



Towards the implementation of CIHR Institute of Aging's Action Plan 2014-15

Mining a unique Canadian resource: The Canadian Longitudinal Study on Aging



CIHR IRSC

Canadian Institutes of Health Research
Institut de recherche en santé du Canada

CAG

Niagara Falls, ON

October 17, 2014



clsa élcw

Canadian Longitudinal Study on Aging
Étude longitudinale canadienne sur le vieillissement

Overview

- Landscapes of Aging: Snapshots from the CLSA
Susan Kirkland, PhD, Dalhousie University
- Developing a Social Isolation Program of Research Using the CLSA
Andrew Wister, PhD, Simon Fraser University
- Exploring health and function using the CLSA
Verena Menec, PhD, University of Manitoba
- Work, Aging, Retirement and Health in the CLSA
Lauren Griffith, PhD, McMaster University





Landscapes of Aging: Snapshots from the Canadian Longitudinal Study on Aging

Susan Kirkland, PhD, Dalhousie University

Parminder Raina, PhD, McMaster University

Christina Wolfson, PhD, McGill University

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Canadian Longitudinal Study on Aging
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The Canadian Longitudinal Study on Aging (CLSA)

- Strategic initiative of CIHR; on Canadian research agenda since 2001
- Team of 3 principal investigators, 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 Canadians for 20 years



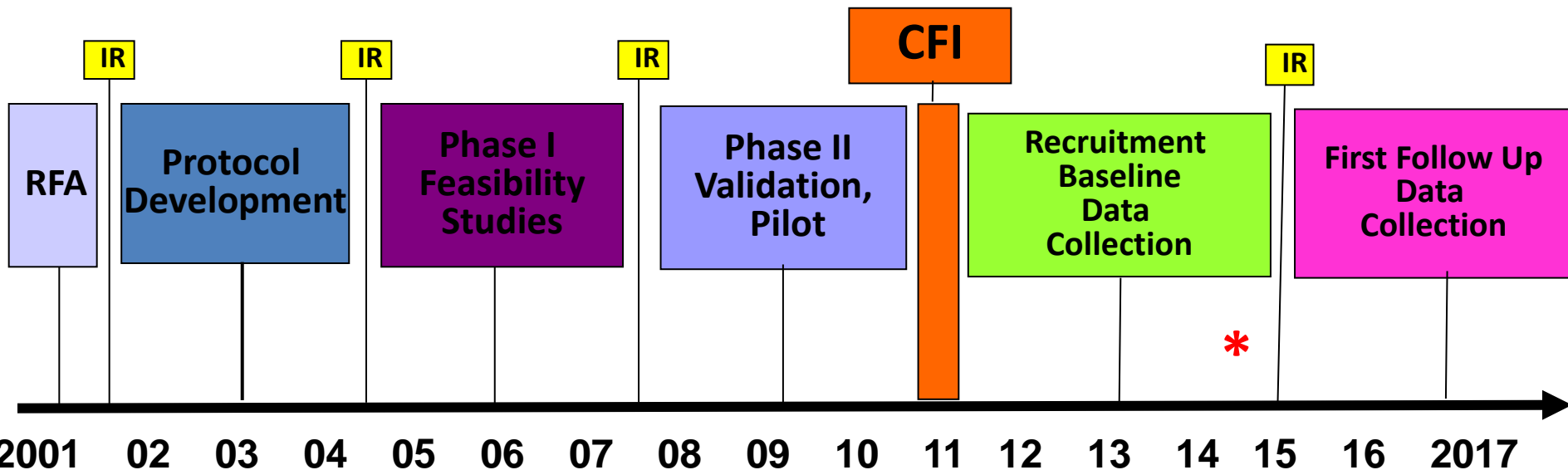
CLSA Timeline and Milestones

Team
Design
Objectives
Content

Acceptability
Bio-specimens
Recruitment
Data Linkage

Pilot recruitment
Validate measures
SOPs, TMs
Pilot protocol

Data Collection



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Overall Aims of the CLSA



- To examine aging as a dynamic process
- To investigate the inter-relationship among intrinsic and extrinsic factors from mid life to older age
- To capture the transitions, trajectories and profiles of aging
- To provide infrastructure and build capacity for state-of-the-art, interdisciplinary, population based research and evidenced-based decision making

Design Overview

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

Tracking (20,000)
Randomly selected
10 provinces

Questionnaire
• By telephone (CATI)

Comprehensive (30,000)
Randomly selected
25-50 km of 11 sites in 7 provinces

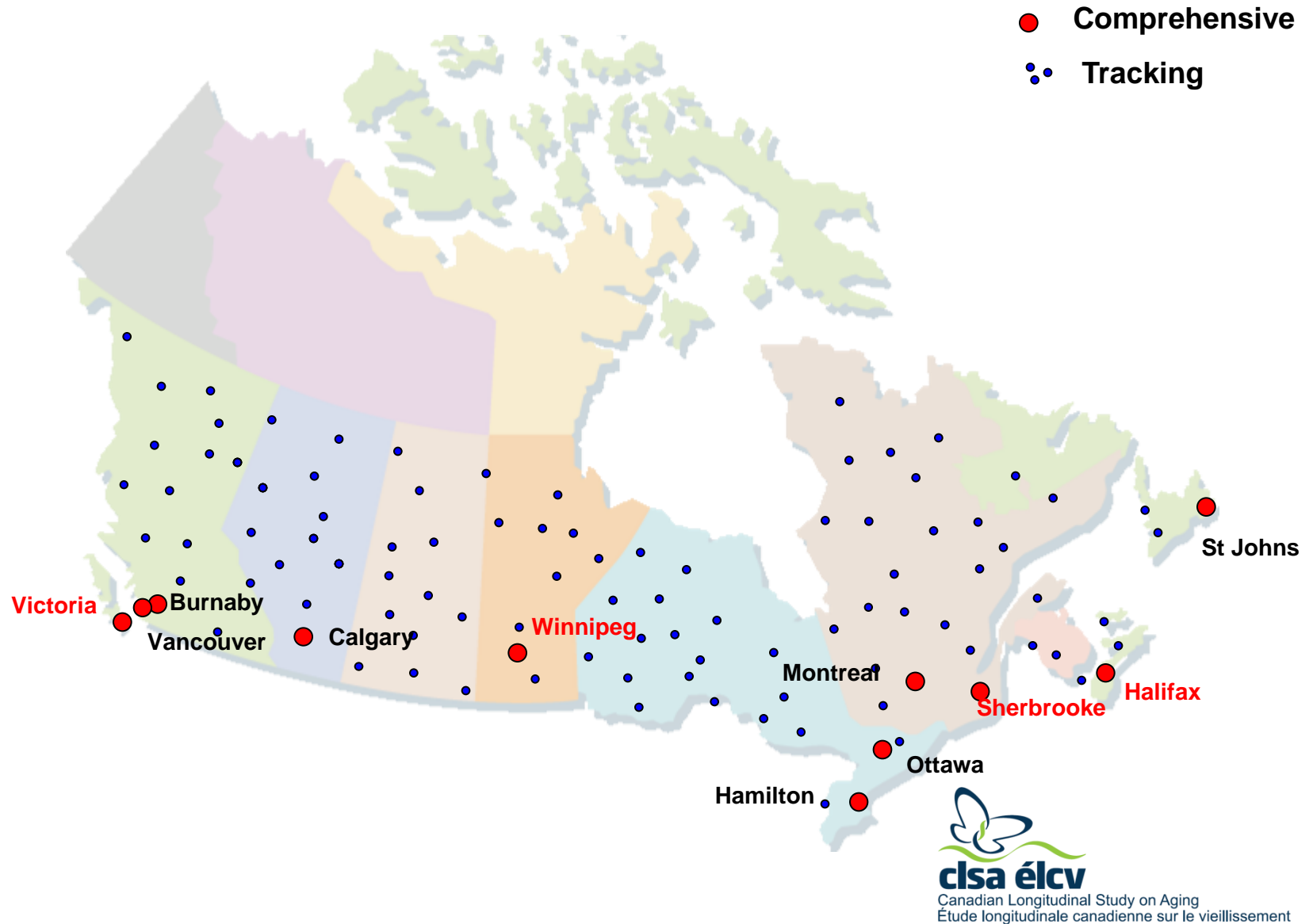
Questionnaire
• In person, in home (CAPI)

Physical Assessments
Blood, Urine
• At Data Collection Site

20 year study: Full follow up every 3 years, maintaining contact in between

Data Linkage

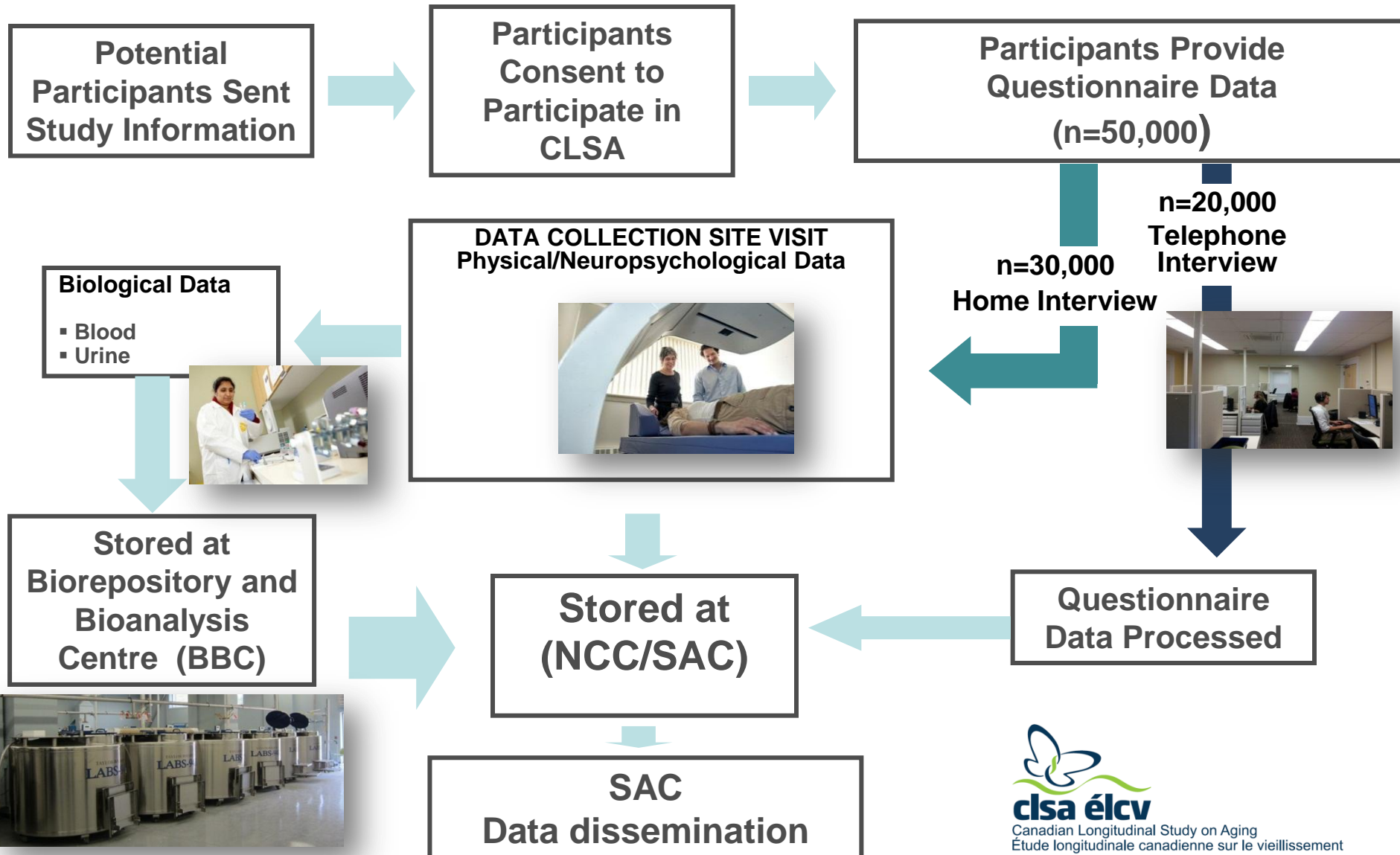
National Scope



Representative Sample Frame for Recruitment

- 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

Standardized, Centralized Process



Depth and Breadth of CLSA Questionnaire modules

- **DEMOGRAPHIC**
- Education
- Marital status
- Ethnicity
- **HEALTH BEHAVIOURS**
- Smoking, alcohol
- Nutritional risk
- Food frequency
- Physical activity
- Health care utilization
- Medication use
- Supplement use
- **HEALTH STATUS**
- General health
- Women's health
- Chronic conditions, symptoms
- Oral health
- **PHYSICAL**
- Injuries, falls
- Mobility
- Pain, discomfort
- Functional status
- ADL, IADL
- **PSYCHOLOGICAL**
- Cognition—Executive function, memory, psychomotor speed
- Depression
- Mood
- Psychological distress
- Veteran identifier
- Satisfaction with life
- PTSD
- **SOCIAL**
- Social networks
- Social support
- Social participation
- Online communication
- Social inequality
- Care receiving
- Care giving
- Retirement status
- Labour force participation
- Retirement planning
- Transportation
- Mobility, Migration
- Built environments
- Home ownership












Depth and Breadth of CLSA Physical Assessment Modules

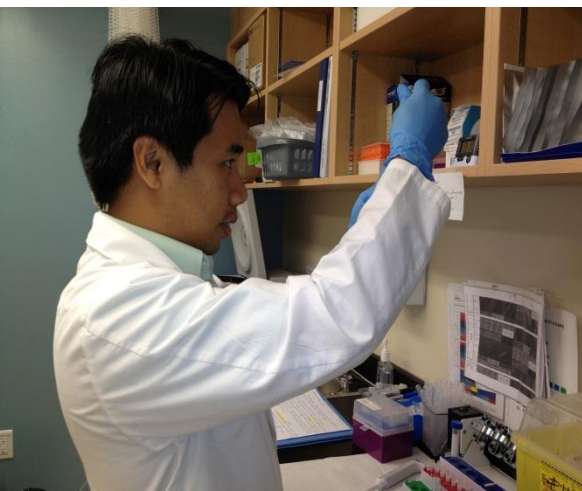
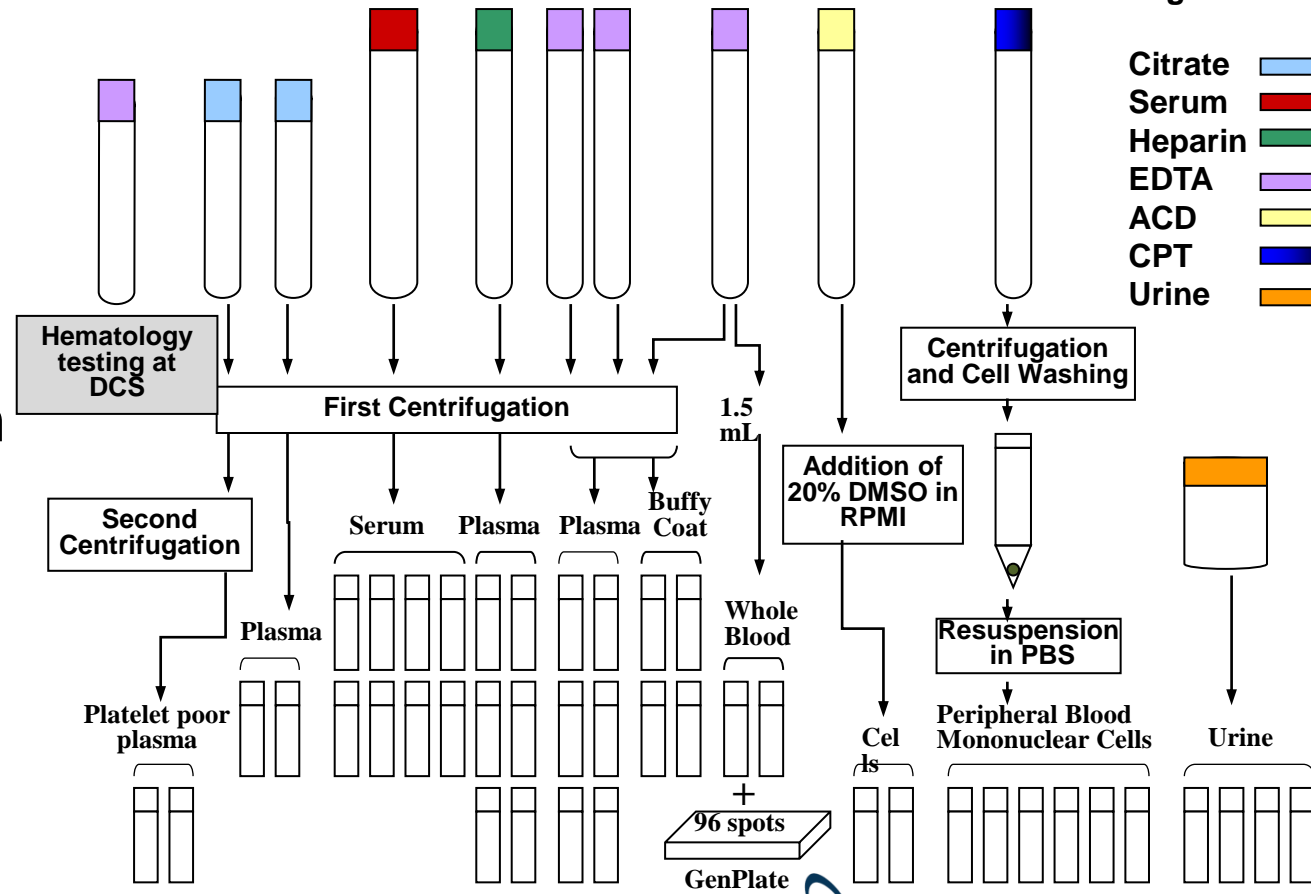
- Height, weight, BMI
- Blood pressure
- Spirometry - FEV
- Carotid ultrasound – CIMT, plaque sweep
- ECG
- DEXA – BMD, body composition, aortic calcification
- Hearing
- Visual acuity
- Grip strength
- Fundus photograph – blood flow
- Tonometer – pressure
- Neuropsych battery – memory, executive function, reaction time
- Timed up and go
- Balance
- 4 metre walk
- Chair rise
- Blood
- Urine



Bio specimen processing 42 aliquots per participant

Legend:

Citrate	
Serum	
Heparin	
EDTA	
ACD	
CPT	
Urine	



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Biorepository and Bioanalysis Centre (BBC)

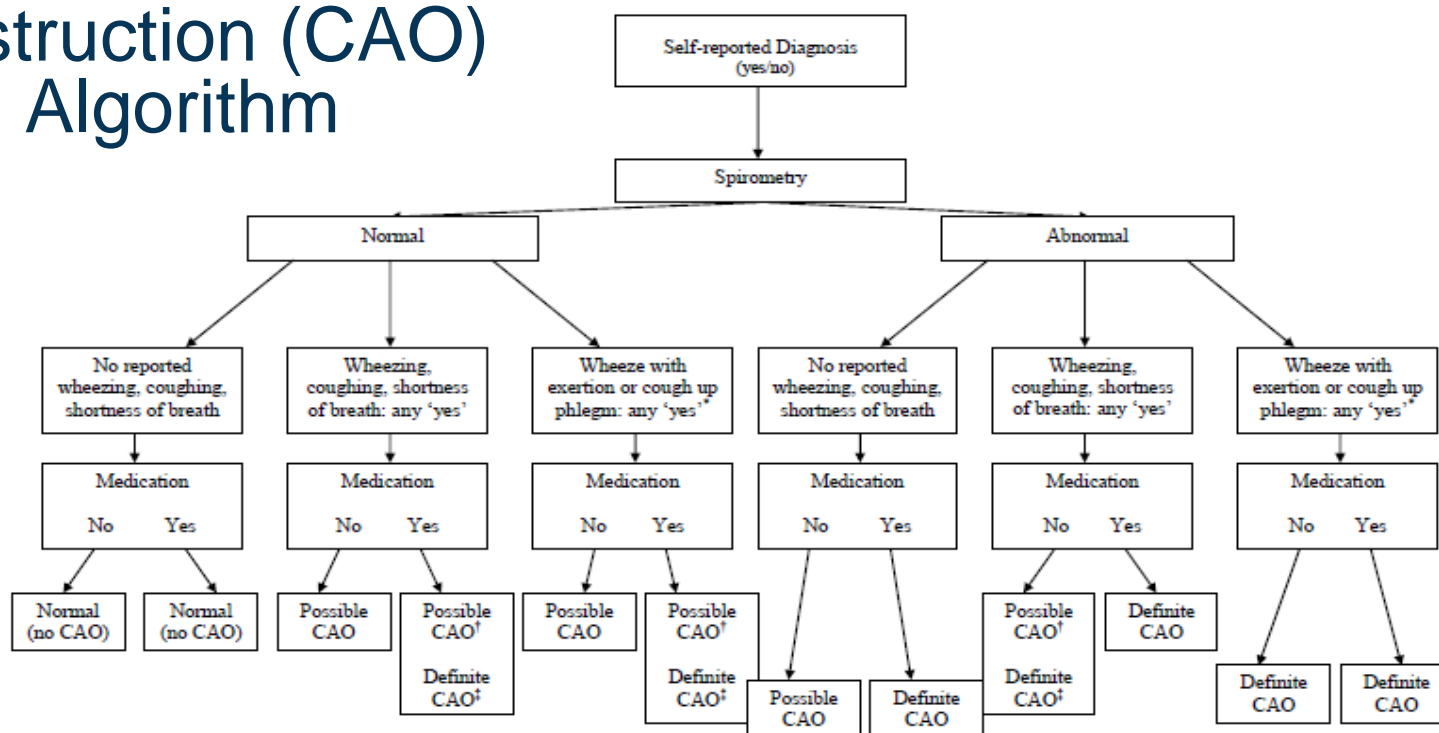


- 31 nitrogen freezers (-180°C)
 - Space for 5 million aliquots
- Personal Archive
 - Dry storage, humidity controlled, room temperature
- Laboratory Information System (LabWare)
 - Sample tracking system, QC
- High-throughput robotic platform for biomarker analysis



Disease outcomes via algorithms

Chronic Airflow Obstruction (CAO) Algorithm



eFigure 1c: Chronic Airflow Obstruction Algorithm. CAO = chronic airflow obstruction. [†]If participant coughs without phlegm, then outcome will be possible CAO. [‡]Outcome when self-reported diagnosis = no. [‡]Outcome when self-reported diagnosis = yes.

Linking CLSA Data with Administrative Databases

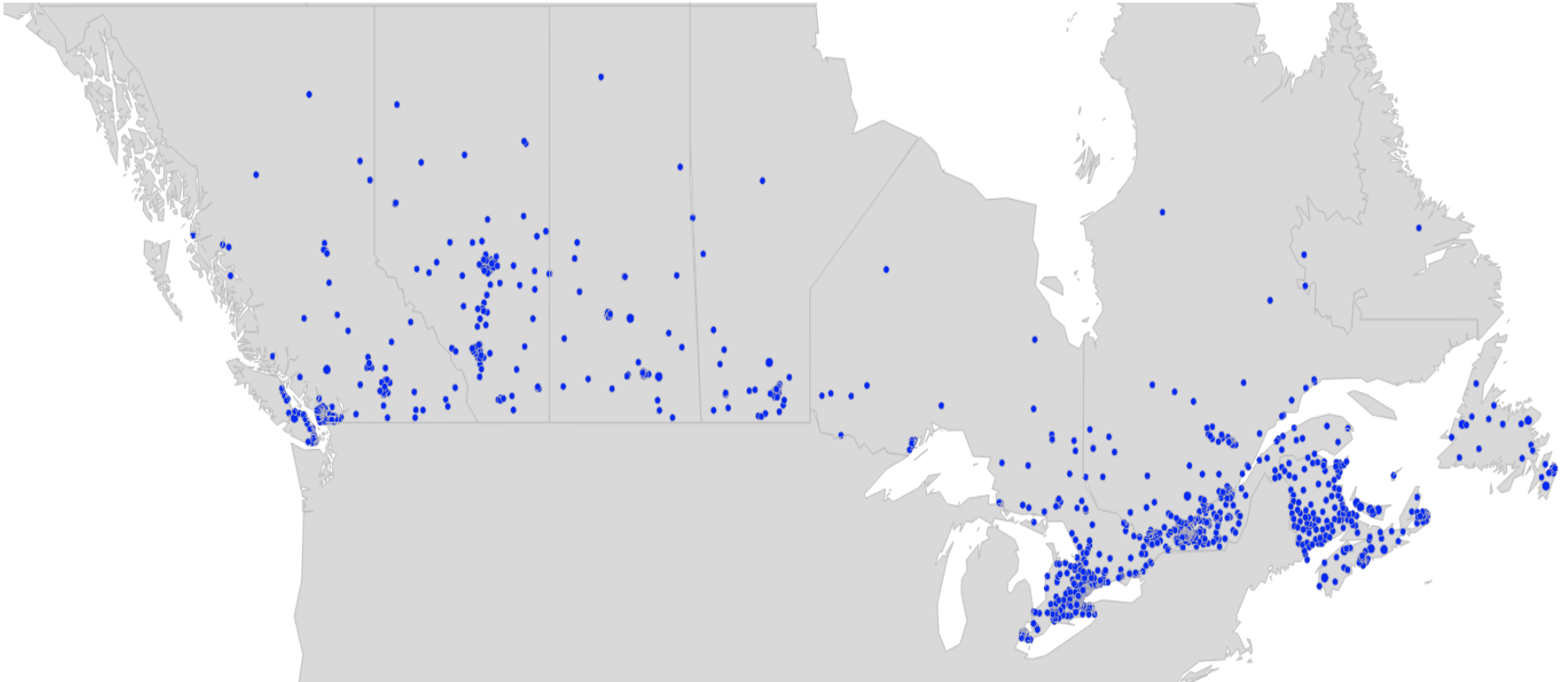
- Linkage is key to CLSA research strategy
 - Enormous potential for collection of information that is difficult to get from participants due to time, accuracy limitations; unknown to participants
- Types of databases
 - Individual level administrative provincial health databases (priority)
 - Disease registries
 - Population level databases of community characteristics, climate, pollution
 - Individual level economic characteristics



Recruitment and Baseline Data Collection Progress and Milestones

- On schedule to meet recruitment and baseline data collection goals by Spring 2015
 - Tracking: Completed! N=21,241
 - Comprehensive: Over 20,000 completed – underway
- Inter-wave contact (MCQ) with >96% retention so far
 - 10,000 completed to date
- 90% signed consent for linkage to health records so far
- 94% signed consent to provide blood and urine so far

Tracking cohort participants



Sampling Weights

- Data weighted to represent the Canadian (and provincial) population between 45-85 years old
- A **survey weight** corresponds to the number of persons in the entire population that an individual respondent represents
- Weighting is necessary because the probability of selecting individuals from certain sub-groups of the population varied

CLSA Tracking Telephone Interviews

N=21,208

	Count	Percent	Weighted Percent
Age			
45-54	5826	27.5	38.2
55-64	6554	30.9	31.2
65-74	4525	21.8	18.8
75-85	4203	19.8	11.8
Sex			
Male	10387	49.0	48.3
Female	10821	51.0	51.7
Language			
English	17457	82.3	75.9
French	3751	17.7	24.1
Born in Canada	18486	87.2	84.5



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CLSA Tracking Telephone Interviews

N=21,208

Province	Count	Percent	Weighted Percent
British Columbia	2619	12.4	13.8
Alberta	2110	10.0	9.3
Saskatchewan	1388	6.5	2.9
Manitoba	1472	6.9	3.3
Ontario	4722	22.3	38.3
Quebec	3603	17.0	24.7
New Brunswick	1350	6.4	2.4
Nova Scotia	1564	7.4	3.1
Prince Edward Island	1132	5.3	0.5
Newfoundland, Lab	1248	5.9	1.7

CLSA Tracking Telephone Interviews

N=21,208

Chronic Condition	Count	Percent	Weighted Percent
Arthritis	8194	38.9	35.1
Asthma	2344	11.1	11.7
COPD	1433	6.8	5.8
Hypertension	8090	38.2	33.4
Diabetes	3542	16.7	15.1
Heart disease	2189	10.3	9.0
Angina	1149	5.4	4.3
Heart attack	1299	6.2	4.9
Stroke	388	1.8	1.5
Dementia/AD	43	0.2	0.2
Parkinson's, Parkinsonism	78	0.4	0.3
Cancer	3262	15.4	13.2
Osteoporosis	2008	9.5	8.7



CLSA Tracking Telephone Interviews

N=21,208

	Count	Percent	Weighted Percent	CCHS Weighted Percent
Marital status				
Single/Never married	1694	8.0	8.4	7.0
Married/Common Law	14586	68.8	73.0	73.8
Widowed	2355	11.1	7.3	8.4
Divorced	1988	9.4	8.5	2.7
Separated	579	2.7	2.7	8.2
Education				
Less than Secondary	1978	9.3	7.0	20.4
Secondary School	2875	13.6	12.8	19.1
Some Post-Secondary	1622	7.7	7.6	5.2
Post Secondary Degree/ Dipl	14650	69.1	72.2	55.3
Annual Household Income				
Less than \$20,000	1341	6.8	5.5	9.0
\$20,000 - \$50,000	5841	29.4	23.9	29.1
\$50,000 - \$100,000	7212	36.3	35.9	36.2
\$100,000 - \$150,000	3212	16.2	19.4	16.2
Greater than \$150,000	2237	11.3	15.4	9.4

CLSA Tracking Telephone Interviews

N=21,208

	Count	Percent	Weighted Percent	CCHS Weighted Percent
Self Rated General Health				
Excellent	3972	18.8	20.8	20.5
Very Good	8115	38.3	38.3	33.8
Good	6249	29.5	28.7	30.4
Fair	227	10.5	9.6	11.5
Poor	624	2.9	2.7	3.9
Self reported Weight Status				
Overweight	11188	53.0	52.1	60.5
Underweight	432	2.0	1.9	1.3
Just about right	9492	45.0	46.0	38.2
Satisfaction with Life				
Dissatisfied	2068	9.8	9.8	9.3
Neutral	850	4.0	4.5	2.7
Satisfied	18264	86.2	85.6	88.0

First Follow Up (2015-2018)

- 1st follow up Tracking (June 2015 to May 2018)
 - Re-contacting 21,242 participants for their follow up telephone interviews
- 1st follow up Comprehensive (June 2015-May 2018)
 - Re-contacting 30,000 participants for their follow up inhome interviews and DCS visits
- 2nd MCQ (December 2016-November 2019)
 - Re-contacting ~50,000 participants for maintaining contact telephone interviews

First Follow Up (2015-2018)

Additions to study content

- Child maltreatment
- Elder Abuse
- Epilepsy
- Hearing
- Arterial stiffness
- Decedent information
- Workability
- Subjective cognitive decline
- Transportation
- Health care use
- Preventive health behaviours

Biomarker and epigenetic analyses

- Complete Blood Count (available)
- Proposed panel of biomarkers: albumin, ALT, creatinine, CRP, ferritin, hemoglobin A1C, lipids (cholesterol, HDL, Triglycerides, LDL), thyroid stimulating hormone, free T4, 25-hydroxyvitamin D
 - N~30,000 (Calgary Laboratory Services)
- Proposed genotyping: Affymetrix UKBiorepository array assay 820,967 SNPs
 - n=10,000 (McGill Genome Centre)
- Proposed epigenetic analysis: targeted age-associated CpG methylation using pyrosequencing and Sequenom EpiTyper
 - n=5,000 (UBC Genetics and Epigenetics Centre)



Data and Sample Access

- Data and samples available to the research community
- Guiding principles
 - Rights and privacy of participants must be protected
 - Confidentiality and security of data must be safeguarded
 - Data and samples made available in timely manner
 - Data and samples can only be used for research purposes
 - Return of derived variables
 - No exclusive access
 - Cost neutral

Data Currently Available

21,242 Telephone Interviews (Tracking):

- 1st release available now
- 2nd release planned for late 2014/early 2015 to include cognitive scores, occupational classes

30,000 Data Collection Site Visits (Comprehensive)

- 1st release planned 10 months after completion of recruitment and baseline assessments
- ~Mid 2016



How to apply for data

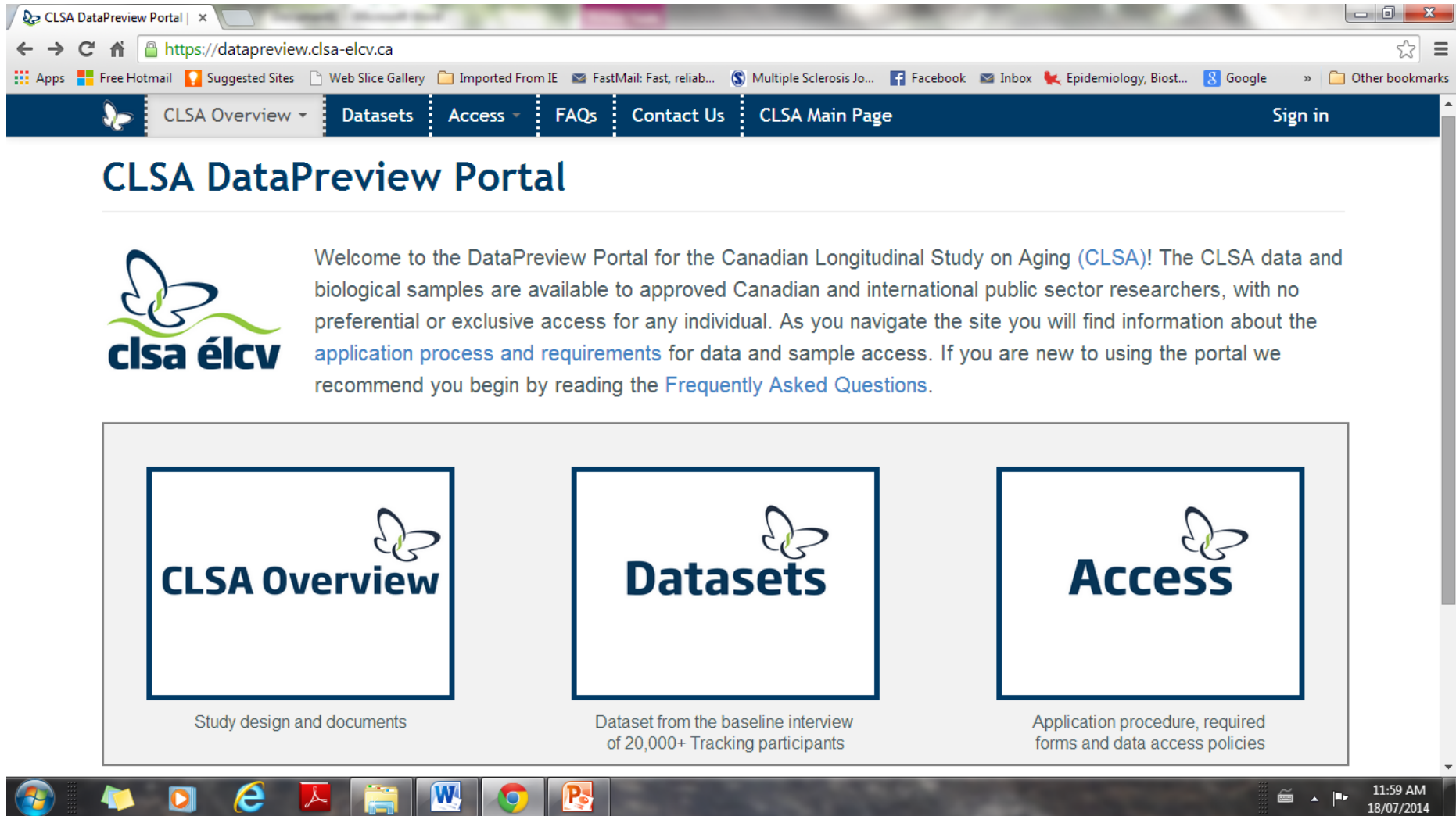
- Via CLSA website: www.clsa-elcv-ca
- CLSA Data and/or Biospecimen Request Application
- Reviewed by CLSA Data and Sample Access Committee
- 6-8 week turnaround
- Institutional data/biospecimen transfer agreements

DataPreview Portal

- DataPreview Portal launched May 2014
- Gateway to access for alphanumeric data and biospecimens
 - Meta data: data dictionaries, data collection tools
 - Documentation and application form
 - Variable search mechanism providing simple descriptive statistics for selected variables

DataPreview Portal

www.clsa-elcv.ca



The screenshot shows a web browser window displaying the CLSA DataPreview Portal. The address bar shows the URL <https://datapreview.clsa-elcv.ca>. The browser's toolbar includes various icons for navigation and search. The website's header features a dark blue navigation bar with links: CLSA Overview, Datasets, Access, FAQs, Contact Us, CLSA Main Page, and a Sign in button. Below the header, the main content area has a large heading "CLSA DataPreview Portal" and a welcome message. The welcome message states: "Welcome to the DataPreview Portal for the Canadian Longitudinal Study on Aging (CLSA)! The CLSA data and biological samples are available to approved Canadian and international public sector researchers, with no preferential or exclusive access for any individual. As you navigate the site you will find information about the [application process and requirements](#) for data and sample access. If you are new to using the portal we recommend you begin by reading the [Frequently Asked Questions](#)." Below the welcome message, there are three large, square buttons with rounded corners, each containing the CLSA logo and a title. The first button is labeled "CLSA Overview" and has the subtitle "Study design and documents". The second button is labeled "Datasets" and has the subtitle "Dataset from the baseline interview of 20,000+ Tracking participants". The third button is labeled "Access" and has the subtitle "Application procedure, required forms and data access policies". At the bottom of the browser window, the Windows taskbar is visible, showing various application icons and the system clock indicating 11:59 AM on 18/07/2014.


CLSA DataPreview Portal | x

← → ↻ 🏠 <https://datapreview.clsa-elcv.ca> ☆ ☰


Apps Free Hotmail Suggested Sites Web Slice Gallery Imported From IE FastMail: Fast, reliab... Multiple Sclerosis Jo... Facebook Inbox Epidemiology, Biost... Google » Other bookmarks

CLSA Overview ▾ Datasets Access ▾ FAQs Contact Us CLSA Main Page Sign in

CLSA DataPreview Portal




Welcome to the DataPreview Portal for the Canadian Longitudinal Study on Aging (CLSA)! The CLSA data and biological samples are available to approved Canadian and international public sector researchers, with no preferential or exclusive access for any individual. As you navigate the site you will find information about the [application process and requirements](#) for data and sample access. If you are new to using the portal we recommend you begin by reading the [Frequently Asked Questions](#).




CLSA Overview

Study design and documents



Datasets

Dataset from the baseline interview of 20,000+ Tracking participants

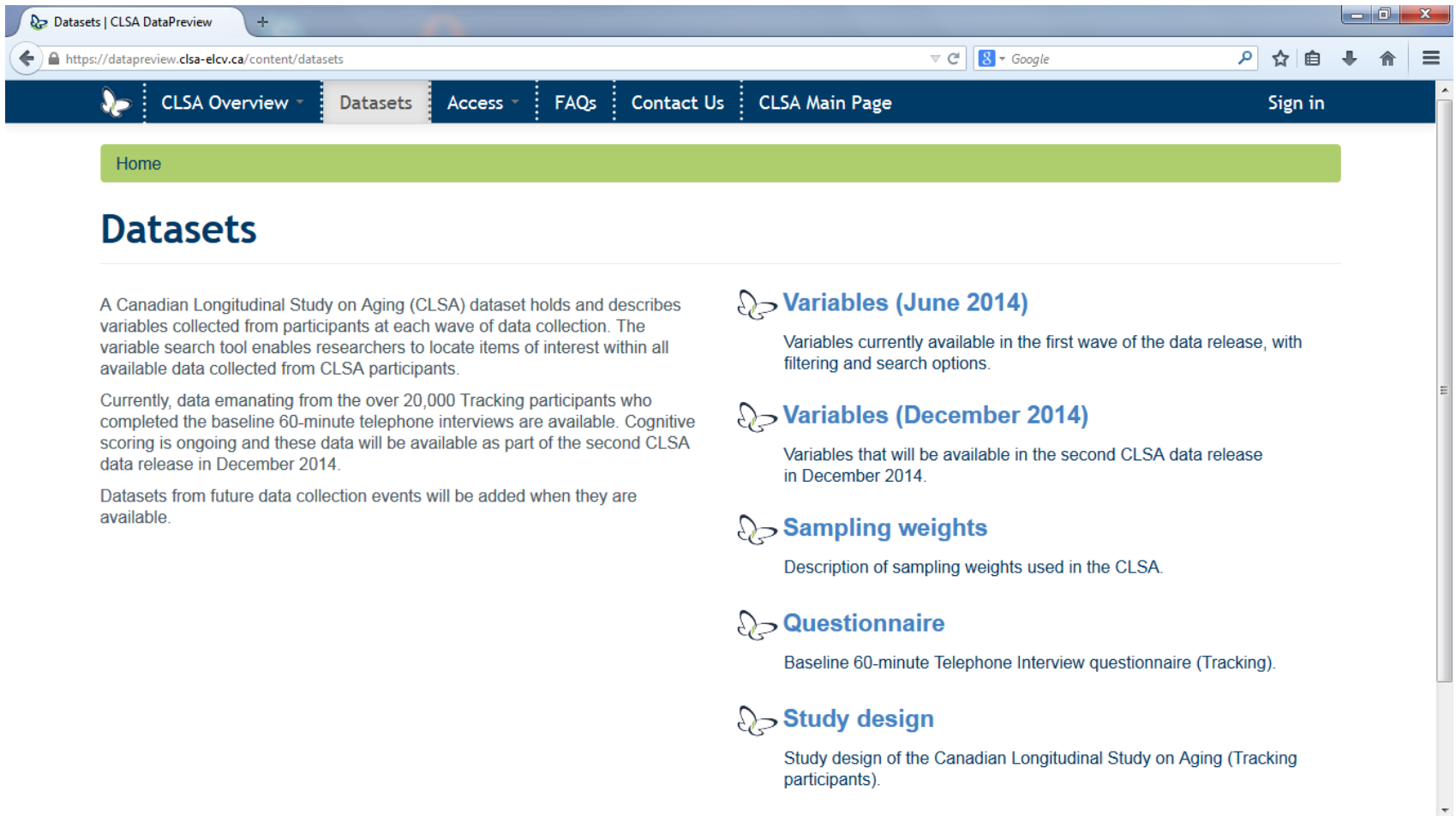


Access

Application procedure, required forms and data access policies

Windows taskbar: 11:59 AM 18/07/2014

DataPreview Portal



The screenshot shows a web browser window with the address bar displaying <https://datapreview.clsa-elcv.ca/content/datasets>. The page has a dark blue navigation bar with links: CLSA Overview, Datasets (active), Access, FAQs, Contact Us, and CLSA Main Page. A 'Sign in' link is on the right. Below the navigation bar is a green 'Home' button. The main content area is titled 'Datasets' and contains two columns of text. The left column describes the CLSA dataset and mentions that data from the over 20,000 Tracking participants who completed the baseline 60-minute telephone interviews are available. The right column lists five categories of data: Variables (June 2014), Variables (December 2014), Sampling weights, Questionnaire, and Study design, each with a brief description.

Datasets

A Canadian Longitudinal Study on Aging (CLSA) dataset holds and describes variables collected from participants at each wave of data collection. The variable search tool enables researchers to locate items of interest within all available data collected from CLSA participants.

Currently, data emanating from the over 20,000 Tracking participants who completed the baseline 60-minute telephone interviews are available. Cognitive scoring is ongoing and these data will be available as part of the second CLSA data release in December 2014.

Datasets from future data collection events will be added when they are available.

- Variables (June 2014)**
Variables currently available in the first wave of the data release, with filtering and search options.
- Variables (December 2014)**
Variables that will be available in the second CLSA data release in December 2014.
- Sampling weights**
Description of sampling weights used in the CLSA.
- Questionnaire**
Baseline 60-minute Telephone Interview questionnaire (Tracking).
- Study design**
Study design of the Canadian Longitudinal Study on Aging (Tracking participants).

DataPreview Portal

Variables | CLSA DataPreview

https://datapreview.clsa-elcv.ca/variable-search

Google

CLSA Overview

Datasets

Access

FAQs

Contact Us

CLSA Main Page

Sign in

Current search

Search found 1000 variables

DATASET

Tracking - Baseline Interview (1000)

DISEASES HISTORY AND RELATED HEALTH PROBLEMS

Injury, poisoning and certain other consequences of external causes (102)

Neoplasms (42)

Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (14)

Symptoms and signs involving cognition, perception, emotional state and behaviour (14)

Diseases of the circulatory system (10)

Show more

MEDICAL HEALTH INTERVENTIONS/HEALTH SERVICES UTILIZATION

Physical/Physiological therapeutic interventions (3)

MEDICATION

Medication Intake (7)

Genito urinary system and sex hormones (7)

REPRODUCTIVE HEALTH AND HISTORY

Menopause (2)

Number of children (1)

Pregnancy (1)

LIFE HABITS/BEHAVIOURS

Home / Datasets


Variables

Help: To obtain all the variables contained in a CLSA questionnaire module, type the two- or three- letter module prefix (e.g. SDC for socio-demographic variables) into the full-text search box.

Q

Fulltext search

Name	Label	Dataset
startdate	Date and time at start of interview	Tracking - Baseline Interview
startlanguage	Language at start of interview	Tracking - Baseline Interview
AGE_NMBR_TRM	Age (years)	Tracking - Baseline Interview
SEX_ASK_TRM	Sex	Tracking - Baseline Interview
SDC_COB_TRM	Country of birth	Tracking - Baseline Interview
SDC_COB_OTSP_TRM	Country of birth other, Specify	Tracking - Baseline Interview
SDC_YACA_YR_TRM	Year arrival in Canada	Tracking - Baseline Interview
SDC_ETHN_CA_TRM	Parental ethnic background Canadian	Tracking - Baseline Interview
SDC_ETHN_FR_TRM	Parental ethnic background French	Tracking - Baseline Interview



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Watch our videos

Find out how participation works, meet the CLSA research team and tune into our Cafe Scientifique videos.

[Click here](#)



[Researchers: Data Access](#)

[Participants: Stay Connected](#)

[Celebrating 40,000 CLSA participants](#)

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[Watch our videos](#)

Our Mission

Transforming everyday life into extraordinary ideas

42,406 Participants so far



50,000 goal



Canadian Longitudinal Study on Aging
Étude longitudinale canadienne sur le vieillissement

Enabling Unit Leads

- Debra Sheets, Lynn Young, DCS **Victoria**
- Andrew Wister, Scott Lear, DCS **Surrey**
- Max Cynader, Teresa Liu-Ambrose, DCS **Vancouver**
- Michael Kobor, GEC **Vancouver**
- David Hogan, Marc Poulin, DCS **Calgary**
- Verena Menec, Philip St. John, DCS and CATI **Winnipeg**
- Parminder Raina (NCC, DCS), Lauren Griffith DCS **Hamilton**
- Cynthia Balion, BBC **Hamilton**
- Vanessa Taler, Larry Chambers, DCS **Ottawa**
- Christina Wolfson (DCS, SAC) Isabel Fortier (SAC) **Montreal**
- Hélène Payette, DCS and CATI **Sherbrooke**
- Susan Kirkland, DCS and CATI **Halifax**
- Gerry Mugford, Pat Parfrey DCS **St. John's**

CLSA Team



Canadian Longitudinal Study on Aging
Étude longitudinale canadienne sur le vieillissement

CLSA Funders and Partners



Veterans Affairs
Canada



Anciens Combattants
Canada

Health PEI



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through CIHR and CFI, and provincial governments
and universities**

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