Transforming Everyday Life into Extraordinary Ideas
Advancing the Science of Population Health and Aging through Interdisciplinary Research

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Faculty of Health Sciences,
McMaster University, Hamilton

PHRI, McMaster University
March 25th, 2015
Historians may well conclude that the most significant event of the 20th century was ...? 

the growth of world population.
DEMOGRAPHY AND AGING

“Population aging is unquestionably the most important demographic force of the first half of the twenty-first century”.

(Schoeni FR, Ofstedal MB. “Key Themes in research on the Demography aging” Demography, 47, 2010: S5-S15)
THE DEMOGRAPHIC TRANSITION

THE DEMOGRAPHIC TRANSITION MODEL

STAGE ONE (Pre-Modern)
STAGE TWO (Urbanizing/Industrializing)
STAGE THREE (Mature Industrial)
STAGE FOUR (Post Industrial)

YEAR

CBR, CDR RATE PER 1000

TOTAL POPULATION

CBR, CDR

Total Population

(www.marathon.uwc.edu)
The world population is rapidly growing:

World Population: 1950-2050

Source: U.S. Census Bureau, International Data Base, June 2010 Update.
World population is especially growing older:

- The share of the population aged 65+ is expected to double between 2010 and 2040, from 7.8% to 14.7%

- The number of older people will increase from 530 million in 2010, to 1.3 billion by 2040.

(U.S. Census Bureau, International Data Base)
Another aspect of world population aging is the aging of the older population; the share of the older at ages 80+ (the “oldest-old”) is growing more rapidly than the older population itself.

This growth will translate into a large increase of oldest-old within the world’s older population, from 16% in 2000 to 24% in 2040.

(U.S. Census Bureau, International Data Base)
Gender and Aging

- NUMBERS
- MORBIDITY
- POVERTY
Trends in Global Aging

Percent of Population Aged 65 & Over: History and UN Projection

Source: UN (2005)
Number of Years for Percent of Population Age 65 or Older to Rise from 7% to 14%

<table>
<thead>
<tr>
<th>More developed countries</th>
<th>Less developed countries</th>
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<tbody>
<tr>
<td>France 1865-1980</td>
<td>Azerbaijan 2000-2041</td>
</tr>
<tr>
<td>Sweden 1890-1975</td>
<td>Chile 1998-2025</td>
</tr>
<tr>
<td>Australia 1938-2011</td>
<td>China 2000-2026</td>
</tr>
<tr>
<td>United States 1944-2013</td>
<td>Jamaica 2008-2033</td>
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<td>Canada 1944-2009</td>
<td>Tunisia 2008-2032</td>
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<td>Poland 1966-2013</td>
<td>Thailand 2003-2025</td>
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<tr>
<td>United Kingdom 1930-1975</td>
<td>Brazil 2011-2032</td>
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<td>Spain 1947-1995</td>
<td>Colombia 2017-2037</td>
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<table>
<thead>
<tr>
<th>Speed of Population Aging in Selected Countries</th>
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<tbody>
<tr>
<td>Japan 1970-1996</td>
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<td>Sweden 1890-1975</td>
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<tr>
<td>Jamaica 2008-2033</td>
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<td>Tunisia 2008-2032</td>
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<td>Sri Lanka 2004-2027</td>
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<tr>
<td>Thailand 2003-2025</td>
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<tr>
<td>Brazil 2011-2032</td>
</tr>
<tr>
<td>Colombia 2017-2037</td>
</tr>
<tr>
<td>Singapore 2000-2019</td>
</tr>
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</table>

* Dates show the span of years when percent of population age 65 or older rose (or is projected to rise) from 7 percent to 14 percent.

EPIDEMIOLOGY OF AGING: DISEASES

• The leading cause of death among elderly:
  • heart disease
  • cancer
  • stroke
  • chronic lower respiratory tract disease
  • Alzheimer’s disease

EPIDEMIOLOGY OF AGING: DISEASES

The leading Causes of Morbidity:

- Hypertension
- Osteoprosis
- Osteoarthritis
- Vision/Hearing Problems
- Falls and Fractures
  - Disease in older population is the norm
  - And many have multiple morbidities: Need more research in this area
- Use of multiple medications
Rectangularization of the survival curve

FURTHER INCREASE IN LIFE EXPECTANCY

Squaring the survival curve

PERCENT SURVIVING

AGE

1900

1980

TRAUMA

IDEAL

Compression of morbidity

Fries’ paradigm based on the premise that:

- The length of human life is fixed
- AND
- Chronic disease can be postponed

- Predicted that the increase in life expectancy would plateau in the coming decades, particularly life expectancy from age 65 which excludes early life mortality
Evidence suggests otherwise

- Is average life expectancy approaching an upper limit to life expectancy?
  - the evidence that the average life span is 80 years is unconvincing
  - there is no evidence for further rectangularization of survival curves

- Will age at first infirmity increase?
  - there is no evidence for over-all declines in incidence of morbidity: on the contrary
  - evidence for actual “(de)compression” of morbidity is ambiguous
EPIDEMIOLOGY OF AGING: DISABILITY

• A large body of epidemiologic studies allowed a greater understanding of occurrence, determinants, and consequences of disability in the older population.

• Epidemiologic studies have clearly identified disability as the most powerful markers in predicting adverse outcomes. Disability measures are able to capture the presence and the severity of multiple pathologies, including physical, cognitive, psychological conditions.
Martin et al., considering data from the NHANES and the NHIS, conclude that health and disability of elderly improved during the last two decades of 20th century. At the same time, population aged 40-64 years has not shown a consistent improvement and there is some evidence of increase in disability in this age group.

(Martin LG, Schoeni RF, Andreski PM. Demography 2010; 47:S41-S64)
RESEARCH ON AGING

• The demographic causes of aging of the population, in terms of fertility rates and mortality rates, are generally predictable. A variety of population projections are available, prepared by UN, EU and National Statistic Institutes.

• What is less predictable is the interaction of these forces with social context, health status, economic changes, cultural influences and hence international migrations.
Physiologic reserve - Hypothetical Trajectory to Illness, Functional Limitation & Disability

- Hip fracture
- Pneumonia
- Congestive heart failure

Younger age Older age

Physiologic reserve

Functional limitation
Disability

Time

Younger age Older age
For this reason further research on biodemography, dynamic of health, epidemiology, economics, psychology, social sciences and aging are needed.

Longitudinal data are essential in order to sort causal relationships among demographic, biological, psychosocial and economic factors, and health.

Cross-national comparison are important, considering variability across societies, in terms of status and well-being of older persons, experiences of health and mortality, family and social support.
CLSA Research Team

Lead Principal Investigator
Parminder Raina (McMaster)

Co-principal Investigator
Christina Wolfson (McGill)

Co-principal Investigator
Susan Kirkland (Dalhousie)
The Canadian Longitudinal Study on Aging (CLSA)

- A key strategic initiative of CIHR
  - The Canadian Longitudinal Study on Aging
- More than 160 researchers - 26 institutions
- Multidisciplinary - biology, genetics, medicine, psychology, sociology, demography, economics, epidemiology, nursing, nutrition, health services, biostatistics, population health
Canadian Longitudinal Study on Aging (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.
Intrinsic and Extrinsic Factors

Environmental influences
(e.g., rural, socio-economic, exercise, nutrition)

Chronic diseases
(e.g., diabetes, cancer, dementia, arthritis, cardio)

Epigenetics
(e.g., telomeres/oxidative stress, psychological & cognitive abilities, immune functions)

Aging

Inflammation

Genetics

Health & Social Services Utilization

Time (Longitudinal Study)
50,000 women and men aged 45 - 85 at baseline

n=20,000
Randomly selected within provinces

Questionnaire
• By telephone (CATI)

n=30,000
Randomly selected within 25-50 km of 11 sites

Questionnaire
• In person, in home (CAPI)

Clinical/physical tests
Blood, urine (consent)
• At Data Collection Site

Interim contact, follow up every 3 years

Data Linkage (consent)
Participants (50,000)

Enrolled

Questionnaire Data (50,000)

Physical Exam and Biological Specimen (30,000)

Active Follow-up (F) Every 3 years
- Questionnaire
- Physical exam
- Biological samples

Maintaining Contact Interview (MC) mid-wave
- Update contact information
- Short Questionnaire

Passive Follow-up Every 3 years
- Health care utilization
- Disease registries
- Mortality databases

Data and Biological Sample Repositories

Researchers
Depth and Breadth of 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)

**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
- PTSD
- Coping, adaptation
- Injuries and consumer products
- Work-to-retirement transitions
- Retirement planning
- Social inequalities
- Mobility-lifespace
- Built environments & Contextual Factors
- 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
- Targeted age-associated CpG methylation on 5,000 participants
CLSA as Platform for Interdisciplinary Research: Few Examples

- Biomarkers, mobility and Muscle Health
- Sex Hormones and Aging
- Hearing and Cognition
- Volunteerism, social engagement and baby boomers
- Falls and Consumer Products
- Air pollution and chronic diseases
- Veteran’s Health and PTSD
- CLSA-Brain sub-study
- MINDMAP-Urbanization and Mental Health (EU-Horizon2020)
- PathAge-Social, Lifestyle and Biological Mechanisms of Multimorbidity in Aging Population (EU-Horizon2020)
- Epigenetic Clock and Healthy Aging
- Genetics, Environment (metals) and Chronic Disease
- Inflammation and Cognitive Aging
- Metabolomics and Pre-diabetes sub-study
Recruitment & Data Collection

Telephone Interviews

- Recruitment of 21,241 participants for telephone interviews:
  - Statistics Canada CCHS on Healthy Aging
  - Provincial Health Care Registries
  - Random Digit Dialing

- Baseline data collection is completed!
- Data is now available to researcher community
- Maintaining contact interviews initiated in 2013 (>13,000 completed, current retention rate 96%)
- First follow-up begins 2015
Recruitment & Data Collection
Home Interviews and Data Collection Site Visits

- Recruitment of 30,000 for Home Interviews and Data Collection Site Visits:
  - Provincial Health Care Registries
  - Random Digit Dialing
- Baseline data collection 2012 to 2015: Data collection completed on almost all 30,000
- Initial Data release for 30,000 planned for end of 2015
- Maintaining Contact Interviews initiated in 2014 (>9000 completed, current retention rate 96%)
- First follow-up begins 2015
Mining the CLSA data: Data and Biospecimen Access

- Fundamental tenets: rights and privacy of participants, confidentiality and security of data and biospecimens, optimal use to benefit all Canadians

- Application process via CLSA website portal
- Review: Administrative, Data and Sample Access Committee recommendation
- Approval, data/biospecimen sharing agreements
- Raw data and/or biospecimens to investigator
- Return of derived variables to CLSA dataset
Recruitment and Baseline Data Collection Data Release

• DataPreview Portal soft launch June 2014
• Gateway to access for data* and biospecimens
  ➢ Meta data: data dictionaries, data collection tools
  ➢ Documentation and application form
  ➢ Variable search mechanism providing simple descriptive statistics for selected variables

*Currently available for alphanumeric data
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
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

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>
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<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_NMNR_TRM</td>
<td>Age (years)</td>
<td>Tracking - Baseline Interview</td>
</tr>
<tr>
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<td>Sex</td>
<td>Tracking - Baseline Interview</td>
</tr>
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<td>Country of birth</td>
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<tr>
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<td>Country of birth other, Specify</td>
<td>Tracking - Baseline Interview</td>
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<tr>
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<td>Year arrival in Canada</td>
<td>Tracking - Baseline Interview</td>
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<td>SDC_ETHN_CA_TRM</td>
<td>Parental ethnic background Canadian</td>
<td>Tracking - Baseline Interview</td>
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<tr>
<td>SDC_ETHN_FR_TRM</td>
<td>Parental ethnic background French</td>
<td>Tracking - Baseline Interview</td>
</tr>
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</table>
**GEN OWNAG_TRM**

In terms of your own healthy aging, would you say it is excellent, very good, good, fair, or poor?

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Label:</strong></td>
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<td><strong>Value Type:</strong></td>
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<td><strong>Repeatable:</strong></td>
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### Categories

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<td>1</td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Very good</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Poor</td>
<td></td>
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<tr>
<td>8</td>
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<td>✓</td>
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<tr>
<td>9</td>
<td>[DO NOT READ] Refused</td>
<td>✓</td>
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**Statistics**

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<tr>
<th>Value</th>
<th>CLSA</th>
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<tr>
<td>Excellent</td>
<td>3931 (18.8%)</td>
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<tr>
<td>Very good</td>
<td>8513 (40.8%)</td>
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<tr>
<td>Good</td>
<td>6276 (30.1%)</td>
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<tr>
<td>Fair</td>
<td>1731 (8.3%)</td>
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<tr>
<td>Poor</td>
<td>419 (2%)</td>
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<td>2</td>
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<tr>
<td>All</td>
<td>20925</td>
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</table>
Follow-up One of the CLSA (2015-2018)

- Will commence in Summer of 2015
- Focus on retention
- Renewal funding has been approved
- Proxy protocols
- In home assessments (shorter version)
Follow-up One of the CLSA (2015-2018) Contd…

- Child Maltreatment and adverse events
- Elder Abuse
- Epilepsy, Aortic Stenosis
- Enhanced Hearing, Oral Health, and Transportation modules
- Decedent Information
- Workability
- Subjective Cognitive Decline and Meta Memory
- Preventive Health Behaviours
- Sexual orientation and Gender Identity
Global Observatory on Aging

- EU FP7 funded Project: Creating a network of about 30 cohorts across Canada, Europe, Israel, China, and USA
  - CHANCES: Healthy Aging (already funded)
    - 10 Cohorts
  - MINDMAP: Urbanization and Mental Health
    - 30 Cohorts
- Collectively~200,000-300,000 participants
- CONSTANCE and CLSA Collaboration
- Potential to Harmonize PURE and CLSA
- Lead for Harmonization~ Isabel Fortier
  - Methods and Tools for Harmonization of data
  - Data sharing and Ethical issues
# CLSA CORE TEAM

<table>
<thead>
<tr>
<th>Lead PI</th>
<th>Parminder Raina <em>(McMaster)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-PI</td>
<td>Christina Wolfson <em>(McGill)</em> and Susan Kirkland <em>(Dalhousie)</em></td>
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<tr>
<td>Key Site Co-Investigators</td>
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<td>Scientific Working Group</td>
<td>See our website – <a href="http://www.clsa-elcv.ca">www.clsa-elcv.ca</a></td>
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</tbody>
</table>
CLSA Funders and Partners
praina@mcmaster.ca

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

www.clsalcv.ca
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**

<table>
<thead>
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<th>Age</th>
<th>Count</th>
<th>Percent</th>
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## CLSA Tracking Telephone Interviews
### N=21,208

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<td>COPD</td>
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<td>Hypertension</td>
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<td>15.1</td>
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<tr>
<td>Heart disease</td>
<td>2189</td>
<td>10.3</td>
<td>9.0</td>
</tr>
<tr>
<td>Angina</td>
<td>1149</td>
<td>5.4</td>
<td>4.3</td>
</tr>
<tr>
<td>Heart attack</td>
<td>1299</td>
<td>6.2</td>
<td>4.9</td>
</tr>
<tr>
<td>Stroke</td>
<td>388</td>
<td>1.8</td>
<td>1.5</td>
</tr>
<tr>
<td>Dementia/AD</td>
<td>43</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Parkinson’s, Parkinsonism</td>
<td>78</td>
<td>0.4</td>
<td>0.3</td>
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<tr>
<td>Cancer</td>
<td>3262</td>
<td>15.4</td>
<td>13.2</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>2008</td>
<td>9.5</td>
<td>8.7</td>
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</tbody>
</table>
### CLSA Tracking Telephone Interviews

N=21,208

<table>
<thead>
<tr>
<th>Marital status</th>
<th>Count</th>
<th>Percent</th>
<th>Weighted Percent</th>
<th>CCHS Weighted Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single/Never married</td>
<td>1694</td>
<td>8.0</td>
<td>8.4</td>
<td>7.0</td>
</tr>
<tr>
<td>Married/Common Law</td>
<td>14586</td>
<td>68.8</td>
<td>73.0</td>
<td>73.8</td>
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<tr>
<td>Widowed</td>
<td>2355</td>
<td>11.1</td>
<td>7.3</td>
<td>8.4</td>
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<tr>
<td>Divorced</td>
<td>1988</td>
<td>9.4</td>
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<tr>
<td>Separated</td>
<td>579</td>
<td>2.7</td>
<td>2.7</td>
<td>8.2</td>
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</table>

<table>
<thead>
<tr>
<th>Education</th>
<th>Count</th>
<th>Percent</th>
<th>Weighted Percent</th>
<th>CCHS Weighted Percent</th>
</tr>
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<tbody>
<tr>
<td>Less than Secondary</td>
<td>1978</td>
<td>9.3</td>
<td>7.0</td>
<td>20.4</td>
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<tr>
<td>Secondary School</td>
<td>2875</td>
<td>13.6</td>
<td>12.8</td>
<td>19.1</td>
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<tr>
<td>Some Post-Secondary</td>
<td>1622</td>
<td>7.7</td>
<td>7.6</td>
<td>5.2</td>
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<tr>
<td>Post Secondary Degree/ Dipl</td>
<td>14650</td>
<td>69.1</td>
<td>72.2</td>
<td>55.3</td>
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</table>

<table>
<thead>
<tr>
<th>Annual Household Income</th>
<th>Count</th>
<th>Percent</th>
<th>Weighted Percent</th>
<th>CCHS Weighted Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $20,000</td>
<td>1341</td>
<td>6.8</td>
<td>5.5</td>
<td>9.0</td>
</tr>
<tr>
<td>$20,000 - $50,000</td>
<td>5841</td>
<td>29.4</td>
<td>23.9</td>
<td>29.1</td>
</tr>
<tr>
<td>$50,000 - $100,000</td>
<td>7212</td>
<td>36.3</td>
<td>35.9</td>
<td>36.2</td>
</tr>
<tr>
<td>$100,000 - $150,000</td>
<td>3212</td>
<td>16.2</td>
<td>19.4</td>
<td>16.2</td>
</tr>
<tr>
<td>Greater than $150,000</td>
<td>2237</td>
<td>11.3</td>
<td>15.4</td>
<td>9.4</td>
</tr>
</tbody>
</table>
## CLSA Tracking Telephone Interviews

**N=21,208**

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>Percent</th>
<th>Weighted Percent</th>
<th>CCHS Weighted Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self Rated General Health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>3972</td>
<td>18.8</td>
<td>20.8</td>
<td>20.5</td>
</tr>
<tr>
<td>Very Good</td>
<td>8115</td>
<td>38.3</td>
<td>38.3</td>
<td>33.8</td>
</tr>
<tr>
<td>Good</td>
<td>6249</td>
<td>29.5</td>
<td>28.7</td>
<td>30.4</td>
</tr>
<tr>
<td>Fair</td>
<td>227</td>
<td>10.5</td>
<td>9.6</td>
<td>11.5</td>
</tr>
<tr>
<td>Poor</td>
<td>624</td>
<td>2.9</td>
<td>2.7</td>
<td>3.9</td>
</tr>
<tr>
<td><strong>Self reported Weight Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>11188</td>
<td>53.0</td>
<td>52.1</td>
<td>60.5</td>
</tr>
<tr>
<td>Underweight</td>
<td>432</td>
<td>2.0</td>
<td>1.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Just about right</td>
<td>9492</td>
<td>45.0</td>
<td>46.0</td>
<td>38.2</td>
</tr>
<tr>
<td><strong>Satisfaction with Life</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>2068</td>
<td>9.8</td>
<td>9.8</td>
<td>9.3</td>
</tr>
<tr>
<td>Neutral</td>
<td>850</td>
<td>4.0</td>
<td>4.5</td>
<td>2.7</td>
</tr>
<tr>
<td>Satisfied</td>
<td>18264</td>
<td>86.2</td>
<td>88.0</td>
<td></td>
</tr>
</tbody>
</table>
The employment rate of individuals 55 years or older has gone up significantly in the recent years.

- **Statistics Canada comparing 1997 to 2010**
  - 9% increase for men
  - 13% increase for women

Canadian Workforce

The expected number of years a 50 year old could expect to work:

1997 → 14
2010 → 16

Percent of workers 55 years and older is on the rise

“Canada’s boomers woefully short of hitting retirement goals: report”

“As Canada’s Baby Boomers prepare to head into their retirement years, many are discovering they don’t have the funds they had hoped would be available and now face the reality that they have little time to play catch-up,” said Chris Buttigieg, senior manager of wealth planning strategy at BMO Financial Group.

Strategies to generate more income include delaying retirement; taking on a part-time job to earn extra money after retirement; selling off collectibles, antiques and other possessions; selling the home or renting out part of it.
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Canadian Workforce
Financial Post, Jan 28, 2014

“Most older workers who leave career jobs return to work within a decade:
Statistics Canada”
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Statistics Canada”
5 ways Canada's workforce will change in 20 years

Canada's statistics agency projected 20 years into the future... "The projections also [are] that ... the labour force will become older and increasingly ethnoculturally diverse," as the agency put it.
Changing Canadian Workforce
CBC News, Aug 17, 2011

5 ways Canada's workforce will change in 20 years

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CLSA Data Available
Telephone-Administered Questionnaire

Total Sample $n = 21,241$

- Completely Retired $n = 9,899$
- Partly Retired $n = 2,254$
- Retired and Returned to Work $n = 2,993$
## CLSA Data Available

**Telephone-Administered Questionnaire**

**Weighted Results**

<table>
<thead>
<tr>
<th>Retirement Status</th>
<th>45-64</th>
<th>65-85</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Completely Retired</td>
<td>17.0%</td>
<td>22.9%</td>
</tr>
<tr>
<td>Partly Retired</td>
<td>8.8%</td>
<td>8.2%</td>
</tr>
<tr>
<td>Not Retired</td>
<td>74.2%</td>
<td>68.8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Retirement Status</th>
<th>45-64</th>
<th>65-85</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Retired and Returned to Work</td>
<td>7.8%</td>
<td>7.2%</td>
</tr>
</tbody>
</table>

---

[CLSA élcv](https://www.xyz.com)  
Canadian Longitudinal Study on Aging  
Étude longitudinale canadienne sur le vieillissement
Of those Retired:

- Retirement voluntary  \( n = 9,683 \) (78%)
- Health/Disability/Stress contributed to decision to retire  \( n = 2,935 \) (24%)
Of those not retired and ever worked

Currently working \( n = 8,085 \) (91%)

Of those currently working

• Currently >1 job \( n = 1,351 \) (15%)
CLSA Data Available
Telephone-Administered Questionnaire
Weighted Results

<table>
<thead>
<tr>
<th>Of Those Not Retired</th>
<th>45-64</th>
<th>65-85</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Currently Working</td>
<td>92.2%</td>
<td>89.4%</td>
</tr>
<tr>
<td>More than 1 job</td>
<td>15.0%</td>
<td>15.5%</td>
</tr>
</tbody>
</table>
Richness of CLSA Data
Extensive Work and Retirement Modules

Retirement Module

- Age of retirement
- Spouse’s retirement status
- Reasons for retirement
- Preparation for retirement
- Return to work after retirement
- Reasons for return
- Full-time/Part-time, type of work
Richness of CLSA Data
Extensive Work and Retirement Modules

Labour Force Participation Module*

- Current working status**
- Characteristics of current/most recent job
  - Hours worked
  - Work schedule
  - Occupation, Industry
  - Duration of employment
- Characteristics of longest held job
- Reasons for not working (if not currently employed and if never worked)**

*Current or prior to retirement
**Only asked of those currently working
Richness of CLSA Data
Extensive Work and Retirement Modules

Retirement Planning Module

- Age plan to retire
- Preparation for retirement
- Contribution to pension
- Adequacy of income/investments to maintain standard of living
- Reasons for planned retirement
Sample Research Topics

- Disability in retirees and occupational history
- Correlates of health-related job loss
- Cognition and function in retirement in relation to occupational history
- Cognition and function related to work injury in younger and older workers
- Health status and return to work after retirement
- Informal caregiving and work