

Figure 4.3b. EXPLORATORY DATA ANALYSIS: Comparison of Female and Male EarningsEM9307: *The Globe and Mail*, Editorial, January 21, 1993, page A24

Sex, statistics and wages

GIVE the Canadian media some credit: they didn't make as much of a hash of this story as they usually do. The subject is the much ballyhooed "wage gap" between men and women, documented annually by Statistics Canada, and eagerly lapped up by the nation's newspapers and television news shows. Faint praise is in order this year, however, because three ingredients that are essential to understanding the wage difference – education, hours worked and marriage – received at least passing mention in some of last week's coverage.

It was reported that women's wages rose to 69.6 per cent of men's in 1991, from 67.6 per cent the year before. But what does that mean? For starters, it does *not* mean, despite the obfuscatory efforts of those who ought to know better, that women are being paid nearly one-third less to do the same jobs. A recent ad campaign by the Ontario Women's Directorate, for example, asked Toronto bus and subway passengers, "How much would they pay a man to do your job?" The slogan, and the text that followed, suggested to female readers that, by the simple virtue of being male, a man at their firm is being paid one-third more to do precisely the same job. He isn't. Sex discrimination in wages – paying a man with the same qualifications more than a woman to fill exactly the same position – is against the law, and has been ever since Bob Rae was in short pants.

Statscan's numbers are, of course, an average of millions of Canadians, with different ages, levels of and types of education, skills, years of work experience and jobs. An average focusing solely on gender tends to obscure the degree to which all sorts of other factors come into play. (Keep in mind also that the following statistics refer to full-time workers only.)

One would expect that, since society's attitudes towards women's work and education have changed relatively recently, the difference in average wages would be least among the young. And that is precisely what one finds: The hypothetical full-time working woman over age 55 earned 63.6 per cent of the income of her male counterpart in the same age bracket, while her grand-daughter, aged 15 to 24, earned on average 86.4 per cent as much as a man in the same age group.

Crunch the numbers a bit further, and other interesting facts pop

up. Education, for one thing, matters. Women with a university degree earned more, not less, than men with lower levels of education. When one considers that a majority of those enrolled in Canadian universities are female (55.3 per cent of full- and part-time university students are women) it's hard to imagine a future in which the wage difference will not continue to narrow.

But there is already almost no wage gap between single men and single women. In 1991, the single women's average earnings were 91.1 per cent of those of their male counterparts. For some women, there was even less of a difference. Data compiled by Statistics Canada at *The Globe and Mail's* request show that the income of single women aged 35 to 44 was 94.5 per cent of that earned by men of the same age. And looking only at the most educated members of that age group – single females with a university degree – women actually made six per cent *more* money than single, 35 to 44 year-old, university-educated men. (In fairness, the margin of error in Statscan's survey is large, so these last two percentages could be off by several points.)

All of these numbers refer, of course, to full-time workers. But not all full-time workers work the same number of hours. On average, men work more than women: 40.4 hours vs. 35.2 hours a week. In other words, the average man works 12.9 per cent longer, explaining a large part of the wage gap.

But the biggest factor is marriage. The earnings of single women, single men and married women working full-time are roughly comparable. But the earnings of the average married man rise above those of everyone else. That is the only real "wage gap". Whether or not it is a problem is a subject worthy of discussion. Its existence suggests that, as one would expect, married men and women choose certain career and life paths, different from those chosen by singles. But why is it that many married women work only part-time, or adopt less time-consuming (and less well-paying) full-time careers? Are they forced to by their husbands? By circumstance? By entrenched social attitudes? Do many, for a whole variety of unquantifiable reasons, freely choose this path, thinking it best for their families?

In the debate that ought to take place around this issue, answering these questions would be a good place to start.

- 1 At the end of the first paragraph of the editorial EM9307 reprinted above, education, hours worked and marriage are referred to as *three ingredients that are essential to understanding the (male-female) wage difference*. Outline the essential *statistical* issue(s) raised by this statement.
 - Summarize how the editorial uses information on each of these three explanatory variates to reduce the limitation imposed on Answers to Questions about the response variate (male-female difference in wages).
 - Indicate how the limitation on Answers would be affected if each explanatory variate were to be ignored.
- 2 At the end of the second paragraph of the right-hand column of the editorial EM9307 reprinted above, the (large) *margin of error in Statscan's survey* is mentioned. Describe briefly what you understand to be the matter(s) of statistical importance implied by this phrase in the context of the editorial.
 - Indicate briefly how to reconcile your answer with the phrase from the beginning of the third paragraph of the editorial: *Statscan's numbers are an average of millions of Canadians,*
- 3 Comment briefly on the figure of *12.9 per cent* given near the end of the third paragraph of the right-hand column above.
 - Explain briefly whether it would be correct to say *12.9 percentage points* in this context instead of *12.9 per cent*.
- 4 The last sentence of the second-last paragraph of the editorial EM9307 is the question: *Do many (married women), for a whole variety of unquantifiable reasons, freely choose this path, thinking it best for their families?* Explain briefly what you consider to be the *statistical* issue(s) raised by the word *unquantifiable* in this context.

(continued overleaf)

The article EM9307 reprinted overleaf on page 4.11 is used in Chapter 1 of the STAT 231 Course Materials and also in Statistical Highlight #99.

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