The Myth of Middle-Class Stagnation in Canada

Donald J. Boudreaux
with Joel Emes, Hugh MacIntyre, and Charles Lammam

FRASER INSTITUTE

September 2016

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Executive summary

A frequently heard complaint is that for the past several decades middle-class workers and families in Canada have stagnated economically. A typical rendition of this claim appears in the 2016 federal budget from the Department of Finance in Ottawa: "The net result is that even though there has been economic growth over the past three decades, it hasn't much benefitted the middle class. Too often the benefits have been felt only by already wealthy Canadians, while the middle class and those working hard to join it have struggled to make ends meet."

If it is true that over the previous thirty or forty years the material welfare of ordinary Canadians has remained stagnant, then this would indeed be a troubling state of affairs. But despite being incessantly repeated as if its truth were incontestable, the assertion of middle-class stagnation is a myth.

Like all widely accepted myths, this myth rests on superficially plausible foundations. Some data for Canada do tell a tale of stagnation or even decline. The inflation-adjusted median income of Canadian families before taxes was 7.0 percent lower in 2011 than it was in 1976. It's easy to conclude from such a statistic that, over the past several decades, middle-class Canadians have indeed not gained economically.

But statistics, although invaluable, are notorious for their potential to mislead the unwary. Great care must be exercised when assembling, interpreting, and drawing conclusions from them. Statistics emphatically do not speak for themselves.

The statistics that suggest stagnation suffer several problems, including:

- failure to adjust income for changes in taxes and government transfers;
- failure to adjust family income for changes in the number of people in the typical Canadian family;
- an overestimate of the amount of inflation suffered by the Canadian dollar.

First, instead of pre-tax income, looking at family income after taxes and government transfers reveals that, rather than falling by 7.0 percent

between 1976 and 2011, real median income rose by 5.6 percent. This figure is more relevant for a family's economic well-being, because what a family cares about in the end is how much it has available to spend (and to save) after it has paid all taxes and received all transfers.

Next, consider the effects of changes in the average size of families. In 2011, the average number of people in a Canadian family was 2.3, which is 19 percent lower than the 1976 figure of 2.9 persons per family. This difference is not small. It means that the seemingly meager 5.6 percent increase in real median post-tax and -transfer family income becomes a 30.7 percent increase—in per-family-*member* income—once the data are adjusted for family size.

Finally, consider the distorting effects of over-estimating inflation. The income and wage figures that tell the tale of stagnation are adjusted for inflation using the consumer price index (CPI). But researchers have found that this common inflation adjuster erroneously overestimates inflation of the dollar by about 0.45 percentage points annually.

This error seems small, but over the course of 35 years its distortion looms large. Adjusting for inflation by correcting for this bias in the CPI, we find that in 2011 the income per member of the Canadian family earning the median after-tax and -transfer income was 52.1 percent higher than in 1976. This figure suggests impressive economic improvement, not stagnation. It is all the more marked when compared to the initial 7.0 percent decline cited above over the same period.

An alternative way to gauge changes over time in ordinary people's standard of living is to calculate how much time an ordinary worker must work today to earn enough income to buy a variety of goods compared to the amount of time an ordinary worker in the past had to work in order to buy the same goods. If the amount of work-time required to buy typical middle-class goods remains unchanged over time, then a conclusion of stagnation is warranted. But if work-time costs have fallen for most such goods, then a conclusion of stagnation is mistaken.

An examination of a wide variety of goods sold by Sears in 1976 and their counterparts sold by Sears today shows that the average Canadian wage earner today works fewer hours than he or she did in 1976 to earn enough income to buy almost all goods. For example, it took the typical Canadian worker 90 percent fewer hours to purchase a colour television and 84 percent fewer work hours to earn enough to purchase a refrigerator in 2011 than in 1976. These findings are yet further evidence that ordinary Canadians have enjoyed significant economic improvement since the mid-1970s.

The bottom line is that the myth of middle-class stagnation is just that: a myth.

Introduction

> "Strictly speaking, statistics never lie, but the truths they tell are often misinterpreted. This is particularly the case with economic statistics."
>
> Steven E. Landsburg, *The Armchair Economist* (2012)

In a speech at the 2016 World Economic Forum Annual Meeting held in Davos, Switzerland, Prime Minister Justin Trudeau spoke of the need to ensure that economic growth benefits everyone (*Maclean's Magazine*, 2016), implying that this has not necessarily been the case. This is a theme that was made explicit in the 2016 federal budget:

> The net result is that even though there has been economic growth over the past three decades, it hasn't much benefited the middle class. Too often the benefits have been felt only by already wealthy Canadians, while the middle class and those working hard to join it have struggled to make ends meet. (Canada, Department of Finance, 2016: 14)

Prime Minister Trudeau and his government are not alone in expressing a concern that the middle class has not adequately enjoyed economic gains over the past few decades.[1] Indeed, the claim that the middle class has stagnated economically is a common meme in political debates across Western countries, including Canada and the United States. This meme spans the ideological spectrum and is often repeated as if its truth is settled beyond any question.

But the truth of this meme is not at all settled. Indeed, the evidence against it is significant. No matter, the meme fuels itself: the more it is repeated, the greater seem to be its prospects of being further repeated. This phenomenon is dangerous, for if a public policy "cure" is fashioned in

1. For example, University of British Columbia professor Kevin Milligan wrote a column in *Maclean's Magazine* arguing that stagnating middle-class incomes is a problem (Millgan, 2013).

response to a mistaken belief about the economy, the policy will almost certainly be counterproductive. That policy will be a medicine prescribed for a non-existent illness. The patient is then likely to be inflicted with a genuine ailment rather than cured of its imaginary one. Indeed, government policies can create more problems even if they get the diagnosis right.

An accurate understanding of middle-class living standards is important if we are to avoid false diagnoses of economic ills and any resulting reckless treatments of those "ills." The following analysis, therefore, is meant to give a clear, fact-based account of the standard of living of ordinary Canadians over the past several decades. The hope is that this account will help to diminish the risk that false pessimism about the economy will prompt Canadian governments to adopt unwise economic policies.

Defining the middle class

When pundits and politicians refer to stagnation among the middle class, they often do not provide a precise definition of the term. There are in fact many issues involved with defining and measuring the middle class.[2] The middle class can be defined in terms of income, net wealth, occupational standing, or self-identification. It is also unclear how to delineate at what points in the distribution the middle class begins and ends. For instance, even if "middle class" is defined by some measure of income, it is not clear what income range qualifies someone as middle class. As a result, the middle class can be defined in multiple ways. Rather than providing its own definition, this study relies on the statistical definition that purportedly shows that middle-class incomes are stagnating. In this context, middle-class income usually refers to the median income, or the middle point in the income distribution.

2. For a discussion on the issues related to defining and measuring the middle-class, see Cross and Sheikh (2015).

Setting the context: The meme and insights from America

The claim of middle-class stagnation is being increasingly challenged by researchers in the United States, and many of the arguments on both sides of the debate also apply to Canada. Also, it is likely that the debate in Canada has been influenced to at least some degree by rhetoric from the United States.[3] For these reasons, an overview of the evidence in the United States provides some important context. Two pieces of data are to blame for fueling this myth that since the mid-1970s only very rich Americans have enjoyed improvements in their living standards. The first is the average real hourly wage rate of production and non-supervisory workers: In 2016 US dollars, that wage in 1975 was $20.94; today (April 2016) that wage is $21.45—a mere 2.4 percent higher than it was four decades earlier (Federal Reserve Bank of St. Louis, 2016; calculations by authors).[4]

The second piece of data is median household income. The median-annual-income household in the US in 1975 earned $11,800. Converted, using the CPI, into 2014 dollars, that was a median annual income of $51,924. Today (2014) it is $53,657—only 3.3 percent greater than it was during Gerald Ford's first full year in the White House.[5]

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3. Commentaries and news articles on income stagnation in Canada often discuss the situation in the United States as well. For examples, see Walkom (2014) and Grant (2013).
4. The 1975 wage of $4.73 was converted into 2016 dollars by using the Consumer Price Index online calculator available from the US Bureau of Labor Statistics at <http://data.bls.gov/cgi-bin/cpicalc.pl>.
5. See US Census Bureau, Current Population Reports: Consumer Income, Series P-60, No. 104, March 1977, Table A: <https://www2.census.gov/prod2/popscan/p60-104.pdf> and US Census Bureau, Current Population Survey: Annual Social and Economic Supplement (2015), Table HINC-01: <http://www.census.gov/hhes/www/cpstables/032015/hhinc/hinc01_000.htm>. 2014 is the latest year for which we have data on median household income.

Despite first appearances, these data are not unassailable evidence of middle-class stagnation. They are fraught with problems, most notably:

1. The dollar values are adjusted for inflation using the Consumer Price Index, which almost certainly overestimates inflation, not least because it inadequately accounts for improvements in product quality.

2. The data on wages exclude changes in the value of non-wage benefits (such as employer contributions to workers' pension savings)—benefits which have increased over the years as a share of total worker compensation.[6]

3. These data potentially create statistical illusions. For example, if the population of workers changes over time because of additions to this population of a disproportionately large number of workers who are paid below-average wages, the average wage will be pulled down even if the wages earned by each and every one of the workers in the population are rising significantly. Because of the continuing entry since the mid-1970s of married women and, especially, of immigrants into the US workforce—and because these new workers generally earn below-average hourly wages when they first enter the workforce—the average wage gives a falsely pessimistic impression of workers' fortunes over time.

4. Data on household income should be—but too often are not—adjusted to reflect changes in the number of people who live in the average-size household. The number of people per household, on average, in the US in 1975 was 2.94. Today (2014) it is 2.54. That is, compared to 1975, 16 percent fewer people live today in the typical American household. Any given amount of household income, therefore, is spread less thinly across individuals today than it was in the past. While this 16 percent difference might seem small, it means that even if real median *household* income today is only 3.3 percent higher than it was in 1975, the real income share of each *person* in the typical American household today is 20 percent higher than it was in 1975.[7]

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6. See Schwenk (2001) and the US Bureau of Labor Statistics at <http://data.bls.gov/cgi-bin/surveymost?cm>.

7. This is a rough calculation for the impact of changes in household size. Dividing the inflation-adjusted 1975 median household income of $51,924 by 2.94—which is the number of people in the average-size 1975 household—yields a per-household-person annual income for 1975, in 2014 dollars, of $17,771. Performing the same calculation for the 2014 median household income and the number of people in the average-size 2014 household yields a per-household-person annual income for 2014 of $21,125. The 2014 income figure is 20 percent larger than the 1975 income figure. The adjustment for household size

5 Data on wages and on household income are typically reported before taxes have been paid by—and before government transfers have been made to—workers and households.

Assembling, processing, and interpreting quantitative data can indeed be tricky. Fortunately, a number of scholars over the past several years have attempted to correct the resulting misimpressions. The present author has done much work on this topic, especially on his blog (<www.cafehayek.com>). So, too, has the economist Terry Fitzgerald in research sponsored by the Federal Reserve Bank of Minneapolis. The most important of these efforts, however, is the 1999 book by Michael Cox and Richard Alm, *Myths of Rich & Poor*.

Of particular note is Cox's and Alm's method for avoiding the myriad difficulties of adjusting for inflation. To get a good sense of changes over time in workers' real incomes, these authors divide the nominal hourly wage of an ordinary worker into the nominal price of each of a variety of goods and services available for sale. In this way, Cox and Alm discover the number of hours it took an ordinary worker in, say, 1975 and again in 1995 to earn enough income to buy, say, an automobile battery. If an ordinary worker had to work fewer hours in the more recent year to earn enough income to purchase this item, then in a concrete and economically meaningful sense the real price of this item (measured in work time) fell.

By performing this work-time calculation for several different items commonly purchased by ordinary Americans, Cox and Alm painted a compelling portrait of what actually happened over time to ordinary Americans' living standards. They found, in fact, that ordinary Americans' living standards did not stagnate at all from the mid-1970s through the mid-1990s. Quite the contrary. Those living standards improved greatly.

Follow-up work, including some by the present author, not only confirmed Cox's and Alm's findings but showed that the improvement in ordinary Americans' living standards continues. As summarized in 2013 by Manhattan Institute scholar Scott Winship, "[a]fter adjusting for household size … [median] post-tax income was 49 percent higher" for Americans in 2007 than it was in 1979 (Winship, 2001).

This American context provides important insights for the Canadian debate and for assessing whether ordinary Canadians have stagnated economically.

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to the Canadian income data made in the next section follows a different methodology. Data on average number of persons per US household are from Statista.com, *Number of People Per Household in the United States*: <http://www.statista.com/statistics/183648/average-size-of-households-in-the-us/>

Have ordinary Canadians stagnated economically since the mid-1970s?

So what has been the economic fate of Canada's middle-class since the mid-1970s? As in the US, some data do indeed tell a tale of stagnation. The inflation-adjusted *median* income (before taxes and government transfers) of Canadian families was seven percent *lower* in 2011 than in 1976, while the inflation-adjusted *average* income (again, before taxes and government transfers) of Canadian families grew by only 12.9 percent over those same years (**figures 1, 2**). For two reasons, these figures combine to suggest that ordinary Canadians have indeed stagnated economically since the mid-1970s.[8]

First and most obviously, a seven percent decline in real median family income seems clearly to be bad news for ordinary Canadians. It seems to indicate a fate *worse* than mere stagnation: economic decline. Second, the fact that real *average* family income rose while real median family income fell suggests that whatever economic growth *did* occur in Canada between 1976 and 2011 was captured exclusively by higher-income Canadians.

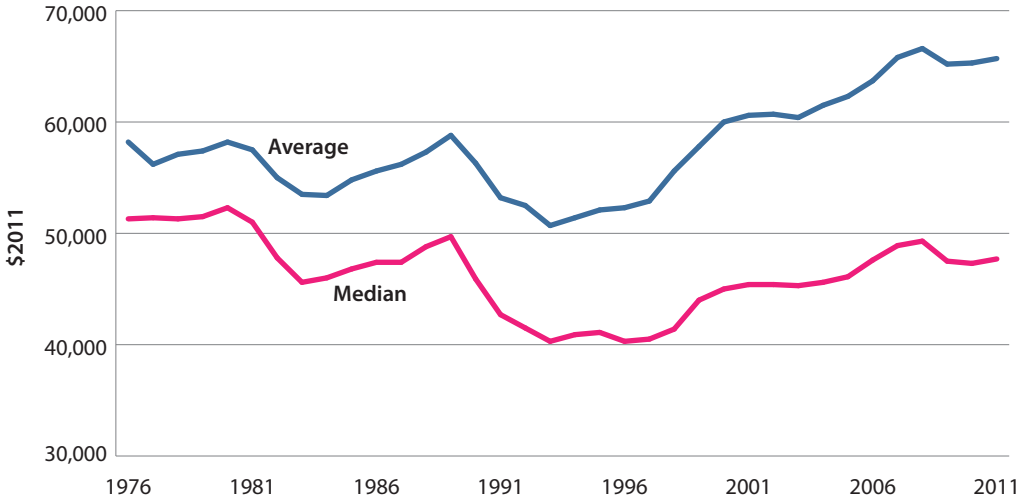
The stagnation story is reinforced by a glance at inflation-adjusted wage rates. The average real hourly wage of the average Canadian worker was only 13.8 percent higher in 2011 than in 1976 (**figure 3**).[9] That difference seems to imply real-wage-rate growth so paltry that, if this implication is correct, it is no abuse of language to describe Canadians' real wages since 1976 as having stagnated.

8. A similar analysis was used in the 2016 federal budget to argue that "the benefits of economic growth have been shared by fewer and fewer Canadians" (Canada, Department of Finance, 2016: 11).

9. Statistics for the average hourly wage are not readily available for years prior to 1997. The average hourly wage was calculated by dividing the average income earned (from employment and net self-employment) by the average weekly hours worked (Statistics Canada, 2013c, 2016d).

Figure 1

Median and average family income before taxes and government transfers, 1976–2011

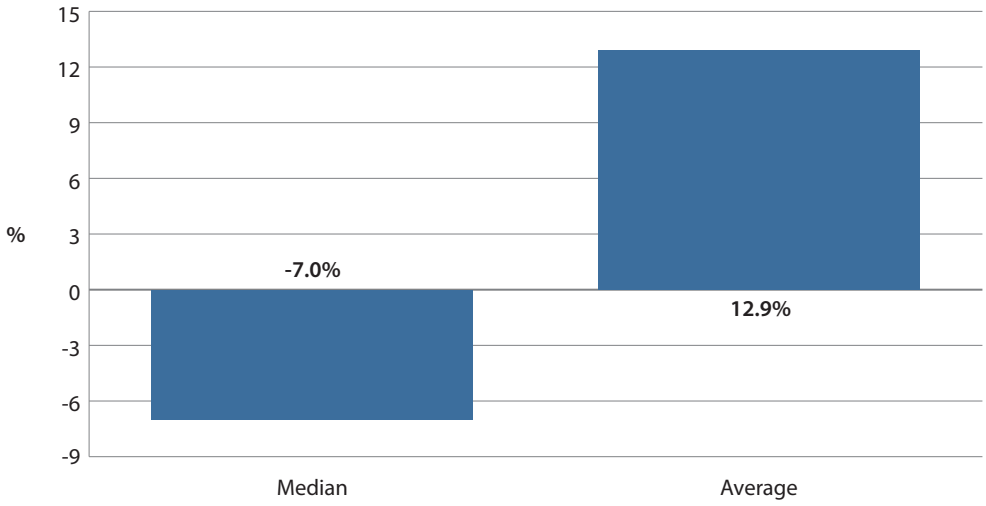


Note: Refers to all family units.

Sources: Statistics Canada, 2013a, 2013b.

Figure 2

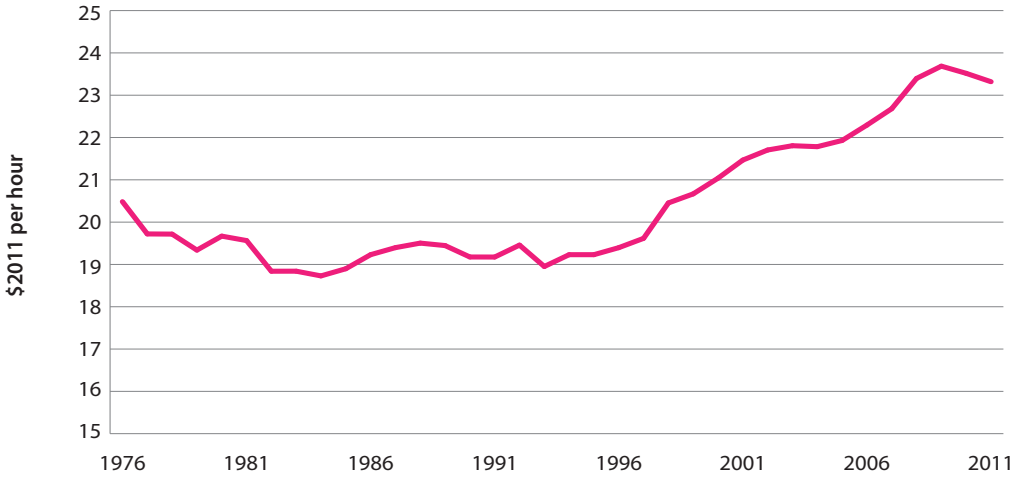
Growth in median and average family income before taxes and government transfers, 1976–2011



Notes: Refers to all family units. Based on 2011 dollars.

Sources: Statistics Canada, 2013a, 2013b.

Figure 3
Inflation-adjusted hourly earnings, 1976–2011



Note: The average hourly wage was calculated by dividing the average income earned (from employment and net self-employment) by the average weekly hours worked.

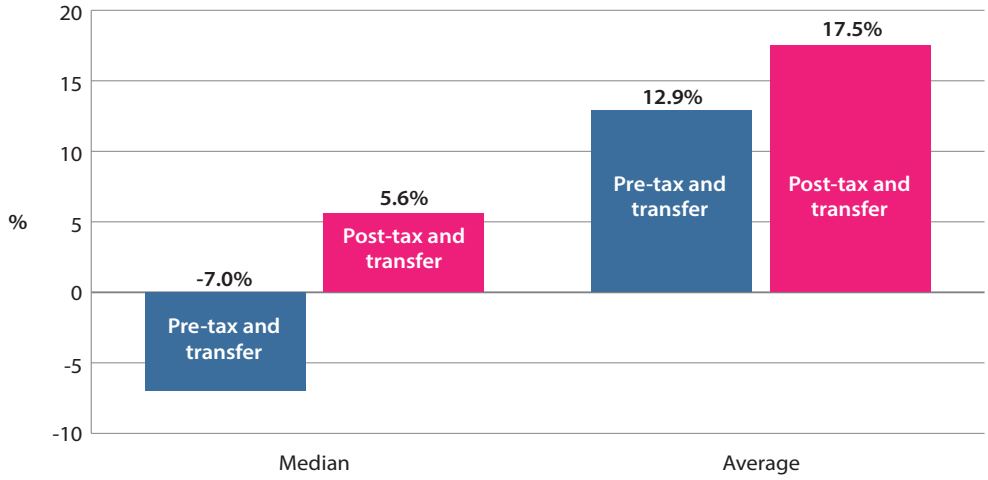
Sources: Statistics Canada, 2013c, 2016a.

But as in the US, the simple story of stagnation told by these data is highly misleading. Consider annual family income. The figures before taxes and government transfers reported above are obviously less relevant for a family's economic well-being than are figures *after* taxes and government transfers.[10] What a family cares about in the end is how much it has available to spend (and to save) *after* it has paid all taxes and received all transfers.[11] So looking at the much more relevant post-tax and -transfer family-income figure reveals that, rather than falling by seven percent between 1976 and 2011, real median family income rose by 5.6 percent. And real *average* family post-tax and -transfer income rose, not by the 12.9 percent figure mentioned above, but by 17.5 percent (**figure 4**). Although such rises in income over a span of 35 years are small, the differences between these figures and the earlier-reported figures before taxes and government transfers reveal clearly the importance of knowing just what the analyst (or the pundit) means by "income." Is the "income" under discussion pre-tax and -transfer income, or post-tax and -transfer income—or yet some other definition of income? The differences

10. In this context, taxes narrowly refer to income and payroll taxes, not all taxes including sales, property, profit, vehicle, and other taxes. Specifically, Statistics Canada (2009) defines income tax as "taxes on income, capital gains and RRSP withdrawals, after taking into account exemptions, deductions, non-refundable tax credits, and the refundable Quebec abatement."
11. This is not to say that income before taxes and government transfers is never relevant for economic analyses. For example, it can be useful for researchers interested specifically in an income measure that is more closely connected to the labour market.

Figure 4

Growth in median and average family income before and after taxes and government transfers, 1976–2011



Notes: Refers to all family units. Based on 2011 dollars.

Sources: Statistics Canada, 2013a, 2013b, 2013d, 2013e.

between these alternative conceptions of income—each one colloquially often called simply "income"—are significant, both numerically and for purposes of assessing the performance of the middle-class.[12] We present data for both median and average family income, but will focus our attention on median income as it is not affected by extreme values.

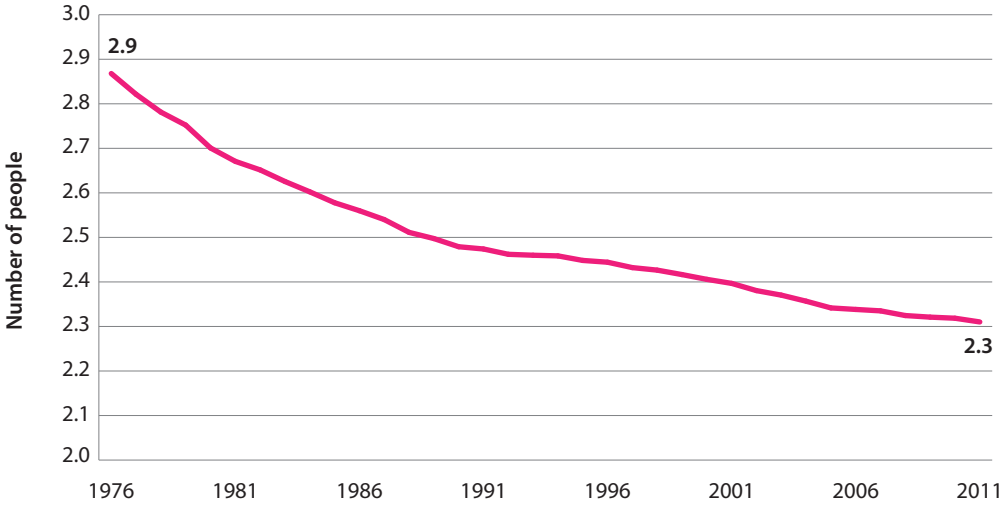
Adjusting for family size

Another adjustment that is necessary to secure a more accurate understanding of middle class performance over time is one that accounts for changes in the average number of people in a family. In 2011, the average number of people in a Canadian family is 2.3, which is 19 percent lower than the 1976 figure of 2.9 persons per family (**figure 5**). This difference is not small. It means that the seemingly meager 5.6 percent increase in real median post-tax and -transfer family income becomes a 30.7 percent increase—in per-family-*member* income once the data are adjusted for family size (**figure 6**).[13]

12. Compared to pre-tax and -transfer income figures, post-tax and -transfer figures offer a more accurate reflection of how well, over time, markets combined with government policies are working.
13. The average family size is presented here for informational purposes and does not directly enter into the adjustment that is made to the median income data to reflect changes in family size. The adjustment is made with a commonly used equivalence scale (dividing the unadjusted income by the square-root of the family size), which approximates the equivalent level of income needed by households of different sizes to achieve the same standard of living.

Figure 5

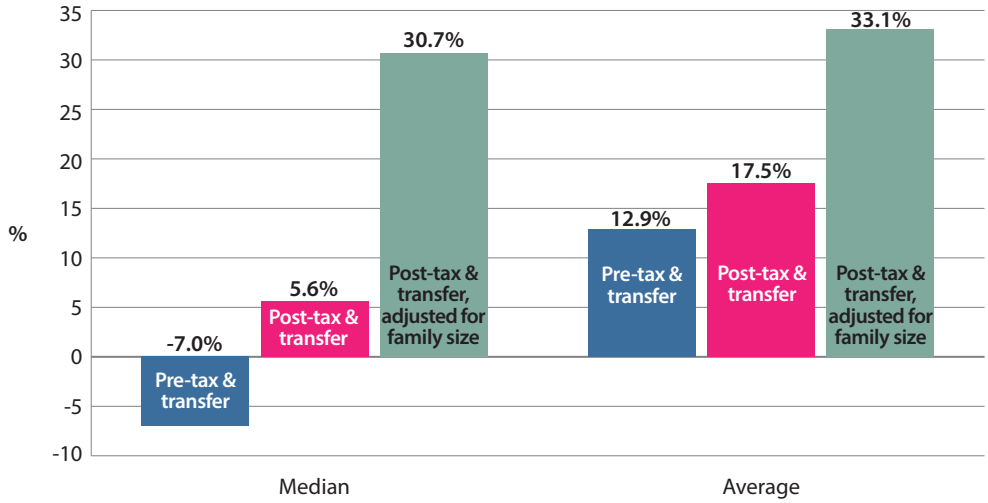
Average family size in Canada , 1976–2011



Source: Statistics Canada, 2013f, 2015.

Figure 6

Growth in median and average family income before and after taxes and government transfers, after adjusting for family size, 1976–2011



Notes: Refers to all family units. Based on 2011 dollars.

Sources: Statistics Canada, 2013a, 2013b, 2013d, 2013e, 2013g, 2016b.

Inflation adjusters

Yet another problem that calls for attention is the imperfection in inflation adjusters. The above figures are all adjusted for changes in the dollar's purchasing power by using the conventional consumer price index (CPI). Adjusting for purchasing-power changes—that is, for inflation when the dollar's purchasing power is falling over time—is necessary for obvious reasons. $100 of nominal income represents a great deal more real value if the price of a bundle of widely purchased goods and services is $50 than if the price of that same bundle is $500. So to the extent that we use monetary figures to get a reasonably objective sense of changes in real income over time, these figures must be comparable over time. Inflation adjusters, such as the CPI, are used to create such comparability.

But these adjusters are imperfect. Testifying to this imperfection is the fact that several different inflation adjusters are used, each of which adjusts for inflation differently from the others and, as a result, yields a different estimate of inflation than is yielded by the other adjusters.

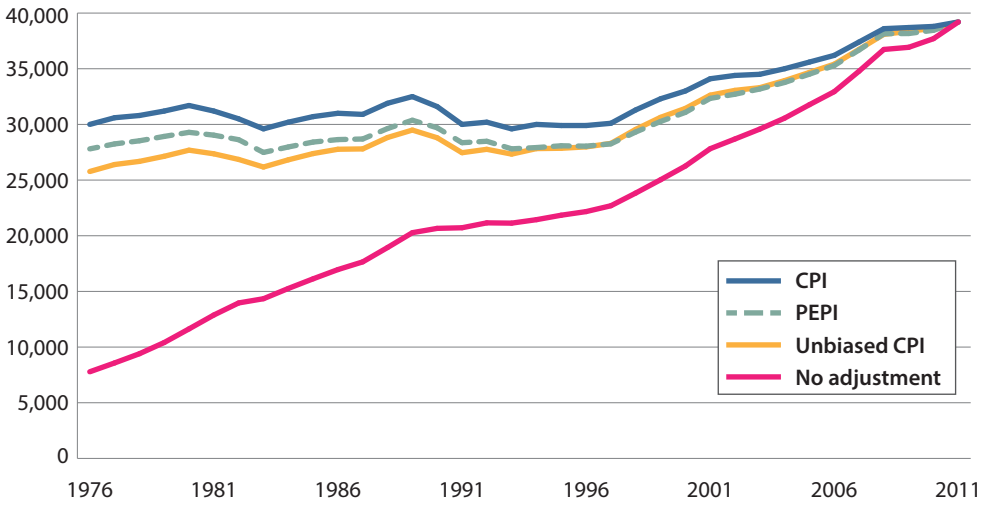
Consider, for example, that in 1976 the adjusted median post-tax and -transfer income in Canada was, in 1976 dollars, $7,781 (see "no adjustment" line in **figure 7**). But to understand what that income was had Canadians in 1976 been paid in 2011 dollars—with a 2011 dollar, of course, possessing less purchasing power than did a 1976 dollar—those 1976 dollars must be "deflated" so that they have the same (lower) purchasing power as 2011 dollars. Using the conventional CPI to convert 1976 dollars into 2011 dollars yields an adjusted median post-tax and -transfer income in 1976 of $30,000 ("CPI" in figure 7). This conversion means that, according to the conventional CPI, each 1976 dollar was the equivalent of $3.86 in 2011.

But look at what happens when we adjust for inflation by using, not the conventional CPI, but the Personal Expenditure Price Index.[14] The $7,781 nominal adjusted median after-tax income in 1976 becomes $27,801 when reckoned in 2011 dollars. This inflation-adjusted figure for 1976 income is 7.3 percent lower than the inflation-adjusted figure derived by using the conventional CPI.

A third inflation-adjusted figure is available—namely, one that is arrived at by modifying the conventional CPI to eliminate its suspected upward bias. Call this adjuster the "unbiased CPI." In the mid-1990s, the Boskin Commission found that the US CPI overstates inflation by about 1.1 percentage points annually. The four principal reasons identified by the Commission for this bias can be summarized in two points. First, products

14. The Personal Expenditure Price Index deflator is based on the implicit price index for personal expenditures on consumer goods and services as reported in Statistics Canada (2011) and updated with Statistics Canada (2012).

Figure 7
Median family income using different deflators, 1976–2011



Note: Median family income is post tax- and -transfer, adjusted for family size.

Sources: Statistics Canada, 2012, 2016b, 2016c.

whose prices have fallen (or that are totally new) are weighted too lightly in the bundle of goods the prices of which are used to calculate price-level changes over time; second, higher prices due to improvements in product quality are too often miscounted as being due to inflation.

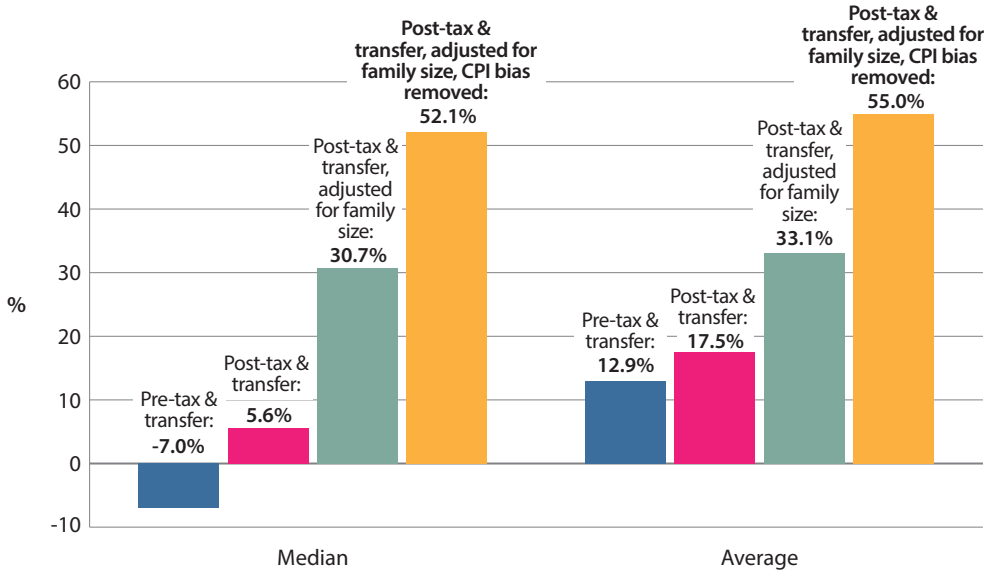
Researchers found a similarly-caused upward bias in the Canadian CPI, although this bias isn't as great as in the US. Based on estimates for 2005 to 2011, the Canadian CPI overestimates inflation by about 0.45 percentage points annually.[15] So when 1976 Canadian dollars are adjusted to equivalence with 2011 dollars using the unbiased CPI, the adjusted per-family-member median after-tax income in Canada in 1976 was $25,771—a figure notably lower than the figure of $30,000 that is generated when using the conventional CPI.

Therefore, if we treat $25,771 as the correct adjusted median post-tax and -transfer income figure for 1976 when reckoned in 2011 dollars, and use it as the base from which we calculate changes in income over the 35 years from 1976 through 2011, we find that adjusted post-tax and -transfer income rose by 52.1 percent to $39,200. (**figure 8**).

15. This is the mean estimate for 2005–2011 as reported by Sabourin (2012), who states that "empirical evidence suggests that the average size of the measurement bias in the Canadian CPI has been relatively constant over the past 15 years." Extending this estimate back further than 15 years is conservative as inflation was much higher over 1976–1996 (5.7 percent on average) than 1997–2011 (2.0 percent), and Fortin (1990) estimated the bias at between 0.5 and 1.0 percentage points.

Figure 8

Growth in median and average family income before and after taxes and government transfers, after adjusting for family size and correcting CPI bias, 1976–2011



Notes: Refers to all family units. Based on 2011 dollars.

Removing the CPI bias changes the 7.0% decline seen in pre-tax and -transfer to 8.2% growth and the 5.6% growth in post-tax and transfer income increases to 23.0%.

Sources: Statistics Canada, 2013a, 2013b, 2013d, 2013e, 2013g, 2016b.

Such a rise is significantly larger than the reported 30.7 percent increase when adjusting for inflation using the conventional CPI. And this 52.1 percent rise is certainly enough of an increase in real monetary income to cast deep doubts on claims that the economic welfare of ordinary Canadians has stagnated since the mid-1970s.

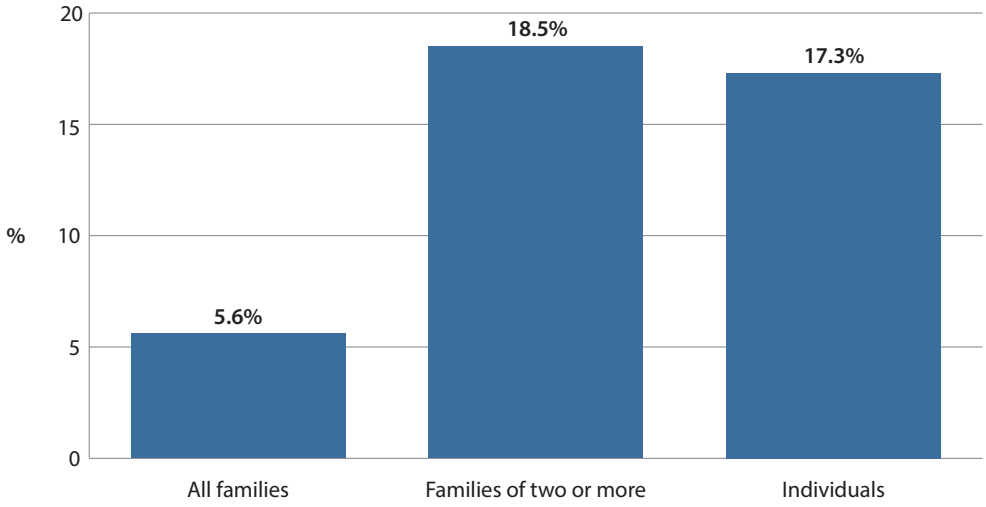
Simpson's paradox

Yet another reality to keep in mind is the ability of even the most accurate statistics to mislead. Of special relevance here is Simpson's Paradox. This paradox refers to the fact that when the mean or the median of a data set is taken at one level of aggregation, this mean or median can be surprisingly different from what might be inferred from the mean or median of each of the subsets of that data set.

An example is found in Canadian data on the change in real median, post-tax and -transfer income by family type, between 1976 and 2011. As mentioned above, for "All families," this income in 2011 was only 5.6 percent higher than it was in 1976 (when dollars are adjusted for inflation using the conventional CPI). This paltry figure suggests that the typical Canadian family

over the course of those 35 years enjoyed an increase in real, post-tax and -transfer income that is barely perceptible. But if we disaggregate "All families" into its two constituent parts—"Economic families, two persons or more" and "Unattached individuals"—we find that the percentage increase in the real median, post-tax and -transfer income of each of these two groups was much higher than 5.6 percent. The real median, post-tax and -transfer income for "Economic families, two persons or more" grew over these 35 years by 18.5 percent, while that for "Unattached individuals" grew by 17.3 percent (**figure 9**).

Figure 9
Growth in median income after taxes and government transfers, 1976–2011



Note: Based on 2011 dollars.

Sources: Statistics Canada, 2013e.

How can this be? The answer lies in the changing composition of the subgroups of family types. Here's an explanation offered by Terry Fitzgerald when he identified a similar occurrence in the data on US household incomes:

> As an extreme but illustrative example, consider what would happen if one-half of all married couples were to divorce next year. Median household income would plummet as each higher-income married-couple household is dissolved into two lower-income households—the same income is spread across more households. This would be true even if wages increased substantially for all workers, so that household types had large income gains. (Fitzgerald, 2008: 29, 51)

As in the US, in Canada economic families with two persons or more earn significantly higher annual incomes than do unattached individuals, largely because such families often have two or more income earners.[16] So if, over the years, some multi-person families divide into unattached-individual "family" units, this change in family composition puts downward pressure on overall median family income. The result might well be only a modest increase (or even a decrease!) in overall median family income although the median incomes of all subgroups of families increase substantially. And as it happens, between 1976 and 2011 the portion of economic families with two persons or more fell, relative to all family units, from 91 percent to 85 percent (with, of course, the portion of unattached individuals rising)—a change that explains the apparently anomalous result of the median after-tax income of "All families" rising by a mere 5.6 percent while the median after-tax income of each of the two subgroups of "All families" rose by significantly more.

The astute reader will recognize that these higher growth figures for the subgroups still likely underestimate the improvement in ordinary Canadians' economic well-being from 1976 through 2011. The reasons are that these figures (1) do not account for the reduction in the average number of people in the typical Canadian family, and (2) are adjusted for inflation using the conventional CPI. So what happens when these adjustments are made?

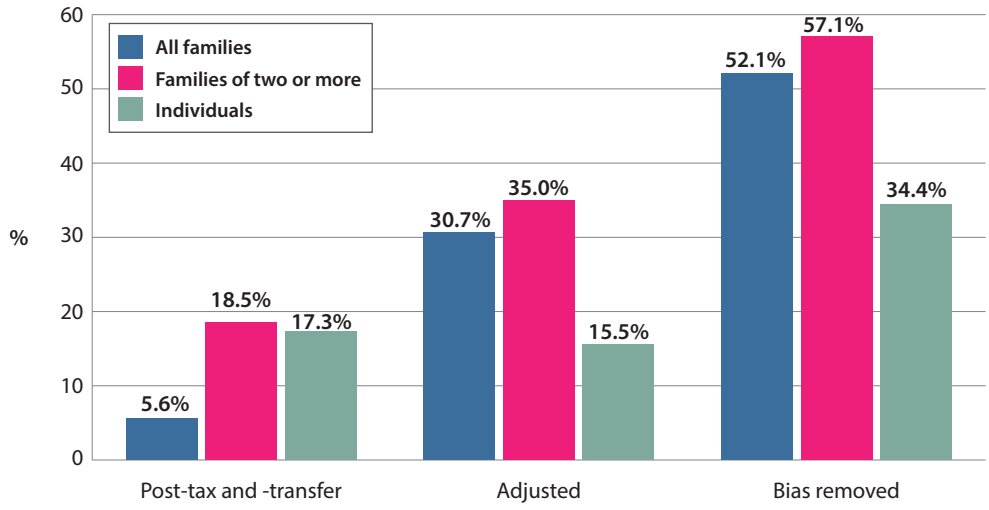
In 1976 the average number of members of families with two or more persons was 3.5; by 2011 that figure had fallen by more than 14 percent to 3.0. The result is that, once we adjust for the change in family composition over these years, median post-tax and -transfer income *per person* rose by 35.0 percent rather than 18.5 percent (**figure 10**).[17] By no stretch of the imagination is such growth in family income stagnant.

When adjusted for inflation using the unbiased CPI, the growth, between 1976 and 2011, in real adjusted median post-tax and -transfer annual income *per person* in economic families with two or more persons rises to 57.1 percent from 35.0 percent, while the growth in this income for unattached individuals is 34.4 percent rather than 15.5 percent (figure 10). These growth rates are inconsistent with charges of middle-class economic stagnation.

16. In 1976, the median annual after-tax income of economic families with two persons or more was 161 percent higher than the median after-tax income of unattached individuals. In 2011, this difference was 164 percent.

17. No per-family-member income-share adjustment is necessary for unattached individuals because, by definition, each person counted as an unattached individual is one person.

Figure 10
Income growth, 1976–2011



Notes: Based on 2011 dollars.

The growth of income for individuals defined as "post-tax and -transfer" and "adjusted" should be the same. The discrepancy is due to adjustments made to the data by Statistics Canada to produce the custom tabulation.

Sources: Statistics Canada, 2013a, 2013b, 2013d, 2013e, 2013g, 2016b.

Summary

Let's pause to recount how aggregate income figures (and the impressions they convey) change when adjusted to better reveal the underlying reality that we are ultimately concerned with—namely, the economic well-being of flesh-and-blood individual Canadians. From a reported seven percent *fall*, from 1976 through 2011, in real median all-family income (when reckoned before taxes and before transfers, without adjusting for changes in family size, and when adjusted for inflation using the conventional CPI) we arrive at a 52.1 percent *increase*, over these same years, in median income. These figures are emphatic evidence *against* claims that ordinary Canadians' material standards of living are today no higher, or only barely higher, than they were in 1976.

Yet we can look at even more data to sharpen our picture of the change in living standards.

Consumption, not income, is the end

Clearly, data on incomes—and, especially, on changes in real incomes over time—must be interpreted with caution because of how easily these data can convey wholly misleading impressions of economic reality. The need for such caution is only further raised by the fact that, ultimately, at stake in economic activities are only people's subjective utilities—individuals' personal experiences that are unobservable, unmeasurable, and knowable only to each individual. Ultimately what each person cares about, economically, is (1) the subjective utility she receives from the multitude of goods and services that she consumes, and (2) the subjective disutility she suffers as a result of acquiring the means to consume whatever goods and services she consumes. Objective, observable prices and incomes can at best give only a partial, flawed, and impressionistic picture of the ultimate performance of an economy in terms of its ability to meet the needs of people.

None of this is to say, however, that we shouldn't keep searching for ways to make our picture of the ultimate performance of an economy a bit fuller and more realistic, even if a complete and flawless hi-def "photograph" is forever beyond our reach. One way to improve our picture is to use Michael Cox's and Richard Alm's device of calculating work-time costs for different goods.[18]

Working for pay is the chief means used by the overwhelming majority—and by nearly all of the middle-classes—in Canada and other market-oriented societies to acquire the incomes that they then spend on items for

18. The Cox-Alm method of dividing the nominal price of each of a large number of consumer goods by the mean or median nominal wage, and then comparing the resulting "work-time" calculations across time, has some limitations. First, posted and catalogue prices are sometimes higher than are the prices actually paid by consumers. Second, as done in this paper, this method uses only pre-tax and pre-transfer prices and wages. While using post-tax and post-transfer prices and wages would give a somewhat more accurately detailed measure of changes over time in the typical Canadian worker's work-time costs for various goods, the use of pre-tax and pre-transfer prices and wages gives a reliable big-picture account of the trend in ordinary Canadians' "work-time" costs of these goods. Third the analysis is limited to goods contained in the available catalogues and leaves out important goods and services such as housing and education.

consumption.[19] We can infer from the fact that almost no one works for zero pay (as well as from our own introspection) that work is a source of "disutility." People work not because it gives them direct satisfaction but because it is the best means available for acquiring the incomes that are necessary to acquire those goods and services the consumption of which *does* yield satisfaction.

In short, the means is work and the end is consumption (rather than income). And because a person is made better off if the amount of means he must use to achieve a given end is reduced, reducing the amount of work necessary to acquire a given amount of consumption items represents an improvement in the economic well-being of workers. *This increase in well-being is real even if the amount of inflation-adjusted money income that that worker receives does not increase.*

A helpful, if imperfect, proxy for the amount of work a person does to achieve a given amount of consumption is the *time* that that person must work in order to earn the income necessary to purchase those consumption items—for example, the number of hours that that person must work to acquire enough income to purchase a pair of shoes.[20] If the work-time cost of a consumption good falls, it is fair to count this falling cost as a real benefit to workers and their families. The reason is obvious: if the amount of time a worker must work to purchase a pair of shoes falls, the amount of time the worker can devote to earning income to be used to purchase other goods and services (including leisure) rises. The size of the available bundle of consumption goods and services available to that worker is enlarged by the fall in the work-time cost of a pair of shoes. The worker, in short, is made richer than otherwise in what matters most: ability to consume. Therefore, as Michael Cox and Richard Alm (1999) have shown, measuring changes in the work-time costs to an ordinary worker of various, commonly purchased consumer items is a useful way of improving our understanding of what has happened over time to ordinary people's material standard of living.

A particular benefit of looking at changes over the years in the work-time costs of a variety of commonly purchased consumer goods is that this investigation avoids the need to adjust for inflation. A worker in 1976 received

19. See Sarlo (2016) for further discussion on the importance of examining consumption over income, particularly as it pertains to measurements of inequality.

20. The chief reason that time spent working is only an imperfect proxy for the amount of work that a person must perform to acquire sufficient income to purchase a given bundle of consumption goods is that not all jobs are equally agreeable. For example, the amount of work effort required of workers per hour is variable. If Smith works the same number of hours each week as does Jones, but expends twice the amount of effort each hour while on the job than does Jones, Smith works "more" each week than does Jones. Nevertheless, because for nearly all workers the dominant cost they incur to work is the sacrifice of their time to their employers, we can reasonably use time spent on the job as a good enough proxy for work effort.

his income in 1976 dollars and paid 1976 prices for his consumption items, while a worker today receives his income in today's dollars and pays today's prices for his consumption items. Therefore, by simply dividing the price of a consumption good in 1976 by the nominal average hourly wage in 1976, and then repeating the same process for a comparable good today, we can easily determine if the work-time cost of that good is higher, lower, or the same today as in 1976. To the extent that the work-time costs of various comparable consumer goods are lower today than in the past, ordinary Canadians are more prosperous than they were in the past, regardless of the trends of statistics on real wages or annual incomes.

The phrase "comparable consumer goods" should not be read to imply that the items in 2011 are identical, or necessarily even close, to those of 1976. In some cases—for example, jeans and sofas—the items are indeed close in both kind and quality.[21] But in many other cases—for example, televisions and video cameras—the quality of the 2011 items differs radically from that of their 1976 counterparts. Almost always, the quality of the 2011 item is higher than that of its counterpart of 35 years earlier.

We do not attempt in this paper to prove with any scientific rigor our contention that the quality of today's consumer products is generally higher than was the quality of such items in the past. Instead, we rely upon casual observations and comparisons that readers themselves can easily make by exploring catalogues from the past. Readers doubtful of our claim of improved product quality can compare product-offerings today to those of 1976 and then ask themselves, for each good, which of the two—today's version of that good or yesterday's version—they would prefer to have if each item cost the same as the other. We are confident that in most cases informed readers would choose today's product over its past version.

So what has been the trend of work-time costs from the mid-1970s until now (2011)? Let's take a look.

21. Nevertheless, the variety of these goods might differ across time. For example, while the quality of any given pair of jeans might be the same at a later time as it was at an earlier time, the number of readily available styles of jeans—boot-cut, straight-leg, relaxed fit, trim fit, stone-washed, button-fly, etc.—might change over time. If the variety of a good increases, that increase is itself an improvement in the quality of that good, although one that is manifest more in the selection available to consumers and less in any physical feature of one unit of that good today compared to a unit of that good from yesterday.

Work-time costs

In 1976, the average Canadian worker earned $5.30 per hour; the 2011 counterpart of that 1976 worker earned $23.30 per hour.

Table 1 shows, for each of a number of different familiar consumer goods available from Sears, the 1976 prices of these goods (in 1976 dollars) and the 2011 prices (in 2011 dollars). For each good, the 1976 price is then divided by the 1976 wage of $5.30 and the 2011 price is divided by the 2011 wage of $23.30. The results of each of these divisions is the number of hours the typical Canadian worker had to work, in each of the two years, to earn enough income to purchase the good in question. The last column shows the percentage change in work-time costs for each good.

The table, of course, has only a sample of the thousands of goods available, then and now, from Sears. Yet this sample is representative. And it shows that the work-time costs of the vast majority of consumer goods for middle-class consumers—from inexpensive clothing to expensive appliances—are today lower than they were in the 1970s. In many cases these costs today are *much* lower.

And, as noted above, *quality* differences are not adjusted for in this sample of goods. Adjusting for quality would produce an even more remarkable reduction in the work-time costs of acquiring these products—or, more precisely, in the work-time costs of acquiring the satisfaction, or utility, that consumers get from owning such products. It's very good that today the amount of work-time required to earn sufficient income to buy a television is 90 percent less than it was in 1976; it's even better when the higher quality—improved sound, far better picture, higher efficiency, and greater durability—of today's televisions is accounted for. Eighty-eight percent less work time than was required in 1976 buys today not only a television, but an incomparably improved television-viewing experience than was available back then.

For some products, quality over the years has not changed, or changed only a little. The quality of a quarter-carat diamond ring today is no higher (or lower) than it was in the mid-1970s, and the same is likely true for pairs of jeans (although the variety of cuts and colors of jeans has expanded). Hand-tool sets aren't *much* better today: a manual screwdriver today hardly differs from its counterpart of 40 years ago. But the number of different hand

Table 1

Work-time costs of various consumer goods in 1976 and 2011

	1976		2011		
	Price ($)	Work-time cost (hours)	Price ($)	Work-time cost (hours)	Percent change in work-time cost (%)
Household appliances					
drip-coffee maker	49.98	9.4	69.99	3.0	-68
automatic dishwasher	489.98	92.2	399.97	17.5	-81
automatic clothes washer	459.98	86.6	469.70	20.6	-76
automatic clothes dryer	319.98	60.2	399.97	17.5	-71
refrigerator	729.98	137.4	499.97	21.9	-84
microwave oven	579.98	109.2	229.99	10.1	-91
conventional oven	279.98	52.7	399.99	17.5	-67
griddle	37.98	7.1	79.99	3.4	-52
portable room fan-heater	26.98	5.1	49.99	2.1	-58
toilet	44.98	8.5	139.99	6.1	-28
electric hair dryer	24.98	4.7	44.99	1.9	-59
Household furniture					
futon	134.98	25.4	299.99	12.9	-49
cushion chair	150.00	28.2	399.99	17.2	-39
sofa	269.98	50.8	849.99	36.5	-28
Household tools					
snow blower	368.00	69.3	399.99	17.2	-75
electric vacuum	69.88	13.2	89.99	3.9	-71
luggage with wheels	63.98	12.0	249.99	10.7	-11
hand-tool set	99.98	18.8	119.99	5.1	-73
electric 10″ table saw	419.98	79.0	499.99	21.4	-73
Apparel					
women's jeans	17.00	3.2	39.99	1.7	-46
men's jeans	14.98	2.8	54.99	2.4	-16
long underwear	4.49	0.8	9.99	0.4	-49
woman's faux-fur coat	115.00	21.6	250.00	10.7	-50
man's leather coat	120.00	22.6	329.99	14.2	-37
women's leather gloves	15.00	2.8	49.99	2.1	-24
.25 carat diamond ring (14-carat gold)	266.6	50.2	999.9	42.9	-15
Sporting and entertainment goods					
boy's skates	18.98	3.6	39.99	1.7	-52
exercise bike	99.98	18.8	349.99	15.0	-20
billiards and table-tennis combo	299.98	56.5	599.99	25.7	-54
weight-lifting bench	89.98	16.9	299.99	12.9	-24
pocket camera	11.99	2.3	29.99	1.3	-43
high-quality camera with video recorder	309.94	58.3	199.99	8.6	-85
electric guitar	99.98	18.8	149.99	6.4	-66
clock radio	28.88	5.4	17.99	0.8	-86
stereo (with radio)	79.98	15.1	99.99	4.3	-72
television	599.98	112.9	269.88	11.6	-90

Notes: Work-time costs are calculated by dividing the price of the consumer good by the nominal average hourly wage in the respective year. The average nominal hourly wage was $5.30/hour in 1976 and $23.30/hour in 2011.

Some items were drawn from the 2010 Sears catalogue instead of the 2011 catalogue. Specifically, the following came from the 2010 catalogue: automatic dishwasher, automatic clothes washer, automatic clothes dryer, refigerator, conventional oven, and toilet.

Consumer goods on this list are selected on the basis of being common household goods that make for reasonable comparisons. Specifically, a comparison is made if goods have similar functions and, as much as possible, similar features in 1976 and 2011. For example, the price of a colour television from 1976 is compared to a colour television of approximately the same size from 2011. Where there are a number of options of similar comparable goods, the cheapest available item is selected for comparison. For example, the cheapest woman's jeans from 1976 are compared to the cheapest 2011 woman's jeans.

Sources: Sears Canada, 1976, 2010, 2011.

tools offered in the set sold today is slightly larger (75) than was the number (71) offered in a similar set sold in 1976. Likewise, women's gloves aren't that much better now than they were back then—but they do today come in a greater variety of colors. And the quality of today's weight-lifting bench isn't that much higher than that of such a bench four decades ago. When you buy a weight-lifting bench today, however, you also get a set of accompanying weights, while in 1976 you had to buy the weights separately.

For some other products, though—such as the television mentioned above—the improvement in quality is extraordinary. Consider, for example, a home-music system. A typical 1976 system featured a stereophonic record player and AM-FM radio. Decent sound required large speakers. A home-music system today is incomparably different—and, for most consumers, incomparably better. Today's system has a compact-disc player (rather than a turntable) and a dock for an MP3 player, the speakers are smaller and produce better sound than those of 1976, and this system is digital. (While many high-end audiophiles insist that analog vinyl LPs are superior in quality to CDs and other digitized sources of recorded music, such superiority is far less likely for modestly priced systems of the sort that were, and are, available from Sears. For everyday music enjoyment, digitized systems—with their absence of the scratchy sounds of typical vinyl records, the availability of instant downloading of music, and other advantages—are for most middle-class consumers superior in quality to the analog systems that were dominant in the mid-1970s.)[22]

Perhaps even more dramatic than the improvement in sound systems is the improvement in photography. In 1976, all cameras available to middle-class consumers were film cameras. So the costs of photography included not only the price of the camera but also the price of each role of film and, in addition to that, the price of developing each role of film. Also, the quality of the overall "photographic experience" back then was much worse than is the quality of that experience today. A photo taken with a digital camera can be viewed immediately. If Aunt Yvonne's eyes were closed or little Billy suddenly stuck his tongue out mischievously, the photographer knows to tell

22. The late economic historian Stanley Lebergott offered complementary evidence that supports, although it does not strictly prove, the contention that product quality (as judged by consumers spending their own money) is today higher than it was in the past: "But the array of available goods changes slowly. The high-button shoes of 1900 were still for sale in 1905. Vacuum tubes were stocked in the 1950s, even as transistorized appliances began to replace them. Twentieth-century consumers could therefore usually choose last year's budget items this year if they desired. Yet real consumer expenditure [in the US] rose in seventy of the eighty-four years between 1900 and 1984, as consumers continually switched to new goods. Such repetition reveals consumers behaving as if the newer goods did indeed yield more 'worthwhile experience.'" (Lebergott, 1993: 15)

his or her subjects to remain in place so that another photo can be taken. In addition, the number of photographs that can be taken with a digital camera is multiple times the number that can be taken with a film camera. And unlike photos taken with a film camera, photos taken with a digital camera can be easily cropped, color- and tint-adjusted, or otherwise "photoshopped" to turn them into something closer to the photographer's ideal. Finally, digital photos can be widely shared, in multiple forms, with people across the globe no less easily or quickly than with people across the room.

While theoretically—using hedonic pricing techniques[23]—quality changes can be factored into calculations of changes in the real prices of goods and services, in practice such a factoring in of quality changes can be at best imperfect. Most quality improvements are too small to be noticed and accounted for in official statistics. While, say, the addition of airbags to automobiles might be easily noticed, and while a more or less accurate "price" might be calculated for the value of this amenity, no such notice and price calculation occurs for the most common kinds of quality improvements—improvements such as slightly stronger plastic kitchen garbage bags, canned goods that can be opened with a pull-tab rather than with a can opener, and the more thorough washing of fresh vegetables available at supermarkets.

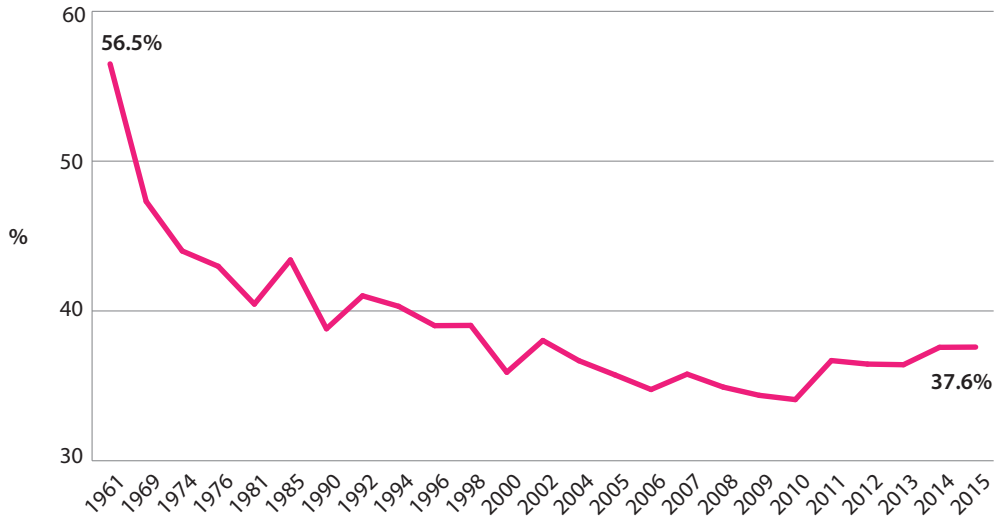
Most quality improvements that occur today in market economies are relatively small. Each is a tiny modification of an existing product (such as, to give another real-world example, the treatment of cotton swabs with an antimicrobial agent to make them even more sanitary than before). These modifications are each so small, and they occur with such regularity and in such large numbers, that statisticians cannot practically hope to document more than a fraction of them, much less to hedonically "price" each of these improvements. But this failure to capture in official statistics the value of these quality improvements does not render these improvements any less real or significant.

Detractors might object that goods, other than clothing, sold at Sears are of little significance compared to more essential goods, such as food and shelter. A starving family's well-being isn't meaningfully improved if economic growth enables them to acquire at lower costs only the likes of household appliances and sporting equipment. But in fact the percentage of income spent by the average Canadian family on basic necessities—food, clothing, and shelter—has fallen significantly over the past half-century. In 1976, the average Canadian family spent 43 percent of its income on these necessities; in 2011, it spent 36.7 percent, a decline of 6.3 percentage points (**figure 11**). This decline is powerful evidence that the cost to the average Canadian family of supplying itself with the basic necessities has indeed fallen.

23. See Maynes (1976).

Figure 11

Expenditures on basic necessities (shelter, food, and clothing) as a percentage of income for the average Canadian family, select years, 1961–2014



Source: Palacios et al., 2016.

And this decline in the cost of basic necessities is even more impressive in light of two additional facts. The first is that the quality and variety of these basic necessities has improved. The second is the steep decline, as documented above, in the costs of non-necessities such as cameras and televisions. Falling costs of non-necessities means that the percentage of the family budget that the average family today must spend to acquire the same quantity of non-necessities that it acquired in 1976 is lower. That the average family today in fact spends a higher percentage of its budget on non-necessities, even though the costs of non-necessities has fallen, underlines the great improvement in ordinary Canadians' material standard of living since the mid-1970s.

Conclusion

Considered carefully, the empirical record reveals clearly that the living standards of ordinary Canadians have improved significantly since the mid-1970s. There has been no stagnation. Many of the data that are conventionally used to tell a story of stagnation are flawed. These data, in addition to being pre-tax and pre-transfer, are adjusted neither to account for changes in the average number of people living in Canadian households nor for quality improvements in the products available for sale to ordinary Canadians. Also, statistical illusions—most notably Simpson's Paradox—create an empirical mirage of stagnation.

When the data are rid of these flaws and interpreted appropriately, they show that the typical Canadian has a standard of living today that is approximately 50 percent higher than it was in the mid-1970s. That's a significant improvement in the material living standards of ordinary Canadians. Canada's middle class emphatically has not stagnated.

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About the authors

Donald J. Boudreaux

Donald J. Boudreaux is a Professor of Economics and former Economics Department Chair at George Mason University and a Senior Fellow with the Fraser Institute. He is also a Senior Fellow with the F. A. Hayek Program for Advanced Study in Philosophy, Politics, and Economics at the Mercatus Center at George Mason University, and holds the Martha and Nelson Getchell Chair for the Study of Free Market Capitalism at the Mercatus Center. He has a Ph.D. in economics from Auburn University and law degree from the University of Virginia.

Professor Boudreaux is committed to making economics more accessible to a wider audience, and he has lectured across the United States, Canada, Latin America, and Europe on a wide variety of topics, including the nature of law, antitrust law and economics, and international trade. He is published in a variety of newspapers and journals, including *The Wall Street Journal*, *The Washington Times*, and *The Supreme Court Economic Review,* and writes a blog (with Russell Roberts) called Café Hayek, <http://www.cafehayek.com>.

Joel Emes

Joel Emes is Fraser Institute Senior Fellow who rejoined the Institute after a stint as a senior advisor to British Columbia's provincial government. He previously served as a senior analyst, then as executive director (2009 to 2011), at the BC Progress Board. Prior to that, Joel was a senior research economist at the Fraser Institute, where he initiated and led several flagship projects in the areas of tax freedom and government performance, spending, debt, and unfunded liabilities. Joel holds a B.A. and an M.A. in economics from Simon Fraser University.

Hugh MacIntyre

Hugh MacIntyre is a Policy Analyst at the Fraser Institute. He holds an M.Sc. in Political Science from the University of Edinburgh and an Honours B.A. from the University of Toronto. Mr. MacIntyre has co-authored numerous studies on topics such as government finances and government performance. His commentaries have appeared in various media outlets including the *National Post* and the American Enterprise Institute's prestigious magazine, *The American*.

Charles Lammam

Charles Lammam is Director of Fiscal Studies at the Fraser Institute. He holds an M.A. in public policy and a B.A. in economics with a minor in business administration from Simon Fraser University. Since joining the Institute, Mr. Lammam has published over 75 studies and 290 original articles on a wide range of economic policy issues including taxation, government finances, pensions, investment, income mobility, labour, entrepreneurship, public-private partnerships, and charitable giving. His articles have appeared in every major national and regional newspaper in Canada (including the *Globe and Mail* and *National Post*) as well as prominent US-based publications (including *Forbes* and *The American*). Mr. Lammam's career in public policy spans a decade. He regularly gives presentations to various groups, comments in print media, and appears on radio and television broadcasts across the country to discuss the Institute's research. He has also appeared before committees of the House of Commons as an expert witness.

Acknowledgments

The authors wish to thank the Lotte and John Hecht Memorial Foundation for generously funding this paper and the anonymous reviewers for their comments, suggestions, and insights. Any errors or omissions are the sole responsibility of the authors. As the researchers have worked independently, the views and conclusions expressed in this paper do not necessarily reflect those of the Board of Directors of the Fraser Institute, the staff, or supporters.

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ISBN

978-0-88975-416-4

Date of issue

September 2016

Citation

Boudreaux, Donald J., Joel Emes, Hugh MacIntyre, and Charles Lammam (2016). *The Myth of Middle-Class Stagnation in Canada.* Fraser Institute. <http://www.fraserinstitute.org>.

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