



Statistics Canada
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Canadian Health Measures Survey (CHMS): an introduction and overview

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Statistics Canada
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CANADIAN HEALTH MEASURES SURVEY



Overview

- Collection of data
- Content
- Microdata files
- Documentation available
- Online access and analytical products
- Biobank

CHMS OBJECTIVES



- **Explore** emerging public health issues and new measurement technologies
- **Establish** national baseline data on major health concerns
- **Determine** relationships among risk factors, protection practices and health status
- **Assess** the validity of self reported information
- **Assemble** a nationally representative sample for storage in a biobank



CHMS: FOUR COMPONENTS

- Household component – about 1¼ hours
- Mobile Examination Centre (MEC) component – about 2¼ to 3 hours
- Laboratory component – several external reference labs, one lab in the MEC
- Biobank component - storage for future health research of: whole blood, plasma, serum, urine and DNA.

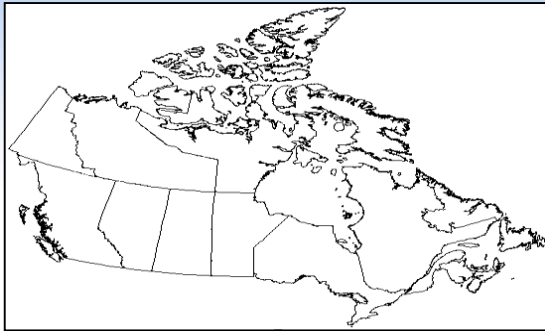
OVERALL RESPONSE RATES: CYCLE 4



- **92%** of selected respondents completed the household questionnaire.
- **77%** of respondents who completed the household questionnaire attended the mobile clinic
- well over **90%** participation for all the tests performed at mobile examination centre

SAMPLING STRATEGY: CYCLES 3 - 5

National sampling frame
(360 eligible collection sites)



- Collection sites stratified in 5 regions
- Covers about 96% of population
- 11 age/sex groups from age 3 to 79
- Sample size ($n = 5,700$) to yield national estimates by sex/age group at 10% prevalence with coefficient of variation of 16.5%

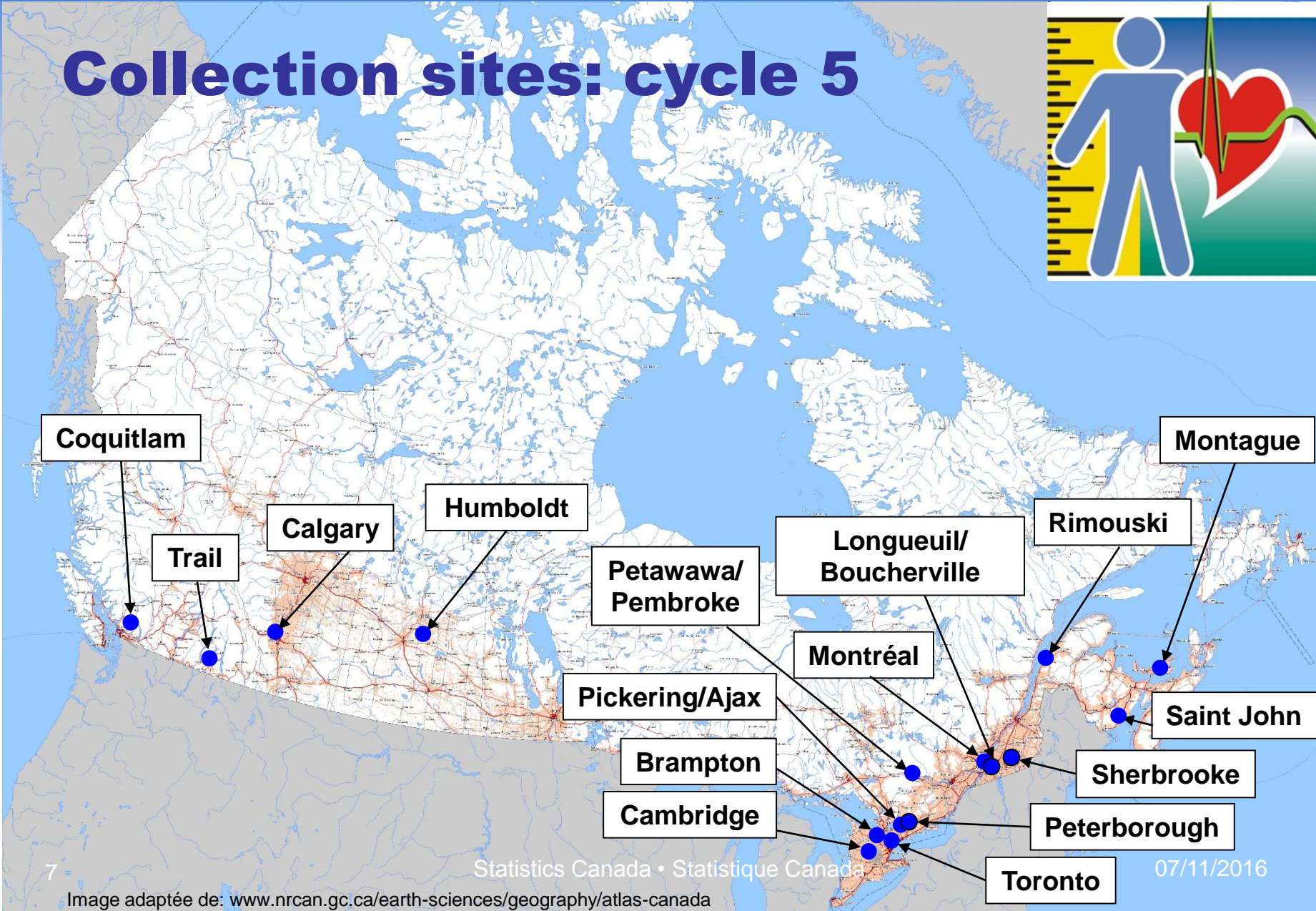
Collection sites selected

Households selected

Respondents selected



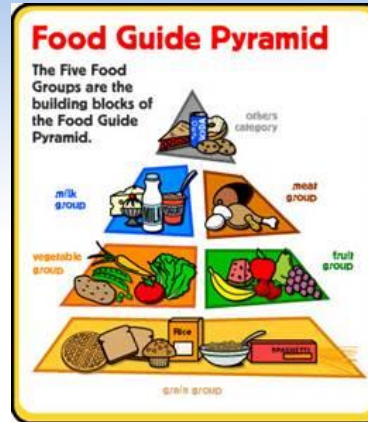
Collection sites: cycle 5



QUESTIONNAIRE CONTENT

The questionnaire content is to be used in context with physical measures data and covers the following topics:

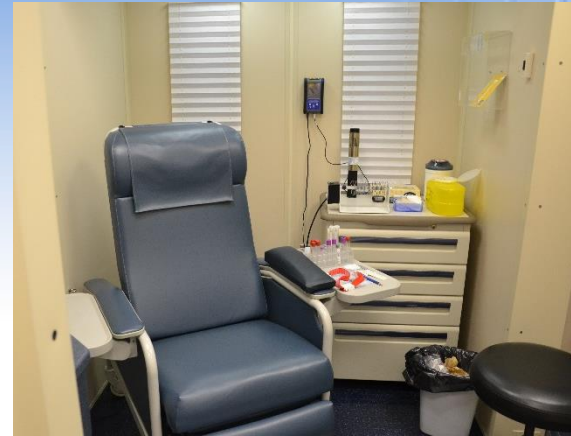
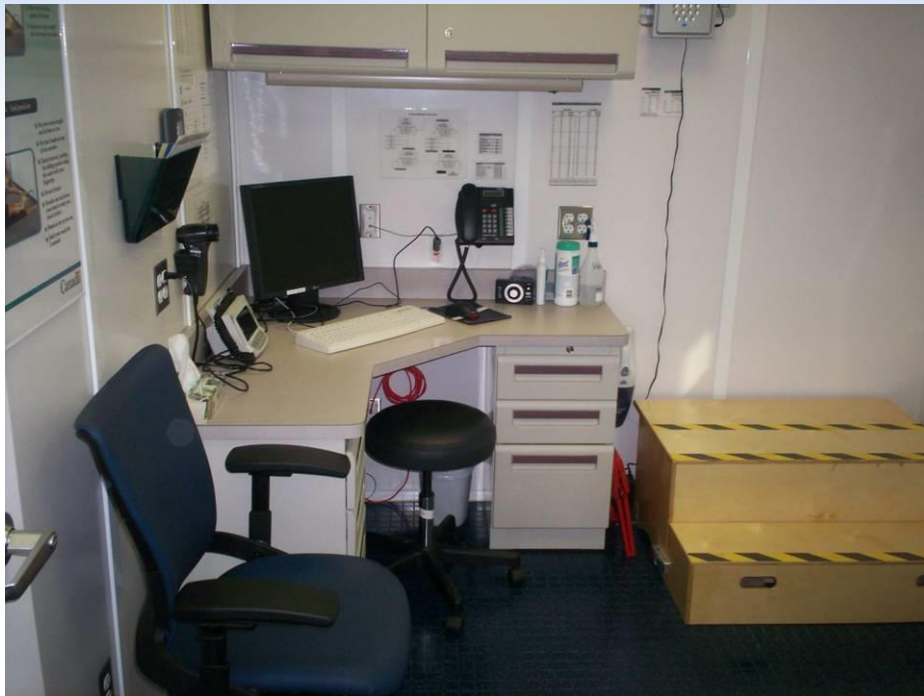
- Health status
- Nutrition and food
- Medication use
- Health behaviours
- Environmental factors
- Socio-economic information



THE MOBILE CLINIC

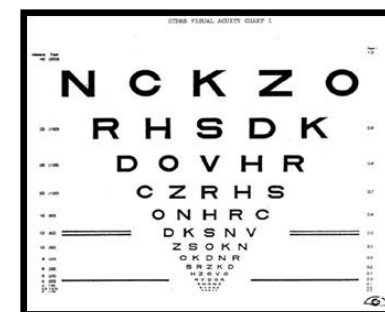
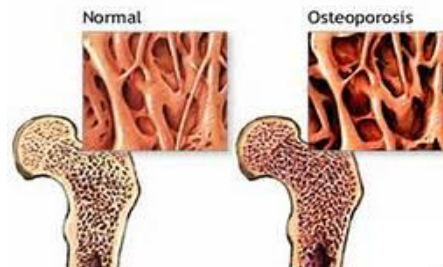


THE MOBILE CLINIC



PHYSICAL MEASURES: CYCLE 5

- Anthropometry
- Cardiorespiratory fitness
- Musculoskeletal fitness
- Physical activity
- Bone Health
- Vision



BLOOD AND URINE MEASURES: CYCLE 05



Over 200 laboratory tests

Cardiovascular health

Diabetes

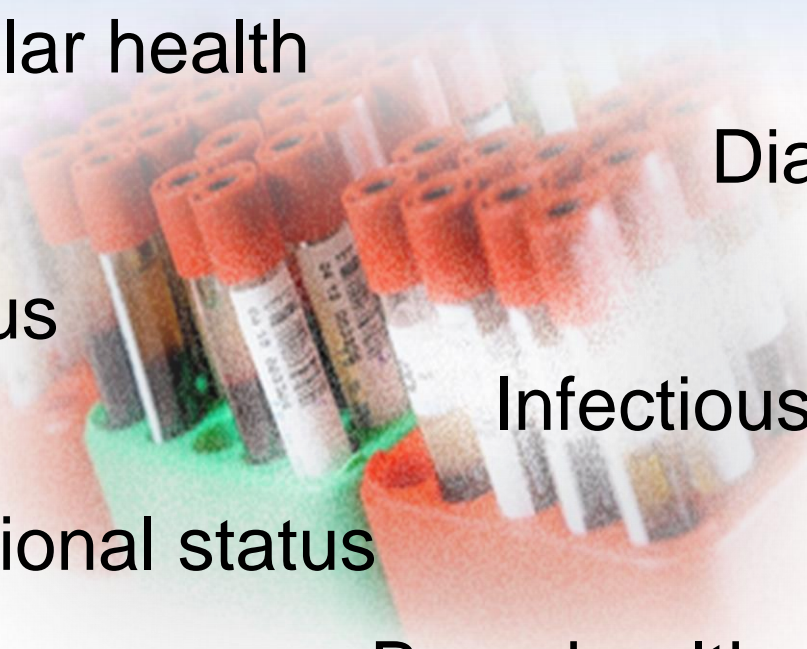
Thyroid status

Infectious disease

Nutritional status

Bone health

General health



BLOOD AND URINE MEASURES: CYCLE 05 (cont'd)

Environmental exposure

- Plasticizers
- Metals
- Insecticides
- Volatile organic compounds
- Parabens
- Phthalates
- Bisphenol A
- Tobacco
- Hair samples – metals/trace elements



INSECTICIDES



MICRODATA FILES - CYCLE 1

Full sample file

Subsample files

Medication file

Full sample file	Subsample files		Medication file
	Content	# obs.	
Household questionnaire, clinic and laboratory measures done on all respondents 5604 obs. Ages 6 to 79	Fasting measures	2,634	6 to 79
	Inorganic mercury	1,123	6 to 79
	PBDE / PCB	1,696	20 to 79
	PFCs	2,880	20 to 79
	Activity monitor	4,441	6 to 79
	Phthalates	3,237	6 to 49
	Nicotine	2,483	12 to 79
			Medication File 5604 obs. Ages 6 to 79

MICRODATA FILES - CYCLE 2

Full sample file

Subsample files

Medication file

Household questionnaire, clinic and laboratory measures done on all respondents
6,395 obs.
Ages 3 to 79

Content	# obs.	Age covered
Fasting measures	2,793	6 to 79
Indoor air - hhld	3,857	N/A
Indoor air - person	5,191	3 to 79
Activity monitor	4,948	3 to 79
Environmental blood	1,524	12 to 79
Environmental urine	2,563	3 to 79

Medication File
6,395 obs.
Ages 3 to 79

MICRODATA FILES - CYCLE 3

Full sample file

Subsample files

Medication file

<p>Household questionnaire, clinic and laboratory measures done on all respondents</p> <p>5,785 obs.</p> <p>Ages 3 to 79</p>	Content	# obs.	Age covered	<p>Medication File</p> <p>5,785 obs.</p> <p>Ages 3 to 79</p>
	Fasting measures	2,571	6 to 79	
	Activity monitor	4,271	3 to 79	
	RBC fatty acids	1,984	20 to 79	
	Fluoride - hhld	2,188	12 to 79	
	Fluoride - person	2,671	12 to 79	
	VOCs - hhld	2,650	12 to 79	
	VOCs - person	2,527	12 to 79	

MICRODATA FILES - CYCLE 3 (CONT'D)

Subsample files

Content	# obs.	Age covered
Acrylamide (environ. blood)	2,492	3 to 79
Methyl mercury (environ. blood)	1,032	20 to 79
NNK metabolites (environ. urine)	2,220	12 to 79
Environmental urine (main)	2,538	3 to 79
Indoor air - household	3,524	N/A
Indoor air - person	4,752	3 to 79
Pooled serum data file (50 environ. variables) – Fall 2016		

RELEASE DATES FOR MICRODATA FILES - CYCLE 4



Release date	Topic
Oct. 13, 2016	Household, Clinic, hearing data
Dec. 8, 2016	Activity monitor data
Jan. 12, 2017	Non-environmental lab data
Feb. 23, 2017	Medication data
Apr. 6, 2017	Fluoride and VOC data (tap water and blood and urine subsamples)
May 25, 2017	Spirometry data
July 6, 2017	Environmental lab data (except fluoride, VOCs and indoor air)
Oct. 5, 2017	Indoor air data

CHMS DOCUMENTATION

- User guide
- Data dictionaries
 - Information for all variables on the full sample and subsample files
- Derived variables documentation
- Sampling documentation
- Instructions for combining multiple cycles of CHMS data
- CHMS Bibliography
- Content summary document

COMBINING MULTIPLE CYCLES OF CHMS DATA



- Use combined weights
- Use instructions document
 - Steps to follow
 - Limitations
 - Data files and variables that can be combined
 - Response rates for the combined cycles
 - SAS code
 - Analysis below national level – must consider
 - Reduced number of degrees of freedom
 - CHMS is designed to produce national estimates
 - Recommendations for analyzing CHMS data

RESEARCH DATA CENTRES (RDCs)

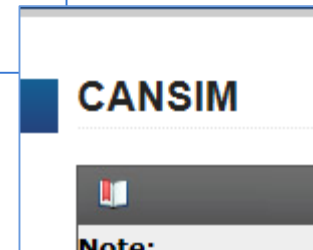
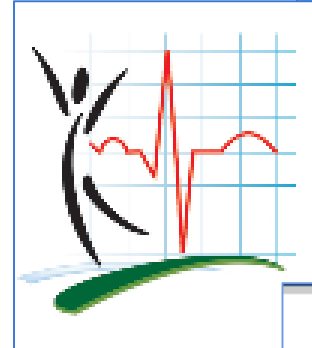


- Access route for most researchers
- Allows microdata access in universities across Canada, under research agreement, in a secure setting
- CHMS microdata and supporting documentation, all Statistics Canada health survey microdata
- Similar files at Health Canada & PHAC

<http://www.statcan.gc.ca/rdc-cdr>

STATISTICS CANADA ANALYTICAL PRODUCTS

- Health Reports journal articles
- Health at a Glance articles
- CANSIM data tables
- Cycle 3 fact sheets
- Cycle 4 fact sheets



HEALTH REPORTS RELEASE SEPTEMBER 21, 2016



Statistics
Canada

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Search website



Information for... ▾

Browse by subject

Browse by key resource

About StatCan

Canada.ca

[Home](#) → [82-003-X](#) → [Main page](#) → Physical activity and sedentary behaviour of Canadian children aged 3 to 5

Health Reports Physical activity and sedentary behaviour of Canadian children aged 3 to 5



by **Didier Garriguet, Valerie Carson, Rachel C. Colley, Ian Janssen, Brian W. Timmons and Mark S. Tremblay**

Release date: September 21, 2016

[More information](#)

[PDF version](#)

For preschool children, physical activity is associated with improved measures of adiposity, motor skill development, psychosocial health and cardiometabolic health indicators, ¹ while sedentary behaviour, notably screen time, is associated with increased adiposity and decreased psychosocial and cognitive development. ² In 2012, this evidence was used to develop physical activity ³ and sedentary behaviour ⁴ guidelines for Canadian children aged 0 to 4.

During the 2009-to-2011 period, the Canadian Health Measures Survey (CHMS) employed accelerometers to obtain objective measures of physical activity among 3- to 5-year-olds. According to the accelerometer results, 84% of 3- to 4-year-olds met the guideline of at least 180 minutes of total physical activity on all valid days, ⁵ but based on parental reports, the percentage meeting the guideline of no more than 1 hour of daily screen time was 18%. ⁶ For 5-year-olds, the guideline of at least 60 minutes of daily

For this article...

[Abstract](#)

[Tables and figure](#)

HEALTH AT A GLANCE RELEASE: JUNE 27, 2016



The screenshot shows the Statistics Canada website interface. At the top left is the Canadian flag and the text 'Statistics Canada' and 'Statistique Canada'. To the right is a search bar labeled 'Search website'. Below this is a navigation menu with options: 'Information for...', 'Browse by subject', 'Browse by key resource', 'About StatCan', and 'Canada.ca'. A breadcrumb trail reads: 'Home → 82-624-X → Main page → Understanding your health by using reference ranges'. The main heading is 'Health at a Glance' followed by 'Understanding your health by using reference ranges'. Below the heading is the author information: 'by Janine Clarke, Victoria Higgins, and Khosrow Adeli'. The release date is 'June 27, 2016'. There are links for 'More information' and 'PDF version'. A section titled 'On this page' is visible, followed by a 'Highlights' section which contains a bullet point: 'Reference ranges are one of the many ways that doctors assess and monitor the health of Canadians.'

CANSIM TABLE



Information for... Browse by subject Browse by key resource About StatCan

Home > CANSIM

Table 117-0011 ^{1, 2, 3, 4, 5, 10}

Distribution of the household population by chronic diseases, by sex and age group occasional (percent)

Data table Add/Remove data Manipulate Download Related information Help

The data below is a part of CANSIM table 117-0011. Use the [Add/Remove data](#) tab to customize your table.

Selected items [\[Add/Remove data\]](#)

Geography = Canada

Sex = Both sexes

Characteristics = Estimate

Diseases	Age group	Categories	2011	2013	2015
Hypertension ^{5, 7}	Ages 6 to 79	Presence of Chronic Disease	18.0	18.8	18.7
		Absence of Chronic Disease	82.0	81.2	81.3
Chronic obstructive pulmonary disease (COPD) ^{5, 9}	Ages 35 to 79	Presence of Chronic Disease	13.3	14.2	..
		Absence of Chronic Disease	86.7	85.8	..

Symbol legend:

Not available

STATCAN ANALYTICAL PRODUCTS

(CONT'D)

- Cycle 3 fact sheets
 - Blood pressure: * adults, * children and youth
 - Body composition/BMI: * adults, * children and youth
 - Chronic obstructive pulmonary disease
 - Metabolic syndrome
 - Cholesterol levels
 - Vitamins: * C, * . D
 - Physical activity: * adults, * . children and youth
 - Hearing loss
 - Bisphenol A
 - Tobacco use
 - Lead, mercury and cadmium
 - Omega 3 fatty acid levels

STATCAN ANALYTICAL PRODUCTS

(CONT'D)

- Other Cycle 4 fact sheets to be released:
 - Body composition of adults
 - Body mass index of children and youth
 - Directly measured physical activity: * adults, * children and youth
 - Metabolic syndrome of adults
 - Cholesterol levels of adults
 - Omega-3 fatty acid levels of adults
 - Vitamin D levels of Canadians
 - Chronic obstructive pulmonary disease
 - Bisphenol A concentration in Canadians
 - Tobacco use of Canadians
 - Lead, mercury and cadmium concentrations in Canadians.



Canadian Health Measures Survey

Frequently asked questions

List of surveys in collection

Videos

Infographics

Search in ISP



One of the main goals of the survey is to gather information to help improve health programs and services in Canada. Your information may also be used by Statistics Canada for other statistical and research purposes.

The survey will collect information on Canadians' health and health habits. The first part of the survey is a household interview, which includes questions on many health-related topics. The second part of the survey involves a visit to a mobile clinic to collect direct physical measures such as blood pressure, height and weight, bone density and vision tests.

Collection periods: January 4, 2016 to December 20, 2017

Collection methods: the first step is a personal interview in the respondent's home. The second step is a visit to a mobile clinic, where physical measures are taken.

Survey participation: voluntary

► Confidentiality

► Data sharing agreements and record linkage

► Topics covered in the survey

► Published data

► Biobank

► Respondent relations

Questionnaires, definitions, data sources and methods: [survey number 5071](#)

Videos

Canadian Health Measures Survey



www.statcan.gc.ca/chms

or

www.statcan.gc.ca/ecms

CHMS INFORMATION ON-LINE (CONT'D)



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Information for... ▾

Browse by subject

Browse by key resource

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Canada.ca

[Home](#) → [Definitions, data sources and methods](#) → [Surveys and statistical programs](#) → Canadian Health Measures Survey (CHMS)

Canadian Health Measures Survey (CHMS)

Canadian Health Measures Survey
(CHMS)

Summary of changes

Other reference periods

Related products

Detailed information for January 2014 to December 2015 (Cycle 4)

Status: Active

Frequency: Every 2 years

Record number: 5071

The Canadian Health Measures Survey (CHMS) aims to collect important health information through a household interview and direct physical measures at a mobile examination centre (MEC), sometimes referred to as a mobile clinic.

Data release - October 13, 2016 (First in a series of releases for this reference period.)

- [Questionnaire\(s\) and reporting guide\(s\)](#)
- [Description](#)
- [Data sources and methodology](#)
- [Data accuracy](#)
- [Documentation](#)

Description

The Canadian Health Measures Survey (CHMS), launched in 2007, is collecting key information relevant to the health of Canadians by means of direct physical measurements such as blood pressure, height, weight and physical fitness. In addition, the survey is collecting blood and urine samples to test for chronic and infectious diseases, nutrition and environment markers.

Through household interviews, the CHMS is gathering information related to nutrition, smoking habits, alcohol use, medical history, current health status, sexual behaviour, lifestyle and physical activity, the environment and housing characteristics, as well as demographic and socioeconomic variables.

DATA HIGHLIGHTS FROM CYCLE 3



- 11% of adults aged 35 to 79 measured airflow obstruction consistent with chronic obstructive pulmonary disease (COPD); however, 90% of these individuals were unaware of their condition
- 25% of Canadians aged 3 to 79 were at risk for inadequate vitamin D and 10% were at risk for having a vitamin D deficiency
- 21% of Canadian adults aged 18 to 79 suffer from metabolic syndrome
- 62% of Canadian adults aged 18 to 79 and 31% of children and youth 5 to 17 years were overweight or obese

DATA HIGHLIGHTS FROM CYCLE 4



- About 4 in 10 Canadian adults aged 20 to 79 have been measured as having at least slight hearing loss in one or both ears and 77% of these adults weren't aware
- Almost 8 in 10 adults aged 60 to 79 had hearing loss
- A quarter of Canadian adults aged 20 and older suffer from high blood pressure
- 7% of children and youth aged 19 and younger had blood pressure considered borderline or elevated
- Both adults and children who were classified as being overweight or obese had higher blood pressure than their normal weight counterparts.

FUTURE CONTENT CYCLES 5-8



- Cycles 5 and/or 6
 - Neighbourhood environment
 - Sleep apnea
 - Hair (metals)
 - Vision
 - pQCT and mechanography

- Cycles 7 & 8
 - Dual-energy x-ray absorptiometry (DXA)
 - More to come

CHMS BIOBANK



National Microbiology
Laboratory, Winnipeg MB

- Whole blood
- Serum
- Plasma
- Urine
- Buffy Coat DNA
- Saliva DNA



CHMS INFORMATION ON-LINE

- To access CHMS respondent relations section of the website:
www.statcan.gc.ca/chms or www.statcan.gc.ca/ecms

Canadian Health Measures Survey

Frequently asked questions | **List of surveys in collection** | Videos | Infographics

Search in ISP

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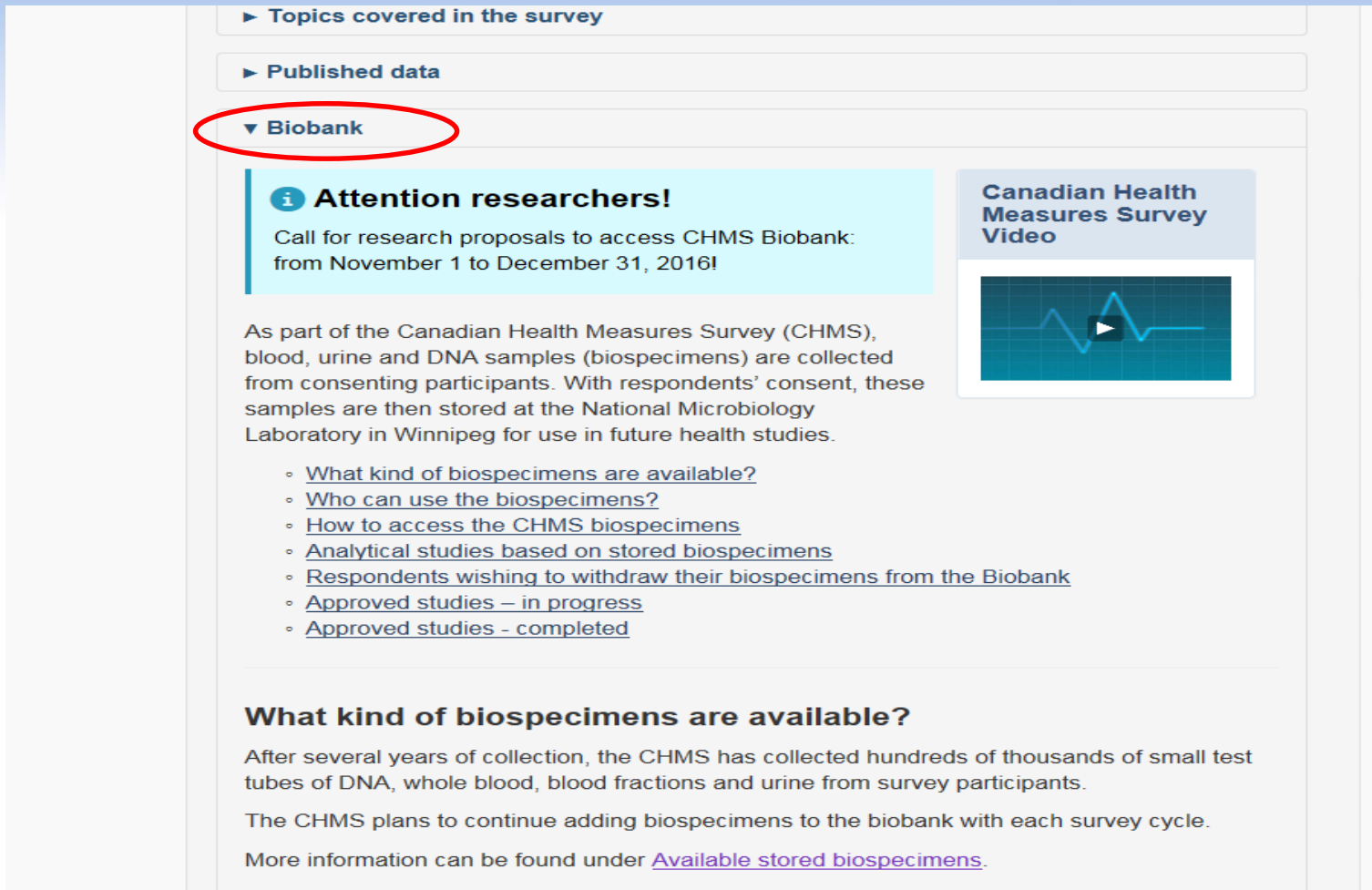
Videos

Canadian Health Measures Survey

Because your **health** matters!

CHMS INFORMATION ON-LINE (CONT'D)

- To access information on the biobank studies in progress, how researchers can access the samples and how respondents can withdraw their samples, click [Biobank](#)



The screenshot shows a navigation menu with three items: 'Topics covered in the survey', 'Published data', and 'Biobank'. The 'Biobank' item is circled in red. Below the menu, there is a light blue callout box with an information icon and the text 'Attention researchers! Call for research proposals to access CHMS Biobank: from November 1 to December 31, 2016!'. To the right of this box is a video player titled 'Canadian Health Measures Survey Video' with a play button. Below the callout box, there is a paragraph of text and a list of links. At the bottom, there is a section titled 'What kind of biospecimens are available?' with a paragraph of text and a link.

► Topics covered in the survey

► Published data

▼ **Biobank**

i Attention researchers!
Call for research proposals to access CHMS Biobank:
from November 1 to December 31, 2016!

Canadian Health Measures Survey Video

As part of the Canadian Health Measures Survey (CHMS), blood, urine and DNA samples (biospecimens) are collected from consenting participants. With respondents' consent, these samples are then stored at the National Microbiology Laboratory in Winnipeg for use in future health studies.

- [What kind of biospecimens are available?](#)
- [Who can use the biospecimens?](#)
- [How to access the CHMS biospecimens](#)
- [Analytical studies based on stored biospecimens](#)
- [Respondents wishing to withdraw their biospecimens from the Biobank](#)
- [Approved studies – in progress](#)
- [Approved studies - completed](#)

What kind of biospecimens are available?

After several years of collection, the CHMS has collected hundreds of thousands of small test tubes of DNA, whole blood, blood fractions and urine from survey participants.

The CHMS plans to continue adding biospecimens to the biobank with each survey cycle.

More information can be found under [Available stored biospecimens](#).

STEPS FOR ACCESS

- Proposal application submitted to CHMS Biobank
- Feasibility assessment by CHMS Staff
- Biobank Advisory Committee
- Statistics Canada's senior management
- Key points
 - ✓ Proof of Funding
 - ✓ Research Ethics Board approval
 - ✓ Security Clearance – facility and personnel



COSTS

- Samples available on cost recovery basis:
 - 2 ml serum, plasma, whole blood: \$44,000 per series
 - DNA plates: \$44,000 per series
 - 5 ml urine: \$48,000 per series
- costs are estimates only



ADDITIONAL INFORMATION



Data User Workshops

- one-day hands-on workshops using synthetic data file; practice using recommended software SAS and SUDAAN
- offered once or twice a year, according to demand

For more information on the CHMS:

- toll-free number: 1-888-253-1087
- e-mail: statcan.infostats-infostats.statcan@canada.ca
- Web site: www.statcan.gc.ca/chms

QUESTIONS?

Home → Information for Survey Participants (ISP) → List of surveys in collection → Canadian Health Measures Survey

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- ▶ Respondent relations

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Videos

Canadian Health Measures Survey

Because your health matters!



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Web site: www.statcan.gc.ca/chms