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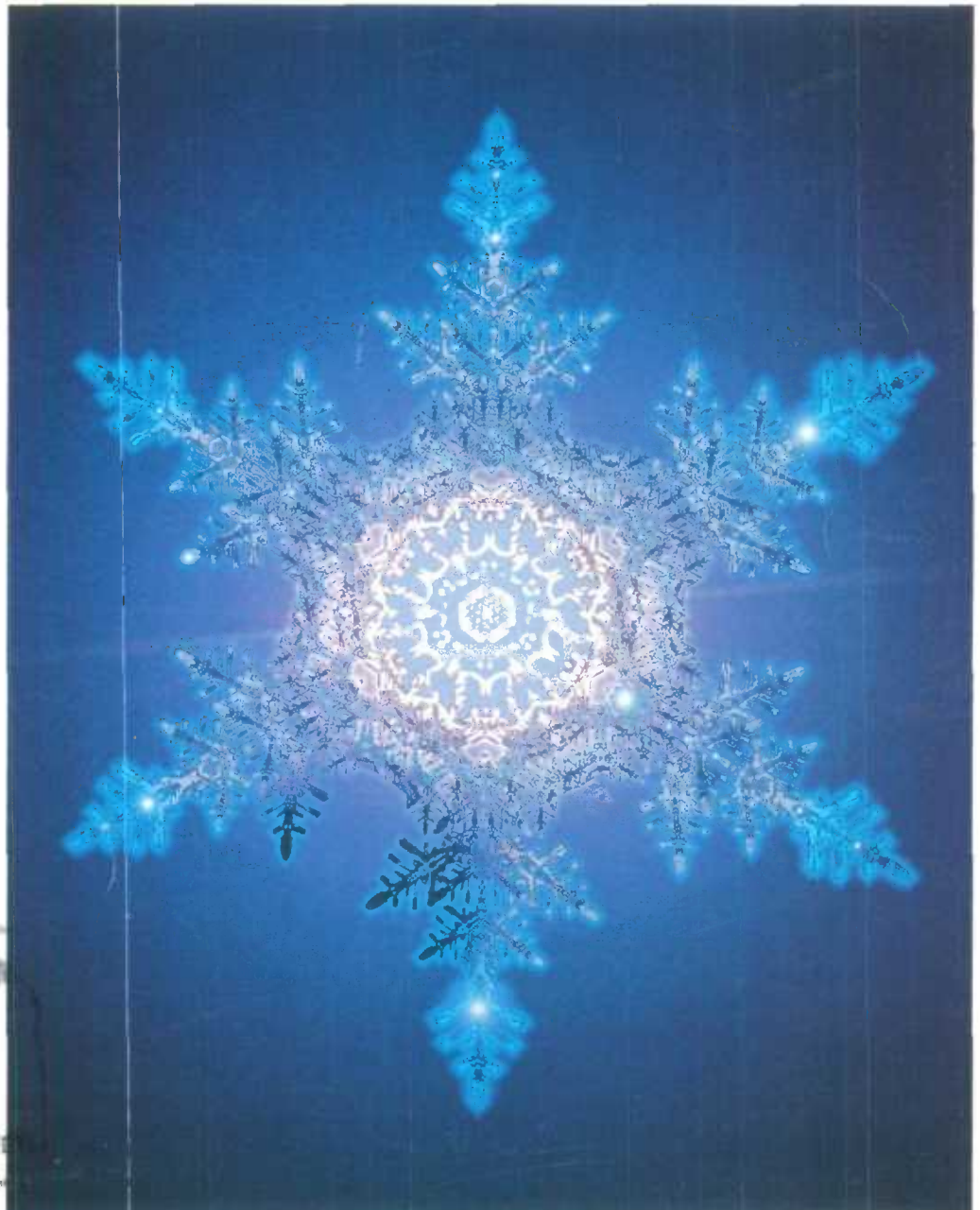
PERSPECTIVES

ON LABOUR AND INCOME

WINTER 1999

Vol. 11, No. 4

- "COPRENEURS"
- TRUCK DRIVERS
- EARNINGS RATIOS
- EARNINGS OF PHYSICIANS
- EXPORTS, GDP AND JOBS
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ON LABOUR AND INCOME

■ Departments

- 3 Forum
- 5 Highlights
- 42 What's new?
- 47 Key labour and income facts
South-bound graduates
- 55 Cumulative index 1989-1999

Perspectives on Labour and Income (Catalogue no. 75-001-XPE; aussi disponible en français: *L'emploi et le revenu en perspective*, n° 75-001-XPF au catalogue) is published four times a year under the authority of the Minister responsible for Statistics Canada. ©Minister of Industry 1999. SUBSCRIPTION RATES: \$58 a year in Canada, US\$58 for all countries outside Canada. Single issue \$18 in Canada, US\$18 for all countries outside Canada. ISSN: 0840-8750. All prices exclude sales tax.

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Indexed in the *Canadian Index*, *Canadian Periodical Index*, *P.A.I.S. International* and *Sociological Abstracts*, and available online in *Canadian Business and Current Affairs* and *Employee Benefits Infosource*. Also indexed in French in *L'Index de l'Actualité* and *Point de Repère*.

■ Articles

- 9 Working together—self-employed couples
Katherine Marshall

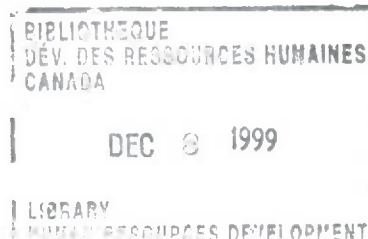
This article notes the growing incidence of self-employment among dual-earner couples and compares their characteristics with those of couples who have paid jobs. It also looks at the occupations and businesses of self-employed couples who co-own a business.

- 14 Work patterns of truck drivers
Irwin Bess

Increased interprovincial and cross-border trucking has fuelled the demand for truck drivers. This study examines the hours, earnings and demographic characteristics of workers in one of the most common occupations among men.

- 20 Women's earnings/men's earnings
Diane Galarneau and Louise Earl

In addition to the Survey of Consumer Finances, the Labour Force Survey now provides a way of comparing women's earnings with men's. The two measures are explained here, as are the reasons for the sizable gap between them.



PERSPECTIVES

ON LABOUR AND INCOME

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27 Earnings of physicians

Abdul Rashid

Earnings of physicians continue to exceed the overall average. This article presents a demographic and earnings profile of the medical profession and highlights changes between 1980 and 1995.

39 Exports, GDP and jobs

Grant Cameron

The recent increase in exports' share of GDP has been exceptional. Imports have mirrored the trend in exports, with trade across the U.S. border being the driving force for both. Using Statistics Canada's Input-Output tables, this article explores the issue of some goods moving back and forth across the border at various stages of processing. (Adapted from an article in *Canadian Economic Observer* published in November 1999).

Symbols

The following standard symbols are used in Statistics Canada publications:

-	figures not available
...	figures not appropriate or not applicable
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...	amount too small to be expressed
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Forum

From the Managing Editor

For the record:

■ In the article "Seniors who volunteer," published in the Autumn 1999 issue, Table 1 provides volunteer participation rates by education. Changes to Labour Force Survey coding in 1990 mean that the 1987 and 1997 breakdowns are slightly different.

Category		Composition
Less than high school	1987	Grades 0-8
	1997	Grades 0-8 Grades 9-10 Grades 11-13, non-graduate
High school graduation	1987	Some secondary No postsecondary
	1997	Grades 11-13, graduate
Some post-secondary	1987	Some postsecondary
	1997	Some postsecondary Trade certificate or diploma Community college, CEGEP, etc. University certificate below bachelor's
Degree or diploma	1987	Postsecondary certificate or diploma University degree
	1997	Bachelor's degree Graduate degree (master's or doctorate)

As well, the data for 1997 were incorrect and should be replaced by the following:

	Age			
	55+	55-64	65-74	75+
Less than high school	12.9	14.8	14.6	9.1
High school graduation	25.8	27.6	25.9	21.8
Some postsecondary	31.0	36.4	29.2	--
Degree or diploma	36.1	38.8	35.7	28.5

Perspectives

We welcome your views on articles and other items that have appeared in *Perspectives*. Additional insights on the data are also welcome, but to be considered for publication, communications should be factual and analytical. We encourage readers to inform us about their current research projects, new publications, data sources, and upcoming events relating to labour and income.

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Highlights

In this issue

■ Working together— self-employed couples ... p. 9

- In one-third of dual-earner couples at least one spouse was self-employed in 1998. In 50% of these couples the husband was self-employed while the wife had a paid job; in 22% the wife was self-employed and the husband was an employee; and in 28% both spouses were self-employed. Furthermore, among those dual self-employed couples, more than two-thirds were running the same business together.
- Compared with couples with paid jobs, dual self-employed couples were older and less likely to live in an urban area. Also, self-employed husbands and wives were more likely to work part time, to hold a second job, to have a varied work schedule and to earn less than spouses in paid worker couples.
- Of the 227,000 couples in business together, 28% ran a farm or ranch and 15% owned a retail business.
- While paid worker couples averaged 74 combined weekly work hours, self-employed couples in business together averaged 87 hours. Couples with a business in the food, beverage or accommodation industry worked well over 100 hours per week.
- Most self-employed couples reported having the same occupation within their business. For example, in 24% of couples both spouses reported having an occupation in agriculture.

■ Work patterns of truck drivers ... p. 14

- Truck driving was the number one occupation for men in 1996.
- Truck drivers were three years older, on average, than employees in other occupations. About 13% were over the age of 54 in 1998, compared with less than 10% of workers in other occupations.
- About one in 5 employee truck drivers usually worked 60 hours or more per week (often on an irregular schedule), compared with only one in 50 employees in other industries.
- Only one in 4 truck drivers had completed some form of postsecondary training. In spite of this, those who worked long hours were able to earn incomes comparable to those in occupations requiring more education. Average weekly earnings for all truck drivers in 1998 totalled \$673, slightly higher than those of full-time employees overall (\$666). A driver working 60 or more hours in a typical week earned \$854.
- Self-employment among truck drivers is an important and growing component of the trucking industry. In 1998, about 50,000 Canadians were classified as self-employed independent truckers or "owner-operators." Over a 12-year period, the ratio of paid truck drivers to self-employed owner-operators narrowed from almost seven to one (1987) to less than four to one (1998).

■ Women's earnings/men's earnings

... p. 20

- In 1997, the widely used female-to-male earnings ratio produced by the Survey of Consumer Finances (SCF) for all full-year full-time workers was 72.5%. This was ten percentage points less than a new ratio based on the Labour Force Survey (LFS) (82.3%).
- Several conceptual differences exist between the two measures. The SCF measure covers all workers, including the self-employed. That of the LFS refers strictly to employees. As well, the definition of earnings is broader in the SCF.
- After adjustments, the 1997 SCF ratio is much closer to that of the LFS, rising from 72.5% to 79.3%. Though they appear to be far apart, the ratios produced by these two sources ultimately prove similar when conceptual differences are taken into account.

■ Earnings of physicians

... p. 27

- Compared with 14% of all earners aged 25 and over in 1995, nearly two-thirds of physicians were self-employed. On the whole, self-employed workers earned 2% less than paid workers; physicians with their own practice earned 46% more than those working for others.
- At \$105,200, physicians earned 244% more than the overall average of \$30,600 in 1995 and 143% more than workers with a university degree in a discipline other than medicine. Their longer work hours accounted for about 17% of the difference between their average earnings and the overall average.
- Over half of all workers aged 25 and over earned less than \$30,000, and less than 2% earned \$100,000 or more. Comparable proportions for physicians were 13% and 46%.

- A little over one-third of all physicians were specialists. Their average earnings (\$116,500) were 18% higher than those of general practitioners and family physicians (\$98,700).

- Between 1980 and 1995, overall real average earnings fell 4%. Men lost 7%, while women gained 15%. In the case of physicians, men and women gained 1% and 19%, respectively. However, because of the extraordinary growth in the number of young female physicians with lower earnings, average earnings of physicians declined by 2%.

■ Exports, GDP and jobs

... p. 39

- Nominal exports as a proportion of Canada's GDP soared from 25% in 1991 to 38% in 1995. Over one-third of the increase in exports' share of GDP in the early 1990s reflects the rising import content in exports. The adjusted, value-added contribution of exports rose from 19% to 26% over the same period.
- The increase in import content has been strongest where export growth has been strongest—machinery and equipment, and electronic equipment. These exports, with about 50% import content, accounted for 10% of all exports in 1995, compared with 7% in 1986.
- The importance of trade to the economy does not come from an excess of exports over imports; rather, it comes from the productivity gains that accrue from specialization. Because of its high capital intensity, the export sector's output per employee is higher than that of the rest of the economy and its contribution to overall employment is less. (In 1995, 21% of jobs, versus 26% of output, were dependent on exports.)

What's new?

... p. 42

■ Upcoming release

Survey of Household Spending (Public use microdata file)

■ Just released

Manufacturing Industries of Canada: National and Provincial Areas, 1997

Government Expenditures on Culture Survey

The Statistical Report on the Health of Canadians, 1999

A Portrait of Seniors in Canada

A Statistical Profile of Canadian Communities

Insights on...

Second International Technology in Education Study

E-STAT 1999

Characteristics of Dual-earner Families in 1997

The Survey of Labour and Income Dynamics, 1993-1997

Family Food Expenditure in Canada

Survey of Household Spending (Standard data tables)

■ Upcoming Conference

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Working together— self-employed couples

Katherine Marshall

A number of studies have explored the recent growth in self-employment, with specific attention to determinants, transitions, youths and women (Manser and Picot, 1999; Sawchuk and Whewell, 1998; Simpson and Sproule, 1998; Tompa et al., 1999). Rising self-employment may also be having an effect on families. As this article shows, in a growing number of families either one or both partners are self-employed. Also, the majority of dual self-employed couples are in business together, a fact that has been noted elsewhere: "The fastest growing segment of family-based business is couples in partnership, now called 'copreneurship'" (Gardner, 1991).

The increase in the number of couples in business together is bound to change family dynamics. It can give couples more control over their work and schedules, which may make it easier to manage home and work obligations. However, income security and stability may be more at risk when couples choose to work for the same business. Quality of family life may also be affected by changes in family vacation time, longer work hours and varying schedules, less access to non-wage benefits such as dental plans or maternity/

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Data sources and definitions

The monthly Labour Force Survey (LFS) collects labour market information from all household members aged 15 and over, as well as demographic and family relationship information, making it possible to derive family types. Also, detailed information on what industry the respondent works in, and where he or she works (business name), makes it possible to determine whether two people work for or own the same business (see below).

The Survey of Consumer Finances, conducted each year in April or May as a supplement to the LFS, collects information about amounts and sources of income received in the previous calendar year.

Dual-earner couple: married or common-law couples who, at the time of the survey, were both working either full time or part time at a job or business. The spouses' class of work status (paid work or self-employment) was based on their main job.

Self-employed couples in the same business: husbands and wives who were both self-employed at their main job, and whose business had the same three-digit industry code and business

name (that is, with the first 10 characters matching). Husbands and wives who were both medical practitioners—for example, physicians or chiropractors—were not considered to be working for the same business. (Clients and funding are usually independent for such persons.) Other dual-professional couples, such as accountants or lawyers, were considered to own the same business only if they reported working for the same firm or company name.

Special note on the file creation: in order to make the file as complete as possible, substantial manual checking was done. For example, because business names must be spelled the same before a computer match is made, business names that matched on only the first three letters and had matching industry codes, were manually assessed and coded appropriately. Furthermore, records that matched at the 10-character level for name of business, but did not match at the industry level, were also manually assessed. Finally, given the extent of the manual intervention required, only a 1998 data file of same-business couples was created.

parental leaves, and perhaps increased stress from blending personal relationships with business partnerships.

This article examines the incidence of self-employment among dual-earner couples and compares

their characteristics with those of couples who have paid jobs. It also looks at the jobs and businesses of self-employed couples who co-own a business (see *Data sources and definitions*). The effects of self-employment on family dynamics are not explored in this study.

Chart A: One in three dual-earner couples had at least one self-employed spouse in 1998.



Source: Labour Force Survey

One-third of couples touched by self-employment

Self-employment doubled between 1976 and 1998 from 1.2 million to 2.5 million persons or 18% of all employment (up from 12%). This growth changed the proportion of self-employment among couples as well.

In 1976, at least one spouse was self-employed in 21% of all dual-earner couples, but by 1998 that proportion had risen to 33% (Chart A). In 50% (589,000) of the 1.2 million dual-earner couples who had at least one spouse self-employed in 1998 the husband was self-employed while the wife had a paid job; in 22% (254,000) the wife was self-employed and the husband was an employee; and in 28% (334,000) both spouses were self-employed. Furthermore, of those dual self-employed couples, a full 227,000, or 68%, were running the same business together (Table 1).

Most self-employed spouses have varying work hours

Generally, many of the differences between employee and self-employed couples are consistent with findings for individuals in paid work or self-employment. For example, husbands and wives who were both employees in 1998 were on average younger (41 and 39, respectively) than those who were self-employed (48 and 45). Employee couples were also more likely to be city dwellers: 86%, compared with 63% for dual self-employed couples. Although farming couples contributed to this finding (only 14% lived in an urban area), urban living among other types of self-employed couples was still less common than among couples with paid work (76%). Couples in rural areas or small towns may be more inclined to consider self-employment because of the relative scarcity of paid jobs or because of lower start-up costs in some businesses.

Wives in both employee and self-employed couples worked an average 34 hours per week; in contrast, husbands worked 40 and 51 hours, respectively. Multiple jobholding was higher among the self-employed than among employee couples, as was the rate of part-time work. For example, among employee couples, 23% of wives and 3% of husbands worked part time, but among dual self-employed couples 38% and 9% did so.

Not surprisingly, given that flexibility is often a key attraction to self-employment, the work schedules of employee couples and self-employed couples differed considerably in 1998. Only 2 out of 10 spouses with paid jobs had varying work hours, compared with more than 6 out of 10 self-employed spouses. Finally, with combined earnings of \$38,800, self-employed couples had lower median earnings than did employee couples (\$64,000).¹

Table 1: Dual-earner couples by selected characteristics

	Total couples	Both employees	Dual-earner couples					
			One spouse self-employed			Both spouses self-employed		
			Total	Hus-band	Wife	Total	Same business	
							No	Yes
'000								
Total	3,599	2,422	843	589	254	334	106	227
Personal characteristics								
Average age								
Husband	42	41	44	44	42	48	46	49
Wife	40	39	41	42	40	45	43	46
%								
Live in urban area*	82	86	78	77	81	63	77	57
Job characteristics								
Average weekly hours								
Husband	43	40	46	48	41	51	47	53
Wife	33	34	32	32	33	34	34	35
%								
Multiple jobholder								
Husband	5	4	7	5	10	6	8	6
Wife	5	4	7	7	7	7	10	6
Works part time								
Husband	4	3	6	8	3	9	10	8
Wife	27	23	32	30	39	38	38	38
Unpaid family worker								
Husband	--	-	--	--	-	1	--	1
Wife	1	-	--	-	1	10	--	14
Work hours vary								
Husband	31	18	54	69	21	67	69	66
Wife	29	21	36	25	63	63	64	63
\$								
Median earnings**								
Husband	38,000	40,000	34,500	29,100	42,000	25,000
Wife	22,100	24,000	20,000	24,000	9,700	13,800

Sources: 1998 Labour Force Survey; 1997 Survey of Consumer Finances

* Population concentration of 1,000 or more and a population density of 400 or more per square kilometre.

** Variable from the SCF; represents before-tax earnings in 1997.

Four in ten co-owners in farming or retail

Of the 227,000 couples (nearly half a million people) who co-owned and ran a business together in 1998, 28% (63,000) were in agriculture

(Chart B). Half of these farms or ranches were involved primarily in raising livestock. Another 15% (35,000) of co-owning couples had retail businesses, including non-store businesses selling goods door-

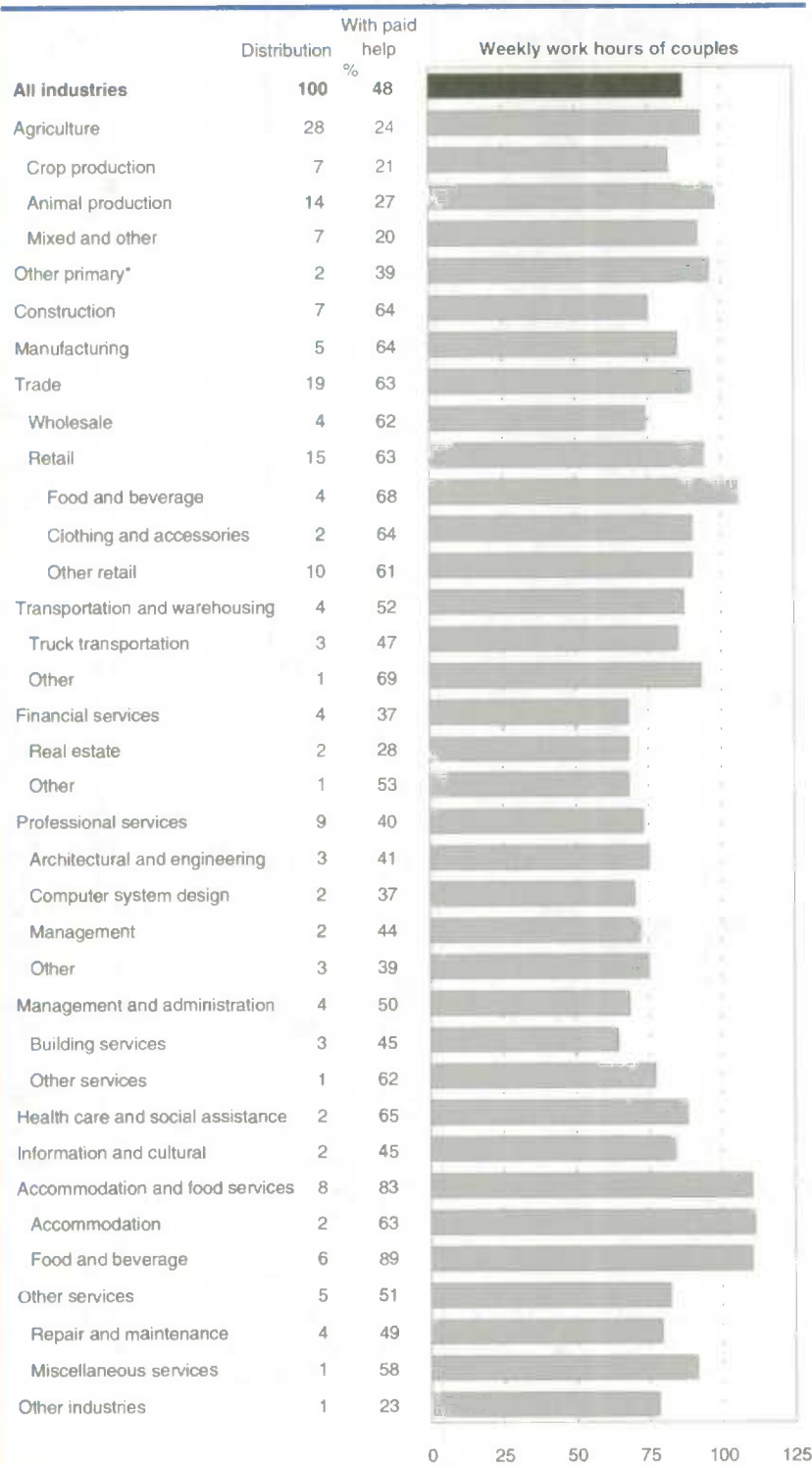
to-door or through catalogues or the Internet, among other means. About one in 4 family farms hired employees, whereas 6 in 10 family retail businesses had hired help.

Another 17% (39,000) of co-owned businesses were more or less equally divided between professional, scientific and technical services (20,000) (a sector providing knowledge, skills and expertise to professional communities), and accommodation and food services industries (19,000). Compared with 40% of businesses in the professional, scientific and technical services industry, more than 80% of those in accommodation and food services hired employees, possibly because these businesses are more difficult to manage with only one or two people.

Owning a business takes time

Dual-earner couples with paid jobs averaged 74 hours of combined weekly work in 1998; in contrast, couples who co-owned a business averaged 87 hours (Chart B). The type of business appears to have influenced the length of the work week. Establishments providing goods or services outside usual business hours, such as hotels, motels, restaurants or food stores, required around 110 hours per week. Farm couples, especially those with livestock, also worked above-average weekly hours (98). Couples who owned businesses associated with the business community, such as those in finance, insurance, professional services or administration, together clocked around 60 to 70 hours per week, work hours similar to those of employees.

Chart B: Co-owner couples in food, beverage or accommodation industries work well over 100 hours per week.



Source: Labour Force Survey, 1998

* Forestry, fishing, mining, oil and gas

Most spouses have same job within their business

Three of the four most common occupations reported by husbands and wives in a co-owned business were the same—that is, agricultural, managerial, or sales and service jobs (67% of husbands and 60% of wives) (Table 2). Other common occupations were financial, secretarial, administrative or clerical (22% of wives) and trades, transportation and equipment operating (14% of husbands).

Couples may have owned a business together, but not necessarily have had the same job or responsibilities—although most did. In 24% of couples surveyed in 1998, both spouses reported having an occupation in agriculture, and in another 13% both had management jobs in retail. This reflects the industry profile of co-owner couples, as noted earlier. The next two most common shared occupations were in sales and service (7%), and trades, transportation and equipment operating (5%). In another 17% of couples, husbands were in trades, transportation and equipment operating; management; agriculture; or sales and service, and wives worked in financial, secretarial, administrative or clerical occupations. These couples' duties were most likely divided between service provision and office management.

Summary

In 1998, some 33% (1.2 million) of all dual-earner couples reported at least one spouse who was self-employed. A substantial number of this group (227,000) included couples who were running a business together. Although one-quarter of these couples were

Table 2: Occupational distribution of husbands and wives who co-own businesses

	%
Top jobs for husbands	100
Occupations unique to agriculture	28
Managerial	27
Trades, transportation and equipment operating	14
Sales and service	12
Other	19
Top jobs for wives	100
Occupations unique to agriculture	25
Financial, secretarial, administrative or clerical	22
Managerial	21
Sales and service	14
Other	19
Top combinations in co-owned businesses	100
Both have occupations in agriculture	24
Both are retail managers	13
Both have occupations in sales and service	7
Both have occupations in trades, transportation and equipment operating	5
Husband in trades, transportation and equipment operating	7
Wife in financial, secretarial, administrative or clerical occupation	
Husband in management	5
Wife in financial, secretarial, administrative or clerical occupation	
Husband in management	5
Wife in sales and service	
Husband in agriculture	3
Wife in financial, secretarial, administrative or clerical occupation	
Husband in sales and service	2
Wife in financial, secretarial, administrative or clerical occupation	
Other combinations	29

Source: Labour Force Survey, 1998

co-owners of a farm or ranch, the others had businesses in a wide range of industries. Most husbands and wives who ran a business together had varying work schedules, and their combined work week averaged 87 hours. No matter what their work pattern, these couples faced the challenge of blending work and family partnerships.

Perspectives

Acknowledgement

The author wishes to thank Mary McAuley for her considerable effort in creating a custom file of self-employed couples who co-own a business.

Note

1 The lower average annual earnings of farm couples (\$25,000) do bring down the overall average earnings for all self-employed couples, but not substantially. Average earnings for non-farm self-employed couples were \$44,000.

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Work patterns of truck drivers

Irwin Bess

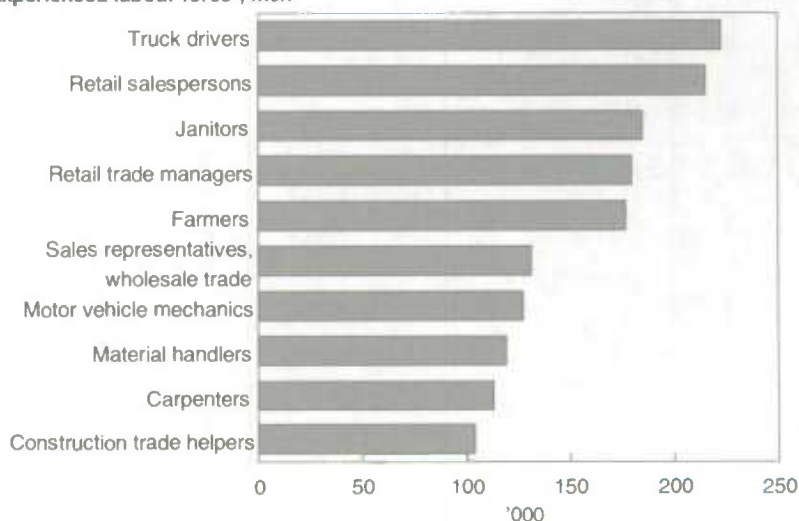
The trucking industry is an important component of the Canadian economy and the national transportation system, linking producers and wholesalers of goods to domestic and international markets. About two-thirds of the value of all trade to and from the United States moves over the road, including commodities ranging from automotive parts, machinery and forestry products to food, beverages and clothing. Between 1990 and 1998, when the economy was growing at a rate of about 2% per year, output in the trucking industry increased at an average annual rate of 5%—far greater than that of the airline (1%) and railway transport industries (1%), and in contrast to the 1% decline in the marine industry. With the increasing emphasis on just-in-time delivery at competitive prices, demand for truckers has grown. By 1998, about 230,000 Canadians, or 2% of the entire labour force, were employed as drivers of commercial transport trucks. This reflected an increase of 13% since 1989 (compared with a 9% overall employment growth).

Using data from the Labour Force Survey (LFS), the Survey of Work Arrangements, the Quarterly Motor Carriers of Freight Survey,

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Chart A: Truck driving was the most common occupation among men in 1996.

Experienced labour force*, men



Source: Census of Canada, 1996

* Aged 15 or over, employed or unemployed, and who worked in 1995 or 1996.

and the Survey of Small For-hire Carriers and Owner Operators, this article compares the work arrangements of truck drivers with those of workers in other occupations and industries (see *Data sources and definitions*). Unless otherwise noted, the analysis refers to both employees and self-employed workers (see *Self-employment a major component of for-hire truck driving*). It includes trends in hours worked, earnings and various socio-economic characteristics of workers in this growing occupation.

More men and older workers in trucking

Despite the inroads made by women into many non-traditional occupations and the increasing demand for trucking services, very few women drive transport trucks (Hughes, 1990). On the other hand, "truck driver" was the number one occupation for men in 1996 (Chart A).

Truck driving also employed proportionately more workers over age 55 than did other occu-

Table: Socio-economic characteristics of truck drivers

	All occupations	Truck drivers		
		Total	For-hire	Private
		'000		
Total	14,326	231	128	103
		%		
Province	100.0	100.0	100.0	100.0
Newfoundland	1.4	1.1	--	--
Prince Edward Island	0.4	0.5	--	--
Nova Scotia	2.8	3.0	2.7	3.3
New Brunswick	2.3	3.6	3.6	3.5
Quebec	23.2	23.4	21.0	26.3
Ontario	39.2	38.0	39.3	36.3
Manitoba	3.8	4.1	4.6	3.5
Saskatchewan	3.3	3.3	3.7	2.8
Alberta	10.6	12.2	13.3	10.7
British Columbia	13.0	10.9	10.5	11.4
Age	100.0	100.0	100.0	100.0
15 to 24	14.7	7.0	5.1	9.4
25 to 54	75.4	80.4	81.5	79.1
25 to 34	24.9	25.5	26.6	24.0
35 to 44	28.9	31.8	32.3	31.2
45 to 54	21.6	23.2	22.6	24.0
55 and over	9.9	12.6	13.4	11.5
Both sexes	100.0	100.0	100.0	100.0
Men	54.5	97.2	97.1	97.3
Women	45.5	2.8	2.9	2.7
Education	100.0	100.0	100.0	100.0
Less than postsecondary certificate, diploma or degree	47.7	73.1	72.2	74.2
Postsecondary certificate or diploma	33.3	25.0	25.9	24.0
University degree	19.0	1.9	--	--
Economic family size	100.0	100.0	100.0	100.0
One person	15.0	13.6	13.0	14.4
Two people	25.5	26.4	28.1	24.3
Three people	20.7	22.0	21.6	22.5
Four or more people	38.9	38.0	37.3	38.8
Number of children	100.0	100.0	100.0	100.0
No children under 18	63.0	60.1	59.5	60.8
With children under 18	37.0	39.9	40.5	39.2
One child	15.1	15.6	15.0	16.3
Two children	15.8	17.8	18.0	17.6
Three or more	6.1	6.5	7.5	5.4

Source: Labour Force Survey, 1998

pations, and fewer under the age of 25. According to the LFS, about 13% of all truck drivers were over 54 in 1998, compared with less than 10% of workers in other occupations. Overall, truck drivers were

about three years older than workers in other occupations. Some studies have predicted that many of these people will have retired by the year 2005, or at least have restricted the amount of time they spend on

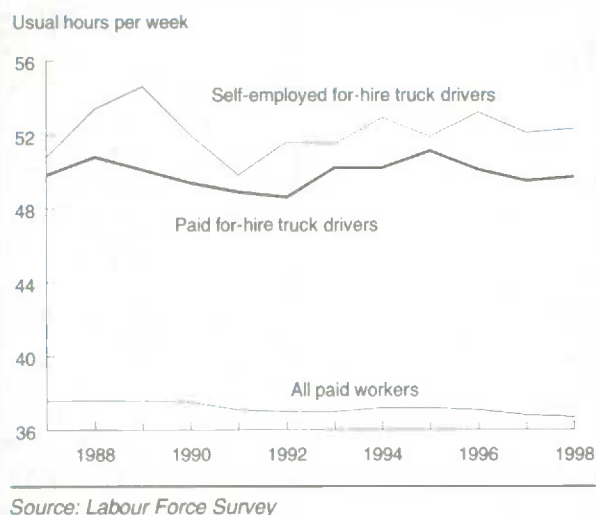
the road (CTHRC, 1998). However, if recent trends are any indication, their replacements will probably be older than 24. The "for-hire" segment of the trucking industry, composed of firms whose principal business is transportation of goods for a fee, were especially unlikely to be employing young people in 1998 (Table). Only 5% of for-hire drivers were under age 25, compared with 9% of drivers employed in private trucking (companies that transport their freight by truck, but whose principal business activity is not trucking) and 15% of Canadians in other occupations. This may reflect the minimum age for truck drivers in the United States (21), as well as the demand for practical experience and specialized training to haul certain products, liquids or chemicals (EIC, 1990; CTHRC, 1998).

Truck drivers' place of residence mirrored that of the 1998 labour force in general: about 38% lived in Ontario, 23% in Quebec, 12% in Alberta and 11% in British Columbia. The Atlantic region (8%), Manitoba (4%) and Saskatchewan (3%) were home to a smaller proportion of drivers.

Many drivers working long hours

For many Canadians, the lure of truck driving is often its promise of independence, its above-average earnings and the opportunity to travel to a variety of domestic or international destinations. However, the highly competitive nature of the trucking industry often demands nearly around-the-clock operation of vehicles and equipment (Binkley, 1998). The job may require that a driver complete multiple cross-town trips in several

Chart B: For-hire drivers have averaged over 50 hours per week since 1991.



hours, for example, or a round trip between Toronto and Montréal in a day, or a journey from Vancouver to Winnipeg in three days. Truck drivers also often spend a good part of each day completing a number of non-driving activities, such as loading and unloading freight, clearing customs and border crossings (Johnson, 1999), and performing administrative duties. As a result, few drivers (5%) were employed on a part-time basis in 1998, or worked less than 35 hours per week. Rather, they appeared to have joined the growing ranks of workers at the other end of the spectrum (Chart B) (Sheridan, Sunter and Diverty, 1996). According to the LFS, 20% of paid truck drivers were usually on duty 60 hours or more per week, compared with only 2% of employees in other industries. (In fact, paid truck drivers accounted for about 15% of the 244,000 employees who typically worked over 60 hours per week.)¹

For-hire² truck drivers tended to log more time on the road than drivers employed in private trucking. More than one-half (52%) of paid for-hire drivers usually worked 50 or more hours per week and about one-third (31%) worked 60 or more hours in 1998 (Chart C). In comparison, only 22% of drivers working for private carriers typically worked 50 hours or more and only 11% put in more than 60 hours each week. For-hire drivers were also highly likely to work for companies that engaged in long-distance³ trucking or derived most of their revenues from trips to and

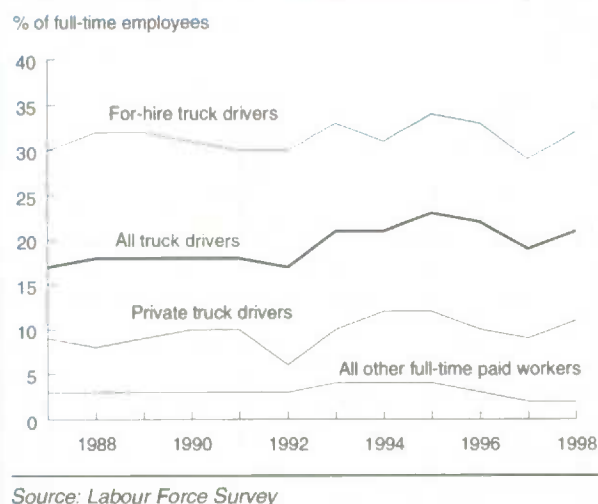
from the United States. Data from the Quarterly Motor Carriers of Freight Survey indicate that in 1998 over two-thirds of for-hire truck drivers (69%) worked for long-distance trucking companies, and about one-quarter (26%) were employed by firms that received over one-half of their revenues from service between Canada and the United States.

Long hours mean higher earnings for many drivers

A number of studies have noted a growing demand for highly trained workers and a related decline of earnings among those with less than high school education or little formal postsecondary training (Stafford, 1999). Truck drivers, relatively few of whom held college diplomas or postsecondary degrees in 1998⁴ (Table), posted hourly wages substantially lower than those of workers in occupations demanding higher levels of training. Although for-hire drivers earned slightly more than clerical, construction or transportation workers at \$13.94 per hour, they earned 7% less than manufacturing machine operators or assemblers, for example, and just over one-half (56%) the average wages earned by workers in natural and applied science occupations.⁵

What drivers lacked in hourly wage rates, they compensated with longer hours. On a weekly basis, average earnings for full-time truck drivers totalled \$673

Chart C: About one-third of for-hire drivers work 60 or more hours per week.

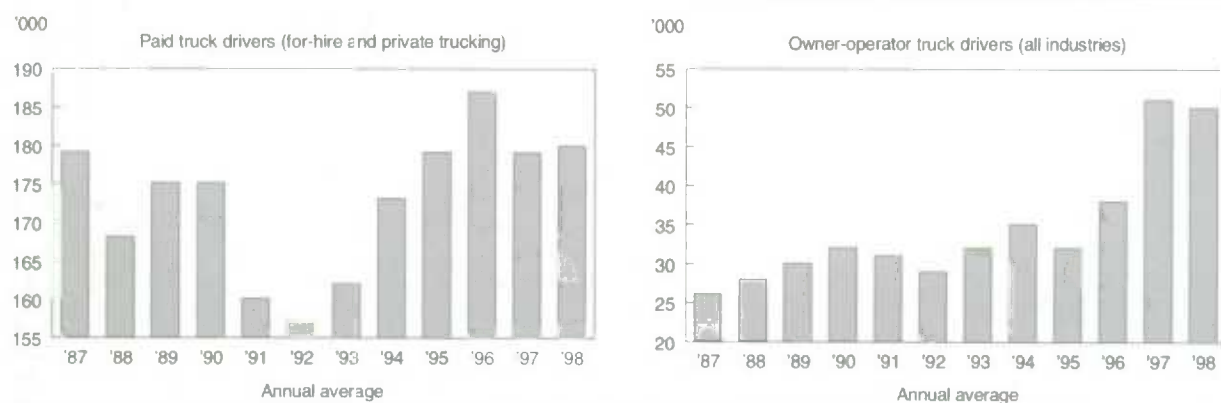


Self-employment a major component of for-hire truck driving

According to the Survey of Small For-hire Carriers and Owner Operators, the majority (75%) of self-employed or owner-operator drivers worked in "for-hire" trucking in 1996, and have emerged as an important and growing component of the trucking industry (Statistics Canada, 1999). Labour Force Survey data show that over a 12-year period (1987 to 1998), the ratio of paid truck drivers to self-employed owner-operators narrowed from almost seven to one to less than four to one. In 1998, about 50,000 Canadians were owner-operators, receiving over \$3.5 bil-

lion in payments from trucking companies. Use of owner-operators offers flexibility for trucking firms hoping to increase revenues without increasing permanent payrolls and capital investments (McKeown and Rea, 1996).

According to the 1995 Survey of Work Arrangements, about 39% of owner-operators chose to run their own trucking business for the sake of greater independence. These drivers may have found it necessary to work long weeks in order to cover fuel, maintenance, insurance and rental or leasing expenses.



Source: Labour Force Survey

in 1998, slightly higher than those of full-time employees generally (\$666). A driver working 60 or more hours in a typical week earned \$854 (or \$44,400 a year—assuming year-round work).⁶ Among unionized truck drivers putting in long hours, weekly earnings averaged \$898 (\$46,700 per year). Overall, the average weekly earnings of contractors and supervisors in trades and transportation were \$837; of workers in natural and applied sciences, \$842; and of those in management occupations, \$871.

Truck drivers less likely to be in dual-earner families

Although many paid and self-employed drivers work alone or

spend most of their time away from their office or terminus, only one in 10 was living alone in 1998. The majority (72%) lived with a marital or common-law partner and about 4 in 10 had at least one son or daughter under the age of 18 living at home. In contrast to the majority of couples in other occupations, the spouses of truck drivers were less likely to be working outside the home (Marshall, 1994). Less than one-half of drivers (42%) had a spouse doing paid work, compared with 8 out of 10 (79%) attached workers in other occupations. This situation could explain drivers' willingness to take on longer routes or work weeks as a way of supporting their families, or perhaps it reflects the challenges of

reconciling a trucker's schedule with the demands of a dual-earner household.

Balancing work with family time may be especially challenging for long-haul drivers in the for-hire industry, who may not see their families for days or, in some cases, for several weeks (Cancilla, 1999). According to the 1995 Survey of Work Arrangements, only 40% of paid for-hire drivers had a regular daytime schedule, compared with 71% of drivers in other industries and 68% of paid workers in other occupations. Rather than work a regular daytime shift, about 42% of for-hire drivers mixed daytime, evening and late night work. For one in five for-hire drivers, the nature of the job also meant

Data sources and definitions

This study uses data from the Labour Force Survey (LFS), the 1995 Survey of Work Arrangements (SWA), the Quarterly Motor Carriers of Freight Survey (QMCFS), and the Survey of Small For-hire Carriers and Owner Operators. Unless otherwise noted, the occupation considered here is truck driver (code H711), defined in the 1991 Standard Occupational Classification (SOC 1991), and excludes delivery drivers, fire-fighters, snowplows, road oilers, and waste and public works maintenance equipment operators. Persons employed in this occupation are primarily concerned with transporting goods and materials over urban, interurban, provincial or international routes.

The LFS is a monthly household survey of a sample of about 53,000 households representative of the civilian, non-institutionalized population 15 years or older in the 10 provinces. Excluded are residents of the Yukon, Northwest Territories and Nunavut, as well as persons living on Indian reserves, full-time members of the Canadian Armed Forces and inmates of institutions.

The SWA, sponsored by Human Resources Development Canada, was conducted as a supplement to the November 1995 LFS. A household sample survey, the SWA collected data on the work schedules and hours of paid and self-employed workers. The analysis is based on a sample of 239 respondents representing about 77,500 employed drivers in the for-hire trucking industry. Comparisons with employed drivers in other industries were based on a sample of 207 respondents representing 87,500 drivers outside the for-hire industry.

The QMCFS collects operating and financial data through a sample of for-hire trucking companies excluding self-employed owner-operators. The survey sampled between 713 and 756 companies with \$1 million or more in annual operating revenues during each quarter of 1998, representing approximately 2,300 companies.

Smaller companies are covered in the Survey of Small For-hire Carriers and Owner Operators, which collected operating and financial data from 8,664 companies with annual revenues between \$30,000 and \$1 million (1996).

Definitions

The trucking industry can be divided into two major components: for-hire trucking and private trucking. **For-hire trucking** companies carry freight for a fee to domestic and/or international markets. **Private trucking** refers to companies that maintain a fleet of trucks and trailers and employ drivers to haul and distribute their freight, but whose principal business is not trucking. Companies with private trucking operations tend to be retail distributors of consumer goods, chemical product producers, pulp and paper companies, beverage distributors, or wholesale distributors of agricultural products. Truck drivers working for couriers and postal service companies are classified as private truckers in this study.

Owner-operators are self-employed truck drivers who work under contract for either for-hire trucking companies or companies engaged in private trucking. They typically use their own road tractors and trailers.

working most Saturdays. At the extreme, about 10% typically logged seven-day work weeks. Studies conducted for Transport Canada suggest that work-related factors, such as the regularity of a driver's schedule and the time of day, as opposed to just the number of hours on duty, can influence driver alertness and overall driving performance (Transport Canada, 1997; Binkley, 1998).

Despite the long hours and potential tensions between work and personal commitments, most paid drivers seemed willing to meet the demands of their jobs in exchange for higher earnings.

While 55% of drivers who usually worked 50 hours or more per week in November 1995⁷ said they had little control or choice in the schedules they worked, some 64% said they would work the same hours if given the choice. And about 22% of drivers working such hours wanted to work more hours for more pay. Only 13% of drivers working long hours would have preferred fewer hours for less pay.

Summary

About 230,000 Canadians listed their occupation as truck driver in 1998. Workers with little or no

postsecondary education but who are willing and able to work long hours can earn incomes comparable to those of occupations requiring more education. Although many drivers would prefer to continue working long hours on an irregular schedule in exchange for higher earnings, they would lose time for family, friends and personal interests. As more and more experienced drivers approach retirement age and fewer Canadians opt to work long hours, finding suitable skilled workers may prove challenging for the trucking industry.

Perspectives

■ Notes

1 From 1976 to 1996, usual hours referred to hours worked in a typical week, regardless of whether they were paid or unpaid. Conceptual changes to "usual hours of work" for employees were phased in gradually from September 1996 to January 1997 with the redesign of the Labour Force Survey questionnaire. The new concept redefines usual hours as normal paid or contract hours, not counting any overtime. These changes may have introduced a slight downward shift in estimates of usual hours for paid workers.

2 The for-hire trucking industry is not a single industry, but a combination of smaller segments such as home and office moving, and highway transportation of dry materials, liquid chemicals, and forestry products. Drivers account for over half (61%) of all workers in for-hire trucking and most (68%) work for medium or large companies with annual revenues exceeding \$1 million.

3 According to the North American Industry Classification System, long-distance trucking refers to the truck transportation of general or specialized freight between metropolitan areas.

4 Although a number of studies point to increased demand for drivers with a broad range of skills and education, on-the-job training still appears to be a common feature of the occupation. While most drivers go through some form of driver training to obtain their commercial vehicle licence, only 26% of for-hire drivers and 24% of those working for private carriers in 1998 had obtained a postsecondary certificate, diploma or university degree. Even among the one in five drivers self-employed (owner-operators) and running a trucking business, only one in four had completed a postsecondary certificate, diploma or degree.

5 Earnings are for employees only.

6 Estimates of annual earnings are based on average weekly earnings from the Labour Force Survey and assume that the person worked or was paid each week over a 52-week period in 1998.

7 November is the reference period of the 1995 Survey of Work Arrangements.

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Women's earnings/ men's earnings

Diane Galarneau and Louise Earl

Since women began making their presence felt in the labour market and in institutes of higher learning, their earnings have been compared with men's. For this reason, Statistics Canada publishes considerable data on the subject. The Survey of Consumer Finances (SCF), which estimates the annual income of individuals and families, is the source most often used to measure the female-to-male earnings differential (see *Data sources*). Since 1997, the Labour Force Survey (LFS) has also been used to compare the incomes of women and men, on a monthly basis.

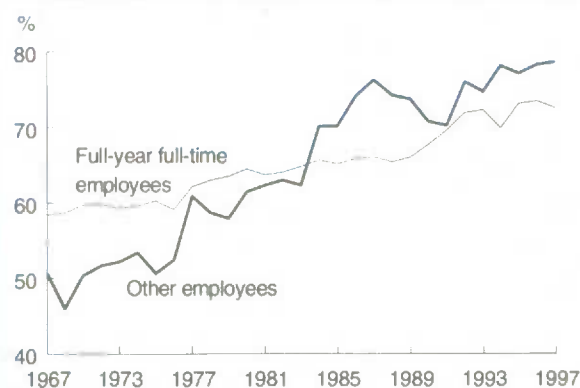
This article aims to familiarize readers with this new LFS-based measure of relative earnings, and to compare it with the one produced by the SCF. It also explains the reasons for the sizable gap between the two measures. In 1997, the female-to-male earnings ratio produced by the SCF was 72.5%; that of the LFS was 82.3%. (See Appendix 1 for a discussion of data quality.)

Ratios derived from the SCF

Since 1951, the SCF has been collecting information on the annual incomes of individuals and families by source. Since 1967, these data have been published by sex, making it possible to compare the earnings of men and women. Earnings comprise wages and salaries and net income from self-employment. Two main earnings ratios produced by the SCF are commonly used; one covers all persons earning employment income (whatever their work pattern), and the other, those working full time for the whole year.

The first ratio covers persons who worked for pay from as little as one to as many as 52 weeks a year, for at least one hour a week. Annual earnings can, there-

Chart: Female-to-male earnings ratios have increased steadily for 30 years.



Source: Survey of Consumer Finances

Note: The years between 1967 and 1973 are 1969, 1971 and 1972.

fore, vary greatly from one worker to another, mainly because of differences in work volume.

In order to take into account these differences, the SCF also provides an earnings ratio that covers only *persons working full year full time* (that is, those working 49 to 52 weeks during the year, "mostly" 30 hours or more per week). Individuals in this group are more homogeneous since they are less likely to vary their work schedule during the year.

A ratio for "other" workers² (full- or part-time for part of the year or part-time for the full year) is also available, though, as is the case with the first ratio, the annual amount of work performed varies greatly from one person to the next. It may also vary for the same person over the year. The comparison of earnings for this group, then, refers to a wide range of work schedules and annual hours of work.³ Consequently, the ratio for this group tends to zigzag over time (Chart).

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This last ratio, then, provides little information on the earnings differential between women and men, since it does not take into account work volume. The same is true for the ratio for all workers, since it includes "other" workers.

The most meaningful ratio, then, is that concerning full-year full-time workers. This increased from 58.4% in 1967 to 72.5% in 1997.

The LFS ratio

Since 1997, the LFS has included questions on the usual wages and salaries of employees in their main job.⁴ This does not include overtime pay or wages received for one or more secondary jobs, paid or self-employed.⁵ This new information is used to calculate female-to-male wage ratios on a monthly or annual basis. In this article, ratios from the LFS are based on *hourly* wages. The 1997 female-to-male ratio for average hourly wages of all employees stood at 82.3%. This was ten percentage points greater than the SCF ratio for full-year full-time workers, a sizable gap.

Ratios differ according to source

Several factors may explain such a gap. First, the populations covered are different. The SCF ratio refers to both employees and self-employed workers, while the LFS ratio considers only employees.

The definition of earnings is broader in the SCF. In addition to wages from the main paid job, the SCF includes earnings from one or more secondary jobs (paid or self-employed), paid overtime, and increases provided for in the contract of employment.⁶ The LFS includes only wages and salaries from the main paid job.

Furthermore, the two surveys calculate earnings on a different basis. The SCF produces ratios based on annual earnings, while the LFS uses hourly earnings.

As noted earlier, in order to take into account the volume of work, the most-used ratio from the SCF is that for full-year full-time workers only. It therefore excludes from the comparison other workers. By contrast, the LFS measure covers all employees, whatever their work pattern (see *Effect of part-time workers*). This ratio is therefore fully adjusted for hours of work.⁷

In the following exercise, a reconciliation of the two rates is attempted by means of two adjustments to the SCF ratio. First, it will exclude self-employed workers

from the SCF universe; then it will convert annual earnings to hourly wages.⁸

Adjustments

Comparable populations

The exclusion⁹ of self-employed workers from the SCF has a marginal effect on the 1997 ratio, which drops from 72.5% to 72.2% when only full-year full-time workers are considered (Table 1).

Table 1: Reconciliation of SCF and LFS female-to-male earnings ratios

	Ratio
	%
SCF ratios (1997 earnings)	
Published ratio	72.5
Adjusted for covered populations	72.2
Adjusted for work volume (full-year full-time workers)	78.8
Adjusted for work volume (all workers)	79.3
1997 LFS ratio	
Hourly earnings of all employees (full- and part-time)	82.3

Sources: Survey of Consumer Finances and Labour Force Survey

Adjustment for amount of work

The most important adjustment to consider in comparing earnings is the one related to volume of work. However, because the SCF does not collect information on weekly or monthly hours, it cannot determine precisely a person's annual hours.

For this reason, the usual practice is to consider only full-year full-time workers. However, this adjustment is only partial, since, on average, women working full time work fewer hours than men (39.5 hours versus men's 43.8 in 1997). Over the course of a year, this difference can amount to as much as six weeks of work.

A more precise adjustment would be the conversion of annual earnings in the SCF to hourly wages.¹⁰ The SCF collects information on the number of *usual* weekly hours worked at the time of the survey.¹¹ For the sake of argument, this is assumed to correspond to the *average* weekly hours worked over a year. It is also assumed that persons working "mostly" 30 hours or more per week do so throughout the 49 to 52

Data sources

A number of data sources can be used to calculate the female-to-male earnings ratio. That most often used is the Survey of Consumer Finances (SCF). Comparable ratios are also available from the census and from Revenue Canada taxation data. But the census data are produced only every five years, while the Revenue Canada data provide no information concerning the amount of work.

The ratio produced by the Labour Force Survey has the advantage of being fully adjusted for the amount of work and of being available on a monthly basis, 21 days after the reference week for the survey.

The SCF was conducted for the last time in 1998, collecting data covering the 1997 reference year. As of the 1998 reference year, the Survey of Labour and

Income Dynamics (SLID) now gathers those data, along with longitudinal data on labour and income. SLID can produce an even more precise measure of volume of work, since work hours are known for a maximum of six jobs. Thus, it will be possible to produce not only the usual SCF ratios, but also ratios adjusted for the amount of work.

Data sources for calculating the female-to-male earnings ratio

Source	Frequency	Time lag	Adjustment for amount of work	Lastest year	Ratio for 1997
					%
SCF	Annual	20 months	Partial	1997	72.5*
LFS	Monthly	21 days	Total	1999	82.3**
SLID	Annual	15 months	Total	1997	81.0†
Census	Quinquennial	29 months	Partial	1995	70.9*
Revenue Canada	Annual	18 months	None	1997	62.3‡

* Ratio for employment income of persons working full year full time.

** Ratio for employees' hourly wages.

† Ratio for average hourly earnings for all jobs and all employees.

‡ Ratio for median employment income of all persons reporting earnings.

Effect of part-time workers

The LFS ratio shows that among part-time workers, women exceed wage parity with men (109.9%). The ratio for full-time employees is 83.2%. In light of this, why should including part-time workers lower the overall ratio (from 83.2% to 82.3%)?

In fact, when part-time employees are added to the overall ratio, the numerator decreases in relation to the numerator for the full-time ratio, because hourly earnings of women working part time are less than those of women working full time (\$12.14 versus \$14.73, and \$14.34 for all women). The denominator also decreases, since hourly earnings of men working part time are lower than those of men working full time (\$11.04 versus \$17.70, and \$17.43 for all men). But since a greater proportion of women than men hold part-time jobs (13.3% and 5.8% of all employees, respectively), the relative decrease in the numerator is greater than that in the denominator.

Average hourly earnings

	Hourly earnings	Proportion	Ratio
	\$	%	
All employees	16.10	100.0	82.3
Men	17.43	54.9	
Women	14.34	45.1	
Full-time	16.51	81.0	83.2
Men	17.70	49.1	
Women	14.73	31.9	
Part-time	11.84	19.0	109.9
Men	11.04	5.8	
Women	12.14	13.3	

Source : Labour Force Survey, 1997

Table 2: Female-to-male income ratios, SCF and LFS

	Annual income**	SCF		LFS
		Wages and salaries*		Hourly earnings
		Full-year full-time employees	All employees	All employees
		%		
All employees	72.5	78.8	79.3	82.3
Age				
15 to 24	80.8	88.9	95.3	89.8
25 to 34	76.3	83.4	85.0	88.4
35 to 44	73.4	79.8	79.2	82.0
45 to 54	69.8	75.6	74.6	76.5
55 and over	66.4	71.8	73.0	75.6
Marital status				
Single (never married)	91.8	99.0	99.9	93.7
Married or common-law	67.5	73.8	73.6	78.3
Other	80.3	85.7	85.0	82.4
Education				
Less than Grade 9	69.6	73.4	78.1	70.3
Some high school	64.6	69.8	71.8	74.5
High school graduation	73.0	79.6	79.8	81.3
Some postsecondary	75.0	78.2	80.0	82.6
Postsecondary certificate or diploma	70.6	77.3	78.6	80.9
University degree	73.6	80.4	80.1	84.0
Occupation				
Management and administration	65.5	72.2	71.8	77.5
Professional	73.0	80.9	81.5	85.2
Clerical	80.7	85.8	86.7	89.4
Sales	73.1	78.3	76.9	74.8
Service	64.8	70.0	74.9	72.2
Primary industry	60.8	64.2	64.7	67.9
Occupations unique to production	65.2	68.2	67.7	67.2
Construction	--	--	--	86.0
Transportation equipment operators	78.8	89.9	88.6	84.7
Labourers and other	61.0	62.1	65.0	71.0

Sources: Survey of Consumer Finances and Labour Force Survey, 1997

* Does not include self-employment income of paid workers who had a second job in which they were self-employed.

** Calculated for persons working full year full time.

weeks (and not only for 26 weeks, the minimum for full-year full-time workers) (see note 2).

By dividing SCF annual wages and salaries by the number of weeks and weekly hours usually worked, one can convert annual earnings to an hourly wage. The

SCF ratio for full-year full-time employees then stands at 78.8% (Table 1).

In order to make the SCF ratio conceptually comparable with the LFS ratio, "other employees"—namely, those working part time part of the year, part time all year

or full time part of the year — must be added, so as to cover all employees.¹² The same adjustments can be made for this group of employees and a ratio calculated for all employees. The final ratio is therefore 79.3%, much closer to the LFS ratio. This similarity also holds for a number of socio-demographic characteristics (Table 2). (A detailed set of female-to-male earnings ratios for the 1998 LFS is provided in Appendix 3.)

Conclusion

This article has compared the new Labour Force Survey (LFS) measure of the female-to-male earnings differential with the widely used measure produced by the Survey of Consumer Finances (SCF). It has also explained the reasons for the sizable, ten percentage-point gap observed between those two ratios.

Several conceptual differences set the two measures apart. The SCF ratio covers all workers, both employees and the self-employed. The LFS measure covers only employees. The definition of earned income is broader in the SCF, since it includes not only earnings from one or more paid or self-employed jobs, but also paid overtime, and contractual wage increases. In the LFS, only the wages and salary of the main job are taken into account.

Even more important, the base used in the calculation of earned income is different: the SCF collects earnings on an annual basis, while the LFS provides hourly wages. The LFS ratios are therefore fully adjusted for volume of work, while the SCF ratios are only partially adjusted.

In this article, the SCF ratio was adjusted to make it conceptually comparable with the LFS ratio. Making the opposite adjustment would have been practically impossible, since the LFS does not collect information on the number of weeks worked. The adjusted SCF ratio therefore covers only the wages and salaries of employees. A further adjustment converted annual incomes to hourly wages, to take volume of work into account.

Following these adjustments, the 1997 SCF ratio comes closer to that of the LFS (82.3%), changing from 72.5% to 79.3%. Of all the adjustments made, the one for volume of work has the greatest effect. The reconciliation achieved holds for a number of socio-demographic variables.

While they are apparently far apart, the ratios produced by these two sources ultimately prove similar when conceptual differences are taken into account. The remaining gap may be due to the survey methodologies.

Perspectives

■ Notes

1 "Mostly" means that a person worked 30 hours or more per week for at least 26 weeks during the year. The person could have worked less than 30 hours per week the rest of the year and still be considered full-year full-time.

2 Other workers may have worked "mostly" 29 hours or less per week for 49 to 52 weeks or less than 49 weeks during the year.

3 A variety of work schedules also exists for full-year full-time workers, since in order to be considered as such these people must have put in "mostly" 30 hours or more per week. However, this group usually has a major attach-

ment to the labour market and a fairly stable work schedule.

4 Wages and salaries also include before-tax tips, commission and bonuses. The main job is the one at which the employee worked the greatest number of hours during the LFS reference week.

5 The LFS does not question self-employed workers on their wages and salaries, because it is impossible for them to supply such information. Conceptually, the earnings of self-employed workers should correspond to net income, that is, income minus expenses. However, the incomes and expenses of self-employed workers are not necessarily linked to current hours of work (equipment, for example, will have been paid for prior to its use). Self-employed workers, may, however, report their net income for the calendar year. Since the SCF and the Census of Population are based on annual incomes, those surveys can cover both employees and self-employed workers.

6 Questions regarding wages and salaries are usually asked only in the first interview (of six). However, if the respondent changes employer or tasks, the interviewer asks these questions again. But if an employee moves to a new level, or if his or her wages rise, such increases are not immediately reflected in the data. They eventually appear with sample rotations.

7 Other factors, such as sampling and non-sampling errors, may also help to explain the sizable gap between the SCF and LFS ratios. One such factor is the SCF's smaller sample size (two-thirds of the LFS sample) and the different reference period (the SCF refers to the year preceding the survey, while the LFS refers to one week). Furthermore, the SCF asks respondents to recall their labour market activities over the past year, while the LFS refers to the past week. Recall problems may therefore be more common in the SCF.

8 The LFS ratio cannot be adjusted to make it comparable with that of the SCF because the LFS does not collect any information on the number of weeks worked.

9 This first adjustment may seem rather crude, since it does not take account of transitions from "employee" to "self-employed worker" status or vice versa during the year. Since the SCF is an annual survey, it records the respondent's status once—at the time of the survey (April 1998). This study made an additional adjustment to take these transitions into account. However, the effect is marginal, as may be seen in Appendix 2.

10 This conversion is not usually recommended. It is done here solely in an effort to reconcile conceptually the SCF and LFS ratios. If the comparison is confined to average overall measures, however, it is valid.

11 The SCF, a supplement to the April LFS, refers to the previous year. Usual work hours correspond, then, to those of April of the following year.

12 Making the same adjustments in work volume for "other" employees is riskier, owing to the diversity of work status within this group. Also, workers included in it are more likely to change their hours during the year. The assumption that average weekly work hours in 1997 are equivalent to usual hours in April 1998 is probably further from reality than is the case for full-year full-time workers. Overall, however, the final result is fairly reliable, although very detailed breakdowns should be avoided.

■ References

- Statistics Canada. *Earnings of Men and Women, 1997*. Catalogue no. 13-217-XIB. Ottawa, 1999.
- . *Guide to the Labour Force Survey*. Catalogue no. 71-543-XPB. Ottawa, 1997.

Appendix 1—Data quality

The Labour Force Survey (LFS) and one of its supplements, the Survey of Consumer Finances (SCF), are used to produce estimates based on the data drawn from a sample survey of households. The gap between the estimates based on the sample and those derived from a complete enumeration conducted in similar conditions is called the **sampling error** of the estimates.

While the sampling error is not known, it can be estimated using the sample data. One such measure is the coefficient of variation (CV), the standard error as a percentage of the estimate. Generally, the larger the estimate, the smaller the CV. LFS-derived estimates that are less than 1,500

systematically have high CVs, and therefore are less reliable. The comparable value for the SCF is 2,250. In this article, earnings ratios derived from estimates based on at least 2,250 records (both in the numerator and in the denominator) for the SCF and 1,500 for the LFS are considered sufficiently reliable.

Errors unrelated to sampling can occur at almost any stage of a survey. Interviewers may not fully understand the instructions, respondents may make mistakes in answering questions, responses may be improperly entered on questionnaires, or errors may be introduced during the compilation or processing of the data. These errors are all examples of **non-sampling error**.

Over a great number of observations, random errors will have little effect on the survey estimates. However, errors that occur systematically will contribute to biases. Quality assurance measures were applied at each stage of the data collection and processing cycle, including the use of experienced interviewers, observation of interviewers and quality control procedures.

To obtain a more detailed description of the LFS and its objectives, coverage, sampling techniques, concepts, definitions, data quality, and so on, see the Appendix in *Historical Labour Force Statistics* (Catalogue no. 71-201-XPB).

Appendix 2—Exclusion of the self-employed

The SCF is conducted annually. Persons who were employees at the time of the survey may have been self-employed for part of the previous year and vice-versa.

To avoid including persons who changed status during the year, it is possible to consider only employees who have been in their job for at least 16 months (a period that covers the survey reference year up to the following April, when the SCF data are collected).

This adjustment has a minimal effect on the 1997 ratio, which drops to 78.5% (compared with 79.3% when duration of employment is not considered). The difference is also minor when age, marital status and education are taken into account.

	Female-to-male ratio (hourly wage)	
	All employees	In their job for at least 16 months*
	%	
All employees	79.3	78.5
Age		
15 to 24	95.3	90.0
25 to 34	85.0	83.5
35 to 44	79.2	79.9
45 to 54	74.6	74.2
55 and over	73.0	73.2
Marital status		
Single (never married)	99.9	97.2
Married or common-law	73.6	74.1
Other	85.0	83.7
Education		
Less than Grade 9	78.1	78.9
Some high school	71.8	69.6
High school graduation	79.8	78.7
Some postsecondary	80.0	76.9
Postsecondary certificate or diploma	78.6	78.4
University degree	80.1	80.1

Sources: Survey of Consumer Finances and Labour Force Survey, 1997

* Does not include the self-employment income of paid workers who had a second job in which they were self-employed.

Appendix 3—1998 LFS female-to-male hourly earnings ratios

Highlights

The female-to-male wage gap generally increases with age. In 1998, the ratio ranged from 90% for employees aged 15 to 24 to 75% for those aged 55 and over.

The wage ratio for part-time employees exceeded wage parity, reaching 114%, compared with 83% for full-time employees.

The wage gap tends to diminish as education increases. The ratio for employees with less than high school was 73%, in contrast to 85% for employees with a university degree.

Single employees experienced a higher ratio (92%) than married employees (78%).

Among industries, the wage gap was smallest for employees in agriculture and in services, whose ratios were 90% and 87%, respectively. This contrasts with a ratio of 68.5% for finance industries.

Women working in primary occupations faced a relatively large wage gap, with a ratio of about 67%. In contrast, the ratio for clerical and transport equipment operating workers was around 90%.

Unionized women earned 90 cents for every dollar earned by their male counterparts. These earnings compare favourably with those of non-unionized women, who earned just 78 cents for every dollar earned by non-unionized men.

	All ages	15-24	25-34	35-44	45-54	55 and over
All employees	82.1	89.7	87.9	81.6	77.3	75.0
Full-time	82.9	89.9	88.3	82.4	78.4	75.6
Part-time	113.8	101.6	104.1	94.2	81.4	92.9
Education						
Less than high school	72.8	84.3	74.6	71.0	68.4	71.1
High school graduation	80.8	82.7	81.5	78.4	74.3	76.5
Some postsecondary	82.6	90.2	88.4	78.5	76.7	69.2
Postsecondary certificate or diploma	80.4	87.3	85.2	80.8	77.4	79.1
University degree	85.1	90.6	89.4	88.9	84.9	81.2
Marital status						
Single (never married)	92.3	89.6	92.0	95.4	97.4	99.4
Married or common-law	78.3	84.4	85.6	79.3	75.3	73.3
Other	81.2	81.4	83.3	83.1	80.0	77.3
Job tenure						
<1 year	81.8	92.0	86.3	75.6	73.1	69.8
1-5 years	81.3	87.6	87.0	76.6	72.4	73.4
6-10 years	84.9	89.2	89.1	83.2	79.7	78.7
11-20 years	82.6	75.6	89.0	86.3	76.3	73.8
>20 years	83.8	-	--	85.9	85.6	77.1
Industry						
Agriculture	89.6	96.2	99.1	79.3	84.0	76.0
Other primary	81.2	78.5	86.9	84.3	74.4	82.2
Manufacturing	73.5	85.1	81.8	73.1	65.4	63.3
Construction	75.5	80.6	79.2	75.5	63.5	75.1
Transportation	86.9	86.3	98.6	86.3	86.4	69.9
Communication & other utilities	84.7	93.4	92.6	87.4	80.3	67.7
Trade	75.2	92.4	82.3	71.0	66.9	70.0
Finance	68.5	91.9	79.9	62.8	59.8	63.1
Insurance	74.8	112.6	78.6	74.1	73.1	58.2
Real estate	85.9	100.0	85.5	83.9	74.4	97.1
Service	87.2	97.1	90.7	85.8	79.8	77.8
Public administration	81.8	96.4	89.0	85.3	77.4	77.5
Occupation						
Managerial & other professional	81.4	92.4	89.3	82.1	77.9	73.4
Clerical	88.5	95.0	91.2	85.8	83.1	79.9
Sales	73.2	96.1	79.1	70.5	65.6	66.4
Service	73.1	96.6	76.0	67.8	62.6	76.6
Primary occupations	67.0	78.2	68.7	68.4	60.5	59.5
Processing, machining & fabricating	67.3	80.1	71.4	64.2	61.5	63.0
Construction	80.7	90.1	82.7	87.8	--	--
Transport equipment operating	89.0	80.4	95.8	89.1	88.1	89.5
Material handling & other crafts	69.9	86.9	74.4	67.2	56.2	66.4
Size of workplace						
<20 employees	81.0	88.6	85.4	78.0	75.4	76.5
20-99 employees	84.5	92.4	88.8	82.4	81.4	79.3
100-500 employees	80.8	90.4	86.9	81.2	76.2	73.1
>500 employees	86.7	90.3	93.2	90.0	81.9	77.6
Union status						
Union coverage	89.8	94.9	95.6	89.3	87.7	83.5
Member	90.1	94.8	96.2	89.6	88.1	83.9
Collective agreement	84.8	93.9	88.0	83.9	82.0	76.7
Non-unionized	78.1	89.5	84.6	77.0	69.1	69.4

Source: Labour Force Survey

Earnings of physicians

Abdul Rashid

Employment income has always varied widely, but some patterns have remained constant. As a rule, university graduates have earned more than those without a degree. And among university graduates, physicians have maintained relatively high earnings over the years (see *Notes and definitions*).

Although the demographic characteristics of physicians have changed considerably over the years—the profession now includes a significant proportion of women, for example—their earnings have continued to exceed the overall average (Statistics Canada, 1999). Using census data, this article presents a demographic and earnings profile of the medical profession and highlights changes between 1980 and 1995.

Characteristics

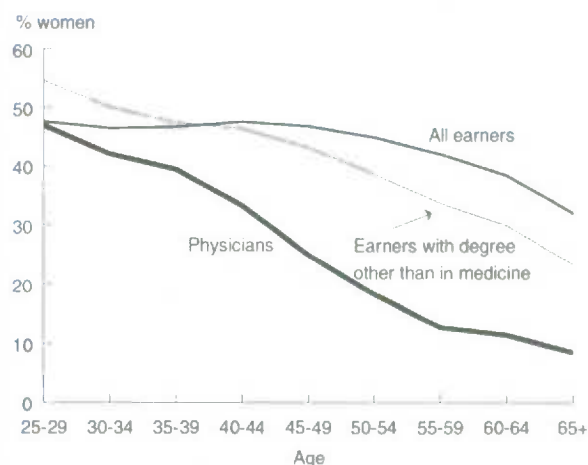
Female physicians are younger

In 1995, some 12,147,500 persons aged 25 and over worked and received employment income. Almost half (46%) were women. In contrast, only 29% of the 59,200 physicians were women (Table 1).

Overall, the age profiles of working men and women were similar. Men's median age (41.2 years) differed by less than a year from women's (40.5). In contrast, women in the medical profession were considerably younger than men (38.4 years versus 46.1). They formed 47% of the youngest group (25 to 29 years), but only 24% of those aged 40 to 59 and 10% of those aged 60 or over (Chart A).

Two factors are primarily responsible for this contrast. Participation of women in the labour force began to increase sharply in the 1960s, eventually matching that of men.¹ This was accompanied by fast growth in the number of women with higher levels of education, which allowed them to make strong inroads into higher paying occupations. Men contin-

Chart A: In 1995, almost half of the youngest physicians were women.



Source: Census of Canada, 1996

ued to dominate the older age groups, however. By 1996, the proportion of female physicians under age 35 was nearly twice that of male physicians (35% versus 18%). In contrast, only 14% of female physicians were at least 50, compared with 39% of male physicians.

Work patterns of physicians more intensive

Compared with 78% of all earners 25 years and over, 92% of physicians worked at least 40 weeks in 1995 (Table 1). Furthermore, irrespective of the number of weeks worked, 92% of physicians worked full time, compared with 83% of all earners.

Work patterns of men and women differed significantly. Compared with 80% of men, 76% of women worked 40 weeks or more. The respective proportions in the case of physicians were 94% and 88%. The proportion of women working mostly part time was three times that of men (27% versus 8%). The

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Table 1: Physicians and other earners, by selected characteristics, 1995

	All earners			Physicians			Other university graduates			All others		
	Both sexes	Men	Women	Both sexes	Men	Women	Both sexes	Men	Women	Both sexes	Men	Women
	'000						'000			'000		
Total	12,148	6,588	5,560	59,220	41,925	17,295	2,283	1,235	1,048	9,805	5,311	4,494
Age												
25 to 29	1,650	865	785	5,240	2,785	2,460	385	175	210	1,260	688	572
30 to 34	2,005	1,072	933	8,405	4,870	3,530	398	199	199	1,599	868	731
35 to 39	2,080	1,109	971	9,565	5,800	3,765	370	195	176	1,700	908	791
40 to 44	1,914	1,005	909	9,380	6,260	3,115	361	194	167	1,544	805	739
45 to 49	1,709	909	800	7,750	5,805	1,940	344	195	148	1,358	708	650
50 to 54	1,231	678	553	6,060	4,950	1,110	218	134	84	1,007	540	467
55 to 59	813	472	341	4,170	3,640	530	114	75	38	695	393	302
60 to 64	471	290	181	3,770	3,345	430	55	38	16	412	248	164
65 and over	275	187	88	4,885	4,470	420	39	30	9	231	152	78
Median age	years			years			years			years		
	40.9	41.2	40.5	43.3	46.1	38.4	39.8	41.3	38.3	41.1	41.1	41.0
Average years of education	13	13	13	21	21	21	18	18	18	12	12	12
Class of worker	'000						'000			'000		
Paid worker	10,454	5,457	4,997	22,370	14,340	8,020	1,970	1,023	946	8,462	4,419	4,043
Self-employed	1,650	1,122	528	36,855	27,580	9,270	310	211	99	1,303	884	420
Weeks worked												
1 to 13	635	287	349	890	600	295	93	41	51	542	245	297
14 to 26	1,082	537	544	2,165	1,270	900	164	71	94	915	465	450
27 to 39	898	472	426	1,520	665	860	150	63	88	746	408	337
40 to 52	9,533	5,293	4,241	54,640	39,385	15,250	1,876	1,060	815	7,603	4,193	3,410
Work intensity												
Mostly full time	10,091	6,040	4,052	54,725	39,665	15,055	1,937	1,131	806	8,100	4,869	3,231
Mostly part time	2,056	548	1,508	4,500	2,260	2,240	347	105	242	1,705	441	1,264
Average annual hours	hours			hours			hours			hours		
	1,609	1,805	1,377	2,293	2,426	1,970	1,733	1,929	1,501	1,576	1,771	1,346

Source: Census of Canada, 1996

same pattern prevailed among physicians (13% versus 5%). On the whole, 77% of male earners and 60% of female earners worked at least 40 weeks, mostly full time. The respective proportions among physicians were 90% and 79%.

On average, men worked 1,805 hours in 1995, about 31% more than women (1,377). Average annual hours of physicians were significantly greater. Male physicians worked 2,426 hours, about 34% more than the average for all male earners. Similarly, female physicians worked 1,970 hours, 43% more than the average for all female earners. Work patterns of uni-

versity graduates with a degree in a discipline other than medicine were less intensive than physicians' but more so than the overall average.

Earnings

Average employment income of all workers 25 years and over amounted to \$30,600 in 1995 (Table 2). At \$105,200, the average earnings of physicians were nearly three-and-a-half times the overall average and nearly two-and-a-half times greater than that of other university graduates (\$43,200).

Table 2: Average earnings of physicians and other earners, by selected characteristics, 1995

	All earners			Physicians			Other university graduates			All others		
	Both sexes	Men	Women	Both sexes	Men	Women	Both sexes	Men	Women	Both sexes	Men	Women
	\$			\$			\$			\$		
Total	30,600	36,800	23,200	105,200	117,200	76,000	43,200	51,500	33,500	27,200	32,700	20,600
Age												
25 to 29	21,700	24,400	18,700	41,200	42,400	39,900	24,700	26,800	22,900	20,700	23,700	17,100
30 to 34	27,500	32,200	22,100	84,700	94,900	70,600	36,200	41,600	30,800	25,000	29,700	19,500
35 to 39	31,200	37,700	23,900	105,600	120,900	82,000	44,400	52,900	34,900	27,900	33,900	21,100
40 to 44	33,700	41,100	25,500	117,900	134,700	84,300	49,200	58,900	38,000	29,500	36,100	22,400
45 to 49	35,500	43,600	26,400	125,600	136,500	92,700	52,800	61,800	40,900	30,600	37,800	22,900
50 to 54	35,800	44,400	25,200	130,400	138,700	93,700	56,200	65,800	41,000	30,800	38,200	22,300
55 to 59	32,500	39,800	22,400	130,600	135,400	97,500	54,100	62,300	38,000	28,400	34,600	20,300
60 to 64	29,100	35,000	19,600	123,000	128,500	80,100	48,400	55,500	31,900	25,700	30,600	18,300
65 and over	22,400	26,100	14,500	84,600	86,700	61,500	36,700	41,400	21,400	18,600	21,300	13,400
Class of worker												
Paid worker	30,700	37,200	23,700	82,000	93,900	60,700	43,000	51,200	34,100	27,800	33,800	21,100
Self-employed	30,000	34,800	19,900	119,300	129,400	89,200	45,000	53,100	27,800	23,900	27,400	16,600
Weeks worked												
1 to 13	7,000	9,000	5,300	20,800	21,300	19,600	8,100	9,800	6,600	6,800	8,900	5,000
14 to 26	13,200	15,900	10,600	32,100	34,700	28,300	15,900	17,800	14,400	12,700	15,500	9,800
27 to 39	19,100	22,700	15,200	60,300	75,400	48,500	23,000	25,800	21,000	18,300	22,100	13,600
40 to 52	35,200	41,700	27,100	110,700	122,100	81,400	49,000	56,900	38,700	31,300	37,000	24,100
Work intensity												
Mostly full time	34,300	38,900	27,300	110,300	121,400	81,000	48,200	54,900	38,800	30,400	34,600	24,200
Mostly part time	12,500	13,000	12,300	43,300	44,400	42,300	15,500	15,000	15,800	11,800	12,400	11,600
Hourly earnings	19.00	20.38	16.87	45.88	48.32	38.58	24.96	26.71	22.30	17.24	18.47	15.34

Source: Census of Canada, 1996

Earnings higher for workers in their fifties

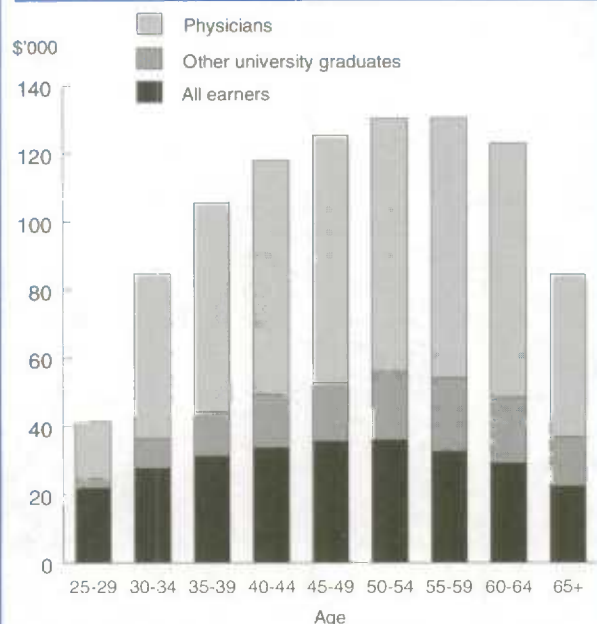
In general, young workers begin with relatively low earnings. As experience and job training increase, earnings rise, reach a peak, and then begin to slip as workers approach retirement. On average, workers aged 25 to 29 in 1995 earned \$21,700, some 71% of the overall average, and those aged 30 to 34 earned \$27,500 (90%). Average employment income peaked at \$35,800 in the 50-to-54 years group (Chart B).

Earnings of physicians followed this overall pattern with some sig-

nificant differences. First, those aged 25 to 29 earned \$41,200, substantially less than the average for their profession. The relatively low earnings of these young physicians (and those of other university graduates) may reflect their late entry into the labour force. On average, workers 25 years and over spent 13 years in formal education. In comparison, physicians spent 21 years, and other university graduates, 18 years. Moreover, before medical graduates are licensed to practise on their own, they are required to serve as residents in a medical facility.

Second, average earnings of female physicians peaked in the 55-to-59 age group—later than the average for all other female workers. This helped maintain the above-average earnings of physicians in this age group, which is characterized by declining earnings for workers in general.

Third, earnings of physicians exhibited a different pattern by age than did earnings overall. For example, while the difference in average earnings between the youngest (25 to 29) and the next age group (30 to 34) was 27% overall, it was 47% for university

Chart B: Physicians' earnings peaked later than those of other earners.

Source: Census of Canada, 1996

graduates with degrees in a discipline other than medicine and 105% for physicians. In the next age group (35 to 39), workers overall gained 13%, non-medical graduates, 22% and physicians, 25%. This pattern resulted in a much greater variation by age in the earnings of physicians and university graduates.²

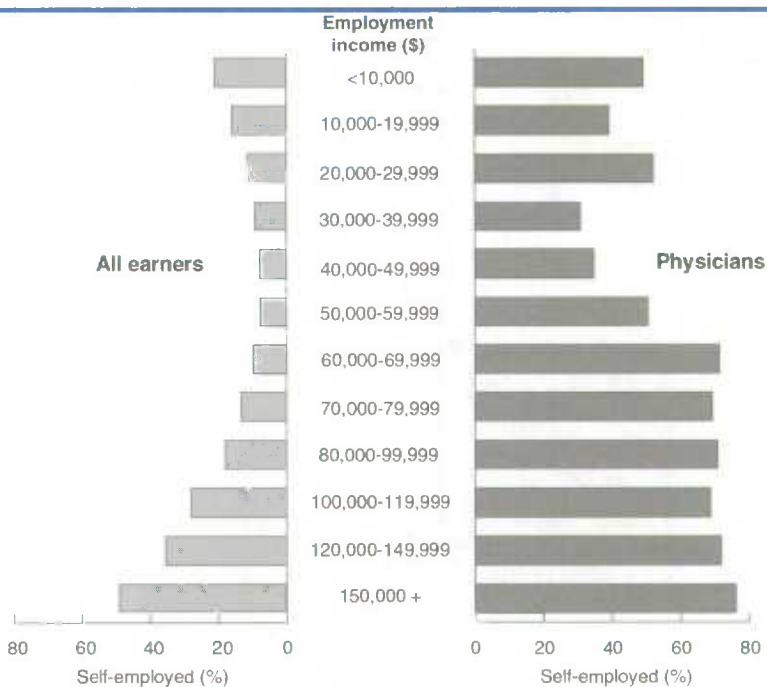
Earnings and work activity closely related

In 1995, persons 25 years and over who worked less than 14 weeks earned on average \$7,000—only 20% of that earned by those who worked at least 40 weeks (\$35,200). Differences were similar for physicians (19%) and for those with a non-medical degree (16%). The pattern held for men and women. Irrespective of the number of weeks worked, those who worked mostly part time earned \$12,500,

or only 37% of that earned by those who worked mostly full time (\$34,300). Similar differences existed for physicians (39%) and other university graduates (32%).

The distribution of full-time working men and women by number of weeks worked was almost identical. In the case of part-time workers, women worked significantly more weeks than men: 59% worked at least 40 weeks, compared with 45% of men. As a result, while the average earnings of full-time working men were 43% higher than those of their female counterparts, average earnings of part-time workers differed by less than 6%. Similarly, the average employment income of full-time male physicians (\$121,400) was 50% greater than that of their female counterparts (\$81,000), but that of part-time physicians was only 5% higher.

While *annual* earnings of physicians exceeded the overall average by 244% in 1995, their average *hourly* earnings were higher by 141% (see *Notes and definitions*). Similarly, compared with other university graduates, physicians averaged 143% more per annum, but 84% more per hour. Their longer work hours accounted for an estimated 23% of the difference between their

Chart C: Regardless of earnings level, physicians were more likely than other earners to be self-employed.

Source: Census of Canada, 1996

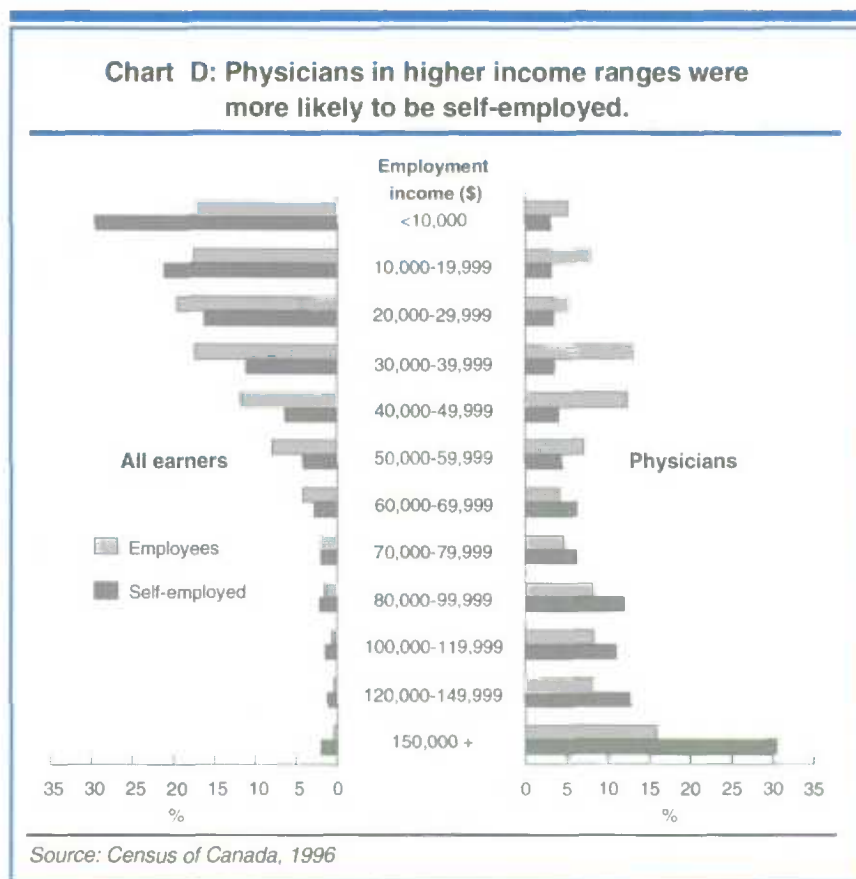
average earnings and those of other university graduates, and about 17% of the gap between their earnings and those of workers overall.

Most physicians self-employed

On the whole, just 14% of earners aged 25 and over in 1995 were self-employed,³ while 86% were employees (Table 1). The incidence of self-employment was higher among men (17%) than women (9%). In contrast, self-employment was the norm among physicians (62%): nearly two-thirds of men and a little over half of women worked for themselves.

Overall, average earnings of the self-employed (\$30,000) were 2% lower than those of employees (\$30,700). However, this does not reflect some key differences between the two groups. For instance, about one-fifth of all workers earning less than \$10,000 in 1995 were self-employed (Chart C). The proportion of self-employed workers diminished as earnings levels approached \$60,000, and then increased. Nearly one-half of all workers earning \$150,000 or more were self-employed. The pattern was similar among physicians, though the proportion was much higher at each level. Three out of four physicians earning \$150,000 or more were self-employed.

These patterns affect the overall earnings distribution of paid workers and the self-employed. Compared with about one-third of paid workers, one-half of the self-employed had earnings of less than \$20,000 in 1995 (Chart D). Only after \$80,000 did the proportions of self-employed earners exceed those of employees. Compared with about 1% of all employees, some 5% of the self-employed



earned \$100,000 or more. Consequently, as opposed to a 2% difference in *average* earnings, a 29% gap in *median* earnings existed between the self-employed and employees (\$19,700 versus \$27,800).

In the case of physicians, the situation was the reverse. In this profession, self-employment generated a substantially higher level of earnings than did paid work. Compared with about one-third of physicians working as employees, over one-half of self-employed physicians earned at least \$100,000 in 1995. Their average earnings (\$119,300) were 46% greater than those of their employee counterparts (\$82,000) and their median earnings were 82% greater (\$107,600 versus \$59,000).

On the whole, average earnings of self-employed men were 7% less than those of male employees; self-employed women earned 16% less than female employees. In the case of physicians, both men and women who ran their own practices earned significantly more than employees: 38% and 47%, respectively.

Women earn less

On the whole, average earnings of women in 1995 amounted to about 63% of the average earnings of men.⁴ This holds true for different groups. Female physicians earned, on average, 64.8% of male physicians' earnings; other female university graduates earned 65.0% of their male counterparts' earnings. Age

Table 3: Women's earnings standardized for various factors, 1995

		All earners	Physicians	Other graduates	All others
		\$			
Actual earnings of women		23,200	76,000	33,500	20,600
Actual earnings of men		36,800	117,200	51,500	32,700
Average earnings of women standardized by					
Age	$\Sigma (PAm_i \cdot YAf_j)$	23,100	80,100	34,400	20,500
Weeks worked	$\Sigma (PWm_i \cdot YWf_j)$	24,000	78,400	35,300	21,200
Worked full/part time	$\Sigma (PFm_i \cdot YFf_j)$	26,000	78,900	36,900	23,100
Weeks and time	$\Sigma (PWFm_i \cdot YWf_j)$	26,100	80,800	37,900	23,100
Age, weeks and time	$\Sigma (PAWFm_i \cdot YAWf_j)$	26,400	85,900	38,800	23,000
Ratio of women's to men's earnings					
Actual		63.0	64.8	65.0	63.0
Standardized		71.7	73.3	75.3	70.3

Source: Census of Canada, 1996

P = Proportion of men in category i
 Y = Average earnings of women in category j
 A = Age group

W = Weeks worked in 1995
 F = Full- and part-time earners
 m_i = Men in an age/weeks/work category
 f_j = Women in an age/weeks/work category

group (25 to 29) earned around 94% of that of their male counterparts. However, because women's significant presence among university-educated workers is relatively recent, they are still concentrated in the younger, lower-earning groups. Thus, men account for a greater proportion in the higher-earning age groups. This has a negative effect on the overall average earnings of women. Other things being equal, had female physicians and other university graduates had the same age distribution as their male counterparts in 1995, their average earnings would have been higher by 5% and 3%, respectively.

Differences in earnings by sex were due in part to work patterns. Overall, female earners put in slightly fewer weeks but a significantly greater proportion of them worked part time. If they had had the same work patterns as their male counterparts, their average earnings would have been 13% greater than their actual earnings. The effect in the case of physicians

and work patterns accounted for a significant part of the disparity in earnings by sex.

Although women made up 46% of all earners, they accounted for a relatively small proportion of workers in the lower-earning pre-retirement age groups. This had a favourable effect on their earnings (Table 3). Other things being equal, had women's age distribution been the same as men's, their employment income would have been slightly smaller (0.6%).

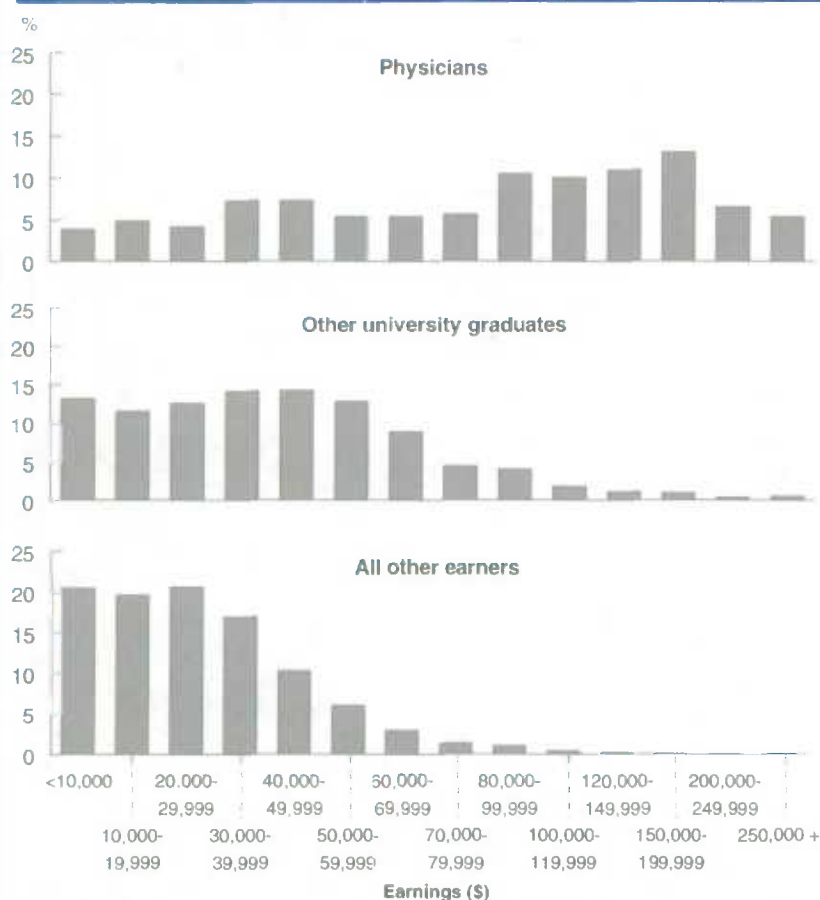
Except for two age groups—40 to 44 and 60 to 64—physicians showed higher-than-average earnings ratios in all age groups. In fact, female physicians in the youngest

Table 4: Ratio of women's to men's average annual and hourly earnings, 1995

	All earners		Physicians		Other graduates		All others	
	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly
All ages	63.2	82.8	64.8	79.8	65.0	83.5	63.1	83.1
25 to 29	76.6	97.6	94.2	107.7	85.1	99.7	72.1	94.9
30 to 34	68.6	95.0	74.4	98.8	74.0	101.0	65.6	91.5
35 to 39	63.4	86.1	67.8	95.5	65.9	91.6	62.4	84.4
40 to 44	62.0	80.5	62.5	79.7	64.6	84.5	62.1	80.3
45 to 49	60.6	77.4	67.9	87.0	66.2	81.6	60.7	77.7
50 to 54	56.9	73.9	67.6	85.2	62.3	77.4	58.3	75.7
55 to 59	56.3	74.6	72.0	88.5	60.9	75.8	58.7	77.9
60 to 64	56.1	77.2	62.3	87.1	57.4	78.6	59.7	81.5
65 and over	55.5	82.1	70.9	74.5	51.7	70.6	63.0	94.0

Source: Census of Canada, 1996

Chart E: In 1995, more than half of all physicians earned \$70,000 or more.



Source: Census of Canada, 1996

was much smaller (6%), reflecting the similarity in men's and women's work patterns.

On the whole, if both age and work patterns of female earners 25 years and over had been identical to those of men in 1995, their average earnings would have been over 13% higher than their actual earnings. Average earnings of female physicians would have been 13% higher and those of other female graduates, 16%. The overall female-to-male earnings ratio would have been 72%, while that

of physicians would have been 73%, and that of other university graduates, 75%.

Overall, compared with an annual earnings ratio of 63%, women's *hourly* earnings were 83% of men's (Table 4). The corresponding figures for physicians were 65% and 80%, and for other university graduates, 65% and 84%. Furthermore, the ratio of female-to-male hourly earnings for physicians aged 25 to 29 was 108%, and for those aged 30 to 34, 99%. Similarly, average hourly earnings

of other women under 35 with a university degree were at par with those of their male counterparts. Overall, women's fewer annual hours accounted for 53% of the difference between their average earnings and those of their male counterparts.⁵ In the case of physicians, annual hours accounted for about 43% of the difference.

Distribution of earnings

About one-fifth (19%) of all persons 25 and over who worked in 1995 reported total earnings of less than \$10,000, and over one-half (56%) earned less than \$30,000. Only one in 10 earned \$60,000 or more.

Workers who did not have a university degree (four out of five in 1995) earned considerably less (Chart E). Over 20% earned less than \$10,000, 20% earned between \$10,000 and \$20,000, and another 20% earned between \$20,000 and \$30,000. Less than 1% had earnings of \$100,000 or more.

Those with a university degree other than in medicine were less concentrated at the lower end of the earnings scale. One-quarter had earnings of less than \$20,000 in 1995, and about one-third earned at least \$50,000. Only 4% reported earnings of \$100,000 or more.

In contrast, less than 10% of physicians reported earnings under \$20,000. About 46% of all physicians earned at least \$100,000 in 1995, with 5% reporting earnings of \$250,000 or more.

Specialists earn more than other physicians

A little over one-third of all physicians were specialists; the rest were general practitioners and family

Table 5: Average earnings of specialist and other physicians, 1995

	Specialist physicians						General practitioners and family physicians					
	Number			Average earnings			Number			Average earnings		
	Both sexes	Men	Women	Both sexes	Men	Women	Both sexes	Men	Women	Both sexes	Men	Women
	\$						\$					
Total	21,565	15,585	5,975	116,500	130,800	79,300	37,660	26,335	11,320	98,700	109,200	74,200
Age												
25 to 29	1,765	980	785	37,800	39,400	35,900	3,475	1,805	1,675	43,000	44,000	41,800
30 to 34	2,930	1,835	1,095	87,600	97,400	71,400	5,470	3,040	2,430	83,100	93,500	70,200
35 to 39	3,420	2,195	1,225	116,000	132,700	86,300	6,145	3,605	2,540	99,800	113,800	79,900
40 to 44	3,300	2,270	1,030	136,500	158,300	88,500	6,085	3,995	2,085	107,900	121,300	82,200
45 to 49	2,680	1,885	795	135,500	154,300	90,900	5,070	3,925	1,140	120,300	128,000	94,000
50 to 54	2,290	1,855	440	147,200	155,800	111,000	3,770	3,095	675	120,200	128,400	82,500
55 to 59	1,650	1,390	265	139,200	147,400	95,700	2,520	2,250	265	125,000	128,000	99,400
60 to 64	1,660	1,485	175	143,300	150,700	80,100	2,110	1,860	250	107,000	110,700	80,000
65 and over	1,865	1,705	160	93,300	96,100	63,300	3,025	2,765	255	79,200	80,900	60,400
Weeks worked												
1 to 13	380	245	140	18,200	20,700	14,000	510	355	155	22,600	21,700	24,600
14 to 26	755	400	350	35,500	39,500	31,000	1,415	865	550	30,200	32,500	26,500
27 to 39	550	285	265	76,800	98,300	53,200	975	375	595	50,900	58,000	46,400
40 to 52	19,880	14,655	5,225	122,600	135,800	85,600	34,760	24,735	10,025	103,900	113,900	79,200
Work intensity												
Mostly full time	19,900	14,760	5,140	122,800	135,600	86,100	34,820	24,905	9,910	103,100	113,000	78,400
Mostly part time	1,660	825	835	41,900	45,800	38,000	2,840	1,430	1,405	44,200	43,600	44,800
Average annual hours	2,306	2,440	1,955				2,285	2,418	1,977			
Average hourly earnings				50.54	53.60	40.57				43.18	45.17	37.54

Source: Census of Canada, 1996

physicians (Table 5). Women accounted for 28% of specialists and a similar proportion of general practitioners (30%).

Average earnings of specialists (\$116,500) were 18% higher than those of general practitioners and family physicians (\$98,700). The difference was greater for men than for women (20% and 7%, respectively). As a result, the ratio of female-to-male earnings among specialists was 61%, compared with 68% for general practitioners. On the basis of hourly earnings, the respective ratios were 76% and 83%.

Although the relationship between earnings and age or sex was similar for both men and women, two points are noteworthy. First, both male and female

specialists aged 25 to 29 earned, on average, less than young general practitioners. Second, while male specialists earned consistently more than general practitioners in all other age groups, the difference for female physicians showed considerable variation.

Changes between 1980 and 1995

Changes in overall economic activity as well as in workers' characteristics affect earnings. The number of persons 25 years and over who worked and reported employment income increased by 33% between 1980 and 1995 (Table 6 and Table 1). This was consistent with the corresponding growth of 34% in population (men, 33% and women, 36%).

Table 6: Physicians and other earners by selected characteristics, 1980

	All earners			Physicians			Other university graduates			All others		
	Both sexes	Men	Women	Both sexes	Men	Women	Both sexes	Men	Women	Both sexes	Men	Women
	'000						'000			'000		
Total	9,105	5,516	3,589	39,680	33,175	6,505	1,133	743	390	7,932	4,740	3,192
Age												
25 to 29	1,791	1,012	780	6,165	4,210	1,955	277	154	123	1,509	854	655
30 to 34	1,626	963	663	6,730	5,170	1,560	284	180	104	1,335	778	557
35 to 39	1,300	776	524	6,055	5,075	975	195	135	60	1,099	636	463
40 to 44	1,060	630	430	4,620	4,015	610	121	86	35	935	541	394
45 to 49	962	588	374	4,305	3,870	435	84	59	24	874	525	349
50 to 54	883	555	328	3,745	3,395	350	68	48	20	812	504	308
55 to 59	741	477	264	3,535	3,260	275	53	41	13	684	433	250
60 to 64	481	325	156	2,120	1,925	195	31	23	7	448	300	148
65 and over	260	189	71	2,405	2,250	155	21	17	4	237	170	67
Median age	years			years			years			years		
	39.3	40.1	38.3	40.8	42.5	33.8	35.1	36.3	33.3	40.1	40.9	39.1
Weeks worked	'000						'000			'000		
1 to 13	529	184	345	460	320	145	43	16	26	486	168	319
14 to 26	786	371	415	1,360	890	475	79	35	43	706	335	371
27 to 39	686	369	317	1,250	800	445	79	38	41	607	331	276
40 to 52	7,103	4,592	2,511	36,600	31,170	5,430	933	654	280	6,133	3,907	2,226
Work intensity												
Mostly full time	7,756	5,204	2,553	37,215	31,920	5,295	1,014	707	306	6,706	4,464	2,241
Mostly part time	1,348	312	1,036	2,465	1,250	1,205	120	36	84	1,226	276	951
Average earnings	1995 \$			1995 \$			1995 \$			1995 \$		
All ages	31,800	39,400	20,200	107,500	116,100	63,600	47,300	55,300	32,000	29,300	36,400	18,700
25 to 29	26,400	31,500	19,900	49,300	52,400	42,800	30,600	34,000	26,400	25,500	30,900	18,600
30 to 34	31,700	39,100	20,800	89,200	98,400	58,500	42,800	49,300	31,500	29,000	36,400	18,700
35 to 39	34,700	44,000	20,900	121,200	130,500	72,900	52,700	60,800	34,500	31,000	39,700	19,000
40 to 44	35,000	44,700	20,600	136,300	144,200	83,500	58,700	67,500	37,200	31,400	40,400	19,100
45 to 49	35,200	44,400	20,600	140,000	146,300	84,000	63,000	72,800	38,800	32,000	40,500	19,200
50 to 54	34,700	43,200	20,300	141,100	145,800	95,900	64,400	74,300	40,000	31,700	39,600	19,000
55 to 59	33,000	40,400	19,600	128,000	130,600	96,600	64,300	72,400	39,000	30,000	36,700	18,500
60 to 64	30,300	35,700	19,100	112,700	116,200	78,000	57,700	64,400	36,400	28,000	32,900	18,100
65 and over	21,000	23,600	13,900	73,500	76,300	34,000	35,200	38,800	20,700	19,200	21,500	13,500
Weeks worked												
1 to 13	6,400	10,200	4,300	21,900	22,400	20,900	7,800	10,600	6,000	6,200	10,200	4,200
14 to 26	13,900	18,700	9,500	28,200	30,800	23,400	16,900	20,000	14,400	13,500	18,500	8,900
27 to 39	21,200	26,800	14,700	47,700	54,900	34,800	27,100	31,200	23,300	20,400	26,300	13,400
40 to 52	36,800	43,200	24,900	113,600	121,100	70,600	53,300	59,700	38,400	33,800	39,900	23,100
Work intensity												
Mostly full time	35,200	40,700	24,200	111,600	118,500	69,500	50,900	57,000	36,900	32,400	37,500	22,300
Mostly part time	12,400	18,400	10,500	46,700	55,200	37,900	16,300	21,400	14,100	11,900	17,800	10,200

Source: Census of Canada, 1981

Note: For comparable 1995 figures, see Tables 1 and 2.

The number of male earners increased by 19%, while that of female earners grew by 55%. The difference in the case of physicians was even greater.

While the total number of physicians increased by 49%,⁶ that of men in the profession did so by 26%, and that of women, by 166%.

Notes and definitions

Earnings (employment income) are the sum of wages and salaries and net self-employment income from the operation of a farm, business or professional practice owned and operated by the respondent. Self-employment income is calculated after business expenses but, as with wages and salaries, before income tax.

All income figures are expressed in **1995 dollars**, meaning that actual earnings for earlier years have been adjusted for changes in the Consumer Price Index.

The 1980 Standard Occupational Classification, used in the 1981 Census, classified **physicians and surgeons** in a single group (3111). The 1991 Standard Occupational Classification, used for data from the 1996 Census, classifies medical doctors into two groups: specialist physicians (D011) and general practitioners and family physicians (D012). For the most part, however, these are treated as a single group in order to facilitate comparisons.

Paid workers work for others, while the **self-employed** work for themselves in an *unincorporated* farm, business or professional practice, with or without paid help. Respondents who describe themselves as self-employed in an *incorporated* enterprise, though technically employees of the corporation, are more like the self-employed in their economic behaviour. Furthermore, they tend to own most of the capital invested in the enterprise. Their income is, therefore, a mixture of returns to labour and capital. Accordingly,

these persons are classified here with the unincorporated self-employed. Finally, a small group designated as unpaid workers in a business owned and operated by a family member is included in the totals but not discussed separately.

Census respondents reported the number of weeks worked in the preceding calendar year and weekly hours worked in their job at the time of the census. **Annual hours** were estimated as a product of these two variables.

Selection of universe

Persons selected for this analysis were at least 25 at the time of the 1996 Census, had worked in 1995 and had reported employment income for that year.

Of the 15 million persons who worked and reported earnings in 1995, about 2.4 million or 17% were aged 15 to 24. Over 93% of these young earners were without a university degree. Only 1% of physicians fell into this age group. Their 1995 earnings, considerably lower than those of others in the profession, were probably casual earnings of medical students and trainees. Although their small proportion would not affect the overall average earnings of physicians, that of young earners overall, being much larger, would depress overall average earnings. This would distort comparisons. Accordingly, this age group was excluded from the analysis.

As was pointed out earlier, these changes are a function of both the growing participation of women in the labour force and their increasing level of education. For example, during the period under review, the number of male earners with a university degree other than in medicine increased by 66%, while that of their female counterparts grew by 169%.

The age profile of earners also changed between 1980 and 1995. The changes in the number of earners ranged from a decline of 8% in the youngest group to an increase of 81% in the group aged 40 to 44. In the case of physicians, the proportion of men declined among those under 35 and increased in all other age groups. Increases among

women in the profession ranged from 26% in the youngest group (25 to 29) to 411% in the 40-to-44 years group.

Significant changes occurred in the work patterns of earners. Among men, the proportion of earners working at least 40 weeks declined three percentage points; among women, it increased six points. In the case of physicians and other university graduates, work patterns changed little among men; however, the proportions of women working at least 40 weeks increased five and six percentage points, respectively. Furthermore, regardless of the number of weeks worked, the proportion of women working mostly full time also increased during the period.

As a consequence of the recession of the early 1980s, workers 25 years and over lost 3.9% in real earnings between 1980 and 1985. They recovered 2.9% between 1985 and 1990, only to lose it as a result of the early 1990s recession. Thus, overall real average earnings fell 4.0% between 1980 and 1995.

Average earnings of men and women moved in opposite directions (Statistics Canada, 1998). Over the 15-year period, men lost 7% while women gained 15%. In contrast, although physicians' average earnings declined 2% over 15 years, neither men nor women lost in real terms. Between 1980 and 1995, male physicians actually gained 1%: their earnings moved from \$116,100 to \$117,200. Real

average earnings of female physicians increased by 19%: from \$63,600 to \$76,000.

One reason for the different rates of change in earnings is the two groups' different rates of growth. As noted earlier, the increase in the number of male physicians was less than that of the overall population 25 years and over, indicating a more or less normal rate of entry and exit for men in the profession. In contrast, new female physicians did not just replace those leaving, but were an addition to the profession. As they gained experience, their earnings increased. As a result, real average earnings of female physicians rose throughout the period under review. However, because they earned less than their male counterparts, their growing proportion (from 16% in 1980 to 29% in 1995) depressed the overall average earnings of physicians.

The increasing proportion of female earners exerted a strong downward pressure on overall average employment income, especially in the case of workers with higher levels of education (Table 7). Other things being equal, if the sex composition of workers had not changed between 1980 and 1995, overall average earnings would have increased by 3%. For both physicians and other university graduates, the effect would have been even greater (5% in each case).

This was more than balanced by the effect of a maturing workforce. If the age distribution had not changed between 1980 and 1995, overall average earnings would have been 3% lower; in contrast, physicians and other university graduates would have seen increases of 5% and 8%.

Changes in work patterns had a positive effect on women's earnings and a negative effect on men's. The overall net effect of such changes was relatively small (around 1%) except for university graduates other than in medicine (3%).

Taken together, changes in sex, age and work profiles between 1980 and 1995 had a positive effect on the earnings of physicians (0.4%) and other university graduates (0.6%) and a negative effect on the earnings of others (-1.5%).

Summary

Compared with 46% of workers 25 years and over in 1995, women

accounted for 29% of physicians. Among the latter, women were concentrated in the lower age groups. So, while the overall median age of working men and women differed by less than a year, female physicians were about eight years younger than their male counterparts.

In general, women worked fewer weeks than men, and a larger proportion worked part time. This pattern prevailed among physicians, although both men and women in this profession worked more weeks and longer hours than other workers. Overall, men worked 1,805 hours and women, 1,377; physicians worked 2,426 hours and 1,970, respectively.

Table 7: Effect on earnings of changes in earners' characteristics, 1980-1995

		All earners	Physicians	Other graduates	All others
		\$			
Actual 1995 earnings		30,600	105,200	43,200	27,200
Standardized by					
Sex	$\Sigma (PS_i \cdot YS_i)$	31,400	110,500	45,300	27,900
Age	$\Sigma (PA_i \cdot YA_i)$	29,600	99,900	39,800	26,500
Sex and age	$\Sigma (PSA_i \cdot YSA_i)$	30,500	104,600	41,700	27,200
Weeks worked	$\Sigma (PW_i \cdot YW_i)$	30,500	105,400	41,700	27,200
Worked full/part time	$\Sigma (PF_i \cdot YF_i)$	31,000	106,100	44,800	27,500
Weeks and time	$\Sigma (PWF_i \cdot YWFi)$	30,800	106,100	44,600	27,400
Sex, age, weeks and time	$\Sigma (PSAWFi \cdot YSAWFi)$	30,900	104,800	43,000	27,600

Source: Census of Canada, 1981 and 1996

P = Proportion of earners in 1980 in category *i*

Y = Average earnings in 1995 in category *j*

S = Male and female earners

A = Earners in age category *i*

SA = Male and female earners in age category *i*

W = Earners in "weeks worked" category *i*

F = Full-and part-time earners

WF = Full-and part-time earners in "weeks worked" category *i*

SAWF = Earners in category *i* of sex-age-weeks-full/part-time

Compared with 14% of all earners, 62% of physicians were self-employed.

At \$105,200, physicians earned 244% more than the overall average of \$30,600 in 1995, and 143% more than workers with a university degree in a discipline other than medicine. Longer work hours accounted for about 17% of the difference between physicians' average and overall earnings. On the whole, self-employed workers earned 2% less than paid workers; among physicians, those with their own practice earned 46% more than others.

While 56% of all workers earned less than \$30,000 in 1995, less than 2% earned \$100,000 or more. Comparable proportions for physicians were 13% and 46%, with 5% reporting earnings of at least \$250,000.

A little over one-third of all physicians were specialists, whose average earnings were 18% higher than those of general practitioners and family physicians (\$116,500 versus \$98,700).

Overall, the ratio of female-to-male average earnings was 63%; the comparable ratio for physicians was 65%. If women had had the same age and work patterns as men, ratios would have been 72% and 73%, respectively. The ratio of average hourly earnings overall was 83%. In the case of physicians, it was 80%. Little difference existed in average earnings per hour for those under age 35.

Between 1980 and 1995, the number of earners aged 25 and over increased by 33%: men by 19% and women by 55%. The number of physicians increased by 49%: men 26%, women 166%.

As a result of the recessions of the early eighties and nineties, real average earnings fell 4% between 1980 and 1995. Male earners lost 7% but female earners gained 15%. In the case of physicians, men and women gained, respectively, 1% and 19%. However, overall average earnings of physicians declined 2%. This was because of the extraordinary growth in the number of young female physicians. Their lower earnings depressed the profession's average. At the same time, a maturing workforce had a positive effect on earnings. If the sex composition and age and work profiles of workers had not changed between 1980 and 1995, average earnings of physicians and other university graduates in 1995 would have been slightly lower and those of all other workers, 1% higher.

Notes

1 In fact, the number of young (15 to 24 years) female earners in 1995 exceeded that of young male earners.

2 This is estimated by using the following formula:

$$\text{coefficient of variation (CV)} = \sqrt{\sum P_i (Y_i - \bar{Y})^2 / \bar{Y}}$$

where P_i is the proportion of earners in the i th age group in a category, Y_i equals their average earnings and \bar{Y} is the overall average earnings of the category. The CV of average earnings by age for physicians (24.6%) and other university graduates (22.2%) was twice that for other earners (12.7%).

3 See *Notes and definitions*.

4 Most published statistics relating to female-to-male income ratios are restricted to persons who work 49 to 52 weeks, mostly full time. However, this section covers all earners 25 years and over; the effect of differences in work activity is estimated separately.

5 The proportion, P , of the earnings difference ascribed to the difference in hours was calculated as follows:

$$P = Y_f \cdot \frac{\frac{H_m}{H_f} - 1}{Y_m - Y_f}$$

where Y_f and Y_m are the average earnings of women and men and H_f and H_m are their annual work hours.

6 Overall, there was one physician aged 25 or over for every 613 Canadians in 1981. By 1996, this had changed to one physician for every 487 Canadians.

References

Statistics Canada. *Canadian Income and Earnings for 1990 and 1995*. Dimension series, 1996 Census of Canada. CD-ROM Catalogue no. 94F0005XCB. Ottawa, 1999.

---. *The Daily*. Catalogue no. 11-001-XPE. Ottawa, May 12, 1998.

Exports, GDP and jobs

Grant Cameron

The share of exports in aggregate demand began rising in the 1970s, after hovering around 20% during the 1950s and 1960s. However, the increase in the share of exports in GDP has been exceptionally high in the 1990s; after averaging about 25% in the five years leading up to the Canada-U.S. Free Trade Agreement, exports as a proportion of nominal GDP (that is, unadjusted for price changes) soared above 40% by 1998, the highest of any G7 nation.¹ Imports have mirrored the trend in exports, with trade across the U.S. border being the driving force for both.

This article attempts to explore the issue of goods moving back and forth across the border at various stages of processing. If this has increased in recent years, it will have increased the measured rate of export growth without a corresponding full increase in the economic effects of those exports. Since the Auto Pact of 1965, much of the increased flow of auto goods across the border can be attributed to parts used in assembly and then re-exported. With free trade and globalization, is this type of production process spreading to other industries and inflating trade flows relative to their actual contribution to the economy? And if imports are rising almost as fast as exports, what is the net benefit of trade to Canada?

This paper uses Statistics Canada's Input-Output tables to examine various aspects of imports and employment embodied in exports over the 1986-to-1995 period. It determines the value added to GDP embedded in the exports of over 550 specific commodities. Value added is the net contribution to output by an industry, after all the intermediate inputs from other industries are subtracted from its gross output. Because all inputs are tracked to their origin,

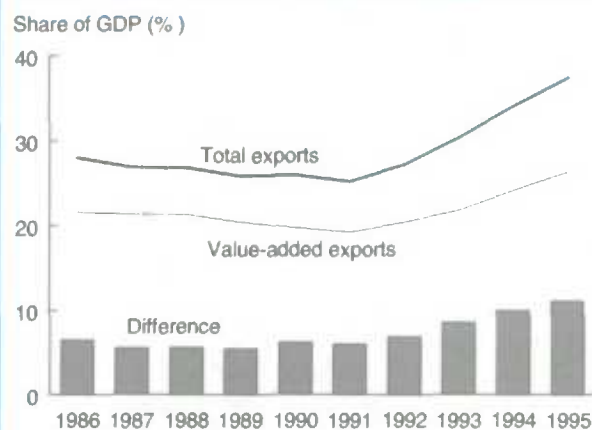
Adapted from an article in Canadian Economic Observer (Statistics Canada, Catalogue no. 11-010-XPB) 12, no. 11 (November 1999). Grant Cameron is with the Input-Output Division. He can be reached at (613) 951-3764 or camegra@statcan.ca.

the tables capture the direct and indirect contributions of various industries to exports. The value of the imports in these exports is the difference between the total value of the exports and the domestic GDP content. The GDP in exports can then be compared with total GDP to determine the degree to which Canadian incomes are dependent on foreign markets.

Consider automotive exports. The total GDP embodied in these trade flows includes the incomes earned in the automobile industry as a result of its exports (direct) plus the incomes earned in all other industries to the degree that their outputs support the production of automobiles destined abroad (indirect). The indirect effect includes all upstream activities; for example, it captures the incomes earned in mining the iron ore that ultimately finds its way into the chassis of exported cars.

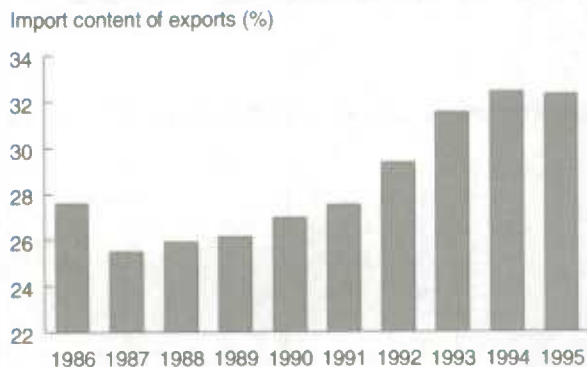
In the first half of this decade, the share of exports in GDP rose from 25% to 38%. However, over one-third of this increase reflects the rising import content

Chart A: The share of GDP earned from exports rose steadily in the early 1990s.



Source: Input-Output Division

Chart B: Imports comprised almost one-third of the total value of exports in 1995.



Source: Input-Output Division

in exports: excluding this, the value-added contribution of exports to GDP still rose, but from its low of 19% in 1991 to 26% in 1995, compared with its previous high of 22% in 1986 (Chart A).

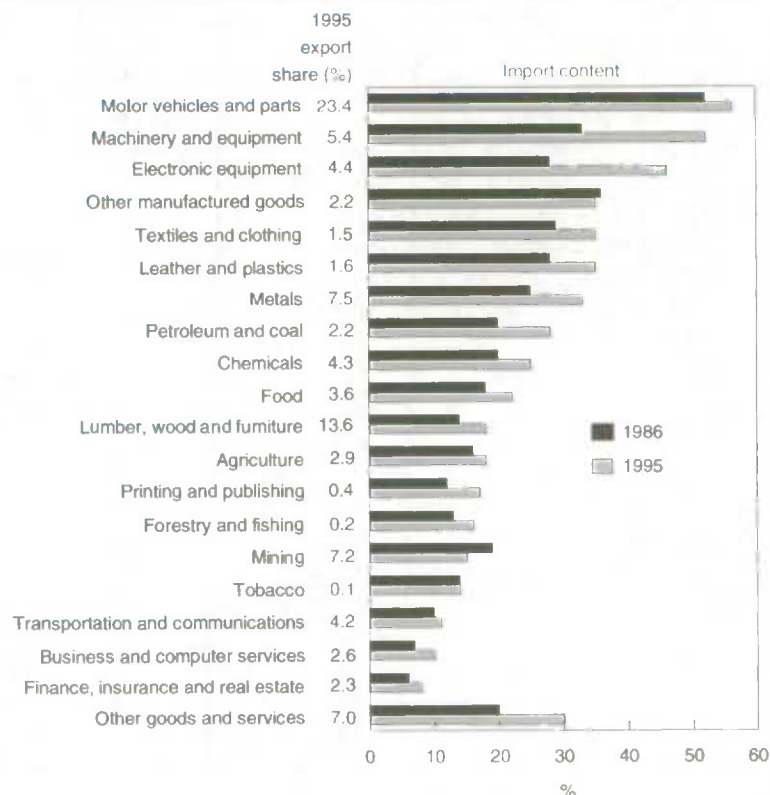
The difference reflects increasing specialization in many industries. For example, the auto industry has long used many plants on both sides of the border to produce parts, which are then shipped to one central plant for assembly, from which the finished vehicles are sent across North America. The import content of exports rose steadily between 1987 and 1995: from 25% to 32% (Chart B).²

Increases in the import content of exports are evident for almost all export commodities. Seventeen of twenty export commodity groups saw their import content rise between 1986 and 1995—the only exceptions were mining, tobacco and other manufactured goods (Chart C). Moreover, the increase was strongest where export growth was strongest—machinery and equipment (mostly

assembled computers) and electronic equipment (largely computer parts). These goods, with an import content averaging nearly 50%, accounted for 10% of all exports in 1995, up from 7% in 1986. The import content of the computer-driven components was especially large, up 20 percentage points in less than a decade. This reflects the adoption of new production processes, especially the use of imported parts in plants that have a mandate for global production for certain product lines from their parent company.

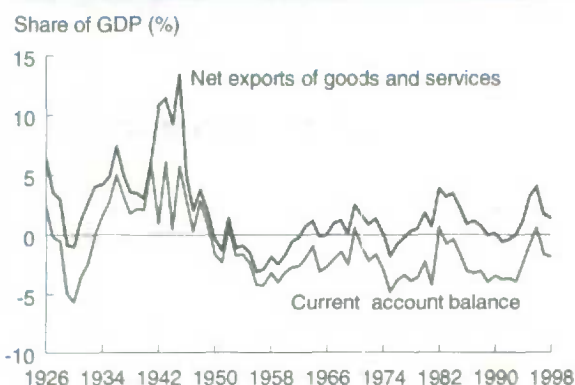
The specialization of labour implicit in these trade flows is also a key to understanding the role of exports in generating economic growth. Over the long run, export and import flows tend to track each other closely, leaving the share of net exports in GDP hovering around zero (Chart D). In fact, net exports have usually been noticeably greater than zero only in times of economic distress, such as the 1930s and the

Chart C: The top three export commodities had an import content around 50% in 1995.



Source: Input-Output Division

Chart D: The share of net exports in GDP hovers around zero.



Source: Input-Output Division

cyclical slowdowns in 1970 and 1982. Even then, the positive current account balance resulted from plunging domestic demand for imports, not from strength in exports.³

The importance of trade to the economy does not come from an excess of exports over imports; rather, it is from the productivity gains that accrue with increased specialization. In 1995, the value-added

output per worker was nearly one-third higher in the export sector than in the overall economy (Chart E). (The largest GDP per employee was in capital-intensive resources such as mining, chemicals, petroleum and lumber. With capital use factored in, however, their total multifactor productivity may not have been as high.) Moreover, this gap grew nearly 10 percentage points after 1991. As more resources are shifted to industries with above-average labour productivity (and incomes), overall GDP may rise. However, it is difficult to quantify this process, as the incremental changes to production occur at a highly detailed level, and because it is impossible to sort out other factors, notably technological change.

The total (direct plus indirect) number of jobs embodied in exports can be estimated in a similar fashion. It is derived by applying the industry-specific labour/output ratio (typically used in the calculation of labour productivity) to the direct and indirect levels of gross outputs in the corresponding industries.

Because of its high capital-intensity, output per employee is higher in the export sector, and its contribution to overall employment is less than to GDP. In 1995, 21% of all jobs, versus 26% of output, were directly or indirectly derived from exports. The gap between these shares had risen slightly since the start of the decade, reflecting the gains in output per employee in export industries.

Perspectives

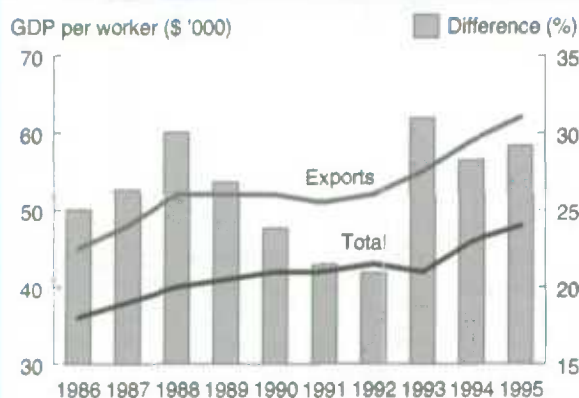
Notes

1 The share analysis of aggregate demand is in current dollars so that relative price shifts do not distort the data. Computer prices, for example, plunged over 50% between 1992 and 1995, so their share of the economy in constant dollars will change radically the next time the National Accounts base year is updated, making any analysis based on 1992 much less meaningful.

2 It was unusually high at 28% in 1986, when the collapse in oil prices boosted auto sales to a record that still stands. This industry has the highest import content.

3 Furthermore, developments in the current account often trigger changes in the capital account that may offset some or all of the current account effects. This is because deficits have to be financed and surpluses recycled abroad. These mechanisms are beyond the scope of this article.

Chart E: GDP per worker is nearly one-third higher in the export sector.



Source: Input-Output Division

What's new?

Recent reports and studies

■ UPCOMING RELEASE

■ *Survey of Household Spending*

The Public Use Microdata File (Catalogue no. 62M0004XCB, \$3,000) for the new Survey of Household Spending will be released soon. It will include 1997 data for household spending, household and dwelling characteristics and household facilities and equipment from the over 18,000 households in the sample. All records have been thoroughly screened to ensure the anonymity of respondents. Public-use microdata files for previous Family Expenditure Surveys are also available for the following years: 1969, 1978, 1982, 1984, 1986, 1990, 1992 and 1996. Public-use microdata files for previous Household Facilities and Equipment Surveys are available for 1982 and every survey year since 1984.

For more information or to order, contact Client Services, Income Statistics Division, at (613) 951-7355 or 1 888 297-7355; fax: (613) 951-3012; income@statcan.ca.

■ JUST RELEASED

■ *Manufacturing industries*

The latest publication based on the Annual Survey of Manufactures is now available. This survey collects information for approximately 35,000 manufacturing establishments grouped into 236 industries. The data provide a measure of manufacturing production and an indication of the well-being of each industry and its contribution to the economy.

The publication includes an analysis of the manufacturing industry and a feature article titled "The importance of exporters for Canadian manufacturers: A focus on small- and medium-sized establishments." It also includes tables on principal statistics (notably shipments, materials purchased and labour data) by industry, as well as tables of historical data (1970-1997), size ranking and establishment counts by employment size.

Manufacturing Industries of Canada: National and Provincial Areas, 1997 (Catalogue no. 31-203-XPB, \$68) is now available. The data are also available electronically on demand. For more information, contact Jean-Marie Houle, Manufacturing, Construction and Energy Division, at (613) 951-9497; fax: (613) 951-3522; manufact@statcan.ca.

■ *Government expenditures on culture*

In 1997-98, total spending on culture by all three levels of government was \$5.56 billion, down 2% from the previous year, and 5% lower than the peak in 1992-93. If inflation is taken into account, 1997-98 represents the eighth straight year that total government spending on culture has declined.

Municipalities continued to increase cultural spending, allocating \$1.48 billion in the 1997 calendar year, up 3% from the previous year. Federal cultural outlays were down 4% to \$2.67 billion in 1997-98, while provincial and territorial cultural spending fell just under 1% to \$1.72 billion.

Selected data from the Government Expenditures on Culture Survey are available in table format (Catalogue no. 87F0001XPB, \$50). Data from this survey are also available by province and territory. Users may request special tabulations on a cost-recovery basis.

For more information, or to enquire about concepts, methods or data quality, contact Norman Verma, Culture, Tourism and the Centre for Education Statistics, at (613) 951-6863; fax: (613) 951-9040; vermnor@statcan.ca.

■ *Health of Canadians*

The Statistical Report on the Health of Canadians was officially released by the federal, provincial and territorial ministers of health at a conference in Charlottetown, September 16, 1999.

The report draws primarily on results from the National Population Health Survey, as well as sources such as the National Longitudinal Survey on Children and Youth.

A section on health determinants explores social, economic and physical environments, health services, personal resources and coping, health knowledge, and lifestyle behaviours. A second section on health status examines individual well-being, general health and function, injuries, conditions and diseases, and death.

The Statistical Report on the Health of Canadians, 1999 (Catalogue no. 82-570-XIE) is now available free of charge on Statistics Canada's website (www.statcan.ca) under "Products and services," then "Downloadable publications (free)," then "Health." For more information, contact Larry Swain, Health Statistics Division, at (613) 951-8569; larry.swain@statcan.ca. For print copies of this report, call (613) 954-5995.

■ *Seniors in Canada*

In 1998, an estimated 3.7 million Canadians were aged 65 and over, a 57% increase from 1981. Seniors made up 12% of the total population in 1998, up from 10% in 1981 and just 5% in 1921. This population is expected to grow even more rapidly during the next several decades, particularly once baby boomers start turning 65 around 2011. By 2041, a projected 23% of the population will be 65 and over.

The latest edition of a report on seniors provides a comprehensive statistical profile of the population aged 65 and over, with details on family status and living arrangements, housing, health, education, income, and work and leisure patterns.

This 130-page publication was prepared, in part, to provide a database on seniors for the current International Year of Older Persons.

A Portrait of Seniors in Canada (third edition) (Catalogue no. 89-519-XPE, \$45) is now available. For more information on this report, or to enquire about concepts, methods or data quality, contact Colin Lindsay, Housing, Family and Social Statistics Division, at (613) 951-2603; fax: (613) 951-0387; lindcol@statcan.ca.

■ *A statistical profile of Canadian communities (enhanced version)*

Since its release in November 1998, "A statistical profile of Canadian communities" has been one of the most popular components of Statistics Canada's website. It offers a wealth of statistical information free of charge for close to 6,000 Canadian cities, towns, villages, and Aboriginal communities. A simple mapping feature allows users to pinpoint the community they are interested in. Information is given for four major topics: population, education, income and work, and families and dwellings.

The enhanced version adds another topic to the list: health. Under this section will be found the number of births and deaths in 1996 for every community.

Data will now also be available for large and not-so-large metropolitan areas—census metropolitan areas (CMAs) and census agglomerations (CAs).

Users can try the new enhanced version of "A statistical profile of Canadian communities" by accessing the "Census," "Education resources," or "Canadian statistics" module on the Statistics Canada website at www.statcan.ca. For more information, contact the nearest Statistics Canada Regional Reference Centre.

■ *Newsletter on business and trade*

Insights on... is a newsletter on trends in business and trade. It documents developments in Canadian industry and shows how businesses are responding to new challenges and opportunities. It also includes information on new products and services about businesses and industry available from Statistics Canada.

The September 1999 issue includes the article "Aboriginal entrepreneurs in Canada—progress and prospects," which was compiled and recently published by Industry Canada using Statistics Canada data.

Insights on... (Catalogue no. 61F0019XIE, free) is now available on the Internet (www.statcan.ca) or on paper (Catalogue no. 61F0019XPE, \$40/\$100).

To order, or for more information on this publication, contact Jamie Brunet, Small Business and Special Surveys Division, at (613) 951-6684; fax: (613) 951-1572; jamie.brunet@statcan.ca.

■ *Computer technology in schools*

The majority of Canadian schools are connected to the Internet for educational purposes, according to a new survey on computer technology in the classrooms. The survey showed that despite some major strides, education systems face significant challenges as they attempt to take fuller advantage of new technologies.

At the time of this survey, more than 9 out of 10 students at the elementary, intermediate and secondary levels in Canada attended schools that had access to the Internet for educational purposes.

Data were drawn from the Second International Technology in Education Study (SITES), conducted in January and February 1999 in 30 nations, including Canada. This survey was designed to profile the use of new information and communication technology in elementary and secondary schools. Data are available by province and selected school type: those with Grade 5 (most elementary schools); those with Grade 9 or secondary III (most intermediate and junior high schools); and those with the last year of secondary (most high schools).

A more detailed publication, which will include a comprehensive series of statistical tables resulting from SITES, will be released early in 2000.

For tables or general inquiries, contact Sharon-Anne Borde at (613) 951-1503; fax: (613) 951-9040; bordsha@statcan.ca. For more information, or to enquire about concepts, methods or data quality, contact Raynald Lortie, Centre for Education Statistics, at (613) 951-1525; lortray@statcan.ca or Nanci Comtois at (613) 951-1740; comtnan@statcan.ca.

■ *The new E-STAT*

The 1999 edition of E-STAT is now available. Since 1992, this interactive learning tool has continually evolved to meet the changing needs of the education sector. The 1999 edition contains the latest data from the 1996 Census and a wide range of previous censuses, as well as updates from the CANSIM (Statistics Canada's Canadian Socio-economic Information Management System) database.

E-STAT 1999 also incorporates a number of features designed to make it more user friendly. Features include a quick user guide, a teachers handbook and lesson plans/teaching activities written by educators for educators.

E-STAT brings current statistical and demographic data about Canada into the classroom. Students learn how to develop critical thinking skills and to transform data into colourful, easy-to-read graphs and maps.

The Internet (Catalogue no. 10F0174XIB) and the CD-ROM Windows (Catalogue no. 10F0174XCB) versions of E-STAT are now available. For more information or to order, contact the nearest Statistics Canada Regional Reference Centre or consult Statistics Canada's website (www.statcan.ca) under "Education resources."

■ WHAT'S NEW IN INCOME STATISTICS?

■ *Earnings of two-partner families*

The final Survey of Consumer Finances report, *Characteristics of Dual-earner Families in 1997*, is now available. This publication presents the latest profile of two-partner families, according to the earnings status of each spouse.

It includes distributions, estimated numbers and average incomes for 1967 to 1997. Tabulations for 1997 provide average family income by province of residence, composition of family income by source, distributions of families by characteristics of spouses (such as age, education, immigration status, mother tongue, and presence of children) and distributions, spousal earnings and average family income by earnings groups, work and unemployment experience, job tenure and occupation of spouses.

Historical data on average income of two-partner families by earnings status of spouses are available free on Statistics Canada's website (www.statcan.ca). The menu path is "Canadian statistics," then "The people—Families, households and housing" followed by "Income."

Characteristics of Dual-earner Families in 1997 (Catalogue no. 13-215-XIB, \$21) is now available.

■ *SLID, 1993-1997*

The longitudinal Survey of Labour and Income Dynamics (SLID) builds a picture of Canadians' jobs, income changes and family events over time. The same people are interviewed from one year to the next to capture both personal and labour

market changes. About 35,000 people of all ages were selected in 1993 and interviewed each year from 1994 to 1997 to gather information on their demographic characteristics, family income and labour market activities. In 1996, an additional 35,000 individuals joined the sample.

Previous SLID data and analyses were released in April 1996 (Life events: How families change); June 1996 (Transitions in the labour force); July 1997 (Crossing the low-income line); June 1998 (Moving out of low paid work) and March 1999 (Encountering low income). Many other studies have been conducted using SLID data. Results from the fifth wave are now available through custom tabulations, and show labour market and family experiences covering a five-year period from 1993 to 1997.

■ *Food Expenditure Survey*

Are you interested in doing in-depth analysis of the food spending patterns of Canadian households? For example, do you need to know what proportion of the budget is spent on various food categories by different types of households? Or which households purchase meals in restaurants and what kind of restaurants they favour?

The microdata file from the 1996 Food Expenditure Survey gives data users access to hundreds of detailed variables about food spending, the quantity of food purchased, and the type of store or restaurant where purchases occurred. Also included are several household demographic variables.

The public-use microdata file for the 1996 Food Expenditure Survey (Catalogue no. 62M0002XDB, \$1,500) is now available. Similar files based on the 1984, 1986, 1990 and 1992 surveys are also available. Analytical highlights are presented in *Family Food Expenditure in Canada* (Catalogue no. 62-554-XPB, \$52).

■ *Dwelling characteristics and household equipment*

Standard data tables on the dwelling characteristics and household equipment of households in 1997 are now available. The dwelling characteristics include the type of dwelling, whether repairs are needed, tenure (owned or rented), year of move, period of construction, number of rooms and bathrooms, and the age and type of heating equipment and fuel used. The household equipment includes a variety of household appliances, communications and entertainment equipment, and the number of vehicles owned.

The data are from the Survey of Household Spending which, starting with 1998 data, replaces the Household Facilities and Equipment Survey (conducted for the last time in 1997). The Survey of Household Spending also collects data about the complete range of household spending on consumer goods and services.

Five standard tables for dwelling characteristics and household equipment are now available for \$125 each: for Canada, provinces and territories, and selected metropolitan areas (Catalogue no. 62F0041XDB); by household income quintile (Catalogue no. 62F0042XDB); by housing tenure (Catalogue no. 62F0043XDB); by household type (Catalogue no. 62F0044XDB) and by size of area of residence (Catalogue no. 62F0045XDB). Similar tables based on expenditure data from the same survey are also available.

For more information about these surveys and related products and services, or to enquire about concepts, methods or data quality, contact Client Services, Income Statistics Division, at (613) 951-7355 or 1 888 297-7355; fax: (613) 951-3012; income@statcan.ca.

■ **UPCOMING CONFERENCE**

■ *Statistics Canada, Economic Conference 2000: Expanding Horizons: Canada in an International Context May 15-16, 2000, Ottawa*

While Canada's has always been an open economy, it is now more extensively and intricately linked to the rest of the world. Attention is drawn more than ever to how Canadian markets, programs and institutions compare with those of other countries. Statistics Canada's annual economic conference, to be held at the Ottawa Congress Centre, provides a forum for the exchange of empirical research by business, government, research centres and labour.

Speakers will address plenary sessions, comparing Canadian situations with those of other countries, and will speak on issues arising from international flows of all kinds. Topics will include income distributions, literacy levels, labour compensation, productivity, trends in self-employment, technological investment by industry, effect of e-commerce, effect of emerging technologies on transportation, "brain drain and gain," and immigrant entrepreneurs.

For more information, contact Jocelyne Lepage, Conference Co-ordinator, at (613) 951-1135; fax: (613) 951-4179; lepajoc@statcan.ca; or visit our website at www.statcan.ca/english/conferences/economic2000.

Perspectives

Key labour and income facts

Selected charts and analysis

This section presents charts and analysis featuring one or more of the following sources. For general inquiries, contact Joanne Bourdeau at (613) 951-4722 or bourjoa@statcan.ca.

Administrative data

Small area and administrative data

Frequency: Annual
Contact: Customer Services
(613) 951-9720

Business surveys

Annual Survey of Manufactures

Frequency: Annual
Contact: Richard Vincent
(613) 951-4070

Business Conditions Survey of Manufacturing Industries

Frequency: Quarterly
Contact: Claude Robillard
(613) 951-3507

Census

Census labour force characteristics

Frequency: Quinquennial
Contact: Michel Côté
(613) 951-6896

Census income statistics

Frequency: Quinquennial
Contact: Abdul Rashid
(613) 951-6897

Employment and income surveys

Labour Force Survey

Frequency: Monthly
Contact: Nathalie Caron
(613) 951-4168

Survey of Employment, Payrolls and Hours

Frequency: Monthly
Contact: Sylvie Picard
(613) 951-4090

Help-wanted Index

Frequency: Monthly
Contact: Sylvie Picard
(613) 951-4090

Employment Insurance Statistics Program

Frequency: Monthly
Contact: Sylvie Picard
(613) 951-4090

Major wage settlements

Bureau of Labour Information
(Human Resources Development Canada)
Frequency: Quarterly
Contact: (819) 997-3117
1 800 567-6866

Labour income

Frequency: Quarterly
Contact: Anna MacDonald
(613) 951-3784

Survey of Labour and Income Dynamics

Frequency: Annual
Contact: Client Services
(613) 951-7355 or
1 888 297-7355

Survey of Consumer Finances

Frequency: Annual
Contact: Client Services
(613) 951-7355 or
1 888 297-7355

Survey of Household Spending (replaces Household Facilities and Equipment Survey and Family Expenditure Survey)

Frequency: Annual
Contact: Client Services
(613) 951-7355 or
1 888 297-7355

General Social Survey

Education, work and retirement

Frequency: Occasional
Contact: Client Services
(613) 951-5979

Social and community support

Frequency: Occasional
Contact: Client Services
(613) 951-5979

Time use

Frequency: Occasional
Contact: Client Services
(613) 951-5979

Pension surveys

Pension Plans in Canada Survey

Frequency: Annual
Contact: Thomas Dufour
(613) 951-2088

Quarterly Survey of Trusteed Pension Funds

Frequency: Quarterly
Contact: Bob Anderson
(613) 951-4034

Special surveys

Survey of Work Arrangements

Frequency: Occasional
Contact: Ernest B. Akyeampong
(613) 951-4624

Adult Education and Training Survey

Frequency: Occasional
Contact: Cathy Oikawa
(613) 951-3103

Graduate Surveys

(Postsecondary)
Frequency: Occasional
Contact: Bill Magnus
(613) 951-4577

South of the Border—Graduates from the Class of '95 Who Moved to the United States

Concern over the movement of skilled workers to the United States is not new. For a variety of reasons, however, the issue of the “brain drain” to the south has been receiving a great deal of attention in the late 1990s. The demand for highly educated and skilled workers on both sides of the border has grown considerably, especially in the thriving U.S. economy.

The period of fiscal restraint that characterized much of the mid- to late-1990s in Canada may also

have encouraged some people—nurses, for example—to look south for opportunities. In addition, the North American Free Trade Agreement has provided a mechanism for many Canadians to enter the United States as temporary workers. Also, some have argued that current differences in personal income tax and currency exchange rates have made this option more attractive to Canadians.

Flow of postsecondary graduates from the class of 1995



Source: Survey of 1995 Graduates Who Moved to the United States

The movement of 1995 graduates to the United States was relatively small. Only 1.5% of the more than 300,000 men and women who graduated from a Canadian postsecondary institution in 1995 moved to the United States between graduation and the summer of 1997.

In addition to economic forces, social factors played a compelling role in motivating some people to move. More than half the 1995 graduates who relocated (57%) did so mainly for work, and another 23% for education purposes. But about 17%, the majority of whom were women, relocated for marriage or relationships.

By March 1999, about 830 or 18% of the graduates had returned to Canada. Of these, one-half (52%) reported having done so for work-related reasons. Another 38% moved back for marriage or relationship reasons, or other family-related reasons.

Graduates who moved to the United States, by sex and level of study

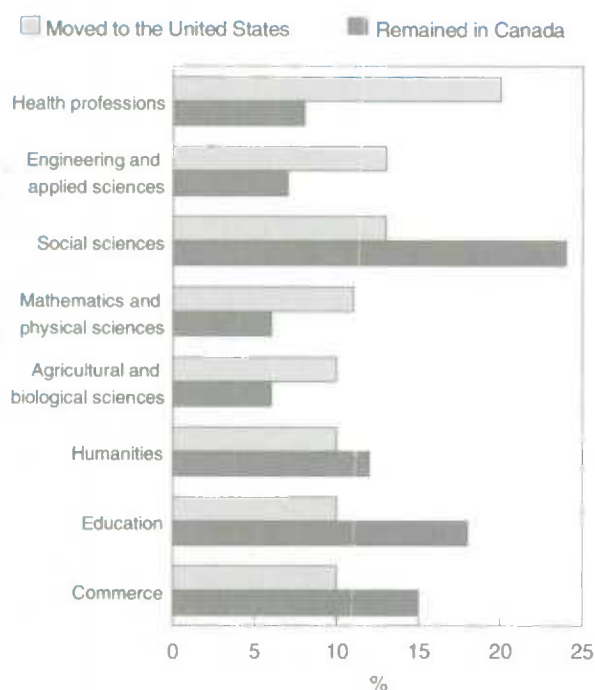


Source: Survey of 1995 Graduates Who Moved to the United States

Just over 4,600 graduates of the Class of 1995 moved to the United States between graduation in 1995 and the summer of 1997. Women accounted for one-half of these graduates (and 57% of those who remained in Canada). However, when health graduates (primarily female nurses) are excluded, the majority of those who relocated were men (62%).

Among the graduates who moved, women and men were more or less equally represented at the college level (53% and 47%, respectively) and at the bachelor's level (52% and 48%). However, men were more strongly represented at the master's and PhD levels: 58% and 76%.

Distribution of 1995 university graduates, by field of study



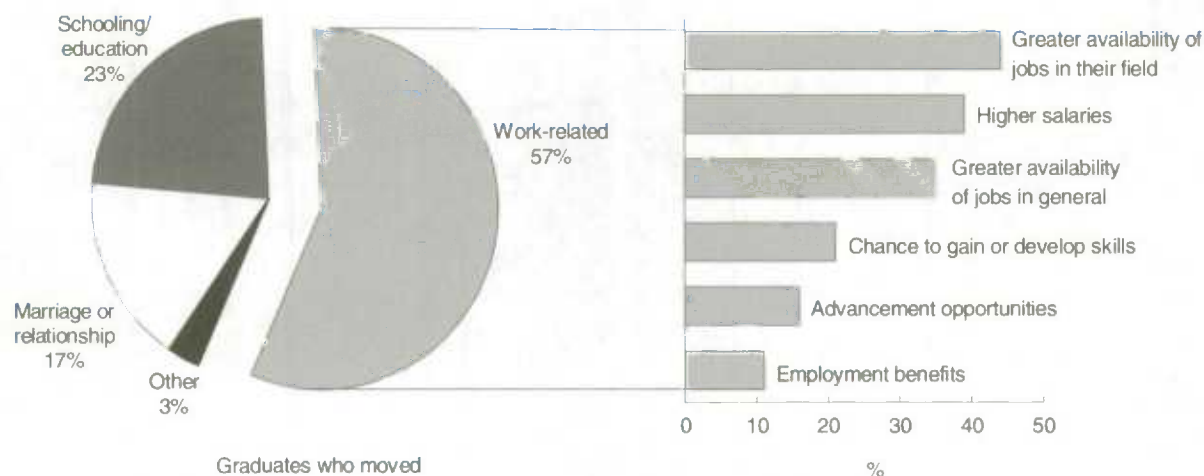
Sources: Survey of 1995 Graduates Who Moved to the United States and 1997 National Survey of 1995 Graduates

Health graduates represented 20% of all university graduates who moved to the United States but only 8% of those who remained in Canada. Graduates in engineering and applied sciences were the next largest group of graduates who moved (13%). They accounted for just 7% of those who stayed in Canada. Social sciences graduates accounted for another 13% of graduates on the move and 24% of those who remained.

Of the engineering and applied sciences graduates who moved to the United States, 93% were men. Men also accounted for 72% of mathematics and physical sciences graduates who moved. Women, however, made up 82% of university health graduates on the move. These percentages were similar to, though slightly higher than, those observed for graduates who stayed in Canada.

Most (54%) of the *college* graduates (not shown in chart) who moved were in health-related fields of study. Some 71% of these were women. Only 15% of the graduates who stayed in Canada were health graduates from college programs. The majority of health graduates who moved were nurses.

Factors that drew graduates south



Source: Survey of 1995 Graduates Who Moved to the United States

Note: Multiple responses were allowed.

Although men and women were equally likely to have moved for work-related reasons, most who moved because of education were men (84%). (Men accounted for 51% of the 1996-97 enrolments in Canadian universities.)¹ Meanwhile, women accounted for most (86%) of those who reported moving for marriage or relationship reasons.

Both PhD and college graduates were most likely to have moved for work-related reasons: some 80% of both categories did so. In contrast, only 43% of those with bachelor's degrees, the most numerous group of 1995 graduates on the move, relocated because of work. One-third of the bachelor's graduates (33%) moved for education-related reasons. Another 22% did so for marriage or relationship reasons.

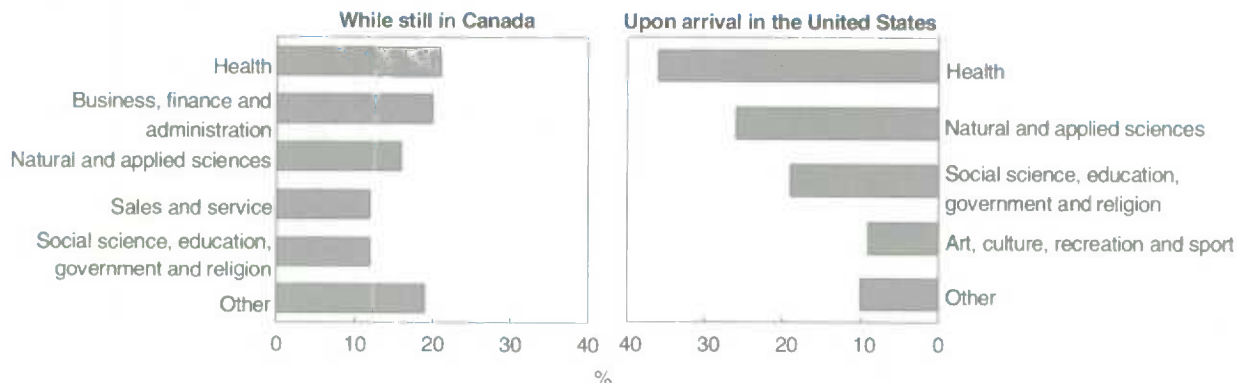
Graduates who reported work as their main reason for moving to the United States were asked a more detailed question about the factors that had attracted them. *Opportunity* was the most common theme. Greater availability of jobs in a particular field or industry was cited by 44%. In addition, 35% mentioned greater availability of jobs in general, while 21% noted the chance to gain or develop skills and 16% cited better career advancement opportunities.

Better compensation was another theme. Some 39% mentioned higher salaries in the United States. Also, 11% noted that better employment benefits had drawn them south.

Only an insignificant proportion of graduates explicitly mentioned *lower taxes* as a factor in their decision to move. This consideration may have been implicit in the discussion of higher salaries, however. Also, differences in Canadian and U.S. personal income tax rates tend to be smaller at lower income levels. At this early stage in their careers, many of these graduates may have been most concerned with finding an opportunity in their field.

¹ This information is from Statistics Canada's Centre for Education Statistics.

Occupations of graduates

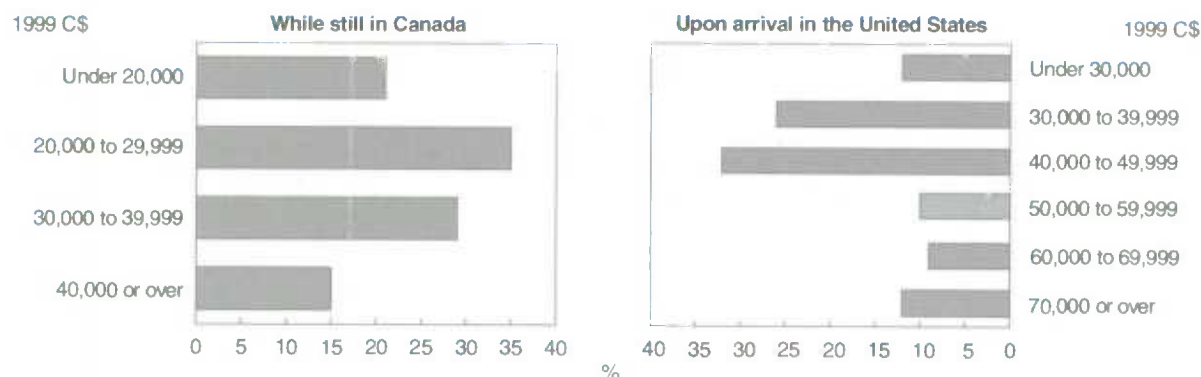


Source: Survey of 1995 Graduates Who Moved to the United States

Graduates with jobs waiting for them tended to have found different lines of work. For example, they were far less likely to remain in business, finance and administration occupations or in sales and service jobs.

Instead, they became even more concentrated in health occupations (36%), natural and applied sciences (26%), and social science, education, government and religion (19%).

Annual earnings of working graduates

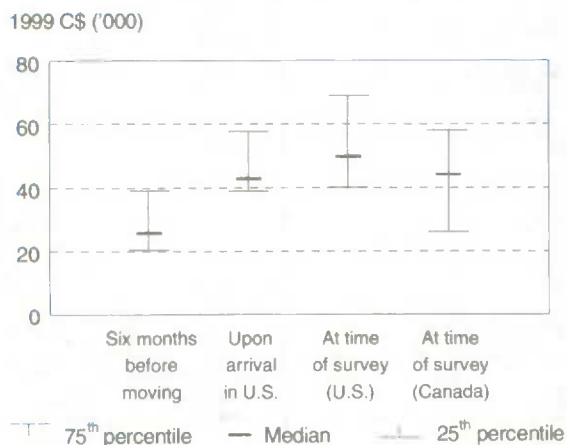


Source: Survey of 1995 Graduates Who Moved to the United States

Graduates with prearranged jobs also earned higher salaries than they had in Canada. A markedly smaller proportion earned under \$30,000 (12% versus 56%). At the higher end of the pay scale, nearly two-thirds (63%) earned \$40,000 or more upon arrival in the

United States. Only 15% had done so while employed in Canada. To some extent, this may reflect a predictable shift from transitional and student jobs to more career-related positions.

Annual earnings of working graduates over the survey period

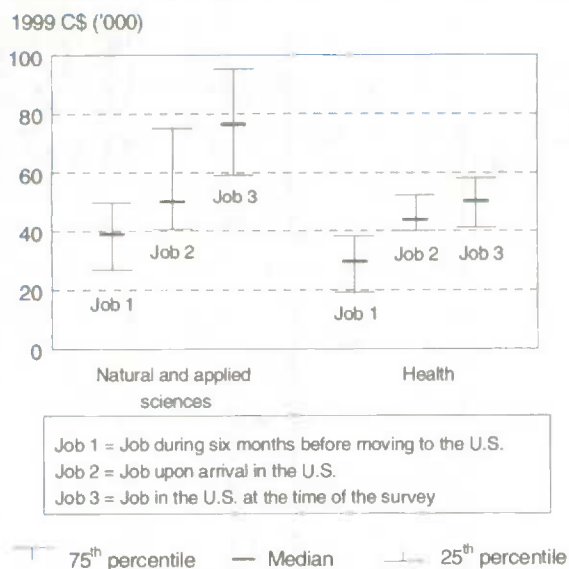


Source: Survey of 1995 Graduates Who Moved to the United States

The salaries of working graduates rose significantly after their move to the United States. If inflation and purchasing power parity are taken into account, median annual earnings of new arrivals were \$42,900, (Canadian dollars), up considerably from the \$25,600 earned by these graduates while still in Canada.

The American salaries continued to increase. By March 1999, the median salary had reached \$50,000. Graduates who had returned to jobs in Canada were earning \$44,200.

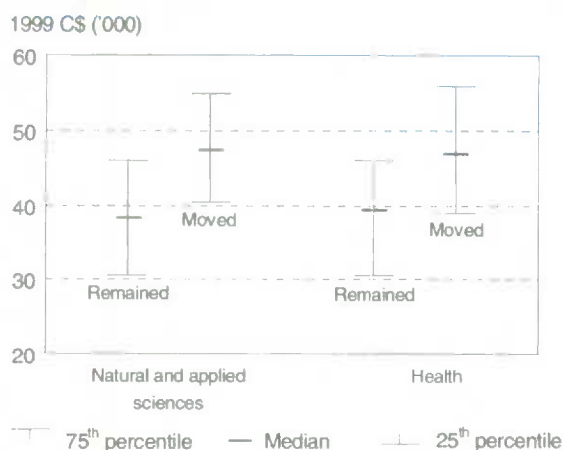
Annual earnings of working graduates over the survey period, in natural and applied sciences, and health occupations



Source: Survey of 1995 Graduates Who Moved to the United States

At the time of the survey, graduates working south of the border in natural and applied sciences occupations had the highest salaries. Largely scientists, engineers, computer systems analysts and programmers, this group was earning a median annual salary of \$76,300 by March 1999.

Initial earnings of working bachelor's graduates in natural and applied sciences, and health occupations

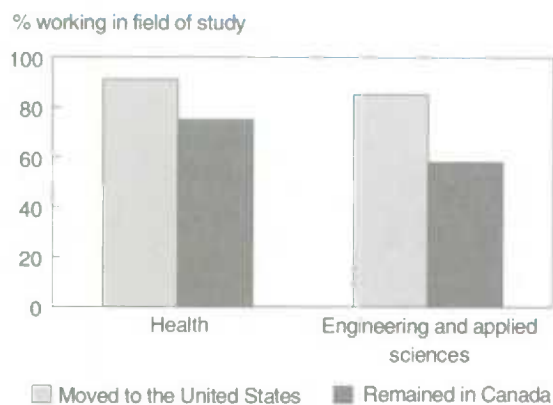


Sources: Survey of 1995 Graduates Who Moved to the United States and 1997 National Survey of 1995 Graduates

Salaries were immediately higher for graduates who relocated. This difference was greatest among college graduates, whose median annual salary upon arrival in the United States was \$42,600, significantly higher than the \$24,200 median for those who remained in Canada. At the bachelor's level, the median salary was \$43,400 for those who moved and \$30,500 for those who remained in Canada.

Median annual earnings of bachelor's graduates in applied and natural sciences jobs were \$47,400, considerably higher than the \$38,400 median among their counterparts in Canada. The gap for graduates in health occupations was similar.

Graduates working in their field of study



Sources: Survey of 1995 Graduates Who Moved to the United States and 1997 National Survey of 1995 Graduates

Those working in the United States seemed also to enjoy a better job-education match. For example, 91% of health graduates who moved south were working in health occupations upon arrival. This was the case for only 75% who remained in Canada. A similar pattern was evident for those who graduated in engineering and applied sciences.

About the survey

Statistics Canada, in partnership with Human Resources Development Canada, conducted the Survey of 1995 Graduates Who Moved to the United States (SGMUS) in March 1999. The survey covered postsecondary graduates from the Class of 1995 who moved to the United States between graduation and the summer of 1997. American citizens who returned home after studying in Canada

were not included. Interviews with 531 of the just over 4,600 graduates who moved to the United States provided information on their characteristics, reasons for relocating, education and work experiences, and plans for the future. The movement of graduates to other countries, or that of foreign students and graduates to Canada, was beyond the scope of the survey.

Charts and text were adapted from *South of the Border—Graduates from the Class of '95 Who Moved to the United States*. Ottawa: Human Resources Development Canada and Statistics Canada, 1999. (Statistics Canada Catalogue no. 81-587-XIE.)

For more information, contact Jeff Frank, Policy Research Secretariat, at (613) 947-3905; fax (613) 995-6006; j.frank@prs-srp.gc.ca. The publication is available on the Internet at www.hrdc-drhc.gc.ca/arb.

Cumulative index

1989–1999

This index lists articles published in Perspectives since its inception. It is updated quarterly (available as a PDF file) and published in the Winter issue.

ABSENCE FROM WORK

Missing work in 1998—industry differences	Autumn 1999
Work absences: New data, new insights	Spring 1998
Work absence rates, 1995	Autumn 1996
Work absences and compensation	Autumn 1996
Missing work	Spring 1995
Absences from work revisited	Spring 1992
Taking their leave	Autumn 1989
On maternity leave	Summer 1989

CONSUMER SPENDING

Spending patterns of couples without children	Summer 1994
Tracking down discretionary income	Spring 1991
Consumer spending in urban and rural Canada	Autumn 1990
Where the money goes: Spending patterns in Canada and the U.S.	Autumn 1990

EARNINGS

Earnings of physicians	Winter 1999
Women's earnings/men's earnings	Winter 1999
Earnings mobility of Canadians, 1982-1992	Summer 1999
Northern earnings and income	Spring 1997
Do earnings rise until retirement?	Summer 1996
Are service jobs low-paying?	Spring 1996
Women as main wage-earners	Winter 1995
Employment prospects for high school graduates	Autumn 1995
Labour market outcomes for university co-op graduates	Autumn 1995
Recent trends in earnings	Autumn 1995
Adults living solo	Winter 1994
A recession for whom?	Winter 1993
A note on wage trends among unionized workers	Autumn 1993
Seven decades of wage changes	Summer 1993
The changing profile of dual-earner families	Summer 1992

On non-wage labour income	Winter 1991
Are jobs in large firms better jobs?	Autumn 1991
Visible minorities in the Canadian labour force	Summer 1991
Women's earnings and family incomes	Summer 1991
Recent trends in wages	Winter 1990
The price of labour	Autumn 1990
Male-female earnings gap among recent university graduates	Summer 1990
The graduates of '82: Where are they?	Spring 1990
Wives as primary breadwinners	Spring 1990
Working for minimum wage	Winter 1989
Unionization and women in the service sector	Autumn 1989
Bilingualism and earnings	Summer 1989

EDUCATION

Paying off student loans	Spring 1999
Facing the future: Adults who go back to school	Autumn 1997
After high school...	Summer 1997
Employment prospects for high school graduates	Autumn 1995
Labour market outcomes for university co-op graduates	Autumn 1995
Work experience	Summer 1995
Youths—waiting it out	Spring 1994
Labour market outcomes for high school leavers	Winter 1993
School, work and dropping out	Summer 1993
Women in academia—a growing minority	Spring 1993
A degree of change	Winter 1992
Juggling school and work	Spring 1992
Lifelong learning: Who goes back to school?	Winter 1991
Overview of literacy skills in Canada	Winter 1990
Male-female earnings gap among recent university graduates	Summer 1990
The graduates of '82: Where are they?	Spring 1990

FAMILIES

Working together—self-employed couples	Winter 1999
Employment after childbirth	Autumn 1999
Family income: 25 years of stability and change	Spring 1999
Family income inequality, 1970-1995	Winter 1998
Couples working shift	Autumn 1998
Retirement patterns of working couples	Autumn 1998
Income after separation—people without children	Summer 1998
Stay-at-home dads	Spring 1998
Intergenerational equity in Canada	Autumn 1997
Family income after separation	Summer 1997
Transfer payments to families with children	Autumn 1996
Dual-pensioner families	Autumn 1996
The many faces of unemployment	Spring 1996
Women as main wage-earners	Winter 1995
Families and moonlighting	Summer 1995
Hours of working couples	Summer 1995
Work and low income	Summer 1995
Adults living solo	Winter 1994
High income families	Winter 1994
Left behind: Lone mothers in the labour market	Summer 1994
Spending patterns of couples without children	Summer 1994
Balancing work and family responsibilities	Spring 1994
Family facts (charts)	Spring 1994
Employed parents and the division of housework	Autumn 1993
Female lone parents in the labour market	Spring 1993
Alimony and child support	Summer 1992
The changing profile of dual-earner families	Summer 1992
Marriage, money and retirement	Winter 1991
Family income inequality in the 1980s	Autumn 1991
Who's looking after the kids? Child care arrangements of working mothers	Summer 1991
Women's earnings and family incomes	Summer 1991
Tracking down discretionary income	Spring 1991
Government transfer payments and family income	Autumn 1990
Where the money goes: Spending patterns in Canada and the U.S.	Autumn 1990
Work and relative poverty	Summer 1990
Wives as primary breadwinners	Spring 1990

GOVERNMENT TRANSFER PAYMENTS

Family income inequality, 1970-1995	Winter 1998
Intergenerational equity in Canada	Autumn 1997
Transfer payments to families with children	Autumn 1996

Men retiring early: How are they doing?	Winter 1995
Who gets UI?	Summer 1994
Family income inequality in the 1980s	Autumn 1991
Dependence on government transfer payments, 1971-1989	Summer 1991
Taxes, transfers and regional disparities	Winter 1990
Government transfer payments and family income	Autumn 1990

HEALTH

You wear it well: Health of older workers	Autumn 1996
A job to die for	Summer 1996
Tired workers	Summer 1995
Perceptions of workplace hazards	Spring 1994
Defining and measuring employment equity	Winter 1993
Back injuries at work, 1982-1990	Autumn 1992
Under the influence	Autumn 1990
Disabled workers	Winter 1989

HIGH TECHNOLOGY

Computer programmers	Autumn 1998
The booming market for programmers	Summer 1998
Computers in the workplace	Summer 1997
The future of data dissemination	Summer 1996
Computers in the workplace	Summer 1991
Measuring Canada's international competitiveness	Summer 1990
High technology at work	Spring 1990

IMMIGRANTS

Canada's newest workers	Spring 1995
Defining and measuring employment equity	Winter 1993
The census: One hundred years ago	Summer 1991
Visible minorities in the Canadian labour force	Summer 1991
Gail Cook Johnson speaks out on human resource issues	Spring 1991
Immigrants in product fabricating	Winter 1989

INCOME

Earnings mobility of Canadians, 1982-1992	Summer 1999
Family income: 25 years of stability and change	Spring 1999
Income transition upon retirement	Winter 1998
Family income inequality, 1970-1995	Winter 1998
Income after separation—people without children	Summer 1998
Family income after separation	Summer 1997
Northern earnings and income	Spring 1997
Transfer payments to families with children	Autumn 1996

Dual-pensioner families	Autumn 1996
Men retiring early: How are they doing?	Winter 1995
Work and low income	Summer 1995
High income families	Winter 1994
Who gets UI?	Summer 1994
Income facts (charts)	Autumn 1993
Investment income of Canadians	Summer 1993
Facing retirement	Spring 1993
Alimony and child support	Summer 1992
Hard at work	Spring 1992
Family income inequality in the 1980s	Autumn 1991
Dependence on government transfer payments, 1971-1989	Summer 1991
Women's earnings and family incomes	Summer 1991
Work and relative poverty	Summer 1990

INDUSTRIES

Missing work in 1998—industry differences	Autumn 1999
Job stability	Winter 1998
The gambling industry: Raising the stakes	Winter 1998
Sizing up employment in clothing manufacturing	Spring 1997
Work absence rates, 1995	Autumn 1996
A sure bet industry	Autumn 1996
Are service jobs low-paying?	Spring 1996
Recent trends in earnings	Autumn 1995
Hiring difficulties in manufacturing	Summer 1995
Missing work	Spring 1995
The horseless carriage	Spring 1995
Three large urban areas in transition	Winter 1994
A recession for whom?	Winter 1993
A note on tracking employment in manufacturing	Summer 1993
International employment trends by industry—a note	Summer 1993
The renaissance of self-employment	Summer 1993
Are single industry towns diversifying? A look at fishing, mining and wood-based communities	Spring 1992
Immigrants in product fabricating	Winter 1989
The Canadian auto industry, 1978-1986	Autumn 1989

INTERNATIONAL COMPARISONS

Self-employment in Canada and the United States	Autumn 1999
An international comparison of employee training	Spring 1998
International survey on adult literacy	Summer 1996
The marginally literate workforce	Summer 1996
International facts (charts)	Summer 1994
International employment trends by industry—a note	Summer 1993
Gail Cook Johnson speaks out on human resource issues	Spring 1991

Labour force participation: An international comparison	Winter 1990
Training the work force: A challenge facing Canada in the '90s	Winter 1990
Where the money goes: Spending patterns in Canada and the U.S.	Autumn 1990
Dependency ratios: An international comparison	Summer 1990
Measuring Canada's international competitiveness	Summer 1990
The distribution of wealth in Canada and the United States	Spring 1990

INTERVIEWS

David Foot discusses career paths	Winter 1994
An interview with Laurence E. Coward	Winter 1993
Dian Cohen on the new economy	Summer 1993
Gail Cook Johnson speaks out on human resource issues	Spring 1991

LABOUR MARKET

Labour force participation in the 1990s	Autumn 1998
Working overtime in today's labour market	Winter 1997
The labour market: Mid-year review	Every Autumn (1989 to 1997)
The labour market: Year-end review	Every Spring (1990 to 1997)
Employment and industrial development in the North	Spring 1997
Another measure of employment	Winter 1996
Greying of the workforce	Spring 1995
Dian Cohen on the new economy	Summer 1993
Job ads: A leading indicator?	Autumn 1989

LABOUR MOBILITY

Job stability	Winter 1998
An overview of permanent layoffs	Autumn 1997
Changes in job tenure	Winter 1996
Hiring difficulties in manufacturing	Summer 1995
Job-related moves	Winter 1992
Staying put: Job tenure among paid workers	Winter 1992
Workers on the move: Permanent layoffs	Autumn 1992
Workers on the move: Quits	Autumn 1992
Workers on the move: An overview of labour turnover	Summer 1992
Workers on the move: Hirings	Summer 1992

LANGUAGE

Immigrants in product fabricating	Winter 1989
Bilingualism and earnings	Summer 1989

LITERACY

Literacy in the workplace	Summer 1999
International survey on adult literacy	Summer 1996
The marginally literate workforce	Summer 1996
Literacy in the workplace	Spring 1992
Gail Cook Johnson speaks out on human resource issues	Spring 1991
Overview of literacy skills in Canada	Winter 1990
Training the work force: A challenge facing Canada in the '90s	Winter 1990

MEN

Women's earnings/men's earnings	Winter 1999
Working past age 65	Summer 1999
Stay-at-home dads	Spring 1998
Do earnings rise until retirement?	Summer 1996
Men retiring early: How are they doing?	Winter 1995
Employed parents and the division of housework	Autumn 1993
Trading places: Men and women in non-traditional occupations, 1971-86	Summer 1990
Male-female earnings gap among recent university graduates	Summer 1990

OCCUPATIONS

Earnings of physicians	Winter 1999
Work patterns of truck drivers	Winter 1999
Private security and public policing	Spring 1999
Computer programmers	Autumn 1998
The booming market for programmers	Summer 1998
The diversity of managers	Winter 1996
Work absence rates, 1995	Autumn 1996
Women in non-traditional occupations	Autumn 1995
Employer-supported training—it varies by occupation	Spring 1994
Unemployment—occupation makes a difference	Winter 1991
Trading places: Men and women in non-traditional occupations, 1971-86	Summer 1990

PENSIONS

Savings for retirement: RRSPs and RPPs	Summer 1999
The RRSP Home Buyers' Plan	Summer 1998
RRSP contributions and withdrawals: An update	Spring 1998
Tapping unused RRSP room	Spring 1998
Low incomes and RRSPs	Spring 1997
RRSP participation—the sooner the better	Spring 1997
RRSP withdrawals revisited	Winter 1996
RRSP rollovers	Winter 1996
Dual-pensioner families	Autumn 1996
Pension fact or fiction?	Summer 1996
Men retiring early: How are they doing?	Winter 1995

RRSPs—unused opportunities	Winter 1995
Tax assistance for pensions and RRSPs	Winter 1995
Who's saving for retirement?	Winter 1995
Pension plan potpourri	Summer 1995
Greying of the workforce	Spring 1995
Update on RRSP contributions	Spring 1995
Greying of the workforce (charts)	Winter 1994
RRSP withdrawals	Spring 1994
An interview with Laurence E. Coward	Winter 1993
RRSPs—new rules, new growth	Winter 1993
C/QPP costs and private pensions	Autumn 1993
Facing retirement	Spring 1993
Note on RRSP contributions and payouts	Spring 1993
Employer-sponsored pension plans—who is covered?	Winter 1992
RRSPs—not just for retirement	Winter 1992
Marriage, money and retirement	Winter 1991
On non-wage labour income	Winter 1991
Women and RRSPs	Winter 1991
Are jobs in large firms better jobs?	Autumn 1991
Retirement attitudes, plans and behaviour	Autumn 1991
The pension carrot: Incentives to early retirement	Autumn 1991
Women approaching retirement	Autumn 1991
Dependence on government transfer payments, 1971-1989	Summer 1991
RRSPs: Tax-assisted retirement savings	Winter 1990
Taxes, transfers and regional disparities	Winter 1990
Government transfer payments and family income	Autumn 1990
The performance of trustee pension funds	Spring 1990

PRODUCTIVITY

Exports, GDP and jobs	Winter 1999
Measuring productivity	Spring 1995
About productivity	Spring 1993

REGIONAL ANALYSIS

Regional disparities and non-permanent employment	Winter 1997
Employment and industrial development in the North	Spring 1997
Northern earnings and income	Spring 1997
A job to die for	Summer 1996
Canada's unemployment mosaic in the 1990s	Spring 1996
Full-year employment across the country	Autumn 1995
Are single industry towns diversifying?	Spring 1992
A look at fishing, mining and wood-based communities	
Visible minorities in the Canadian labour force	Summer 1991

Taxes, transfers and regional disparities	Winter 1990
Consumer spending in urban and rural Canada	Autumn 1990
Shifting patterns of unemployment distribution since the 1960s	Autumn 1990
Bilingualism and earnings	Summer 1989
Canada's unemployment mosaic	Summer 1989

RETIREMENT

Working past age 65	Summer 1999
Saving for retirement: RRSPs and RRP	Summer 1999
Income transition upon retirement	Winter 1998
Retirement patterns of working couples	Autumn 1998
Measuring the age of retirement	Summer 1997
RRSP rollovers	Winter 1996
Dual-pensioner families	Autumn 1996
Do earnings rise until retirement?	Summer 1996
Men retiring early: How are they doing?	Winter 1995
Greying of the workforce	Spring 1995
Greying of the workforce (charts)	Winter 1994
A note on the recession and early retirement	Winter 1993
An interview with Laurence E. Coward	Winter 1993
Facing retirement	Spring 1993
Marriage, money and retirement	Winter 1991
Retirement attitudes, plans and behaviour	Autumn 1991
The pension carrot: Incentives to early retirement	Autumn 1991
Women approaching retirement	Autumn 1991

TAXES

Family income inequality, 1970-1995	Winter 1998
The RRSP Home Buyers' Plan	Summer 1998
Family income inequality in the 1980s	Autumn 1991
Taxes, transfers and regional disparities	Winter 1990
Consumer spending in urban and rural Canada	Autumn 1990
Where the money goes: Spending patterns in Canada and the U.S.	Autumn 1990

TRAINING

Literacy in the workplace	Summer 1999
An international comparison of employee training	Spring 1998
Facing the future: Adults who go back to school	Autumn 1997
A note on the self-initiated training of job-losers	Spring 1994
Employer-supported training—it varies by occupation	Spring 1994
Recent information on training	Spring 1994
Studying on the job	Summer 1992
Apprentices: Graduate and drop-out labour market performances	Spring 1991

Gail Cook Johnson speaks out on human resource issues	Spring 1991
Training the work force: A challenge facing Canada in the '90s	Winter 1990

UNEMPLOYMENT

Obtaining a job	Spring 1999
Looking for work	Autumn 1998
Employment Insurance in Canada: Policy changes	Summer 1998
The redistribution of overtime hours	Winter 1997
Facing the future: Adults who go back to school	Autumn 1997
Canada's unemployment mosaic in the 1990s	Spring 1996
The many faces of unemployment	Spring 1996
Who gets UI?	Summer 1994
A note on the self-initiated training of job-losers	Spring 1994
Alternative measures of unemployment	Winter 1992
A note on Canadian unemployment since 1921	Autumn 1992
Discouraged workers—where have they gone?	Autumn 1992
Unemployment—occupation makes a difference	Winter 1991
Then and now: The changing face of unemployment	Spring 1991
Shifting patterns of unemployment distribution since the 1960s	Autumn 1990
Time lost: An alternative view of unemployment	Spring 1990
Unemployment: A tale of two sources	Winter 1989
"Discouraged workers"	Autumn 1989
Canada's unemployment mosaic	Summer 1989

UNIONIZATION

Unionization—an update	Autumn 1999
The rise of unionization among women	Winter 1998
A statistical portrait of the trade union movement	Winter 1997
Unionized workers	Spring 1996
A note on wage trends among unionized workers	Autumn 1993
Are jobs in large firms better jobs?	Autumn 1991
Working for minimum wage	Winter 1989
Unionization and women in the service sector	Autumn 1989

WOMEN

Women's earnings/men's earnings	Winter 1999
Employment after childbirth	Autumn 1999
Baby boom women—then and now	Autumn 1999
The rise of unionization among women	Winter 1998
Women entrepreneurs	Spring 1996

Women as main wage-earners	Winter 1995	Work arrangements: 1995 overview	Spring 1997
Adult women's participation rate at a standstill	Autumn 1995	Women entrepreneurs	Spring 1996
Women in non-traditional occupations	Autumn 1995	Non-standard work on the rise	Winter 1995
Baby boom women	Winter 1994	Full-year employment across the country	Autumn 1995
Work-related sexual harassment	Winter 1994	Families and moonlighting	Summer 1995
Declining female labour force participation	Summer 1994	Hours of working couples	Summer 1995
Left behind: Lone mothers in the labour market	Summer 1994	Work experience	Summer 1995
Balancing work and family responsibilities	Spring 1994	Ever more moonlighters	Autumn 1994
Defining and measuring employment equity	Winter 1993	Involuntary part-timers	Autumn 1994
Employed parents and the division of housework	Autumn 1993	Jobs! Jobs! Jobs!	Autumn 1994
Female lone parents in the labour market	Spring 1993	The hours people work	Autumn 1994
Women in academia—a growing minority	Spring 1993	Voluntary part-time workers	Autumn 1994
A degree of change	Winter 1992	Weekend workers	Summer 1994
Alimony and child support	Summer 1992	Working "9 to 5"	Summer 1994
Absences from work revisited	Spring 1992	Balancing work and family responsibilities	Spring 1994
Women and RRSPs	Winter 1991	Flexitime work arrangements	Autumn 1993
Women approaching retirement	Autumn 1991	Paid overtime	Autumn 1993
Who's looking after the kids? Child care arrangements of working mothers	Summer 1991	Work arrangements of Canadians—an overview	Autumn 1993
Women's earnings and family incomes	Summer 1991	Working shift	Spring 1993
Male-female earnings gap among recent university graduates	Summer 1990	Hard at work	Spring 1992
Trading places: Men and women in non-traditional occupations, 1971-86	Summer 1990	A note on self-employment	Winter 1991
Wives as primary breadwinners	Spring 1990	A note on the Work Sharing Program	Winter 1991
Unionization and women in the service sector	Autumn 1989	Non-standard work arrangements	Winter 1991
On maternity leave	Summer 1989	Moonlighters	Winter 1989
		The changing face of temporary help	Summer 1989
WORK ARRANGEMENTS		YOUTH	
Working together—self-employed couples	Winter 1999	After high school...	Summer 1997
Self-employment in Canada and the United States	Autumn 1999	Labour market outcomes for university co-op graduates	Autumn 1995
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