

Comparing Poverty Measures – Ontario

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Working Papers provide a succinct discussion of specific issues that arise throughout the analytical process of poverty measurement. The Metcalf Foundation has funded the overall project.

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Comparing Poverty Measures – Ontario

1 Objectives

This working paper compares three commonly used measures of low income used in Canadian poverty analysis. It is the fourth in a series of working papers intended to promote a discussion by participants in our Sounding Board and others.

Thresholds and incidences of low-income for the Low Income Cut-off (LICO), Low Income Measure (LIM) and the Market Basket Measure (MBM) are compared. Each of these measures has a distinct method for calculating thresholds, and as such, reports different incidences of low income. In this paper, the median before-tax income is reported for those living in Ontario and who have income within \$1,000 (as determined by each different measure) of the applicable low-income threshold, by type.¹ The motivation for this exercise was to help compare, for Ontario, the income thresholds of different poverty measures on a consistent basis. This allows one to compare the stringency of various poverty measures.

This task was achieved through the use of Statistics Canada's Social Policy and Simulation Database and Model (SPSD/M), v16.0 released in September 2008. Methodology used to determine the applicable thresholds, income type (where applicable), and incidences are noted in the next sections of this paper.

By licensing agreement regarding the use of the SPSPD/M, the authors make this statement:

This analysis is based on Statistics Canada's Social Policy Simulation Database and Model. The assumptions and calculations underlying the simulation results were prepared by Informetrica Limited and the responsibility for the use and interpretation of these data is entirely that of the author(s).

2 Application of Measures using the SPSPD/M

The analysis presented here was completed at the economic family level. The application of family equivalence is consistent with the measure used by Statistics Canada.² The LICO and LIM items reported here were calculated for 2008.

The MBM was calculated for 2004, and then adjusted by CPI to capture a threshold for 2008. The MBM was completed in this manner for the purposes of comparison of the incidence of low

¹ The threshold for one being \$1,000 above or below their applied measure is due to observations available within SPSPD/M.

² The measure allots a value of 1 for the first person in the family, then 0.4 for the second person in the family; then 0.4 for each additional person 16 years and older, and 0.3 for each additional person less than 16 years. For a more detailed explanation see Statistics Canada publication "Low Income Cut-offs for 2007 and Low Income Measures for 2006" Income Research Paper Series, Catalogue no. 75F0002M-004, June 2008.

<www.statcan.ca/english/research/75F0002MIE/75F0002MIE2008004.pdf> Accessed 19 Nov 2008.

income between the published 2004 values and the calculated values within the SPSD/M. Also, the basket of goods that make up the MBM is re-priced in each year; with the application and that the SPSD/M is a static model, (whose base year in v16.0 is 2004). Methodological differences are noted in sections 2.1.3 *Market Basket Measure Disposable Income* and 2.4 *Market Basket Measure*.

Results presented in this paper are for the province of Ontario. Of note, the before- and after-tax family adjusted income was compared to the Canadian LIM, not a separately calculated Ontario before- and after-tax LIM. The median income values for those with family-adjusted income above or below \$1,000 to the national LIM threshold (before and after tax) are reported for Ontario, as noted in the table in section 3 *Results*.

2.1 SPSD/M Information Specific for this Application

There is some SPSD/M-specific information that is useful for those well versed with the model, and also regarding calculations presented in this paper.

2.1.1 Probability of an OAS recipient applying for GIS

The calculation of OAS in the SPSM is an application of the legislation as interpreted by the model. Thus, the model assumes all persons apply for the OAS. In previous versions of the SPSD/M, to capture “take-up” of the GIS, probabilities were provided to the holders of the SPSD/M from HRSDC.³ This information was applied in the SPSM to capture the probability of one in receipt of OAS who applies for, but not necessarily receives, a GIS benefit. In the version of the SPSM used for this application, the probability of one in receipt of the OAS who applies for the GIS is 100 per cent. This results in an over-estimate in the number of persons in receipt of a GIS benefit (for 2004, the base-year of the model) from administrative data. For the purposes of reporting the incidence of low income by demographic group, there may be an over-estimate of the income of those aged 65 and older. The analyses applied in the exercise presented here is not by age.

2.1.2 After-tax measure

Due to categorical matching of the SPSD with the National Accounts and the concept of RRSP withdrawals being “dissavings” versus “income”, taxable RRSP withdrawals are added to disposable income variables to capture a consistent “after-tax” measure per economic family.

2.1.3 Market Basket Measure Disposable Income

The MBM disposable income is income after tax, after payroll deductions (for health insurance, and pension contributions) and after day care and medical expenses.⁴ The MBM analyses presented below attempts to mimic the MBM income definition within the SPSD/M.

³ SPSD/M was used as created by Statistics Canada. Version 16 assumes 100% take-up for those eligible for OAS and GIS, thus there is likely a small under-estimate of the poverty rate for seniors.

⁴ The medical expense is estimated based on the SPSD/M value for Line 330 of the income tax return, the Medical Expense Credit.

The results reported in this paper are for Ontario, but the MBM disposable income was compared against the Ontario minimum threshold, communities with population 30,000 to 99,999. Those near (within \$1,000) of the lowest MBM threshold in Ontario are identified and the median total income (before tax) of these individuals (or families) is determined. This is repeated using the highest MBM threshold in Ontario, Toronto Census Metropolitan Area (CMA).

The purpose of this exercise was to determine the before-tax income of economic families close to their respective MBM. The main reason why it is difficult to properly estimate one's MBM disposable income within the SPSD/M includes the collapsing of urban and rural data for rural BC and urban PEI, and that the thresholds within a province for different urban centres may be different. For this exercise, the issue is with the different MBM thresholds for the Ontario communities that are included in the 500,000+ population category within SPSD/M. For example, the MBM threshold for the reference family in Toronto for 2004 was \$30,121, whereas for Hamilton it was \$25,778. Within the SPSD/M, those living in either city would be noted as living in urban Ontario. The smaller rural areas reported within the SPSD/M for Ontario matched the community sizes used by HRSDC.

For those who did not report any expenses on the "T1 General Income Tax and Benefit Return" Line 330, HRSDC imputed those individual's health expenses. This was not completed with the SPSD/M analyses. Since this item is based on Line 330 of the Tax Return, that item's value for each reference family was used for determining one's SPSD/M MBM disposable income. It was found that the average individual spending on this item for 2004 was \$220.

For those with total income greater than zero, the MBM disposable income as calculated within the SPSD/M was determined as follows:

Total income less basic provincial tax, less basic federal tax, less CPP/QPP contributions, less EI contributions, less EI benefit recovery, less RPP contributions (line 207 of the Tax Return), less union and professional dues (line 212 of the Tax Return), less alimony paid (line 220 of the Tax Return), less child-care expenses allowed (for deduction in calculation of Net Income on the Tax Return), less gross medical expenses (line 330 of the Tax Return), and less provincial health premium.

2.2 Low Income Cut-off (LICO)

The Low Income Cut-off thresholds, applicable for each family, for both before- and after-tax concepts are a built-in feature of the SPSD/M. The commodity tax facility flag was turned off to capture the appropriate after-tax thresholds.

2.3 Low Income Measure (LIM)

The LIM, in its entirety, was calculated within the SPSD/M. Initially, the Distribution Analysis Facility of the SPSM was utilized to determine the median before- and after-tax income for economic families. The family-size adjustment was applied to half of the median calculated to capture adjusted family income (before- or after-tax, as applicable).

The LIM thresholds were calculated for Canada, for which the Ontario population was compared. The median income of those within \$1,000 (above or below) the applicable threshold (before- or after-tax) was then determined through the Distributional Analysis Facility.

2.4 Market Basket Measure (MBM)

The calculation of the MBM disposable income was discussed above. Once that income was determined, the applicable MBM family adjustment was applied to all economic families. Note that the reference family is the base unit for measure, not the individual. For example, the reference family value used in the MBM is 1, whereas for calculation of the LIM it is 2. The methodology otherwise used to determine family equivalence for the MBM is the same as calculated for the LIM.

From the family-adjusted MBM income, those near their applicable threshold were determined, and their median income was captured through the application of the Distribution Analysis Facility of the SPSM.

The price of the basket of goods used in the MBM is determined in every year (i.e., not scaled by CPI, but the price of the basket is physically measured), and therefore the MBM median income items reported here are scaled forward for 2008 by CPI, as opposed to completing the analysis in 2008 within the SPSD/M. This is because the base year of the micro-data within SPSD/M is for 2004, and is also the most recent year available for the MBM information as published by HRSDC. The CPI applied was an 8.8% increase from 2004 to capture the 2008 values.⁵ This is likely an overestimate of the median income of those near the MBM because incomes do not typically increase at the rate of inflation. No attempt was made for LIM or LICO to be determined for 2004.

3 Results

The differences in poverty methodologies make comparisons between poverty measures difficult. The measures each include some arbitrary setting of a threshold for acceptability or decency. For the LICO the setting is 20% above the norm for spending on necessities; the same 20% is used before tax and after tax. For the LIM, the threshold is 50% of median; one could also use 40% or 60%. The MBM makes a number of assumptions, unavoidably arbitrary, in setting its acceptable basket.

Various poverty lines measure income differently; before and after tax, with or without adjustments for employer health benefits and pension contributions. To identify if these measures are capturing similar income characteristics, or to identify if there is a difference in the before- and after-tax income of those near the threshold for each measure, by type, we captured the median before-tax income of those near the respective measures. This section details comparisons of the poverty measures using a consistent income definition (total income before tax). The results for the poverty measures are applied to Ontario using SPSD/M.

⁵ Bank of Canada CPI information from <http://www.bank-banque-canada.ca/en/cpi.html>, accessed 21 Oct 2008.

The incidence of low income reported is beside the median income (appropriate measure) of those with income close to the applicable threshold.

The incidence of low income, as reported is the percentage of the families in Ontario that have income below the applicable threshold.

The results are presented in the Table below. For unattached individuals, when the threshold is expressed in total income (before-tax), the cut-offs vary from a low value of \$13,607 (using the lowest MBM in Ontario) to \$ 19,513 based on the before-tax LICO. The data demonstrate that the choice of poverty measure then is not simply a choice of methodology, but these measures apply a wide range of stringency when compared against a consistent measure of income.

The median before-tax income of individuals close to their applicable before- and after-tax LICO threshold is roughly \$19,500 based on the before-tax LICO (LICO-BT) and \$17,600 based on the after-tax LICO (LICO-AT). The median before-tax income of unattached individuals near their before-tax LIM (LIM-BT) threshold is roughly \$19,000 and \$16,000 for those near the LIM-After-Tax (LIM-AT). For an individual to be poor using the MBM, their before-tax income needs to be under \$13,600 in small-town Ontario and \$16,700 in urban Ontario. Again, the income values here use a consistent definition, total income before-tax, but is determined by the applicable low-income measure's threshold and income concept.

Naturally, the poverty rates vary dramatically over the range of measures from about 19% to 31% for individuals.

For families, the poverty lines vary over a similar range of about \$14,300 to \$19,300 and are expressed as "Single Equivalency". When adjusted for "Family Equivalency", the before-tax income of families close to their applicable thresholds ranges from \$31,200 to \$43,200. Again, the poverty rate can range from 7% to about 12%.

4 References

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