



# Brown's Economic Damages Newsletter

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## FATALITY CASES: PCRs, Valuable Services, Remarriage & Divorce Contingencies, and the Tax Gross-up

By Cara L. Brown, M.A.

This issue is a follow-up to our November 2011 edition entitled "Fatality Cases: Unique aspects related to quantum awards". In this month's issue, we update readers on the economic research underlying personal consumption

Prior issues of **Brown's Economic Damages Newsletter** & published articles related to this month's topic: (to subscribe, send email to [newsletter@browneconomic.com](mailto:newsletter@browneconomic.com))

**March 2018:** "Legal Memorandums for injury/fatality cases; Information to compile for injury/fatality cases for quantum of economic damages; & Online Calculators to assess economic damages" vol. 15, issue #3

**November 2017:** "*Baker Estate v. Poucette* (2016-2017): Appeal Decision sets Principles for "Fairness" in Fatality Cases" vol. 14, issue #9

**August 2014:** "Personal Consumption Rates ("PCRs") in Fatality Cases: 2007-2008 *Surveys of Household Spending Data*" vol. 11, issue #7

**September 2012:** C.L. Brown, "Update of Personal Consumption Rates for Canada Using 2007-08 *Surveys of Household Spending Varying by Family Size and Income Level*", *Journal of Forensic Economics* (XXIII) 2

**July 2012:** "Personal Consumption Rates ("PCRs") in Fatality Cases – published article in *Journal of Forensic Economics* (forthcoming in 2012)" vol. 9, issue #6

**November 2011:** "Fatality Cases: Unique aspects related to quantum awards", vol. 8, issue #9

**April 2011:** "**PCR Rates for Canada** by income level: update 2000 estimates with **2007-08** Survey of Household Spending data – **PART II**", vol. 8, issue #3

**March 2011:** "**PCR Rates for Canada** by income level: update 2000 estimates with **2007-08** Survey of Household Spending data – **PART I**", vol. 8, issue #2

**August 2010:** "RRSPs: Impact on after-tax loss calculations, and in fatality cases", vol. 7, issue #8

**November 2010:** "The Divorce Contingency: negative contingency in fatality cases – update with 2005 data", vol. 7, issue #5

**June 2010:** "Impact of Taxes & Tax gross-ups (on subrogated & WCB claims)", vol. 7, issue #6

**February 2006:** "Fatality Methodologies and PCR rates for Canada by income level – article published in the *Journal of Forensic Economics*", vol. 3, issue #2

**April 2006:** "Divorce rates in fatality cases", vol. 3, issue #4

**February 2004:** "Canadian spending patterns – *Survey of Household Spending*", vol. 1, issue #102

**March 2004:** "Remarriage contingencies in fatal dependency claims", vol. 1, issue #103

**Spring/Summer 2004:** C.L. Brown, "Personal Consumption Rates for Canada: Differentiated by Family Size and Income Level Using Survey of Household Spending (SHS) 2000 Data", *Journal of Forensic Economics* (XVII) 2

**May 2004:** "PCR rates for Canada by income level: original research using the *Survey of Household Spending* (SHS) 2000", vol. 1, issue #105

**December 2004:** "*Fullowka et al v. Royal Oak Ventures et al* (The 'Giant Mine' case)", vol. 1, issue #111

**February 2003:** "Loss of dependency awards – personal consumption rates in Canada. New research has significant impact on dependency calculations", vol. 1, issue #90

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rates (PCRs) for the decedent; negative contingencies (remarriage and divorce); quantifying the decedent's valuable services; factoring in a new partner if the survivor has cohabited or remarried; and particulars related to the tax gross-up, which is mandatory in fatality cases because the Supreme Court of Canada instructed experts many years ago to use the couple's *after-tax* income to calculate dependency losses.<sup>1</sup> This information applies to fatality cases where a spouse or spouse and children are dependents.<sup>2</sup>

## Personal Consumption Rates (PCRs)

Personal consumption rates represent the portion of family income consumed by the decedent that is no longer needed with his or her death. The *inverse* of personal consumption rates is dependency rates.<sup>3</sup> 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. The determination of the PCR is the most important element in a fatality case after developing the after-tax income profiles for the decedent, survivor and possible new or hypothetical partner.

Gillespie and Cotton remarked, "Alberta authority seems clear that, with regard to various approaches...In general, statistical averages will be used in assessing the dependency rate, rather than actual expenditure rates".<sup>4</sup> This is precisely the conclusion reached by Fraser, J. in *Millott Estate v. Reinhard*, [2001] A.J. No. 1644 (Alta. Q.B.) in which this author testified for the defendants.<sup>5</sup>

## Guiding principles in fatality cases (dependency loss on income)

- 1) The portion of the household income that would have been spent solely on the decedent and which can now be considered "saved" must be deducted from household income to estimate the survivor's dependency loss;<sup>6</sup>
- 2) The dependency loss amount should be consistent with what might reasonably have been expected by the survivor in terms of the household's standard of living before the decedent's premature passing.

<sup>1</sup> The basis for this distinction can be found in the comments of Dickson J. (as he then was), in *Keizer v. Hanna*, [1978] 2 S.C.R. 342 (S.C.C.) wherein he stated that "[T]he impact of income tax should be taken into account in assessing a damage award under the *Fatal Accidents Act*" and in the words of De Grandpre J. in that same case:

It seems to me that what the widow and the child have lost in this case is the support payments made by the deceased, support payments which could only come out of funds left after deducting the cost of maintaining the husband, including the amount of tax payable on his income. I cannot see how this pecuniary loss could be evaluated on any other basis than the take-home pay, that is the net pay after deductions on many items, including income tax . . .

It is quite obvious that basing an award under the *Fatal Accidents Act* on gross income would fail to take into consideration the realities of life in a modern state and would, in some cases, give to the dependents a fund greatly in excess of their financial loss. Income tax must therefore be taken into consideration . . .

<sup>2</sup> Dependency losses in "filial piety" cases pertain to awards reflecting children's financial support to elders. It requires a different approach than that described in this article.

<sup>3</sup> For instance, if the PCR is 15%, this implies that the family's dependency rate is 85%. The PCR + dependency rate = 100%, where 100% represents the family's total income.

<sup>4</sup> Gillespie, C. and Bottom Line Research, "Sole/Cross/Modified Approaches to Loss of Dependency in a Fatal Accident Claim" *The Barrister* Issue no. 100, June 2011, p. 14. For more discussion on this point, see **C.L. Brown, Damages: Estimating Pecuniary Loss**, loose-leaf (Toronto, ON: Canada Law Book, a Thomson Reuters business), December 2022 (32<sup>nd</sup> edition), §II.B.7:15 entitled "Why not use family budget information instead of the *Surveys of Household Spending*?"

<sup>5</sup> In *Millott*, when our report was prepared in 2000 (and testimony was heard in 2000), counsel requested that both approaches be undertaken. As a result, PCRs were calculated by using the Millott family's expenditures prior to Mr. Millott's death; and using Statistics Canada's *Family Expenditure Survey* 1996 (the most recent data at that time). Not only were the PCRs within 1 to 2% of each other in both methods, it became clear when analyzing the Millott family's budget that many expenditures were unaccounted for due to cash expenditures. Also, the Millott family's budget was based primarily on their circumstances at the time of Mr. Millott's death, which included near poverty-level income while Mr. Millott attended school and subsequently secured low-level employment as a night clerk at a hotel. Clearly, these circumstances would have changed as the Millotts aged and as Mr. Millott earned a higher income, so the PCRs based on expenditure patterns before 2000 were not representative of the family's spending as they aged and their household income increased.

<sup>6</sup> As stated by the authors of *Litigation Economics*: "If the survivors no longer must spend a portion of family income on the deceased, an award that included that amount would overcompensate them, leaving an extra amount for them to consume" (source: P.A. Gaughan and R.J. Thornton, *Litigation Economics* (London: Jai Press Inc.), 1993, p. 32).

**Principle (1)** means that we must establish the decedent's "personal consumption" of household income that pertained to the decedent's variable expenses which are no longer needed. To abide by principle (2) above, we exclude household expenditures which the survivor is still required to make, many of which are fixed items and even if the decedent shared in the fixed item (such as a house), the survivor requires the entire house to maintain his/her pre-incident standard of living.

**Principle (2)** requires that the total before-tax household income of the deceased and survivor that is now interrupted must be used as the basis for the personal consumption rate dependency loss calculation;<sup>7</sup> then the "deceased's personal consumption" (in dollar terms) is subtracted based on the household's total after-tax household income.

Christensen explains the process of establishing PCRs:<sup>8</sup>

...in cases in which the plaintiff and decedent lived in the same household, monetary support was most often not explicit monetary transfers. *The comingling of income and its consumption by various household members is the genesis for the self-consumption literature.* It facilitates the estimation of the income share that was for the exclusive support of the decedent so that it can be deducted from the decedent's earnings, thus leaving economic values that represent the monetary support the decedent would have provided to the plaintiff. (p. 4, emphasis added)

In Canada, it is important to examine Statistics Canada's *Survey of Household Spending* to derive PCRs, and become familiar with the sizeable literature on PCRs contained in the Journal of Forensic Economics and the Journal of Legal Economics which has burgeoned since the early 1980s. In the next section, I briefly discuss the economic literature on consumption and expenditure that can assist forensic economists with the process of establishing PCRs.

### ***Economic findings on consumption and expenditure***

The economics literature, specifically on consumption and savings behavior, has established in no uncertain terms that families' spending is dictated by available resources, i.e.: money income. Thus, it is not surprising to find that when we try to account for the portion of family income<sup>9</sup> that the decedent consumed – and is now 'saved' – it fluctuates according to how much income the family had prior to the decedent's passing. This is not a novel concept; it has been recognized since John Maynard Keynes, a famous 20<sup>th</sup> century economist, commented in 1935 that:

"The fundamental psychological law, upon which we are entitled to depend with great confidence both a priori from our knowledge of human nature and from the detailed facts of experience, is that men are disposed, as a rule and on average, to increase their consumption as their income increases, *but not by as much as the increase in their income.*" (emphasis added)<sup>10</sup>

<sup>7</sup> It is preferable to use the before-tax estimates of household income when determining PCRs because Statistics Canada's *Survey of Household Spending* (SHS) data provides more accurate estimates of the responding household's before-tax income, whereas after-tax income is a "derived" variable in the SHS. Additionally, though we use the household's before-tax income to establish the PCR each year, the dependency loss formula is based on the specific household's after-tax and deductions income ("disposable income"), consistent with case law provided to us.

<sup>8</sup> Christensen, E. *Personal Consumption and Personal Maintenance Estimates using Empirically Based Expenditure Allocation Rules*, Journal of Legal Economics, vol. 28, no. 1, July 2022. Christensen's analysis takes for granted that PCRs vary by household size and income level and seeks to refine PCRs further between "personal consumption" and "personal maintenance" because in many US states these terms are legislated. This is not the case in Canada.

<sup>9</sup> The reader will note the use of the term "family income" instead of only the decedent's income. Canadian courts, for the most part, have accepted that *both* spouses' income is relevant in the calculation of dependency losses. Christensen confirms household income as the basis for deriving PCRs: "Personal consumption estimates ... are based on household income, not individual income." (source: Christensen, E. *Personal Consumption and Personal Maintenance Estimates using Empirically Based Expenditure Allocation Rules*, Journal of Legal Economics, vol. 28, no. 1, July 2022, p. 8).

<sup>10</sup> Keynes, John Maynard, *The General Theory of Employment, Interest and Money* (Cambridge, Massachusetts: Harcourt Brace and Company), 1935.

The last part of Keynes' quote means that **as a percentage, consumption will fall as income rises**. This has been confirmed in economic studies of consumption and income and is demonstrated by the graphs in the **APPENDIX** to this issue which graph Canadians' expenditures as a percentage of income from the 2007-08 *Surveys of Household Spending*.<sup>11</sup> Similarly, two forensic economists in the US commented that one of the 'stylized facts' about consumption is:

"...if a spending unit receives an additional dollar of income, *it will increase its level of consumption spending, but by less than an additional dollar* and at least with regard to budget studies, average consumption (consumption divided by income) tends to fall as income rises." (emphasis added)<sup>12</sup>

### ***Is there data showing that spending patterns vary by income level?***

We summarize ancillary research that demonstrates expenditure varies directly with household income level:<sup>13</sup>

- o When we look at *Survey of Household Spending* ("SHS") data for 2019,<sup>14</sup> we see that households in the lowest income quintile<sup>15</sup> spent \$5,560 on food, equal to **16%** of their total expenditure. In comparison, households in the highest income quintile spent \$15,570 on food, equal to **8%** of their total expenditure. This implies that higher-income households spend *more* on food in dollar terms (\$15,570 versus \$5,560) but *less* as a percentage of total expenditure (8% versus 16%).<sup>16</sup>
- o Adults consume more than teenagers, and teenagers consume more than children (with the exception of daycare costs that can double the cost of raising young children not yet attending school), reflecting the changing nature of expenditure in households through the life cycle of consumption
- o Adults who have children display 'substitution effects' in their purchasing patterns compared to adults without children, for instance deferring expenditures on travel or vacation in lieu of saving for their children's post-secondary education; this will be influenced by the overall household income level
- o Lower income families buy more 'inferior' goods than high-income families due to the "luxury" effect. 'Inferior' goods are ones that people buy less of when their income rises
- o Income has important influence on spending habits: as a household acquires more income, it expends more on consumption, but it also begins to defer consumption and saves income; the more income the household has, the more it spends on housing<sup>17</sup>
- o High-income households, on average, spend more than other households and they allocate expenditures differently. Households with annual incomes in excess of \$90,000 allocate larger shares to food away from home, housing operations, supplies and furnishings, personal insurance and pensions, cash contributions, entertainment and apparel and services. Households with lower incomes allocate larger shares to food at home, shelter and utilities, transportation and health care.<sup>18</sup>

<sup>11</sup> Update of the 2007-08 PCRs by household income level and household size from Statistics Canada's *Surveys of Household Spending* are in progress using the survey years 2009 and 2019.

<sup>12</sup> Trout, Robert R. and Carroll B. Foster, "Estimating a Decedent's Consumption in Wrongful Death Cases" *Journal of Forensic Economics* 1993 6(2), p. 136.

<sup>13</sup> These published findings were not linked to interrupted earnings cases but rather can be found in the economic literature on consumption and expenditure.

<sup>14</sup> Based on data from Statistics Canada's Table 11-10-0223-01 – *Household spending by household income quintile, Canada, regions and provinces*; and an analysis of data from the Statistics Canada's 2019 *Survey of Household Spending*.

<sup>15</sup> Income groupings are obtained by ranking the households who responded to the interview in ascending order by total household income before tax, then partitioning the households into five groups of similar size. The lowest income quintile contains the 20% of households with the lowest income. The highest income quintile contains the 20% of households with the highest income.

<sup>16</sup> Even more persuasive than this example is that Statistics Canada relies on Statistics Canada's low-income lines (LILs), which is an income threshold below which a family will likely devote a larger share of its income on the necessities of food, shelter and clothing than the average family. Their approach is essentially to estimate an income threshold at which families are expected to spend 20 percentage points more (63%) than the average family on food, shelter, and clothing (43%). Twenty percentage points are used based on the rationale that a family spending 20 percentage points more than the average would be in "strained circumstances". In other words, poorer households spend more of their income (as a percentage) on basic necessities. (Source: Statistics Canada. *Low Income Lines, 2010 to 2011*. Catalogue no. 75F0002M, June 2012).

<sup>17</sup> Moehrle, Thomas, *Expenditure patterns of the elderly: workers and non-workers*, *Monthly Labor Review*, Bureau of Labor Statistics, May 1990.

<sup>18</sup> U.S. Dept. of Labor Bureau and Labor Statistics, *Spending Patterns of High-Income Households*, November 1998, summary 98-10.

- o Intra-allocation of households imply that higher-income spouses share their allocation of income: in a two-person poor household, where the wife's share of income is only 25% of total household income, she receives 42% of total expenditure; in a wealthy household where the wife earns 75% of income she has a 58% share in expenditures<sup>19</sup>
- o Two studies from the US and Canada show that expenditures on food, housing, transportation decline as income rises by depicting expenditures on these items by income quintile group<sup>20</sup>

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 the decedent's passing (a legal concept),<sup>21</sup> we know that this portion of family income is **variable**. It represents money the decedent consumed while s/he was alive, but the family must maintain its standard of living: the decedent's consumption can only be for **variable** expenses that fluctuated directly with the decedent's presence and are no longer needed in his/her absence. Immediately, we can see that described thusly, this **variable** portion that we must subtract in the form of the PCR *cannot* include fixed expenses, because these would not vary with the decedent's passing; or, even if they varied, the family still needs the entire expenditure for the fixed item *despite* the decedent's passing. For instance, the surviving family requires the pre-incident dwelling they resided in, and even though we could attribute a share to the decedent (to reflect his/her usage of it), we cannot reduce the shelter expenses for this share because it would violate the legal concept of maintaining the family's standard of living with respect to shelter.

### ***Refining PCRs by household income level was long overdue in Canada***

Constructing PCRs by family size *and* family income level is a refinement that was long overdue, since prior to that time, when quantum experts calculated them,<sup>22</sup> Canadian dependency awards were based on PCRs that only fluctuated by family size.<sup>23</sup> In other words, the "constant" percentages alluded to in precedent are based on evidence which never included a refinement by household income level.

This author has been corresponding with forensic economists and accountants in the US, UK, and Australia, all of whom concur with using PCRs by income level and have relied on the Canadian PCRs published by household income level and household size in this author's Journal of Forensic Economics articles.

Michael Lee, a forensic accountant with *Vincent's* ([www.vincents.au.com](http://www.vincents.au.com)) from Australia, has published an article entitled "Dependency Percentages in Australia Revisited – Estimating Personal Consumption using Statistical Data", and quoted Ms. Brown's 2012 article from the Journal of Forensic Economics entitled "Update of Personal Consumption Rates for Canada, Using 2007-08 *Surveys of Household Spending* Varying by Family Size and Income Level", Journal of Forensic Economics (XXIII) September 2012.<sup>24</sup> This author's 2012 article is also cited in Australia's book by Luntz and Harder, *Assessment of Damages for Personal Injury and Death* (5<sup>th</sup> edition), chapter 10.

<sup>19</sup> Martin Browning, Francois Bourguignon, Pierre-Andre Chiappori and Valerie Lechene, *Income and Outcomes: A Structural Model of Intrahousehold Allocation*, Journal of Political Economy, 1994, vol. 102, no. 61, at 1088-1090.

<sup>20</sup> Sources: U.S. Department of Labor Bureau of Labor Statistics, *Consumer Expenditures in 2001*, April 2003, report 966 and Statistics Canada *Spending Patterns in Canada 2000* catalogue no. 62-202.

<sup>21</sup> As per *Keizer v. Hanna and Buch* (1978), 82 D.L.R. (3d) 449, [1978] S.C.R. 342, p. 352.

<sup>22</sup> Canadian judges have commented on the importance of family income level for the dependency award, and have made adjustments to the PCRs, the dependency rate, or the total award for this factor. See, for instance, *Johnson v. Carter* 2007 BCSC 622 in which Justice Slade adopted a 10% PCR for the recognition that the decedent was a high-income earner. (para. [160]) Mr. Johnson earned \$1,250,000 per annum, as found by the judge. Note that in the *Survey of Household Spending* ("SHS") data, from 2007 and 2008, the highest before-tax income level reported for Canadian households is "greater than \$200,000".

<sup>23</sup> See, for instance, Table 3 in C.L. Brown, "Wrongful Death Claims: Dependency Loss Calculations" 22(1) *Advocates Quarterly* 1999, p. 16. In Table 3, this author shows a summary of PCR rates by family size from six different sources as of the year 1999 (four of which were from the U.S.). These PCRs were calculated across *all* income levels, and only varied by family size.

<sup>24</sup> Derivation of PCRs using Statistics Canada's *Surveys of Household Spending* from 2009 and 2019 are in progress. Most quantum experts in Canada, if they review SHS data, rely on the year 2000.

Christensen cites both of this author's *Journal of Forensic Economics* articles in his newly published article entitled *Personal Consumption and Personal Maintenance Estimates using Empirically Based Expenditure Allocation Rules*, *Journal of Legal Economics*, vol. 28, no. 1, July 2022 (pp. 6, 30).

The PCRs derived from the 2007-08 *Surveys of Household Spending* are reproduced in Table 1 below, which shows them fluctuating by family size *and* income level. There is *not* one economic concept or finding that supports the idea that a constant percentage is applicable across all income brackets. Indeed, to assume a constant percentage contradicts virtually all findings on consumption and expenditure in the economic literature.

*Table 1: Canadian PCRs by household size and income level (Canadian 2007-08 dollars)*

Before-tax household income (Canadian dollars, 2007-08)	Household size					
	Average before-tax income <sup>1</sup>	Average family consumption <sup>2</sup>	2 adults	2 adults, 1 child	2 adults, 2 children	2 adults, 3 or more
			(2 persons)	(3 persons)	(4 persons)	(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
<b>NOTES:</b>						

<sup>1</sup> 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

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

Because we rely on the percentages shown in Table 1, and not the actual dollar amounts, we know that the PCRs do not change appreciably when all of the ranges for the “Before-tax household income (Canadian dollars, 2007-2008)” shift. This was confirmed by a comparison of the PCRs in Table 1 from the 2007-08 SHS data and the previous PCRs derived from the 2000 SHS year, which were published in this author’s *Journal of Forensic Economics* article from 2004 (listed under “Prior issues of **Brown’s Economic Damages Newsletter**” on page 1). In any event, PCRs are in progress of being derived from the 2009 and 2019 *Surveys of Household Spending* (SHS) data, which will update the 2007-08 data.

### Why using a “constant percentage” of 30% to 40% for the PCR is unfounded

Some experts assume a constant PCR of 30% to 40% in a 2-adult household, which is too high for most income brackets (Table 1 above shows that after household income of \$25,000 per year, the PCR declines from 30.22% to 12.87% for 2-adult households with income greater than \$200,000 per year). A 30% PCR implies an unchanging 70% dependency rate for the family irrespective of income level, which is not corroborated by the empirical patterns exemplified by most expenditure categories, which is to reduce – as a percentage – as household income rises: see the graphs in **APPENDIX** to this article from Statistics Canada’s *Surveys of Household Spending* (SHS) from 2007 and 2008.

When some quantum experts use a “constant percentage” approach, they assume a PCR for the decedent of 30% to 40%. As we can see from Table 1, using PCRs of this magnitude are only applicable to low-income families. As higher-income families’ monetary resources grow, their expenditures on food, shelter, transportation, clothing, health, recreation, personal care, education and tobacco and alcohol decline as a percentage of household income. The graphs in the **APPENDIX** attest to this empirical pattern. Using a larger-than-necessary PCR for the decedent always leads to a much lower dependency claim on income.

This author has a unique understanding of how the 30% PCR (70% dependency rate) was originally derived, because it originated with Dr. Chris Bruce of Economica Ltd. As Dr. Bruce’s first (and only) employee for many years,<sup>25</sup> this author prepared and co-signed fatality reports with him and acquired proprietary knowledge as to how Bruce’s 70% rate emerged. (It is also described in Bruce’s text, *Assessment of Personal Injury Damages*).

Upon establishing Brown Economic Consulting in 1995, this author investigated the derivation of PCRs using Statistics Canada’s expenditure data. This led to publication in 1999 of “Wrongful Death Claims: Dependency Loss Calculations” in the *Advocates’ Quarterly* 22 (1) 1-67, in which I included a summary of published PCRs by that date, including Bruce’s PCRs from the 1992 edition of his text,<sup>26</sup> and our derivations of PCRs from Statistics Canada’s 1996 FAMEX.<sup>27</sup> Nevertheless, estimates by both Bruce and Brown were only derived by family size, not by household income level. Further work had to be done.

Unfortunately, Bruce’s derivation of PCRs reflected myriad methodological problems.<sup>28</sup> To start, constructing PCRs by family size *and* family income level was a refinement that was long overdue, since prior to that time, when quantum experts calculated them,<sup>29</sup> Canadian dependency awards were based on PCRs that only fluctuated by family size.<sup>30</sup> The

<sup>25</sup> From 1988 to 1995. See this author’s CV (page 1).

<sup>26</sup> Based on data from Statistics Canada, *Family Expenditures in Canada, 1986*, Catalogue No. 62-555 (Ottawa: Statistics Canada, March 1989).

<sup>27</sup> Statistics Canada’s *Family Expenditure in Canada 1996*, Catalogue 62-555-XPB, Table 11, pg. 68-69 and Statistics Canada’s *Family Expenditure in Canada 1996*, IPS 62F0019-Table 9 (custom tables). The FAMEX was replaced by the *Survey of Household Spending* (SHS) in 1997, which continues to this time.

<sup>28</sup> Several of these problems are described in **Brown’s Economic Damages Newsletter**, “PCR rates for Canada by income level: update 2000 estimates with 2007-08 *Survey of Household Spending* data – PART I” March 2011, vol. 8, issue #2.

economics literature, specifically on consumption and savings behavior, has established in no uncertain terms that families' spending is dictated by available resources, i.e.: money income.<sup>31</sup> This is not a revolutionary finding and accords with most people's spending experiences. But Bruce's derivation of a PCR (in Tables 11.7A and 11.7B of his text) only uses two household income levels in Table 11.1: expenditure equal to \$61,643 (2 adults) or \$84,522 (2 adults, 2 children), from Statistics Canada's 2008 published data.

This is a key observation, because it means that Bruce's 28% PCR (based on a 72% dependency rate for 2 adults) ONLY applies to households with annual expenditures of \$61,643. As we can see from Table 1 above, households with before-tax income between \$60,000 to \$64,999 imply a PCR for the decedent (in a 2-adult home) of **20.11%**.

Precisely because household expenditures change as household income rises in 'real' terms (see the graphs in the **APPENDIX**), Bruce's 28% PCR cannot be used for households with *lower* or *higher* levels of income equal to \$61,643 (in 2008 dollars).

We detected these numerous methodological problems with the data Bruce relies on to derive their 28% PCR for 2-adult households with expenditures of \$61,643:

- a. In his 2019 version of *Assessment of Personal Injury Damages*, Bruce cites a Statistics Canada publication entitled *Spending Patterns in Canada, 2008* and states that this is the "most recent Survey for which data are available" (p. 284). This is not correct. The following are the release dates for *Survey of Household Spending* (SHS) data since 2008:
  - i. 2009 – released Dec. 17, 2010
  - ii. 2010 – released Apr. 25, 2012
  - iii. 2011 – released Jan. 30, 2013
  - iv. 2012 – released Jan. 29, 2014
  - v. 2013 – released Jan. 22, 2015
  - vi. 2014 – released Feb. 12, 2016
  - vii. 2015 – released Jan. 27, 2017
  - viii. 2016 – released Dec. 13, 2017
  - ix. 2017 – released Dec. 12, 2018
  - x. 2019 – released Jan. 22, 2021

What the dates above imply is that when the 2019 version of Bruce's book was published, they had access to all *Survey of Household Spending* datasets from 2009 to 2017, yet they chose to rely instead on the 2008 catalogue.

<sup>29</sup> Canadian judges have commented on the importance of family income level for the dependency award, and have made adjustments to the PCRs, the dependency rate, or the total award for this factor. See, for instance, *Johnson v. Carter* 2007 BCSC 622 in which Justice Slade adopted a 10% PCR for the recognition that the decedent was a high-income earner. (para. [160]) Mr. Johnson earned \$1,250,000 per annum, as found by the judge. Note that in the *Survey of Household Spending* ("SHS") data, from 2007 and 2008, the highest before-tax income level reported for Canadian households is "greater than \$200,000".

<sup>30</sup> See, for instance, Table 3 in C.L. Brown, "Wrongful Death Claims: Dependency Loss Calculations" 22(1) *Advocates' Quarterly* 1999, p. 16. In Table 3, this author shows a summary of PCR rates by family size from six different sources as of the year 1999 (four of which were from the U.S.). These PCRs were calculated across *all* income levels, and only varied by family size.

<sup>31</sup> This literature will not be repeated in this issue. For a summary of the literature, see C.L. Brown, "Personal Consumption Rates for Canada: Differentiated by Family Size and Income Level Using Survey of Household Spending (SHS) 2000 Data", *Journal of Forensic Economics* (XVII) 2, Spring/Summer 2004, section **II. Review of the Literature**, pp. 149-151.

- b. In using the SHS data, Bruce chose simply to reproduce one table from Statistics Canada's 2008 catalogue<sup>32</sup>. Instead of obtaining the actual records from the SHS surveys as we did to derive PCRs by family size and household level in the 2004 and 2012 *Journal of Forensic Economics*.<sup>33</sup> Obtaining the actual records from the surveys produces additional data about more detailed expenditures (such as the minimum, mean and maximum values of various transportation expenditures from variable name K001),<sup>34</sup> and allows us to perform regression analysis to derive the decedent's PCRs. Compared to this process, Bruce is forced to rely on only one household type (2-adult household with annual expenditures of \$61,643).
- c. Bruce relies on household "expenditure" to derive his specific PCR, rather than household before-tax income. Not only does the jurisprudence in Canada affirm that quantum experts should rely on the **household's before-tax income**, so do the majority of authors who have published PCRs in the *Journal of Forensic Economics* and the *Journal of Legal Economics*. By focusing only on expenditure, or "current consumption", the expert ignores any savings by the household and is able to manipulate the PCR to be as large as possible. In fact, if the household is "dissaving" (borrowing), this method *will allocate debt* to the PCR for the decedent. This method attributes *none* of the savings to the surviving family members to maintain their standard of living. Especially when we consider that savings is devoted to many indivisible items, or is for the children's education or left as bequests, we know that excluding any portion of savings for the family will undermine the legal concept of maintaining the surviving family members' standard of living.<sup>35</sup>
- d. Bruce's "dependency" methodology appears to derive primarily from a highly-traditional view of the "family unit", particular as the dependency rates shown in his 2019 text refer to "husbands and wives". No mention is made of whether Bruce's data in this respect could be applied to common-law couples or households with parents of the same gender. Indeed, in a "Note" published in 1997, Bruce argues that his dependency methodology depends on three "types" of marriage which should be used to describe the decedent and the survivor: an "idealized marriage" (couple marries for love and the breadwinner spouse derives emotional pleasure by financially supporting his/her spouse); the "marriage of convenience" (couple marries for financial gain); or the "marital partnership" (couple marries for love but has separate bank accounts). I submit that first, economists are in no position to assess what any couple's marriage was like before the decedent's premature passing; and second, the only aspect of the "coupling" that matters is whether they shared income and expenses (or not). There is no requirement to assess what "type" of marital relationship the couple had to derive PCRs from expenditure data.

<sup>32</sup> What this means is that all of the data (and percentages) in Bruce's Table 11.1 are data reproduced from this catalogue. None of the "per cent of total expenditure" are derived but rather are simply repeated from the data in the 2008 catalogue. Similarly, in Tables 11.7A and 11.7B, the first column of data are simply transcribed from Table 11.1. Bruce's sole contribution to "deriving" his PCR for one specific household is shown under the column headed ("Dependency by Expenditure Category"). In contrast, obtaining the actual datasets and applying regression analysis permits us to produce PCRs for all household sizes and household income levels (see Table 1 above).

<sup>33</sup> In this author's 2012 *Journal of Forensic Economics* article, Table 1 (p. 139) shows that the 2007 SHS polled 21,407 respondents with a usable sample of 8,658; the 2008 SHS polled 15,445 respondents with a usable sample of 6,088. Regression analysis was performed on 14,746 records.

<sup>34</sup> From the *SHS Record Layout, 2007* and *SHS Record Layout, 2008*, we know there are 15 separate expenditure categories contained in the major category "Transportation" (K001 through to K038). Since this expenditure category has a sizeable impact on the PCR, these separate values can assist us in properly attributing shares of this category strictly attributable to the decedent's presence – while also retaining enough transportation costs for remaining family members to enjoy the same level of transportation.

<sup>35</sup> There is no economic justification for excluding savings from either the family's survival needs, or the decedent's consumption. By including variable SHS O305 for "savings", and applying the PCR to the household's income, we have allocated to the decedent his share of the savings. While some experts could argue that the PCR is higher after retirement than during the working years (because household size is usually smaller), we automatically take this into account by adjusting the PCR by the income levels of the household, which virtually always decline after retirement since we only count guaranteed government benefits (CPP and OAS) and defined benefit pensions, but do not estimate any other savings from RRSPs or other sources.

- e. Notwithstanding Bruce's "Note", McIntyre J. had already decided in *Labbee v. Peters*<sup>36</sup> that Bruce's approach to labelling marriages in loss of dependency cases was troubling:

"Because it ascribes value to love and affection other than non-pecuniary damages relating to pain and suffering. *Courts are charged with assessing economic, not emotional loss.*" (para. 66, emphasis added)

The other difficulty with Bruce's "expenditure"-based PCR is that **no attempt was ever made to derive PCRs by household income level**, and this could easily have been done (and *is* done in this author's 2004 and 2012 Journal of Forensic Economic articles on Canadian PCRs). In other words, Bruce never asked the question of the data whether PCRs vary by household income level, even after his text was updated in 2004, 2011 and 2019.

It is worth noting that when economic researchers applied economic analysis to the problem of what parents spend on their children (research that preceded the creation of and implementation of child support guidelines in both the US and Canada),<sup>37</sup> virtually all economists agreed that family expenditures resemble a 'black box': *these allocations are unobserved*. Indeed, parents themselves are unable to specify how much of each expenditure category they spend on their individual children due in part to items that are indivisible; in part to the economies of scale which means that expenditures do not increase one-to-one with additional family members; and in part to the substitutions that occur when income remains static but the number of people consuming the income changes. This is also true in fatality cases because the family's expenditure before the premature passing of the decedent is unobserved. Too often, however, quantum experts do not rely on any empirical literature to make these allocations, but this is needed given the variables that influence households' expenditures:

"Model estimation results show that a *host of household and personal socio-economic, demographic, and location variables affect the proportion of monetary resources that households allocate to various consumption categories.*" (emphasis added)<sup>38</sup>

Similarly, Crossley and Pendakur, two noted Canadian researchers on consumption, observe the following about separating different kinds of expenditures that households make:

"Unfortunately, we are typically unable to perfectly separate durables from nondurables and unable to perfectly estimate the consumption flow from durables. In this research, we focus on nondurable consumption plus the imputed consumption flow from accommodation. Even with this narrow basket of consumption flows, we can't get at all nondurable consumption."<sup>39</sup>

Some of Crossley and Pendakur's research centers on the differences in lifetime consumption *between* birth cohorts – that is, they find that when a group of consumers is born in a different era, they consume differently.<sup>40</sup> This observation requires that PCRs must continue to be derived from newer releases of Statistics Canada's *Survey of Household Spending* (SHS). Analysis of the 2009 and 2019 SHS datasets is in progress.

<sup>36</sup> *Labbee v. Peters* (1997), 201 A.R. 241 (Q.B.), affd 237 A.R. 382, 45 M.V.R. (ed) 44 (C.A.).

<sup>37</sup> This author completed a study for the federal Justice department with Chris Bruce, entitled *Child Rearing Expenditure Estimates for Canada: Based on Statistics Canada 1986 Family Expenditure Survey* (Ottawa, Ontario: Justice Department of Canada), 1991.

<sup>38</sup> Ferdous, N., A.R. Pinjari, C.R. Bhat, R.M. Pendyala, "A comprehensive analysis of household transportation expenditures relative to other goods and services: an application to United States consumer expenditure data" *Transportation* (2010) 37: 363-390.

<sup>39</sup> Crossley, Thomas F. and Krishna Pendakur, *Consumption Inequality*, August 2002, p. 8.

<sup>40</sup> Crossley, Thomas F. and Krishna Pendakur, *Consumption Inequality*, August 2002. Crossley and Pendakur used consumption data from the 1969, 1978, 1982, 1986, 1996 FAMEX surveys; and the *Surveys of Household Spending* for 1997, 1998 and 1999, all of which are Canadian expenditure surveys.

In Pendakur (2002) it was shown that *differences in consumption across household incomes and composition are so important* that inequality may be misestimated if they are not accounted for. He calculates price indices that accurately reflect differences in expenditure by household income and household size. Using Canadian data, this author then shows that adjusting household consumption by a price index that reflects these expenditure differences has a significant effect on the measurement of consumption inequality.<sup>41</sup>

In a survey of forensic economists published in the *Journal of Forensic Economics*, **81% of the forensic economists responding indicated that they vary personal consumption rates by income.**<sup>42</sup> This is because consumer expenditure surveys in the US over past decades consistently affirm that expenditure in most categories (namely variable ones, which is what the PCR reflects) diverge considerably by household income level. In most households, expenditure on variable items declines as income rises (as a percentage). The graphs in the APPENDIX demonstrate this consistent pattern from Statistics Canada's 2007-08 *Surveys of Household Spending*. Authors Cook et al reaffirmed the use of PCRs that vary by household income level in a 2018 article.<sup>43</sup>

In *Fallowka et al v. Royal Oak Ventures et al* (2004) NWTSC 66, Justice Lutz accepted Brown Economic's process for deriving PCRs by income level, even after acknowledging that it represented a departure from some previous cases in Canada; the court described Brown Economic's PCR methodology as having "tremendous depth and merit" (para. [1015]).<sup>44</sup>

### Estimating the value of the decedent's valuable services

With respect to evidence about housekeeping hours, a quantum expert's assessment begins with evidence about the decedent's time use (usually from the spouse or other family member) and compares this evidence to statistical averages, matching the decedent's demographic characteristics in terms of gender, age, employment status, marital status, and presence or absence of children. Special tabulations showing time use by "role group" are available from Statistics Canada using their *General Social Surveys*. The most recent one done by Statistics Canada was for the 2015 year.

Brown Economic has created a *Diary of Household Activities*™ form that has been used for many years and which went through several iterations with the help of feedback from counsel and the courts. This form was designed while keeping in mind the biases that can result from, say, asking an open-ended question such as "How many hours do you spend on housekeeping per week?" Such an open-ended question invariably leads to an overstatement of such hours because the respondent is not constrained to a 168-hour week. In *Baker v. Poucette* 2017 AQBCA 334, the court of appeal of Alberta affirmed the use of our specific *Diary* form to gather evidence about the decedent's valuable services.<sup>45</sup>

<sup>41</sup> Pendakur, K. "Taking prices seriously in the measurement of inequality" *Journal of Public Economics* 2002 86(1) pp. 47-69.

<sup>42</sup> Michael L. Brookshire, Michael R. Luthy & Frank L. Slesnick, "2006 Survey of Forensic Economists: Their Methods, Estimates and Perspectives" (2006) 19 *Journal of Forensic Economics* 29 at 41-42. Although subsequent NAFE surveys were done in 2011 and 2015, they did not include this question.

<sup>43</sup> F.B. Cook, J. Oryema and C. Stephens, "Consumer Expenditures and Savings in High Income Households," *Journal of Forensic Economics*, 27(2) 2018, pp. 107-125.

<sup>44</sup> Specifically, Lutz, J. stated:

[1015]...The fundamental difference is that Brown's PCRs vary significantly by income level and [the opposing expert's] do not... Brown applied the American methodology to Canadian data offered by Statistics Canada and developed new Canadian tables... Therefore, Brown's calculations reflect an inverse trend; as family income increases, the PCR decreases, and, as family size increases, the PCR decreases. These figures mark a departure from those accepted by Canadian Courts in the past; however, having considered all the evidence, particularly that with regard to Brown's research, I find that her PCR tables are preferable to those of [the opposing expert]. *Brown demonstrated tremendous depth into her data analysis toward the development of her PCR tables, the result of which has merit in my view* [emphasis added].

<sup>45</sup> For more information, see **Brown's Economic Damages Newsletter**, "Baker Estate v. Poucette (2016-2017): Appeal Decision sets Principles for "Fairness" in Fatality Cases" November 2017, vol. 14, issue #9.

The usefulness of a form like the *Diary of Household Activities*™ is that it achieves what the courts dictate: a link between the family's evidence as to the decedent's household activities and the statistics published as to the 'average' hours performed by Canadians. It also asks the family to allocate his/her time to other activities (paid work, sleeping, personal care, leisure), not just housework, and constrains all activities to a 168-hour week.

To access our *Diary of Household Activities*™ (fatal) online, please visit [www.browneconomic.com](http://www.browneconomic.com) > **Products & Services** menu > "Checklists & Diaries" > Diaries.

To access our **Housekeeping Damages Calculator**™ (HDC), visit [www.browneconomic.com](http://www.browneconomic.com) > **Economic Loss Calculators** > "Housekeeping (pay per use)".<sup>46</sup>

### ***What is the "PCR" for valuable services?***

Just like in calculating dependency losses on income, so too a deduction has to be made for the decedent's absence in the household with respect to valuable services. However, we cannot use the PCRs that we apply in the income loss calculation, because these are derived with respect to dollar expenditures. For this head of damage, we must take into account how the decedent's absence affects the provision of valuable services.

First, we assume that the parents benefited equally from the housework that was done by the decedent before the incident. This implies that 50% of the decedent's valuable services were for the family now needs to be replaced. We also assume that the family experienced economies of scale when they used to do housework (i.e., when two or more people live together and share household duties, their combined hours of housework is less than the sum of the number of hours two or more individuals would spend doing housework if they lived separately). For example, if the decedent used to do indoor and outdoor cleaning, we assume it will take the survivor more than half the time it used to take her and the decedent to do the same chores combined. This implies that *more* than 50 percent of the decedent's housekeeping capacity would need to be replaced, since the survivor will no longer benefit from these economies of scale. On the other hand, we assume that as a result of the accident, the survivor will now have to do *less* housework (i.e., laundry, meal preparation) due to the decedent's absence. This could mean that the household's total housework has decreased (although likely not the parenting requirements). In fatality cases, we use a "per-capita" approach, whereby we assign to the decedent one share of the total family member count. In a 2-adult family, this implies a 50% deduction. In a 4-person family, this implies a 25% deduction.

This per-capita approach is not required if another expert is hired to assess the surviving family's needs.

### ***Using an occupational therapist (cost of care expert) in fatality cases***

Another strategy that counsel employ in fatality cases is to commission a report from a cost of care expert (usually an occupational therapist, or "OT") about the parent's care giving role in the family. In many cases, this information is superior to filling out a form, because the occupational therapist visits the family in their home and as a result often

<sup>46</sup> The **HDC** uses a condensed version of our *Diary* form and completes the calculation of lost housekeeping services in injury or fatality cases. The cost for using the **HDC** is \$190 + GST per file.

compiles information about the parent's role that may not be fully communicated in the *Diary*. Unlike injury cases, the decedent may have fulfilled a care-giving role as a parent that goes far beyond simple housekeeping tasks. This strategy may also be preferred in cases where the decedent focused primarily on unpaid work in the home (i.e., stay-at-home parents).

The report prepared by the cost of care expert is similar to valuations done in injury cases for seriously injured plaintiffs who require goods and services to treat their ailments. In fatality cases, the parent's role may only be adequately replaced with parental duties, tutoring and mentoring help, along with managing the household.

For referrals to OTs in Alberta, visit [www.saot.ca](http://www.saot.ca).

## Remarriage & Divorce Probabilities

These contingencies refer to either the probability that the original couple might have divorced, had the decedent not died in the incident in question; or, that the survivor might now remarry given the decedent has passed on. It is important to remember that one of these contingencies (**divorce**) pertains to the "but-for" scenario: that is, *what would have happened to the marriage if the incident had not occurred*. The other contingency (**remarriage**) pertains to the fact situation *now that the incident has occurred and the decedent has passed on*.

In all fatality cases, it is incumbent upon the quantum expert to present loss of dependency awards (on income and valuable services) *without* remarriage and divorce contingencies; and then *with* remarriage and divorce contingencies (separately and together). The reason for this is that the courts (or parties to the negotiations) determine whether these contingencies should be applied, given the facts at hand – not the quantum expert.

### Source of remarriage rate data

The trier of fact evaluates the prospects of the survivor's probability for "re-coupling" using qualitative information. Brown Economic has obtained a custom tabulation from Statistics Canada showing remarriage rates, by gender, for widow(ers) only, excluding divorced persons.

Some quantum experts have attempted to use Statistics Canada's tables for "numbers of people" who marry and divorce each year in Canada.<sup>47</sup> Unfortunately, data by "numbers of people" do not permit us to extrapolate conditional probabilities<sup>48</sup> that must be used in interrupted earnings cases – there is simply not enough information. Moreover, the marriage rates published by Statistics Canada reflect 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup>+ marriages, so include many divorced people who have remarried. In fatality cases, remarriage rates must be based on widow(ers) only. Unsurprisingly, *remarriage rates for widow(ers) are considerably lower than remarriage rates for divorced persons*, which means that if a quantum expert uses the "numbers of people" data, they are grossly overstating the probability that someone who was widowed will remarry (which lowers the damages claim). What this means is that even if a quantum expert insists s/he converted the "numbers of people" into conditional probabilities (which is mathematically impossible), they are still

<sup>47</sup> See for instance, Statistics Canada. Table 39-10-0053-01- *Number of persons who divorced in a given year and divorce rate per 1,000 married persons, by age group and sex or gender*; Statistics Canada. *Divorces 2001 and 2002 – Shelf Tables*. Catalogue no. 84F0213XPB (2004); Statistics Canada. *Divorces 2003 – Shelf Tables*. Catalogue no. 84F0213XPB (2005); and Statistics Canada. *Marriages 2001 – Shelf Tables*. Catalogue no. 84F0212XPB (2003).

<sup>48</sup> Conditional probabilities take into account how long the survivor has remained widowed since the incident date, because widow(ers) who delay cohabitation or remarriage are less likely to remarry in the future. There is no possible way to reflect this factor using data for "numbers of people".

the wrong data source because the remarriage rates for widow(ers) are obscured by Canadians' first marriages and then remarriage after divorce.

The remarriage rates must be applied separately for women and men, since the propensity to remarry differs for women than for men: women are less likely to remarry once widowed, and when they do, take longer to remarry than men. Remarriage rates are also, as we would expect, lower for older people than for younger people; so this contingency will have a large impact in cases where the decedent and survivor were young (i.e., in their 20s or 30s) but will have a much smaller impact in cases where the decedent and survivor are older (mid- to late-40s and older).

### **Source of divorce rate data**

The trier of fact weighs *qualitative* information about the decedent and survivor's state of marriage before the incident. In cases where the spouses in question were legally married, Statistics Canada publishes divorce rates by gender, age and province<sup>49</sup> that are readily available. The most recent divorce rates are from 2005 and are available for each province and territory: Statistics Canada's **Tables 101-6504 and 101-6505, Age-specific divorce rates per 1,000 legally married females and males, Canada, provinces and territories, annual (rate per 1,000 legally married females or males), CANSIM (database).**<sup>50</sup> Divorce rates by number of previous marriages are not regularly published; the most recent are from 2005.

The divorce rate depends significantly on the duration of marriage. Statistics demonstrate vividly that divorce rates rise steeply during the first few years of marriage (1 to 9 years), then drop off to less than 5% for couples who have been together for 30-34 years.<sup>51</sup> These are overall divorce rates, however. The actual annual rate of divorce hovers around 1 to 2% per year. It is the *cumulative* nature of this contingency that decreases dependency and housekeeping estimates in fatality cases by 10 to 20% overall.<sup>52</sup>

### **Couples living common-law (opposite-sex or same-sex)**

If the couple in question had been common-law partners rather than legal spouses, it is more appropriate to use rates of common-law dissolution ("CLU" rates) than divorce rates. This is due to the fact that the rate of CLU dissolution is considerably higher than the rate of divorce, at least for younger couples.<sup>53</sup> To our knowledge, Brown Economic may be the only group of experts in Canada who have purchased a custom tabulation that provides CLU rates by gender and age. We utilize the CLU rates in cases where the couple had been living common-law rather than married, including same-sex couples.

<sup>49</sup> This is important, as the national average obscures some important differences between provinces and territories in Canada. For instance, although the total divorce rate (by the 30<sup>th</sup> year of marriage) was 38.3% in 2003 – meaning that for every 100 divorces, 38 of them end in divorce by the 30<sup>th</sup> year of marriage – this obscures the fact that the overall divorce rate is much lower in Newfoundland and Labrador (17.1%) and much higher in Quebec (49.7%). The "average" rate of roughly 40% (40 out of 100 marriages) describes couples in Ontario (37.0%), British Columbia (39.8%), Alberta and the Yukon (40.0%). Lower-than-average divorce rates are prevalent in the remaining provinces and territories (27 to 30%). (Source: Statistics Canada, "Divorces 2003" *The Daily* released March 9, 2005).

<sup>50</sup> The 2005 age- and gender-specific divorce rates are available free of charge from Statistics Canada.

<sup>51</sup> See Figure 1 in **Brown's Economic Damages Newsletter** "Divorce rates in fatality cases" April 2006, vol. 3, issue #4.

<sup>52</sup> It is important to note that the total impact of the divorce contingency *cannot* be reported until the annual calculations are undertaken. This contingency cannot be estimated until these calculations are performed, and they depend heavily on the ages of the couple at the time of the incident. Younger couples are more prone to divorce than older couples, so the cumulative contingency will be considerably larger for younger couples than older ones.

<sup>53</sup> For additional commentary on divorce rates vis-à-vis CLU rates, see **Brown's Economic Damages Newsletter**, "The Divorce Contingency: negative contingency in fatality cases – update with 2005 data" May 2010, vol. 7, issue #5.

The final caveat with respect to the divorce or CLU contingency is to consider the notion that *if* the original couple in question had divorced in the absence of the incident, there might well have been ongoing monetary support obligations after the divorce or CLU dissolution, either in terms of a time-limited spousal support order or a matrimonial property transfer.<sup>54</sup> This is especially true if the decedent was the main “breadwinner” whose income was much higher than the survivor’s income. In all cases, when we apply the divorce or CLU contingency, we downgrade the impact of the contingency by calculating annual support payments to the survivor, which are time-limited and contingent upon divorce occurring. (The spousal support payments that are calculated are assumed to be a proxy of either an annual allowance, or a matrimonial property transfer). This adjustment to the divorce contingency has been accepted in two cases that this author has testified: in *Fallowka et al v. Royal Oak Ventures et al* (2004); and in *Palmquist v. Ziegler* (2010).<sup>55</sup>

### ***How to address a new partner’s presence in the survivor’s household***

Formerly, it was taken as “given” that once remarriage (or cohabitation) occurred, the survivor’s dependency losses automatically ceased. With the advent of new technological advances in our fatality software, Brown Economic is able to compare, on a year-by-year basis, the decedent’s after-tax income with a new partner’s after-tax income;<sup>56</sup> and, as well, the decedent’s contribution to valuable services with the partner’s provision of valuable services.<sup>57</sup> Often, we have found that this explicit comparison leads to an ongoing loss of dependency on either income or valuable services, or both, by the survivor. It *does* require more information, since we now must know the date of cohabitation (or remarriage); and we need demographic information about the new partner, i.e., his/her date of birth, resume, tax returns, etc.

A further refinement to the consideration of a new partner can be done about the certainty of the new relationship, i.e., the new partner’s contribution can be weighted according to whether it is believed (or not) the survivor will eventually marry the new partner or whether they will live in a common-law, less permanent basis.

In all cases, consideration of a partner allows more refinement and more accuracy than was previously provided by assuming wholesale cessation of the dependency losses upon cohabitation or remarriage by the surviving spouse.

<sup>54</sup> This adjustment to the divorce contingency only applies to the loss of dependency award on income, not valuable services. Since a marital disruption presumes different residences, there is no ‘scaling back’ of the divorce contingency in the valuable services award, as we assume divorce would limit the non-custodial parent’s provision of such services (except for parenting duties).

<sup>55</sup> Spousal support (or transfer of matrimonial property) is calculated using this formula:  $\{[(\text{decedent's after-tax income} + \text{survivor's after-tax income}) / 2] - [\text{survivor's after-tax income}]\}$ . This adjustment to the divorce contingency was accepted in *Palmquist v. Ziegler* 2010 ABQB 337, paras. [239] and [243].

<sup>56</sup> Moreover, we can conduct this comparison even if the decedent and survivor lived in a different province or territory than the survivor and new partner, since we have tax tables for all provinces and territories in Canada.

<sup>57</sup> The comparison of valuable services is accomplished by having the survivor complete a *Diary of Household Activities* (fatal) for both the decedent, and the new partner. Alternatively, the cost of care expert could inquire and observe the new partner’s contribution to the household and make a comparison to the decedent’s prior role in the household.

## Tax gross-up in fatality cases

Like the valuable services award, in almost every fatality case there is an accompanying award for a tax gross-up to offset the tax payable on the interest income arising from the dependency awards (on income *and* valuable services), which are based on the decedent's and survivor's after-tax income profiles. This is a well-established head of damage in fatality cases, because the prospective award will be eroded if there is interest income that accrues on the declining balance of the award and it is taxed. Normally, the claimant would not have to declare such interest income in the absence of receiving an award, so the tax on this interest income is an "extra" tax burden that arises specifically because of the prospective award(s).<sup>58</sup>

The tax gross-up is calculated on the basis of the surviving parent's award only, not on the total award for the family, because children under the age of 21 are not taxed on investment income from an award as per section 81(1)(g.1) of the *Income Tax Act*. This provision has been endorsed in various cases known to this author (*LeBlanc v. Burcevski* (1995), *Taguchi v. Stuparyk* (1994), *Jensen v. Guardian Insurance Co. of Canada* (1997), and *Dewhurst Estate v. Schmidtke* (1995) to name a few).

For a quantum expert calculating a tax gross-up on the widow(er)'s awards for loss of dependency on income and valuable services, the key assumptions to be made are as follows:

- ◆ The amount of the lump sum award(s);<sup>59</sup>
- ◆ The tax brackets and credits published in the most recent federal government and provincial budgets;
- ◆ The age and life expectancy of the decedent and survivor;
- ◆ The real discount rate used to calculate the prospective award and the tax gross-up;
- ◆ The future rate of inflation;<sup>60</sup>
- ◆ The rate of growth of non-refundable tax credits (i.e., CPP and EI contributions);<sup>61</sup>
- ◆ The survivor's tax bracket in the absence of the award (specifically, the survivor's other sources of income<sup>62</sup> and the survivor's non-refundable tax credits);
- ◆ The "survivor's" deductions from income.<sup>63</sup>

<sup>58</sup> This concept was realized in *Watkins v. Olafson*, 1989 CanLII 36 (S.C.C.), [1989] 2 S.C.R. 750, as noted by Finch C.J.B.C. reiterated in *Townsend v. Kroppmanns*: "...the case law acknowledged the need to increase the lump sum award by an amount sufficient to pay income tax on the fund's income and to leave intact a fund sufficient to pay for the future costs as they were incurred." (para [34]).

<sup>59</sup> The amounts for the awards to be "grossed up" (i.e., dependency on loss of income and valuable services awards) have to dovetail exactly with the tax gross-up calculations. This typically prevents two experts (i.e., an economist and accountant) from doing the tax gross-up calculation, as the expert doing the tax gross-up award would have to replicate the dependency awards already done by the initial expert on the file. Most quantum experts, whether they are economists, actuaries or accountants, are able to do the tax gross-up calculation and are accepted in court as qualified to do so. Thus it is not necessary to hire a tax accountant when the forensic economist or actuary has done the initial lump sum calculations.

<sup>60</sup> We forecast these rates according to P. Dungan and S. Murphy, *Long Term Outlook for the Canadian Economy National Projection through 2050 Policy and Economic Analysis Program*, PEAP Policy Study 2020-02, Table 1b, which consider the Bank of Canada's official target for inflation, renewed in December 2021.

<sup>61</sup> We forecast these rates according to P. Dungan and S. Murphy, *Long Term Outlook for the Canadian Economy National Projection through 2050 Policy and Economic Analysis Program*, PEAP Policy Study 2020-02 University of Toronto, Table 3. Many quantum experts ignore this aspect of forecasting tax brackets and rates, but we know the EI contribution rate often changes and the CPP contribution rates have recently increased.

<sup>62</sup> These sources of income can include non-employment sources, such as royalties, interest income, rental income and capital gains income, as well as retirement income (CPP and OAS benefits, RRSP withdrawals, private pension income) and survivorship benefits (which are not deducted in fatality cases). For data on average and maximum CPP/OAS benefits, see Human Resources Development Canada's *Statistical Bulletin* on the Canada Pension Plan and Old Age Security benefits received by Canadian seniors, by age and gender, and *Old Age Security (OAS) Payment Rates* (see [www.servicecanada.gc.ca](http://www.servicecanada.gc.ca)).

<sup>63</sup> Such deductions could include union dues; employment expenses; carrying charges; and RRSP/RPP contributions. For statistics on the propensity to contribute to RRSPs and the rate of RRSP contributions, see **Brown's Economic Damages Newsletter**, "RRSPs: Impact on after-tax loss calculations, and in fatality cases" August 2010, vol. 7, issue #8.

A final caveat needs to be mentioned. Often, counsel observe in reports that a numerical percentage is shown along with the tax gross-up award expressed in dollar terms. The numerical percentage is shown as a convenience for counsel (and the court) to apply in future negotiations if the base awards change. It is important to know, however, that the numerical percentage is derived *after* the dollar awards are calculated – in other words, there is no “schedule” of percentages that can be used to generate a tax gross-up award. As Cooper-Stephenson and Adjin-Tettey comment:

The need for an evidential base on which to ground the computation of a tax gross-up is clear. **The calculations are too complex and various for a simple range of percentages to be used** [See, e.g., *Watkins v. Olafson* (1986), 40 C.C.L.T. 229 at 234-35 (Man. C.A.)] (emphasis added)<sup>64</sup>

On occasion, quantum experts simply apply general percentages to the dependency awards to generate tax gross-up figures. But these percentages cannot be assumed *without* performing the year-by-year tax gross-up calculations, especially since there are so many moving parts in the tax gross-up calculation that can cause it to fluctuate every year.

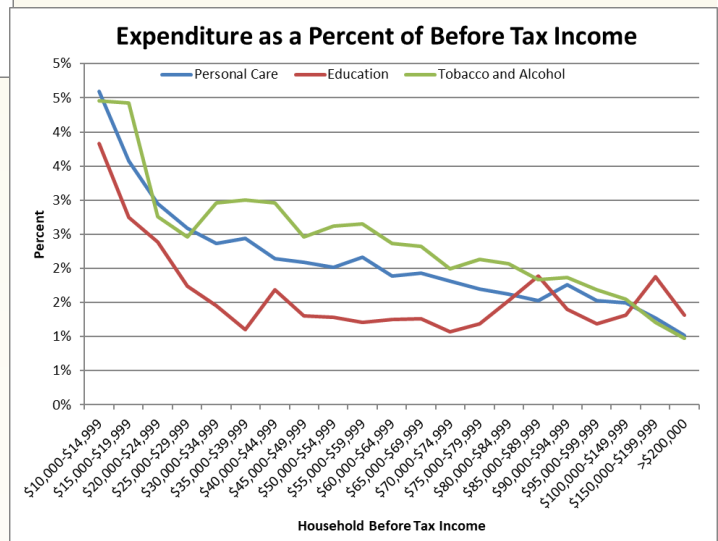
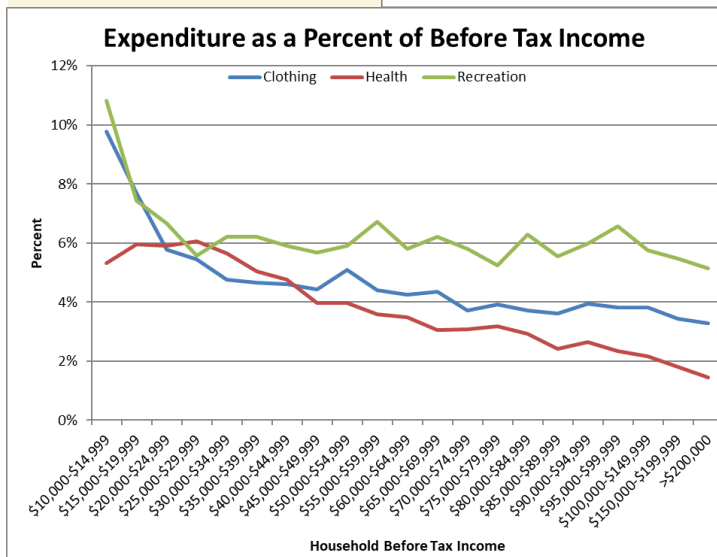
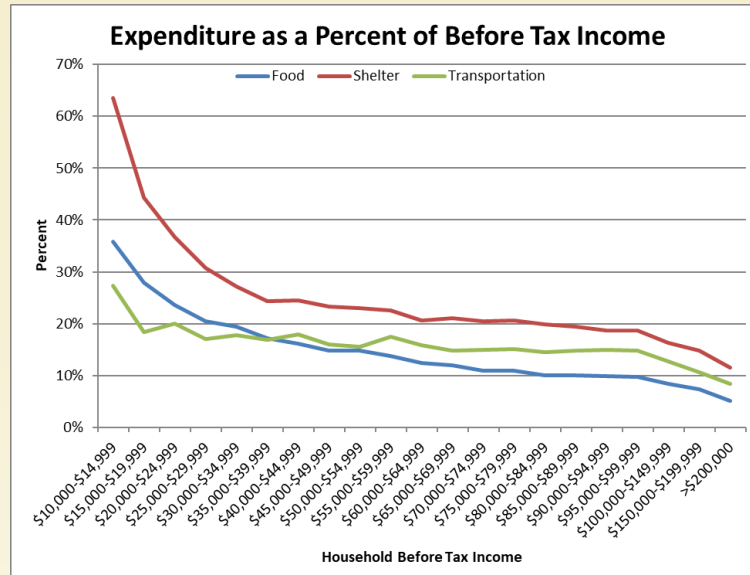
The final caveat is that many quantum experts fail to include their tax gross-up schedules in their reports. This is required as part of the forensic economist’s ethical principles (“Disclosure”)<sup>65</sup> and implicit in Alberta’s *Civil Practice Note no. 5* for economic experts governing the content and format of economic loss reports. Any rebuttal or critique should include a request from the originating expert for the tax gross-up schedules if they are missing. Otherwise, verification (or refutation) cannot be conducted.

<sup>64</sup> K. Cooper-Stephenson and E. Adjin-Tettey, *Personal Injury Damages in Canada*, 3rd ed. (Toronto, Ontario: Carswell, a Thomson Reuters business, 2018), p. 657.

<sup>65</sup> As per the *National Association of Forensic Economics* (NAFE’s) and the *American Academy of Economic and Financial Experts* (AAEFE’s) ethical principles. This author has been a NAFE member since 1995 and an AAEFE member since 2008.

## APPENDIX

### GRAPHS from Statistics Canada's 2007-08 *Surveys of Household Spending*



## Consumer Price Index



## Unemployment Rate

From October 2021 to October 2022*		For the month of October 2022	
(rates of inflation)			
Canada**	6.9%	Canada:	5.2%
Vancouver:	7.3%	Vancouver:	4.4%
Toronto:	6.4%	Toronto:	6.2%
Ottawa:	6.7%	Ottawa:	4.2%
Montréal:	6.7%	Montréal:	4.7%
Edmonton:	6.8%	Edmonton:	5.2%
Calgary:	7.4%	Calgary:	5.3%
Halifax:	7.7%	Halifax:	5.5%
St. John's, NF:	6.4%	St. John's, NF:	5.9%
Saint John, NB:	7.3%	Saint John, NB:	6.5%
Charlottetown (PEI):	9.4%	Charlottetown (PEI):	5.4%
* Using month-over-month indices. Source: Statistics Canada.			
** 12 month rolling average up to October 2022 is 6.5% (see non-pecuniary awards table).			

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## UPDATING NON-PECUNIARY AWARDS FOR INFLATION (OCT. 2022, CANADA)

Year of Accident/ Year of Settlement or Trial	"Inflationary" Factors*	Non-Pecuniary Damages - Sample Awards				
		\$10,000	\$25,000	\$50,000	\$75,000	\$100,000
October 2021-October 2022	1.065	\$10,651	\$26,628	\$53,256	\$79,884	\$106,512
Avg. 2020-October 2022	1.093	\$10,928	\$27,320	\$54,640	\$81,960	\$109,280
Avg. 2019-October 2022	1.101	\$11,007	\$27,517	\$55,034	\$82,551	\$110,068
Avg. 2018-October 2022	1.122	\$11,221	\$28,053	\$56,107	\$84,160	\$112,213
Avg. 2017-October 2022	1.148	\$11,475	\$28,688	\$57,376	\$86,063	\$114,751
Avg. 2016-October 2022	1.166	\$11,658	\$29,146	\$58,292	\$87,438	\$116,584
Avg. 2015-October 2022	1.183	\$11,825	\$29,563	\$59,125	\$88,688	\$118,251
Avg. 2014-October 2022	1.196	\$11,958	\$29,896	\$59,791	\$89,687	\$119,583
Avg. 2013-October 2022	1.219	\$12,186	\$30,465	\$60,931	\$91,396	\$121,861
Avg. 2012-October 2022	1.230	\$12,300	\$30,751	\$61,501	\$92,252	\$123,003
Avg. 2011-October 2022	1.249	\$12,487	\$31,218	\$62,435	\$93,653	\$124,871
Avg. 2010-October 2022	1.285	\$12,851	\$32,126	\$64,253	\$96,379	\$128,505
Avg. 2009-October 2022	1.308	\$13,080	\$32,699	\$65,398	\$98,097	\$130,796
Avg. 2008-October 2022	1.314	\$13,142	\$32,854	\$65,708	\$98,562	\$131,416
Avg. 2007-October 2022	1.343	\$13,429	\$33,573	\$67,147	\$100,720	\$134,293
Avg. 2006-October 2022	1.372	\$13,716	\$34,290	\$68,580	\$102,871	\$137,161
Avg. 2005-October 2022	1.399	\$13,990	\$34,976	\$69,952	\$104,928	\$139,905
Avg. 2004-October 2022	1.430	\$14,301	\$35,751	\$71,503	\$107,254	\$143,006
Avg. 2003-October 2022	1.457	\$14,566	\$36,416	\$72,832	\$109,248	\$145,664
Avg. 2002-October 2022	1.497	\$14,968	\$37,421	\$74,842	\$112,264	\$149,685
Avg. 2001-October 2022	1.531	\$15,307	\$38,267	\$76,534	\$114,801	\$153,068
Avg. 2000-October 2022	1.569	\$15,692	\$39,230	\$78,460	\$117,690	\$156,920
Avg. 1999-October 2022	1.612	\$16,120	\$40,299	\$80,598	\$120,897	\$161,195
Avg. 1998-October 2022	1.640	\$16,399	\$40,996	\$81,993	\$122,989	\$163,986
Avg. 1997-October 2022	1.656	\$16,562	\$41,405	\$82,810	\$124,214	\$165,619
Avg. 1996-October 2022	1.683	\$16,830	\$42,075	\$84,150	\$126,226	\$168,301
Avg. 1995-October 2022	1.710	\$17,095	\$42,738	\$85,477	\$128,215	\$170,954
Avg. 1994-October 2022	1.746	\$17,462	\$43,656	\$87,312	\$130,968	\$174,624
Avg. 1993-October 2022	1.749	\$17,491	\$43,727	\$87,455	\$131,182	\$174,909
Avg. 1992-October 2022	1.782	\$17,818	\$44,545	\$89,089	\$133,634	\$178,179
Avg. 1991-October 2022	1.808	\$18,083	\$45,207	\$90,413	\$135,620	\$180,826
Avg. 1990-October 2022	1.910	\$19,100	\$47,751	\$95,502	\$143,252	\$191,003
Avg. 1989-October 2022	2.001	\$20,015	\$50,037	\$100,074	\$150,110	\$200,147
Avg. 1988-October 2022	2.101	\$21,012	\$52,531	\$105,061	\$157,592	\$210,122
Avg. 1987-October 2022	<b>2.186</b>	\$21,856	\$54,640	<b>\$109,280</b>	\$163,920	\$218,560
Avg. 1986-October 2022	2.281	\$22,809	\$57,021	\$114,043	\$171,064	\$228,086
Avg. 1985-October 2022	2.376	\$23,765	\$59,412	\$118,823	\$178,235	\$237,647
Avg. 1984-October 2022	2.471	\$24,706	\$61,765	\$123,531	\$185,296	\$247,062
Avg. 1983-October 2022	2.577	\$25,770	\$64,424	\$128,848	\$193,272	\$257,696
Avg. 1982-October 2022	2.728	\$27,282	\$68,205	\$136,411	\$204,616	\$272,822
Avg. 1981-October 2022	3.022	\$30,218	\$75,545	\$151,090	\$226,635	\$302,180
Avg. 1980-October 2022	3.399	\$33,993	\$84,982	\$169,964	\$254,945	\$339,927
Avg. 1979-October 2022	3.744	\$37,436	\$93,591	\$187,181	\$280,772	\$374,362
Jan. 1978-October 2022	<b>4.264</b>	\$42,641	\$106,603	\$213,205	\$319,808	<b>\$426,410</b>

\$109,280 = \$50,000 x 2.186 represents the dollar equivalent in October 2022 of \$50,000 based on inflation increases since 1987. Similarly, \$426,410 (= \$100,000 x 4.264) represents the dollar equivalent in October 2022 of \$100,000 in 1978 based on inflationary increases since the month of January 1978.

\* Source: Statistics Canada, Consumer Price Index, monthly CPI release, rolling average (except for Jan. 1978).



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