

Poverty and Low Income Measurement in Canada:

Recent Analyses and Future Directions

By

Alison Hale

Statistics Canada

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Abstract

Statistics Canada has for the last 25 years published estimates of low income. Trends in the prevalence of low income are used extensively by analysts concerned with income distribution issues. However, these trends do not reveal whether it is the same people who find themselves in a state of low income year after year (i.e. the **persistence** of low income). Nor do studies of trends address the **severity** or depth of low income - that is, how far below the low income line is a family's income.

With the availability of new longitudinal data in Canada and through recent developments in the measurement of low income severity, researchers can now look beyond just the rates of low income. This paper summarizes some of the recent work in Canada examining the persistence and severity of low income as well as discussing future developments in the measurement of low income and poverty in Canada.

1. Introduction

Statistics Canada has for the last 25 years published estimates of low income. The most widely known results rely on "low income cut-offs" or LICOs, which in general are based on what the average family spends in a year on food, shelter and clothing as a proportion of their annual income. Currently a family is in low income if more than 63% of its after-tax income is needed to cover food, shelter and clothing. (See Appendix A for more information on how LICOs are calculated). The other commonly used low income measure in Canada is the LIM (low income measure) which is based on one-half of median income adjusted for family size and type. Trends in the prevalence of low income are used extensively by analysts concerned with income adequacy issues. However, these trends do not reveal whether it is the same people who find themselves in a state of low income year after year (i.e. the **persistence** of low income). Nor do studies of trends address the **severity** or depth of low income - that is, how far below the low income line is a family's.

With the availability of new longitudinal data in Canada and through the recent developments in the measurement of low income intensity, researchers can start to look beyond just the rates of low income. This paper summarizes some of the recent work in Canada examining the persistence and severity of low income as well as discussing future developments in the measurement of low income and poverty in Canada.

2. Recent Studies on Low Income

2.1 Persistence of low income

The Survey of Labour and Income Dynamics (SLID), a longitudinal survey conducted by Statistics Canada, follows a sample of Canadians for six consecutive years. The first release of longitudinal data from the survey, *Crossing the Low Income Line* (Noreau, et. al., 1997), analyzed persons who were in low income at some time in 1993 and 1994 to see whether it was the same people living in low

income from one year to the next. Based on the family's income (after taxes and government transfers), a person was classified as being above or below the low income cut-off (LICO) in each of the 2 years.

Among the key findings were -

- Canada experienced a 25% turnover in the low income population between 1993 and 1994, based on their income (after taxes and transfers). Over one million Canadians dropped into low income, while almost as many were able to climb out of their difficult financial straits.
- Children under the age of six ran the highest risk of any age group of being in low income for two consecutive years (1993 and 1994).
- Women outnumbered men in the population experiencing low income over the two years.
- Flows into and out of low income were generally the result of substantial changes in family income.

In another study, *Why do Children Move Into and Out of Low Income - Changing Labour Market Conditions or Marriage and Divorce* (Picot et al, 1999), similar questions about what causes people to move into and out of low income were addressed. In this study, however, the discussion was narrowed to and to a dichotomy of contributing factors, that is, labour market activity or changes in the family structure. Again, SLID data for 1993 and 1994 were used but in this case a logistic regression framework was used to look at the effects of changes in the parent's labour market situation and family composition in shaping the low income transition probabilities for children between the two years. Also the Low Income Measure (or LIM) was used, which was defined as 50% of the 1993 median adult-equivalent adjusted family income.

The authors found that for an individual child, a divorce or marriage could have a tremendous influence on the likelihood of entering or exiting low income. At the level of the individual, changes in family composition (when they occur) are more important than changes in jobs held by parents. However, changes in family status were relatively infrequent compared to labour market changes. Parents were much more likely to lose or find jobs, and experience changes in hours worked or wages,

than they were to marry or divorce. When this is accounted for they found that, in the aggregate, flows of children into and out of low income were associated roughly equally with family compositional changes and changes in wages and hours worked.

A third study, *To What Extent are Canadians Exposed to Low Income?* (Morissette & Drolet, 1999), investigated the extent to which Canadians were exposed to low income during the 1993-1996 period, again using SLID data. This time a 4-year time interval was used for the study.

As in the previous two studies mentioned, they showed that the low income population is far from being static but in fact there is a great deal of turnover (see Table 1). Roughly half of individuals who started a spell of low income were in that state for only one year, indicating that there is a lot of movement in and out of low income. On the other hand, as many as 30% of individuals who started a spell of low income were receiving low income for three years or more. This showed that low income exhibits a non-negligible degree of persistence.

Some of the other findings of the study -

- While in a given year 1 in 10 Canadians lived in families who had a low income, as many as 1 in 5 Canadians experienced low income for one year or more during the 4-year period. Thus the experience of low income one that affects the lives of many Canadians.
- At the same time, 1 in 20 Canadians received low income continuously, i.e. for 4 consecutive years. In some types of families - such as those headed by female lone parents or whose major income earner had a disability entailing a work limitation - 25% of individuals were exposed to 4 consecutive years of low income. In some other cases - such as those involving families whose major income earner had a university diploma - individuals appear to be insulated from low income.

Table 1: Percentage of individuals by number of years in low income, 1993-1996

Characteristics	Number of years in low income					At least one year in low income
	0	1	2	3	4	
Overall	79.4	7.5	4.6	3.3	5.2	20.6
Men	81.0	7.0	4.4	2.9	4.7	19.0
Women	77.9	8.0	4.7	3.7	5.7	22.1
Age						
Less than 6 years old	73.6	8.4	5.4	4.8	7.8	26.4
6 - 17 years	76.6	8.5	5.6	3.9	5.4	23.4
18 - 24 years	67.5	13.2	7.9	4.7	6.8	32.5
25 - 34 years	79.8	7.5	4.7	3.3	4.9	20.2
35 - 44 years	83.5	6.0	3.6	2.9	4.0	16.5
45 - 54 years	83.5	5.2	3.9	2.8	4.7	16.5
55 - 64 years	80.5	7.8	3.1	3.3	5.3	19.5
65 +	87.1	4.9	2.4	1.2	4.5	12.9
Family Composition						
Unattached individual	64.2	6.8	6.1	4.2	18.7	35.8
Married/Common-law - no children	93.3	3.7	1.8	-	-	6.7
Married/Common-law - with children	86.9	4.3	2.9	2.2	3.7	13.1
Lone parent	52.4	7.2	7.6	10.4	22.7	47.6
Other	87.7	4.4	1.3	3.0	3.5	12.3
Change in family composition	70.3	13.2	7.4	4.7	4.4	29.7

Source: Survey of Labour and Income Dynamics, 1993-1996.

Note: - number too small to report

2.2 Severity of low income

As mentioned at the beginning of the paper, it is also interesting to look at the depth or severity of low income. Two recent Canadian studies have explored this aspect of low income measurement.

In the Morissette/Drolet study mentioned earlier, they also looked at severity, that is, the difference between the low income cut-off and a family's income. Some individuals may be more likely than others to receive low income during a given period of time. However, they may have higher incomes than others while experiencing low income states. In other words, a higher prevalence of low income is not necessarily associated with a greater depth of low income. (Table 2 shows the average depth of low income for various demographic groups.)

They noted that while the difference between the LICO and family income is a simple way to measure how far below the LICO a person lives, it is not appropriate for between-group comparisons. To see this, consider an unattached individual whose income is \$1000 below his/her LICO and a family of six whose income is also \$1000 below their LICO. Although the absolute shortfall is the same, unattached individual is worse off, in relative terms. A better measure of the depth of low income is to calculate severity in relative terms, i.e. as a percentage of the relevant LICO:

$$(\text{LICO} - \text{Family income after tax}) / \text{LICO}$$

In summary they found that -

- Individuals aged 65 and over had an average income gap 16 percentage points smaller than that of individuals aged 25-34;
- University graduates had an average income gap which exceeded 6 percentage points that of individuals with some post-secondary education.

- Individuals living in married couple families with no children were further below the LICO (by 5 percentage points) than individuals living in families consisting of married couples with children.

The authors noted that that high probabilities of being exposed to low income did not imply high income gaps. As a result, a complete understanding of the extent to which Canadians are exposed to low income requires an analysis of both the probabilities of being exposed and the income gaps while being exposed.

Table 2: Average income gap while receiving low income, 1993-1996
(1996 constant \$)

Average income gap = LICO - after tax family	
Characteristics	Individuals 16 and over
All	5,745
Men	6,161
Women	5,430
Adult aged 25 - 34	6,412
Elderly (65+)	1,935
High school graduates	5,656
University graduates	8,274
Not a student	5,484
Student all 4 years	7,595
Canadian born	5,420
Immigrant: before 1977	6,919
Immigrant: 1977-1986	6,546
Immigrant: 1987 and after	8,174
Visible minority	8,262
Not a visible minority	5,444
Has a work limitation	6,325
No work limitation	5,188
Unattached individuals	3,713
Married/Common-law with children	7,791
Lone parents	5,302

Source: Survey of Labour and Income Dynamics, 1993-1996

(Since the individual is the unit of analysis, the average individual-specific income gap was averaged across all individuals who lived in families who received low income for at least one year.)

In the last study to be discussed in this note, *Social Transfers, Earnings and Low income Intensity among Canadian Children, 1981-96* (Myles & Picot, 1999) the authors looked at the trends in low income among Canadian children, taking advantage of recent developments in the measurement of low income severity.

The objective of this paper was to review a low income severity measure (Sen-Shorrocks-Thon (SST) index). This index incorporates information on the low income rate, the low income gap and the distribution of the gap. Hence, the measure is sensitive not only to changes in the share of people in low income (the rate), but also to changes in the average level and distribution of income among low income families (the gap). Changes in the social transfer system, employment opportunities or anything else that affects either (1) the number of families in low income or (2) the level and distribution of low income will be captured by the intensity measure. Therefore, the authors felt the intensity measure was a more useful instrument for analyzing low income trends and the effect of the tax/transfer system than the low income rate. To demonstrate the advantages of the intensity measure they focussed on low income among children and their findings are summarized here.

When the authors examined low income trends among Canadian children between 1981 and 1996 they showed that, among other things:

- Low income intensity among Canadian children declined somewhat through the 1980s, primarily a result of rising transfers. This change was largely invisible when measured by the low income rate, with the result that earlier studies had concluded that there was no change in low income among children over the 1980s.
- Trends in Canada for the 1990s are the result of two distinct periods. Market income fell sharply between 1989 and 1993 (the recession years in Canada) and low income intensity before transfers grew as a result. Per capita transfer payments continued rising over this period and offset a substantial share of the increase.

- In contrast, during the period of recovery from 1993 to 1996, low income intensity before transfers was relatively stable or even declined slightly, as earnings improved marginally. Government transfers, however, fell substantially, much more than earnings rose. Two-parent families were mainly affected by cuts in Employment Insurance benefits and lone-parent families by falling social assistance benefits. At least through 1996, increases in other family benefits did not offset these reductions. As a result, low income intensity was fully 20% higher in 1996 (an expansionary year) than it had been in the midst of the 1990s recession, and 50% above the low point at the peak of the last business cycle (1989).

In general, the authors concluded that trends in any low income (or poverty) rate, the most commonly used indicator of low income trends, are an imperfect guide for analyzing low income. This is in part because any improvement (or deterioration) in income among families below the cut-off are, by definition, ignored by the rate. It measures changes in the number of people in low income, not how well-off they are.

Comparisons between low income trends as indexed by the intensity measure and the rate showed that:

- Changes in the low income rate usually correctly identify the direction of change in low income intensity but not always. Between 1993 and 1996, low income intensity among children rose but the low income rate measured by the LICO fell slightly. More typically, small or negligible changes in the rate can mask much more substantial change in low income intensity leading to the conclusion that there has been little or no change over periods when low income intensity was in fact rising (or falling).
- Qualitative conclusions about trends in low income intensity are not very sensitive to the choice of a lower or higher low income cut-off. Lower cut-offs tend to magnify the amount of change in some periods and deflate it in others as a function of where in the low income distribution change is taking place.

- Changes in the low income rate are not a reliable indicator of the changing impact of the tax-transfer system on low income intensity. For example, only about a third of the decline in low income intensity produced by increasing transfers in the 1980s is captured by changes in the low income rate. Rising transfers had more impact on the low income gap than the low income rate. Conversely, changes in the low income rate systematically underestimate the impact of falling transfers on low income intensity between 1993 and 1996.

3. Future Directions

While the previous section discussed the results of recent studies on low income, this section discusses recent developments in Canada in measuring low.

3.1 Low Income Cut-offs (LICOs)

Statistics Canada has produced information on low income since the 1960s using low income cut-offs or LICOs. Low income rates based on these LICOs are continuously in the public eye. The LICO methodology has been frequently questioned in the media and it certainly has its detractors. At the same time, Statistics Canada is often urged to continue producing this information, for two reasons: it focuses public attention on groups in society that are the most disadvantaged and, because of the long-standing time series, it can be used to monitor changes in the long term.

At the heart of the LICOs is what the average family spends in a year on food, shelter and clothing as a proportion of their annual income. Periodically, LICOs are “rebased”, that is, updated to reflect the most recent information on family spending. The spending data came historically from the Canadian Family Expenditure Survey (FAMEX), generally conducted every four years. The last FAMEX was conducted in 1996. Since then, Statistics Canada has collected annual expenditure data via the Survey of Household Spending. Like FAMEX, SHS covers all expenditures but it is less detailed: the number of commodities for which specific amounts are collected was reduced by about one-third. On the other hand, the SHS sample is about 75% larger and it produces data every year.

Currently, Statistics Canada uses LICOs based on 1992 family expenditure data. Every year, the LICOs are updated for inflation using the Consumer Price Index. However, any changes in spending patterns that have occurred since 1992 are not reflected in the LICOs, or the associated low income rates. Although the information is not highlighted in data releases, LICOs and low income rates are also published on the basis of 1986 FAMEX data.

Statistics Canada has been examining options with respect to updating the LICOs and a report is being prepared to describe the issues and findings, and will propose a course of action.

3.2 Market Basket Measure

Successive governments in Canada have wanted to address child poverty through explicit policies and programs. In the past five or six years, a new program called the National Child Benefit has been implemented. The federal government department that spearheaded the program, as well as the provincial government departments responsible for social services, wanted a measure that could be used to evaluate the impact of this new program. The proposed measure is called the Market Basket Measure or MBM.

At the outset, the desired properties of this new measure were specified. First, the MBM needed to reflect a consensus view of what should be in the basket to achieve a minimum acceptable level of living. Second, the rate needed to be easy to understand; it had to lend itself readily to a good intuitive explanation, although this does not imply that it must be easy to calculate. Third, it needed to be sensitive to geographical differences in the cost of the goods and services in the basket. Fourth, it would be adjusted annually to reflect price differences and periodically to reflect changes in consumption patterns.

Some of these requirements are a direct consequence of perceived shortcomings in the LICOs. For example, the LICOs reflect differences in average spending on food, shelter and clothing by community size, but they are not sensitive to provincial

variations. Also, the stress placed on ease of understanding is a reflection of the difficulties experienced in understanding the LICOs.

The approach is to cost out a “basket” of predefined “necessary” goods and services including food, shelter, clothing and transportation and a “multiplier” to cover other essentials. The data would come from various sources – the best available for the purpose. The results would be used to define levels of disposable income needed to cover the cost of the basket. The income levels would be calculated for each province and for different sizes of community within each province. The measure of disposable income envisaged is more restrictive than the after-tax income normally calculated by Statistics Canada. It excludes such expenses as support payments, work-related child care costs and employee contributions to Employment Insurance.

Since an article on the MBM was published in the autumn of 1998 by the Canadian government department that developed the measure (Human Resources Development Canada), the MBM has received a great deal of public attention. Based on the proposed methodology, the MBM would generate an average poverty rate below the before-tax low income rate (which is the measure that has historically been high-lighted in media releases). However, it is not that different from the after-tax rate or the LIM-based rate (see Table 3).

One of many themes in the ensuing debate is that, even if the MBM should be produced regularly, it would be beneficial for Statistics Canada to continue producing LICO-based low income information as a point of comparison and for longer-term trends.

Table 3 - Incidence of Low Income - LICOs, LIMs and MBMs (1996)

PROVINCE	LICO pre-tax	LICO post-tax	LIM post-tax	MBM*
Canada	17.9	13.5	11.5	12.0
Newfoundland	17.6	13.4	15.7	17.8
Prince Edward Island	14.5	8.2	12.6	9.6
Nova Scotia	17.8	11.6	14.9	14.9
New Brunswick	16.1	16.4	13.9	12.0
Québec	21.4	12.2	13.5	10.8
Ontario	16.1	14.4	9.9	12.5
Manitoba	19.6	12.3	12.2	11.1
Saskatchewan	17.6	13.4	13.3	12.1
Alberta	16.4	13.0	10.6	9.2
British Columbia	17.9	13.5	10.8	13.9

* For illustration purposes only - estimated based on the assumptions presented in the preliminary proposal for the MBM.

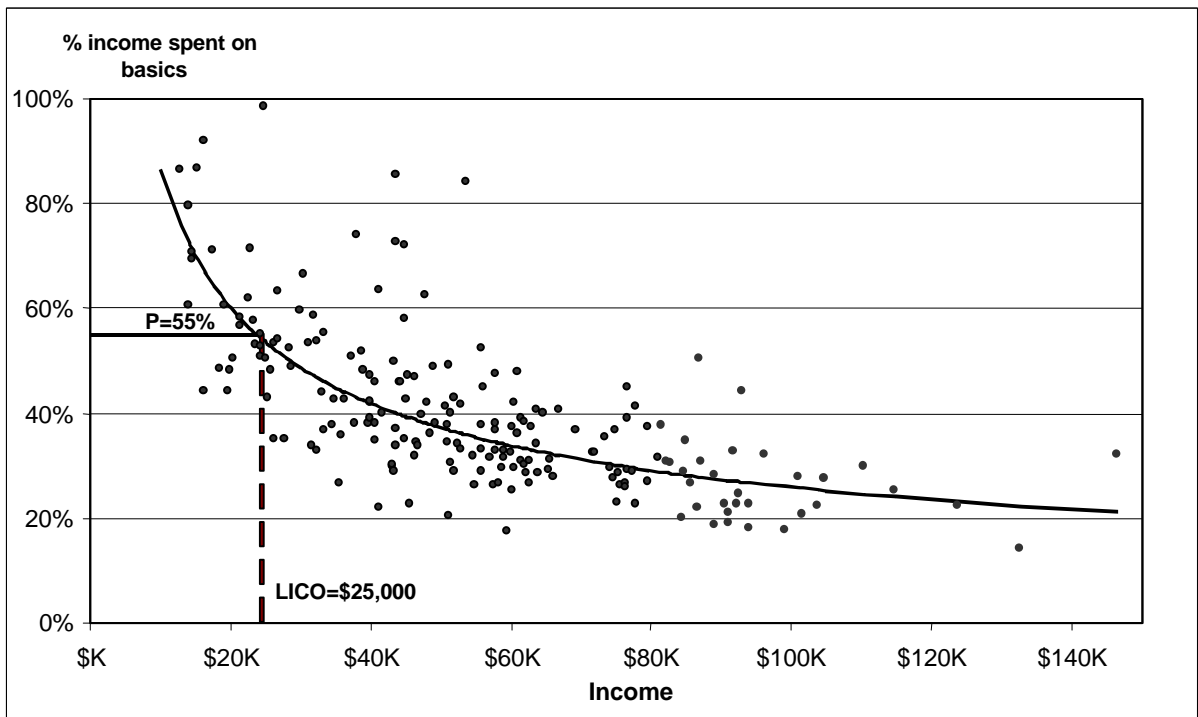
Appendix A - How Statistics Canada's low income cut-offs are calculated

A low income cut-off is an income threshold below which a family is likely to spend significantly more of its income on food, shelter and clothing than the average family. When this measure was first developed using 1959 Family Expenditure Survey data, the average family spent 50% of its pre-tax income on food, shelter and clothing. Twenty percentage points were added to this figure, on the rationale that a family spending over 70% of its income on these essentials would be in “straitsened circumstances”. This 70% threshold was then converted to a set of low income cut-offs that varied by family size and community size.

Since the LICOs were first introduced, average family income has increased, and the proportion of income spent on food, shelter and clothing has declined. Because the cut-offs are by design hinged to what the average family spends, they have periodically been “rebased”, that is, recalculated to reflect more current spending patterns. The most recent rebasing occurred following the 1992 Family Expenditure Survey. The 1992 FAMEX results showed that the average family spent 35% of its pre-tax income on food, shelter and clothing.

In between “FAMEX years”, the LICOs have been updated each year using the CPI. Chart 1 illustrates how a LICO is calculated, using a family of four living in an urban area of 30,000 to 99,000 as an example. The 55% line represents the average proportion of pre-tax income spent by all families (regardless of size) on food, shelter and clothing in 1992, plus the 20 p.p. margin. The points on the diagram show the actual observed proportion of income spent on these basics by families of four in mid-size cities, according to the 1992 FAMEX. A regression line is fitted to the distribution and the intersection of that curve and the 55% line defines the LICO. In this case, it is about \$25,000. This amount has increased somewhat since 1992 due to the CPI adjustment.

Chart 1 Calculation of a Low Income Cut-off



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