
Who Are Canada's Top 1 Percent?

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AFTER A LONG PERIOD OF RELATIVE STABILITY IN THE POSTWAR PERIOD, THE CANADIAN earnings and income distribution has changed substantially over the past several decades. One of the most striking developments has been the dramatic rise in incomes at the very top of the income distribution (Saez and Veall 2005; Veall 2012). At the same time, real earnings have fallen at the bottom of the distribution, and have shown little growth among middle-income earners, especially among men (Green and Sand, forthcoming). As a consequence, earnings and income inequality have increased, a development that has received much public attention as well as scholarly interest (Fortin et al. 2012; Veall 2012). Other noteworthy changes in the wage structure since the early 1980s include some widening of earnings differences by educational attainment, substantial growth in earnings gaps by age and a narrowing of earnings differentials by gender (see, among others, Boudarbat, Lemieux and Riddell 2010).

Although the dramatic increase in top incomes has received great attention, much remains to be learned about top earners and how the characteristics of this group have evolved over time. Are they mainly employees or owners of businesses? How important to their high incomes are labour earnings relative to income from other sources such as investments? What industries and occupations do they work in, and how have these changed over time? What about other personal and demographic characteristics such as gender, educational attainment, and province and city of residence?

There are a number of competing explanations for the increase in income inequality, not only in Canada but also in countries such as the United States and the United Kingdom.¹ Studies that look at the whole earnings distribution have generally focused on explanations linked to technological change, globalization and labour

market institutions. Some of these explanations have direct implications for top-end earnings. For instance, if technological change affects the earnings distribution through a change in the skills premium, the earnings of highly educated workers at the upper end of the distribution should have grown more than those of less-educated workers.² Likewise, top earners who perform highly skilled tasks that are hard to move offshore should have done better than those who perform routine tasks that can easily be sent offshore or replaced by computers.

By contrast, explanations of inequality growth based on changes in labour market institutions might not have played an important role at the top end of the distribution, at least directly. For instance, changes in the minimum wage are an important determinant of inequality at the bottom end of the distribution (DiNardo, Fortin and Lemieux 1996; Lee 1999; Fortin and Lemieux, forthcoming), but they are unlikely to play a direct role at the upper end of the distribution. Deunionization is also an important explanation for the increase in earnings inequality among men (Card, Lemieux and Riddell 2004), but since very few top earners are unionized, it has not had much of a direct influence on changes in inequality at the top end. That said, however, occupational licensing and professional organizations of highly skilled workers can be viewed as a related form of unionization that might have played a more important role than traditional unions at the top end,³ which could help account for changes in earnings of specific top-end occupations such as medical doctors. In addition, as we discuss later, changes in labour market institutions such as minimum wages and unionization can influence top incomes indirectly by creating opportunities to shift economic rents to high earners from those lower down the earnings distribution.

In addition to these general explanations for changes in inequality over the whole income distribution, a number of factors more specific to the very top end have also been discussed in the literature. For instance, a number of studies have looked at the role of changes in the way chief executive officers (CEOs) are paid as a potential explanation for the phenomenal growth in their earnings over the past few decades. In a standard market/competitive model, CEOs, like other workers, are simply paid the equivalent of their marginal product — that is, their addition to the firm's value. Some authors (such as Gabaix and Landier 2008; Gabaix, Landier and Sauvagnat 2013) have argued that a competitive model of CEOs' pay could explain the observed growth in their compensation. Other authors are

more skeptical; for instance, both Bebchuk and Fried (2004) and Bertrand and Mullainathan (2001) dispute the conventional view that executives are paid for performance. They instead argue that CEOs are much more likely to set their own pay, directly or indirectly, relative to other workers; in other words, they are in a better position to extract economic rents than is the rest of the workforce.⁴ For example, a well-designed incentive contract for executive compensation would reward relative performance — if, for example, the firm does better than other firms in the same industry. However, corporate boards often hire compensation consultants who use benchmarks based on “peer groups” that bias compensation upward and reward absolute performance and good fortune, rather than relative outcomes (Bebchuk and Fried 2004; Bertrand and Mullainathan 2001). Similarly, the intent of stock options (the use of which has grown dramatically in recent decades) is to align the interests of senior management with those of shareholders, but standard executive pay arrangements do not restrict hedging through financial instruments that allow executives to limit downside risk while retaining considerable upside potential (Bebchuk and Fried 2010).

Kaplan and Rauh (2010) suggest that the finance sector has also played an important role in the growth in earnings at the top end. Unlike the incomes of CEOs of large publicly traded firms, however, for whom detailed compensation data have to be disclosed, the incomes of most top earners in investment banks, private equity firms and hedge funds are not publicly available, and the authors' suggestion is based on limited evidence.⁵

The dramatic growth in top incomes also might reflect the phenomenon of “superstars,” as formalized in a famous paper by Rosen (1981). Although earnings of superstars are expected to exceed those of “stars,” the magnitude of the premium depends on the size of the market. In some circumstances, small differences in the skills of certain individuals might be magnified incredibly if there is a large market for their services — that is, when the service or product they provide can be sold to a large group of customers that can share the cost of the superstars' compensation. In such a case, the “best” person might command a salary that is far higher than that of the “next-best” person, even though the superstar's ability or skill might be only marginally better than the next-best person's. Contributing to the increased incidence of “superstar” salaries might be the dramatic increase in the market size for some services as a result of the “decline of distance” and the associated globalization of economic activity.

More generally, the debate about the growth of top earnings revolves around two broad classes of explanations. Proponents of the market-based view, such as Kaplan and Rauh (2013), argue that the growth in top earnings is a broad-based phenomenon associated with increasing demand for the skills and abilities of top earners linked to technological change, globalization, scale effects and so on. On the other side of the debate are those, such as Bivens and Mishel (2013), who propose an explanation based on the increased ability of top earners to extract economic rents — that is, to demand, and receive, more than the market value of their services. Reductions in marginal tax rates on earned income also might have raised the incentive to receive remuneration in the form of earnings, rather than other kinds of compensation. In addition, declining union power, lower real minimum wages and the reduced bargaining power of workers due to globalization might have increased the opportunities for rent shifting from the vast majority of workers to those at the top.

These two classes of explanations parallel the above-mentioned debate about the source of growth in executive compensation. They also mirror the more general and older debate about the sources of growth in overall inequality. Influential studies such as those of Katz and Murphy (1992) and Juhn, Murphy and Pierce (1993) take a broad-based competitive market view in which the increase in inequality is linked mostly to an increase in the returns to skills. In contrast, Freeman (1993), Card (1992, 2001) and DiNardo, Fortin and Lemieux (1996) look at the contribution of deunionization, where the main mechanism in changing inequality is the increasing inability of workers in the middle of the distribution to extract rents through collective bargaining agreements.

The debate between these two classes of explanations is also highly policy relevant. If a share of earnings consists of rents, these can be “taxed away” without affecting the allocation of labour to various uses. If, on the other hand, these high earnings represent an increase in the return to skills or talent, taxing this income could result in a loss of talent to other uses (and perhaps to other countries).⁶

If one had good measures of skills, rents and the ability to appropriate rents, it would be straightforward to determine which of these explanations is behind the growth in top earnings. Short of this, good proxies for skills (education, experience, field of study) and job characteristics (industry, occupation, firm size) can be used to see how well they explain the growth in top earnings. Finding that earnings growth is mostly concentrated among highly educated workers in

science, technology, engineering and mathematics, regardless of industry, would support the market/skills view. In contrast, finding that the growth in top earnings is limited to a few industries (say, finance) and occupations (say, CEOs) could lead one to conclude that rent extraction is the key factor, especially if, as Bivens and Mishel (2013) argue, evidence consistent with rent extraction exists in these industries and occupations.

Most of the research on the evolution of top incomes has used administrative data on taxfilers (see, for example, Finnie and Irvine 2006; Murphy, Michaud and Wolfson 2008; Murphy, Roberts and Wolfson 2007; Saez and Veall 2005; Veall 2012). Although taxfiler data have important advantages, they also have disadvantages; in particular, they contain relatively few socio-demographic characteristics. Thus, basic questions such as the role of educational attainment and occupation in the rise of top incomes remain to be investigated. In this chapter, however, we use the master files from Canadian censuses taken between 1981 and 2006 — which, unlike most other available datasets, contain detailed information on a number of important socio-economic characteristics — to gain a better understanding of the factors behind the dramatic increase in top earnings since the early 1980s.

Census Data

THE CENSUS MASTER FILE DATA HAVE SEVERAL IMPORTANT ADVANTAGES. FIRST, responses to the “long-form” census questionnaire provide detailed information on key socio-demographic characteristics, including gender, industry of employment, occupation, education and immigrant status, as well as annual earnings and work experience during the previous year. The information on educational attainment is particularly detailed, and includes years of completed schooling (except in 2006), all diplomas, certificates and degrees obtained, and (starting in 1986) field of study. Most of this information was collected on a consistent basis between 1981 and 2006. The second important advantage of the master file data is the large sample size — 20 percent of the Canadian population — which is particularly important for studying a small group such as the top 1 percent of income earners. The combination of these first two features of the data allows us to investigate the characteristics of narrowly defined subgroups within the top 1 percent, such as medical doctors or those with degrees in finance and accounting. A third important advantage of the master

file data is the absence of “top coding,” which occurs when observations above a certain level are censored for confidentiality reasons.⁷

Much previous research into aspects of Canada’s wage structure — such as returns to education and experience, male-female earnings differences and earnings differences between immigrants and the native-born — has employed public-use census data.⁸ However, although such data have the advantage of being widely available to researchers, they are not suitable for investigating top-income earners because of their relatively limited sample sizes and because they are top coded.⁹ During a period in which the overall earnings distribution is relatively stable, top coding might not affect conclusions about the evolution of the wage structure, but when there is a dramatic rise in incomes at the very top of the distribution — as has been the case in Canada during the past three decades — there is considerable risk that the combination of top coding in the public-use census files and dramatic increases in top incomes might lead to incorrect conclusions about changes in the wage structure.¹⁰

For these reasons, the census master file data are highly suitable for analyzing the characteristics of top earners and their evolution over time. The census has also used a questionnaire structure and variable definitions that are relatively consistent over time. During our sample period, however, a few notable changes were made to the census:

- > Since 2006, respondents required to complete the “long-form” census have been given the opportunity of allowing Statistics Canada access to their income tax records instead of self-reporting the income items. As a result information on income and earnings reported in 2006 is not strictly comparable to previous census data.
- > In 2006, information on educational attainment was simplified relative to that in the censuses taken between 1981 and 2001.¹¹
- > In 1986, a new question about field of study (for postsecondary degrees only) was introduced; then, in 2006, a new classification system for field of study was introduced.
- > Changes were also introduced over time to the classification system used for industry and occupation. We explain in the appendix how we recoded the data to have fairly consistent information on these variables over the 1986-2006 period.

- > In 2011, the mandatory long-form census was replaced by a voluntary National Household Survey (NHS). To provide the most recent available information, we report NHS results in our main tables; however, because of the voluntary nature of the NHS, substantial caution needs to be exercised in comparing census and NHS data.

Trends in Inequality and Top Incomes: Census and Tax Data

AS WE SHOW BELOW, THE BASIC TRENDS IN TOP INCOMES OBSERVED USING INCOME TAX data are quite comparable to those observed using census data. This suggests that, even though income data were self-reported in the census until 2006, there do not appear to be significant reporting biases that would make the census of questionable validity for studying the evolution of top incomes.

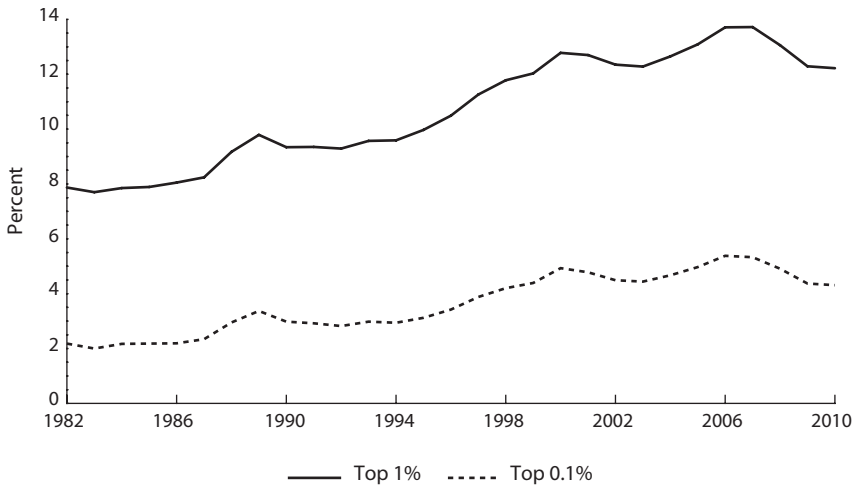
Trends based on tax data

The tax data show a large increase in the share of total income earned by those at the top of the income distribution since the early 1980s (Saez and Veall 2005; Veall 2012).¹² Figure 1 reproduces the trend in the income shares of the top 1 percent and top 0.1 percent for the period from 1982 to 2010 using data from Statistics Canada's Longitudinal Administrative Databank (LAD). As the figure shows, the income share of the top 1 percent grew from less than 8 percent in the early 1980s to close to 14 percent in 2006-07, before declining slightly during the recession of 2008-09. Note that, although the LAD data start only in 1982, data from tax returns used by Saez and Veall (2005) indicate that top-income shares were relatively stable in the 1970s and early 1980s. The sharp increase in these shares starting in the mid-1980s, therefore, was a major departure from earlier trends.

As figure 1 also shows, the income share of the top 0.1 percent of earners grew even more dramatically than that of the top 1 percent, more than doubling from around 2 percent in the early 1980s to around 5 percent in recent years. Put another way, the income of the top 0.1 percent (one taxfiler out of a thousand) went from 20 times average income to 50 times average income over a period of about 20 years.

These dramatic trends are illustrated in a different way in figure 2, which shows that average income increased by 13.5 percent between 1982 and 2010, but the gains

Figure 1

Share of total income¹ earned by the top 1 percent and top 0.1 percent of earners, Canada, 1982-2010

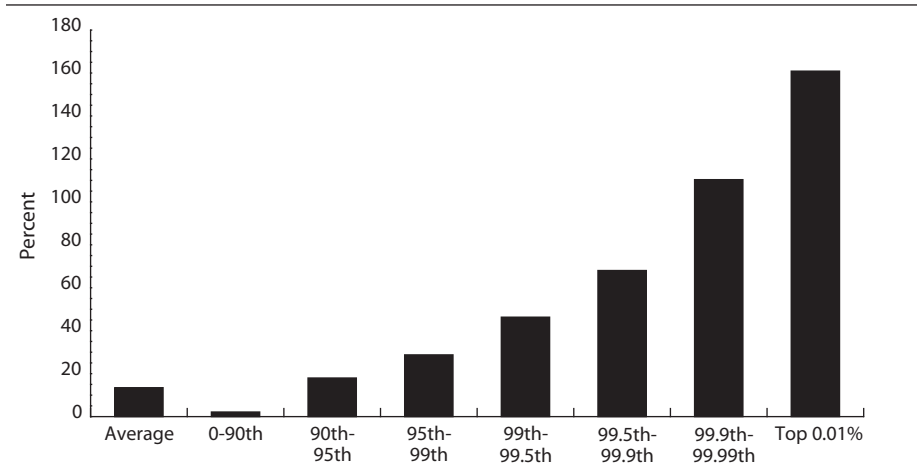
Source: Authors' calculations based on F. Alvaredo, T. Atkinson, T. Piketty and E. Saez, World Top Incomes Database (<http://topincomes.parisschoolofeconomics.eu/>).

¹ Based on market income, which includes all income except government transfers and capital gains. The data are based on all taxfilers, including those with zero income.

were spread very unevenly across the distribution. In particular, average income of the “bottom 90 percent” of earners was essentially stagnant, growing by only about 2 percentage points over the 28-year period, or a negligible less than 0.1 percent real income growth per year (annualized growth rates are reported in figure 3). Further up the distribution, however, real income gains grew larger and larger, reaching 160 percent for the top 0.01 percent of the distribution. As figure 3 shows, this increase was close to 6 percent per year, and much larger still for the top 0.01 percent in the United States. In contrast, in both countries, the income of the “bottom 90 percent” essentially did not grow at all over the period. Higher up in the distribution, income growth is systematically larger in the United States than in Canada. It is more than twice as high by the time we reach the very top of the distribution.

Although the available data indicate significant differences in the growth of top incomes in Canada and the United States, these might reflect differences and changes in how income is reported in the two countries (Veall 2012). In particular, both countries have changed their incorporation laws (and the administration

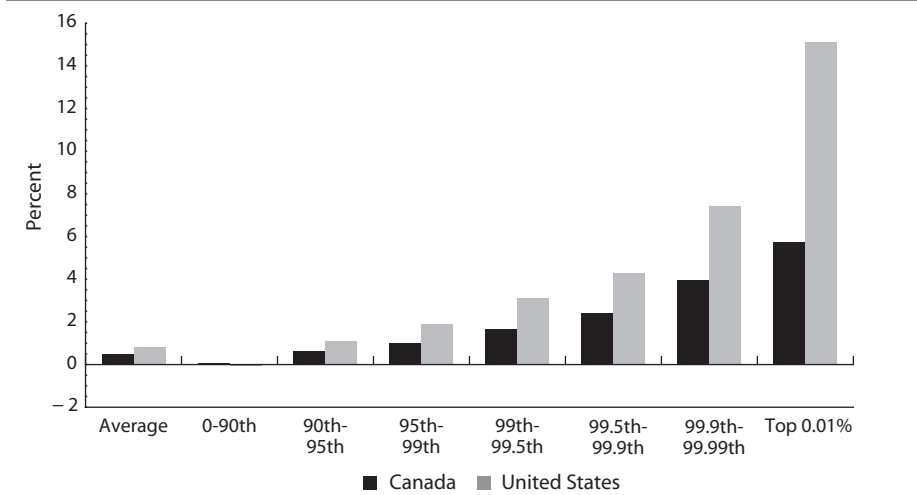
Figure 2
Total income¹ growth by fractile, Canada, 1982-2010 (percent)



Source: Authors' calculations based on F. Alvaredo, T. Atkinson, T. Piketty and E. Saez, World Top Incomes Database (<http://topincomes.parisschoolofeconomics.eu/>).

¹ Based on market income, which includes all income except government transfers and capital gains. The data are based on all taxfilers, including those with zero income.

Figure 3
Annualized income¹ growth by fractile, Canada and the United States, 1982-2010 (percent)



Source: Authors' calculations based on F. Alvaredo, T. Atkinson, T. Piketty and E. Saez, World Top Incomes Database (<http://topincomes.parisschoolofeconomics.eu/>).

¹ Based on market income, which includes all income except government transfers and capital gains. The data are based on all taxfilers, including those with zero income.

of such laws), which influence how income earned by professionals such as doctors, dentists and lawyers flows through to personal income reported for tax purposes; however, the extent to which these changes account for differences in the growth of reported top incomes in the two countries is an open question.¹³ In addition, in Canada since the 2006 Census, allowing individuals to choose to permit access to their tax returns, rather than self-report their income, might have played a role, although it is unclear how an incorporated individual would have answered the census income question prior to tax-based reporting.

Table 1 suggests that an important factor contributing to Canada-US differences in income growth at the top of the distribution is that Canada does not have the extreme upper tail of top earners that is observed in the United States. Table 1 reports annualized income growth rates and real average income by fractile in the two countries for the period 1982-2010. We should point out that average incomes for the United States are reported in US dollars, and that because of differences in personal income taxation in the two countries, the US data include joint-filing households while the Canadian data refer to individual taxfilers. Because of the importance of dual-earner families in both countries, this tax-filing difference accounts for a good portion of the gap in average incomes by fractile. In Canada, annual income growth is higher among the bottom 90 percent (0.076 percent in Canada versus a decline of 0.055 percent in the United States), but it is considerably higher among the top 10 percent in the United States. Moreover, the differences in average incomes and income growth rates between the two countries become progressively larger as we move up the top 10 percent of the income distribution, and are particularly pronounced at the very top. Thus, because there are not as many people (relative to population) with extremely high incomes in Canada as there are in the United States, fractile-based comparisons of incomes at the top refer to people with substantially different levels of incomes. For example, the average income of the top 0.01 percent in the United States was over \$11 million, more than triple that in Canada, which makes the difference in the average annual income growth rate of the top 0.01 percent — 15 percent in the United States versus less than 6 percent in Canada — even more striking. This appears to explain most of the difference in the growth in top incomes in the two countries.

Another way of illustrating the consequences of the increasing concentration of income in Canada is to look at the evolution of the labour share of total income — that is, the share of national income received by workers, with the remainder going to capital — with and without the top earners. Figure 4 shows that, after hovering around

Table 1

Annualized income growth and average annual income by fractile, Canada and the United States, 1982-2010 (2000 dollars)

	Average income (\$)¹		Income growth 1982-2010 (%)	
	Canada	United States	Canada	United States
Average	25,671	49,884	0.481	0.806
0-90th	17,755	32,775	0.076	-0.055
90th-95th	64,945	119,250	0.642	1.101
95th-99th	91,772	184,054	1.027	1.908
99th-99.5th	156,224	349,324	1.654	3.105
99.5th-99.9th	260,417	627,632	2.430	4.273
99.9th-99.99th	698,372	1,886,699	3.941	7.416
Top 0.01%	3,213,034	11,065,209	5.745	15.130

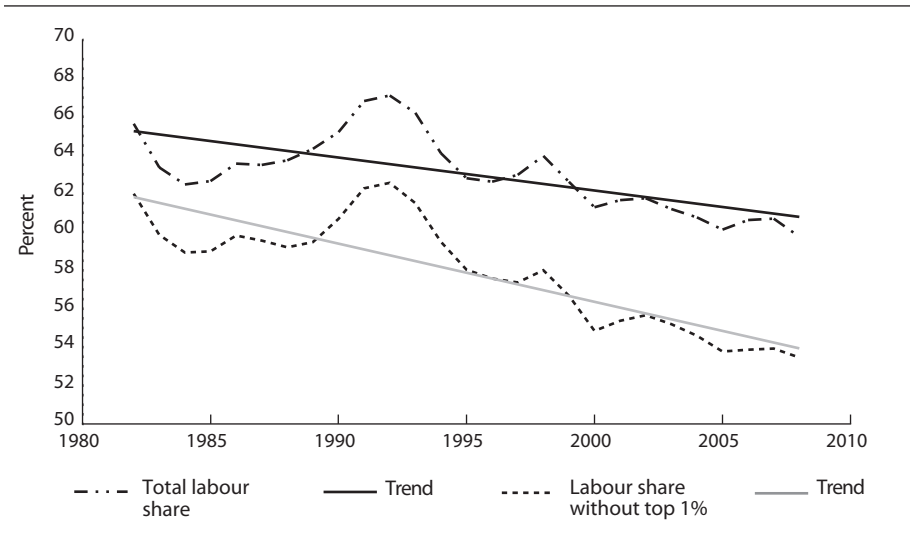
Source: Authors' calculations based on F. Alvaredo, T. Atkinson, T. Piketty and E. Saez, World Top Incomes Database (<http://topincomes.parisschoolofeconomics.eu/>).

¹ The income concept used is market income, which includes all income except government transfers and capital gains. The Canadian data are based on individuals' tax returns and include all taxfilers, including those with zero income. The US data include data from joint tax-filing households and are reported in US dollars.

65 percent until the mid-1990s, the labour share (including the top 1 percent of earners) declined precipitously, to about 60 percent by 2008. Although the labour share of total income also declined in most other industrialized countries (Karabarbounis and Neiman 2013), for Canada this was a dramatic change considering that the labour share had been stable at around two-thirds for decades. The decline in the labour share is even more dramatic when one excludes the top 1 percent of earners, dropping from a peak of 62 percent in the early 1990s to only 54 percent by 2008. As figure 4 shows, fitting a linear trend to the data indicates that the overall labour share, including the top 1 percent, declined by 0.17 percentage points per year between 1982 and 2008, but that the rate of decline almost doubled to 0.30 percentage points in the absence of the top 1 percent.

Although these yearly percentage changes look small, they correspond to large amounts of money in an economy now approaching \$2 trillion in annual gross domestic product. The 0.17 percent annual decline in the labour share means that, year after year, an additional \$3.2 billion of the total income generated by the economy was paid to capital, rather than to labour, relative to what would have been the case had the labour share remained constant. A further \$2.5 billion a year was received by the top 1 percent of earners, rather than by

Figure 4

Labour share of total income with and without the top 1 percent of earners, Canada, 1982-2008

Source: Authors' calculations based on Organisation for Economic Co-operation and Development, OECD Data, Productivity Unit Labour Costs (<https://data.oecd.org/lprdy/unit-labour-costs.htm>).

the remaining 99 percent, again relative to what would have occurred had a stable share gone to those two groups. In other words, \$5.7 billion annually was being paid to the top 1 percent and to capital, rather than to the bottom 99 percent — equivalent to about \$230 annually for each of 23 million Canadian workers as of 1995, the middle of our sample period. This is a dramatic illustration of the size of the distribution effects linked to growing inequality in Canada over the past few decades.

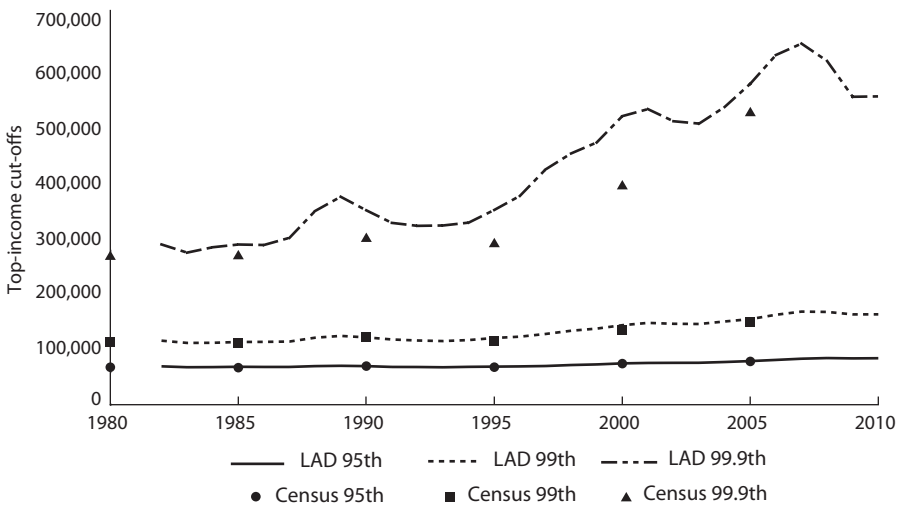
Comparing census and tax data

As noted above, until 2006, when the census gave respondents the option of allowing Statistics Canada to access their tax returns (80 percent did so), income data in the long-form census were self-reported. One concern with self-reported income was that it might have systematically understated incomes at the very top. For instance, in a US study, Bound and Krueger (1991), comparing administrative income data from the Social Security Administration with self-reported income from the Current Population Survey (CPS), find

evidence that high-income individuals tend to underreport their income, while low-income individuals do the opposite, although the authors did not look explicitly at the case of top earners. However, Burkhauser et al. (2012), using the confidential (and non-top-coded) version of the CPS, conclude that, although the income share of the top 1 percent is smaller in self-reported CPS data than in administrative tax data, trends in top income in the United States are similar in the two data sources. Frenette, Green and Picot (2006) compare trends in inequality and average income by vingtiles in Canada using a variety of data sets. Their findings suggest that census and tax data show similar income trends, except perhaps at the bottom of the distribution. Milligan (2013) reaches a similar conclusion in the case of top income shares.

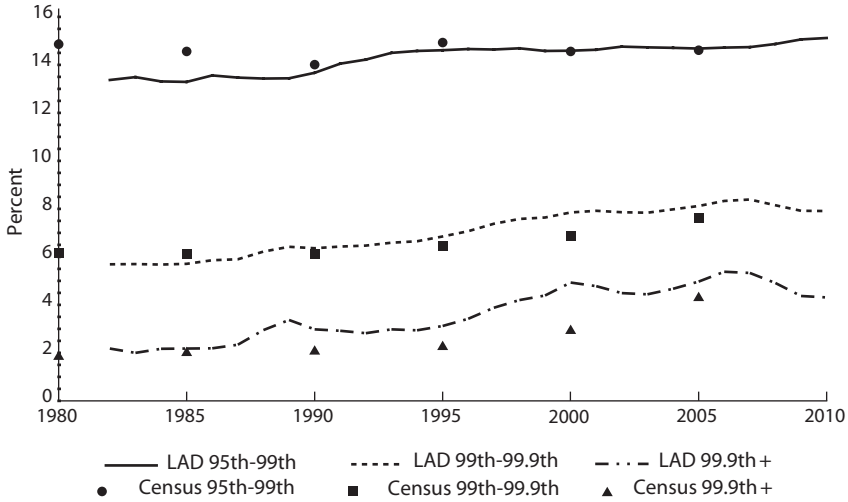
In figures 5 and 6, we explicitly compare the top-income cut-offs and top-income shares computed from the census master files (reported in Milligan 2013) with those from the LAD (reported in Veall 2012). As figure 5 shows, the cut-offs for the 95th and 99th percentiles in the two data sources are remarkably similar, with those from the LAD slightly higher than those

Figure 5
Top-income cut-offs by fractile according to the Longitudinal Administrative Databank and the census, Canada, 1980-2010 (2000 dollars)



Sources: Authors' calculations based on F. Alvaredo, T. Atkinson, T. Piketty and E. Saez, World Top Incomes Database (<http://topincomes.parisschoolofeconomics.eu/>); Milligan (2013).

Figure 6
Top-income shares according to the Longitudinal Administrative Databank and the census, by fractile, Canada, 1980-2010



Sources: Authors' calculations based on F. Alvaredo, T. Atkinson, T. Piketty and E. Saez, World Top Incomes Database (<http://topincomes.parisschoolofeconomics.eu/>); Milligan (2013).

from the census, but in most cases the gap is less than 5 percent. In the case of the cut-off at the 99.9th percentile, there is a more substantial gap between the two data sources. The income cut-offs are systematically larger in the LAD, and the gap relative to the census grows until 2001, when it reaches close to 25 percent. The cut-offs get much closer in 2006, however, suggesting that the introduction of the option to allow use of income tax information in the census makes the two data sources more comparable.¹⁴ As figure 6 shows, the income shares are also relatively similar in the two data sources. As in the case of the income cut-offs, there is a wider gap at the very top end, although the difference between the two data sources declines substantially in 2006. We conclude from the examination of these trends that the census provides very accurate information on top-end incomes that is quite close to that obtained using tax data from the LAD. There is more of a difference between the two sources at the top end (the 99th percentile), but the gap narrowed substantially with the introduction of tax-based reporting.

The Characteristics of Canada's Top-Income Earners

THE RICH FEATURES OF THE CENSUS AND THE NATIONAL HOUSEHOLD SURVEY ALLOW us to see how the characteristics of the top-income earners have changed over time and which groups among them have experienced the most income growth. Existing Canadian studies have looked at these characteristics at a particular point in time. For example, using data from the 2006 Census, Fortin et al. (2012) show that there is a fair amount of diversity among the top earners. They find that the largest groups of top earners are executives, doctors (including dentists and veterinarians) and individuals working in the financial sector, and that they are overwhelmingly men and much more highly educated than the average Canadian, a finding that is corroborated by data from the 2011 NHS (Statistics Canada 2013). The NHS data also indicate that the majority of top earners come from only three fields of study: business, health and engineering.

To the best of our knowledge, however, no previous studies have attempted to document the evolution *over time* of the composition of top earners in Canada using the detailed information on education, occupation, industry and so on available in the census. In the United States, Bajika, Cole and Heim (2010) use information in income tax statements to look at trends in the composition (and average income) of top earners by occupation. Although the accuracy of such information on occupation is unclear, the authors find a number of interesting trends: in particular, that most individuals in the top 0.1 percent are executives, managers, supervisors and financial professionals and that individuals in these occupations accounted for 70 percent of the growth in the share of national income earned by the top 0.1 percent between 1979 and 2005. This group also accounted for close to 50 percent of the top 1 percent of earners. (The main reason for the difference between the percentage of executives, managers, supervisors and financial professionals in the top 1 percent and top 0.1 percent is that medical doctors accounted for between 15 and 20 percent of the top 1 percent, depending on the year, but few MDs made it into the top 0.1 percent.)

We present the detailed results of our examination of the characteristics of Canada's top earners — those with income in the top 1 percent of the distribution — relative to all income earners over the period from 1981 to 2011, in the tables in the appendix. We focus on the data from the six censuses taken between 1981 and 2006, as these were collected on a consistent basis over time;

we include the results from the 2011 NHS in the tables and occasionally discuss them in the text, but because the two data sources cannot reliably be compared, we accord less attention to the NHS results. Table A1 shows the changes in the underlying characteristics of the top 1 percent over time and, as a benchmark, table A2 reports the corresponding characteristics for all earners over age 15 with non-negative income. In table A3, we present the average income over time of the top earners as a function of the different characteristics reported in table A1, and we do the same for all income earners in table A4. Tables A1 and A3 thus provide two different, but related, ways of looking at the sources of growth in top earnings over time. Holding the share of all income earners in a given group or sector (such as finance) constant over time, if that group experiences unusual growth in income at the top, we should see an increase in the share of all top-income earners who are in that sector. In other words, we can conclude that a given group is contributing positively to the growth in income at the top if the share of top earners in that group (table A1) is increasing faster than the share of all income earners in that same group (table A2). Likewise, we can reach the same conclusion if the average income of a given group of top earners (table A3) is increasing relative to the average income of a given group of all income earners (table A4). Both approaches, in fact, yield relatively similar answers.

Table 2 highlights the most salient results on the characteristics of the top 1 percent relative to all income earners from tables A1 and A2, while tables 3 and 4 provide summary information by fields of study and industry. Table 5 summarizes the information on average incomes of the top earners and all earners shown in tables A3 and A4, and shows the relative growth rates of these incomes between 1981 and 2006. In table 2 and some of the appendix tables (discussed later), we also report the ratio of top earners to all earners for each category at the beginning and end of the sample period. These “relative proportions” enable the reader to see easily which groups are under- or overrepresented among the top earners and how the extent of under- or overrepresentation changed over time.¹⁵

The top-income cut-off

The first row of table 2 shows the income cut-off (in constant 2000 dollars) of the top 1 percent of the income distribution. Consistent with the evidence reported in figure 5, the cut-off increases steadily over time to reach about \$154,000 in the 2006 Census and \$160,000 in the 2011 NHS. Table 2 also shows that labour

earnings — which include both wage and salary earnings and self-employment income — have been by far the largest source of income of individuals in the top 1 percent,¹⁶ accounting, on average, for over 80 percent of their income, substantially higher than the corresponding figure for all income earners (60 percent in 2011). Furthermore, the share of labour earnings in the income of people at the top has been relatively constant over time, which clearly indicates the need to focus on the role of labour earnings, as opposed to other income sources such as investment income, in accounting for the growth in income of the top group.

Work hours

A related set of results on hours of work indicates that individuals in the top 1 percent tend to work substantially longer hours than do the rest of the workforce. For instance, for those who worked, hours of work of the top earners were stable at just under 49 hours from 1981 to 2006, compared with around 39 hours for all workers. Furthermore, a much larger share of individuals at the top worked more than 50 hours a week, and this share increased from 46 percent in 1981 to 54 percent in 2006 (see table A1).¹⁷ This is consistent with the findings of Kuhn and Lozano (2008) that, in the United States, high-wage workers are increasingly likely to work long hours (defined in their study as more than 48 hours a week).

Gender

Table 2 also shows the role of the standard demographic characteristics of gender, age and education in determining the probability of being in the top 1 percent. The most dramatic finding is that the overwhelming majority of top earners are men. Although their share has declined steadily over time — not surprising, since the wage gap between men and women has also declined (Baker and Drolet 2010) — it remained close to 80 percent in 2011. The small percentage of women at the top is nonetheless consistent with the existence of a glass ceiling that makes it hard for women to access high-paying jobs.¹⁸

Age

The probability of being in the top 1 percent depends on age: less than 5 percent of individuals under age 35 were in the top 1 percent in 2006 (table A1). This is also not surprising, since it is well known that earnings grow rapidly as a function of age until about age 40. Furthermore, the share of top earners under age 35 has

Table 2

Selected characteristics of top-1-percent-income earners and all income earners, Canada, 1981-2011 (percent)

	Top-income earners		All earners		Relative share ¹	
	1981	2006	1981	2006	1981	2006
Top-income cut-off (2000\$)	122,439	153,908	160,232			
Work and earnings						
Average hours of work (only workers)	48.6	48.8	45.8	39.1	37.6	
Fraction of income from earnings	80.1	84.6	82.0	76.7	59.5	1.0
Men	91.5	81.2	79.7	53.8	49.1	1.7
Education						
Less than a bachelor's degree	53.9	35.4	32.5	90.9	81.2	0.6
Bachelor's degree	17.6	29.5	32.0	5.9	12.0	3.0
Medicine, dentistry, veterinary	14.7	12.1	10.4	0.4	0.5	34.2
Other graduate degrees	13.8	22.9	25.2	2.8	6.2	5.0
Major field of study²						
Commerce, management and business	16.2	24.7	25.3	7.7	10.5	2.1
Engineering and applied sciences	8.0	9.0	10.3	1.3	2.8	6.2
Health professions and related technologies	19.3	16.6	15.2	3.9	5.8	4.9
Industry						
Mining, quarry and oil and gas	3.0	5.7	7.1	1.4	1.0	2.1
Finance and insurance	5.4	10.8	11.0	2.9	2.7	1.9
Business services	11.9	19.0	19.2	3.4	6.7	3.6
						2.8
						2.8

Table 2 (cont.)
Selected characteristics of top-1-percent-income earners and all income earners, Canada, 1981-2011 (percent)

	Top-income earners			All earners			Relative share ¹		
	1981	2006	2011	1981	2006	2011	1981	2006	2011
Occupation³									
Management	35.0	38.5	36.3	7.4	7.0	7.1	4.7	5.5	5.1
Senior management	13.7	16.8	16.0	0.7	0.9	0.8	19.0	18.6	19.1
Business, finance and administrative	8.7	12.7	13.0	15.0	13.4	13.0	0.6	1.0	1.0
Business and finance	5.6	9.1	9.2	2.1	2.7	2.8	2.7	3.3	3.3
Natural and applied sciences and related	5.0	7.5	9.2	3.6	4.8	5.0	1.4	1.6	1.8
Province of residence									
Quebec	20.8	16.7	16.3	25.6	24.1	23.9	0.8	0.7	0.7
Ontario	38.9	47.1	43.1	36.5	38.2	38.3	1.1	1.2	1.1
Alberta	14.5	17.0	20.8	9.3	10.3	10.6	1.6	1.7	2.0
British Columbia	14.4	12.0	11.9	11.8	13.2	13.4	1.2	0.9	0.9

Source: Authors' calculations based on Statistics Canada, Census of Canada, 1981-2006, master files, and National Household Survey, 2011.

Note: Sample consists of all income earners (individuals with income above zero) ages 15 and older.

¹ Share of top-1-percent-income earners relative to the share of all earners by subgroup.

² Base year: 1986.

³ Base year: 1991.

declined steadily over time (table A2), in part reflecting the declining share of young people in the population over time as the baby boom cohort ages. But the share of young top earners has declined to a greater extent than would be expected on the basis of demographic trends, which is consistent with a well-documented decline in the relative earnings of young workers starting in the early 1980s (see Beaudry and Green 2000; Boudarbat, Lemieux and Riddell 2010).

Education and field of study

Education plays quite an important role in the probability of being a top-income earner. As table 2 shows, even in 2006, only 19 percent of all income earners had a bachelor's degree or higher education (including professional and graduate degrees); this share was even lower (less than 10 percent) in 1981. By contrast, in 2006, 65 percent of top-income earners had at least a bachelor's degree, with the share rising to 68 percent in 2011. In other words, individuals in the top 1 percent are more than three times as likely as all income earners to hold at least a bachelor's degree. The importance of higher education has also grown over time: in 1981, 46 percent of top earners had at least a bachelor's degree; by 2006 the share had increased by almost 20 percentage points. The growing role of higher education as a characteristic of top earners is consistent with the finding of Boudarbat, Lemieux and Riddell (2010) that returns to higher education have steadily increased in Canada since 1981.

Among individuals with at least a bachelor's degree, those with a medical degree (including degrees in dentistry and veterinary medicine) are particularly likely to be part of the top 1 percent. Table 2 indicates that around 12 percent of these individuals were in the top 1 percent in 2006, even though they accounted for only about 0.5 percent of income earners. Note, however, that the share of top-income earners with a medical degree has declined steadily over time despite their representing a slightly growing share of all income earners. This suggests that, over time, medical doctors have lost ground relative to other top earners, perhaps because their earnings depend more on government policies than on market forces. For instance, evidence from the United States, where government plays a smaller role in determining the salaries of medical doctors, indicates that there has not been a similar decline in the share of medical doctors at the top of the income distribution (Bajika, Cole and Heim, 2010). The fact that the downward trend stopped in Canada after 2001 is also consistent with the large federal reinvestment in health care that started around 2000.¹⁹

Information about medical degrees is available in the main census question about educational attainment, but detailed information on other fields of study is available only starting in 1986. The most noticeable trend is the growing importance of commerce, management and business degrees among top earners, mainly reflecting the general growth of this type of degree among all earners (see tables 2, A1 and A2).²⁰ Another noticeable trend is the declining importance of health-related degrees among top earners, which is consistent with the evidence for medical degrees discussed above. Other noteworthy trends are the large differences between top earners and all earners — and the dramatic decline among all income earners — in the “No specialization/no postsecondary” category and the strong and continued overrepresentation of degrees in the social sciences (tables A1 and A2).

Table 2 also indicates that holders of a degree in engineering and applied sciences are more likely to be part of the top 1 percent than are most other degree holders. For instance, in 2006, individuals with a degree in engineering and applied sciences represented 9 percent of top earners, but only 2.8 percent of all income earners. That said, the share of top earners with such a degree has increased only slightly over time, suggesting this is not the main group behind the growth of top incomes in Canada. However, the aggregate categories reported in table 2 hide some interesting developments among more finely defined groups of degree holders. In particular, table 3 shows that the share of top earners with a degree in computer science and other applied mathematics has increased dramatically over time, accounting for about 0.2 percent of top earners in 1986, but for 1.6 percent by 2001. In contrast, the share of all income earners with such a degree increased from 0.2 percent in 1986 to just 0.5 percent in 2001.

It is difficult to compare fields of study in 2006 with those in earlier years because of a major change in the classification system — from the Major Field of Study system to the Classification of Instructional Programs system — for coding field of study. Nonetheless, the share of computer scientists among all income earners grew from 0.5 percent in 2001 to 0.7 percent in 2006, while the share among top earners declined precipitously from 1.6 percent in 2001 to 0.9 percent in 2006. This suggests that the growth in the share of top-income earners with a computer science degree between 1986 and 2001 was mostly a transitory phenomenon linked to the information technology (IT) boom and bust of the 1990s and early 2000s. The longer view, up to 2011,

Table 3

Fields of study with the highest relative share of top-income earners, Canada, 1981-2011 (percent)

	Top-income earners		All income earners		Relative share ¹	
	1986	2001	1986	2001	1986	2001
Medicine	13.6	11.4	0.3	0.4	39.3	26.2
Dentistry	2.6	2.2	0.1	0.1	31.0	20.3
Law and jurisprudence	6.2	6.9	0.4	0.5	15.1	12.6
Engineering, NEC	0.7	2.4	0.1	0.4	6.7	6.6
Economics	1.7	2.6	0.3	0.5	5.2	5.2
Electrical/electronic engineering	1.2	1.9	0.3	0.4	4.9	4.1
Business and commerce	5.9	11.2	1.4	2.8	4.2	4.0
Civil engineering	1.6	1.0	0.2	0.3	6.8	3.5
Mechanical engineering	1.5	1.1	0.2	0.3	6.4	3.5
Financial management	6.8	8.2	1.7	2.5	4.0	3.3
Computer science and other applied mathematics	0.2	1.6	0.2	0.5	1.0	2.9
	2006	2011	2006	2011	2006	2011
Medicine	12.0	10.7	0.4	0.5	27.3	21.8
Dentistry (DDS, DMD)	1.4	1.2	0.1	0.1	18.4	13.4
Law and jurisprudence	7.1	7.1	0.5	0.6	13.0	12.1
Geological and earth sciences/ geosciences	1.1	1.1	0.1	0.1	8.4	8.1
Engineering, general	1.4	3.0	0.3	0.6	5.1	5.1
Business/commerce, general	6.5	7.1	1.4	1.8	4.5	4.0
Economics	2.4	2.3	0.5	0.6	4.3	3.9
Civil engineering	1.4	1.4	0.4	0.4	3.8	3.8
Finance and financial management services	2.4	2.3	0.6	0.6	4.3	3.8
Mechanical engineering	1.6	1.5	0.4	0.4	3.7	3.7
Computer science	0.9	1.1	0.7	0.8	1.4	1.4

Source: Authors' calculations based on Statistics Canada, Census of Canada, 1981-2006, master files, and National Household Survey, 2011.

Note: The table reports the 10 fields of study with the highest relative proportion of top-1-percent-income earners in 2001 or 2011, as well as computer science, ranked according to their relative share in 2001 or 2011. Major Field of Study classification used for 1986 to 2001. Classification of Instructional Programs (2000) used for 2006 and 2011. NEC = not elsewhere classified.

¹ Share of top-1-percent-income earners relative to the share of all income earners by field of study.

suggests that the growth in the IT sector has not been a major factor in the growth of incomes at the top end.

Technological change, especially related to computer and information technologies, is considered to play an important role in many explanations of changes in the wage structure, including the rise in top incomes. Our findings demonstrate that those actually employed in the IT sector in Canada do not constitute a significant category among top earners (though their relative importance has been rising). Technology-based explanations would argue, however, that computer and information technology has altered the wage structure in other sectors of the economy — for example, by making it easier for those in sectors such as business management and finance to earn extremely high incomes.

Industry

As for the industries in which the top earners work,²¹ table 2 reports our results for some of the key industries, while table 4 shows more detailed information on industries with a high concentration of top earners. Our most significant finding is the growth in the share of top earners working in the finance and insurance sector and in business services. The increase in top earners working in finance and insurance was dramatic, doubling from 5.4 percent in 1981 to 10.8 percent in 2006, even as the share of all income earners in this sector remained constant at around 3 percent (see table 2). Thus, the financial sector has played an important role in the growth of top earnings in Canada, just as it has in the United States (see, for example, Bajika, Cole and Heim 2010). In contrast, the share of top earners working in business services (such as management consulting, law and accounting) increased from 12 percent to 19 percent between 1981 and 2006, while the share of all income earners working in that sector doubled from 3.4 percent to 6.7 percent, indicating that the growth in top earners in business services was a composition effect linked to that sector's growth, which continued in the latter half of the 2000s, according to the NHS data.

Another sector in which the share of top earners has increased significantly is the oil and gas extraction (and mining) sector, which accounted for 3 percent of top earners in 1981 and for 5.7 percent in 2006 — rising to 7.1 percent in 2011, according to the NHS. Not surprisingly, therefore, the share of top earners resident in Alberta has also increased significantly (table 2), with 17 percent of top earners living in that province in 2006, compared with 10.3 percent of all income earners. These findings are also consistent

with those of Veall (2012), who shows that Alberta has experienced the fastest growth of any province in the top-income share in Canada.²²

Also noteworthy is the decline in the representation of top earners in manufacturing, from 12 percent in 1981 to just over 7 percent in 2011, although the decline was more gradual than the share of all earners in this sector, which fell from 15.3 percent in 1981 to 6.6 percent in 2011, as table 4 shows.

Table 4
Industries with the highest relative share of top-income earners, Canada, 1981, 2001 and 2011 (percent)

	Top-income earners		All income earners		Relative share ¹	
	1981	2001	1981	2001	1981	2001
Industry classification²						
Finance and insurance	5.4	10.2	2.9	2.7	1.9	3.8
Mining, quarry and oil wells	3.0	2.9	1.4	0.8	2.1	3.6
Business services	11.9	20.8	3.4	6.1	3.6	3.4
Real estate	4.8	3.9	1.4	1.3	3.4	3.0
Health and social services	15.6	15.0	6.0	7.5	2.6	2.0
Wholesale trade	7.0	7.3	3.8	3.8	1.8	1.9
Communication and other utility	1.5	2.5	2.6	2.1	0.6	1.2
Manufacturing	11.9	11.5	15.3	10.4	0.8	1.1
	2001	2011	2001	2011	2001	2011
Industry classification³						
Mining and oil and gas extraction	2.8	7.0	0.8	1.1	3.5	6.6
Finance and insurance	10.9	11.6	3.0	3.1	3.7	3.7
Professional, scientific and technical	18.5	17.0	4.6	5.1	4.0	3.3
Utilities	0.7	1.5	0.6	0.6	1.3	2.4
Real estate and rental and leasing	3.1	3.1	1.2	1.3	2.5	2.3
Wholesale trade	6.9	6.6	3.2	3.0	2.2	2.2
Health care and social assistance	15.0	13.3	7.1	8.0	2.1	1.7
Manufacturing	10.9	7.1	10.2	6.6	1.1	1.1

Source: Authors' calculations based on Statistics Canada, Census of Canada, 1981-2006, master files, and National Household Survey, 2011.

Note: The table reports data for the seven industries with the largest relative share of top-1-percent-income earners, plus manufacturing, ranked according to their relative share in 2001 or 2011. Sample consists of all income earners (individuals with income above zero) ages 15 and older.

¹ Share of top-1-percent-income earners relative to the share of all earners by industry.

² 1981 data based on SIC 1970; 2001 data based on SIC 1980 (see appendix).

³ 2001 data based on NAICS 1997; 2011 data based on NAICS 2007 (see appendix).

Occupation

As for the share of top earners by occupation, because of major changes in the coding of occupations introduced in 1991, we report results only for the period from 1991 to 2011, based on the Standard Occupational Classification system in 1991. Not surprisingly, executives (senior management) account for a disproportionate share of top-income earners — for example, in 2006, 16.8 percent of top earners were senior managers, compared with only 0.9 percent of all income earners (table 2). More significantly, the share of top earners in senior management occupations increased from 13.7 percent in 1991 to 16.8 percent in 2006. Interestingly, all of the increase (from 35.0 percent to 38.5 percent) in the share of managers (at all levels) in the top 1 percent was in senior management. Likewise, essentially all the growth in the broad business, finance and administrative occupations (from 8.7 percent to 12.7 percent) over the period was in business and finance.

Given the growing importance of senior managers in the top 1 percent, table A5 shows the distribution of senior managers among top earners and all earners by industry over the period from 1991 to 2011. Among top earners, the share of senior managers in business services grew substantially, from about 12 percent to 17 percent in 2006, but proportionately less than the share among all earners, so that the relative proportion of the former fell from 1.2 to 1.0. In contrast, in finance and insurance, the increase in the share of senior managers among the top 1 percent was greater than that of senior managers in finance and insurance among all earners, and the relative proportion of the former increased slightly, from 1.9 to 2.2, over the period. These findings highlight the importance of the finance and insurance sector and of CEOs and other senior managers in that sector to the growth of top incomes. The opposite trends hold for numerous other sectors, such as educational services and accommodation, food and beverage, in which the relative importance of senior managers has declined, especially with respect to their share in the top 1 percent of earners.

The only other occupational category that has grown in importance among top earners, as table 2 shows, is natural and applied sciences and related occupations, from 5.0 percent in 1981 to 7.5 percent in 2006. Indeed, the relative importance of this category has also grown among all income earners, from 3.6 percent to 4.8 percent over the period. Furthermore, individuals in this occupational category are about 50 percent more likely than average to be in the top

1 percent (7.5 percentage points is about 50 percent higher than 4.8 percentage points). In contrast, individuals in business and finance are over 3 times more likely than average to be in the top 1 percent (9.1 percent versus 2.7 percent in 2006). The odds are even higher for senior managers, who are almost 20 times more likely than average to be among the top earners (16.8 percent versus 0.9 percent in 2006). On balance, our findings are similar to trends in the United States, where top executives and finance specialists are the two most important contributors to the growth in incomes at the top (see, for example, Bajika, Cole and Heim 2010; Kaplan and Rauh 2013).

Geographical location

The last set of characteristics of top earners we looked at is their geographical location by province and major urban area. As mentioned above, a noticeable trend is the growth of the share of top-income earners who live in Alberta. The share of top earners living in Ontario also outpaced population growth in that province, going from 39 percent in 1981 to 51 percent in 2001, although it declined somewhat over the next decade (see table A1). This is again consistent with Veall (2012), who shows that, after Alberta, Ontario has experienced the fastest growth in its share of top-income earners. Alberta and Ontario are also the only two provinces that have a disproportionate share of top earners. In Quebec, in contrast, the share of top-income earners declined faster (from 21 percent in 1981 to just over 16 percent in 2011) than its share of income earners overall. The share of top-income earners in British Columbia also declined even though its share of all income earners increased, perhaps reflecting the decline of the forestry industry and the loss of head offices in this sector as a result of reductions in Canadian ownership.

The results for major urban areas use the census definition of census metropolitan areas (CMAs). Overall, top incomes are to an important extent an urban phenomenon: more than 60 percent of top earners live in the five major CMAs (table A1), whereas almost 60 percent of all income earners live outside these large urban areas (table A2). Comparing tables A1 and A2 shows that the top 1 percent of earners are overrepresented in four of the five largest CMAs; in Montreal, the share of top earners is about the same as its share of all earners. Over time, the changes in the five CMAs parallel those by province, with the most noteworthy changes being the increase in the share of top-income earners in Toronto (from 20.3 percent in 1981 to 27.3 percent in 2011) and, especially,

in Calgary, where the share almost doubled, from 5.4 percent in 1981 to 10.5 percent in 2011, a much larger rise than the increase in its share of all earners.²³ Again, the growth of incomes at the very top of the distribution is essentially an increasingly urban phenomenon — the fraction of the top 1 percent living outside the five major cities declined from 49 percent in 1981 to 39 percent in 2006, and to 38 percent in 2011 (table A1).

Average income

Tables A3 and A4 report the average incomes of individuals in the top 1 percent and all income earners, respectively, and the main results are summarized in table 5. Consistent with the evidence from the tax data (figure 2), the second row in table 5 and the third row in table A3 indicate that the average real income of top earners increased substantially from \$197,000 in 1981 to \$342,000 in 2006 (in constant 2000 dollars).²⁴ Moreover, the income growth rate of the top earners substantially outpaced that of all income earners, again consistent with the evidence from tax data reported in figure 2.

The detailed breakdown by groups and sectors shows that trends in average income at the top are closely related to the main characteristics associated with top-income earners (tables A1 and A3). For example, the average income of individuals with a medical degree declined relative to that of other top earners between 1981 and 2006 (tables 5 and A3), as did the overrepresentation of this group among top earners (tables 2 and A1): the average income of top earners in this group was close to the average for all top earners in 1981, but was 23 percent below that average in 2006. So both the declining share of top-income earners with a medical degree and the evolution of their average income indicate that this particular group lost ground relative to other top-income earners over time. Indeed, their average income is one of the lowest of all groups in the top 1 percent, reflecting, as noted earlier, the influence of government policies on the compensation system for doctors, which is closely connected to government-set (or negotiated) reimbursement rates for various medical procedures. For all practical purposes, most medical doctors are paid something akin to piece rates, which essentially makes it impossible to earn the extremely high incomes of some top executives, investment bankers, etc.

The income experience of top earners with a medical degree contrasts sharply with that of top earners who are managers, especially senior management,

Table 5
Average income of top-1-percent-income earners and all income earners, by selected characteristics, Canada, 1981-2011 (2000 dollars)

	Top-income earners (\$)			All earners (\$)			Income growth, 1981-2006 (%)	
	1981	2006	2011	1981	2006	2011	Top earners	All earners
Top-income cut-off	122,439	153,908	160,232					
Work and earnings								
Mean total income	197,476	342,487	320,235	28,191	31,650	33,288	73.4	12.3
Work 50 hours or more per week	202,404	351,551	338,824	46,119	56,601	60,101	73.7	22.7
Men	197,927	353,899	330,569	36,731	38,948	39,793	78.8	6.0
Women	192,610	293,277	279,690	18,252	24,655	27,023	52.3	35.1
Education								
Less than a bachelor's degree	199,026	332,147	310,945	25,827	26,851	27,986	66.9	4.0
Bachelor's degree	199,174	362,247	332,140	44,808	47,171	48,156	81.9	5.3
Medicine, dentistry, veterinary	193,395	264,072	276,029	103,663	102,625	96,600	36.5	-1.0
Other graduate degrees	193,614	374,532	335,313	58,743	58,093	57,332	93.4	-1.1
Major field of study¹								
Commerce, management and business	197,619	387,484	351,715	34,559	43,082	43,814	96.1	24.7
Engineering and applied sciences	197,808	345,467	335,847	60,272	53,848	56,609	74.6	-10.7
Health professions and related technologies	194,524	273,891	278,402	38,701	41,635	42,025	40.8	7.6
Mathematics, computer and physical sciences	183,677	375,666	333,075	45,600	55,875	55,197	104.5	22.5
Industry								
Mining, quarry and oil and gas	191,041	368,425	325,085	46,735	72,235	79,406	92.9	54.6
Finance and insurance	232,659	449,075	393,278	34,823	57,595	58,510	93.0	65.4
Business services	197,907	337,294	316,488	38,225	45,619	48,772	70.4	19.3

Table 5 (cont.)
Average income of top-1 percent-income earners and all income earners, by selected characteristics, Canada, 1981-2011 (2000 dollars)

	Top-income earners (\$)			All earners (\$)			Income growth, 1981-2006 (%)	
	1981	2006	2011	1981	2006	2011	Top earners	All earners
Occupation²								
Management	233,410	397,701	353,533	54,783	68,569	68,055	70.4	25.2
Senior management	256,621	445,925	390,037	96,386	131,894	126,672	73.8	36.8
Business, finance and administrative	204,133	355,372	336,412	29,222	35,057	37,806	74.1	20.0
Business and finance	210,283	353,330	343,050	42,520	53,584	56,226	68.0	26.0
Natural and applied sciences and related	184,521	290,086	282,178	46,869	51,168	54,932	57.2	9.2
Province of residence								
Quebec	189,566	300,482	298,238	27,022	28,597	29,768	58.5	5.8
Ontario	203,796	352,817	331,055	28,891	33,969	34,609	73.1	17.6
Alberta	197,450	381,821	326,647	31,879	37,654	41,727	93.4	18.1
British Columbia	200,227	334,455	324,817	30,894	30,777	32,276	67.0	-0.4

Source: Authors' calculations based on Statistics Canada, Census of Canada, 1981-2006, master files, and National Household Survey, 2011.

Note: Sample consists of all income earners (individuals with income above zero) ages 15 and older.

¹ Base year: 1986.

² Base year: 1991.

and those who work in the business and finance sectors. As tables 5 and A3 show, executives/managers and individuals in the finance sector earn substantially higher incomes than other top earners. Furthermore, the rate of growth of the average income of these two groups has been above that of all top earners, so that, by 2006, top earners in the finance sector were earning 31 percent above the average of all top earners.

A similar picture emerges when we examine the growth of top earnings by major field of study over the period from 1986 to 2006 (tables 5 and A3). The largest increases in income were enjoyed by top earners in commerce, management and business administration (96 percent) and in mathematics, computer and physical sciences (105 percent), two major fields that also saw their shares of top earners grow over the period. In contrast, top earners in the health professions saw their average income grow by 41 percent, less than half as much.

Conclusion

USING DETAILED INFORMATION FROM THE CENSUS MASTER FILES OF 1981 TO 2006 and from the 2011 National Household Survey, we find that over the past three decades the incomes of Canadians in the top 1 percent of the income distribution have grown much faster than those of all Canadian income earners. Looking also at what these data tell us about the characteristics of top-income earners allows us to draw conclusions about certain trends that have been under way over that time.

First, as in the United States, executives and individuals working in the finance and business services sectors are the two most important groups driving the growth in top incomes, but in contrast to the United States, the oil and gas sector has also played an important part in income growth at the top, especially in more recent years. A closely related finding is that a disproportionate share of top-income earners now live in Alberta.

Second, at the other end of the spectrum, individuals with a medical degree are substantially overrepresented among top earners, but in terms of income they have generally lost ground relative to other top earners.

Third, given the prominent role of technological change in the growth of top incomes, it is no surprise that individuals with a natural or applied sciences degree, including those in the computer sciences, have made substantial income

gains relative to other top earners. However, these gains have been smaller than those made by senior managers and those working in the finance and business services sectors.

Fourth, although there are many more computer scientists among the top 1 percent than there were 30 years ago, this group still constitutes only a small share of top earners. In addition, the greater presence of computer scientists among top earners mostly reflects a general increase in the share of all income earners who hold a computer science degree. Although technological changes can affect the earnings of different groups of workers in different ways, the results for scientists and computer scientists in particular suggest that such changes are only a modest part of the explanation of what has happened at the very top of the distribution. If the IT revolution had been the main driver of income growth at the very top, the group of IT specialists at the very core of this revolution should have accounted for a larger share of top-income earners.

What do these findings tell us about the relative roles of market forces and economic rents? When we compare the incomes of top executives and doctors, it is clear that rents or related institutional factors are at least part of the story of changes at the top. In Canada, the ability of doctors (as individuals or as a group) to extract rents chiefly depends on reimbursement rates that are negotiated with provincial health authorities as well as on control over entry into the profession due to the limited numbers of spaces available in medical schools (which also rely on provincial funding). Although there is an ongoing debate about the ability of top executives to extract rents, it is difficult to believe that rents are not part of the reason executives have done much better than doctors in terms of top-income growth in recent decades.

Although it is difficult to be definitive, several factors appear to have been more consistent with rent creation and extraction than with the competitive market view. For example, our finding that the growth of top incomes has been much greater in a few sectors (especially finance) and occupations (especially senior executives) is consistent with rent extraction associated with opportunities that are specific to those sectors. In the case of finance, deregulation and lack of oversight have created opportunities for finance professionals to earn extraordinarily large incomes by taking substantial risks with other people's money — and in some cases, by camouflaging the nature of those risks. Similarly, the fact that the pay of CEOs has increased more substantially in some countries (especially the United

States) than in other advanced nations is more consistent with country-specific features of corporate governance that create rent-extraction opportunities than with a generalized increase in demand for executive talent. Finally, the declining bargaining power of many workers due to the globalization of economic activity, and institutional changes such as dramatic declines in private sector unionization and lower real minimum wages, might have reduced economic rents that would otherwise have flowed to workers lower down the wage distribution and increased rents received by those at the very top.

Market forces surely are playing a role in the growth of earnings in the oil and gas sector and in provinces, particularly Alberta, where this sector is most developed. Indeed, reflecting the substantial increase in the demand for labour among workers with earnings below the top 1 percent during the resource boom, Fortin and Lemieux (forthcoming) find that less-skilled workers have benefited substantially from the extractive resources boom. It is not clear, however, why people at the very top in this sector (CEOs and senior managers, in particular) should benefit to an even greater extent, as is evident in our data. Bertrand and Mullainathan (2001) use changes in oil prices as a prime example of CEOs' compensation based on "luck" — on factors beyond their control — rather than on performance. As the authors explain, if CEOs were paid in a way that serves the interests of shareholders, they would be rewarded based on their effort and performance, as opposed to factors like world oil prices, which are beyond their control. The fact that top incomes went up substantially in the oil and gas sector is consistent with a "skimming" model of pay setting, where top executives are able to capture some of the large rents created by higher oil prices.

On balance, we think that our findings are more consistent with a rent-extraction story than with a market-based explanation. It is important to stress that we do not mean to suggest that top-income earners are "rentiers" in the traditional sense of the word. Like the rest of Canadian income earners, people at the top earn most of their income from work — indeed, if anything, their work effort has increased over time, as evidenced by the growing share working more than 50 hours a week. Nonetheless, although some high incomes are surely compensation for hard work, the growth in top incomes over time has been so large that rent extraction must be the major contributing factor.

Appendix: Census Changes and Data Consistency Issues

In this appendix we describe key changes to the census over our sample period and explain how we have recoded the data to obtain consistent information over time.

Two important changes introduced in the 2006 Census created some comparability problems with the data from the 1981-2001 period. First, respondents who were required to complete the “long form” (Form 2b) of the census were given the opportunity of allowing Statistics Canada to access their income tax records instead of self-reporting the income items as was the case with earlier censuses. Although more than 80 percent of respondents did permit access to their tax records (Statistics Canada 2008), the information on income and earnings since 2006 is not strictly comparable to previous census data.²⁵

Second, the information on educational attainment in the 2006 Census was simplified relative to that in previous censuses. Although it was possible to identify precisely the number of years of schooling in the earlier censuses, the only information available in the 2006 Census is the highest diploma or degree obtained, which limits the number of educational categories that we could use in our empirical analysis. For example, starting in 2006, all workers without a certificate or diploma have been pooled in the same educational category, regardless of whether they have one or eleven years of schooling. We nonetheless were able to construct six education categories that are consistently defined over time: (1) less than a high school diploma; (2) high school diploma; (3) postsecondary degree or diploma below a bachelor's degree (including a trade certificate); (4) bachelor's degree; (5) professional degree in medicine, dentistry or veterinary medicine; and (6) postgraduate degree.

A new question about field of study (for postsecondary degrees only) was introduced in the 1986 Census, and from 1986 to 2001, field of study was coded using the Major Field of Study (MFS) classification system. Then, in the 2006 Census, a new classification system, the Classification of Instructional Programs (CIP), was introduced. To take this change into account, we used the concordance between the MFS and the CIP from the Statistics Canada website (Statistics Canada 2015) and report the results at the major levels of the MFS. However, the CIP is a more detailed classification than the MFS: 170 CIP categories have more than one MFS major level, so, to deal with those cases, we added an “overlapped”

category that includes individuals with a major field of study in one of the 170 categories. We use a set of 10 major fields of study in our main analysis tables and report supplemental evidence for 25 more detailed fields that contain a particularly large share of top-income earners.

There have also been some changes over time in the classification system used for industry and occupation. Regarding industry, four different classifications have been used in the census master files over the years: the Standard Industry Classification 1970 (SIC-1970) in 1981, the SIC-1980 in the 1986 to 2001 censuses, the North American Industry Classification System 1997 (NAICS-1997) in 2001, and the NAICS-2002 in 2006. Because the SIC and the NAICS have a similar structure at the major industry level, we grouped some NAICS categories to match the SIC categories and report the industry composition at the SIC major industry level. In particular, we grouped NAICS categories 51 and 22 into the SIC's "communication and other utility" level, NAICS categories 54 to 56 into the SIC's "business services" level and NAICS categories 71 and 81 into the SIC's "other services" level. Finally, to maintain consistency over time in both composition and averages, we computed the value of these variables in 2006 based on their level in the 2001 Census (using the SIC) and the changes from the 2001 to the 2006 Census using the grouped NAICS classification. As with field of study, in the main analysis tables, we present results for a limited set of industries and occupations that are consistently defined over time. We also present more detailed results for industries and occupations in which top earners tend to be concentrated.

Table A1
Characteristics of top-1-percent-income earners, Canada, 1981-2011 (percent)

	1981	1986	1991	1996	2001	2006	2011
Top-income cut-off (2000\$)	122,439	118,871	125,213	119,795	140,150	153,908	160,232
Work and earnings							
Positive hours of work	86.9	87.1	85.5	86.7	88.5	87.8	87.1
Work 50+ hours a week (only workers)	46.5	48.0	46.9	53.5	52.7	54.4	39.6
Average hours of work (only workers)	48.6	48.6	47.5	48.7	48.4	48.8	45.8
Fraction of income from earnings	80.1	81.3	81.2	83.1	85.5	84.6	82.0
Men	91.5	90.0	86.5	84.9	83.1	81.2	79.7
Education							
Less than a bachelor's degree	53.9	46.7	46.7	40.9	37.5	35.4	32.5
Bachelor's degree	17.6	21.3	21.2	24.6	28.1	29.5	32.0
Medicine, dentistry, veterinary	14.7	15.8	14.0	14.2	12.3	12.1	10.4
Other graduate degrees	13.8	16.2	18.2	20.4	22.1	22.9	25.2
Age groups							
Under 35	13.7	10.9	9.5	7.8	7.3	4.8	4.2
35-64	76.5	78.4	77.7	80.3	83.0	84.3	83.7
Over 64	9.8	10.7	12.8	11.9	9.7	11.0	12.1
Major field of study¹							
Educational, recreational and counselling services		1.5	2.1	2.3	1.8	1.7	2.1
Fine and applied arts		1.0	1.2	1.0	1.1	0.8	0.8
Humanities and related fields		2.5	2.6	3.0	3.1	2.3	2.3
Social sciences and related fields		10.0	11.7	12.5	12.8	11.8	12.2
Commerce, management and business		16.2	16.8	20.2	22.9	24.7	25.3
Agricultural, biological, nutritional and food sciences		1.6	1.8	1.8	1.7	1.3	1.4
Engineering and applied sciences		8.0	7.5	7.8	8.9	9.0	10.3
Applied science technologies and trades		5.9	7.0	6.7	7.5	6.6	7.6
Health professions and related technologies		19.3	17.6	18.1	16.1	16.6	15.2
Mathematics, computer and physical sciences		3.2	3.2	4.1	5.1	3.0	3.1
No specialization/no postsecondary education		30.7	28.5	22.4	18.8	16.7	13.6
Overlapped						5.4	6.2
Industry							
Agriculture, forestry, fishing and hunting	7.5	5.0	4.5	2.9	2.0	1.4	1.1
Mining, quarry and oil and gas	3.0	3.7	2.5	2.7	2.9	5.7	7.1
Manufacturing	11.9	12.0	10.7	11.9	11.5	9.6	7.7
Construction	5.7	4.3	5.4	3.4	3.6	4.2	5.3
Transportation and storage	4.5	4.3	3.9	3.7	3.4	2.6	2.4

Table A1 (cont.)
Characteristics of top-1-percent-income earners, Canada, 1981-2011 (percent)

	1981	1986	1991	1996	2001	2006	2011
Industry (cont.)							
Communication and other utility			2.0	2.2	2.5	2.1	2.3
Wholesale trade	1.5	1.9	5.4	6.8	7.3	7.7	7.0
Retail trade	7.0	5.9	5.2	3.9	4.1	4.3	3.8
Finance and insurance	5.5	5.0	6.7	8.3	10.2	10.8	11.0
Real estate	5.4	6.5	4.2	3.9	3.9	4.1	3.9
Business services	4.8	4.3	15.5	16.7	20.8	19.0	19.2
Government services	11.9	13.6	3.7	3.4	2.2	2.2	3.5
Educational services	3.4	3.5	3.2	3.2	1.9	1.8	3.1
Health and social services	3.2	3.3	15.8	16.4	15.0	15.2	13.3
Accommodation, food and beverage	15.6	17.3	1.3	1.1	1.1	0.8	0.8
Other services	1.4	1.4	3.0	3.1	2.8	2.6	2.8
Not applicable	2.2	2.8	6.8	6.4	4.8	5.8	5.6
Occupation²	5.5	5.3					
Management			35.0	34.8	38.2	38.5	36.3
Senior management			13.7	13.6	16.0	16.8	16.0
Business, finance and administrative			8.7	11.2	11.7	12.7	13.0
Business and finance			5.6	7.7	8.9	9.1	9.2
Natural and applied sciences and related			5.0	5.4	7.8	7.5	9.2
Health			15.8	16.1	14.6	15.2	13.8
Social science, education, government services and religion			9.7	9.7	8.7	9.0	10.1
Art, culture, recreation and sport			1.4	1.5	1.6	1.0	1.2
Sales and services			7.6	7.4	6.2	5.9	4.9
Trades, transport and equipment operators and related			5.0	3.5	3.5	2.4	3.4
Occupations unique to primary industry			4.0	2.6	1.9	1.5	1.7
Occupations unique to processing, manufacturing and utilities			0.9	1.3	1.0	0.6	0.7
Not applicable			6.8	6.4	4.8	5.8	5.6
Industry — senior management only							
Agriculture, forestry, fishing and hunting			0.7	1.0	0.6	0.7	0.8
Mining, quarry and oil and gas			3.8	4.4	3.7	4.3	4.9
Manufacturing			25.6	24.5	20.8	19.7	15.6
Construction			7.2	4.9	3.7	5.4	7.2
Transportation and storage			3.4	3.9	3.4	3.5	3.4
Communication and other utility			3.4	3.6	4.9	3.9	2.9
Wholesale trade			12.0	13.6	12.0	12.5	12.4
Retail trade			6.7	4.9	4.5	4.4	4.4

Table A1 (cont.)
Characteristics of top-1-percent-income earners, Canada, 1981-2011 (percent)

	1981	1986	1991	1996	2001	2006	2011
Industry — senior management only (cont.)							
Finance and insurance			10.2	10.5	13.2	13.6	14.0
Real estate			3.2	3.8	3.9	4.3	4.6
Business services			11.9	12.9	20.2	17.1	17.3
Government services			4.5	1.9	3.2	2.3	3.2
Educational services			0.7	0.9	0.7	0.8	1.0
Health and social services			1.7	2.5	1.9	1.7	2.2
Accommodation, food and beverage			1.7	1.1	1.0	1.2	1.3
Other services			3.5	4.1	3.6	4.5	4.9
Largest census metropolitan areas							
Montreal	12.7	12.4	11.5	11.9	11.4	11.2	11.0
Toronto	20.3	25.6	27.9	27.4	30.2	28.6	27.3
Calgary	5.4	5.9	4.8	5.6	7.1	9.4	10.5
Edmonton	4.0	3.4	2.7	2.8	3.2	3.9	5.1
Vancouver	9.1	8.1	8.7	9.3	8.5	8.3	8.4
Rest of Canada	48.6	44.6	44.4	42.9	39.7	38.6	37.7
Province of residence							
Newfoundland and Labrador	0.8	0.8	0.8	0.8	0.7	0.7	0.9
Nova Scotia	1.8	2.2	1.9	1.9	1.7	1.5	1.3
New Brunswick	1.0	1.3	1.3	1.3	1.0	0.9	1.0
Quebec	20.8	19.4	18.2	17.8	16.7	16.7	16.3
Ontario	38.9	45.2	49.3	48.1	51.1	47.1	43.1
Manitoba	3.2	3.2	2.7	2.7	2.3	2.1	1.9
Saskatchewan	4.3	3.4	2.4	2.3	1.7	1.7	2.2
Alberta	14.5	12.4	9.9	10.9	12.9	17.0	20.8
British Columbia	14.4	11.7	13.0	13.8	11.5	12.0	11.9
PE/Yukon/NW Territories/Nunavut	0.4	0.4	0.5	0.5	0.3	0.3	0.4
Population (000s)	157.2	170.7	193.5	213.0	227.3	244.2	259.2

Source: Authors' calculations based on Statistics Canada, Census of Canada, 1981-2006, master files, and National Household Survey, 2011.

Note: Sample consists of individuals with income above zero, ages 15 and older.

¹ Based on MFS classification, 1986-2006.

² Based on SOC 91.

Table A2
Characteristics of all income earners, Canada, 1981-2011 (percent)

	1981	1986	1991	1996	2001	2006	2011
Work and earnings							
Positive hours of work	64.6	63.4	62.6	60.3	61.6	61.8	60.3
Work 50 + hours a week (only workers)	14.3	15.8	15.0	17.7	17.9	18.2	12.5
Average hours of work (only workers)	39.1	39.1	38.3	38.1	38.8	39.0	37.6
Fraction of income from earnings	76.7	69.9	77.9	62.7	61.8	63.0	59.5
Men	53.8	52.3	50.8	50.3	49.2	48.9	49.1
Education							
Less than a bachelor's degree	90.9	89.4	87.9	86.0	84.0	81.2	78.4
Bachelor's degree	5.9	7.1	7.9	9.2	10.5	12.0	13.8
Medicine, dentistry, veterinary	0.4	0.4	0.5	0.5	0.5	0.5	0.6
Other graduate degrees	2.8	3.1	3.7	4.3	5.0	6.2	7.2
Age groups							
Under 35	44.9	41.8	38.8	34.5	31.4	29.9	29.4
35-64	41.5	43.8	46.3	49.9	52.7	53.7	53.1
Over 64	13.6	14.4	15.0	15.6	15.9	16.5	17.5
Major field of study							
Educational, recreational and counselling services	3.5	3.5	3.9	4.5	4.7	4.4	4.7
Fine and applied arts	1.9	1.9	2.1	2.3	2.5	2.7	2.8
Humanities and related fields	2.2	2.2	2.3	2.6	2.9	2.7	2.8
Social sciences and related fields	2.8	2.8	3.3	4.1	4.5	4.4	4.8
Commerce, management and business	7.7	7.7	8.5	9.3	9.9	10.5	11.3
Agricultural, biological, nutritional and food sciences	1.7	1.7	1.8	2.0	2.2	1.9	2.1
Engineering and applied sciences	1.3	1.3	1.5	1.8	2.1	2.8	3.0
Applied science technologies and trades	8.5	8.5	9.1	9.5	9.8	10.0	10.3
Health professions and related technologies	3.9	3.9	4.4	4.7	5.0	5.8	6.6
Mathematics, computer and physical sciences	1.1	1.1	1.2	1.4	1.7	0.8	0.9
No specialization/no postsecondary education	65.4	65.4	61.9	57.9	54.7	48.0	44.4
Overlapped						6.0	6.5
Industry							
Agriculture, forestry, fishing and hunting	4.2	4.1	3.7	3.3	2.9	2.4	2.0
Mining, quarry and oil and gas	1.4	1.2	1.0	0.8	0.8	1.0	1.1
Manufacturing	15.3	13.5	11.4	10.4	10.4	8.9	6.8
Construction	5.2	4.7	5.1	4.2	4.3	4.9	5.2
Transportation and storage	3.8	3.5	3.2	3.0	3.1	3.0	2.9
Communication and other utility	2.6	2.5	2.6	2.2	2.1	2.0	2.0
Wholesale trade	3.8	3.6	3.3	3.6	3.8	3.8	3.6

Table A2 (cont.)
Characteristics of all income earners, Canada, 1981-2011 (percent)

	1981	1986	1991	1996	2001	2006	2011
Industry (cont.)							
Retail trade	9.9	10.0	10.3	9.2	8.9	9.0	9.0
Finance and insurance	2.9	2.8	3.1	2.6	2.7	2.7	2.8
Real estate	1.4	1.4	1.3	1.4	1.3	1.4	1.4
Business services	3.4	3.7	4.4	4.8	6.1	6.7	6.8
Government services	6.2	6.1	6.2	4.6	4.2	4.2	5.1
Educational services	5.4	5.2	5.4	5.2	5.2	5.4	5.8
Health and social services	6.0	6.5	7.0	7.2	7.5	7.9	8.3
Accommodation, food and beverage	4.9	5.1	5.3	5.2	5.2	5.1	4.9
Other services	4.6	5.2	5.4	5.8	5.5	5.6	5.4
Not applicable	19.0	20.9	21.5	26.5	26.1	25.8	27.2
Occupation²							
Management			7.4	6.4	7.5	7.0	7.1
Senior management			0.7	0.7	0.9	0.9	0.8
Business, finance and administrative			15.0	13.9	13.2	13.4	13.0
Business and finance			2.1	2.2	2.6	2.7	2.8
Natural and applied sciences and related			3.6	3.6	4.7	4.8	5.0
Health			3.8	3.6	3.8	4.1	4.5
Social science, education, government services and religion			5.0	4.9	5.1	5.5	6.8
Art, culture, recreation and sport			1.9	2.1	2.2	2.3	2.5
Sales and services			19.8	19.6	18.5	18.8	17.6
Trades, transport and equipment operators and related			12.0	10.3	10.3	10.7	10.6
Occupations unique to primary industry			4.1	3.6	3.2	2.9	2.4
Occupations unique to processing, manufacturing and utilities			5.9	5.6	5.6	4.8	5.6
Not applicable			21.5	26.5	26.1	25.8	27.2
Industry — senior management only							
Agriculture, forestry, fishing and hunting			1.1	1.0	1.0	1.5	1.4
Mining, quarry and oil and gas			1.5	1.9	1.6	1.8	1.8
Manufacturing			19.5	18.2	15.2	14.1	11.9
Construction			8.1	6.8	7.7	6.8	7.7
Transportation and storage			3.3	3.6	3.2	3.4	2.9
Communication and other utility			2.4	2.1	2.8	1.9	1.3
Wholesale trade			10.0	11.6	10.8	10.5	10.3
Retail trade			9.0	7.5	5.7	5.7	5.6
Finance and insurance			5.5	5.3	6.9	6.3	7.2

Table A2 (cont.)
Characteristics of all income earners, Canada, 1981-2011 (percent)

	1981	1986	1991	1996	2001	2006	2011
Industry — senior management only (cont.)							
Real estate			2.3	2.6	3.1	3.5	3.3
Business services			10.1	12.7	17.3	17.6	17.4
Government services			13.2	11.9	11.2	9.1	8.8
Educational services			1.5	1.5	1.8	2.2	2.4
Health and social services			4.1	4.6	5.3	5.2	6.2
Accommodation, food and beverage			2.4	1.7	1.5	2.1	2.4
Other services			5.9	7.0	7.2	8.4	9.2
Largest census metropolitan areas							
Montreal	11.9	11.8	11.6	11.6	11.5	11.5	11.4
Toronto	13.2	14.3	14.6	14.8	15.5	15.9	16.5
Calgary	2.6	2.7	2.8	2.9	3.3	3.4	3.6
Edmonton	2.8	3.1	3.1	3.0	3.2	3.3	3.4
Vancouver	5.7	5.7	6.1	6.5	6.7	6.8	7.0
Rest of Canada	63.8	62.2	61.8	61.2	59.9	59.0	58.1
Province of residence							
Newfoundland and Labrador	1.9	1.9	1.9	1.9	1.7	1.6	1.6
Nova Scotia	3.3	3.4	3.2	3.2	3.0	2.9	2.8
New Brunswick	2.7	2.7	2.6	2.6	2.5	2.3	2.3
Quebec	25.6	25.3	25.0	24.7	24.2	24.1	23.9
Ontario	36.5	37.1	37.6	37.4	37.8	38.2	38.3
Manitoba	4.3	4.2	4.0	3.9	3.7	3.5	3.5
Saskatchewan	3.9	3.9	3.5	3.4	3.2	3.0	3.0
Alberta	9.3	9.2	9.1	9.2	10.0	10.3	10.6
British Columbia	11.8	11.6	12.2	13.2	13.2	13.2	13.4
PEI/Yukon/NW Territories/Nunavut	0.7	0.8	0.8	0.8	0.7	0.7	0.7
Population (000s)	15,722.6	17,061.9	19,345.6	20,916.8	22,723.1	24,423.2	25,918.5

Source: Authors' calculations based on Statistics Canada, Census of Canada, 1981-2006, master files, and National Household Survey, 2011.

Note: Sample consists of individuals with income above zero, ages 15 and older.

¹ Based on IMFS classification, 1986-2006.

² Based on SOC 91.

Table A3
Average income of top-1-percent-income earners by characteristic, Canada, 1981-2011 (2000 dollars)

	1981	1986	1991	1996	2001	2006	2011
Top-income cut-off	122,439	118,871	125,213	119,795	140,150	153,908	160,232
Total income (millions)	31,048	33,233	41,163	43,523	59,888	83,649	83,000
Work and earnings							
Mean total income	197,476	194,733	212,754	204,364	263,433	342,487	320,235
Mean employment income	154,596	154,945	169,234	168,224	222,532	283,925	257,510
Work 50 hours or more per week	202,404	201,109	221,366	213,126	270,227	351,551	338,824
Only workers	196,968	195,765	213,683	206,172	264,366	341,078	317,956
Men	197,927	195,902	215,445	207,591	269,305	353,899	330,569
Women	192,610	184,237	195,546	186,258	234,520	293,277	279,690
Education							
Less than a bachelor's degree	199,026	192,360	212,036	202,334	252,479	332,147	310,945
Bachelor's degree	199,174	199,138	217,153	207,275	280,681	362,247	332,140
Medicine, dentistry, veterinary	193,395	195,346	209,020	198,711	228,682	264,072	276,029
Other graduate degrees	193,614	195,187	212,340	208,867	279,417	374,532	335,313
Age groups							
Under 35	184,330	175,753	194,326	190,027	237,574	265,980	267,993
35-64	198,259	195,169	212,291	203,744	263,734	339,881	314,670
Over 64	209,804	210,998	229,180	217,966	280,223	395,761	377,184
Major field of study							
Educational, recreational and counselling services	166,541	166,541	185,078	193,567	242,902	305,506	277,523
Fine and applied arts	183,822	183,822	201,533	187,580	252,626	319,172	302,072
Humanities and related fields	182,058	182,058	211,401	204,854	268,565	333,744	301,970
Social sciences and related fields	199,789	199,789	222,292	210,366	283,285	353,880	330,882
Commerce, management and business	197,619	197,619	213,723	213,166	290,116	387,484	351,715
Agricultural, biological, nutritional and food sciences	179,463	179,463	199,455	189,589	235,333	294,068	287,939
Engineering and applied sciences	197,808	197,808	212,678	198,421	267,591	345,467	335,847
Applied science technologies and trades	178,062	178,062	202,611	191,909	241,776	311,860	280,756
Health professions and related technologies	194,524	194,524	208,495	198,239	231,352	273,891	278,402
Mathematics, computer and physical sciences	183,677	183,677	206,442	195,933	247,649	375,666	333,075
No specialization/no postsecondary education	198,856	198,856	217,589	208,378	260,149	357,498	330,015
Overlapped						321,675	298,417
Industry							
Agriculture, forestry, fishing and hunting	197,024	184,941	195,098	186,982	223,138	298,872	349,005
Mining, quarry and oil and gas	191,041	189,723	212,942	202,876	262,076	368,425	325,085
Manufacturing	192,290	195,838	208,717	216,429	276,795	358,888	339,291
Construction	202,966	202,125	265,346	210,151	278,968	412,812	353,933

Table A3 (cont.)
Average income of top-1 percent-income earners by characteristic, Canada, 1981-2011 (2000 dollars)

	1981	1986	1991	1996	2001	2006	2011
Industry (cont.)							
Transportation and storage	186,373	173,678	190,267	184,994	228,670	312,807	268,646
Communication and other utility	172,405	172,038	192,443	182,760	252,521	286,168	294,521
Wholesale trade	204,423	203,908	225,948	212,640	262,643	339,279	309,513
Retail trade	201,587	206,712	220,390	206,246	270,912	355,267	337,182
Finance and insurance	232,659	229,941	233,053	247,249	347,607	449,075	393,278
Real estate	206,261	202,139	220,071	209,897	266,416	387,307	349,802
Business services	197,907	198,432	216,638	206,211	264,166	337,294	316,488
Government services	157,928	154,112	166,808	159,680	191,907	225,459	228,836
Educational services	159,630	160,243	169,264	166,891	200,941	260,351	254,150
Health and social services	196,175	196,509	209,671	198,872	230,133	270,557	276,712
Accommodation, food and beverage	212,749	212,422	205,750	193,637	245,854	381,346	335,958
Other services	208,189	181,251	219,319	210,336	269,699	300,353	330,258
Not applicable	209,271	189,551	209,522	188,098	239,726	352,244	333,820
Occupation²							
Management			233,410	225,875	301,671	397,701	353,533
Senior management			256,621	263,210	342,551	445,925	390,037
Business, finance and administrative			204,133	212,245	273,323	355,372	336,412
Business and finance			210,283	220,435	281,659	353,330	343,050
Natural and applied sciences and related			184,521	174,519	219,891	290,086	282,178
Health			209,752	199,356	229,263	271,421	277,195
Social science, education, government service and religion			204,166	195,482	252,477	314,536	309,064
Art, culture, recreation and sport			215,348	221,876	279,888	303,670	374,332
Sales and services			191,051	176,701	222,594	274,526	272,218
Trades, transport and equipment operators and related			197,882	218,951	218,951	322,284	273,754
Occupations unique to primary industry			193,292	179,833	211,977	279,549	297,147
Occupations unique to processing, manufacturing and utilities			171,831	165,297	214,086	273,332	228,985
Not applicable			209,522	188,098	239,726	352,244	333,820
Industry — senior management only							
Agriculture, forestry, fishing and hunting			272,260	215,018	305,168	458,750	310,790
Mining, quarry and oil and gas			334,310	299,272	397,253	681,684	639,084
Manufacturing			249,078	293,979	353,118	463,607	445,659
Construction			312,731	264,124	404,440	496,645	462,190
Transportation and storage			268,117	228,839	293,758	423,008	318,682
Communication and other utility			227,350	241,222	323,706	372,645	396,251
Wholesale trade			274,594	266,511	336,590	461,882	383,925
Retail trade			259,883	272,602	354,937	442,294	355,764

Table A3 (cont.)
Average income of top-1 percent-income earners by characteristic, Canada, 1981-2011 (2000 dollars)

	1981	1986	1991	1996	2001	2006	2011
Industry — senior management only (cont.)							
Finance and insurance			263,570	273,484	427,296	487,603	411,622
Real estate			240,609	245,907	314,708	410,386	330,496
Business services			160,911	151,849	196,108	260,101	229,527
Government services			209,828	165,186	209,828	265,655	241,631
Educational services			190,313	196,205	257,095	290,660	360,945
Health and social services			222,514	213,016	330,137	445,109	378,791
Accommodation, food and beverage			251,944	256,687	258,298	271,616	271,460
Other services							
Largest census metropolitan areas							
Montreal	191,205	188,265	209,441	201,578	249,712	310,967	309,024
Toronto	209,676	211,223	229,959	221,335	301,527	385,355	352,476
Calgary	205,390	193,738	208,526	212,789	269,211	412,905	358,449
Edmonton	193,350	201,612	212,676	206,276	245,142	348,040	314,705
Vancouver	205,173	197,428	216,497	213,185	272,301	343,962	338,543
Rest of Canada	192,058	186,187	202,546	191,146	236,880	301,936	286,223
Province of residence							
Newfoundland and Labrador	184,419	187,803	206,902	184,575	227,296	265,317	241,721
Nova Scotia	180,915	183,004	190,830	184,965	240,071	274,421	279,402
New Brunswick	191,906	179,358	213,136	185,062	225,937	263,484	258,638
Quebec	189,566	183,171	200,401	193,293	241,122	300,482	298,238
Ontario	203,796	203,163	221,478	209,525	278,548	352,817	331,055
Manitoba	186,891	187,540	201,743	197,599	235,650	304,016	298,565
Saskatchewan	188,779	180,712	191,733	188,495	227,656	328,678	302,810
Alberta	197,450	193,180	205,166	210,247	254,731	381,821	326,647
British Columbia	200,227	194,212	213,600	206,797	260,012	334,455	324,817
PE/Yukon/NW Territories/Nunavut	186,672	172,333	183,156	170,088	208,480	269,473	249,566

Source: Authors' calculations based on Statistics Canada, Census of Canada, 1981-2006, master files, and National Household Survey, 2011.

Note: Sample consists of individuals with income above zero, ages 15 and older.

¹ Based on IFS classification, 1986-2006.

² Based on SOC 91.

Table A4
Average income of all income earners by characteristic, Canada, 1981-2011 (2000 dollars)

	1981	1986	1991	1996	2001	2006	2011
Total income (millions)	443,231	470,174	565,253	573,945	676,442	772,984	862,766
Work and earnings							
Mean total income	28,191	27,557	29,219	27,439	29,769	31,650	33,288
Mean employment income	23,139	21,677	22,727	20,670	22,942	24,120	24,851
Work 50 hours or more per week	46,119	43,728	47,365	47,178	52,400	56,601	60,101
Only workers	34,617	33,488	35,115	33,907	36,546	38,499	41,297
Men	36,731	35,263	36,787	33,888	36,865	38,948	39,793
Women	18,252	19,112	21,397	20,918	22,885	24,655	27,023
Education							
Less than a bachelor's degree	25,827	24,880	26,205	24,266	25,747	26,851	27,986
Bachelor's degree	44,808	43,375	44,805	41,210	45,746	47,171	48,156
Medicine, dentistry, veterinary	103,663	107,178	104,207	94,618	94,607	102,625	96,600
Other graduate degrees	58,743	57,382	58,123	53,631	57,106	58,093	57,332
Age groups							
Under 35	23,377	21,624	22,458	19,498	20,427	20,442	21,944
35-64	36,261	35,369	36,763	34,368	36,932	39,412	41,246
Over 64	19,488	20,973	23,406	22,840	24,437	26,668	28,160
Major field of study¹							
Educational, recreational and counselling services	34,253	34,253	37,075	34,897	35,203	38,001	40,518
Fine and applied arts	23,331	23,331	25,547	22,471	24,404	23,340	24,763
Humanities and related fields	34,724	34,724	35,526	32,121	34,404	33,962	35,330
Social sciences and related fields	42,585	42,585	44,237	39,436	43,365	46,210	46,789
Commerce, management and business	34,559	34,559	36,583	35,027	39,991	43,082	43,814
Agricultural, biological, nutritional and food sciences	30,334	30,334	32,245	29,535	31,011	31,943	33,180
Engineering and applied sciences	60,272	60,272	59,557	51,366	56,264	53,848	56,609
Applied science technologies and trades	37,971	37,971	40,186	36,831	38,987	39,676	40,682
Health professions and related technologies	38,701	38,701	40,130	38,071	39,562	41,635	42,025
Mathematics, computer and physical sciences	45,600	45,600	47,195	44,252	48,655	55,875	55,197
No specialization/no postsecondary education	22,552	22,552	23,249	21,171	22,124	22,599	23,222
Overlapped						34,564	37,014
Industry							
Agriculture, forestry, fishing and hunting	26,384	23,431	25,080	24,266	25,622	25,045	27,475
Mining, quarry and oil and gas	46,735	50,280	51,946	53,053	57,949	72,235	79,406
Manufacturing	33,882	34,788	36,409	36,719	38,899	41,260	42,701
Construction	35,051	31,164	35,033	30,752	34,354	35,338	38,296
Transportation and storage	37,618	37,392	37,913	36,643	37,841	37,906	39,502

Table A4 (cont.)
Average income of all income earners by characteristic, Canada, 1981-2011 (2000 dollars)

	1981	1986	1991	1996	2001	2006	2011
Industry (cont.)							
Communication and other utility	41,098	42,833	42,274	42,502	44,541	46,754	50,538
Wholesale trade	35,625	34,326	36,751	36,128	39,328	42,794	45,355
Retail trade	22,612	21,338	22,398	20,631	22,120	22,814	24,601
Finance and insurance	34,823	36,961	38,468	42,284	50,982	57,595	58,510
Real estate	38,624	36,300	39,719	36,684	42,288	46,133	47,521
Business services	38,225	37,748	41,251	39,091	44,861	45,619	48,772
Government services	36,464	36,597	38,418	39,856	42,373	46,817	49,052
Educational services	37,757	37,513	38,371	37,830	37,649	37,649	40,983
Health and social services	30,853	31,677	33,207	32,950	34,467	37,165	39,099
Accommodation, food and beverage	14,648	14,145	15,168	14,178	15,570	16,862	17,862
Other services	20,838	19,456	21,851	20,457	23,332	23,602	26,200
Not applicable	13,913	15,208	17,554	16,157	17,061	18,706	18,933
Occupation*							
Management			54,783	53,924	60,112	68,569	68,055
Senior management			96,386	95,677	109,304	131,894	126,672
Business, finance and administrative			29,222	30,022	32,659	35,057	37,806
Business and finance			42,520	44,717	49,293	53,584	56,226
Natural and applied sciences and related			46,869	45,922	48,026	51,168	54,932
Health			40,902	42,187	43,901	47,816	49,223
Social science, education, government services and religion			44,772	43,894	44,103	45,842	45,376
Art, culture, recreation and sport			27,423	25,074	27,743	26,042	27,917
Sales and services			20,746	19,577	20,506	20,820	22,643
Trades, transport and equipment operators and related			34,191	32,512	34,033	34,273	36,589
Occupations unique to primary industry			25,165	23,980	24,959	25,311	28,934
Occupations unique to processing, manufacturing and utilities			29,887	29,493	30,405	31,559	32,122
Not applicable			17,554	16,157	17,061	18,706	18,933
Largest census metropolitan areas							
Montreal	28,882	27,836	29,136	26,818	29,199	30,489	31,348
Toronto	31,489	32,182	35,070	31,560	35,618	36,291	36,409
Calgary	34,279	33,030	32,953	31,542	35,693	43,579	46,349
Edmonton	32,692	30,090	29,892	28,019	30,468	35,575	40,343
Vancouver	32,397	29,795	31,908	29,894	31,421	32,207	33,600

Table A4 (cont.)
Average income of all income earners by characteristic, Canada, 1981-2011 (2000 dollars)

	1981	1986	1991	1996	2001	2006	2011
Largest census metropolitan areas (cont.)							
Rest of Canada	26,556	25,866	27,385	26,078	27,823	29,648	31,524
Province of residence							
Newfoundland and Labrador	22,712	21,450	22,866	21,465	22,620	24,640	28,734
Nova Scotia	23,406	24,291	25,389	23,471	25,297	26,914	29,052
New Brunswick	22,610	22,530	24,115	22,603	24,091	25,366	27,932
Quebec	27,022	25,840	27,257	25,264	27,125	28,597	29,768
Ontario	28,891	29,488	31,916	29,741	32,865	33,969	34,609
Manitoba	25,329	25,454	25,725	24,685	26,416	27,925	30,050
Saskatchewan	26,955	25,498	25,125	24,548	25,811	28,188	33,409
Alberta	31,879	29,789	29,738	28,465	31,350	37,654	41,727
British Columbia	30,894	28,141	30,125	28,636	29,613	30,777	32,276
PE/Yukon/NW Territories/Nunavut	23,830	23,992	26,583	25,929	26,831	29,095	32,897

Source: Authors' calculations based on Statistics Canada, Census of Canada, 1981-2006, master files, and National Household Survey, 2011.

Note: Sample consists of individuals with income above zero, ages 15 and older.

¹ Based on MFS classification, 1986-2006.

² Based on SOC 91.

Table A5

Distribution of senior managers among top-1-percent-income earners and all income earners by industry, Canada, 1991-2011 (percent)

	Relative share ¹					
	1991	1996	2001	2006	2011	2011
Top-1-percent-income earners (senior management)						
Agriculture, forestry, fishing and hunting	0.7	1.0	0.6	0.7	0.8	0.6
Mining, quarry and oil and gas	3.8	4.4	3.7	4.3	4.9	2.7
Manufacturing	25.6	24.5	20.8	19.7	15.6	1.3
Construction	7.2	4.9	3.7	5.4	7.2	0.9
Transportation and storage	3.4	3.9	3.4	3.5	3.4	1.0
Communication and other utility	3.4	3.6	4.9	3.9	2.9	2.2
Wholesale trade	12.0	13.6	12.0	12.5	12.4	1.2
Retail trade	6.7	4.9	4.5	4.4	4.4	0.8
Finance and insurance	10.2	10.5	13.2	13.6	14.0	2.0
Real estate	3.2	3.8	3.9	4.3	4.6	1.4
Business services	11.9	12.9	20.2	17.1	17.3	1.0
Government services	4.5	3.2	1.9	2.3	3.2	0.3
Educational services	0.7	0.9	0.7	0.8	1.0	0.4
Health and social services	1.7	2.5	1.9	1.7	2.2	0.4
Accommodation, food and beverage	1.7	1.1	1.0	1.2	1.3	0.7
Other services	3.5	4.1	3.6	4.5	4.9	0.5
All income earners (senior management)						
Agriculture, forestry, fishing and hunting	1.1	1.0	1.0	1.5	1.4	
Mining, quarry and oil and gas	1.5	1.9	1.6	1.8	1.8	
Manufacturing	19.5	18.2	15.2	14.1	11.9	
Construction	8.1	6.8	5.4	6.8	7.7	
Transportation and storage	3.3	3.6	3.2	3.4	2.9	
Communication and other utility	2.4	2.1	2.8	1.9	1.3	
Wholesale trade	10.0	11.6	10.8	10.5	10.3	
Retail trade	9.0	7.5	5.7	5.7	5.6	
Finance and insurance	5.5	5.3	6.9	6.3	7.2	
Real estate	2.3	2.6	3.1	3.5	3.3	
Business services	10.1	12.7	17.3	17.6	17.4	
Government services	13.2	11.9	11.2	9.1	8.8	
Educational services	1.5	1.5	1.8	2.2	2.4	
Health and social services	4.1	4.6	5.3	5.2	6.2	
Accommodation, food and beverage	2.4	1.7	1.5	2.1	2.4	
Other services	5.9	7.0	7.2	8.4	9.2	

Source: Authors' calculations based on Statistics Canada, Census of Canada, 1981-2006; master files, and National Household Survey, 2011.

Note: Sample consists of individuals with income above zero, ages 15 and older.

¹ Share of top-1-percent-income earners relative to the share of all earners, by industry.

Notes

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1. Alvaredo and Piketty (2010) show a sharp divergence between “English-speaking” countries, where inequality and top-income shares have increased rapidly since about 1980, and other countries such as France and Japan, where the income distribution has remained much more stable. This is a major puzzle that we do not try to address in this chapter.
2. See Acemoglu and Autor (2011) for a detailed discussion of the role of technological change in wage inequality. Following Autor, Levy and Murnane (2003), Acemoglu and Autor discuss the implications of “routine-biased” technological change relative to more traditional skills-biased technological change. In both cases, however, highly educated workers should experience wage gains relative to less-educated workers.
3. Kleiner and Krueger (2013) show that, in the United States, more than 30 percent of workers are now in occupations that require a professional licence. This far exceeds the share of the workforce covered by traditional collective bargaining agreements.
4. Economic rents are payments to a factor of production in excess of opportunity cost or “transfer earnings” — the amount a factor of production must earn to prevent its transfer to an alternative use. In the case of labour, rents are earnings in excess of what a worker could earn in the worker’s next-best alternative employment opportunity.
5. See also Bajjka, Cole and Heim (2010), who use US data on occupations based on income tax statements, and Statistics Canada (2013) for information on the occupational distribution of top earners in the 2011 National Household Survey data.
6. Note also that increases in top incomes in one jurisdiction that arise because of rent creation or rent shifting might require a competitive response from other jurisdictions in order to prevent the loss of talent. For example, the gap between the pay of the CEO and that of the average worker has widened much more in the United States than in most other countries. Even if this change were attributable to rent-creation factors that are unique to the United States, competitive market forces put upward pressure on the compensation of top executives in other countries.
7. For example, if the data are top coded at incomes in excess of \$225,000, then all individuals with income greater than \$225,000 are simply reported as earning \$225,000.
8. Indeed, in some research areas, such as immigrant earnings, the census has been the workhorse source of microdata. Similarly, Boudarbat, Lemieux and Riddell (2010) argue that the census is the best source of information for studying the evolution of returns to education over time in Canada.
9. The census is also much less affected by the nonreporting of earnings and other information at the bottom of the income distribution, a problem that has been identified in other surveys, such as the Survey of Consumer Finances (Frenette, Green and Picot 2006).
10. For example, a substantial majority of top earners are men (Fortin et al. 2012). As top incomes have grown over time, the share of censored male observations has increased

- relative to the share of censored female observations. The public-use data thus might yield incorrect conclusions about the evolution of the male-female earnings differential.
11. Another consequence of the changes introduced in 2006 is that it is no longer possible to compute directly years of potential experience, which is defined as age minus years of schooling minus six (the typical age at which an individual starts school). As is well known, it is generally preferable to use potential experience, rather than age, to control for life-cycle effects in a standard Mincer earnings regression. Given these data limitations, we look at the role of age, rather than experience, in our analysis of top incomes.
 12. The data on top incomes in Canada were provided by Michael Veall using the LAD from 1982 to 2010 and tax data records dating back to early in the twentieth century, and obtained from the World Top Incomes Database (<http://topincomes.paris-schoolofeconomics.eu/>), accessed on January 28, 2014. The income concept is "market income," which includes all income except government transfers and capital gains.
 13. For example, the 1986 reform in the United States led to a substantial amount of income being transferred from C corporations (income from which does not flow through to the personal income tax system) to S corporations (income from which does flow through to the personal income tax system) (Slemrod 2000; Veall 2012). This change is the main cause of the 1986 spike in measured top incomes in the United States, and suggests that Canadian top-income levels would be higher if incomes reported by Canadian-controlled private corporations (equivalent to C corporations in the United States) were reported as personal income for tax purposes. In addition, in Canada, there has been an increased propensity over time for doctors, lawyers and dentists to form companies, in part because legal prohibitions that restricted at least some kinds of professional income from being reported as corporate income for tax purposes were lifted during the 1990s and 2000s.
 14. Brochu, Morin and Billette (2014) look at differences in the income distribution between census respondents who did and did not consent to share their income tax data with Statistics Canada. They find that the bottom end of the distribution is more affected by response issues than the top end.
 15. For example, as shown in table 2, the relative share of men among top earners was 1.7 in 1981 and 1.6 in 2011, indicating that men are substantially overrepresented among top earners and that the extent of their overrepresentation declined modestly from about 70 percent in 1981 to about 60 percent in 2011.
 16. Studies based on tax data (such as Saez and Veall 2005) also indicate that labour earnings account for most of the income of top-income earners.
 17. The large decline in this share to 30 percent in 2011 is puzzling; we can only speculate about the reasons for the discrepancy with previous data.
 18. See Albrecht, Bjorklund and Vroman (2003) for evidence on the glass-ceiling hypothesis, and Bertrand, Goldin and Katz (2010) for recent evidence on the income gap between male and female graduates of master of business administration programs.
 19. Federal health and social transfers to provinces decreased during most of the 1990s to reach \$12.5 billion in fiscal year 1998-99. Transfers increased steadily to \$22.3 billion in fiscal year 2003-04, and have grown dramatically since then, following the Health Accord of 2004. Health transfers are now part of a separate program (the Canada Health Transfer), which has grown from \$15.3 billion in fiscal year 2004-05 to \$32.1 billion in 2014-15. See Finance Canada (2014) for more detail.
 20. The overrepresentation of this group declined modestly from 4.2 to 4.0 over the 1981-2001 period.
 21. For the period from 1981 to 2001, we were able to construct a consistent classification of major industries from the 1970 SIC (for 1981) and the 1980 SIC (for 1986-2001). We also constructed a consistent classification for 2001 and 2006 using the 1997 NAICS (for 2001) and 2002

NAICS (for 2006). These two sets of consistent classifications are reported in table 4. In table 2, the figures reported for 2006 were obtained by computing the 2001 to 2006 change from the consistent NAICS coding of industries, and adding it to the “closest” major industry aggregate for 2001 (based on the SIC classification). In most cases, the industry aggregates based on the SIC and NAICS are very close to each other, but the 2006 figures reported in table 2 are nonetheless based on an approximation.

22. Whether the top-income share grew faster in Alberta or Ontario depends on the choice of end point (see table 2). Between 1981 and 2006 growth was greater in Ontario, but according to the 2011 NHS the top-income share declined in Ontario between 2001 and 2006 while continuing to increase in Alberta.
23. In their analysis using tax data, Murphy and Veall (forthcoming) show that more than half of the surge in the share of market income received by the top 1 percent is attributable to those living in Calgary and Toronto.
24. There is a surprising and sizable drop in the average income of top earners in the 2011 NHS, even though the income cut-off grew between 2006 and 2011. This appears to be due to underreporting of income among the very highest earners. Statistics Canada (2011) compares the number of individuals reporting income above certain levels (\$100,000, \$200,000, \$300,000, \$500,000, \$1,000,000) in the NHS and according to tax data (T1 file). The number of individuals reporting income above \$100,000 and \$200,000 is very similar in these two data sources, but the number reporting income above \$1,000,000 is about 20 percent less in the NHS than in tax data. There are also fewer individuals reporting income above \$300,000 and above \$500,000 in the NHS.
25. According to Statistics Canada (2008), comparability problems are significant for workers more marginally attached to the labour market. Since we focus on workers with a strong attachment to the labour market (full-time workers and, in some cases, full-time, full-year workers), the comparabil-

ity problems should not have much impact on our results. Brochu, Morin and Billette (2014) also conclude that the change in income reporting introduced in 2006 most likely has an impact at the bottom of the distribution.

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