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**Personal Consumption Rates for Canada:
Update of 2000 PCRs Using 2007-08
Surveys of Household Spending Data**

Cara L. Brown*

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Abstract

This article seeks to update the Canadian personal consumption rates ("PCRs") that were derived and published in 2004 from Statistics Canada's 2000 *Survey of Household Spending* (SHS) by family size and family income level, variables that have long been understood as influencing the decedent's personal consumption in fatality cases. In this article, data from the *Survey of Household Spending* are used, but combined from Statistics Canada's 2007 and 2008 years, which enlarged the sample size of observations by almost 50% compared to the 2000 data. The PCRs from the 2007-08 samples confirm the 2000 PCRs. The 2007-08 PCRs are summarized in Appendix A; graphs depicting expenditure as a percentage of Canadian household before-tax income are shown in Appendix B for various expenditure categories; and regression results from the 2007 and 2008 SHS datasets are summarized in Appendix C.

I. Introduction

In 2004, personal consumption rates (PCRs) based on Statistics Canada's *Survey of Household Spending* ("SHS") 2000 data were published for Canada for the first time in this journal. This article seeks to update the Canadian 2000 PCRs, but using the combined 2007 and 2008 *Surveys of Household Spending* from Statistics Canada.

Personal consumption rates represent the portion of family income consumed by the decedent that is no longer needed with his or her death. The complement of personal consumption rates is dependency rates.[1] The "dependency" is the proportion of family income needed by the surviving family members to maintain their standard of living once the decedent's personal consumption is subtracted. Since we are describing the portion of the family income that the decedent consumed but is no longer needed, and that the surviving family members require the same standard of living they enjoyed before

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[1]For instance, if the PCR is 10%, this implies that the family's dependency rate is 90%. The PCR + dependency rate = 100%, where 100% represents the family's total income.

the decedent's passing[2] (a legal concept),[3] we know that this portion of family income is *variable*. It represents money the decedent consumed while he/she was alive and that the family no longer requires to maintain their standard of living: so it can only be for *variable* expenses that fluctuated directly with the decedent's presence and are no longer needed in his/her absence.

II. Canadian Data That Corroborate the Finding That Spending Proportions Decrease as Income Increases

In Appendix B to this article, we show graphs that depict various expenditure categories as a percentage of before-tax income: food, shelter, and transportation; clothing, health and recreation; personal care, education and tobacco/alcohol; and total expenditure depicted alongside "savings."[4] These graphs are based on combined data from the 2007-08 SHS, Canada's annual expenditure surveys. (2008 is the most recent survey as of the writing of this article.) They show, with one exception (other than for savings), that most expenditures fall—as a percentage—as income rises. Nevertheless, as common sense would suggest, the absolute dollar amounts spent by families increases as household income level increases; but as a percentage of income—which is how the PCR and dependency ratios are applied—these expenditures decrease as household income level increases.

The only variable that does not strictly follow this pattern is recreation. From income levels of $10,000-$14,999 to $30,000-$34,999, it declines as a percentage of before-tax income. After $35,000, it rebounds slightly and fluctuates by 0.5%, above and below 6.0% of before-tax income. This is not unexpected, since the overall "recreation" category reflects some of the luxury purchases made by higher-income households.[5]

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[2]This is a key condition when attempting to establish PCRs in fatality cases, because without it the PCR could be computed differently. For example, if we wanted to know how much the decedent consumed of all expenses, regardless of maintaining the family's standard of living, we could attribute shares of the fixed and durable expenses to the decedent, depending on his/her use of them. This would be akin to a "*Duncan*-type" estate calculation, where the Court of Appeal of Alberta defined (in this author's opinion) the estate's available surplus (i.e., the award to be calculated) to possibly exist within *each* expenditure category, rather than only the variable expenses associated with the presence of the decedent while alive. In other words, a "*Duncan*-type" estate calculation *does* attribute some share of the shelter expenditure category to the decedent (assuming he/she lived above the low-income threshold) because accounting for "necessary" or "basic" expenses does not require a larger abode in an expensive neighbourhood——it merely requires, say, a 1-bedroom apartment. The "*Duncan*-type" estate calculation would deem shelter expenses over and above say, a 1-bedroom apartment, to be part of the available surplus, and thus part of the award. In essence, this involved attributing part of a fixed expense (shelter) to the decedent, something that is *not* done in fatality cases, where the family's standard of living must be maintained at its pre-incident level. (For construction of the "lost years" deduction to determine available surplus in *Duncan* cases, see Brown, 1999.)

[3]As per *Keizer v. Hanna and Buch* (1978).

[4]"Savings" from the *Survey of Household Spending* data is variable 0305 (retirement and pension fund payments), which is the sum of three variables: 0306 (CPP/QPP payments); 0307 (government pension payments); and 0308 (other pension payments). These variable names are shown in the PUMF *SHS Record Layouts*.

[5]For instance, the overall "recreation" category consists of purchases and payments to operate toys, computers, photographic goods, bicycles, boats, ATVs, RVs, televisions and DVD machines, audio

As noted above, the only variable (other than personal taxes) that defies this pattern is the savings variable, and we would expect this result, since contributions to savings are one of the big differences between low-income and high-income households (another being the purchase of luxury goods, rather than additional expenditures on basic necessities, like food, shelter and clothing).[6] We see the opposite pattern for savings as for other expenditures: *savings rises as income rises.* The difficulty with the savings concept is how it is defined and how the data are collected by Statistics Canada in the SHS. The SHS surveys do not entirely capture a household's savings; for instance, the variable defined as "owned vacation home" (variable G026)[7] is *not* counted in the SHS definition of "savings" but rather under the main variable, shelter (G001). Additionally, SHS tracks two other variables that could be construed as "savings": "money flows" ("MONFLOWS")[8] and "Registered retirement savings plan—contributions less withdrawals" (RRSPCHNG). For the reasons discussed in Brown (2004) these variables are not reliable indicators of "savings" for Canadian households.[9] A discussion of the treatment of "savings" can be found in section VI below.

The graph depicting savings as a percentage of before-tax income also shows total expenditure for households by income level. As is customary, we

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[6]equipment; purchases of entertainment fees (admissions to movies, sports events, live performances); sports equipment; and package trips. Analysis of the PUMF data from the 2007 & 2008 *Surveys of Household Spending* found that while the average expenditure (excluding households who did not purchase the items) on "recreation equipment and services" (variable M102) was $1443, the maximum was as high as $53,500. Similarly, while the average expenditure on "sports equipment" (variable M103) was $529, the maximum was as high as $25,017. More surprisingly, the average purchases for "recreational vehicles" was only $3549, the minimum was −$29,000 and the maximum was $490,000. (We assume the minimum value of −$29,000 could be sale of RVs traded in.)

[6]This is precisely why Statistics Canada uses these three categories to construct its low-income cutoffs: it defines low-income households as ones in which 63% of after-tax household income is spent on food, shelter and clothing.

[7]Calculations showing the average of expenditures (excluding households who did not purchase one) on "owned vacation homes" (variable G026) was $4815 per annum, with a maximum of $855,550.

[8]This consists of net changes during the survey year in bank balances; money on hand; money owed to the household; money owed by the household; purchase and sale of stocks and bonds, personal property, and real estate; expenditures on home additions, renovations and new installations; and contributions to and withdrawal from registered retirement savings plans (RRSPs).

[9]Money flows ("MONFLOWS"), in theory, is supposed to be the difference in the SHS between household income and total expenditures, but there are often discrepancies with this variable, and Statistics Canada does not make any adjustments unless the discrepancy is more than 10%. Analysis of this variable shows that the mean for all household sizes and income levels was $6139; but the standard deviation was $40,910. The "minimum" value was −$774,853 and the "maximum" value was $1,996,030. Given the definition of this variable, and these descriptive statistics, money flows cannot provide us with a reliable indicator of "savings." The "net" difference between RRSP contributions and withdrawals (RRSPCHNG) shows a similar problem as the money flows: the mean for all household sizes and income levels was $1930; but the standard deviation was $6794. The "minimum" value was −$80,000 and the "maximum" value was $170,000. Since maximum RRSP contributions cannot have exceeded $19,000 in 2007 and $20,000 in 2008, the maximum value must be reflecting carry forward amounts (i.e., allowable contributions in 2007 and 2008 due to previous year's contributions not having been made). Both of these variables are attempting to measure "stocks" and "flows" all in the same year, so do not provide reliable measures of "savings" in a given year.

see that low-income households (i.e., from $5,000 to $25,000 in before-tax income per year) spend more than they take in (compare the "average family consumption"[10] to the "average before-tax income" column in Tables A-1 and A-2 from $5,000 to $9,999 up to $20,000 to $24,999). This is why the line showing "total expenditure" in Figure B4 lies above the 100% point on the Y-axis until household income reaches $65,000 per annum. This is not unexpected, given that Statistics Canada published before-tax low-income cut-offs ("LICOs") for 4-person households in 2007 that ranged from $27,714 (rural areas) to $40,259 (cities with population of 500,000 and over).[11] In other words, the LICOs show that 4-person households need as much as $28,000 to $40,000 (depending on city size) to live at the poverty threshold. As a result, we observe households associated with before-tax income from $5,000 to $24,999 spend more than they earn, if only to live at the poverty threshold.

The line showing total expenditure in the last graph corresponds to the line showing pension savings. As household income rises, income exceeds expenditures, resulting in the accumulation of savings.

III. Data

In this article, we produce PCRs from SHS data combined from the 2007 and 2008 *Surveys of Household Spending* ("SHS").[12] The only main difference in the collection of data between the 2000 and 2007 and 2008 surveys was the elimination of the distinction between "part-year" and "full-year" members and households.[13] In the 2000 SHS, we excluded "part-year" households but in the 2007 and 2008 surveys this distinction was not present. Nevertheless, this distinction has little to no impact on the derivation of the PCRs. Like the SHS dataset in 2000, households with nil earnings and households with multiple families are omitted in the 2007-08 SHS databases. Additionally, total household income includes earnings from self-employment (but not losses from this employment arrangement),[14] although only 12-16% of the workforce in Canada is self-employed.[15]

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[10]Average family consumption" (TOTCUCON) is defined as total expenses *excluding* personal taxes, personal insurance payments, and gifts and contributions. "Total expenditure" (TOTEX-PEN) includes consumption *plus* personal taxes, personal insurance and pension contributions, and gifts of money and contributions.

[11]See Statistics Canada. 2009. Table 3, p. 25. The before-tax LICOs for 2008 for 4-person households was $28,361 (rural areas) to $41,198 (cities with 500,000 or more people).

[12]Combining expenditures in these two years does not change the results. Inflation in Canada was only 2.19% from 2007 to 2008 (Canada all-items index, rolling-average method). Rerunning the regressions by converting the 2007 expenditures to 2008 dollars or the 2008 expenditures to 2007 dollars did not change any of the coefficients.

[13]See Statistics Canada, Income Statistics Division, July 2009, p. 6.

[14]The income variable from the SHS is not detailed enough for us to know how much of the total household income before taxes ("HHINCTOT") and household income from earnings ("HHINCEAR") consists of income from self-employment. (Statistics Canada, 2008, p. 12.)

[15]The 12% estimate has been computed from "class of worker" statistics compiled from the 2001 and 2006 Censuses, which are based on a 20% sample of the population. The 16% estimate was published in LaRochelle-Cote, March 2010, p. 6. This article used data from Statistics Canada's *Labour Force Survey* ("LFS"), which samples approximately 54,000 households per month.

We combined the 2007 and 2008 SHS samples to make the sample size larger and more comparable to the 2000 SHS,[16] used in Brown (2004). Table 1 below summarizes the initial eligible households randomly selected by Statistics Canada for inclusion in the two samples, and the final usable responses,[17] along with the culled data records we were able to use in our PCR analysis.[18]

Table 1
Households Surveyed, Response Rates and Final Sample Sizes
2007 & 2008 SHS, Canada[19]

Survey year	Eligible households (Canada)	Response rate[20]	Usable sample on PUMF[21]	Final sample size for PCRs
2007	21,407	65.1%	13,940	8,658
2008	15,445	63.4%	9,787	6,088
Combined surveys	**36,852**		**23,727**	**14,746**

The final 2007/2008 SHS sample of 14,746 for deriving the PCRs is approximately 50% larger than the 2000 SHS sample (9,713), but both are large enough to produce reasonable results; and the samples were randomly drawn by Statistics Canada, so the results are statistically representative of the Canadian population.

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[16]The 2000 SHS sample consisted of 20,989 eligible households, with a response rate of 70.2%, yielding 14,731 usable records. From this sample, one-person households (which numbered 3695) were excluded, as were other households (e.g., part-year households; households with two or more economic families, households inclusive of relatives or unrelated persons; households whose size December 31, 2000 differed from household size during the reference year; and households where household income after taxes and deductions was zero or negative). This resulted in a sample size of 9,713 records from the 2000 SHS, which were used to derive the PCRs. See C.L. Brown (2004), pp. 148, 151.

[17]It is customary for all surveys to encounter unusable responses, either due to an inability make contact; refusal to respond; or surveys that are completed but rejected at the editing stage.

[18]In any analysis of PUMF data, there are always records that are excluded either because they do not meet the criteria for inclusion (i.e., we exclude households with less than two members, or households with more than one economic family in the household) or there is missing data for the specific variables we require (e.g., income for the "HHINCTOTAL" variable, field 62).

[19]See Statistics Canada, July 2009. Table 1, pp. 3, 5-7, 12; and May 2010, Table 1, pp. 6-7, 12. The main difference between the surveys compiled in these years, aside from the sample sizes, is that in 2008 the territories (Yukon, Northwest Territories, and Nunavut) were not sampled as they are included in every odd-numbered year. The sample size in 2008 was "reduced for budgetary reasons, to free up resources to develop the new Survey of Household Spending Redesign which will eventually replace the existing survey design." (Statistics Canada, Income Statistics Division, May 2010, p. 7) Since the current plan is to use the "new design survey" in 2010, combining the sample sizes for 2007 and 2008 is an apt comparison with the sample from the 2000 SHS.

[20]The response rates are for Canada as a whole. The response rates vary from roughly 56% (Ontario, 2007) or 57% (Alberta, 2008) to 70-71% (Newfoundland in both years) across the provinces (see Table 1 in both User Guides, p. 12).

[21]PUMF is acronym for Public-use Microdata file.

Custom tabulations[22] obtained from Statistics Canada from the *Surveys of Household Spending* simply report the amount of dollar expenditures for 16 main expense categories. In contrast, the *Public-Use Microdata Files* ("PUMFs") reveal records for 374 detailed expenditure categories from the actual survey. From this, we are able to obtain much more detailed information about the spending patterns of Canadian families than can be analyzed from only 16 main expense categories.[23] Regression analysis cannot be done with custom tabulations. It needs the raw responses, not the average expenditure data summarized in a spreadsheet (cross-tabulation).

The usual method once the PUMFs are obtained from Statistics Canada is to compare household expenditures between households of different sizes. Economists then use regression analysis to empirically determine what the change in spending is when family size and income level varies. In this way, economists are able to state how expenditures change when family size remains the same, but its standard of living (i.e., income level) changes. This was the method used by the majority of economic researchers who created the schedules underlying the child support guidelines,[24] because the central issue with the child support guidelines was how to accurately reflect the actual apportionment of family expenditure that pertained to one member of the household (the child) when the family was intact, versus the change in expenditure when the household is divided into two homes—for each income level.[25]

Below, we reproduce the specific assumptions made to derive the PCRs, which was previously printed in the 2004 article published in this *Journal* that had used the 2000 SHS data:[26]

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[22]The term "custom tabulations" refers to summary data that are cross-tabulated with the 16 main expense categories (food F001, shelter G001, household operation H001, household furnishings and equipment I001, clothing J001, transportation (private and public) K001, health care L101, personal care L201, recreation M101, reading materials M201, education M301, tobacco & alcohol N101, games of chance N201, miscellaneous O101, personal insurance and pension fund payments O301, gifts and charitable contributions O401). Some economists call variable O301 "security," which was its label in the FAMEX prior to 1997; the *Survey of Household Spending,* starting in 1997, renamed it "Personal insurance and pension fund payments" (field positions 237/239). In contrast, PUMF data are a set of anonymized records from the SHS surveys, organized according to a pre-arranged structure. Human eyes cannot read the data in a micro data file; they need to be read through specialized statistical software, like SAS or SPSS or STATA that are used to extract and process the data to provide recognizable results.

[23]Our use of the PUMF datasets from the 2007 and 2008 *Surveys of Household Spending* accords with Krueger's (2007) use of the 700 micro-expenditure items in the *Consumer Expenditure Survey* (CEX) data, rather than the summary expenditures.

[24]The leading researcher in this area was initially Espenshade (1984) in the US. The federal Department of Justice ultimately commissioned models of estimating child rearing expenditures from three professors in Canada, who followed this methodology but varied some of the smaller details. This research is publicly available from the federal Department of Justice. (See, for instance, Report of the Federal/Provincial/Territorial Family Law Committee, May 1992, Stripinis, Finnie and Giliberti, June 1993, and the Federal/Provincial/Territorial Family Law Committee Report, January 1995.) The one exception to Espenshade's model was the "budget shares" model used by Douthitt and Fedyk (1990) but this method was not relied upon by the federal Department of Justice when commissioning research for the child support guidelines.

[25]The reader will recall that the child support guidelines vary by two factors: family size and income level.

[26]See, for instance, C.L. Brown (2004, pp. 151-154).

1. The following household expenditures are excluded from the decedent's personal consumption: shelter (except for water, fuel and electricity), purchase of telephones and equipment, household furnishing and equipment, purchase of automobiles and trucks,[27] purchase of automotive accessories, rented and leased automobiles and trucks,[28] recreation equipment and associated services, recreation vehicles and associated services, and home entertainment and equipment services,[29] which we assume to be expenditures on durable goods.

2. For each household, adult food consumption is given a weight of 1 while children food consumption is given a weight equal to 0.5.[30] "Food" expenditures are then divided by the number of persons in the household with the resulting amount treated as personal consumption for the decedent.

3. Clothing expenditures are divided by the number of persons over the age of 4 in the household. The resulting figure is assumed to be personal consumption for the decedent. Excluded from the aforementioned "clothing" expenditures are "clothing gifts to non-household members (women)," "clothing gifts to non-household members (men)" and "children's wear (under 4 years)," which are assumed to be indivisible or fixed expenditures and are not included in the decedent's personal consumption.[31]

4. Personal care expenditures have been treated in much the same way as food in terms of the weight given to children versus households. We have assigned adult personal care consumption a weight of 1.0 while children's personal care consumption is given a weight of 0.3.[32]

5. Household operation and "shelter" expenditures are assumed to be indivisible and are excluded from the decedent's person consumption except for "household cleaning supplies," "paper, plastic and foil household supplies" and "water fuel and electricity." Half of these expenditures are assumed to be indivisible while the remaining half is divided by the number of persons in the household with the resulting figure assumed to be personal consumption for the decedent.

6. Under Transportation expenditures, for households with only one (or no) vehicles, "purchase of automobiles and trucks," "purchase of automotive accessories" and "rented and leased automobiles and trucks" are

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[27]This assumption is retained in the estimates for Table A-1 but relaxed for Table A-2. See discussion of Transportation expenditures.

[28]This assumption is retained in the estimates for Table A-1 but relaxed for Table A-2. See discussion of Transportation expenditures.

[29]See Statistics Canada, Income Statistics Division, May 2002, fields 97, 117, 128, 151, 152, 153, 185, 190, 198 pp. 9-11).

[30]See U.S. Department of Agriculture, various issues. We have used the SHS category children "4 years and under;" the only other one they include are children 5 to 17 years old, and children over the age of 10 start to consume as much food as adults.

[31]Note the attribution of variable clothing expenses to the decedent includes an equal adult share of "clothing material and notions," "services," and "laundry and dry cleaning."

[32]See Social Planning Council of Metropolitan Toronto (November 1987). We have used the SHS category children "4 years and under." Note we do not use the dollar figures in the Toronto study, only the relativity of costs between adults and children in this expenditure category.

assumed to be fixed and are excluded from the decedent's personal consumption (see #1 above). However, for households with more than one vehicle, the expenditures represented by automobile purchases (variable K003) and leased/rented vehicles (variable K008) are included as part of the decedent's variable expenses, pro-rated by the number of vehicles owned (variable "nmvehonp") and leased (variable "vehleasp") in the particular household and pro-rated between adult household members. Any other transportation costs are assumed to be indivisible amongst household members and are excluded from the decedent's personal consumption, except "public transportation" expenditures, variable K031 (less moving costs, K038) are assumed to be variable. This differs from the method used in the derivation of the 2004 PCRs, where we allocated expenditures for any additional vehicles (after the first vehicle), divided by the number of remaining adults in the household, to the decedent—except for purchases or leasing costs for the second or additional vehicles.[33] In Table A-2, the PCRs differ from the "base" ones in Table A-1 because the expenditures on "automobile and truck purchases" (K003) and "rented and leased vehicles" (K008) for additional vehicles are attributed to the decedent based on the number of adults in the household, whereas these expenditures are excluded in Table A-1, which we would apply to families with none or one vehicle.

7. All health care, reading materials and other printed matter and education expenditures are divided by the number of persons in the household. The resulting figure is assumed to be personal consumption for the decedent.

8. Recreation expenses are divided by the number of persons in the household and the resulting amount is assumed to be personal consumption for the decedent. Excluded from the decedent's personal consumption are expenditures on recreation equipment and associated services, recreation vehicles and associated services, home entertainment equipment and services (see #1 above) and rental of videotapes and video discs and rental of home entertainment equipment and other services, which are assumed to be indivisible amongst household members.

9. Expenditures on tobacco products and alcoholic beverages and games of chance[34] are divided by the number of adults in the household. The resulting figure is assumed to be personal consumption for an adult decedent.

10. Miscellaneous expenditures[35] are assumed to be indivisible and are not included in the decedent's personal consumption except for dues to un-

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[33]See Brown (2004): "Under Transportation expenditures,… for households with more than one vehicle, expenditures for the first vehicle are assumed to be fixed and required by the family, while expenditures for any additional vehicles *(less purchases or leasing costs for second or additional vehicles)* are divided by the number of remaining adults in the household with the resulting figure treated as personal consumption for the decedent." (emphasis added, p. 152-153)

[34]This is defined as the "sum of expenditures on all types of games of chance minus the sum of winnings from all types of games of chance." (Statistics Canada, 2008, p. 15)

[35]Includes expenses on other property (but not principal accommodation or vacation home), legal services, financial services, dues to unions and professional associations, contributions and dues

ions and professional services. These expenditures are divided by the number of adults in the household with the resulting figure treated as personal consumption for the decedent.

11. Gifts of money and contribution are assumed to be indivisible amongst family members and are not included in the decedent's personal consumption.

12. Personal insurance payments and pension contributions[36] expenditures are allocated equally amongst the adults in the household, except for employment insurance premiums and union dues, which are subtracted from income. Statistics Canada (2008) notes, "[F]or certain uses of data, some of these items might be regarded as savings, although the relationship between the expenditure and any increase in savings may not be easily determined." (p. 16)

In Tables A-1 and A-2 in Appendix A, we summarize the before-tax PCRs from the 2007-08 SHS datasets using the assumptions from #1 through to #12 above. The PCRs in Table A-1 have been derived using the same assumptions (#1 to #12) as set out in Brown (2004) and reproduced above. The PCRs in Table A-2 relax just one assumption with regard to transportation: this second set of PCRs is based on the notion that *if* the household had *more than one* vehicle, the expenditures represented by automobile purchases (variable K003) and leased/rented vehicles (variable K008) are included as part of the decedent's variable expenses, pro-rated by the number of vehicles in the particular household and pro-rated between adult household members. The reader will see that relaxing this assumption results in PCRs that are slightly higher once household before-tax income rises above $25,000. The PCRs in Table A-1 can be used if it is *known* that the family had one or no vehicles. The PCRs in Table A-2

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for social clubs, forfeits of deposits, fines, money lost, and purchase of tools and equipment for work. (Statistics Canada, 2008, p. 15**)**

[36]Field 237 consists of life insurance premiums, annuity contracts, and transfer to RRIFs; employment insurance premiums; retirement and pension fund payments (these comprise 40-60% of field 237, depending on household size). Retirement and pension fund payments include Canada and Quebec pension plan payments (similar to US social security); other government pension fund payments; and other retirement or pension fund payments (excluding RRSPs). Field 237 was called "security" in the 1996 Family Expenditures Survey ('FAMEX') and in years prior to 1996. The PCRs derived in Table A-2 are more similar to the ones derived by Patton et al., and Martin et al., who are able to "proportion out that part of the transportation expenditures which would represent a reduction of one vehicle from the average number of vehicles owned" (Patton and Nelson, 1991, p. 239) and thereby estimate the personal consumption costs of purchasing a second vehicle owned and/or exclusively used by the decedent. The relaxation of the transportation purchases to derive the PCRs in Table A-2 arose because we had different statistics from the 2007-08 SHS about transportation expenditures than we had in the 2000 SHS. In the 2000 SHS, more than half (64.36%) of the households owned only one or no vehicles, and this was not made up for by leasing (only 7.84% said they leased a vehicle),[36] and the average value for "purchase of automobiles and trucks" of all households in the sample was $2670. In the 2007-08 SHS, 53.60% of households owned more than one car,[36] such that the average number of vehicles owned, per household, was 1.46; and only 7.8% of households did not have a car. The average expenditure for "purchase of automobiles and trucks" of all households in the sample was $3736, but when the households who had not purchased one in 2007 or 2008 are excluded, this figure rose substantially to $14,834 spent by the purchasers.

would be used if the family had more than two vehicles.[37] This approach is similar to the one used in Krueger (2007), in terms of modifying the personal consumption attribution depending on the number of vehicles in the family.

IV. Before-tax Income vs. After-tax Income as Basis for PCR

We have derived PCRs based on both before-tax income and after-tax income for the Canadian households from the 2007 and 2008 SHS data, but we show only the before-tax PCRs in Appendix A.[38] In Brown (2004), the before-tax estimates were preferred. We confirm this preference with the 2007 and 2008 SHS datasets. The main reason for this is that the before-tax income estimates from the *Survey of Household Spending* are truer estimates of the household's income than are the after-tax estimates. This is because the before-tax household income variable is collected by the *Survey* directly,[39] whereas the after-tax household income variable is a *derived* variable, manipulated from other variables collected in the *Survey*. That is, after-tax household income is derived by subtracting four variables from the before-tax household income variable: union and professional dues, personal taxes, employment insurance premiums, and CPP/QPP premiums.[40] Moreover, it is possible (indeed likely) that the respondents who report after-tax income measures reflect excessive expenditures, if the respondent is able to legitimately deduct more expenses than are actually required to earn professional or business income. Finally, the after-tax income for each spouse in a household will be affected to a substantial degree by each spouse's non-refundable tax credits. To the extent that one spouse transfers income or credits to the other spouse; or one spouse adopts more of the family tax credits, then the after-tax income of each spouse is not a accurate measure of each spouse's income, and neither is the combined after-tax total.

V. Derivation of Personal Consumption Rates

Appendix A summarizes the results of the accumulated personal consumption expenditures for one adult as a percentage of household income (before taxes) for various household sizes and income brackets, based on the microdata from the 2007 and 2008 combined Canadian *Surveys of Household Spending* and the twelve assumptions set out in Brown (2004) and reproduced above in Section III. Regressions in natural logarithm form were estimated using the data for each family size. This replicates the approach taken in Patton and Nelson (1991). In both tables in Appendix C, "X" is the natural logarithm of the

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[37]Alternatively, if it is unknown how many vehicles the family had before the incident, we recommend using the PCRs in Table A-1 for households with income up to $59,999; or using PCRs in Table A-2 for households with income above $60,000. This is based on the data from the 2007-08 SHS, from which we found that less than 50% of households with incomes up to $59,999 had more than one car; more than 50% of households with incomes in excess of $60,000 had two or more cars.

[38]The after-tax PCRs are available upon request.

[39]This variable is represented by "HHINCTOT," field 62.

[40]The derived variable for after-tax income is (HHINCTOT – O109 – 0201 – 0304 – 0306). Variable O109 are union and professional dues; variable O201 are personal taxes; variable O304 are employment insurance premiums; and variable O306 are CPP/QPP payments.

household income and "Y" is the natural logarithm of the percent of household income consumed by one adult estimated using the methodology described above. Appendix C shows the regression results obtained by regressing the percentage of before-tax household income consumed by one adult on the household income, measured in logarithmic form.

The rates in Appendix A below are similar to the PCRs based on before-tax income (Table A-1) in Brown (2004): for one decedent in a 2-person household with before-tax income from $100,000 to $200,000, the PCR ranges from 15.45% to 13.11%; the midpoint of this range is almost identical to the rate shown in Table A-1 for households with before-tax income of $100,000 and over: 13.50%. Similarly, 3-person households show a PCR ranging from 13.32% to 11.51% for this income bracket, and the rate in Brown (2004) was 11.90%, again in the midpoint of this range. It is only when we look at the 4- and 5-person households at the $100,000 to $149,999 category that we see a larger difference: the rates are 11.89% and 10.55% for 4- and 5-person households, whereas in Brown (2004) the rates for these size households with income of $100,000 or more were 10.60% and 9.50%, respectively. (Note that this is due in part to the difference in income brackets; the 2000 SHS data only extended the analysis to households with before-tax income of $100,000 or more, whereas the 2007-08 SHS published results for households with before-tax income above $200,000). Interestingly, however, the rates are still within one or two percentage points of the 2004 published rates. Of course, we would not expect the rates to be identical to the ones derived from the 2000 SHS, as the 2007-08 SHS samples differ from the 2000 SHS sample (i.e., they are different households, as they are randomly selected in all samples); and the 2007-08 SHS combined sample is more than 50% larger than the 2000 SHS sample (see Table 1 above).

Consistency is found in other income ranges. For instance, if we look at the $50,000 to $54,999 bracket, we see that the PCRs from the 2007-08 SHS range from 20.44% for a 2-person household to 12.88% for a 5+-person household. Table A-1 in Brown (2004) showed that the PCRs from the 2000 SHS ranged from 18.10% for a 2-person household to 12.1% for a 5+-person household. These rates differ by only 0.78 percentage points to 2.34 percentage points (5+-person households versus 2-person households, respectively).

Overall, the rates from the 2007-08 SHS data are higher, for almost all income brackets, than the PCRs shown in Table A-1 in Brown (2004). This means that the dependency awards on income, for surviving families, will be lower—assuming all other factors are held equal.

The other main difference in the newer PCRs compared to Table A-1 in Brown (2004) is that we now have data for additional income brackets. Whereas Table A-1 in Brown (2004) ended at the income bracket $100,000 and over, the tables in Appendix A below show PCRs for three additional income brackets: $100,000 to $149,999; $150,000 to $199,999; and $200,000 and over. This is simply a difference related to the sample coordinates of the 2007 and 2008 SHS surveys, versus the 2000 SHS survey. We also have PCRs for families with more than two vehicles (Table A-2). This represents an additional set of PCRs compared to the ones shown in Brown (2004).

VI. Savings

As was discussed in Section IV (Brown, 2004) there are three ways in which the SHS collects data about savings. These include variable O305 (personal insurance payments and pension contributions); money flows ("MONFLOWS"); and registered retirement savings plan—contributions less withdrawals (RRSPCHNG). Other possible descriptions of "savings" could include "owned vacation home" (variable G026, counted in the shelter variable G001)[41] and/or "purchases of recreational vehicles" (RVs—variable M127, counted in the recreation variable M101).[42] Neither of these is included in variable O305 or 0301. Because the majority of shelter items and recreation items are viewed as durable and/or indivisible (i.e., the family needs them whole), we assume the surviving family needs the entirety of these items to maintain their standard of living.[43] This is consistent with the literature, which has empirically determined that the bulk of savings are transformed into intergenerational transfers or spent on durable/indivisible items for the family.[44] As Judge Lutz stated about the role of savings with PCRs in *Fullowka v. Royal Oak Ventures* (2005):

> …Furthermore, with regard to savings, Brown testified that, as income rises, the income that is allocated to savings increases in both dollar amounts and percentage of family income. *The effect of the increase in savings is to increase the net worth of the family; net worth is the value of the family's income that is not consumed but could be liquidated. It might be used for indivisible items such as children's education, purchase of property or bequests,* for example… (p. 315, emphasis added)

The relevant "savings" variable that is considered in our PCR derivation from the SHS data is variable O301, "Personal insurance and pension fund" payments (which includes variable O305). Recall from item #12 (Brown, 2004, p. 154) reproduced here, in Section III, that variable O301 is allocated equally among the adults in the household (excluding EI premiums, variable O304, because these are deducted from the decedent's income to calculate the dependency losses) when deriving the PCR. Since we apply the PCR directly to the household's after-tax and deductions income to calculate the dependency losses, we capture the decedent's consumption of family savings.

For the same reasons given in Brown (2004), we do not apportion the variables ""MONFLOWS""[45] or "RRSPCHNG"[46] as part of the PCR or dependency

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[41]A calculation showing the average of expenditures on "owned vacation homes" (variable G026) was $4,815 per annum, with a maximum of $855,550 (excluding households who did not purchase a vacation home).

[42]Analysis of the PUMF data from the 2007 and 2008 SHS found that the average purchase for "recreational vehicles" was only $3,549, the minimum was −$29,000 and the maximum was $490,000. (We assume the minimum value of −$29,000 could be sale of RVs traded in.) This variable is included as it is similar to "owned vacation home" for households in higher income classes, and could be bequeathed to family members.

[43]See discussion in C. L. Brown (2004, pp. 151-152).

[44]See, for instance, Kotlikoff and Summers (August 1981) and Owens (March 1991).

[45]This variable consists of net changes during the survey year in bank balances; money on hand; money owed to the household; money owed by the household; purchase and sale of stocks and

loss. These variables, as defined by Statistics Canada, attempt to measure both "stocks" and "flows" simultaneously and as such cannot capture a family's savings in a given year. Moreover, "MONFLOWS" includes not only cash balances (money on hand plus money owed to and by the household); but also notional values for (purchase and sale of) stocks and bonds; real estate; and home renovations. Although "MONFLOWS" is supposed to reflect any gap between total household income and total household expenditure discrepancies up to 29% can be captured in the data. For these reasons, "MONFLOWS" is not a reliable indicator of savings.[47] Note the values found for these two variables in the 2007-08 SHS datasets: the average yearly value equaled only $6139 for "MONFLOWS" and only $1930 for RRSPCHNG. The minimum values were −$774,853[48] and −$80,000,[49] respectively; the maximum values were $1,996,030 and $170,000, respectively.

A. PCRs in the Retirement Period

Typically, Canadian forensic economists do not value a dependency loss to a decedent's savings after retirement, because a savings portfolio is so difficult to estimate.[50] Rather, a deduction is presumed for Registered Retirement Savings Plan ("RRSP") contributions (for tax calculations only) while the decedent would have worked, usually corresponding to his/her contribution history, or using statistics about contribution trends[51] if no history is available.[52] Note

[46]bonds, personal property, and real estate; expenditures on home additions, renovations and new installations; and contributions to and withdrawal from registered retirement savings plans (RRSPs).

[46]This variable consists of contributions to RRSP (Registered Retirement Savings Plans) minus withdrawals from RRSPs at the household level. This variable is included in "MONFLOWS".

[47]Statistics Canada reconciles its household data by matching the income and expenditures of the household. If there is a gap, the figure denoted for "MONFLOWS" is added to expenditures (to represent savings) and then these two values combined are compared to income again. If there is still a gap, and it is greater than 30%, the record is considered unusable by Statistics Canada and therefore the record is not used (see Statistics Canada, 2008, p. 8).

[48]The mean values for "MONFLOWS" were negative for all household sizes until before-tax household income reached $55,000; even then, various households with income up to $95,000 reported negative values.

[49]Mean values for RRSPCHNG were negative for all household sizes until before-tax household income reached $45,000.

[50]The amount of retirement savings for any young or middle-age plaintiff is virtually impossible to project, given the other sources of income he/she may have at retirement; the rate of wealth accumulation of the household's RRSPs and other savings; the rate of withdrawal from the savings portfolio; how spouses in the household divide their income for tax purposes; and each pensioner's non-refundable tax credits.

[51]Recent RRSP contribution trends include these findings: in 2005, 6 in 10 families held RRSPs, a proportion that increases with age (68% of 45- to 54-year-olds have RRSPS), income (89% of families with after-tax income of $85,000 and over have RRSPs), education (73% of university-degree holders have RRSPs) and net worth quintile (87% of the top 20% of net worth individuals have RRSPs). (Pyper, 2008) Lower-income individuals are much less likely to contribute to an RRSP: 4-27% of tax filers in the lowest, second, and third income deciles between 1993 and 2001 contributed to RRSPs, compared to 90-95% of tax filers in the ninth and highest income deciles (Giles and Maser, 2005). Average contributions in 2004 to RRSPs varied by gender and age: husbands between the ages 35 to 54 contributed $2,600 versus husbands aged 25 to 34, who contributed $1,600; wives between the ages 35 to 54 contributed $1,200 versus wives aged 25 to 34, who contributed $800. These contribution rates are across *all* income levels in 2004, however. When we analyze husbands

that the decision to adopt an RRSP/RPP contribution rate during the working years is unduly conservative because it does not take into account any appreciation of the decedent's RRSP portfolio or RPP above the rate of return reflected by real interest rates used in civil litigation cases (which are lower for plaintiffs, on average, than the rate of return which can be earned in the markets; mandated real discount rates in Canada range from 2.50% to 3.00%).

Data on RRSP contribution trends show that as people age, they are more likely to contribute to an RRSP, and to contribute more money than when they are young. This is consistent with the permanent income hypothesis, which has observed that people attempt to smooth out their expenditures by saving while working so that their income and expenditures are maintained evenly throughout their lifetimes.[53]

Even though we assume an RRSP/RPP contribution rate during the working years, we apply the decedent's PCR to the dollar contributions made to an RRSP or RPP, so the decedent's consumption of the future savings is accounted for—but this accounting is done during the decedent's working life expectancy,[54] because we do not estimate the family's savings after retirement. The RRSP/RPP contribution rate is factored in strictly for the purpose of the tax

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between ages 35 and 54, we see that those in the top 20% of earnings in 2004 contributed $12,000 to RPPs/RRSPs, ten times higher than those in the bottom 20% of earnings in 2004 (they contributed $1,300 to RPPs/RRSPs). (Morissette and Ostrovsky, 2007) In comparison to RRSP contribution patterns, private or government pension plans only cover 37% of the Canadian working population (Gougeon, 2009), but this coverage increases with age, marital status (for young women and men) and, until 1997, decreased with de-unionization and employment shifts to low-coverage industries. (Morissette and Ostrovsky, 2007)

[52]It is a long-standing method to proxy the value of retirement income (i.e., pensions or RRSP savings) by valuing the contributions while they are made, rather than counting the income paid at retirement. In fact, this is a common method used when valuing fringe benefits, especially since forecasting retirement income is much more complex than valuing contributions while working, which are typically expressed as a percentage of income. It also has a tendency to *understate* the value of the pension or retirement income later in life. For information on the practices adopted by other forensic economists, a NAFE survey found that 19% of forensic economists valued the decedent's consumption during the retirement years by adjusting the fringe benefits contingency in the working years; a further 41% calculated Social Security benefits in the U.S. as a percentage of the earnings during the individual's work life, as published in Brookshire, Luthy and Slesnick (2009).

[53]See, for instance, Crossley and Pendakur (2006).

[54]Some experts argue that this understates the decedent's consumption of the savings eventually consumed from the RRSP/RPP portfolio because the decedent's PCR would be higher during the post-retirement years than during the working years. Consider, however, that because we cannot estimate the portfolio wealth accumulation and the savings at retirement, no one actually knows the level of income the family would have had at retirement had the decedent lived; so it is impossible to be certain that the decedent's PCR would be different in the retirement period than during the working years. This would only be true if the family's retirement income was substantially lower than the working income. This may or may not be true, depending on the wealth accumulation of all savings; the level of government benefits; and the withdrawal rate from savings. Indeed, there is a literature that argues people attempt to "smooth out" the consumption cycle precisely so their income levels remain roughly constant during their lifetimes; and there are also retirement studies that show higher-income individuals delay retirement until the change in their relative income levels is not drastic (i.e., lower-income individuals retire earlier than high-income individuals because the transition to retirement is not as much of a change in economic circumstances). It may well be that the lack of wealth accumulation we assume for the household more than offsets any reduction to the PCR in the retirement years (if there is such a reduction).

calculations; these dollar contributions are not subtracted from the family income when arriving at the household's after-tax and deductions income.

Some researchers argue that special considerations should take place when using the PCR for older households (defined as age 55 or older). Indeed, we know from Chawla's research (2006) that as households age, their income drops;[55] accordingly, so does expenditure.[56] However, Lafrance and LaRochelle-Cote (2011) indicate that the "current cohorts of Canadian retirees typically achieve replacement rates in excess of 70%" (p. 5) and replacement rates are even higher than 70% when owned housing is considered.[57] The expenditure drop reflects primarily the decline in income tax and security contributions (since seniors over age 65 cease contributing to the Canada Pension Plan ("CPP"), the federal government's retirement pension for workers; Old Age Security ("OAS") payments are paid to all Canadians at the age of 65, but are clawed back once income reaches $66,733). The same three components of expenditure (food, shelter and transportation) still dominate the older households' budget, although Lafrance and LaRochelle-Cote's analysis of Canadian households found that retirees devoted a higher proportion of consumption to residences and properties, and a lower proportion on food, clothing and care. Some decreases in expenditure on tobacco and alcohol, recreation, and clothing were noticed;[58] and out-of-pocket expenditures for items related to health increased (prescribed drugs, other medical and health care services, dental services and eye care—ranked by relative share of the health dollar). Nonetheless, changes in expenditure patterns between older households and working households (other than those dictated by lower income levels) were not markedly pronounced. This is echoed in Lafrance and LaRochelle-Cote (2011): "This result is consistent with U.S. studies based on longitudinal data finding that retirement is associated with negligible decreases in consumption in most population groups." (p. 8)

Most forensic economists either ignore the retirement time period, or if they do account for it, only include mandatory government benefits (CPP and OAS) but decline to estimate the family's savings portfolio (for the reasons given above). We find that the dependency calculation in fatality cases automatically takes into account changes in expenditure for older households if their income level is found to decrease compared to income from employment

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[55]Notably, this does not occur immediately; Chawla (2006) shows that households age 55-64 have total mean income of $62,800 in 2003, compared to all households (of all ages) with total mean income of $47,900 (Table 2).

[56]Chawla (2006) does remark, however, "Income drops much more significantly between the 55-to-64 and 65-to-74 groups, largely because of the loss of earnings, whereas expenditure drops more gradually because households take a little longer to adjust their spending." (p. 21)

[57]Because many retirees own houses clear of mortgage debt, expenses are reduced (since there is no shelter component) and the benefit of owned housing can be imputed as a form of income, or, as LaFrance and LaRochelle-Cote (2011) state "as a kind of dividend representative of the utility that homeowners derive from their homes rather than actual expenses." (p. 8) In this way, home ownership increases the replacement rate.

[58]At the same time, Chawla (2006) concedes, "some of the reduced expenditure on food, clothing and recreation over time may be attributed to a drop in prices for these products and services. This has been brought about largely by increased competition in the retail and wholesale markets, the opening of discount outlets, and changes in tariffs and quotas on imports." (p. 30).

in the younger years. Precisely because we have computed PCRs by family income level, we already have captured any change in expenditure patterns that flows from this change by using the PCRs for lower income levels (see Tables A-1 and A-2 in Appendix A).

VII. Conclusions

The tables presented in this paper are intended to fulfill the same role for economists providing forensic assessments for fatalities within Canadian households as those provided by Patton and Nelson et al., (1991) and Ajwa, Martin and Vavoulis (2000). Our findings based on Canadian household data are consistent with the findings in U.S. studies, in that personal consumption rates vary inversely with both family size and income level. The PCRs using the 2007-08 SHS data are also consistent with the PCRs published in Brown (2004) with the 2000 SHS data. A small refinement to the assumption about transportation expenditures allows forensic economists in Canada to tailor the PCR based on the number of vehicles in the household (see Table A-2).

References

Ajwa, Martine T., Gerald D. Martin, and Ted Vavoulis. 2000. "Estimating Personal Consumption With and Without Savings in Wrongful Death Cases." *Journal of Forensic Economics*, 13(1): 1-10.

Brown, C. L. 2011. *Damages: Estimating Pecuniary Loss*. Toronto, ON: Canada Law Book, Thomson Reuters.

_____. 1999. "Duncan v. Baddeley: A Case Comment." *Alberta Law Review*, 37(3): 772-822.

_____. 2004. "Personal Consumption Rates for Canada: Differentiated by Family Size and Income Level Using Survey of Household Spending (SHS) 2000 Data." *Journal of Forensic Economics*, (17)2: 147-165.

Brookshire, M., M. R. Luthy and F. L. Slesnick. 2009. "A 2009 Survey of Forensic Economists: Their Methods, Estimates, and Perspectives." *Journal of Forensic Economics* 21(1): 5-34.

Chawla, R. K. Spring 2006. "Shifts in spending patterns of older Canadians." *Perspectives on Labour and Income*. Ottawa, ON: Minister of Industry, Statistics Canada catalogue no. 75-001-XPE: 19-30.

Cooper-Stephenson, K. 1996. *Personal Injury Damages in Canada* 2nd edition. Toronto: Carswell.

Crossley, T. F. and K. Pendakur. 2006. "Dimensions of Inequality in Canada." In *Consumption Inequality in Canada*, ed. D. Green and J. Kesselman. Vancouver, BC: UBC Press.

Douthitt, R. A. and J. Fedyk. 1990. *The Cost of Raising Children in Canada*. Toronto, ON: Butterworths.

Federal/Provincial/Territorial Family Law Committee Report. May 1992. *The Financial Implications of Child Support Guidelines Research Report*.

_____. January 1995. *Recommendations on Child Support*. Ottawa, ON: Minister of Public Works and Government Services Canada.

Giles, P. and K. Maser. December 2004. "Using RRSPs before retirement." *Perspectives on Labour and Income*, Ottawa, ON: Minister of Industry, Statistics Canada catalogue no. 75-001-XIE: 14-22.

Gougeon, P. May 2009. "Shifting Pensions." *Perspectives on Labour and Income*, Ottawa, ON: Minister of Industry, Statistics Canada catalogue no. 75-001-XIE: 16-23.

Kotlikoff, L. J. and L. H. Summers. August 1981. "The Role of Intergenerational Transfers in Aggregate Capital Accumulation." *Journal of Political Economy,* 89: 706-732.

Krueger, K. 2007. "Personal consumption by husbands and wives." *Journal of Forensic Economics*, 20(1): 15-30.

Lafrance, A. and S. LaRochelle-Cote. Summer 2011. "Consumption patterns among aging Canadians." *Perspectives on Labour and Income*, Ottawa, ON: Minister of Industry, Statistics Canada catalogue no. 75-001-X.

LaRochelle-Cote, S. March 2010. "Self-employment in the downturn." *Perspectives on Labour and Income*, Ottawa, ON: Minister of Industry, Statistics Canada catalogue no. 75-001-X.

Lierman, W. K., R. T. Patton and D. M. Nelson. 1998. "Patton-Nelson Consumption Tables Updated." *Journal of Forensic Economics* 11(1): 3-7.

Moehrle, T. May 1990. "Expenditure patterns of the elderly: workers and non-workers." *Monthly Labor Review,* 113(5): 34-41.

Morissette, R. and Y. Ostrovsky. November 2007. "Pensions and retirement savings of families." *Perspectives in Labour and Income*, Ottawa, ON: Minister of Industry, Statistics Canada catalogue no. 75-001-XIE: 5-18.

Owens, D. J. Spring 1991. "Tracking down Discretionary Income." *Perspectives on Labour and Income*. Ottawa, ON: Minister of Industry, Statistics Canada, Catalogue 75-001-X.

Patton, R. T. and D. M. Nelson. June 1984. "Estimating Personal Consumption Costs in Wrongful Death and Survival Actions." *Washington State Bar News,* 38(6): 43-51.

_____, and _____. 1991. "Estimating Personal Consumption Costs in Wrongful Death Cases." *Journal of Forensic Economics*, 4(2): 233-240.

Pyper, W. February 2008. "RRSP Investments." *Perspectives in Labour and Income*, Ottawa, ON: Minister of Industry, Statistics Canada catalogue no. 75-001-XIE: 5-11.

Ruble, M. R., R. T. Patton and D. M. Nelson. 2000. "Patton-Nelson Consumption Tables 1997-98 Update." *Journal of Forensic Economics* 13(3): 303-307.

Social Planning Council of Metropolitan Toronto. November 1987. "The Cost of Raising a Child in the Toronto Area in 1986." *Social Infopac,* 6(5): 1-5.

Statistics Canada. November 2011. *The Consumer Price Index October 2011*. Ottawa, ON: Minister of Industry, catalogue no. 62-001-X, 90(10).

_____. July 1999. *Consumer Prices and Price Indexes October-December 1998*. Ottawa, ON: Minister of Industry, catalogue no. 62-010-XIB, 24(4).

_____. 2009. *Low income cut-offs for 2008 and low income measures for 2007*. Ottawa, ON: Minister of Industry, catalogue no. 75F0002M, no. 002.

_____. February 2008. *Spending Patterns in Canada 2006*. Ottawa, ON: Minister of Industry, catalogue no. 62-202-X.

_____, Income Statistics Division. May 2000. *Survey of Household Spending 2000*. User Guide Public Use Microdata file. Ottawa, ON: Minister of Industry, catalogue no. 62M0004XCB.

_____, Income Statistics Division. July 2009. *User Guide for the Public-Use Microdata File Survey of Household Spending 2007*. Ottawa, ON: Minister of Industry, catalogue no. 62M0004XCB.

_____. 2008. *User Guide for the Survey of Household Spending 2007*. Household Expenditure Research Paper Series, Ottawa, ON: Minister of Industry, catalogue no. 62F0026M, no. 1.

_____, Income Statistics Division. May 2010. *User Guide for the Public-Use Microdata File Survey of Household Spending 2008*. Ottawa, ON: Minister of Industry, catalogue no. 62M0004XCB.

Stripinis, D., R. Finnie, and C. Giliberti. June 1993. *The Construction and Implementation of Child Support Guidelines*. Working Document Confidential Draft.

Trout, R. R. and C. B. Foster. 1993. "Estimating a Decedent's Consumption in Wrongful Death Cases." *Journal of Forensic Economics* 6(2): 135-150.

U.S. Department of Agriculture. Various issues. "Cost of Food at Home." *Family Economics Review*.

Case Law

Fullowka v. Royal Oak Ventures (2005). 5 W.W.R. 420 (S.C.), revd 66 C.C.E.L. (3d) 1, 56 C.C.L.T. (3d) 213 (N.W.T.C.A.), affd [2010] 1 S.C.R. 132, 315 D.L.R. (4th) 577

Keizer v. Hanna and Buch (1978), 82 D.L.R. (3d) 449, [1978] S.C.R. 342, p. 352.

Appendix A

Table A-1

Base PCRs, Based on Before-tax Income Level (Canadian 2007-08 dollars)

Before-tax household income (Canadian dollars, 2007-08)	Average before-tax income[1]	Average family consumption[2]	Household size			
			2 adults (2 persons)	2 adults, 1 child (3 persons)	2 adults, 2 children (4 persons)	2 adults, 3 or more children (5+ persons)
$5,000-$9,999	$7,744	$26,386	51.78	39.19	36.82	25.02
$10,000-$14,999	$12,550	$22,740	39.14	30.53	28.34	20.49
$15,000-$19,999	$17,187	$24,044	33.23	26.38	24.32	18.23
$20,000-$24,999	$22,331	$27,555	29.59	23.79	21.82	16.78
$25,000-$29,999	$26,967	$28,554	27.04	21.95	20.06	15.73
$30,000-$34,999	$31,960	$32,378	25.12	20.56	18.72	14.92
$35,000-$39,999	$37,063	$34,571	23.60	19.45	17.66	14.27
$40,000-$44,999	$42,023	$39,202	22.36	18.53	16.80	13.74
$45,000-$49,999	$46,892	$40,073	21.32	17.76	16.07	13.28
$50,000-$54,999	$51,914	$44,208	20.44	17.10	15.44	12.88
$55,000-$59,999	$56,870	$48,575	19.66	16.52	14.89	12.53
$60,000-$64,999	$61,900	$48,623	18.99	16.02	14.41	12.22
$65,000-$69,999	$66,934	$51,573	18.38	15.56	13.98	11.94
$70,000-$74,999	$72,019	$52,902	17.84	15.15	13.60	11.69
$75,000-$79,999	$76,914	$57,337	17.35	14.78	13.25	11.46
$80,000-$84,999	$81,844	$58,691	16.90	14.44	12.93	11.25
$85,000-$89,999	$86,765	$60,859	16.50	14.13	12.64	11.05
$90,000-$94,999	$91,903	$64,199	16.12	13.84	12.37	10.87
$95,000-$99,999	$96,869	$67,535	15.77	13.57	12.12	10.70
$100,000-$149,999	$118,728	$73,862	15.45	13.32	11.89	10.55
$150,000-$199,999	$165,061	$91,649	13.11	11.51	10.20	9.38
>$200,000	$316,381	$130,126	11.68	10.38	9.15	8.63

Notes:

[1]Code name in SHS is HHINCTOT. Defined as "household income before taxes." Includes income from wages and salaries, self-employment, net rentals, interest and dividends, all pensions, WCB and EI benefits, social assistance and income supplements, child tax benefits, GST credits, sales tax and provincial tax credits. Excludes personal income tax refunds.

[2]Code name in SHS is TOTCUCON, "current consumption." Represents total expenses excluding personal taxes, personal insurance payments (O301), and gifts and contributions.

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Table A-2
Base PCRs, Adjusted for Number of Vehicles in the Household, Based on
Before-tax Income Level (Canadian 2007-08 dollars)

Before-tax household income (Canadian dollars, 2007-08)	Average before-tax income [1]	Average family consumption [2]	Household size			
			2 adults (2 persons)	2 adults, 1 child (3 persons)	2 adults, 2 children (4 persons)	2 adults, 3 or more children (5+ persons)
$5,000-$9,999	$7,744	$26,386	50.52	36.48	35.85	22.18
$10,000-$14,999	$12,550	$22,740	39.07	29.58	28.52	19.22
$15,000-$19,999	$17,187	$24,044	33.62	26.17	24.94	17.68
$20,000-$24,999	$22,331	$27,555	30.22	23.99	22.68	16.66
$25,000-$29,999	$26,967	$28,554	27.82	22.43	21.07	15.91
$30,000-$34,999	$31,960	$32,378	26.00	21.22	19.84	15.32
$35,000-$39,999	$37,063	$34,571	24.56	20.26	18.86	14.84
$40,000-$44,999	$42,023	$39,202	23.37	19.46	18.04	14.44
$45,000-$49,999	$46,892	$40,073	22.38	18.78	17.35	14.09
$50,000-$54,999	$51,914	$44,208	21.52	18.19	16.76	13.79
$55,000-$59,999	$56,870	$48,575	20.77	17.67	16.24	13.52
$60,000-$64,999	$61,900	$48,623	20.11	17.21	15.78	13.28
$65,000-$69,999	$66,934	$51,573	19.52	16.80	15.37	13.06
$70,000-$74,999	$72,019	$52,902	19.00	16.43	15.00	12.86
$75,000-$79,999	$76,914	$57,337	18.52	16.09	14.66	12.68
$80,000-$84,999	$81,844	$58,691	18.08	15.78	14.35	12.51
$85,000-$89,999	$86,765	$60,859	17.68	15.49	14.07	12.36
$90,000-$94,999	$91,903	$64,199	17.31	15.23	13.80	12.21
$95,000-$99,999	$96,869	$67,535	16.96	14.98	13.56	12.08
$100,000-$149,999	$118,728	$73,862	16.64	14.75	13.33	11.95
$150,000-$199,999	$165,061	$91,649	14.32	13.05	11.66	10.99
>$200,000	$316,381	$130,126	12.87	11.96	10.60	10.36

Notes:
[1]Code name in SHS is HHINCTOT (defined as "household income before taxes"). It includes income from wages and salaries, self-employment, net rentals, interest and dividends, all pensions, WCB and EI benefits, social assistance and income supplements, child tax benefits, GST credits, sales tax and provincial tax credits. It excludes personal income tax refunds.
[2]Code name in SHS is TOTCUCON, "current consumption." Represents total expenses excluding personal taxes, personal insurance payments (O301), and gifts and contributions.

Appendix B
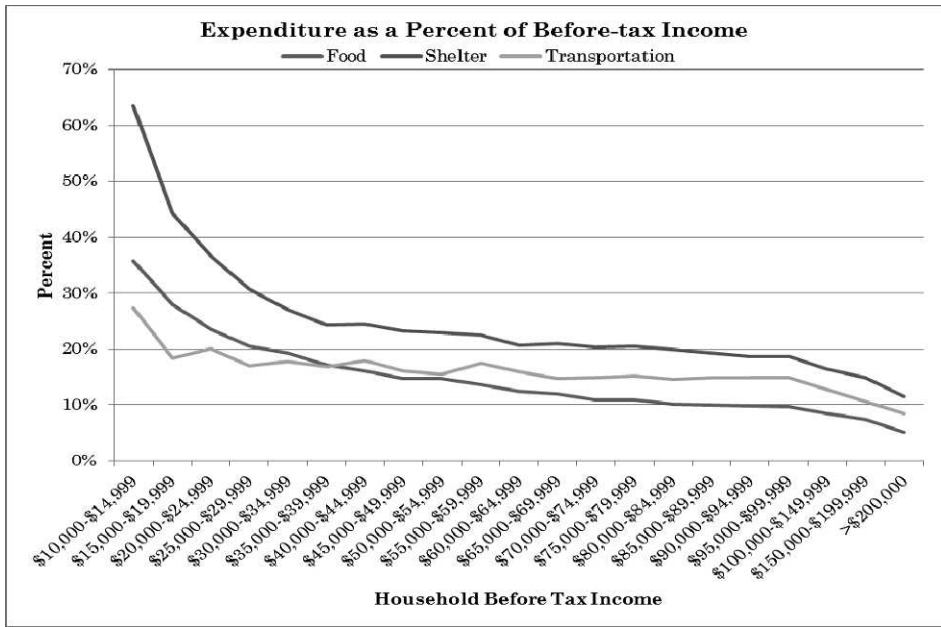(Graphs from Statistics Canada's 2007-08 SHS)

Figure B1. Expenditure as a Percent of Before-tax Income:
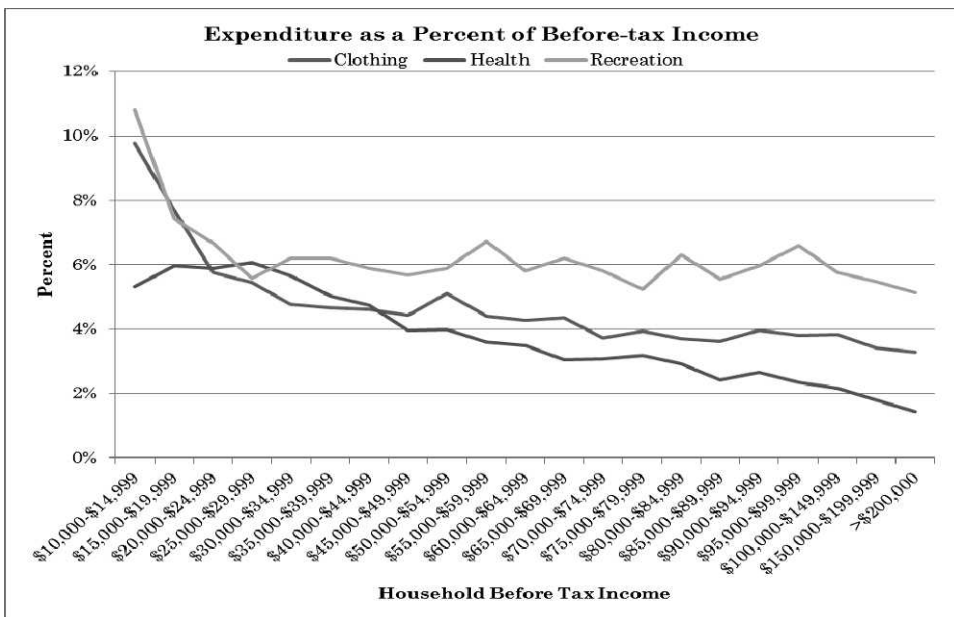Food, Shelter, Transportation

Figure B2. Expenditure as a Percent of Before-tax Income:
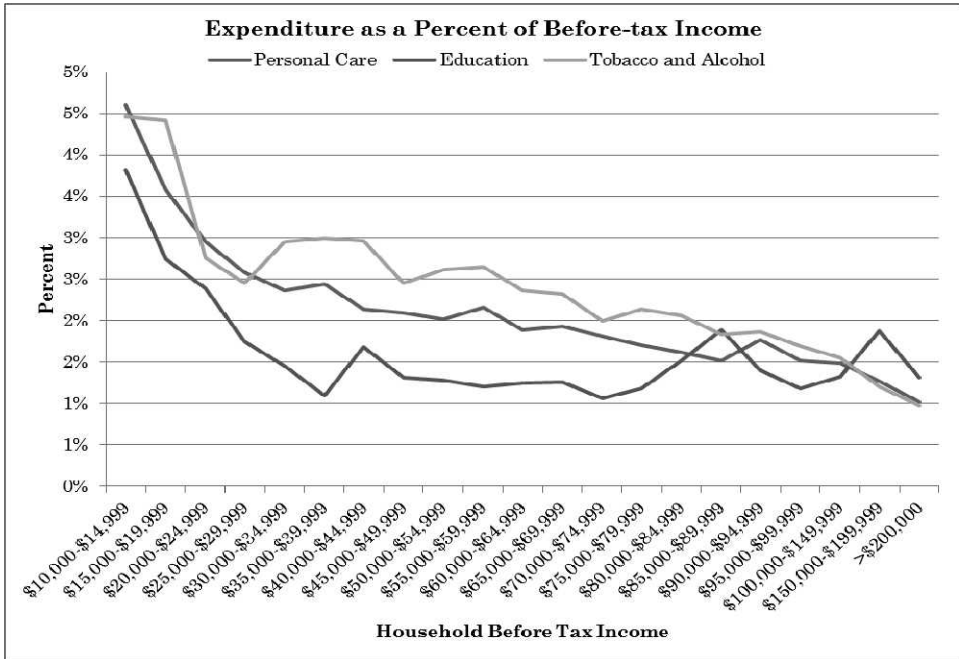Clothing, Health, Recreation

Figure B3. Expenditure as a Percent of Before-tax Income:
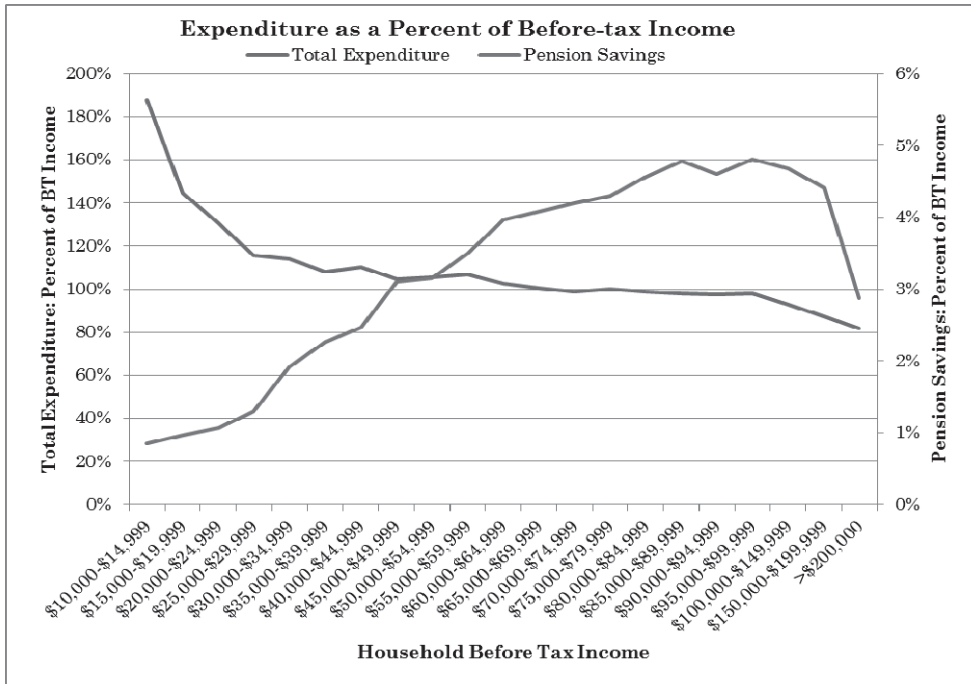Personal Care, Education, Tobacco and Alcohol

Figure B4. Expenditure as a Percent of Before-tax Income:
Total Expenditure, Pension Savings

Appendix C
Regression Results Using Microdata Results

Table C-1
For the Base PCRs, Using 2007-08 SHS Data*

Family Size	Equation	$Y = 7.385 - 0.404X$	
	Equation	$Y = 7.385 - 0.404X$	
	Standard error (coefficients)	0.663	0.006
2 persons	Standard error (regression)	0.3522	
	Adjusted R^2	0.3684	
	Number of observations	7,711	
	Equation	$Y = 6.734 - 0.360X$	
	Standard error (coefficients)	0.110	0.010
3 persons	Standard error (regression)	0.3431	
	Adjusted R^2	0.3184	
	Number of observations	2,883	
	Equation	$Y = 0.681 - 0.377X$	
	Standard error (coefficients)	0.123	0.011
4 persons	Standard error (regression)	0.3436	
	Adjusted R^2	0.3058	
	Number of observations	2,750	
	Equation	$Y = 5.691 - 0.290X$	
	Standard error (coefficients)	0.196	0.017
5 persons	Standard error (regression)	0.3697	
	Adjusted R^2	0.1965	
	Number of observations	1,166	

Table C-2
For the Base PCRs, Adjusted for Number of Vehicles in Household,
Using 2007-08 SHS Data*

Family Size	Equation	$Y = 7.079 - 0.371X$	
	Equation	$Y = 7.079 - 0.371X$	
	Standard error (coefficients)	0.075	0.007
2 persons	Standard error (regression)	0.3972	
	Adjusted R^2	0.2788	
	Number of observations	7,711	
	Equation	$Y = 6.170 - 0.303X$	
	Standard error (coefficients)	0.128	0.011
3 persons	Standard error (regression)	0.3998	
	Adjusted R^2	0.1950	
	Number of observations	2,883	
	Equation	$Y = 6.386 - 0.330X$	
	Standard error (coefficients)	0.152	0.013
4 persons	Standard error (regression)	0.4243	
	Adjusted R^2	0.1809	
	Number of observations	2,750	
	Equation	$Y = 4.873 - 0.208X$	
	Standard error (coefficients)	0.239	0.021
5 persons	Standard error (regression)	0.4512	
	Adjusted R^2	0.0774	
	Number of observations	1,166	

*Y = natural logarithm of the percent of total before-tax income consumed per adult
X = natural logarithm of total before-tax household income