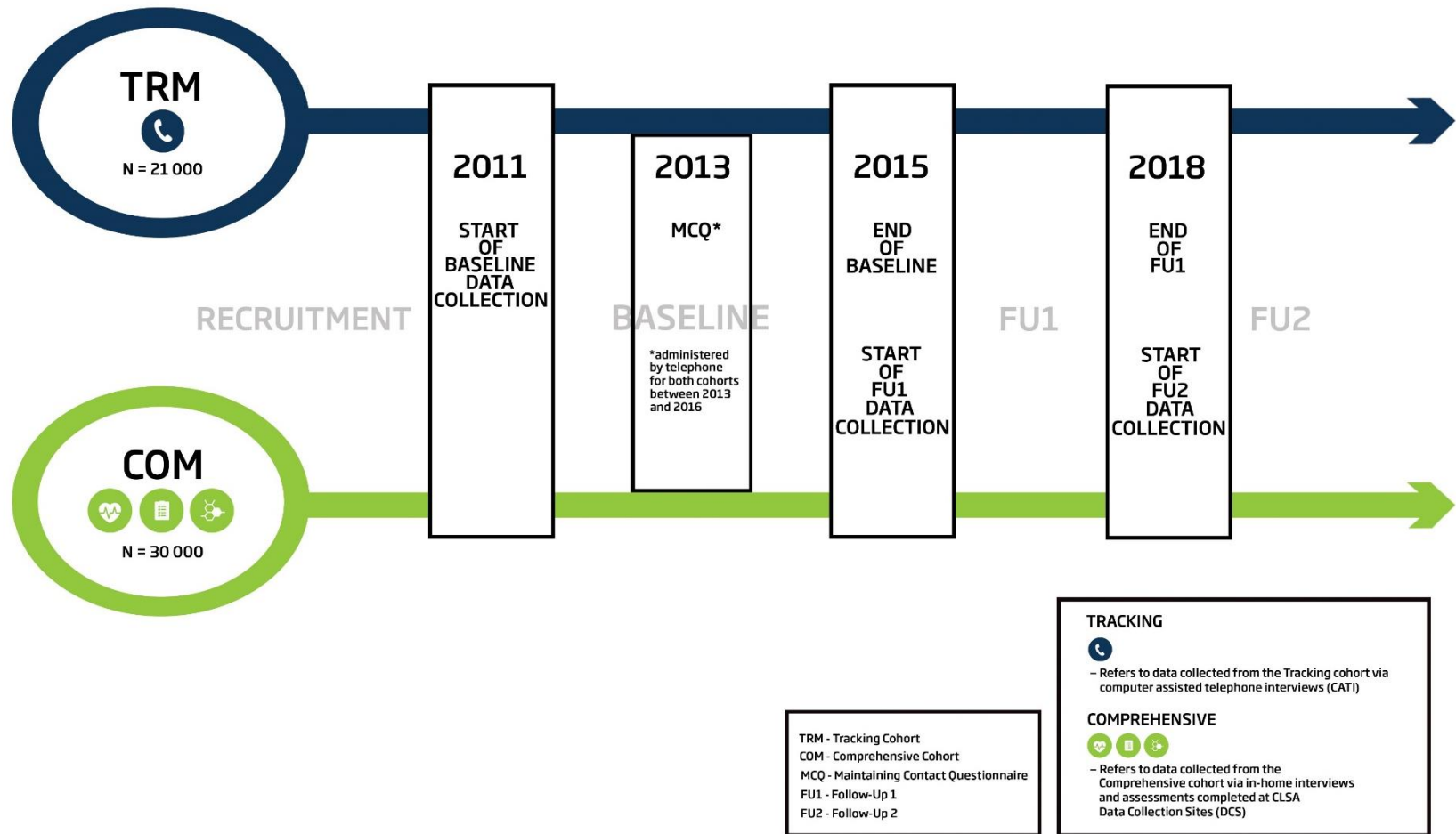
Exclusion Criteria

- Residents in the three territories
- Persons living on federal First Nations reserves (still includes self-identified Indigenous individuals residing off-reserve)
- Full-time members of the Canadian Armed Forces
- Individuals living in institutions
- Individuals unable to respond in English or French
- Individuals with cognitive impairment

National Scope



Core CLSA data collection (pre-COVID-19)



Responding to COVID-19

- March 2020: In-person data collection suspended
- Migration to telephone interviews
- Development COVID-19 questionnaires





CLSA COVID-19 Questionnaire Study

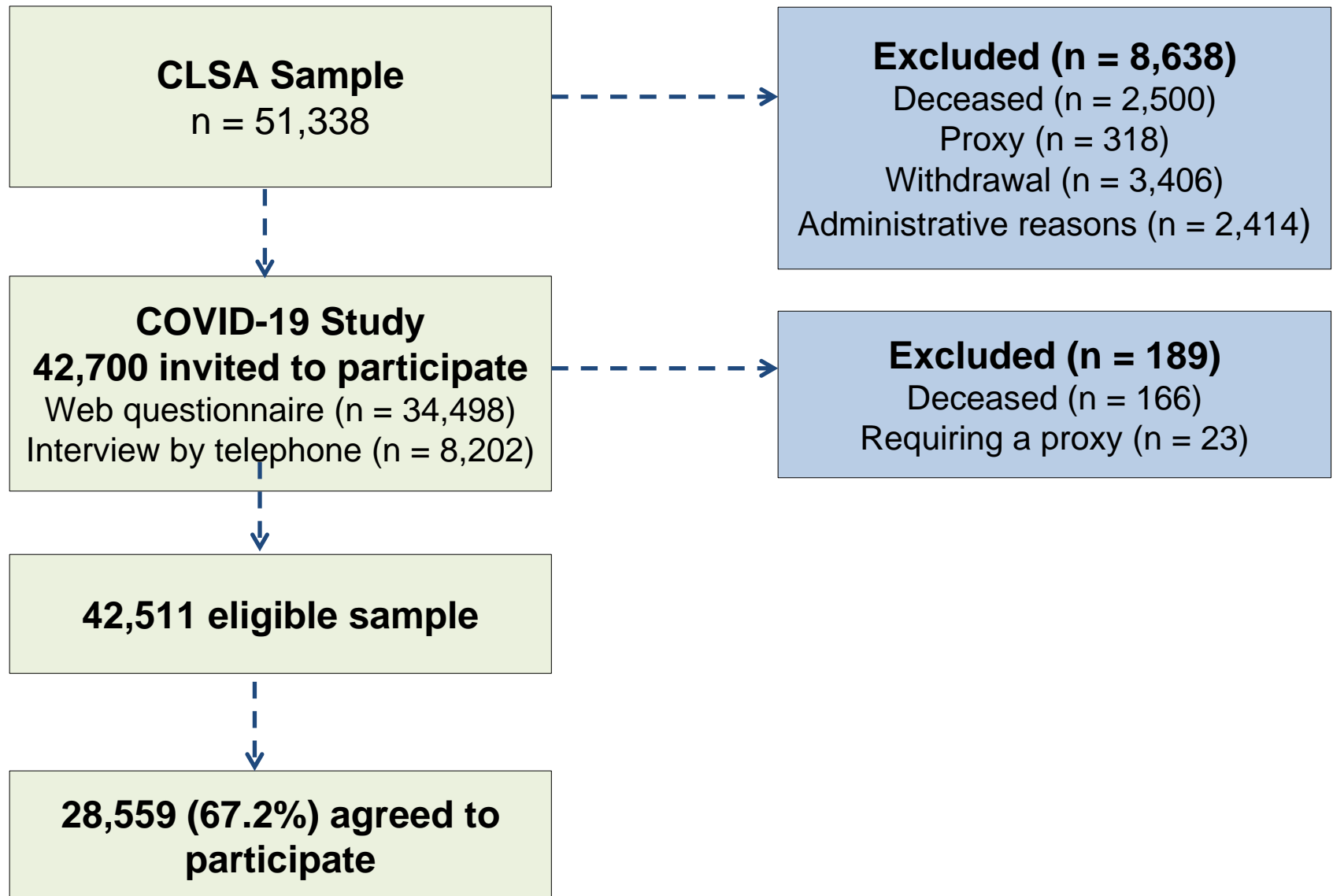
- Launched April 2020
- Web and telephone questionnaires
- Weekly, biweekly, monthly data collection
- 28,000 baseline participants
- Exit survey fall 2020
- Funded through the McMaster Institute for Research on Aging, McMaster University, Juravinski Research Institute, the Nova Scotia COVID-19 Health Research Coalition and the Public Health Agency of Canada



CLSA COVID-19 Questionnaire Study

- COVID symptoms
- COVID status
- Risk factors
- Health-care use
- Health behaviours
- Public Health measures
- Social factors
- Depression and anxiety
- Economic consequences
- Function and mobility

CLSA COVID-19 Study Recruitment

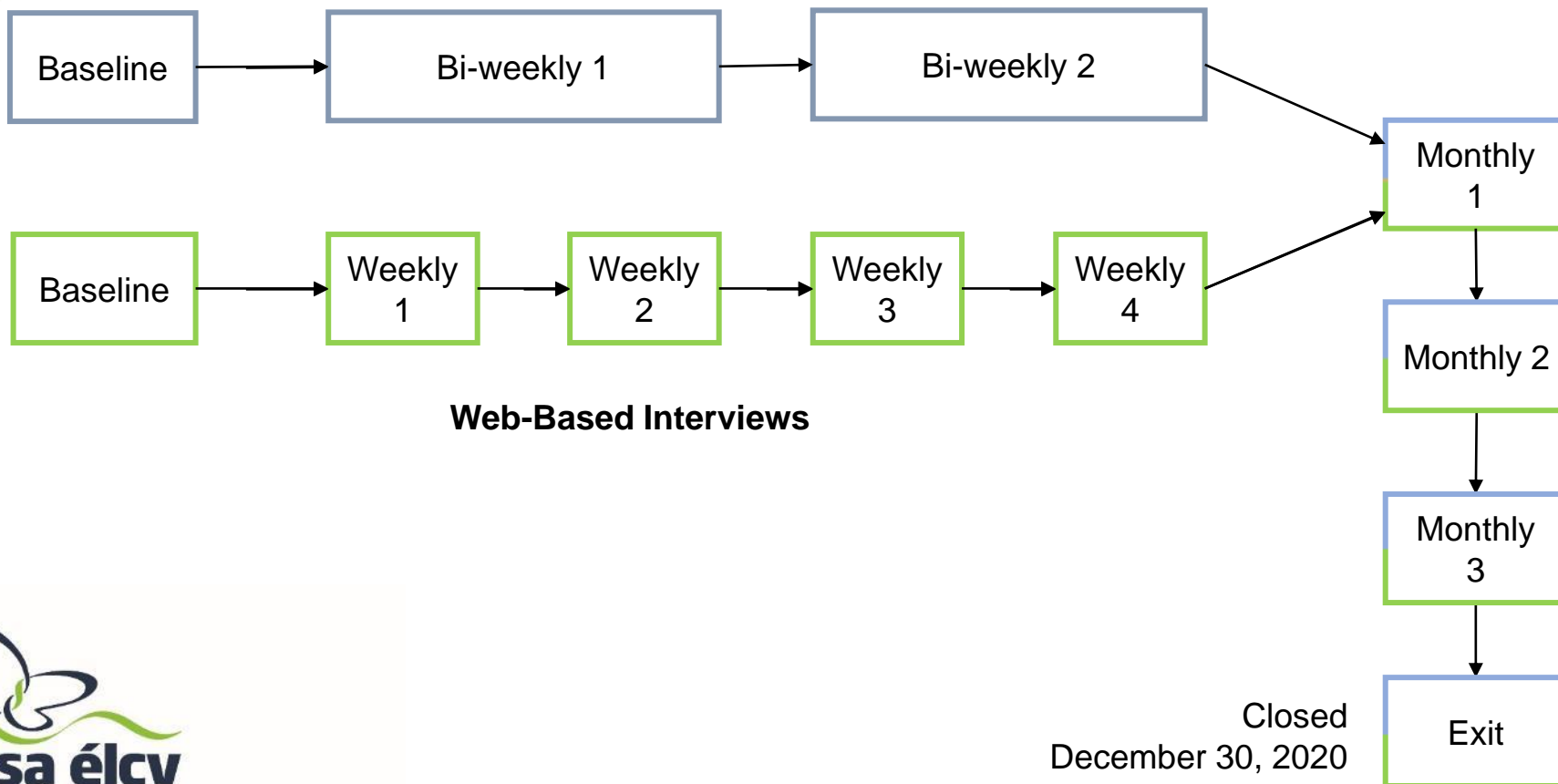




CLSA COVID-19 Questionnaire Study

Launched
April 15, 2020

Phone-Based Interviews



BASELINE QUESTIONNAIRE - ABOUT YOUR HOUSEHOLD

What type of dwelling do you currently live in? (house, apt, seniors' housing)

How many people usually live in your residence?

If 2+, how many children <18 years?

Adults 18-59 years, etc?

How many people currently live in your residence?

If 2+, how many children <18 years, adults 18-59 years, etc?

How many separate rooms are there in your residence?



BASELINE QUESTIONNAIRE - ABOUT YOUR HEALTH

Has a doctor ever told you that you have: asthma, COPD, other chronic lung disease, diabetes, high blood pressure, heart disease, cancer, heart/lung/kidney/liver or pancreas failure,...

Have you ever received an organ, bone marrow or stem cell transplant?

Are you receiving or have you ever received chemotherapy for cancer?

Did you receive a seasonal influenza vaccination in 2019/2020?



BASELINE QUESTIONNAIRE - COVID-19 SYMPTOMS

In the past months, have you had:

Runny or stuffy nose

Sinus pain

Ear pain

Sore/scratchy throat

Hoarseness

Dry cough

Wet cough

Shortness of breath

Headache

Chills or shivering

Muscle and/or joint aches/pains

Fatigue

Decrease in appetite

Diarrhea

Nausea vomiting

Decreased sense of smell

Confusion

Feeling generally unwell

Fever, how long did it last, how high



BASELINE QUESTIONNAIRE - HEALTHCARE

Have you consulted a HCP for any of your symptoms in the past month?

If yes, have you been hospitalized?

In the past month have you had testing for COVID-19?

In the past month have you been told by a HCP that
you have COVID-19 but did not receive a test to confirm this?

Have you had a CXR?

Have you had a CT chest?

At the present time do you smoke cigarettes daily,
occasionally or not at all?

In your lifetime have you smoked marijuana/cannabis for one month or longer?

BASELINE QUESTIONNAIRE - BEHAVIOURS

In the past month, on average how many times did you wash your hands in a day?

Prior to one month ago, on average how many times did you wash your hands in a day?

In the past month did you take public transportation at least once per week?

Prior to one month ago did you usually take public transportation at least once per week?

In the past month have you been in the same room as someone who was told that they had COVID-19?



BASELINE QUESTIONNAIRE - BEHAVIOURS

In the past month have you been in the same room as someone who had fever, severe fatigue, shortness of breath, cough, muscle pain or increased phlegm?

Since Jan 1, 2020:

Have you travelled outside of Canada?

Have you been under quarantine?

Have you been in any large public gatherings (of more than 250 people)?

In the past month did you leave your home?

Did you make contact with people who are not living with you?

What were the reasons to leave your home?

BASELINE QUESTIONNAIRE - WORKPLACE

Do you usually work at a job or business outside of your residence?

How many days and total hours per week do you usually spend at your work?

In the past month has the frequency or duration of time spent at workplace changed?

Are you considered an essential worker?

Has your workplace implemented any of the following: work from home, teleconferences, complete closed, partial closure?

Questions about volunteer work

BASELINE QUESTIONNAIRE - MENTAL HEALTH

How often were you bothered?

How often did you have trouble keeping your mind on what you were doing?

How often did you feel depressed?

How often did you feel that everything you did was an effort?

How often did you feel hopeful about the future?

How often did you feel fearful or tearful?

How often was your sleep restless?

How often were you happy?

How often did you feel lonely?

How often did you feel that you could not get going?

How much time do you spend alone?



BASELINE QUESTIONNAIRE - MENTAL HEALTH

Generalized anxiety disorder module

Nervous, anxious, on edge

Worrying

Trouble relaxing

Restless

Annoyed, irritable

Afraid something awful might happen



BASELINE QUESTIONNAIRE - CONSEQUENCES OF COVID-19 ON YOU AND YOUR HOUSEHOLD

Which of the following have you experienced:

- You were ill
- People close to you were ill
- Death of a person close to you
- Loss of income
- Unable to access supplies or food
- Unable to access usual healthcare
- Unable to access prescriptions and tx
- Verbal or physical conflict
- Separation from family
- Increased time caregiving



EXIT QUESTIONNAIRE

Questions about you and your work status

Health status

Mental health

How likely is it that you have ever been infected with SARS CoV2?

Have you had a test to confirm?

Have you been told by a HCP that you had COVID-19 but did not have a test?

What type of care or treatment did you receive? Hospital? ICU?

Symptoms?

Persistence of symptoms: 2 weeks, more than 2 weeks, 1 month, etc

EXIT QUESTIONNAIRE

Experience with and opinions of vaccinations

Seasonal influenza vaccination since Sept 2020

If a safe and effective COVID-19 vaccine were available to you how likely would you be to choose to get the vaccine?

Alcohol consumption

Mental health

Loneliness

GAD



EXIT QUESTIONNAIRE

Were there times when you did not go to the hospital or to see a doctor even though you needed to?

Have you experienced barriers to accessing testing for COVID-19?

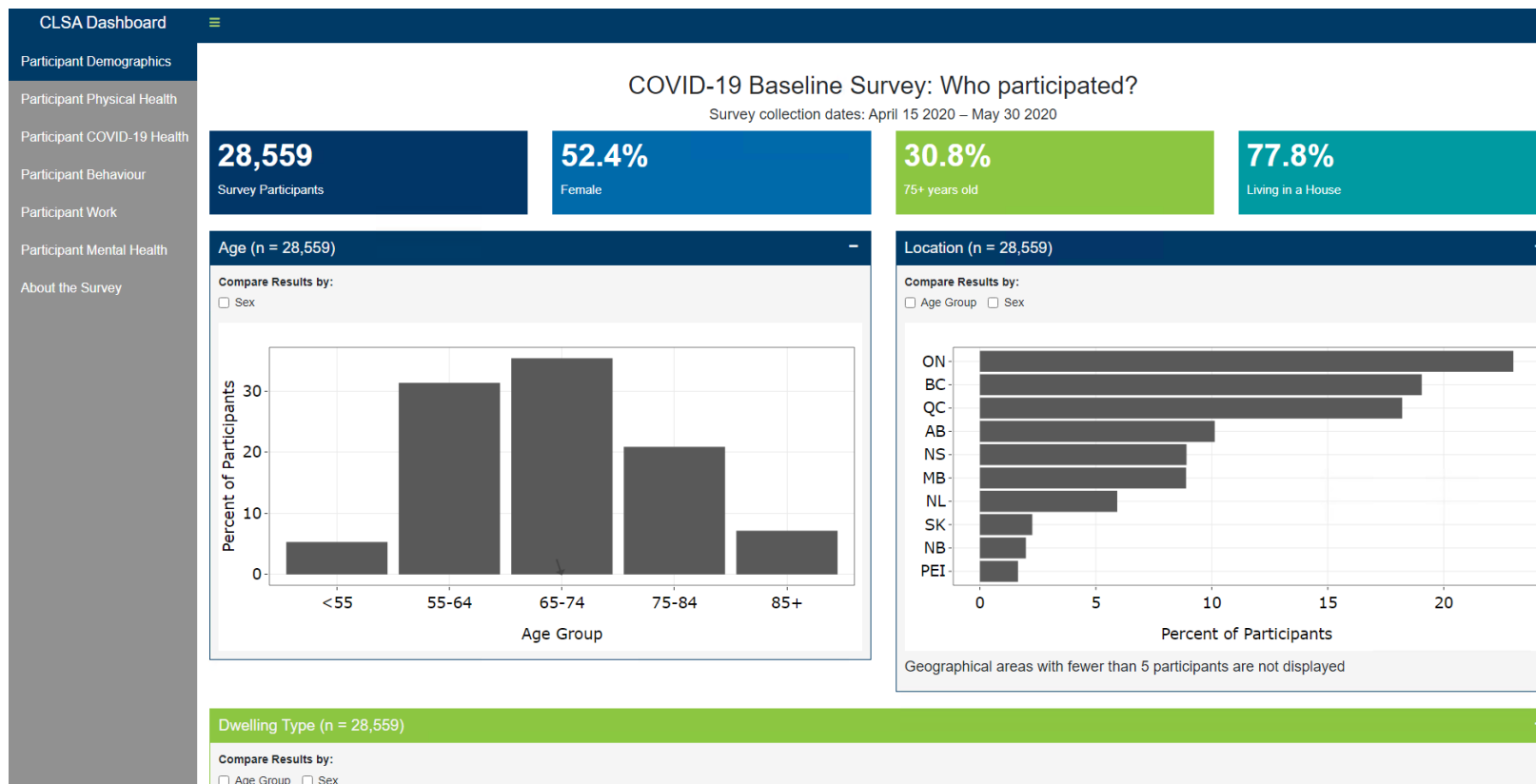
What were the barriers to accessing testing?

Any challenges in accessing healthcare during the pandemic?

Change in mobility, functional ability and daily activities?

How would you describe the consequences of COVID-19 on your household?

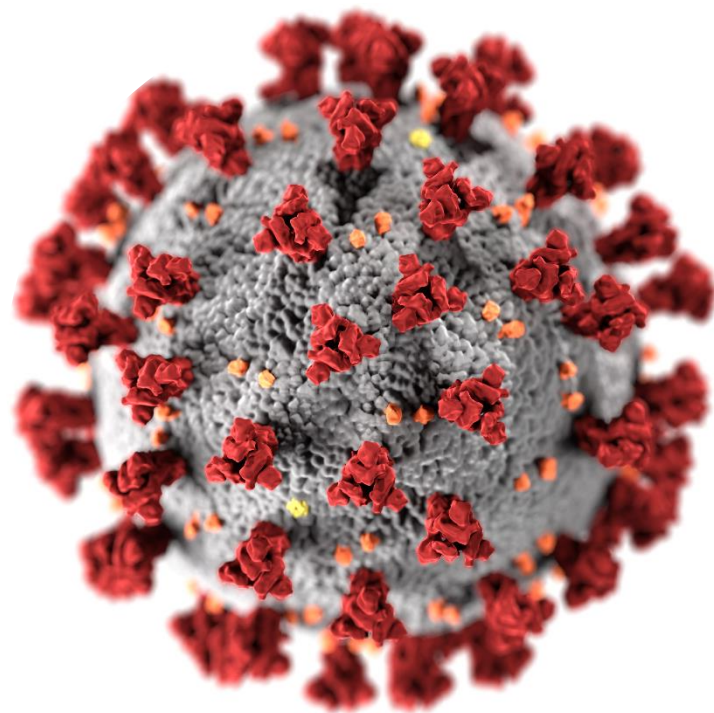
COVID-19 Study Data Dashboard





COVID-19 Seroprevalence Study

- Older adults at greater risk of severe outcomes from COVID-19 disease
- To understand prevalence and impact of SARS-CoV-2 infection among older adults in Canada





COVID-19 Seroprevalence Study

- Launched November 2020
- 19,000 CLSA participants
- Blood sample analysis to determine if a person has been previously infected with SARS-CoV-2
- \$4M investment from the Government of Canada's COVID-19 Immunity Task Force (CITF)



COVID-19 Seroprevalence Study

Venous Blood Collection

- Venous blood collection at CLSA Data Collection Sites
- Enhanced health and safety measures, COVID-19 screening
- 50 mL of blood (about 3 tbsp)
- Telephone questionnaire
- Partners: Alberta Precision Laboratories (APL), FedEx, CITF





COVID-19 Seroprevalence Study

Dried Blood Spot

- Self-collection at home
- 4-5 drops of blood from fingertip using blood collection kit
- Telephone or online questionnaire
- Partners: Boston Microfluidics, APL, FedEx, CITF



COVID-19 IMMUNITY TASK FORCE QUESTIONS

Age

Sex

Gender

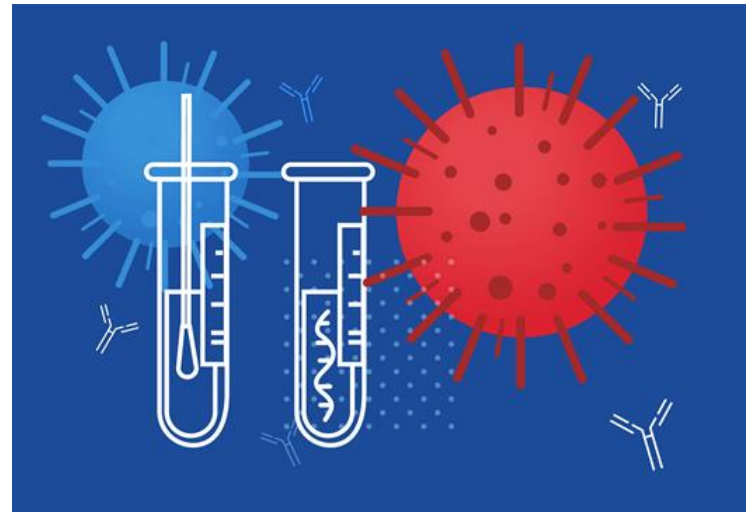
Indigenous status

Ethnicity

Education

Number living in household

Bedrooms and bathrooms in household



COVID-19 IMMUNITY TASK FORCE QUESTIONS

Do you think you have had COVID-19?

Why do you think you have had COVID-19?

Were you hospitalized?

Have you been tested with a nasal/throat swab?

How many times have you been tested? Results of each?

Did you have any of the following symptoms between January 2020 and present:

Cough, fever, SOB, sore muscles, headache,
sore throat, diarrhea, decreased sense of smell,
other symptoms?

COVID-19 IMMUNITY TASK FORCE QUESTIONS

Did you travel outside your home province since January 2020?

What province or country did you travel to?

Have you been working in any of the following occupations or worksites since Jan 2020:

Hospital/healthcare, first responder, childcare, correctional officer, teacher/school staff, transit driver, food service industry, grocery store, pharmacy, hairdresser, aesthetician, flight attendant, factory worker?

How many times have you been in a gathering of >10 people?

Do you currently smoke tobacco? How often? Do you use e-cigarettes? How often?

Have you been diagnosed with: high blood pressure, diabetes, asthma, chronic lung disease, CHD, CKD, liver disease, cancer, chronic blood disorder, immune suppressed, chronic neurological disorder?

COVID-19 IMMUNITY TASK FORCE QUESTIONS

Current weight and height

Do you have a family physician?

Did you get a flu shot in the past year?

How often have you done the following since January 2020:

Worn a mask?

Practiced physical distancing?

Avoided crowds?

Limited contact with people at higher risk?

Self-isolated?

Been quarantined because you may have been exposed?



CLSA COVID-19 Brain Health

- Canadian Institutes of Health Research
- Weston Brain Institute
- Teresa Liu-Ambrose, University of British Columbia
- Eric E Smith, University of Calgary
- Parminder Raina, McMaster University



CLSA COVID-19 Brain Health

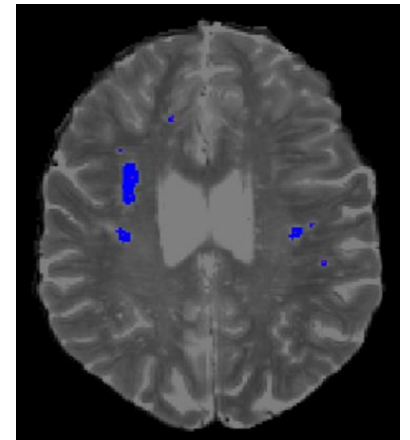
- To explore the impact of the COVID-19 pandemic on human cognition and brain health.
- Our current understanding is limited to acute and overt manifestations.
- We focus on understand the possible covert neurological consequences of COVID-19 and their impact on human brain and cognition.



CLSA COVID-19 Brain Health

Using data from the CLSA COVID-19 Questionnaire, compare adults with suspect, probable, or confirmed COVID-19 vs. those without COVID-19 symptoms or who tested negative on:

- 1) markers of cerebral small vessel disease;
- 2) white matter integrity; and
- 3) efficiency of brain functional networks.





CLSA COVID-19 Brain Health: Phone Assessment

- CLSA Subjective Sleep Questions
- Centre for Epidemiological Studies
- Physical Activity Scale for the Elderly
- Subjective Cognitive Decline (2 questions)
- Neuropsychological Battery
- Generalized Anxiety Disorder (GAD)
- Height
- Weight

CLSA Research Platform



COVID-19
Questionnaire Study

- Launched April 2020
- Web and telephone surveys
- Weekly, biweekly, monthly
- 28,000 baseline participants



COVID-19
Seroprevalence Study

- Launched November 2020
- Recruiting 19,000 CLSA participants
- Dried blood spots samples (self-collection)
- Venous blood sample collection at CLSA Data Collection Sites



COVID-19 Brain
Health Study

- Impact of COVID-19 on cognition & brain health

2010-2015 Baseline

2015-2018 Follow-up 1

2018-2021 Follow-up 2

2021-2024 Follow-up 3



Canadian Longitudinal Study on Aging
Étude longitudinale canadienne sur le vieillissement

PROJECTS USING THE QUESTIONNAIRE AND SEROPREVALENCE DATA

Questionnaire data

- Mental health
- Vaccination
- Physical function and mobility
- Persistence of symptoms

Seroprevalence data

- Not yet available

COVID-19 Data Release



COVID-19 Questionnaire Study



- Baseline Questionnaire
- Weekly Questionnaire
- Biweekly Questionnaire
- Monthly Questionnaire
- Exit Questionnaire



Next data access application deadline:
Wednesday, September 8, 2021



Applying for Data Access

- **Magnolia**, a web-based data access application system
- User account requests: **access@clsa-elcv.ca**
- 2-3 working days to receive login information





Contact:

Data inquiries: access@clsa-elcv.ca

General inquiries: info@clsa-elcv.ca

CLSA is funded by the Government of Canada through CIHR and CFI, and provincial governments and universities

www.clsa-elcv.ca



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