## EXCEL AND RESEARCH DATA - POVERTY IN CANADA

There are different measures used to analyze poverty in Canada.

1. After-tax low income cut-offs (1992 base) were determined from an analysis of the 1992 Family Expenditure Survey data. These income limits were selected on the basis that families with incomes below these limits usually spent $63.6 \%$ or more of their income on food, shelter and clothing. Low income cut-offs were differentiated by community size of residence and family size.
2. The Market Basket Measure (MBM) attempts to measure a standard of living that is a compromise between subsistence and social inclusion. It also reflects differences in living costs across regions. The MBM represents the cost of a basket that includes: a nutritious diet, clothing and footwear, shelter, transportation, and other necessary goods and services (such as personal care items or household supplies). The cost of the basket is compared to disposable income for each family to determine low income rates. Following a review by Human Resources and Skills Development Canada, the shelter component of the MBM thresholds along with the disposable income definition have been revised. The revision takes effect in 2011 and includes an historical revision back to 2002 (the first year in which housing tenure information is available in SLID). See Statistics Canada Income Research Paper (75F0002M) Low Income Lines, 2011-2012 for details.
3. Low income measures (LIMs), are relative measures of low income, set at $50 \%$ of adjusted median household income. These measures are categorized according to the number of persons present in the household, reflecting the economies of scale inherent in household size.

Start by going to the CANSIM database:
http://www5.statcan.gc.ca/cansim/home-accueil?lang=eng\&tz=120308

In the Search CANSIM box, type 202-0803 and click on the Search button
A table loads, but it is not exactly what we want, so click on TAB Add/Remove data
Step 1 - select - Canada : Manitoba, Winnipeg
Step 2- select - Low income cut-offs after tax, 1992 base : Market basket measure, 2011 base : Low income measure after tax
Step 3 - select - Percentage of persons in low income
Step 4 - select - All individuals
Step 5 - select - 2002 to 2011
Step 6 - select - HTML table, time as rows
Step 7 - Apply

This generates a table. Note at the bottom of the table, there is citation information:
Source: Statistics Canada. Table 202-0803-Persons in low income families, by age and sex of major income earner, annual, CANSIM (database). (accessed: 2015-01-15)

At the top of the table, click on the Download tab
Option 1: Download data as displayed in the Data table tab
Click on the Download data button

Click on the link to Download file from CANSIM (CSV version ...)
You can choose to: Open, Save, or Save as.

For out purposes, Open the file cansim-2020803-3measures from your flashdrive

Click and drag to mark the first four columns
At the top, click on Insert $\rightarrow$ scatter graph $\rightarrow$ scatter with smooth lines and markers
This should produce a very basic line graph on the screen. Resize as desired
Still under the Chart Tools tab, click on Layout 1 of the Chart Layouts section (middle left)
This should put in a generic Chart title and Axis titles
Click on the Chart title, and change to Poverty - 3 Measures
Click on the $X$ axis title, and change to Year
Click on the $Y$ axis title, and change to \% Poverty

The lines on the Chart are currently labeled Series 1, Series 2, and Series 3
On the top tabs, click on Insert $\rightarrow$ Shapes $\rightarrow$ Text Box (usually top left)
Click just below the Series 1 line, and in the text box type After-tax low income cut-offs
Repeat for Series 2 - Market basket measure and for Series 3 - Low income measure RIGHT-CLICK on the Series 1... label and delete
DO NOT just click and delete or you will delete the entire Chart

If you want to move chart to a new sheet, Right click up near the title, select Move Chart Select New sheet radio button, and click on the OK button The Chart is now on a separate sheet


## Excel - Functions and Formulas

## Open: cansim-2020803-formula-function file in Excel

This file contains time-series for various annual poverty measures, 2002-2011
The first column is Canada, Low income cut-offs after tax, 1992 base
It contains the \% of persons in low income

It might be useful to find the average \% of persons in this category between 2002-2011

Click in Cell A-21, and change Legend to Average
Click in Cell B-21

In the formula box, type =AVERAGE(B11:B20)
Click Enter, and Excel will place the average figure into Cell B-21
functions are predefined formulas in excel
Click in Cell C-21
Now click on the Formula top menu $\rightarrow$ More functions $\rightarrow$ Statistical $\rightarrow$ Average
From our previous step, Excel has already figured we want cells C11:C20
If you were starting from scratch, you could drag your mouse to select these cells
Finally, click OK to generate the average for this column
It would be very laborious to do each column separately, if you have a lot of columns
If you click on a cell that has had a formula or function placed in it, there is a little box on the lower right corner.

| 18 | 2009 | 9.5 | 34.1 | 5.8 |
| :--- | ---: | ---: | ---: | ---: |
| 19 | 2010 | 9 | 33.3 | 6.3 |
| 20 | 2011 | 8.8 | 30.3 | 5.9 |
| 21 | Average |  | 10.14 | 35.57 |
| 22 | E | Use with caution |  |  |

You can drag this corner to the adjacent cell in the next column to repeat the same operation Likewise, you can drag for several columns and all will repeat the same formula for that column

There are dozens of formulas and functions in Excel. For a list of all, see:

MS Excel: All Formulas/Functions - Listed by Category
http://www.techonthenet.com/excel/formulas/

MumblingProfessor - Cansim and Excel videos
https://www.youtube.com/user/MumblingProfessor

## Calculate a Ratio from two cells in Excel

A ratio shows the relative sizes of two or more values, in comparison to each other.
In Excel, this would be the relative size of one cell to another.
Open the file cansim-202-0803-ratio
Click on Cell H9
Enter the formula: $\quad=F 9 / G C D(F 9, G 9) \& ": " \& G 9 / G C D(F 9, G 9)$
Click Enter to generate the ratio for the Cells F9 and G9
Again, you can drag the tiny box on the lower right down to do the same for adjacent rows.

| Winnipeg, Manitoba [46602] | Winnipeg, Manitoba [46602] |  |
| :---: | :---: | :---: |
| Low income cut-offs after tax, 1992 base | Low income cut-offs after tax, 1992 base |  |
| Number of persons in low income | Number of persons in low income |  |
| Persons in families whose major income earner is a male | Persons in families whose major income earner is a female | Ratio |
| 37 | 51 | 37:51 |
| 36 | 67 | 36:67 |
| 45 | 62 | 45:62 |
| 42 | 52 | 21:26 |
| 45 | 62 | 45:62 |
| 37 | 62 | 37:62 |
| 41 | 41 | 1:1 |
| 27 | 48 | 9:16 |
| 32 | 49 | 32:49 |
| 29 | 59 | 29:59 |
| 30 | 48 | 5:8 |

This formula will take the data in cell F9 and divide it by the General Common Denominator of F9 and G9, then it does the same thing with Cell G9, to generate a ratio Ratio is more commonly used by the Financial sector, i.e. Debt to equity ratio

## GOING FURTHERr:

Learn how to apply \& adapt CANSIM data with these video tutorials http://www.discoverstatcan.ca/using cansim.html
There are many videos on YouTube showcasing various Excel procedures
Walkenbach, John. This author is called "Mr. Spreadsheet" due to his expertise with Excel. The Libraries has several books by him, some online: Excel 2013 Bible, Excel 2010 Power Programming with VBA, Excel 2010 formulas, John Walkenbach's favorite Excel 2007 tips \& tricks, Excel 2007 for Dummies Quick Reference, etc. are all online.

CANSIM is a Statistics Canada database with nearly 74 million time series Statistics Canada - The DLI Collection (DLI Beyond 20/20 Web Data Server) See http://libguides.lib.umanitoba.ca/statistics for more information.

