



The Canadian Longitudinal Study on Aging A Platform Study to Support Policy Decisions and Initiatives

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Workshop Objectives

1. To provide an overview of the CLSA methodology, the kinds of measures that are being collected, and how data can be accessed
2. To present select findings and discuss how the CLSA can support responding to policy-relevant questions

The CLSA

- Strategic initiative of CIHR Institute of Aging; on the Canadian research agenda since 2001
- 3 co-principal investigators supported by more than 160 co-investigators from 26 institutions
- Multidisciplinary - biology, genetics, medicine, psychology, sociology, demography, nursing, economics, epidemiology, nutrition, health services
- Largest study of its kind to date in Canada for breadth and depth: following 50,000 participants for ≥ 20 years

CLSA Leads



**Co-principal Investigator
Christina Wolfson (McGill)**



**Lead Principal Investigator
Parminder Raina (McMaster)**



**Co-principal Investigator
Susan Kirkland (Dalhousie)**



Canadian Longitudinal Study on Aging
Étude longitudinale canadienne sur le vieillissement

Aim and Vision

- **AIM:** To examine life/health transitions and capture trajectories to enable the identification of modifiable factors with the potential to inform interventions (prevention/treatment/impact) to improve the health of populations as they age.
- **VISION:** To create 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 as they age.

CLSA Research Platform

50,000 women and men aged 45 - 85 at baseline

Target: 20,000
Randomly selected within
provinces

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

Questionnaire
• **By telephone (CATI)**

Questionnaire
• **In person, in home (CAPI)**

2010 - 2015

2015

2018

Clinical/physical tests
Blood, urine
• **@ Data Collection Site**

Participants
aged 45 to 85
at baseline
(51,338)

20 Years

Baseline

FU-1

FU-2

FU-3

FU-4

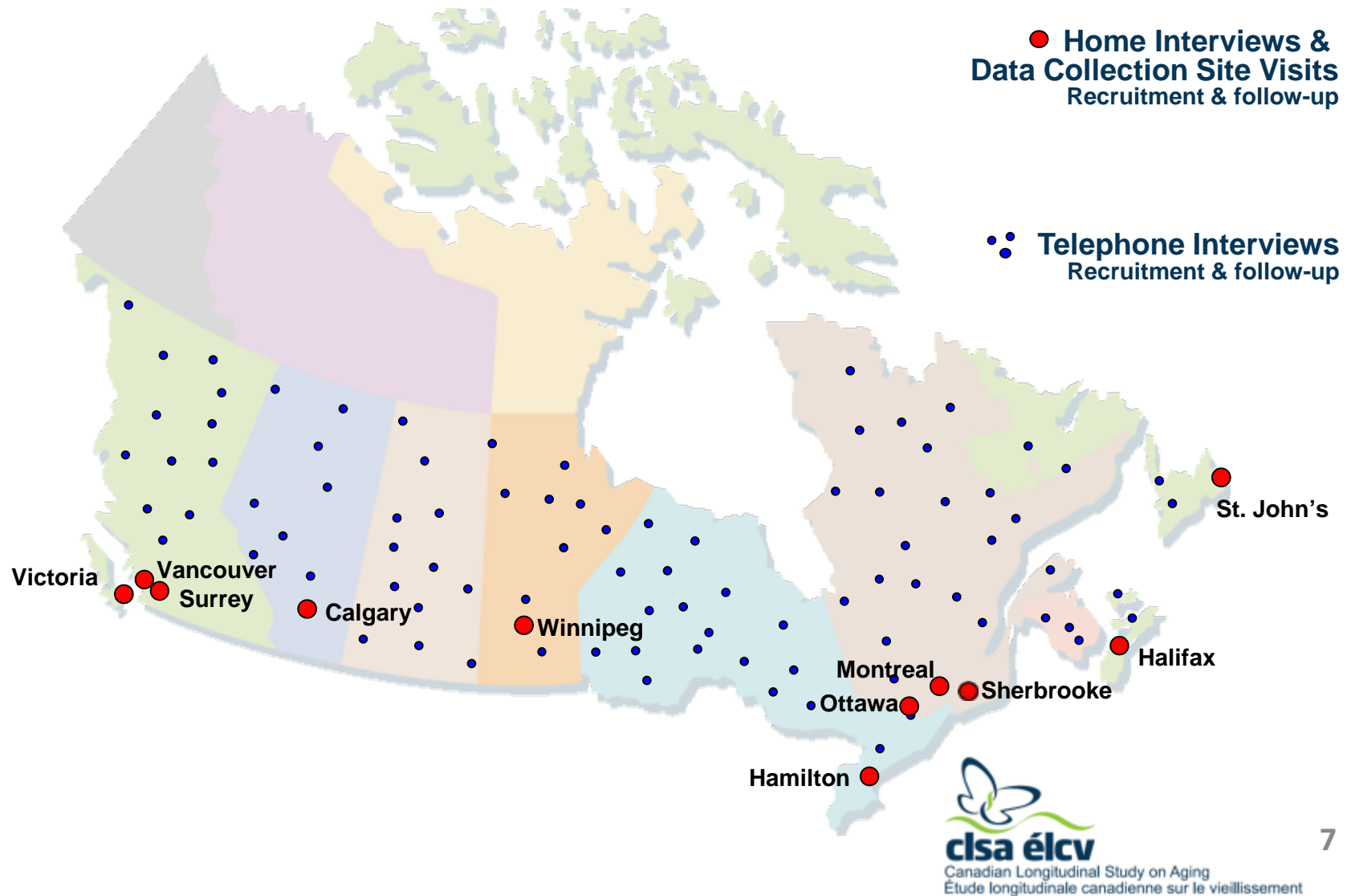
FU-5

FU-6

Active follow-up every 3 years

Data Linkage

National in Scope



Terminology

- Tracking Cohort
 - Target - 20,000 participants from all 10 provinces, followed through Computer Assisted Telephone Interviews (60 minutes 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 (60 minute) and physical assessments (2-3 hours) at a DCS
 - **30,097 recruited***

Study Content and Data Collection



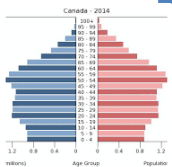
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CLSA Questionnaire modules

All 51,338 participants

Demographic/Lifestyle

- Age
- Gender
- Education
- Marital status
- Sexual orientation
- Language
- Ethnicity
- Wealth/income
- Veteran Identifier
- Smoking, alcohol
- Nutritional risk
- Physical activity
- Health care utilization
- Medication use
- Supplement use



Health

- General health
- Women's health
- Chronic conditions
- Disease symptoms
- Sleep
- Oral health
- Injuries, falls
- Mobility
- Pain, discomfort
- Functional status
- ADL, IADL
- Cognition
- Depression
- PTSD
- Life Satisfaction



Social

- Social
 - networks
 - support
 - participation
 - inequality
- Online communication
- Care receiving
- Care giving
- Retirement status
- Labour force participation
- Retirement planning
- Transportation
- Mobility, Migration
- Built environments
- Home ownership

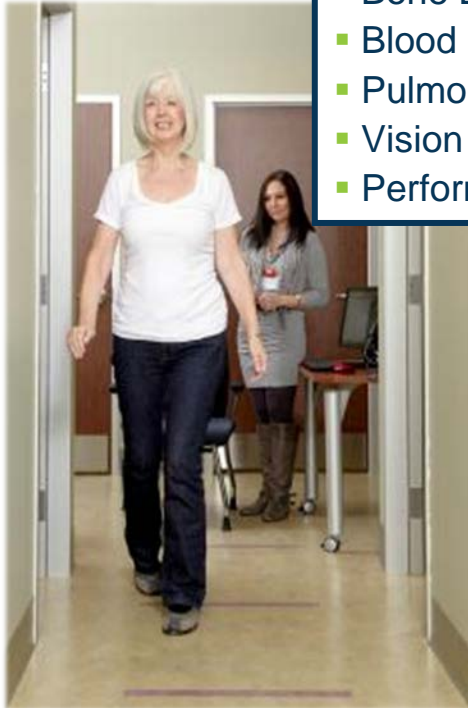


CLSA Data Collection

Data Collection Site

Physical Assessments:

- Height, Weight, BMI
- Bone Density, Body Composition, Aortic Calcification
- Blood Pressure, ECG, c-IMT
- Pulmonary Function
- Vision & Hearing
- Performance testing



Biospecimen Collection:

- Blood
- Urine

Cognitive Assessments:

- Neuropsychological Battery
 - Memory
 - Executive function
 - Reaction time



Core Biomarkers: Baseline

	Category	N	Biomarkers
Available	HEMATOLOGY Data Collection Sites (DCS)	25,425	<ul style="list-style-type: none"> Erythrocytes Granulocytes Hematocrit Hemoglobin Lymphocytes Platelets MCV MCV MCHC MPV RDW
Available mid-2018	CHEMISTRY Calgary Laboratory Services (CLS)	27,122	<ul style="list-style-type: none"> Albumin Alanine aminotransferase (ALT) C-reactive protein (CRP) Creatinine Cholesterol Ferritin Free T4 Hemoglobin A1c (n = 26961) HDL LDL Non-HDL Thyroid stimulating hormone (TSH) Triglycerides 25-Hydroxyvitamin D
	GENETICS Genetic and Epigenetic Centre (GEC)	10,000	<ul style="list-style-type: none"> Genome-wide genotyping DNA extracted from buffy coat on samples (n = 26,884) 820K UK Biobank Axiom Array (Affymetrix)
	EPIGENETICS Genetic and Epigenetic Centre (GEC)	1,500	<ul style="list-style-type: none"> DNA methylation DNA extracted from PBMCs 850K Infinium MethylationEPIC BeadChip (Illumina)
	METABOLOMICS Kyoto, Japan	1,000	<ul style="list-style-type: none"> Mass spectrometry

Passive Data Collection

Work in progress

- Linkage is an important CLSA strategy
 - Great potential for collecting information that is difficult to get from participants due to time, accuracy limitations; and/or may even be unknown to participants
 - Potential to obtain historical data prior to CLSA entry
- Types of databases
 - Individual level administrative provincial health databases
 - Vital statistics/disease registries
 - Population level databases of community characteristics, climate, pollution



Linkage with CANUE Data Platform

NEIGHBOURHOOD FACTORS



GREEN/BLUE SPACES



CLIMATE



AIR QUALITY



NOISE



TRANSPORTATION

First Follow-Up: New Content Added

- *Child maltreatment
- **Elder abuse
- Epilepsy screening
- Decedent interview
- Unmet health-care needs
- Preventive health behaviours (screening)
- Enhanced hearing, oral health
- Gender identity questions
- Subjective cognitive decline
- Loneliness



**Follow-up 1 data
available in early
2019!**

*Childhood Experiences of Violence Questionnaire. Walsh et al 2012

**National Initiative for the Care of the Elderly (NICE)

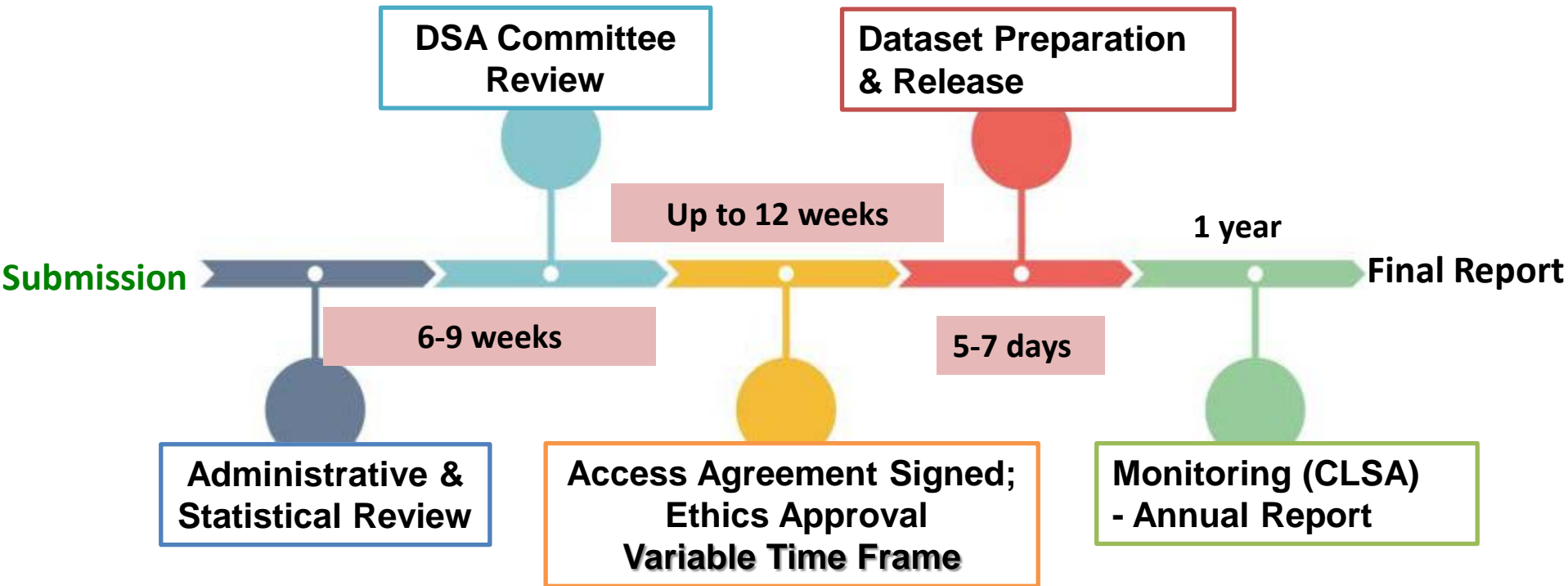
Data Access - Baseline Data



Current CLSA Platform-Use Models and Categories

1. Use CLSA data/biospecimens for research projects
 - **123 projects approved to date**
2. Use of the CLSA platform to collect additional data or biospecimens or analyses to enrich CLSA Platform
 - E.g. Public Health Agency of Canada, Health Canada, Veterans Affairs Canada, Ontario Ministry of Transportation, Neurological Health Charities Canada, Calgary Laboratory Services
3. Projects by the CLSA on behalf of a third party
 - E.g. CLSA Report (Public Health Agency of Canada, Employment and Social Development Canada)
4. Use of the CLSA infrastructure
 - Use of DCS lab for the Ontario Health Study
 - Use of DXA for research project at Simon Fraser University
 - Use of biorepository for sample storage

Data Access Timeline



- Plan on a receiving data 6 months after submission deadline

How much does it cost?

- **Partial Cost Recovery Model**

- **Alphanumeric data**

- **\$3,000** for a straightforward alphanumeric dataset
- **Graduate students** using data solely for thesis research & **Postdoctoral fellows** using data solely for the postdoctoral project are eligible for a **fee-waiver**.

- **Images**

- Additional fees are associated with the request for images. Fees determined by type of images requested.

- **Genomics**

- Additional fees are associated with the delivery of genomics data as it must be shipped on an encrypted drive.

Keywords from Approved Projects



www.clsa-elcv.ca



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Participants

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- [Protecting your privacy](#)
- [Find out how the CLSA platform is being used](#)



Researchers

- [Spring 2016 data release](#)
- [DataPreview Portal](#)
- [Approved Projects](#)



Partners

- [Partners & Supporters](#)
- [Partnering with the CLSA](#)
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Information for Researchers



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[Protocols](#)

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[Physical Assessments](#)

[Data Support Documentation](#)

[Approved Project Summaries](#)

[Data Access](#)

Researchers

The CLSA provides documents online to facilitate understanding of the study and how we are gathering and managing the data.

Protocols

[CLSA Protocol – Executive Summary](#)

[CLSA Protocol - Full Study Design and Baseline \(2008\)](#)

[CLSA Protocol – First Follow-up \(2015\)](#)

The protocols listed are based on the applications CLSA submits to CIHR for each funding cycle. As the CLSA data collection progresses, occasionally, some measurements are changed. Updated versions of the protocols will be posted as necessary. Please refer to the Data Collection Tools section to review the specific questions and measurements gathered at each phase of the study.

Data Collection Tools

Over the course of 20 years, the CLSA will be conducting full data collection every three years. At each major data collection event, the questionnaires and physical assessments remain largely the same for consistency, but there will be some additions to the data collection to further enhance the CLSA platform.

[Questionnaires](#)

Physical Assessments

To ensure that physical assessment data are collected, processed, and stored in a consistent, professional, and structured manner at all CLSA sites across the country, Standard Operating Procedures (SOPs) help maintain the integrity of the data collection and data management

Data Preview Portal



SMART TIPS

- Click the **'Help'** button on the right to see a step-by-step guide to using the DPP
- Use the main Search Bar on this page to search for predetermined **Areas of Information** or **Scales** only
- For a more detailed search, select 'Variable Properties' under the 'Variable' tab on the left. Expand 'Name' and 'Label' to view search boxes for **Variable Names** and **Variable Labels**

Variable Dataset

- Variable properties
- Additional information

▼ Areas of Information

- ▶ Socio-demographic and economic characteristics
- ▶ Lifestyle and health behaviours
- ▶ Health status and functional limitations
- ▶ Diseases
- ▶ Symptoms and signs
- ▶ Medication and supplements

All ▼ e.g. Psychological distress and emotions, Satisfaction with Life Scale

Q ? Help

Clear



CMCQ | COM | TMCQ | TRM ▼ x

+

Satisfaction with Life Scale ▼ x

Variables (32)

Datasets (2)

10



« < 1 2 3 ... > »

1 - 10 of 32

Name	Label	Dataset
SLS_CONDNEG_COM	SWLS scale: Disagree life conditions excellent	COM
SLS_CONDNEG_TRM	SWLS scale: Disagree life conditions excellent	TRM
SLS_CONDPOS_COM	SWLS scale: Agree life conditions excellent	COM
SLS_CONDPOS_TRM	SWLS scale: Agree life conditions excellent	TRM
SLS_COND_COM	SWLS scale: Life conditions excellent	COM

CLSA Report on Health & Aging in Canada

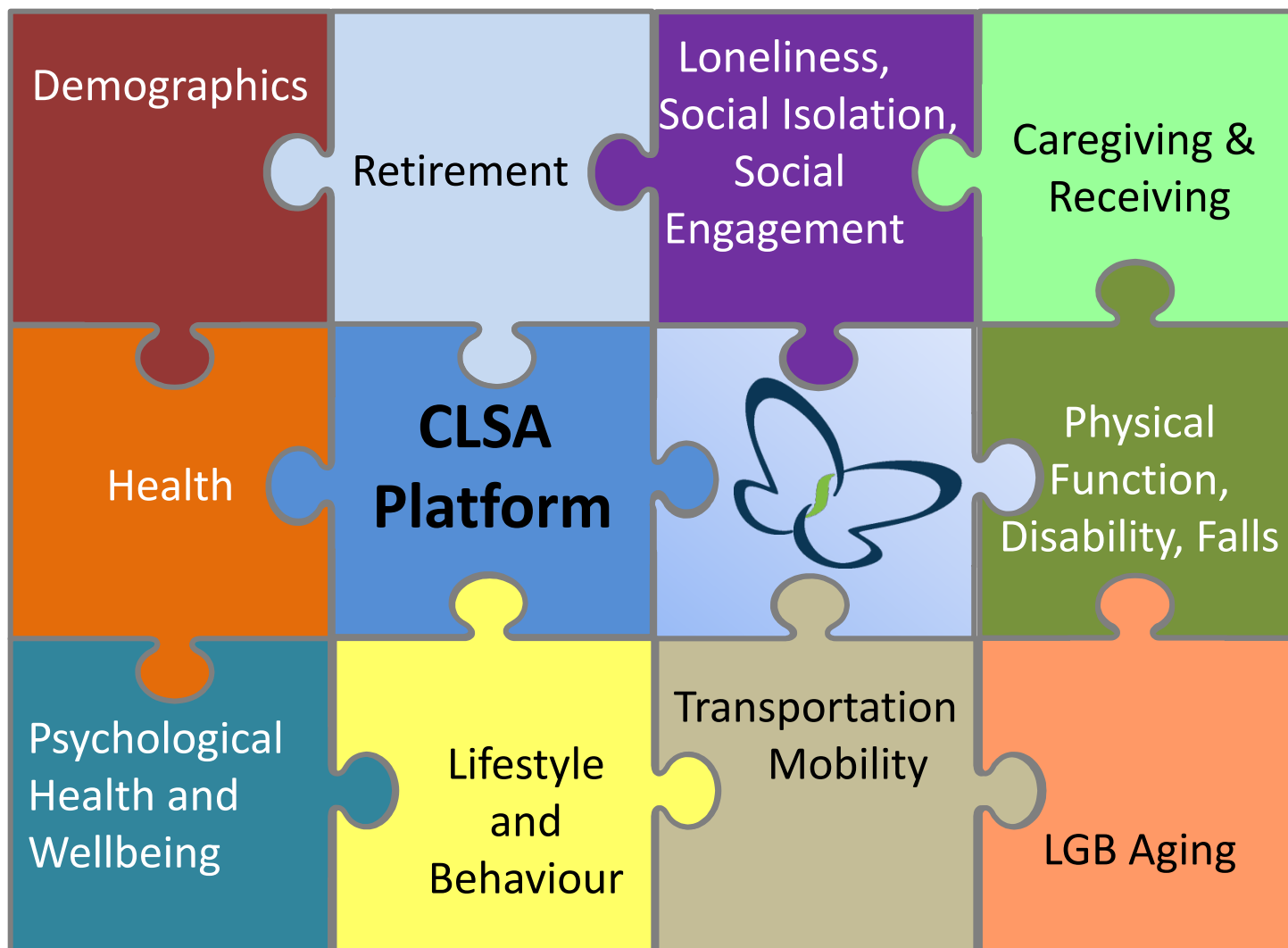
- Partnership between PHAC, ESDC, CIHR and the CLSA
- CLSA Day on the Hill



Select Findings



Report Contents



Demographics

84

% of participants report being born in Canada

3.7

% of participants self-identify as indigenous

74

% of participants report having a post-secondary degree or diploma

5.7

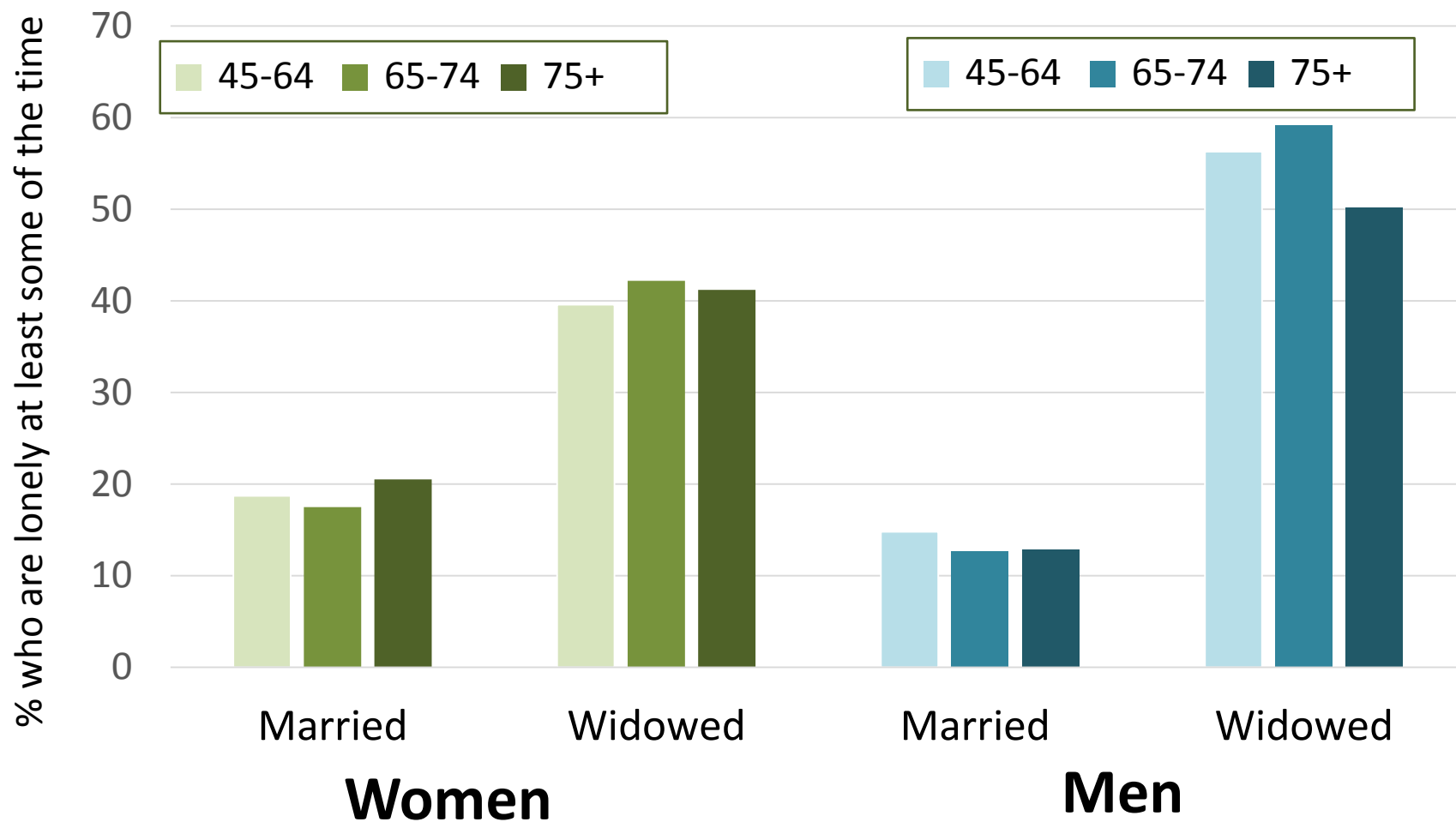
% of participants report an annual household income of less than \$20,000

Loneliness



More **women** than men of all ages in the CLSA reported being **lonely** at least some of the time.

Loneliness

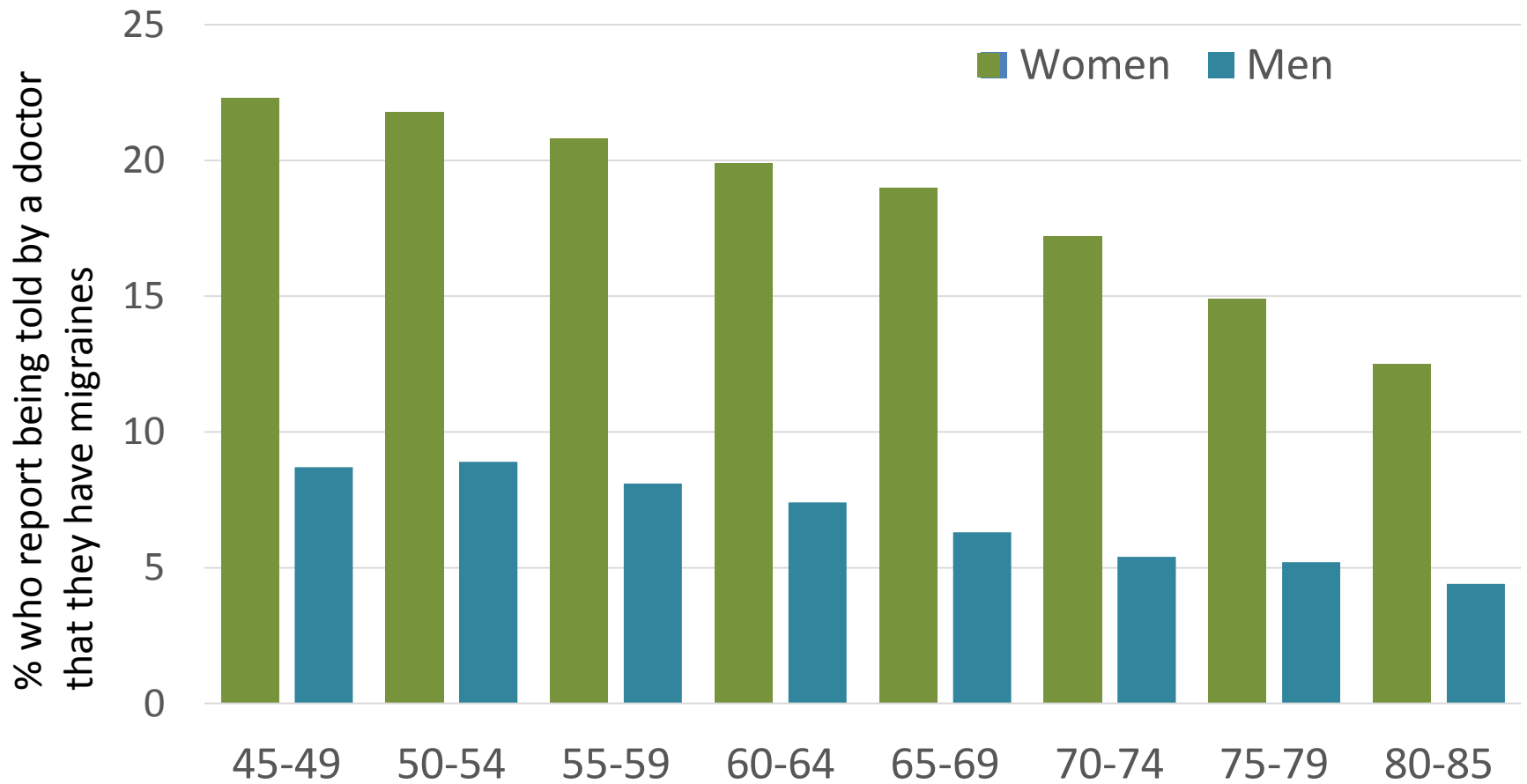


Almost 90% of Canadians aged 45-85 rate their general health as excellent, very good or good.

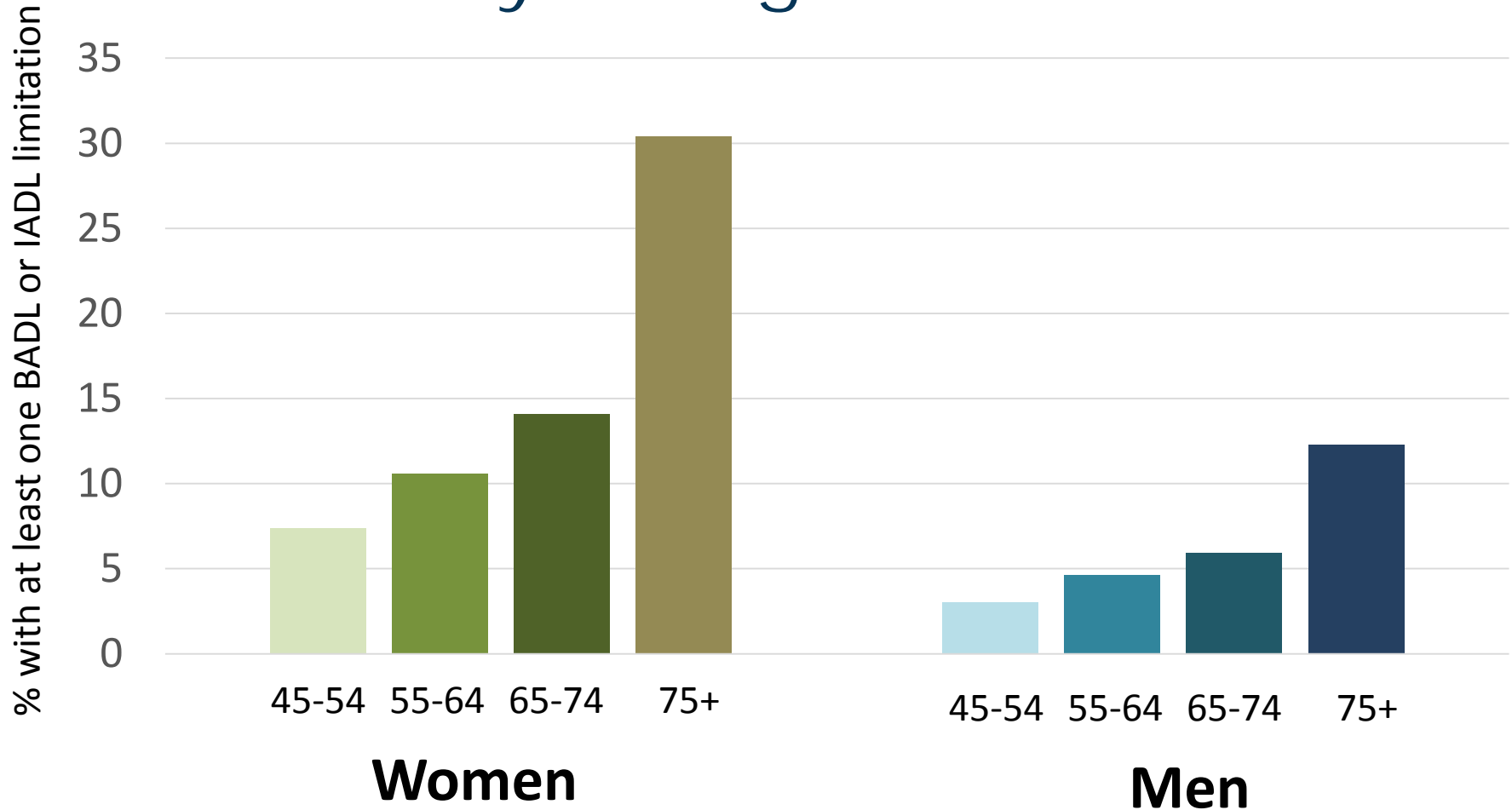


95% of Canadians aged 45-85 rate their own mental health as excellent, very good or good.

Prevalence of Reported Migraines



Basic and Instrumental Activities of Daily Living Limitations



Caregiving & Receiving

38

% of participants report only providing care to others.

8

% of participants report that they only receive care.

6

% report both giving and receiving care.

7

% of caregivers report only getting out at least once a year or never getting out.

Lifestyle & Behavior



Only 25% of Canadians aged 45-85 reported reaching the recommended amounts of aerobic and resistance-based physical activity.

Lifestyle & Behavior



The most frequently cited nutritional risk factors are: skipping meals, eating alone, and weight loss.