Transforming Everyday Life into Extraordinary Ideas
Canadian Longitudinal Study on Aging: A Research Platform for Interdisciplinary Research

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What is the Canadian Longitudinal Study on Aging (CLSA)?

“The Canadian Longitudinal Study on Aging is the largest most comprehensive research platform and infrastructure available fin Canada or aging research with longitudinal data that will span 20 years from over 50,000 Canadians over the age of 45”

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
Depth and Breadth of Baseline CLSA

**Physical & Cognitive Measurements**
- Height & weight
- Waist and hip measurements
- Blood Pressure
- Grip strength, timed up-and-go, chair raise, 4-m walk
- Standing balance
- Vision (retinal imaging, Tonometer & visual acuity)
- Hearing (audiometer)
- Spirometry
- Body composition (DEXA)
- Bone density (DEXA)
- Aortic calcification (DEXA)
- ECG
- Carotid Plaque sweep (ultrasound)
- Carotid intima-media thickness (ultrasound)
- Cognitive assessment (30 min. battery)
- Neuro-imaging (In Planning)

**Health Information**
- Chronic disease symptoms (*disease algorithm*)
- Medication and supplements intake
- Women’s health
- Self-reported health service use
- Oral health
- Preventative health
- Administrative data linkage health services & drugs & other administrative databases

**Psychosocial**
- Social participation
- Social networks and support
- Caregiving and care receiving
- Mood, psychological distress
- Veteran’s Identifier & PTSD
- Coping, adaptation
- Injuries and consumer products
- Work-to-retirement transitions
- Retirement planning
- Social inequalities
- Mobility-life space
- Transportation
- Built environments & Contextual Factors
- Air Pollution
- Income, Wealth and Assets

**Lifestyle & Sociodemographic**
- Smoking
- Alcohol consumption
- Physical activity (PASE)
- Nutrition (nutritional risk and food frequency)
- Birth location
- Ethnicity/race/gender
- Marital status
- Education
Biospecimens
42 aliquots per participant
Analysis of Baseline Biomarkers

- We have completed Complete Blood Count on all fresh samples
  - albumin, ALT, creatinine, CRP, ferritin, HbA1C, lipids panel, TSH, freeT4, Vitamin D on all 30,000 baseline participants
- Gene Wide Genotyping: Affymetrix UK Biobank Array on 10,000 participants (eventually on everyone)
- Whole Genome Sequencing on 500
- Methylation on 5,000 participants
- Metabolomics on 3,000 participants
Additional content 2015-2018 (collaborations & partnerships)

- Child Maltreatment and adverse events
- Elder Abuse
- Epilepsy
- Decedent Information
  - Link with provincial mortality data
  - Primary data collection for end-of-life
- Transition to Institutions
  - Primary data collection versus using InterRai or equivalent data (data linkage)
- Workability
- Subjective Cognitive Decline and Meta Memory
- Preventive Health Behaviours
- Sexual orientation and Gender Identity
Requirements for the CLSA IT Infrastructure

- Wanted to create highly integrated set of software to collect paper and pencil free data
- Cost effective data collection (e.g., VOIP)
- Build on existing sets of open source software where possible
- Integration of voice recordings in the software
  - Collection of cognitive data by recording participants responses
- Using similar platforms in Canada to facilitate harmonization of data across Cohorts
  - Common data catalogue architecture
  - Easy access to data catalogue and information about variables in each cycle of the CLSA
Quality and Data Management Needs

- Ability to implement substantial quality control as part of the data collection (e.g., elements of SOP to be integrated in the software)

- Wanted to code data in real time (e.g., Medication data)
  - Integration of Health Canada database to organize drug information by Drug Information Number (DIN)

- Verification of data from one data collection module to the next

- Minimize cleaning of data at the end
  - Lime survey versus Onyx

- Live audit of data and real time transfer of data
CLSA Software Architecture
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.
DataPreview Portal (MICA)

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 (MICA)

### 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.

<table>
<thead>
<tr>
<th>Name</th>
<th>Label</th>
<th>Dataset</th>
</tr>
</thead>
<tbody>
<tr>
<td>startdate</td>
<td>Date and time at start of interview</td>
<td>Tracking - Baseline Interview</td>
</tr>
<tr>
<td>startlanguage</td>
<td>Language at start of interview</td>
<td>Tracking - Baseline Interview</td>
</tr>
<tr>
<td>AGE_NMBR_TRM</td>
<td>Age (years)</td>
<td>Tracking - Baseline Interview</td>
</tr>
<tr>
<td>SEX_ASK_TRM</td>
<td>Sex</td>
<td>Tracking - Baseline Interview</td>
</tr>
<tr>
<td>SDC_COB_TRM</td>
<td>Country of birth</td>
<td>Tracking - Baseline Interview</td>
</tr>
<tr>
<td>SDC_COB_OTSP_TRM</td>
<td>Country of birth other, Specify</td>
<td>Tracking - Baseline Interview</td>
</tr>
<tr>
<td>SDC_YACA_YR_TRM</td>
<td>Year arrival in Canada</td>
<td>Tracking - Baseline Interview</td>
</tr>
<tr>
<td>SDC_ETHN_CA_TRM</td>
<td>Parental ethnic background Canadian</td>
<td>Tracking - Baseline Interview</td>
</tr>
<tr>
<td>SDC_ETHN_FR_TRM</td>
<td>Parental ethnic background French</td>
<td>Tracking - Baseline Interview</td>
</tr>
</tbody>
</table>
What is your current marital/partner status?

**Description**

**Label:**
Marital/partner status

**Dataset:**
Tracking - Baseline Interview

**Value Type:**
Text

**Studies:**
Canadian Longitudinal Study on Aging

**Repeatable:**
No

**Domains**

**Data Source:**
Questionnaire

**Sociodemographic/Socioeconomic Characteristics:**
Marital/Partner status

**Statistics**

<table>
<thead>
<tr>
<th>Value</th>
<th>CLSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single, never married or never lived with a partner</td>
<td>1698 (8%)</td>
</tr>
<tr>
<td>Married/Living with a partner in a common-law relation</td>
<td>14601 (68.8%)</td>
</tr>
<tr>
<td>Widowed</td>
<td>2361 (11.1%)</td>
</tr>
<tr>
<td>Divorced</td>
<td>1995 (9.4%)</td>
</tr>
<tr>
<td>Separated</td>
<td>580 (2.7%)</td>
</tr>
<tr>
<td>[DO NOT READ] Refused</td>
<td>6</td>
</tr>
<tr>
<td>All</td>
<td>21241</td>
</tr>
</tbody>
</table>
Opportunities and Challenges
Maelstrom Suite of Software

• Opportunities
  • Cost effective solution
    • ($5 million versus $500,000)
      • Each new implementation costs less
  • Able to implement in a very short period of time
  • Support from Maelstrom Team
    • Scientific collaboration versus Service
  • Designing for future data harmonization with other cohorts around the world
Challenges

• Limited expertise in Java language to maintain software internally within CSA team
  • Heavy reliance on Maelstrom team to solve problems

• Limited documentation available on Maelstrom software
  • Getting better

• Version upgrades pose challenges
  • Specifically for ONYX
    • Need further testing before released
Contact:
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www.clsa-elcv.ca