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# *The Impact of Poverty on Health*

A SCAN OF RESEARCH LITERATURE

by Shelley Phipps

## **Poverty and Health—CPHI Collected Papers**

The collection of papers is comprised of three parts:

*The Impact of Poverty on Health* by Shelley Phipps

*Policy Approaches to Address the Impact of Poverty on Health* by David P. Ross

*Poverty and Health: Links to Action*

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# About the Canadian Population Health Initiative

The mission of the Canadian Population Health Initiative (CPHI) is twofold: to foster a better understanding of factors that affect the health of individuals and communities, and to contribute to the development of policies that reduce inequities and improve the health and well-being of Canadians. A Council of respected researchers and decision-makers from across Canada guides CPHI in this work. CPHI collaborates with researchers, policy makers, the public and other key partners to increase understanding about the determinants of health, with the goal of helping Canadians stay healthy and live longer.

As a key actor in population health, CPHI

- provides analysis of Canadian and international population health evidence to inform policies that improve the health of Canadians.
- funds research and builds research partnerships to enhance understanding of research findings and to promote analysis of strategies that improve population health.
- synthesizes evidence about policy experiences, analyzes evidence on the effectiveness of policy initiatives and develops policy options.
- works to improve public knowledge and understanding of the determinants that affect individual and community health and well-being.
- works within the Canadian Institute for Health Information to contribute to improvements in Canada's health system and the health of Canadians.

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## Executive Summary

This paper assesses the current state of research knowledge on linkages between poverty and health as of February 2002. While it refers extensively to the existing research literature, its goal is not to provide an exhaustive survey, but rather to summarize, and to provide a starting point from which to learn and think about future directions.

### Measuring Poverty: Assessing Socio-economic Status

This paper begins with the premise that we cannot understand connections between socio-economic status (SES) and health until we have thought carefully about and devised the very best measures possible for these concepts. Section 1 begins with a discussion of alternative methods for conceptualizing and measuring SES. Consistent with a clear consensus in the literature, it argues that household income after taxes and transfers, appropriately adjusted to account for differences in family size and assigned to *each individual* within the family, is the best readily available measure of individual SES.

Limitations of this measure as a “true” measure of SES, however, are noted. For example, household income does not take account of time required to earn income and the measure does not pay attention to distribution within families or to wealth. Unfortunately, micro-data surveys with a health focus, such as the *National Longitudinal Survey of Children and Youth* and the *National Population Health Survey*, do not currently provide particularly good measures of family income, nor do they offer estimates of family wealth. Improvements in the socio-economic information provided in these surveys could improve the quality of the research possible in Canada.

The section provides a discussion of how to assess the extent of both inequality and deprivation (i.e. poverty) within a population, and attempts to identify *best practice* from the literature in each case. For example, most researchers in the field of poverty and inequality argue that for a rich country such as Canada, poverty should be viewed in relative rather than absolute terms. Many researchers also now argue in favour of summarizing the extent of poverty in a country using a measure of *poverty intensity* that incorporates: 1) incidence; 2) depth of poverty; and 3) a measure of inequality among the poor.

Newly available Canadian longitudinal surveys, which follow the same individuals across time, have created the opportunity to study the *dynamics* of SES. These surveys are likely to be especially important for research on poverty and health, since long-duration poverty or extreme economic insecurity will likely have particularly important links with health.

## **Poverty Trends: What Do We Know About Poverty in Canada?**

Section 2 highlights some of the more important research findings concerning the distribution of SES in Canada and provides international comparisons where available.

Key points include:

- Despite dramatic increases in labour-force participation by mothers, mean real disposable income has remained relatively constant in Canada since the mid 1980s.
- The degree of income inequality remained relatively constant between 1973 and 1997, but increased in the late 1990s.
- There is less inequality among Canadian children than among children in the United States, but more than children living in Scandinavian countries such as Norway.
- Poverty among the elderly has fallen dramatically while poverty among children has not. A key reason for the difference is policy effort directed toward increasing transfers to the elderly.
- Other than a reduction of poverty among the elderly, few dramatic changes in poverty have been observed. Lone mothers, Aboriginal persons, members of visible minority groups, the disabled and residents of Atlantic Canada continue to be vulnerable to poverty.
- Recent preliminary work with longitudinal data suggests considerable persistence of poverty, particularly among vulnerable groups (e.g. lone mothers).

## **Health Inequalities: What Do We Know About the Health Status of Canadians?**

Section 3 examines significant inequalities in the health status of Canadians. Whether it is measured using self-reports of overall health status, infant mortality rates, chronic conditions, activity limitations/disability status or the Health Utility Index, health status is worse for those with lower incomes. Cut another way, the health status of groups that are particularly vulnerable to poverty (e.g. lone mothers, Aboriginal persons, Atlantic Canadians) is consistently worse than that of the general population. Evidence shows that countries with less inequality and/or less poverty than Canada have better health outcomes and fewer health inequalities.

Examples presented in this section illustrate clearly that patterns of inequality in health status correlate very closely with patterns of inequality in SES. That is, groups with the lowest SES are also the groups most likely to have poor health status. While this evidence is certainly very suggestive, such informal evidence does not prove that there is *causal* link between poverty and health.



## Does Poverty Cause Poor Health?

Sections 4, 5, and 6 of the report examine more formal, generally multivariate analyses that attempt to establish that poverty *causes* poor health. Studies of this type can be divided into those with a *micro* or *individual* orientation (i.e. personal direct experience of poverty is associated with personal health status) and those with a *macro* or *population* orientation (i.e. living in a society with a more unequal distribution of income is associated with worse population health outcomes).

The key finding from the individual/micro-level research is that there is a very clear and very robust relationship between individual income and individual health. That is, poverty leads to lower health status.

Additional findings include:

- While increases in income are associated with increases in health status across the full income spectrum, the gains are largest for those at the bottom of the income-distribution scale.
- Longer-term measures of income have larger health associations.
- Long-duration poverty has larger associations with health than occasional episodes of poverty.
- While both income level and changes in income level are important, the former is more important.
- Negative “shocks” to income have bigger consequences than positive shocks.
- For children, spells with low SES in the early years are most important in terms of impact on health.

At the population/macro-level, a flurry of research has tested the hypothesis that societies with more inequality have worse health outcomes. Explanations for this phenomenon vary:

- The *absolute income* hypothesis suggests that health status increases with the *level* of personal income but at a decreasing rate, so that countries with more equally distributed incomes will be observed to have higher average levels of health.
- The *relative position* (or *psycho-social*) hypothesis emphasizes individual position within a social hierarchy, independent of standard of living, as the key to understanding the link between socio-economic inequality and health.
- The *neo-materialist* hypothesis argues that high levels of income inequality are simply one manifestation of underlying historical, cultural, political and economic processes that simultaneously generate inequalities, for example, in social infrastructure (e.g. medical, transportation, educational, housing, parks and recreational systems). From this perspective, inequalities in health derive from inequalities in all of the above aspects of the material environment.

## **Research Directions: What Research Knowledge Do We Need?**

Overall, the interpretation of research findings about the importance of inequality for population health is the subject of heated debate. One worthwhile direction to pursue is continued research at the individual level, where it is very clear that poverty matters. Additional research with better data and estimation techniques should pay off with more precise and definitive estimates of *magnitudes*. Longitudinal data will also allow us to learn more about the dynamic processes underlying the poverty-health connection. Finally, we should be able to learn more about which factors mediate or exacerbate the poverty-health connection.

It also seems worthwhile to continue to study linkages between health and inequality, paying more attention to understanding the processes that generate the observed structure of inequality in both income and social infrastructure. As well, examining policy experience and the impact of policy responses can help clarify the linkages. For example, why do labour markets generate more inequality in some places than others? Why are some countries more willing to redistribute income to alleviate poverty and lessen inequality? Why have excellent public programs for medical care, education, child care and recreation emerged in some countries while in others elite members of society are more likely to purchase high-quality alternatives? How do social institutions interact with market institutions to generate health outcomes for the population? Research that begins to answer such questions will be very important in helping us understand how policy can help both to alleviate poverty and to mediate its negative consequences for health.

## **Conclusion**

The paper concludes with a discussion of the promising directions for research related to poverty and health.

## Introduction

In order to understand the connection between socio-economic status (SES) and health, we need to begin by asking two questions: “What do we mean by *socio-economic status*?” and “What do we mean by *health*?”

This paper begins with a discussion of how best to assess SES, both at the level of the individual and at the level of the state. It goes on to summarize some of what we know about poverty and inequality in Canada, and then presents some of the evidence about how Canada compares to other affluent countries. Likewise, a summary of what we know about health inequalities in Canada concludes that the groups most likely to be poor are also the groups who are most likely to have lower health status. This observation, however, does not provide sufficient grounds for claiming that poverty *causes* ill health; research that attempts to identify a causal connection between poverty and health is also summarized. This literature takes two major approaches:

- *Individual*—(micro-) level analyses, which seek to find associations between an individual’s personal SES and his/her personal health.
- *Population*—(macro-) level analyses, which seek to find links between societal-level socio-economic characteristics (e.g. income inequality) and the health of the population.

Section 4 of the paper presents individual-level research evidence, first for adults and then for children. Evidence from the population perspective is reviewed in section 5. Finally, some concluding remarks provide a perspective on the gaps in research knowledge.

# 1. Measuring Poverty: Assessing Socio-economic Status

Socio-economic status can be measured for both individuals and society. At both levels, important links to health status seem to appear. At the individual level, for example, personal experience of poverty may be associated with poorer health. At the population level, societies with less equal distributions of income may experience worse health than those with more equal distributions of income. In order to understand possible connections between SES and health, we need to think carefully about what we mean by SES at both the individual (micro) and societal (macro) levels.

## Measuring Individuals' Income

### Unit of Measurement

A majority of individuals live in households and share resources with other people. Most children, for example, have no personal income, yet are not destitute because they share in the benefits of family<sup>1</sup> income. (The same is true of “stay-at-home” mothers.) If we are to assess individual SES, household resources cannot be overlooked. At the same time, household resources on their own do not provide an adequate measure of individual SES. Households, for example, come in different sizes. A child with five siblings will have a lower SES than a child with no siblings if the two households have the same total income.

However, *per capita* household income is not a good measure of individual SES because the same level of resources, when shared among several people, can often “go further.” For example, family members can share heating costs, a kitchen and telephone service, allowing them to live together more cheaply than they could if each member lived alone. Researchers and policy makers take account of the potential *economies of scale* available within families by adjusting household income with an *equivalence scale*. While the most appropriate equivalence scale is a topic of considerable debate,<sup>2</sup> there appears to be consensus that SES should be measured for *each* individual within a household, using *household equivalent income* defined as “total household income divided by the appropriate equivalence scale.”

An important limitation of a household equivalent income measure is that it assumes equal sharing of resources within a family, a situation that may or may not reflect reality: for example, children may be neglected, parents may make sacrifices on behalf of their children; or spouses may not share. In cases where income is not shared equally, household equivalent income will provide a biased measure of individual SES. Unfortunately, with currently available data, little can be done to address this problem.<sup>3</sup>

## Annual Disposable Income

Currently, consensus is that the most appropriate, readily available, measure of individual economic resources is *annual disposable income*, including transfers and deducting taxes.

While it may be the best available choice, annual disposable income is not conceptually ideal for a number of reasons:

- It is notoriously difficult to collect information about income. Certain components of income, such as social-assistance payments and self-employment earnings, are consistently under-reported. Some taxes, such as sales tax, are not included.
- It would be preferable to use a longer-term measure of economic resources, given the volatility of annual income, especially for those at the bottom end of the income-distribution.
- The approach does not account for past accumulations of either assets or debts, even though two individuals living with the same current incomes, but very different levels of accumulated wealth, do not have the same SES.
- Annual disposable income takes no account of the amount of time required to acquire the income. For example, a one-earner, two-parent family would presumably be regarded as better off than a two-earner, two-parent family with the same disposable equivalent income insofar as the one-earner family devotes fewer hours to paid labour and hence has more time available for other productive and leisure purposes (e.g. spending time with the children).
- Finally, annual disposable income does not account for differences in social goods provided to families. This can be particularly important when comparisons are made across countries (or even regions within countries). If for instance, public health care is provided in one country and not in another, then two families with the same household equivalent income will not have the same material standard of living. Again, this is difficult to measure, but may well be very important for understanding the linkages between SES and health—as well as how public policy can mediate these linkages.

Health data sets are often particularly inadequate in measuring family income, thus limiting the quality of possible research. For example, in the *National Longitudinal Survey of Children and Youth*, income is estimated on the basis of a single question asked during an approximately two-hour-long personal interview in the home: “What is your best estimate of the total income before taxes and deductions of all household members from all sources in the past twelve months?” This question is nearly always answered by the mother alone (in only 7.5% of cases did a spouse contribute information).<sup>4</sup> The survey thus does not provide estimates of *disposable* income, the preferred choice for measuring SES. As well, it does not provide estimates of amounts of income coming from different family members, though these may be key to understanding links between SES and health.<sup>5</sup> The net result is that the *National Longitudinal Survey of Children and Youth* provides significantly different estimates of child poverty than, for example, the *Survey of Consumer Finance* (by as much as 4.7 percentage points, depending on the poverty line chosen<sup>6</sup>).

In terms of measuring income, it is important to note that if we don't have the best measure of SES, we won't have the best estimates of the links between SES and health.

## **Assessing Inequality in a Population**

Many population-level analyses try to assess the association between population health and socio-economic inequality within a region by employing aggregate measures of inequality. Following from the discussion above, if we take *disposable equivalent income* as the best currently available measure of individual SES, then we must decide how to summarize or describe the extent of income inequality that exists in the population. A vast amount of literature discusses how best to do this. Popular alternatives include: 1) calculating shares of total income received by individuals at the bottom versus middle versus top of the income distribution (e.g. decile [or quintile] shares in which individuals are divided into ten [five] groups of equal size, ranked from poorest to richest); 2) comparing ratios of average incomes of those at the top to those at the bottom of the distribution (e.g. the 90:10 ratio compares the average income of the richest 10% of the population to the average income of the poorest 10% of the population); 3) various *indices* of inequality.<sup>7</sup>

Alternative indices, it should be noted, will not all rank levels of economic inequality in the same way. For example, one index may indicate that inequality has increased while another may say there has been no change or that inequality has decreased.<sup>8</sup> Disparate rankings occur because different measures of inequality focus on different parts of the income distribution. For example, the very popular *gini coefficient*<sup>9</sup> is particularly sensitive to what happens in the middle of the income distribution, while the *coefficient of variation* is sensitive to the top end of the distribution and Atkinson-style measures with higher levels of inequality aversion are particularly sensitive to the bottom end.<sup>10</sup> In the end, which index is chosen is a matter of values, but any particular choice may well be important for the conclusions we reach about linkages between population health and income inequality.<sup>11</sup>

Particular attention has been paid in the literature to links between health and *low* SES. Hence, we turn next to a discussion of poverty.

## **What Do We Mean by "Poverty"?**

For years, scholars have debated alternative conceptions of poverty. We outline three alternatives in this section:

- The *absolute* approach: poverty is having less than an *objectively* defined absolute minimum.
- The *relative* approach: poverty is having less than others in society.
- The *subjective* approach: poverty is feeling you do not have enough to get along.<sup>12</sup>

As well, we will discuss assessing the extent of poverty, and the long-term, dynamic nature of poverty.

## Absolute Poverty

The idea that individuals are poor if they have insufficient income to purchase some “objective” minimum bundle of goods has a long history. In 1901, Rowntree classified families as poor if “their total earnings are insufficient to obtain the minimum necessities for the maintenance of merely physical efficiency.”<sup>13</sup> This idea underlies both the United States official poverty lines, which are derived from recommended minimum adequate food budgets,<sup>14</sup> and the *Market Basket Measures* recently proposed by Human Resources Development Canada. An appeal of such measures is that they represent a fixed benchmark against which progress can be measured over time. A major disadvantage is that it is extremely difficult to choose an objectively defined “minimum set of necessities,” and that this minimum standard will necessarily change over time. For instance, indoor plumbing and electricity would now be regarded as “necessities” in Canada, but this is not necessarily true in other countries, nor was it true in Canada earlier in the century.

## Relative Poverty

A relative conception of poverty defines individuals as poor if they have significantly less income than others around them. This perspective also has a very long history: Adam Smith wrote more than 200 years ago: “Under necessities, therefore, I comprehend not only those things which nature, but those things which the established rules of decency have rendered necessary to the lowest rank of people.”<sup>15</sup> Most typically, relative measures of poverty define poor individuals as having less than some percentage (40% or 50%) of median equivalent income. A major advantage of this approach is its simplicity and transparency<sup>16</sup>—it requires no decisions about what constitutes a minimum necessary basket.

## Subjective Poverty

The subjective approach to defining poverty is more popular in Europe than in North America.<sup>17</sup> This approach argues that individuals are poor when they feel they do not have enough to get along. Proponents argue that the best way to assess how much income people need to “make ends meet” is to ask them. Thus, subjective poverty lines are constructed from surveys that ask questions such as: “Living where you do now and meeting the expenses you consider necessary, what would be the very smallest income you and your family would need to make ends meet?”<sup>18</sup> Of course, answers to this question increase with the respondent’s income, and estimates of subjective poverty lines take this phenomenon into account. Poulin, using a supplement to the 1983 *Survey of Consumer Finances*, produced estimates of subjective poverty lines for Canada<sup>19</sup> that were substantially higher for family sizes of six or less than the Statistics Canada Low-Income Cut-offs (LICOs) for the same year.

A very clear consensus among scholars in the field of poverty research is that the relative approach to measuring poverty makes most sense in the context of measuring poverty in rich nations.<sup>20</sup>

## Measuring the Extent of Poverty in a Population

It is often important to assess the *extent* of poverty in a population. The most obvious summary measure is simply the percentage of the population that is poor. Paying attention only to *incidence*, however, provides little understanding about the *severity* of poverty. Hence, the average *depth* of poverty in a population—the average amount by which a poor household's income falls short of the poverty line—is also often reported. More recently, a number of authors<sup>21</sup> have argued that *intensity* of poverty should be assessed using a measure that pays attention to both incidence and depth of poverty as well as to inequality among the poor.

## Measuring the Dynamics of Poverty

Some of the greatest potential for increasing our understanding of the links between SES and health will likely come through the use of longitudinal data, which provides longer-term information on the same individuals tracked over a significant period of time. Longitudinal data are only just beginning to become available in Canada and include the *Survey of Labour and Income Dynamics*, the *National Longitudinal Survey of Children and Youth*, and the *National Population Health Survey* longitudinal files.

Longitudinal data have several advantages. They allow computation of longer-term measures of SES, such as many-period averages of equivalent disposable income. As argued above, longer-term averages will provide a more accurate measure of *permanent income* than current income, and will hence be a preferable measure for use in studies on the link(s) between individual income and health. Longitudinal data will also allow researchers to measure income trajectories (the movement up or down of income distribution over time). Further, longitudinal data permit assessment of *volatility* in individual income—the number of periods for which individuals experienced significant increases or decreases in living standards, or standard deviations in income across many time periods. Measures of volatility may prove to be extremely important for health connections insofar as economic *security*, and not simply income level, has important connections to health status.<sup>22</sup>

In terms of poverty status, longitudinal data allow us to calculate factors such as the total duration of poverty and the percentage of a child's life spent in poverty, in order to distinguish short spells of poverty from situations of chronic deprivation. Longitudinal data also permits us to trace movements in and out of poverty and the reasons for these changes.<sup>23</sup>

When considering the dynamics of poverty experience, it becomes vital to focus attention upon the individual rather than the family, given that family units can grow, contract, split apart, re-form, etc.<sup>24</sup>



## 2. Poverty Trends: What Do We Know About Poverty in Canada?

This section provides a few highlights from the literature on poverty and inequality in Canada in order to provide a context for the subsequent discussion of possible causal links between poverty to health. Notice that while a case has been made above for an “ideal” approach to measuring SES, this section merely provides results from the existing literature, in which a variety of approaches have been taken.

Among the facts known about SES in Canada are the following:

- Mean (and median) *real*<sup>25</sup> equivalent disposable income per person in Canada increased from \$12,083 in 1971 to \$16,691 in 1981, but has remained relatively constant since the mid-1980s<sup>26</sup> despite significant increases in labour-force participation, especially for married women with children. For example, labour-force participation for mothers with children under age 16 in the household increased from 39.2% in 1976 to 68.7% in 1999.<sup>27</sup> Thus, total average household hours of paid work have increased *with no corresponding increase in real income*. It is also worth noting that average work hours per person are higher in Canada than in some European countries (e.g. 1,181 annual hours in Canada versus 981 in France and 982 in Germany) but lower than in the United States (1,429 annual hours).<sup>28</sup> For women who have added paid work responsibilities to their traditional unpaid work, the burden of a “double workday” has resulted in considerable time stress (38% of married mothers who work full-time report that they are severely time stressed).<sup>29</sup>
- In contrast with the increasing inequality observed in the United States and the United Kingdom, the distribution of equivalent disposable income in Canada remained relatively constant between 1973 and 1997.<sup>30</sup> This phenomenon is at least partially attributable to the redistribution carried out through the Canadian tax and transfer system. Inequality has increased, however, in the late 1990s (the *gini coefficient* increase from 0.305 in 1993 to 0.330 in 1998), apparently because of a reduction in real incomes in the bottom two deciles of the distribution.<sup>31</sup>
- Deteriorating labour-market conditions for young adults are particularly troubling for the socio-economic status of young families.<sup>32</sup>
- There is less inequality among children than among all individuals in Canada, but children are much more likely than other Canadians to live in families with disposable equivalent incomes in the bottom half of the income distribution (61.8% in 1997). There is less inequality among children in Canada (*gini* = 0.275) than among children in the United States or United Kingdom (*gini* = 0.373 and 0.335, respectively) but more inequality among children in Canada than among children in Norway (*gini* = 0.208). Put another way, in Canada, the richest 10% of children have incomes 7.6 times those of the poorest 10% of children. In the United States, rich children have incomes 13.9 times those of poor children. And in Norway, rich children have incomes 4.8 times those of poor children.<sup>33</sup>

- A great Canadian success story has been the reduction in poverty among the elderly—poverty *intensity* among seniors fell from 0.08 to 0.008 between 1975 and 1996. A similar success in reducing poverty among children is not apparent—poverty intensity was 0.097 in 1975 and 0.089 in 1996.<sup>34</sup> An important reason for this difference is that tax and transfer programs have moved seniors out of poverty much more effectively. For example, based only on market income, 70.6% of Canadian seniors would be poor, but state intervention reduces the incidence of poverty to 1.9%. For very young children, on the other hand, the incidence of market-based poverty is 63.1%, which state intervention reduces to 28.3%.<sup>35</sup>
- Aside from the dramatic change for the elderly discussed above, the groups most likely to experience poverty have remained remarkably consistent for as long as data have been available to follow trends:
  - Lone-mother families continue to be particularly vulnerable to poverty, both in terms of incidence (56% were poor in 1997) and depth (incomes for poor lone-mothers families were, on average, \$9,046 less than the LICO poverty line in 1997<sup>36</sup>).
  - Individuals with disabilities are also vulnerable to poverty (e.g. 30.8% were poor in 1995 versus 18.4% of Canadians without disabilities).<sup>37</sup>
  - Poverty rates are higher for members of visible minority groups (35.9% versus 17.6% in 1995).<sup>38</sup> Aboriginal peoples are especially vulnerable to poverty (43.4% were poor in 1995 versus 19.3% of non-Aboriginal people).<sup>39</sup>
  - Regional differences in SES remain important. For example, 17.7% of families in Newfoundland were poor in 1997 versus 12.7% in Alberta.<sup>40</sup>
- While child poverty is less severe in Canada (after-tax and transfer poverty intensity = 0.08 in 1994) than in the United States (0.18) or the United Kingdom (0.11), child poverty is *more* severe in Canada than in many other affluent countries [e.g. Denmark (0.03), Finland (0.02), Belgium (0.02), France (0.05), the Netherlands (0.05), Norway (0.03) and Sweden (0.02)].<sup>41</sup>

A key reason for this difference is that state taxes and transfers more effectively reduce market-induced child poverty in the European countries above. For example, the incidence of poverty among children in Canada falls from 23.4% to 11.7% after taxes and transfers are added to market income (i.e. a 50% reduction). In the United States, the state is much less effective in bringing children out of poverty (incidence falls from 26.7% to 19.1%). However, in Belgium, Finland, France, Germany, Italy, the Netherlands, Norway and Sweden, state programs achieve a greater than 60% reduction in the incidence of child poverty (e.g. from 22.8% to 6.7% in the Netherlands and from 21.6% to 7.5% in France).<sup>42</sup> Even more striking than differences in poverty for all children are differences in poverty experiences for children living in lone-mother families across countries. For example, while 33.0% of children in Canadian lone-mother families were poor in 1994, only 9.2% of children in Norwegian lone-mother families were poor (fewer than the 9.3% of Canadian children in two-parent families who were poor in the same year).<sup>43</sup>

These very dramatic differences in the experience of poverty across countries are in large measure due to differences in social transfers. In a simulation of what would happen if Canadian mothers were given Norwegian social transfers,<sup>44</sup> incomes for women at the bottom of the Canadian income distribution increased by 121%, or about \$7,000.

As argued above, annual income flows alone are not an especially desirable measure of family SES. It is preferable to have some knowledge of a family's *wealth*, though data on the distribution of wealth in Canada have been extremely limited or essentially non-existent in most large-scale health surveys. The 1999 Statistics Canada *Survey of Financial Security* does provide important new evidence about the distribution of wealth in Canada. Evidence of substantial inequality is very compelling: the 10% of families with the highest net worth held 53% of all personal wealth in the country. The 10% of families at the bottom of the wealth distribution actually had negative net worth—they were in debt. Patterns of inequality in wealth resemble those for income/poverty status. For example, lone mothers have very low net worth, with a median of \$14,600, compared to \$81,000 for the Canadian population; families in Newfoundland have median net worth of \$53,000 compared to families in Ontario with median net worth of \$101,400.<sup>45</sup>

## What Do We Know about Poverty Dynamics?

Currently, we know relatively little about the dynamics of socio-economic experiences in Canada. As noted above, the availability of new and better data should open the doors for exciting new research. Below, we discuss some of the current knowledge about the dynamics of poverty in Canada.

Using the Longitudinal Administrative Database for 1992 to 1996, Finnie<sup>46</sup> concludes that the low-income population consists of two distinct groups:

- Those for whom poverty is a temporary experience—about 50% of those counted as “poor” at any point in time.
- Those for whom poverty is a chronic experience—about 40% were poor throughout the entire study period.

Moreover, Finnie presents evidence that women who become single parents between one year and the next are the most likely of any group to enter poverty that year. For example, 46.9% of women with children who were married one year and became lone mothers the next year entered poverty as they became lone parents. Conversely, lone mothers have only a 10% chance of exiting poverty unless they remarry, as witnessed by the fact that two-thirds of lone mothers who re-married left poverty. Not surprisingly, lone-mother families are particularly likely to experience long spells of poverty (e.g. for the period 1992 to 1996, only 31.1% of lone mothers escaped poverty in all five years; 36.0% were poor in *all* five years).

Work by Picot, Zyblock and Pyper<sup>47</sup> using longitudinal microdata from the *Survey of Labour and Income Dynamics* for 1993 and 1994 provides some early evidence of considerable persistence of poverty in Canada—only 37.5% of children in two-parent families who were poor in 1993 had exited poverty by 1994; only 27% of children in one-parent families exited poverty between 1993 and 1994.

These findings are consistent with results from the United States.<sup>48</sup> Picot and colleagues conclude that changes in family composition, such as the divorce/separation or re-marriage of parents, have the largest impact on the probability of a child entering or leaving poverty, respectively. While changing labour-market circumstances, such as gaining or losing a job, do not have nearly so dramatic an association with the probability of a child changing poverty status, they are much more common. Thus, Picot and co-authors conclude that changing family composition and labour market changes are about equally responsible for children moving in and out of poverty in Canada.

### 3. Health Inequalities: What Do We Know About the Health Status of Canadians?

Just as there are a variety of measures of SES, there are also a number of alternative measures of the health status of populations, including measures of health inequalities. Below, we provide some examples of inequalities in the health status of Canadians, and some comparisons of Canadians' health status to that of citizens of other affluent countries.

- Self-reported health status is widely regarded as an excellent measure of population health. Microdata from the *National Population Health Survey* indicate that in 1996–1997, 73% of Canadians in the highest income group rated their health as excellent, while only 47% of Canadians in the lowest income group reported excellent health.<sup>49</sup> *National Population Health Survey* data further indicate that while married mothers have a 29.5% probability of reporting excellent health, lone mothers have only a 21.9% probability.<sup>50</sup>
- Humphries and van Doorslaer<sup>51</sup> also use microdata from the *National Population Health Survey* to demonstrate income-related health inequalities using the *McMaster Health Utilities Index (HUI)*. The extent of income-related inequality is slightly less pronounced using this possibly more “objective” measure of health status,<sup>52</sup> but inequality is still clearly evident.
- Chronic diseases such as arthritis, rheumatism, diabetes, heart problems, cancer, and hypertension are much more common—often twice as common—for Aboriginal persons, who also have generally much lower SES than non-Aboriginals. For instance, Aboriginal men have a rate of diabetes three times the rate of non-Aboriginal men; for women, the ratio is 5 to 1. Chronic conditions are also more prevalent in poorer regions of the country. For example, in the 1996 *National Population Health Survey*, 10.1% of adults aged 15–64 in the Maritime provinces reported high blood pressure diagnosed by a professional versus a national average of 6.8%. More children aged zero to 13 living in the Maritimes have asthma—17.0% versus 12.7% for Canadian children overall.<sup>53</sup>
- Disability or activity limitation is much more common among individuals with incomes in the bottom 30% of the income distribution (32% for men; 28% for women) compared to those at the top of the income distribution (12% for men; 16% for women). The direction of causality, however, is particularly unclear. That is, it is possible that low income leads to activity limitation, but it is also possible that activity limitation, by limiting paid work possibilities, leads to low income.
- Infant mortality is generally regarded as a critical indicator of population health. In 1996, the overall Canadian infant mortality rate dropped to below 6 per 1,000 live births (from 27.3 in 1960).<sup>54</sup> However, infant mortality rates are lower than average in the highest-income urban neighbourhoods (4.5 per 1,000 live births in 1991) and higher than average in the lowest-income urban neighbourhoods (7.5 per 1,000 live births).<sup>55</sup> Moreover, infant mortality rates for the Aboriginal population are twice those for the non-Aboriginal population (12 per 1,000 live births in 1994).

- Evidence shows that countries with less poverty and/or inequality in SES have better health outcomes. This phenomenon is illustrated by different outcomes for several health indicators. For example, a variety of indicators of child health status are better in Norway than in Canada:
  - Child poverty rates in Norway are much lower than they are in Canada; the gap between rich and poor children in Norway is also smaller.
  - Infant mortality rates are lower in Norway (5.1 per 1,000 live births in Norway in 1994 versus 6.8 in Canada).
  - The incidence of low-weight births in Norway is lower (4.6% in 1990 versus 5.4% in Canada), as is the incidence of asthma among Norwegian children aged zero to 13 (8.2% versus 13.3% in Canada).
  - Fewer Norwegian children aged zero to 13 experience accidents or injuries requiring medical attention (7.9% in 1994 versus 10.1% in Canada).<sup>56</sup>
- Finally, just as evidence indicates that there is more inequality of income in Canada than in many other affluent countries, evidence also indicates that there may be more inequality in self-reported health status in Canada than in some other affluent countries such as Sweden (although less than in the United States).<sup>57</sup> In fact, Humphries and van Doorslaer argue that there may be more inequality of health status in Canada than would be predicted given our level of income inequality.<sup>58</sup>

The examples outlined above clearly demonstrate that inequalities in health status exist among Canadians. Moreover, the pattern of these inequalities appears to correlate with some of the patterns of inequality in SES noted in Section 2. That is, groups who have traditionally experienced high rates of poverty or low levels of SES are the same groups who have worse health outcomes. However, to this stage, the evidence presented is only illustrative. No demonstration of *causality* has been provided.

## 4. Does Poverty Cause Poor Health? What Do We Know About the Causal Links Between Poverty and Health?

### Research Evidence on Adults

Research focusing on individuals has found a very robust relationship between an adult individual's income and that individual's health, using a range of measures for both. Regardless of how measures of health status and measures of SES are combined, there is little doubt that poverty leads to ill health. For example, in a recent review of the literature, Benzeval and Judge provide evidence from 16 studies using eight different data sets from four different countries. Health status outcome measures include: subjective self-reports, mortality, emotional stability, chronic conditions, general life satisfaction and physical functioning. Socio-economic status measures include: current income level, recent income change, poverty flags, current earnings, multi-period averaged incomes, relative position in the income distribution and number of spells of poverty. In summing up their review, the authors conclude: "All of the studies that include measures of income level find that it is significantly related to health outcomes."<sup>59</sup>

Similarly, Mullahy and colleagues conclude: "Voluminous empirical studies and reviews demonstrate a robust association between income and morbidity and mortality, using various measures of both income and health, across samples, and at various time points...."<sup>60</sup>

An important research issue in the study of poverty and health is the possibility for ill health to limit an individual's ability to engage in paid work and hence reduce his or her income, even if he or she comes from an affluent background. This possibility is variously referred to as *reverse causation*, *health selection* or *endogeneity*. The problem is that if all we know is that ill health and low income are often observed together, we cannot sort out which caused which. However, the studies reviewed by Benzeval and Judge all used longitudinal data so that they could follow individuals over time rather than merely observing relationships at a point in time. Most of the studies reviewed tried to control for the possibility that ill health causes low income rather than that low income causes ill health<sup>61</sup>; all conclude that *reverse causation* is not a serious problem and that the main direction of influence is *from poverty to poor(er) health*.

Further important conclusions from this body of work include the following:

- The relationship between individual income and health is non-linear (i.e. low-income individuals suffer larger negative health consequences than high-income individuals reap health benefits, though high-income individuals *do* reap benefits).
- Longer-term measures of average income have larger associations with health than measures of current income, which can be highly volatile.

- Long-duration poverty has larger (negative) health consequences than occasional episodes of poverty.
- Both income level and income changes are significant predictors of health status, but income level is the more important of the two.
- Negative “shocks” to income are more important for health than positive shocks.

## Research Evidence on Children

A large body of Canadian evidence also suggests an important link between income and the health status of children.<sup>62</sup> For example, Curtis and Phipps find a significant negative association between poverty and child health in 69 of 80 regressions using data sets from Canada and the United States and a wide variety of both outcome and poverty measures. Ross finds that for 31 indicators in the *National Longitudinal Survey on Children and Youth* and the *National Population Health Survey*, child outcomes worsen as family income falls.<sup>63</sup>

However, some recent Canadian studies find relationships that are small in magnitude or statistically insignificant, so that there is currently a debate about the importance of poverty for children’s health that does not exist in the literature pertaining to adults.<sup>64</sup> For example, using data from the United States, Blau finds only small effects of income on health. In fact, he claims that the income effects are so small that income transfers to poor families are likely to have very little impact on child development “unless they result in very large and permanent changes in income.”<sup>65</sup> Korenman, Miller, and Sjaastad<sup>66</sup> interpret their results from research based on the National Longitudinal Survey of Youth in the United States to indicate a “moderate to large” effect of changes in long-term poverty status on children’s cognitive development. Mayer reviews existing literature and uses several different methodologies and US data sets and concludes that, all other things being equal, the effect of increases in parental income on child outcomes “...is nowhere near as large as many political liberals imagine, neither is it zero as many political conservatives seem to believe.”<sup>67</sup> She goes on to say that although the effect on any single outcome may be small, that most outcomes seem to be affected by income to some extent. Thus, increasing income may have a substantial *cumulative* impact.<sup>68</sup> This cumulation of effects seems very important for children, both across alternative dimensions of child well-being and across time (e.g. through a “snowballing” of consequences across the life course).

The following points summarize the research evidence on the causal linkages between child health status and family socio-economic conditions:

- There is a consensus that children with lower SES have poorer health outcomes. However, there is some disagreement about the magnitude of the associations between child health and child poverty. Conclusions about magnitude will be especially sensitive to measurement choices (e.g. which measure/aspect of health status is studied; which choice of measure for SES is employed).
- There is a consensus that there are larger associations between longer-term measures of family SES and children’s current well-being.<sup>69</sup>



- The *timing* of spells of low levels of SES matters; what happens in the earliest years of a child's life is most critical.<sup>70</sup>
- Socio-economic status will affect children in a non-linear fashion (i.e. it is particularly important for lowest-income children).<sup>71</sup>
- While income *level* is most important, "shocks" are also important, though negative shocks may have larger impacts than positive shocks.<sup>72</sup>
- Paying attention to family time and family assets as well as family income is important for understanding the link between SES and health.<sup>73</sup>
- Mediating variables such as parenting style, good relationships and high-quality schools can help to offset the consequences either of vulnerable starting points or negative shocks.<sup>74</sup>

For both children and adults, a number of technical difficulties in estimating the relationship between SES and health have not been entirely resolved. For example:

- Income and/or poverty may be measured with error, thus biasing the estimated poverty and/or income coefficients towards zero.<sup>75</sup>
- As noted above, there may be problems of *reverse causation* (e.g. a lone mother with a seriously ill child may find it hard to work full-time).
- Income and/or poverty may be highly correlated with other socio-economic variables typically included in regression models<sup>76</sup> of the determinants of child well-being, leading to low significance levels (e.g. low income and lone-mother status are very highly correlated).
- Unobserved parental/familial attributes may be associated both with better outcomes for children and with higher SES (e.g. genetic endowments such as energy or intelligence).<sup>77</sup> This phenomenon is referred to as "unobserved heterogeneity."

Improvements in the income questions included in health data sets could help solve the problem of measurement error. Longer longitudinal panels should help to sort out issues of causation. In other words, more years of the *National Longitudinal Survey on Children and Youth* should help identify whether the onset of a child's ill health preceded or followed income reduction. Mayer and Duncan and colleagues all address the issue of unobserved heterogeneity using United States data and still find statistically significant associations (although they are somewhat smaller in magnitude).<sup>78</sup>

## 5. Theories on Why Inequality of Socio-economic Status Matters for Population Health

The broad perspectives on why we might anticipate a link between population-level SES and population health have been summarized recently as follows<sup>79</sup>:

- The *absolute income* hypothesis suggests that health status improves with the *level* of personal income, but at a decreasing rate.<sup>80</sup> One implication of this hypothesis is that: "...if income is redistributed from the rich, whose health is not much affected, to the poor, whose health is more responsive to income, average health will improve. Other things being equal, including average income, nations (or other groups) with a more equal distribution of income will have better average group health."<sup>81</sup>
- The *absolute deprivation* hypothesis, which might be regarded as an extreme version of the *absolute income* hypothesis, suggests that very low standards of living are bad for health, but that once past some *deprivation threshold*, additional income is not particularly important for health. Note that the emphasis here is that individuals living with very low incomes will encounter physical conditions that may undermine their health, such as poor nutrition, more limited access to health care, hazards from poor environmental quality, health-limiting behaviours such as smoking and sedentary habits and stress resulting from coping with very low income.

A variety of relatively recent research has considered potential linkages between population health and *inequality* of SES. Different authors have offered alternative potential explanations for such a phenomenon. For example:

- The *relative position* (or *psycho-social*) hypothesis, largely associated with the pioneering work of Wilkinson,<sup>82</sup> emphasizes individuals' positions within a social hierarchy, independent of standard of living, as the key to understanding the link between inequality of SES and health. Wilkinson and his colleagues argue that the ongoing stress associated with being "lower down" (and not just at the bottom) on a social ladder leads to biological processes that are harmful to health.<sup>83</sup> They also emphasize the negative implications of income inequality for the creation of *social cohesion*. A major problem associated with the *relative position* hypothesis is the correct identification of the most relevant comparison group—with whom do individuals compare themselves?
- The *neo-materialist* hypothesis<sup>84</sup> argues that high levels of income inequality are simply one manifestation of underlying historical, cultural, political and economic processes that simultaneously generate inequalities in social infrastructure (such as medical, transportation, educational, housing, parks and recreational systems). From this perspective, inequalities in health derive from inequalities in all of the above aspects of the material environment. Lynch and co-authors employ the metaphor of a long trip on an airplane to explain the difference in interpretation between the *psycho-social* and the *neo-materialist* interpretations.<sup>85</sup> On a long trip on an airplane, passengers seated in first class are treated better: they have, for example, more room and receive better food.

Passengers travelling in economy class are cramped and, these days, receive little—if any—food! Lynch et al argue that by the end of many hours of travel, the differences in physical conditions and treatment will reduce the well-being of the passengers in economy class (beyond feeling negative emotions because they know they are being unequally treated).

- Some authors<sup>86</sup> have argued that the apparent link between population health and income inequality may simply be a *statistical artifact* arising from the relationship described above as the *absolute income* perspective. However, Wolfson and co-authors demonstrate fairly persuasively that this relationship cannot account entirely for the link between health and income.<sup>87</sup>

## 6. What Do We Know About the Links Between Socio-economic Status and Population Health?

The recent macro-level research on the links between socio-economic inequality and population health has focused primarily on trying to understand potential links between the two. The measures of income inequality used in work in this area, however, are often inadequate. For example:

- The estimates of income used in research are sometimes of questionable quality, especially where cross-country comparisons are made.<sup>88</sup>
- Equivalent disposable income is seldom employed in research as the measure of SES.<sup>89</sup> As noted earlier, while equivalent disposable income may be the best currently readily available measure, it is far from an ideal approximation of SES. No studies appear to account for differences in the amount of time required to generate observed income levels, though these are very different across countries.<sup>90</sup> Further, no studies seem to include measures of assets.
- The indices of inequality employed in current research are not generally “state of the art.” This may influence results, since the choice of an inequality index can sometimes lead to different rankings of relative inequality across countries. At the least, the cardinal difference in assessed inequality will differ depending upon choice of measure, which in turn will affect regression estimates, depending upon estimation technique.<sup>91</sup>

A complication in sorting out inequality-health linkages is that, in some countries, policy-makers may *respond* to perceived health problems and/or inequalities with interventions, such as nutrition programs for pregnant women, that help improve population health.<sup>92</sup> Wolfson and colleagues<sup>93</sup> provide some evidence for this phenomenon: they find a clear negative association between income inequality and health across the United States, an association not apparent across Canada. These authors point to a neo-materialist interpretation of this finding. That is, they suggest that policy responses to inequality in Canada, in terms of schools, transportation, health care and housing policy may have served to *mute* the relationship between inequality and health, while in the United States, policy responses, or lack thereof, served to *exaggerate* this relationship.

What is the state of evidence in this area? An emerging consensus in a rather heated debate appears to be that results are not robust. For example, Deaton, in a major survey of research in this area, writes: “My tentative conclusion is that there is no direct link from income inequality to ill-health.”<sup>94</sup> In another major survey of the literature, Mullahy, Robert and Wolfe similarly conclude: “While the evidence for a relationship between individual income and health is strong and relatively consistent, the evidence for a relationship between aggregate measures of income inequality and health is weak and controversial.”<sup>95</sup>

## 7. Research Directions: What Research Knowledge Do We Need?

Based on the preceding scan of the research literature, the following knowledge gaps with respect to understanding links between SES and health become apparent:

- Every effort should be made to improve the quality of the income measures available in survey data sets with a health focus. Doing so will improve the quality of results and our confidence in estimated *magnitudes*. For instance, if we reduce poverty in Canada by 10%, by what percentage would we expect infant mortality to fall? Specifically, continuous measures of income, both before and after tax, should be available at household and individual levels in both the *National Population Health Survey* and the *National Longitudinal Survey on Children and Youth*. It would also be useful to know how much income is received from alternative sources, such as labour market and government transfers.
- Relatively little attention appears to have been paid to how the choice of poverty measures affects substantive conclusions about linkages between poverty and health. Further, it is difficult to compare across studies that use different data sets, control variables, estimation methodologies and measures/conceptions of poverty.
- It may be helpful to investigate the health implications of alternative approaches to understanding poverty, including, potentially, broader concepts such as *social exclusion*.<sup>96</sup>
- Particularly for the study of children's health, research has suggested that *which parent receives the income* can be an important predictor of the use of that income.<sup>97</sup> Not knowing a mother's share of family income (in a two-parent family) may be one reason why children's health outcomes appear to be less closely connected to family income level than adult health outcomes. It may also be possible that parents attempt to avoid cutting back on expenditures important for their children by making personal sacrifices (e.g. paying for a child's swimming lessons and forgoing a parent's fitness class). Further examination of such possibilities seems important, and could be facilitated by better income information in survey data sets.
- Beyond simply measuring annual income, we need to know more about other aspects of SES, such as household assets and household time spent working. The knowledge that average household real incomes have remained relatively constant because increasing numbers of women have added paid work to their domestic responsibilities suggests there may be very important gender differences in non-income aspects of SES.

- Extensive analysis of the newly available Canadian longitudinal data sets (i.e. the *National Population Health Survey* and *National Longitudinal Survey on Children and Youth*) will allow researchers to begin to address difficult technical problems. It will also provide researchers with a better understanding of the dynamics of the health-income relationship (e.g. how much more damaging is long-term than short-term poverty? How important are negative versus positive “shocks,” and how do they differ at different points of the income distribution? What about economic security?).
- Most of the research work summarized in this report was carried out using longitudinal files from the United States and should at least be replicated with the Canadian data; there is no necessary reason that findings should be the same for the two countries, given important differences in health and social infrastructure.<sup>98</sup> Moreover, the large size of the Canadian longitudinal files is an advantage that can certainly be exploited.
- Provided that sufficient care is taken to ensure comparability of methods and data sets, it seems very worthwhile to pursue cross-national evidence, particularly in understanding how social and economic structures such as the labour market, the health care system and the educational system can help to mute or exaggerate the consequences of market-driven income inequalities. Curtis and Phipps find a “steeper income gradient for mothers in Canada than in Norway,”<sup>99</sup> which could well be the result of differences in social institutions. To date, relatively few studies can teach us whether the health consequences of low SES in Canada differ from those in other countries.
- Finally, while it seems clear that lower SES is associated with worse health outcomes, we need additional evidence about the mechanism of this linkage. Future research that helps to unravel *how* poverty causes poor health would be extremely useful.

## Conclusion

Perhaps not surprisingly, a vast array of studies using different measures of health status and different measures of income inequality for different countries and for different time periods do not all come to the same conclusions, particularly given the severe measurement problems encountered in such investigations. A key question is, then, “Where do we go from here?”

Mullahy and co-authors argue that the excitement about the inequality-health connection may have diverted study from what they regard as the more important links between income and health at the *individual* level, and they promote the idea of returning attention to individual- (micro-) level studies. This reasoning seems sound, particularly for Canadian researchers at this point in time. Important individual-level research can be conducted using the *National Population Health Survey* and *National Longitudinal Survey of Children and Youth* as they emerge, particularly if improvements in the socio-economic information gathered in these surveys are made. We now know poverty matters for health. Better data and better estimation techniques will allow us to be more comfortable in our knowledge of the *magnitude* of the effects of poverty. Longer panels will also allow us to learn more about the dynamic processes underlying the poverty-health connection. Finally, we will be able to learn more about which factors mediate or exacerbate that connection.

While Mullahy and colleagues call for returned/continued attention to the study of poverty and health at the individual level, they do not suggest that we abandon *population-* (macro-) level studies, which focus on connections between population-level inequality and population health. Rather, they call for more attention to understanding the processes generating the observed structure of inequality, not just in income but also in social infrastructure. For example, why do labour markets generate more inequality in some places than others? Why are some countries more willing to re-distribute income to alleviate poverty and lessen inequality? Why have excellent public programs for medical care, education, child care and recreation emerged in some countries while in others elite members of society are more likely to purchase high-quality alternatives? How do social institutions interact with market institutions in generating health outcomes for the population?

Research that begins to answer such questions will be very important in helping us to understand how policy can help both to alleviate poverty and to mediate the negative consequences of poverty for health.





## Endnotes

- <sup>1</sup> The words “household” and “family” will be used interchangeably throughout this paper.
- <sup>2</sup> Popular choices include: (1) the Luxembourg Income Study or LIS scale, which equals the square root of family size; (2) the “LIM” scale, in which the first adult equals 1.0, each additional adult adds 0.4, and each child adds 0.3 to the scale (except for the first child in a lone-parent family, who adds 0.4 to the scale); (3) the OECD scale, which equals 1.0 for the first adult, plus 0.7 for each additional adult, and 0.5 for each child.
- <sup>3</sup> See Jenkins, Stephen, 1991, “Poverty Measurement and the Within-household Distribution: Agenda for Action,” *Journal of Social Policy*, 20, 457–483; or Phipps, Shelley, and Peter Burton, 1995, “Sharing Within Families: Implications for the Measurement of Poverty among Individuals in Canada,” *The Canadian Journal of Economics*, 28:1, 177–204.
- <sup>4</sup> By contrast, the Survey of Consumer Finance asks a detailed series of questions about various components of income. The survey is conducted at tax time as a mail-out questionnaire with a follow-up computer-assisted interview by telephone for 87% of the sample. All family members aged 15+ are asked to participate.
- <sup>5</sup> Similar criticisms of the income data available in the National Population Health Survey can be raised.
- <sup>6</sup> See Curtis, Lori, and Shelley Phipps, 2000a, “Economic Status and Child Well-being in Canada and the United States: A Sensitivity Analysis,” paper presented at the 2000 meetings of the Canadian International Labour Network, Burlington, Ontario, September 2000. This paper also raises a concern about significant non-response to income questions in many surveys (e.g. 23.1% of observations in the 1994 NLSCY). Income is typically imputed when missing, but this is not always the case, and concerns could be raised about the imputation process (more lower than higher incomes are imputed, for example, which could cause problems for research focused upon links between poverty and health).
- <sup>7</sup> See, for example, Jenkins, Stephen, 1991, “The Measurement of Income Inequality” in Lars Osberg, ed., 2001, *Economic Inequality and Poverty: International Perspectives* (New York: M.E. Sharpe, Inc.), pp. 3–38.
- <sup>8</sup> Atkinson, Anthony, 1970, “On the Measurement of Inequality,” *Journal of Economic Theory*, 2, 244–63.
- <sup>9</sup> The gini coefficient is a statistical measure of the degree of income inequality in a country. It is derived from the Lorenz curve, which plots income share against population share. For example, what is the share of total income held by the poorest 10 percent of the population; what is the income share of the poorest 50 percent of the population, etc. A score of 0 indicates “perfect equality” and a score of 1 indicates “perfect inequality.” Thus, the higher the gini coefficient, the greater the degree of inequality.
- <sup>10</sup> Again, see Jenkins, 1991, “Measurement of Income Inequality,” for details. Also discussed are a variety of inequality indices that are regarded as more desirable theoretically, but that are mathematically much more complicated and so, perhaps for this reason, are used less often in empirical work.
- <sup>11</sup> Much excellent work focuses upon geographic concentration of inequality. In the interests of space, this work is not discussed here.

- <sup>12</sup> Hagenaars, Aldi, and Klaas De Vos, 1988, "The Definition and Measurement of Poverty," *Journal of Human Resources*, 23:2, p. 212.
- <sup>13</sup> Cited in Sen, Amartya, 1981, *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford: Clarendon Press), p. 11.
- <sup>14</sup> Ruggles, Patricia, 1990, *Drawing the Line: Alternative Poverty Measures and Their Implications for Public Policy* (Washington: The Urban Institute Press), pp. 33–38.
- <sup>15</sup> Smith, Adam, 1982, *The Wealth of Nations* (Markham, Ontario: Penguin Books), p. 400.
- <sup>16</sup> See Osberg, Lars, 2000, Presidential Address: "Poverty in Canada and the United States: Measurement, Trends, and Implications," *Canadian Journal of Economics*, 33:4, 847–877.
- <sup>17</sup> See, for example, Van Praag, B.M.S., A.J.M. Hagenaars, and J. van Weeren, 1982, "Poverty in Europe," *The Review of Income and Wealth*, Vol. 28, pp. 345–359; or A.J.M. Hagenaars, 1986, *The Perception of Poverty* (Amsterdam: North-Holland Press).
- <sup>18</sup> Ruggles, 1990, *Drawing the Line*, p. 21.
- <sup>19</sup> Poulin, Susan, 1988, "An Application of Analytic Techniques to Canadian Income Satisfaction Data," Statistics Canada: Labour and Household Surveys Analysis Division, Staff Reports no. 8, 1988.
- <sup>20</sup> For example, Atkinson, Anthony, 1998, *Poverty in Europe* (Oxford: The University Press); Osberg, 2000, "Poverty in Canada and the United States"; Smeeding, Timothy, and Dennis Sullivan, 1998, "Generations and the Distribution of Economic Well-being: A Cross-National View," *American Economic Review, Papers and Proceedings*; almost any paper in the Luxembourg Income Study discussion paper series: <http://lissy.ceps.lu/wpapers.htm>; or Sen, Amartya, 1983, "Poor, Relatively Speaking," *Oxford Economic Papers*, Vol. 35, pp. 153–170.
- <sup>21</sup> For example, Osberg, 2000, "Poverty in Canada and the United States"; Myles, John, and Garnett Picot, 2000, "Poverty Indices and Policy Analysis," *The Review of Income and Wealth*, 46:2, 161–180.
- <sup>22</sup> Using longitudinal data also poses complications. When we come to consider the dynamics of socio-economic status, for example, longitudinal data complicate measurement increases (e.g., absolute poverty lines will need to be adjusted to reflect changes in prices; relative poverty lines may change as the shape of the income distribution changes). Potential data-related problems also increase dramatically (e.g., there is likely to be non-random attrition — for example, poorer households are less likely to continue in a survey).
- <sup>23</sup> For an excellent discussion, see Bradbury, Bruce, Stephen Jenkins, and John Micklewright, 1999, "The Dynamics of Child Poverty: Conceptual and Measurement Issues," Chapter 2 in *Falling In, Climbing Out: The Dynamics of Child Poverty in Industrialised Countries* (Cambridge: Cambridge University Press).
- <sup>24</sup> Duncan, 1983, "The implications of changing family composition for the dynamic analysis of family economic well-being," in Atkinson, A.B. and Cowell, F.A. (eds), *Panel Data on Incomes*, Occasional Paper 2, ICERD (London: London School of Economics) noted that by the thirteenth year of the Panel Study of Income Dynamics (PSID), only 12% of the originally sampled families had not changed composition (cited in Bradbury, Jenkins, and Micklewright, 1999, "The Dynamics of Child Poverty").
- <sup>25</sup> Real incomes are comparable over time insofar as consequences of inflation have been removed.

- <sup>26</sup> Osberg, Lars, 2001. "Labour Supply and Inequality Trends in the USA and Elsewhere," <http://is.dal.ca/~osberg/home.html>.
- <sup>27</sup> Statistics Canada: Housing, Family and Social Statistics Division, 2000, "Women in Canada 2000: A Gender-Based Statistical Report," Catalogue No. 89-503-XPE.
- <sup>28</sup> Osberg, Lars, 2001, "Labour Supply and Inequality Trends."
- <sup>29</sup> Statistics Canada, 2000, "Women in Canada 2000," p. 112.
- <sup>30</sup> 1997 is the last year for which SCF data are available — see Phipps, Shelley, and Lynn Lethbridge, 2001, "Fitting Kids In: Children and Inequality in Canada," paper prepared for presentation at the Equality, Security and Cohesion conference, Vancouver, B.C.
- <sup>31</sup> Marc Frenette, David Green, and Garnett Picot, 2001, "Overview of Trends in Canadian Income Inequality," conference presentation at the Equality/Security/Community Workshop, Vancouver, November 2001. The increase in income inequality is found using the Survey of Labour and Income Dynamics and the T1ff file tax record data. It is not apparent using the Survey of Consumer Finance (from 1993 to 1997, when the SCF ends).
- <sup>32</sup> Garnett Picot and Andrew Heisz, 2000, "The Performance of the 1990s Canadian Labour Market," Statistics Canada: Analytical Studies Branch, Research Paper Series No. 148.
- <sup>33</sup> Phipps and Lethbridge, 2001, "Fitting Kids In."
- <sup>34</sup> Shelley Phipps, 1999, "The Innis Lecture: Economics and the Well-being of Canadian Children," *The Canadian Journal of Economics*, 32:5, 1135-63.
- <sup>35</sup> See, for example, Myles and Picot, 2000, "Poverty Indices and Policy Analysis"; Picot, Garnett, John Myles, and Wendy Pyper, 1998, "Markets, Families and Social Transfers: Trends in Low-Income among the Young and Old, 1973-1995," in Miles Corak (ed.), *Labour Markets, Social Institutions, and the Future of Canada's Children* (Ottawa: Statistics Canada Catalogue No. 89-553-XPB); Phipps, 1999, "The Innis Lecture."
- <sup>36</sup> Ross, David, Katherine Scott, and Peter Smith, 2000, *The Canadian Fact Book on Poverty, 2000* (Ottawa: Canadian Council on Social Development).
- <sup>37</sup> Ross, Scott, and Smith, 2000, *Canadian Fact Book on Poverty*, p. 76.
- <sup>38</sup> Ibid. p. 77.
- <sup>39</sup> Ibid. p. 75.
- <sup>40</sup> Ibid. p. 51.
- <sup>41</sup> See Phipps, 1999, "The Innis Lecture," which provides estimates using Luxembourg Income Study data and an "intensity" measure of poverty.
- <sup>42</sup> Note that focusing only upon incidence somewhat understates the Canadian achievement in poverty reduction since these programs typically help to reduce the depth of poverty but seldom pull children out of poverty. See Myles and Picot, 2000, "Poverty Indices and Policy Analysis."
- <sup>43</sup> See Curtis, Lori, and Shelley Phipps, 2001, "Social Transfers and the Health Status of Mothers in Norway and Canada," forthcoming.
- <sup>44</sup> Ibid.
- <sup>45</sup> Statistics Canada, Income Statistics Division, 2001, "The Assets and Debts of Canadians: An Overview of the Results of the Survey of Financial Security," Catalogue No. 13-595-XIE.

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- <sup>47</sup> Picot, Garnett, M. Zyblock, and W. Pyper, 1999, "Why Do Children Move into and out of Low Income: Changing Labour Market Conditions or Marriage and Divorce?," Statistics Canada: Analytical Studies Branch, Research Paper Series No. 132.
- <sup>48</sup> For example, Bane, Mary Jo, and David Ellwood, 1986, "Slipping into and out of Poverty: The Dynamics of Spells," *The Journal of Human Resources*, 21:1, 1–23.
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- <sup>52</sup> The HUI is intended to describe overall health on a scale from 0 to 1 (perfect health), based on eight attributes: vision, hearing, speech, ambulation, dexterity, emotion, cognition and pain.
- <sup>53</sup> Author calculations using the 1996 NLSCY.
- <sup>54</sup> Health Canada, 1999, *Toward a Healthy Future*, p. 75, and Phipps, Shelley, 1999, *An International Comparison of Policies and Outcomes for Young Children*, Canadian Policy Research Networks Study No. F/05, p. 102.
- <sup>55</sup> Health Canada, 1999, *Toward a Healthy Future*.
- <sup>56</sup> Phipps, 1999, *International Comparison of Policies*.
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- <sup>59</sup> See, for example, Mullahy, John, Stephanie Robert, and Barbara Wolfe, 2001, "Health, Income and Inequality: Review and Redirection for the Wisconsin Russell Sage Working Group" (New York City: Russell Sage Foundation), pp. 5–6; Benzeval, Michaela, and Ken Judge, 2001, "Income and Health: The Time Dimension," *Social Science and Medicine*, 52, p. 1379.
- <sup>60</sup> Mullahy, Robert, and Wolfe, 2001, "Health, Income and Inequality," pp. 5–6.
- <sup>61</sup> This is typically done either by controlling for initial health status in the multivariate regression or by limiting the analysis sample to only those who begin with good health. Typically, the size of the association between poverty and health is somewhat smaller once account of possible reverse causation has been taken.
- <sup>62</sup> Curtis, Lori, and Shelley Phipps, 2000a, "Economic Status and Child Well-being." See also Curtis, Lori, and Shelley Phipps, 2000b, "Economic Resources and Children's Health and Success at School: An Analysis with the National Longitudinal Survey of Children and Youth" (Ottawa: Applied Research Branch, Strategic Policy, Human Resources Development Canada), W-01-1-4E; Kohen, Dafne E., Clyde Hertzman, and Jeanne Brooks-Gunn, 1998, "Neighbourhood Influences on Children's School Readiness" (Ottawa: Applied Research Branch, Strategic Policy, Human Resources Development Canada), W-98-15E; Ross, David, Paul

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- <sup>76</sup> *Regression* is a class of statistical methods in which one dependent variable is related to one or more independent variables.
- <sup>77</sup> See Duncan and Brooks-Gunn, 1997, *Consequences of Growing Up Poor*, for further discussion.
- <sup>78</sup> Duncan, et.al., 1994, "Economic deprivation and early childhood development." *Child Development*, 65, p. 296-318 estimate "change" models. Mayer (1997, *What Money Can't Buy*) uses estimates of income from a time period *after* the child outcome was measured. Duncan et al. (1998, "How Much Does Childhood Poverty Affect the Life Chances of Children?") uses sibling differences.
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- <sup>88</sup> See Atkinson, Anthony, and Andrea Brandolini, 2001, *The Journal of Economic Literature*, 39:3, 771–799.
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- <sup>90</sup> See Osberg, Lars, 2001, "Labour Supply and Inequality Trends."
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- <sup>92</sup> Personal conversation with Lars Osberg.
- <sup>93</sup> See Wolfson et al., 1999, "Income Inequality and Mortality."
- <sup>94</sup> See Deaton, 2001, "Health, Inequality and Economic Development," p. 3.
- <sup>95</sup> See Mullahy, Robert and Wolfe, 2001, "Health, Income and Inequality," p. 9.
- <sup>96</sup> *Social exclusion* has not been discussed here in the interests of space, but it is an important concept that has recently appeared in both academic and policy debates. *Social exclusion* is a dynamic and multidimensional notion of deprivation that is linked to more traditional ideas of long-term poverty, but that is yet distinct and potentially important for health status.
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