

# Do earnings rise until retirement?

Yves Saint-Pierre

Many people believe that a steady job provides regular pay increments, or at least steady pay, until retirement. In fact, though, in any given year the earnings of men working full year full time are higher, on average, among 45 year-olds than among 60 year-olds. For example, in 1980, 1985 and 1990, the average earnings of Canadian men aged 60 to 64 were 85% to 87% those of men aged 45 to 49.

Cross-sectional data show that the earnings of men working full year full time rise with age, until a peak is reached in the forties, followed by a gradual decline that continues until retirement (see *Definitions*). This pattern has persisted for years (Chart A), and has been noted in many other industrialized countries as early as the 1950s (Kreps, 1971).

In terms of earnings, it would seem that working men in their early sixties are no better off than men in their thirties. But does this mean that earnings actually drop prior to retirement, or do they simply not keep up with increases obtained by younger men?

This article looks at some of the possible explanations for the apparent decline in the average earnings of older men working full year full time. It also considers the difficulties inherent in the use of cross-sectional (as opposed to longitudinal) data to address this issue.<sup>1</sup> Women are excluded from the study because only recently have their age-earnings profiles begun to look like those of men.

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## Definitions

**Earnings**, sometimes called "employment income," include wages and salaries, tips and commissions, and self-employment income. **Real earnings** are earnings adjusted for inflation.

**Full-year full-time (FYFT) workers** are those who worked at least 49 weeks at 30 or more usual hours per week during the calendar year preceding the census or survey (see *Data sources*).

In this study, **newly retired** men are those who were not in the labour force at the time the Survey of Consumer Finances (SCF) was carried out (excluding those attending school) but were employed full time for at least one week the previous calendar year.

**Cross-sectional** data can be described as a snapshot of a situation. When a survey is carried out, its sample is representative of the population at that point in time. The following year, the same type of information can be collected from a different sample, which is also representative of the population that year. Because the population changes from year to year, for reasons such as migration, births and deaths, cross-sectional data are very useful for comparing similar populations over time; for example, the population of 45 year-olds employed full year full time in 1980 can be compared with the population of 45 year-olds employed full year full time in 1990.

## Theoretical rationale

Some economists have interpreted the age-earnings relationship in the context of human capital theory, which holds that education and work experience are the main factors behind the rise in earnings at the start of a career. At this point in their lives, people invest time in education and training in order to

A **cohort** is a group of people linked by some event in time (birth, high school graduation in a specific year, etc.) Cohorts can be built from cross-sectional data, though people may enter or leave a cohort population through birth, death, migration or other events. This means that the longer the period examined, the less likely the group studied at the end of the period will be exactly the same as that studied at the beginning. This particular study deals with five-year age cohorts of men employed full year full time, based on their age in a particular year. Because of migration, death, and more importantly, movements in and out of full-time employment, these cohorts have changed in size and composition over time. They have also aged over the time frame studied; for example, the cohort aged 35 to 39 years in 1985 was aged 36 to 40 in 1986, 37 to 41 in 1987, and so on.

**Longitudinal** data are derived from the same people at specified intervals over time. While cross-sectional data may reveal how many people were unemployed in a year, longitudinal data will show whether the same people were unemployed year after year. In this study, the use of longitudinal data, had it been available, would have shown how many employed men aged 50 to 60 saw their real earnings decline, and how many saw them rise.

benefit from higher earnings later on. As they grow older, skills become obsolete; however, the expense of taking time off for training must be amortized over a shorter and shorter period, so older workers have less incentive to keep up their skills. As a result, the value of human capital depreciates with age, which in turn leads to lower earnings (Beach, 1981).

Much empirical work has been done to validate the theory of rising earnings, although little or no research appears to have been undertaken to explain the decline in earnings past the peak period in mid-career. To accomplish this, studies would need to account for investment in on-the-job training, but such information is rarely available and difficult to measure.

### A conventional approach

There appears to be an inverse relationship between earnings and age after age 45 for men working full year, full time (Chart A). For instance, in 1990, the expected earnings at ages 45 to 49 were \$46,000; at ages 60 to 64 they had dropped to \$39,700 (86% of the former).

Another explanation for declining earnings could be a reduction in hours. Data on usual weekly

### Data sources

The data used in this article originate from the Census of Population (conducted every five years), the monthly Labour Force Survey (LFS), and the annual Survey of Consumer Finances (SCF), which is carried out in conjunction with the LFS in April each year. The census provides comprehensive information, while the LFS and SCF furnish more recent data.

Earnings were obtained from both the census and the SCF. Census-based estimates of earnings refer to the previous year; for example, the 1991 Census provides data on earnings received in 1990. Similarly, SCF-based earnings pertain to the year preceding the survey. SCF earnings data were used to examine relationships with

hours of work data obtained from the LFS. The LFS also provided demographic information such as age and sex.

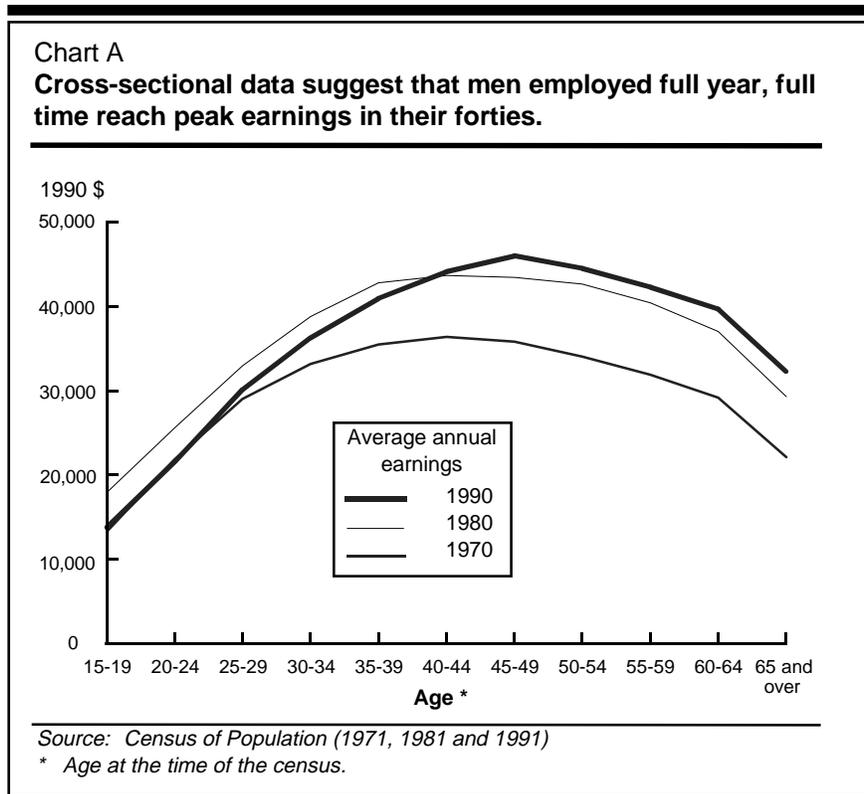
The population covered by the census changed during the period studied. In 1971, people living in institutions were included; in 1981, 1986 and 1991, they were excluded. Non-permanent residents were included in 1991. Furthermore, data on earnings for 1975 were not collected in the 1976 Census. Estimates from the SCF exclude people whose major source of income was military pay or whose earnings were zero (that is, unpaid family workers), but include those whose earnings were negative (because of self-employment losses).

hours worked<sup>2</sup> for the years 1990 to 1993 show that, in general, older men working full year full time (FYFT) tend to work a slightly

shorter week than those in their peak earning years. For the years examined, the disparity in usual hours worked between FYFT workers aged 45 to 49 and those aged 60 to 64 was greatest in 1991 (44.8 hours for the former, 43.5 for the latter), and was actually reversed in 1990 (44.8 hours versus 45.2). These fluctuating discrepancies seem to indicate that the observed decline in earnings may be only marginally related to changing hours of work among older workers.

Other factors may also be involved, such as a change in the characteristics of the jobs held. Some workers laid off or having temporarily retired may find themselves re-employed in a lower-paying job. In some cases, an older worker's earnings may not have kept up with the cost of living, even though they have remained stable or increased slightly over time; in this situation, real earnings drop and can be overtaken by those of younger workers whose earnings are rising faster.

Furthermore, while the earnings of 60 year-old FYFT workers are



well below those of 45 year-olds in any given year (cross-sectional view), the former may never have earned the peak reached by their younger peers.<sup>3</sup>

### A different perspective

To address these possibilities, the annual earnings of FYFT workers (adjusted for inflation) were analyzed using cohorts (see *Definitions*). Chart B combines the 1990 age-earnings profile (broken line), reflected by the 1991 Census, with data obtained for specific cohorts during previous censuses when these cohorts were younger (solid lines). For each cohort examined, the decline in real earnings is not as steep as that seen in the cross-sectional profile. Consider, for example, "cohort 60-64." For this group (aged 50 to 54 in the 1981 Census and 55 to 59 in the 1986 Census) the drop in earnings

between 1980 and 1985 is somewhat smaller than that seen in the cross-sectional presentation (-3.3% versus -5%).

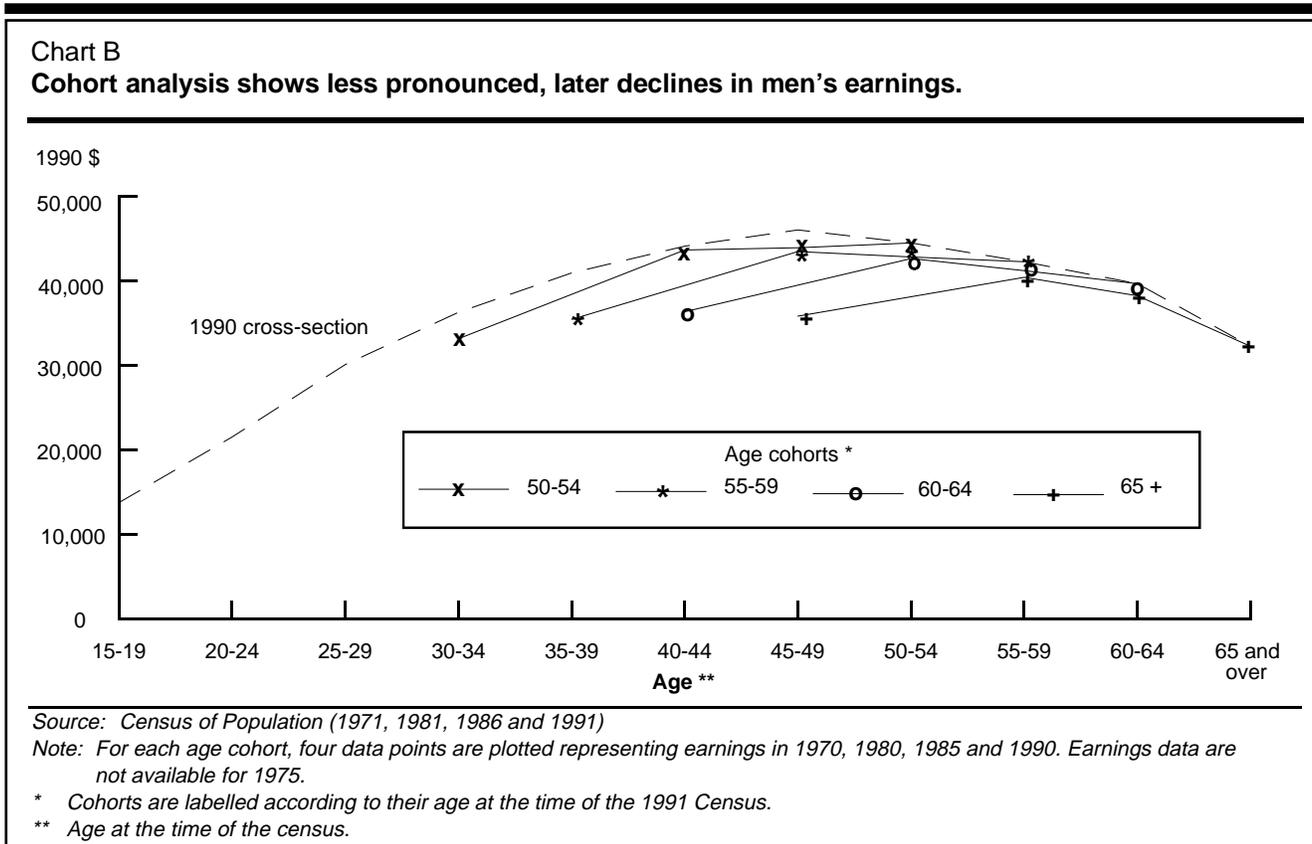
### Effects of a changing population

Although the cohort illustration above shows declines in real earnings before retirement, this phenomenon could result from a changing population rather than a decline in the population's earnings. For instance, older cohorts shrink in size as they age, suggesting that the change in the average earnings of the older age groups in the cross-section could be influenced by any bias among those who drop out of the cohort when they retire (that is, if those with higher earnings prior to retirement are over-represented in this group).

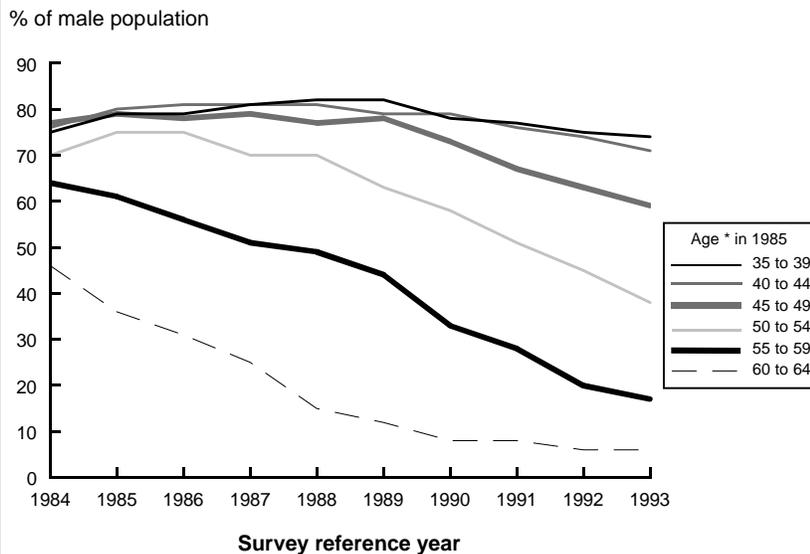
Shrinking cohorts are seen in Chart C, where in 1984 about three

in four men aged 45 to 49 were employed FYFT;<sup>4</sup> this ratio was maintained until 1989 (when this group was aged 50 to 54), and then began to fall. Four years later, their FYFT rate had dropped to 59%. Older men experienced even sharper drops in FYFT rates, while those for the younger cohorts remained relatively stable over the 1984-93 period.

Diminishing cohorts of FYFT workers in older age groups can bias cross-sectional earnings upwards as well as downwards. Some people who died or retired at a young age may have had lower earnings because of ill health, while others may have been able to retire early because of high career earnings. If there are more of the latter than of the former, the average pre-retirement earnings of newly retired men may be higher than those of other full-year full-



**Chart C**  
**The full-year, full-time employment rate drops quickly once men have reached their fifties.**



Source: Survey of Consumer Finances (SCF)

\* Age is determined at the time of the survey but full-year, full-time (FYFT) employment rates are based on the preceding calendar year (the survey reference year). For example, when the SCF was carried out in April 1985, about 64% of the men then aged 55 to 59 had worked FYFT the year before. In April 1986, 61% of men aged 56 to 60 had worked FYFT in 1985.

time workers of the same age. Is that indeed the case?

To test this hypothesis, the study compared the previous year's earnings of newly retired men<sup>5</sup> (who had some full-time work in the previous year) with those of non-retired FYFT workers; comparisons were made using mean and median earnings by age group. Both of these were higher for newly retired men than for non-retired FYFT workers: mean earnings were about 34% higher for the newly retired aged 55 to 59, and 14% higher for those aged 60 to 64; by comparison, median earnings were 2% greater for new retirees in the 55 to 59 group, and 5% greater for those in the 60 to 64 group.

The earnings of the newly retired as well as the non-retired

FYFT workers were not homogeneous, however. Nevertheless, according to three well-accepted measures of inequality,<sup>6</sup> the spread of earnings among newly retired men aged 55 to 64 was much greater than that of FYFT workers in the same age group. Detailed data show that although the average earnings of the newly retired were greater, proportionally more of these men had lower earnings. Some of them may have retired, despite having low earnings, because of ill health or job loss.

### Conclusion

This study has considered several possible explanations for the decline in the real earnings of men employed full year full time from their mid-forties onwards. One hypothesis suggests that those who

can afford to retire do, leaving behind those who earn less, which depresses the average. There is some evidence of higher earnings among the newly retired, at least for the older age groups.

But the question of whether or not an individual FYFT worker's earnings actually decline before retirement remains unanswered. To solve this riddle, longitudinal data are required. Though some longitudinal administrative data are available from income tax files, the latter cover only information reported on a tax return, which excludes most labour force characteristics (for example, the existence of full-year full-time employment). Hence, tax files do not allow the kind of analysis of interest here. Fortunately, before the decade is over Statistics Canada will have accumulated enough data from one of its new longitudinal surveys – the Survey of Labour and Income Dynamics (SLID) – to present research opportunities not possible previously.<sup>7</sup> □

### Notes

1 Since this study is based on averages, the conclusions may not be applicable to individuals.

2 These are the weekly hours usually worked at the time of the survey (the April following the year for which income data were collected), which are used as a proxy for hours usually worked throughout the previous year. Individuals reporting zero usual hours of work for April but who had worked full year full time the previous year were excluded from the tabulations. If an individual had more than one job, the usual weekly hours worked at all jobs were combined.

3 Indeed, real earnings growth is probably linked to the state of the economy.

4 To remind the reader, the age groups noted here pertain to the month of April following the year to which a FYFT rate refers; for example, three in four workers aged 45 to 49 in April 1985 had worked full year full time in 1984.

5 In order to obtain full-year equivalent earnings for each retiree for a specific year, the previous year's earnings were divided by the number of weeks worked, then multiplied by 52. The figures cited for the earnings ratio between new retirees and full-year full-time workers are averages of the ratios of mean and median earnings for 1984 to 1993.

6 Three measures of earnings inequality were calculated for each year: the exponential measure, the Gini coefficient, and the coefficient of variation (CV). The higher the results of these calculations, the greater the inequality. The average CV for the newly retired was 1.301, whereas for full-year full-time workers it was 0.959. The average Gini coefficient was 0.449 for the newly retired, and 0.349 for others. Finally, the exponential measure (excluding 1992 where it was almost ten times greater than in other years for other FYFT men) was 0.486 for the newly retired, and 0.438 for others.

A good discussion of these measures is provided in Wolfson (1995). For a discussion at a more basic level, see chapter 5 in Beach (1981), and chapter 2 in Sen (1973).

7 Some analysis based on SLID results from a preliminary interview has already been released (see *Dynamics of Labour and Income*, Catalogue no. 75-201-XPE); a CD-ROM containing microdata for the 1992 reference year is also available for \$1,700 (Catalogue no. 75M0001XCB). For more information about the Survey of Labour and Income Dynamics, contact Philip Giles at (613) 951-2891.

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