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The Canadian Productivity Review

Producing Hours Worked for the SNA in order to Measure Productivity: the Canadian Experience

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Statistics Canada
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Table of Contents

1. Introduction

This paper provides a brief description of the methodology currently used to produce the annual volume of hours worked consistent with the *System of National Accounts* (SNA).[1] These data are used for labour input in the annual and quarterly measures of labour productivity, as well as in the annual measures of multifactor productivity. For this purpose, hours worked are broken down by educational level and age group, so that changes in the composition of the labour force can be taken into account. They are also used to calculate hourly compensation and the unit labour cost and for simulations of the SNA Input-Output Model; as such, they are integrated as labour force inputs into most SNA satellite accounts (i.e., environment, tourism).

In this paper, each of the production stages will be described. We first describe how we adjust our data sources to correspond with the SNA, conceptually and terminologically. Next, we begin with the initial development of the source data for the labour input. Then, we reconcile our labour inputs with the income estimates contained in the *Industry Accounts*, while adjusting to an aggregate benchmark. The paper ends with a brief discussion of the strengths and weaknesses of this methodology.

2. What is produced in Canada

Since 2001, the *Canadian Productivity Accounts* (CPA) have produced data on the number of jobs and hours worked by category of worker for the 286 industries of the *Industry Accounts*, for the 10 provinces and 3 territories of the Canadian North. Before the incorporation of the SNA (1993), the program aimed essentially to measure growth in labour productivity. In the 1990s, it became clear that our clients also used these data to compare productivity levels. This realization led to the development of the current database intended to estimate both trend and level.

3. Methodology

Canadian methodology was developed in the 1960s by analysts in Statistics Canada's Productivity Accounts group. Over the years, improvements have been made to both the methodology and the source data, but the basic principles have remained essentially unchanged. In short, the CPA produces detailed estimates of the hours worked by estimating the number of jobs on the one hand[2] and the average annual hours per job on the other. The volume of hours worked is obtained by multiplying these two components together. (See the equation below).

When constructing estimates of the labour input, the CPA has three objectives:

- Compliance with the SNA's 1993 concepts;
- Compliance with the primary data from the SNA's *Industry Accounts*; and
- Respect for the trends and levels produced by the source survey data.

1. For a more detailed description, consult J.-P. Maynard, *Annual Measure of the Volume of Work Consistent with the SNA: the Canadian Experience*. Catalogue no. 11F0026MIE2005005, Statistics Canada.
2. As opposed to the term “employed persons”.

The use of a two-stage strategy gives us more latitude in the choice of the source survey data necessary to reach these objectives.

$$\sum\sum\sum\left(J_{cir}\times\overline{H_{cir}}\right)=Vh_{cir}$$

J = Number of jobs
$\overline{H}$ *= Average annual hours worked*
Vh = Volume of hours worked.

Where c=class of worker, i=industry and r=region.

In practice, there is no single source in Canada for estimating a labour input that corresponds entirely, both conceptually and with respect to coverage, with the international standards set out in the SNA Manual of 1993. Canadian data on hours worked are therefore derived by integrating the results from several sources: firm-based employer surveys and household surveys, to which are added the results of quinquennial censuses and administrative data.

4. Main data sources for labour input

Statistics Canada collects labour data mainly from the *Labour Force Survey* (LFS) and the *Survey of Employment, Payrolls and Hours* (SEPH).

The LFS is a monthly household survey providing data on persons, hours worked and payroll. In a specific week every month it collects information on 53,000 households (about 100,000 persons aged 15 and over). The sample is benchmarked to population censuses and inter-censal estimations. It constitutes the Canadian benchmark for the development of the overall measure of labour market. Given its survey frame, this survey is considered the most reliable for estimates at the aggregate level. Its methodology has not changed since 1976 and the comprehensive nature of its questionnaire facilitates a conceptual harmonization of labour estimates with the SNA (1993). This requires that persons with more than one job be captured and, that persons absent from work who were not paid during the week of the survey be excluded. The concept of hours worked parallels the SNA's.

Since the LFS is a household survey, the data are not the most reliable source for detailed industry coding.[3] In this respect, the SEPH data obtained from an establishment survey are more suitable. A census of the industries covered by this survey is made each month and the industrial coding of the base units—i.e., the establishments—is taken from, a business register of firms that uses a standardized classification system (NAICS). This is the common register for all establishment surveys on specific industries. The SEPH collects monthly data on employee jobs and payroll from all establishments in Canada, except agriculture, fishing and trapping, services to agriculture, services to private households, religious organizations and defence services. Since

3. The LFS data are less reliable for detailed industries for two reasons: first, because the sample is often too small and, second, because it is difficult to assign a precise industry code to a respondent at this level of detail.

1998, when remitting payroll deductions, all employers must report the number of their employees and gross payroll, ideally for the last pay period of the month, to the national tax authority (*Canada Revenue Agency*).[4]

In light of the available data, our strategy is to capitalize on the strengths of each survey, while reducing the impact of its weaknesses. The choice of data sources is determined by their degree of correspondence with the proposed concept, their degree of accuracy at various aggregate levels, their extent of coverage, their conformity with sources used to measure production and their methodological consistency over time (no historical break).

5. Estimation of hours worked

The estimation of hours worked takes place in four stages:

- Estimation of average hours;
- Construction of regional benchmarks;
- Industrial and sectoral distribution of jobs and compensation in the source data; and
- Calibration of the results with the *Industry Accounts.*

6. Estimation of average hours

In estimating average hours, the CPA relies mainly on LFS data. This survey consists of a series of questions on the weekly work schedule of employed persons. Respondents are first asked about their regular schedule, paid or unpaid overtime and hours lost. Then they are asked to specify the number of hours worked during the reference week. In the event that respondents were absent from work during the reference week, they are also asked to state the main reason for their absence.

Hours worked in LFS reference weeks are first adjusted by the CPA to eliminate sporadic events (civic holidays, strikes, etc.). They are then interpolated to produce estimates for all weeks in the year. When they are annualized, the hours lost due to sporadic events identified by the survey as well as those outside of the reference week are systematically reintroduced into the calendar. Lastly, a final series of adjustments is made to account for the day on which each year begins or ends. (See Figure A1 in the Appendix). As can be seen in Table A2 of the Appendix, if LFS hours worked are not adjusted for sporadic civic holidays, the estimates of the level and trend of average hours worked will be biased.[5]

4. This administrative source is supplemented by a monthly survey of approximately 11,000 establishments in order to collect data on paid hours of production workers and paid or usual hours for other workers.
5. The bias has been particularly noticeable since 2000. See Galarneau, Maynard and Lee. *Whither the workweek*? Statistics Canada, Fall 2005.

Interpolated hours are calculated by region, industry and class of worker. An overall benchmark for average annual hours worked is produced for each region. At the most detailed industrial level, average hours worked are annualized by combining interpolated hours and employment derived from various information sources.[6] (See Section 8).

7. Calculation of benchmarks

At the aggregate level, the LFS is the main source of data for jobs and hours worked per job for each province and territory, as well as for the three labour categories (paid workers, self-employed with paid help and self-employed own account). The results of this survey are used as the core benchmark. To complete the spatial coverage and harmonize the regional labour concept of this survey with the SNA's,[7] other sources have been added: the census estimate of inter-provincial flows of persons employed, SEPH administrative data for Canada's northern territories and Aboriginal reserves and data from the Public Institution Division for employees of different levels of government. (See Table A1 in the Appendix for an example). The aggregate payroll data are taken from administrative data for the entire economy.

8. Calculation of industry details

The industry breakdown of the initial job and payroll matrices by province and territory is based on surveys of various job categories.

The main source for *employees* is the SEPH, with the exception of industries excluded from this survey as well as construction, retail trade and accommodation and food services,[8] whose source is the LFS. (See Step 1 of Table A6 in the Appendix).

The main source for *self-employed workers* is Population LFS data that is reconciled with the detailed industrial distribution interpolated from quinquennial censuses. These results are adjusted to special LFS[9] sub-totals used as annual benchmarks for each province and category of self-employed worker (employer or own-account) (Step 5 of Table A6 in the Appendix). Since the *Labour Force Survey* uses the *Population Census* to benchmark its population weights, labour market data collected from the survey are consistent with the Census.

6. See Table A5 in the Appendix comparing for jobs estimates derived from the LFS compared to SEPH at the NAICS 2-digit level. The data of this table provide insight about the consistency of industry coding between the two surveys.
7. The basis of LFS statistics is the respondents' province of residence, whereas the SNA has to estimate jobs on the basis of the province of employment.
8. We use the LFS for these three industries as they are barely covered by the *Accounts by Industry* and are likely to be affected by the incidence of clandestine work, which is more easily captured by a household survey; moreover, they are characterized by a high turnover of businesses opening and closing, which in turn creates coding arrears in the *Business Register*.
9. The LFS sub-groups are divided into 12 industry aggregates. These industry sub-groups are created by taking into consideration the similarities of self-employed characteristics and by minimising the coefficient of variation of each sub-group (by choosing a reasonable sample size).

9. Reconciliation of jobs with the Industry Accounts

In the next stage, the CPA reconcile and modify if necessary, the initial job and payroll matrices by comparing them with those in the *Industry Accounts.* It forces the resulting estimates to provincial benchmarks. It should be noted that the *Industry Accounts* rely on various data sources to estimate the Input-Output accounts. In particular, they use annual administrative tax data as a benchmark for salaries and wages, whereas industry coding is mainly derived from specific surveys of each industry.[10] In the process of reconciliation by industry, the CPA consider known occurrences, such as: opening and closing of establishments, massive layoffs, strikes, power outages, etc. which lead to unusual job fluctuations. Also taken into consideration are retroactive payments, annual bonuses and pay in lieu of notice, which cause sudden fluctuations in compensation (Step 2 of Table A6 in the Appendix).

The reconciliation involves a multistop algorithm. In the first stage of the reconciliation, the survey payroll is compared to the wages and salaries of the *Industry Accounts*. If there are large discrepancies, the breakdown of jobs between industries is adjusted. For a given industry, the degree of adjustment for jobs will depend on the relative variance of job and average compensation estimates from the labour data source used to produce the initial estimate of this industry. The more reliable the quality of a cell, the less it will be affected by the reconciliation algorithm. Our variance estimates take into account not only sampling errors, but also non-sampling errors. Once the calibration of job estimates has been completed, the volume of hours is obtained by multiplying the job by the average hours previously calculated (Step 7 of Table A6). Finally, the number of jobs and the volume of hours are forced to their benchmark value. A similar exercise is applied to self-employed jobs via the mixed incomes of unincorporated businesses contained in the *Industry Accounts* (Step 5 of Table A6).

In the *Canadian Economic Accounts,* the construction industry includes both contracted-out and own-account activity.[11] The employment level of own-account construction is estimated from the available or projected payrolls in *Industry Accounts.* Jobs are then derived from relative salary rates captured by the LFS for professions likely to fall in this category. Estimated jobs are removed from the industry of their employer and added to construction. In 2002, own-account construction represented about 13% of the hours worked in total construction activities in Canada (Step 3 of Table A6).

Data for jobs, hours worked and compensation are available for SNA sectors, as well as for industries. For this purpose, the non-commercial sector is based on job statistics in the *Public Institution Division* and on the imputation of work in non-profit organizations serving private households. The business sector is obtained residually (Step 4 of Table A6 in the Appendix).

10. For an overview of the integration of the CPA with the SNA, see J.R. Baldwin and T.M. Harchaoui (2005).
11. Own-account construction is a construction activity carried out by an industry's own workers.

10. Strengths and obstacles

A comparison of our results with a 1998 time use survey in Canada indicates that our method of annualizing hours worked is reliable. The derivation of hours lost also corroborates the validity of our estimates, since hours lost due to annual vacations and civic holidays are consistent with Canadian labour legislation (See Tables A3 and A4 in the Appendix).

Since 2001, labour statistics in line with the SNA have been produced by province and territory from 1997. Each region expects to obtain data of a similar quality. Unfortunately, Canada is made up of regions of diverse size and population and the availability and quality of labour force data is relatively poorer for the North and for the Atlantic provinces.

11. Conclusion

Statistics Canada has no single source enabling the direct production of annual data for hours worked that are consistent with the *Canadian System of National Accounts* in respect of coverage and concepts. Therefore, labour data that are consistent with the CSNA are derived by integrating the results of various surveys and statistical programs. Despite the use of multiple sources, labour force estimates at the aggregate level of the CPA's provincial program are consistent and reconcilable with the results of the *Labour Force Survey*, the seminal survey of the Canadian labour market.

For the CPA, the *Labour Force Survey*, a household survey, is the primary source for estimating the volume of hours worked. Its coverage is the closest to the production boundaries in the *System of National Accounts.* With a professionally designed sampling process, it is designed to provide exhaustive coverage of the population being examined. Its use as a benchmark also avoids the risk of double counting, since its coverage includes all working categories and the civil population of age 15 and over in the 10 Canadian provinces for all industries (about 99% of the total).

In Canada, only the *Labour Force Survey* measures hours worked according to the SNA concept.[12] It closely approximates the estimates of hours worked per person derived from the 1998 *Time Use Survey.*

While the Canadian methodology relies primarily on the *Labour Force Survey* to estimate the economy as a whole, as well as several groups of industries at the 2-digit level, the productivity program makes extensive use of establishment surveys and of the census to estimate industries in more detail. However, we ensure that the national total of all of these data corresponds to a benchmark derived from the *Labour Force Survey.*

12. The SNA's concept of hours worked refers to the resolution adopted by the International Labour Office (ILO) in 1962 at the 10th International Conference of Labour Statisticians. See *System of National Accounts,* 1993, p. 451.

Appendix – Tables and figure

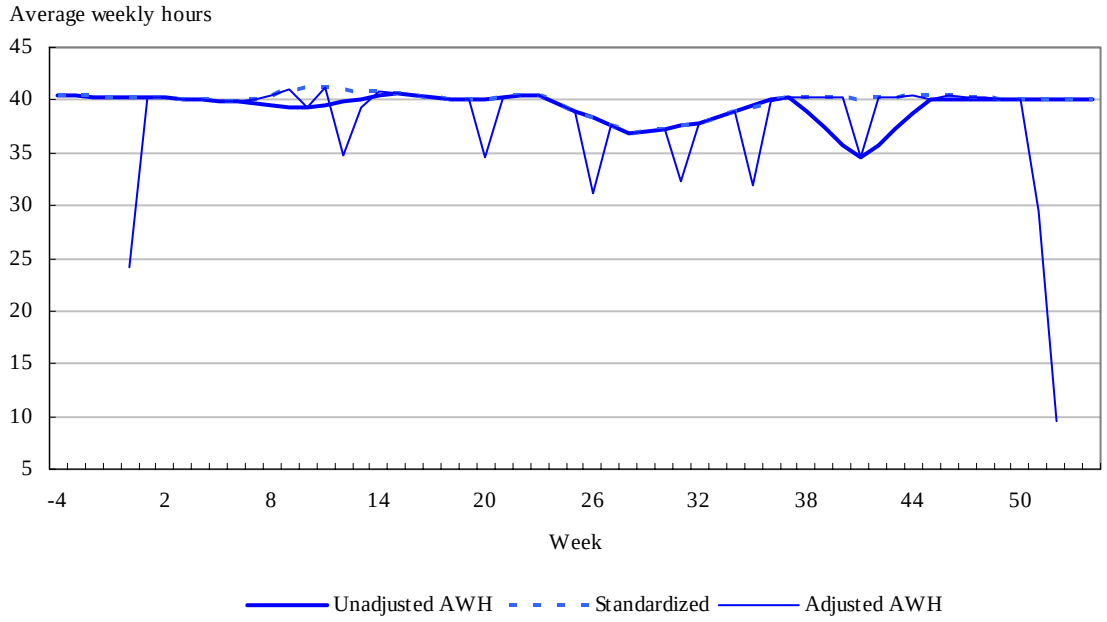
Table A1 Constructing the national employment benchmark based on the average annual number of employed persons from the Labour Force Survey (LFS)

Stage		1998	1999	2000	2001	2002	2003	2004
		('000)						
1	ILO*-LFS all persons employed	14,019	14,390	14,759	14,947	15,308	15,665	15,950
2	Plus: multiple job holders	674	694	691	693	758	764	787
3	Plus: jobs in aboriginal reserves + military personnel	123	118	114	114	115	121	123
4	Plus: all jobs in the Territories + civil servants working outside Canada	54	54	54	54	54	53	55
5	Minus: unpaid absentee paid workers	411	418	434	474	518	558	579
6	Minus: self-employed with "zero" hours worked	225	223	208	179	199	201	188
7	SNA benchmark – all jobs	14,235	14,614	14,976	15,154	15,518	15,843	16,149

* International Labour Office.

Sources: Statistics Canada, National Accounts and Analytical Studies, Micro-Economic Analysis Division, Canadian Productivity Accounts and CANSIM Table 383-0009.

Figure A1 Adjustment of hours worked for the year 2002 in manufacturing, Ontario



Notes: Unadjusted AWH: Average weekly actual hours obtained from the 12 reference weeks of the *Labour Force Survey*.
Standardized: Represents the average weekly hours worked after we have added back the hours lost due to a special event (civic holiday, March break, etc.) and that was captured by the *Labour Force Survey*.
Adjusted AWH: Represents the average hours worked adjusted for special events and that are used in the SNA.

Sources: Statistics Canada, Canadian Productivity Measures, Micro-Economic Analysis Division.

Table A2 Impact of not adjusting the Labour Force Survey (LFS) hours worked data for special events on level and growth of annual hours worked per job in manufacturing, Canada

	a) LFS x 52	b) Adjusted	Difference	c) LFS x 52	d) Adjusted	Difference
	Level	Level	b - a	Growth (%)	Growth (%)	d - c
1999	1,811.5	1,768.4	-43.0	…	…	…
2000	1,823.8	1,766.5	-57.3	0.7	-0.1	-0.8
2001	1,788.6	1,760.6	-28.0	-1.9	-0.3	+1.6
2002	1,775.9	1,743.9	-32.0	-0.7	-1.0	-0.3
2003	1,745.1	1,734.0	-11.1	-1.7	-0.6	+1.1
2004	1,762.6	1,752.2	-10.4	1.0	1.1	+0.1

… not applicable

Notes: The first column titled Difference shows the difference in levels between adjusted and raw hours. The last column shows the impact of not adjusting the hours on labour productivity growth.

Sources: Statistics Canada, National Accounts and Analytical Studies, Micro-Economic Analysis Division, Canadian Productivity Accounts and Labour Statistics Division.

Table A3 Average annual hours worked per category of worker, 1998

	Canadian Labour Force Survey	Canadian Time Use Survey	Difference (hours)
All jobs	1,796.4	1,809.6	-13.2
Employee jobs	1,786.6	1,804.4	-17.8
Self-employed jobs	1,856.6	1,840.8	15.8

Notes: For comparison purpose, the data in this table shows hours worked per person employed (International Labour Organization concept). For more details, see Maynard, Chung and Sunter, 2004.

Sources: Statistics Canada, National Accounts and Analytical Studies, Micro-Economic Analysis Division, Canadian Productivity Accounts, Labour Statistics Division and Social and Aboriginal Statistics Division.

Table A4 Absences from work in hours and days, employee jobs, Canada, 2002

Reason for absence	Hours lost	Days lost	Percentage
Annual leave	90.2	12.0	42
Holidays	50.3	6.7	20
Short-time	4.0	0.6	2
Illness or accident	51.0	6.8	20
Bad weather	1.0	0.2	0
Industrial disputes	1.0	0.2	1
Personal and family responsibilities	9.2	1.7	3
Maternity	20.0	2.7	8
Other	11.0	1.5	4

Notes: The number of days is obtained by dividing the hours lost by 7.5 hours. This corresponds to the reported average usual hours of work in Canada by regular full time employees (5 days a week).

Sources: Statistics Canada, National Accounts and Analytical Studies, Micro-Economic Analysis Division, Canadian Productivity Accounts and Labour Statistics Division.

Table A5 Comparison of the number of employee jobs for 2-digit industry where industry is theoretically comparable in terms of coverage

Industry name (NAICS[1] code)	SEPH[2] ('000) 2002	LFS[3] ('000) 2002	SEPH[2] / LFS[3] (%) 2002	Correlation coefficient (%) 1987 to 2003
Mining, oil and gas extraction	140	165	85	62
Utilities (22)	114	131	87	87
Construction (23)	615	666	92	96
Manufacturing (31-33)	2,052	2,219	92	74
Wholesale trade (41)	737	511	144	90
Retail trade (44-45)	1,550	1,741	89	88
Transportation and storage (48-49)	612	674	91	82
Information and communication (51)	334	371	90	67
Finance, insurance and real estate (52,53,55)	886	811	109	66
Professional services (54)	654	798	82	98
Administration and support, waste management and remediation services (56)	563	474	119	98
Education (61)	953	983	97	86
Health and social services (62)	1,311	1,481	89	96
Arts, entertainment and recreation (71)	232	287	81	98
Accommodation and food (72)	957	949	101	88
Public administration (91)	725	824	84	81
Total excluding 11 and 81	12,399	13,085	95	93

1. North American Industry Classification System.
2. Survey of Employment, Payrolls and Hours.
3. Labour Force Survey.

Sources: Statistics Canada, National Accounts and Analytical Studies, Micro-Economic Analysis Division, Canadian Productivity Accounts and Labour Statistics Division.

Table A6 Example of the different steps to produce the volume of hours worked consistent with the Canadian System of National Accounts — Part 1

Year 2002	A Step 1 Employee Source data	 Employee Average salary: implicit/ source	B Step 2 Employee Micro adjustments to source data	C = A+B Employee Source data adjusted to the benchmark	D Step 3 Employee Adjustments for own-account construction	E = C+D Employee SNA concept Total economy	F Step 4 Employee SNA concept Non-commercial sector
Industry				('000)			
Agriculture, forestry, fishing and hunting	224	0.96	4	228	-2	226	10
Mining and oil and gas extraction	139	1.20	18	157	-14	143	0
Utilities	114	1.16	21	135	-30	105	15
Construction	668	1.11	13	681	95	776	0
Manufacturing	2,052	0.95	-103	1,949	-5	1,944	0
Wholesale trade	737	1.13	91	828	0	828	0
Retail trade	1,746	0.99	-13	1,733	0	1,733	2
Transportation and warehousing	677	1.04	25	702	-9	693	39
Information and cultural industries	334	1.20	50	384	-2	382	30
Finance, insurance, real estate and renting and leasing	886	1.08	54	940	-3	938	36
Professional, scientific and technical services	654	1.04	19	673	0	673	5
Administrative and support, waste management and remediation services	563	1.04	20	582	0	582	2
Education services	939	1.07	-2	937	-4	933	889
Health care and social assistance	1,305	1.04	-43	1,261	-7	1,254	866
Arts, entertainment and recreation	287	1.04	-26	262	-2	260	45
Accommodation and food services	952	1.14	141	1,092	-1	1,092	4
Other services (except public administration)	572	1.25	150	723	0	723	207
Public administration	774	1.13	25	799	-16	783	783
Total Economy	**13,623**	**1.06**	**444**	**14,067**	**0**	**14,067**	**2,932**

Note: This table provides an overview of the main steps that are necessary to produce the volume of hours worked consistent with the System of National Accounts. These steps are referred in the core of the text. The first line in the heading should allow the reader to follow the operations from Step 1 to the last step.

Sources: Statistics Canada, National Accounts and Analytical Studies, Micro-Economic Analysis Division, Canadian Productivity Accounts and CANSIM Table 383-0009.

Table A6 Example of the different steps to produce the volume of hours worked consistent with the Canadian System of National Accounts — Part 2

Year 2002	G = E - F Step 4 Employee SNA concept Business sector	H Step 5 Self-employed SNA concept Business sector	I Step 6 Employee Average hours worked Total economy	J Step 6 Employee Average hours worked Non-commercial	K Step 6 Self-employed Average hours worked	L= G x I Step 7 Employee Volume of hours worked Total economy
Industry			(‘000)			
Agriculture, forestry, fishing and hunting	216	188	2,008	1,785	2,080	453,405
Mining and oil and gas extraction	143	3	2,182	0	1,951	312,450
Utilities	90	0	1,836	1,895	2,009	192,454
Construction	776	141	1,996	0	1,926	1,549,463
Manufacturing	1,944	31	1,950	1,891	1,984	3,790,622
Wholesale trade	828	37	1,951	1,905	1,738	1,615,177
Retail trade	1,731	126	1,578	1,541	1,884	2,734,168
Transportation and warehousing	654	82	1,938	1,890	2,217	1,342,491
Information and cultural industries	352	25	1,741	1,756	1,507	665,201
Finance, insurance, real estate and renting and leasing	901	65	1,753	1,730	1,742	1,643,236
Professional, scientific and technical services	668	212	1,874	1,826	1,699	1,260,767
Administrative and support, waste management and remediation services	581	107	1,710	1,676	1,335	995,535
Education services	44	41	1,549	1,557	1,177	1,444,805
Health care and social assistance	388	163	1,525	1,534	1,848	1,911,975
Arts, entertainment and recreation	215	62	1,520	1,584	1,491	395,272
Accommodation and food services	1,088	41	1,494	1,840	2,324	1,631,474
Other services (except public administration)	515	126	1,634	1,636	1,655	1,180,838
Public administration	0	0	1,695	1,695	0	1,328,226
Total Economy	**11,135**	**1,451**	**1,738**	**1,605**	**1,802**	**24,447,559**

Note: This table provides an overview of the main steps that are necessary to produce the volume of hours worked consistent with the System of National Accounts. These steps are referred in the core of the text. The first line in the heading should allow the reader to follow the operations from Step 1 to the last step.

Sources: Statistics Canada, National Accounts and Analytical Studies, Micro-Economic Analysis Division, Canadian Productivity Accounts and CANSIM Table 383-0009.

Table A6 Example of the different steps to produce the volume of hours worked consistent with the Canadian System of National Accounts — Part 3

Year 2002	M= F x J Step 7 Employee Volume of hours worked Non-commercial	N = H x K Step 7 Self-employed Volume of hours worked	O = L – M+N All jobs Volume of hours worked Business sector	P = E + H All jobs Number of jobs Total economy	Q =M + O All jobs Volume of hours worked Total economy	R = Q/P All jobs Average hours worked Total economy
Industry			('000)			
Agriculture, forestry, fishing and hunting	17,525	391,451	827,331	414	844,856	2,041
Mining and oil and gas extraction	0	6,033	318,483	146	318,483	2,177
Utilities	28,210	533	190,166	105	192,987	1,837
Construction	0	272,047	1,821,509	918	1,821,509	1,985
Manufacturing	938	61,731	3,851,415	1,975	3,852,353	1,950
Wholesale trade	478	65,003	1,679,702	865	1,680,180	1,942
Retail trade	2,790	238,241	2,972,130	1,860	2,972,409	1,598
Transportation and warehousing	72,953	180,793	1,450,331	774	1,523,284	1,968
Information and cultural industries	52,450	38,016	697,972	407	703,217	1,726
Finance, insurance, real estate and renting and leasing	62,643	112,503	1,693,096	1,002	1,755,739	1,752
Professional, scientific and technical services	8,845	359,639	1,611,561	884	1,620,406	1,832
Administrative and support, waste management and remediation services	2,869	142,268	1,134,934	689	1,137,803	1,652
Education services	1,384,393	48,779	109,192	974	1,493,585	1,533
Health care and social assistance	1,328,101	300,690	884,564	1,417	2,212,665	1,562
Arts, entertainment and recreation	70,919	92,766	417,118	322	488,037	1,514
Accommodation and food services	6,512	94,535	1,719,497	1,133	1,726,009	1,524
Other services (except public administration)	338,882	209,309	1,051,266	849	1,390,148	1,637
Public administration	1,328,226	0	0	783	1,328,226	1,695
Total Economy	**4,706,735**	**2,614,337**	**22,355,161**	**15,518**	**27,061,896**	**1,744**

Note: This table provides an overview of the main steps that are necessary to produce the volume of hours worked consistent with the System of National Accounts. These steps are referred in the core of the text. The first line in the heading should allow the reader to follow the operations from Step 1 to the last step.

Sources: Statistics Canada, National Accounts and Analytical Studies, Micro-Economic Analysis Division, Canadian Productivity Accounts and CANSIM Table 383-0009.

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