

**Valuing Households' Unpaid Work in Canada, 1992 and 1998:
Trends and Sources of Change**

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Executive Summary

Canadians aged 15 years and older spend, on average, more time in unpaid work than they do in paid employment. Unpaid work accounts for 28% of people's waking hours, and yet this work is not part of the standard measures of the activity of our society. The sheer volume of unpaid work and its relationship to paid work makes a strong case for supplementing standard measures for many applications and analyses. For this reason the *System of National Accounts 1993* guidelines recommend that countries develop satellite accounts of household production.

Statistics Canada has a long-standing tradition dating back to the seventies to measure and value unpaid work of Canadian households. In an exploratory exercise in the early nineties, an extended I/O account, which includes household production, was developed by Statistics Canada for 1981 and 1986. We are not pursuing further work along these lines at this time.

Building on previous work by Jackson and Chandler (1995), the purpose of this paper is to provide an overview of methods and practices for measuring and valuing unpaid work in Canada. Findings presented in this report, which provides overview of practices used, have been compiled using data from Statistics Canada's 1992 and 1998 General Social Survey on time use. They shed light on differences in unpaid productive tasks undertaken by men and women, highlighting the significant role of women in the household production and the continuing evolution of these differences over time.

I. Introduction

Accounting for household production requires an expansion of the conventional national accounts production boundary. A complete household satellite account would contain a comprehensive and integrated presentation of household economic activities that contribute to individual welfare, such as production, income redistribution and wealth accumulation. Statistics Canada has not undertaken work to compile a full satellite account but has a long history of compiling the labour component of household production.

Conventional economic statistics, such as the national accounts and employment measures, are largely designed to measure the market economy and exclude (in developed economies at least) most of the non-market productive activities occurring within the household. It is clear that the goods and services resulting from such activities are a source of utility to the members of the household and other households and contribute to their well-being. The volume of household production is significant: on average, people spend roughly 10% more time in unpaid work than they do in market work. For many applications, such as welfare studies, more comprehensive analysis of production and consumption is required to track these phenomena over time, and as individuals shift their allocation of available hours between paid market work, unpaid work and leisure, is required.

Another example demonstrating the inter-linkages between the market and household sectors is the labour force participation of women. Individuals who are employed may find it useful to hire a cleaner to clean their house or pay for childcare services, rather than doing this work themselves. Under the System of National Accounts only the marketed work of cleaners, childcare workers is accounted for, and much of this is just a shift from household production to market production. Nonetheless, the same tasks are being done, the residence is being cleaned and the children are being cared for.

In the other direction, the market is pushing some activities back to the household by, for example the own house repair and renovations carried out. There are also shifts between the government and household sectors, as shown by recent policy shifts to deinstitutionalize mental health care and to promote ambulatory care. In order to understand the net effect of these interactions on all sectors, a comprehensive approach, including both market and household production, is required.

Valuing unpaid work makes it possible to compare the value of labour services in the market economy with those engaged in household production. The development of a full satellite account would allow a better understanding the economic dynamics both within and between households, and between the household and other sectors in the economy. The account would provide a database consistent with conventional economic accounts, allowing a structured

analysis of the household economy within the context of conventional national measures.

The valuation of the labour component of unpaid work presented in this paper highlights the contribution of women to total productive activity through their significant role in unpaid work. It also highlights the contribution of those who assist other households and institutions through voluntary unpaid labor.

II. Reasons to measure and value unpaid work

Campaigns promoting awareness of household's unpaid work, in general, and that of women, in particular, have been conducted in countries around the world, including Canada. Knowledge of households' unpaid work is increasingly pertinent for public policy decision-making. Questions like how many hours households spend at various types of unpaid work during the year, how this evolves over time, and women's and men's contributions make visible the hidden costs (in terms of reduced household non-market output) of economic growth. Information on the outputs and the productivity of unpaid work, and of quality differences between home provision and alternative modes, by other institutional sectors of the economy, may help form a more complete assessment of the impacts of cutbacks in social services.¹

There are long-standing arguments for incorporating measures of household non-market production within broader measures of economic activity like GDP. One important argument is the shifting of resources from the non-market to the market sector that takes place with economic growth. These shifts of resources lead to a growth in the market activity at the expense of the non-market unrecorded economy. Moreover, there may be a shifting back and forth of resources between the two sectors over the business cycle. Because the market draws resources from the non-market sector during periods of expansion and release them during phases of contraction, measured economy cycles may overestimate the cyclical character of the economy as a whole.

Another argument concerns the size difference of the household sector between countries. International comparisons of economic activity can be made more meaningful if broader and comparable measures of economic activity are available.

Statistics Canada has long recognized the significance of unpaid work done by Canadians. At Statistics Canada, the measurement and valuation of households' unpaid work dates back to the early seventies, originating with a review of proposals to modify the Gross National Product. Several updates and extensions have been done since the early study in this area, as and when time use data

¹ Statistics Canada (2000)" Paper submitted for the 13th Conference of Commonwealth Statisticians.

become available. Estimates have been made for 1981, 1986, and 1992 with improved source data and refined definitions and methods introduced at each stage. In the mid-nineties, a project was undertaken to revise previous estimates of the value of households' unpaid work. The estimates were put on a comparable footing to analyze longer-term trends in households' unpaid work. Among the main findings of this in-depth study was a sharp decline in the value of households' unpaid work (including volunteer work) relative to GDP until the mid-eighties and a reversal of trend in the early nineties.²

Recently, we updated valuation of households' unpaid work for 1998, along with a reworking of previously published micro-based estimates of the valuation of unpaid work for the year 1992.

III. How is unpaid work measured?

Information on the time spent on households' unpaid work comes from **Statistics Canada's General Social Survey (GSS)**, an annual household survey with a different theme each year and repeated content every six years. So far, three time use surveys have been conducted via the GSS. The first survey was carried out in 1986, with new results in 1992 and 1998. As part of the GSS five-year cycle, another survey is in the field in 2003 with results expected in 2004. The GSS covers all persons aged 15 years and over living in private households in Canada, excluding the Yukon and the Territories and full-time residents of institutions. The sample consists of about 10,000 respondents, one from each household selected through a Random Digit Dialing technique. The survey is administered via computer assisted telephone interviewing (CATI). Since 1992, it has been conducted though the entire year to capture seasonal variation in the use of time.

Respondents' time use is collected by way of a retrospective 24-hour diary for one pre-designated day of the week. The interview takes place no more than 48 hours following the designated day and the sample is distributed across days of the week to ensure an equal representation of weekdays and weekends. Each respondent is requested to report each primary activity as it occurred in chronological order, including a description of the activity, when it started and ended, where it took place, with whom and in certain instances for whom. In 1998 time use survey, unlike the previous cycles, interviewers coded activities as they were reported with the help of computer generated menus showing the most commonly occurring activities.

² Jackson, C and Chandler, W (1995) 'Households' Unpaid Work: Measurement and Valuation, Catalogue 13-603E, No3,

IV. How is the value of unpaid work estimated?

Prior to 1992, the estimates were compiled based on population counts, time use averages for specific demographic groups, and imputed hourly cost for each activity by persons in each group. The population was subdivided into groups defined by province of residence, sex, family status, labour force status, number of children and age of the youngest child. The formula for the value of unpaid work involved estimating a value of each type of unpaid work for specific demographic groups and aggregating these values.

With the 1992 and 1998 studies, the estimates are prepared directly using micro-data from the time use survey so that they can be compared and analyzed along far more dimensions than previously. The formula used in previous analyses still applies but in this case, the summation is across all survey respondents, the number of persons in each population group is replaced with the weight of each respondent in the survey. The average annual hours spent on each unpaid work activity by persons in each population group is replaced with the annualized time reported by type of unpaid work by each respondent. The imputed hourly cost for each activity by population group is replaced with a cost imputed to each respondent.

In the case of non-marketed goods and services, the national accounting approach is to assess value in relation with costs. National accounts guidelines recommend the imputation at the price of some equivalent marketed good or service or, as a next best approach, imputation at the cost of inputs. Valuing the labour component of unpaid work requires that a price of labour (wage rate) be borrowed from the market. While actual hours worked, analyzed by activity, can be measured with some precision, there is no agreed upon, unique market wage rate that should be used to value these hours. The choice of the imputed wage rate has a significant bearing on the valuation and, indeed, is the critical factor in any subsequent paid/unpaid work comparisons.

There are several options available for the choice of an imputed market wage. These can be broadly grouped into two categories depending on their underlying assumption, namely opportunity cost and market replacement cost:

1. Opportunity cost

In this method, paid market work and unpaid household work trade off against one another. The assumption is that time spent in one sector is seen to be at the expense of time spent in the other. The opportunity cost method to valuing unpaid work is based on the premise that when an individual engages in unpaid work, activities that could be done instead along with all associated monetary and non-monetary benefits are given up. For the purpose of the studies of 1992 and 1998, it is assumed that only paid work and monetary benefits are foregone.

The hourly wages used to estimate the value of unpaid work are derived from Statistics Canada's Census of Population using annual employment earnings, weeks worked and weekly hours of persons employed in Canada. The annual hours of paid work were computed as weeks worked multiplied by actual hours worked the week before the census. The most recent census of population was conducted in 1996. Since the census reports income for the previous year, hourly earnings were indexed for inflation over the period 1995-1998 to correspond with the reference year for the time use study.

For the opportunity cost variants, we calculate the overall hourly wage by sex and by province. Employers' contributions for Employment Insurance and Canada/Quebec Pension Plan are added to these wages to arrive at the opportunity cost. For the before-tax variant, employers' contributions are added to earnings since, from society's perspective, it is assumed that the opportunity cost includes the foregone employers' contribution associated with the foregone employment income. Given that society loses potential market output when individuals do unpaid work instead of market work, the gross opportunity cost can be viewed as a 'social opportunity cost'.

For the after-tax variant, since, from the households' perspective, opportunity cost is equivalent to take home pay, no adjustment is needed for employers' contributions. However, employees' contributions are netted out. As potential (after-tax) earnings are foregone by doing household work instead of market work, the net opportunity cost can be viewed as a 'private opportunity cost'.

The use of an opportunity cost wage implies that different people performing the same household task can be paid vastly different wage rates. Preparing meals, for example, is likely to require the same amount of skill whether the individual is a laborer or a doctor, but one has a much higher wage rate than the other. An added complication arises for people who are not employed, and therefore have no equivalent market wage. Because of these issues, the opportunity cost wage has been criticized as a means of valuing households' unpaid work.

2. Market replacement cost

The premise of the replacement cost method is that the time spent on unpaid activities can be valued at the hourly earnings of individuals who are engaged in similar activities in the market sector. It is assumed that household members and their "replacements" are equally productive. The assumption behind this approach is that households save money by deciding to perform the activity themselves. The amount they save, and hence the value to the household of doing the work, is the cost of purchasing the same services in the market or hiring someone else to perform the activity.

Replacement cost specialist

For the specialist variant, the replacement costs of unpaid activities are imputed on the basis of hourly earnings of people employed in matched occupations. With this variant, the wage rate varies according to the particular task being undertaken, as workers in different occupations would be assumed to undertake the different activities. For example, childcare activities require a different wage rate than house maintenance activities, which are different again from repair services.

In this variant of the replacement cost method, wage rates paid to specialized workers employed in the market sector are used (e.g. the wages of a cook in a restaurant for food preparation activities). The major problem with this variant is that the working conditions and productivity of the replacement worker will vary significantly from those of the unpaid household worker. From a practical perspective, it is unlikely that market replacements exist for all household activities to be valued.

Replacement cost general method

In this variant of replacement cost method (called the housekeeper cost method), the wage rate used is that of a general housekeeper. This approach appears to be the most appropriate given (i) working conditions will be similar for many activities, if not the same, as those faced by the unpaid worker; and (ii) a general housekeeper is more likely to perform the majority of the tasks that are typically carried out in a household. Even so, there will still be a number of household productive tasks that a housekeeper would be unlikely to carry out and applying the single wage rate may lead to inappropriate valuations.

V. The featured method

Depending on the method of valuation of unpaid work, this can result in widely differing estimates of the value of household production, notwithstanding the different sources of data that can also impact on final results. Chris Jackson, of Statistics Canada, found that “among the studies with broad coverage of the population, estimates range from 25% to 70% of GDP or GNP and the variation by valuation method is almost as great”.³ This finding confirms the results obtained in our study based on the 1998 time use survey. Findings indicated that unpaid work varied from 33% of GDP (replacement cost general method) to 52% (gross opportunity cost).

While Statistics Canada compiles estimates based on all the valuation methods cited, the replacement cost generalist method is the preferred and findings

³ Jackson, C (1995) ‘Households ‘Unpaid Work: Measurement and Valuation.

presented in this report are based on this approach. The hourly wage rates used to estimate the value of unpaid work are derived from Statistics Canada's Census of Population using annual employment earnings, weeks worked and weekly hours of persons employed full-year full time for selected occupations in Canada. Employers' contributions for Employment Insurance and Canada/Quebec Pension Plan are added to these wages to arrive at the replacement cost. Like the opportunity cost, hourly earnings were indexed for inflation over the period 1995-1998 to correspond with the reference year for the time use.

The population census is the best source of occupational earnings data available in Canada. All household work (except child care) and community work is valued at the wage rate for personal services occupations. Child care is valued at child care occupations wage rate. Other unpaid activities (volunteer work for nonprofit organizations) are valued at the wage rate for occupations in welfare and community services. Unlike the opportunity cost, we calculate the hourly wage by activity and by province. The replacement cost is calculated as an average over both sexes. For both variants of the replacement cost method, hourly earnings in personal services and child care occupations were adjusted upward to account for board and lodging.

VI. Key findings

- The estimated value of unpaid work in Canada in 1998 was \$297 billion. Between 1992 and 1998, the value of unpaid work increased by 18.3% (in nominal terms) comparing to 1992. As a percentage of GDP, however, it fell three percentage points, from 36% to 33%.
- Ninety-four percent of unpaid work occurred inside the household, while the remaining 6% was for the benefit of the community or persons outside the household.
- The value of unpaid work in 1998 per person was 12,256 dollars (15,101 dollars per woman versus 9,319 dollars per man). For both men and women, the value of unpaid work per married person was greater than the value per unmarried person.
- Women who were not employed contributed the greatest proportion in the value of households' unpaid work with 36 percent in 1998. Those employed contributed at 27 percent. Conversely, a greater share of the value of households' unpaid work was attributed to men who were employed (22 percent) than men who were not employed (15 percent). This reflects the fact that a higher proportion of men than women are employed (65.9 percent for men versus 53.8 percent for women).

- Canadians spent 30.4 billion hours on unpaid work in 1998. This equates to an average of 24 hours per week for all persons aged 15 and over, which is greater than the average 21 hours per week in paid employment. Women spent 19 billion hours at unpaid work in 1998 while men contributed 11 billion. Women are doing less unpaid work than in 1992 (1,543 hours on average in 1998 vs. 1,590 in 1992). Men are doing more (948 hours in 1998 vs. 894 hours in 1992) due in part to the taking on more domestic work. The work is unequally distributed by gender, with women spending over 28 hours/week at household work alone (17 hours for men).
- Canadians contributed 1.7 billion hours of volunteer and community unpaid work in 1998 (of which 1.1 billion hours of help and care to other households).
- In Canada, the ratio of unpaid work (including voluntary work) to paid work fell steadily from 1961 to 1986, a period marked by a stronger participation of women to the paid labour market. However the ratio reversed trend in 1992, shortly after a period of recession. Estimates for 1998 indicate a decline related to the counter-cyclical effects in unpaid work: the ratio fell from 112.7 % in 1992 to 110.6% in 1998.
- Women accounted for 62.6% of the total estimated value of unpaid work in 1998, versus 64.9% in 1992. Clothing care is undertaken almost exclusively by women (88.6%) and repair and maintenance largely by men (67.7%). Women contributed to almost the three-quarter of meal preparation (71.6%) and cleaning (71%) and for more than the two thirds of the help and care to children and adults within the household (67.9%). Women also contributed 53.6% to the value of volunteer and community work in 1998, with men contributing the remaining 46.4%.
- However, the division of these tasks between men and women appears to be changing: there is a gradual movement away from traditional roles or tasks in 1998 compared to 1992. Men are spending more time on traditional female tasks like meal preparation, cleaning, laundry and clothing care and help and care of household members). Women are spending more hours on repair and maintenance, transportation.
- The most significant activities for women were meal preparation (26%), cleaning (17.3%) and help and care (12.3%). For men, the most significant activities were repair and maintenance (18.7 %) meal preparation same as management and shopping (17.2%) followed by cleaning and travel (12%). Volunteer work represented 7.4% of the VUW of men and 5% of the value of women in 1998.

1. Value of Unpaid Work

Time Use Survey results for 1998 show that Canadians aged 15 and over spent 30.4 billion hours on unpaid work, both within their own households and for other households and non-profit organizations. Applying a housekeeper wage rate to these hours yields an estimated total value of unpaid work of \$297.3 billion.

The \$297.3 billion estimate, as Table 1 shows, was equivalent to 33% of GDP in 1998.

Table 1: Value of Unpaid Work in Canada

	VALUE OF UNPAID WORK (BILLIONS OF DOLLARS)	GROSS DOMESTIC PRODUCT (BILLIONS OF DOLLARS)	PERCENTAGE OF GROSS DOMESTIC PRODUCT
1998	297.3	901.8	33.0
1992	251.3	698.5	36.0

2. Unpaid work outside the household

The unpaid work of households benefits not only persons within the household but also the community and persons living in other households. Table 2 shows that 94 % of the value of unpaid work was for the benefit of the household itself, while the remaining 6 % was for the benefit of other households and the community.

Table 2: Value of unpaid work inside and outside the household, 1998

	VALUE OF UNPAID WORK (BILLIONS OF DOLLARS)	PERCENTAGE OF TOTAL
UNPAID WORK INSIDE THE HOUSEHOLD	279.7	94.0
VOLUNTEER AND COMMUNITY WORK	17.6	6.0
TOTAL	297.3	100.0

The category of formal unpaid work outside the household represents unpaid work for non-profit institutions. It is interesting to note that Canadians devote 311 million hours in 1998 to formal unpaid work outside the household and that this work is valued at \$4 billion. With 1 billion of hours in 1998, informal unpaid work outside the household, which represents unpaid work for the benefit of other households, was valued \$ 10 billion. The remaining of the value of volunteer and community work is attributable to transport performed for other households and non-profit institutions.

3. Principal functions of household production

All household activities can be split into two mutually exclusive categories, productive and non-productive, based on the 'third party criterion'. This criterion states that an activity is productive if it can be delegated to a third party. Hence, preparing a meal is productive, while eating it is not. Productive activities can be further split into market work and unpaid work.

Table 3: Average weekly hours per person by type of activity

	MALES		FEMALES		TOTAL	
	1992	1998	1992	1998	1992	1998
UNPAID WORK	17.2	18.2	30.6	29.7	24.0	24.1
PAID WORK	26.9	26.9	16.0	16.7	21.3	21.7
LEISURE	39.9	41.3	36.3	37.9	38.1	39.6

Table 3 shows how the average person aged 15 years and over spends the waking hours available per week. The 30.4 billion hours spent on unpaid work activities in 1998 equate to an average of 24 hours per person each week. In comparison, an average of 21 hours per week is spent on market work. In other words, people spend more time, on average, in unpaid work than they do in market work.

Using Time Use Survey data, the unpaid work category can be broken down further into detailed activities. These activities have been grouped into the types of household work, which largely coincide with basic human needs, (food, clothing and care). The two household categories that contributed most to total value of unpaid work were meal preparation, which accounted for 22.7%, and cleaning, which contributed 15.3%. Care of children and adults formed the fourth largest function, accounting for 11.3 % of total unpaid work after management and shopping (14.9%).

4. Gender comparison

Across all productive time activities, females and males had very similar time commitments - on average females worked for 46.4 hours per person per week and males 45.2 hours. However, the split between paid (market) and unpaid work activities was noticeably different. Females are responsible for the majority of unpaid work, recording 29.7 hours per person per week, compared with 18.3 hours for males. As a result, in 1998, females accounted for 62.6 % of the total value of unpaid work in Canada. Table 5 compares valuation estimates for females and males.

Table 4: Value of unpaid work, Gender comparison, 1998

	VALUE OF UNPAID WORK (BILLIONS OF DOLLARS)	PERCENTAGE OF TOTAL
FEMALE	186.1	62.6
MALE	111.2	37.4
TOTAL	297.3	100.0

Looked at from a different perspective, only 37% (16.7 hours per person per week) of females' productive time occurs in the market and is therefore captured in conventional economic statistics. The remaining two thirds (29.7 hours per person per week) is unpaid and remains 'hidden'. For males, the opposite situation applies: 64% of their productive time is in the market and one-third is unpaid.

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