Brown's Economic Damages Newsletter

February 2014

Volume Eleven Issue 2

Brown Economic offers 5 user-friendly, economic loss calculators for quick, accurate, and cost-effective damages estimates, available @ www.browneconomic.com:

- Non-Pecuniary (free)
- Working Life / Life Expectancy (free)
- Present Value (free)
- Housekeeping (pay per use)
- Income Damages (pay per use)

Cara Brown, M.A., Principal
Maureen Mallmes, B.Sc., SEMC
Dan Clavelle, M.Ec.
Laura Dick, B.A.
Rachel A. MacKenzie, B.A., J.D.
Cindy Ghitter
Elda Figueira, MLS
J.C.H. Emery, Ph.D.
Frank Strain, Ph.D.
Stephen Clark, Ph.D.

2011 National Household Survey Data & Income Sources available to Forensic Economics

By Cara L. Brown, M.A. & Rachel A. MacKenzie, B.A. (Economics), J.D.

Now that Statistics Canada has made available income data from the 2011 *National Household Survey* ("NHS"), forensic economists across Canada can obtain custom tabulations directly from Statistics Canada. We have ordered data from the 2011 NHS to use in all our reports quantifying damages, and for Brown Economic's online *Income Damages Calculator* ("IDC").™ The IDC allows the user to draw from industry data in order to project the claimant's loss.

Prior issues of **Brown's Economic Damages Newsletter** related to this month's topic:[1]

- "Income, Benchmark Salary, and Age-Earnings Profiles: Key Definitions & Statistical Overview", June 2013, vol. 10, issue #5
- "Matching data sources to plaintiff salaries", March 2009, vol. 6, issue #2
- "2006 Census 'Major Field of Study' data; Ontario jury trial; IDC improvements", January/February 2009, vol. 6, issue #1
- "2006 Census data & Income Sources Available to Forensic Economists", October 2008, vol. 5, issue #8
- "2001 Census standard vs. custom data", November 2003, vol. 1, issue #99
- "Major field of study data available for 'top quartile' earners", December 2002, vol. 1, issue #88

[1] To request back issues of our newsletter, go to: www.browneconomic.com > **RESEARCH & PUBLICATIONS** > *Brown's Economic Damages Newsletter* > click on "Newsletter index" to view issues extending back to 2000, by topic. To request prior issues, click on the "Back issues" on the left-hand side menu and complete the email request.

Information about the 2011 National Household Survey[2]

The 2011 NHS, a replacement of the mandatory long census questionnaire (Census Form 2B) used in 2001 and 2006, is a voluntary, self-administered survey that provides information about the demographic, social and economic characteristics[3] of all persons who usually live in Canada[4] and their dwellings. The NHS questions were tested during the 2011 Census consultation and testing processes.

A random sample of 4.5 million dwellings was selected for the NHS, slightly less than 30% of all private dwellings in Canada in 2011. The response rate (the ratio of the number of questionnaires completed to the total number of occupied private dwellings in the sample) was 68.6% for Canada, which is similar to the response rate for other voluntary surveys conducted by Statistics Canada. The final responses were then weighted so that data from the sample accurately represents the NHS's target population. This involves calculation sampling weights, adjusting the weights for the survey's total non-response, and calibrating the weights against census totals.

Comparison/Differences between the 2006 Census and the 2011 National Household Survey

Since the 2011 NHS replaced the mandatory long census questionnaire, it is important to note some of the differences between the NHS and the *2006 Census*. As per the *NHS User Guide*:

> The content of the NHS is similar to that of the 2006 Census long questionnaire. However, a number of changes were made to some questions and sections of the questionnaire. For example, the NHS measures a new component of income (capital gains or losses) and child care and support expenses; the questions used to measure Aboriginal identity were altered slightly; and the universe for determining generational status was expanded to include the entire population, not just the population aged 15 and over. In addition, the unpaid work section was not asked in the 2011 NHS (p. 13).
>
> Caution must be exercised when NHS estimates are compared with estimates produced from the 2006 Census long form, especially when the analysis involves small geographies. Users are asked to use the NHS's main quality indicator, the global non-response rate (see section 6.3), in assessing the quality of the NHS estimates and determining the extent to which the estimates can be compared with the estimates from the 2006 Census long form. Users are also asked to read any quality notes that may be included in dissemination products (p. 14).

Note that in addition to the cautionary note included in the *NHS User Guide,* a number of recent publications related to income in Canada from Statistics Canada contain the same note to readers stating:[5]

> **Comparability between estimates from the 2006 Census long form and the 2011 National Household Survey estimates:** When comparing estimates from the 2006 Census long form and estimates from the 2011

[2] Source: Statistics Canada, *NHS User Guide* (Minister of Industry: 2013), catalogue no. 99-001-X2011001.
[3] The data collected by the NHS covered topics including: basic demographics, families and households, activity limitations, ethnic diversity and immigration, language, Aboriginal persons, mobility and migration, education, labour, place of work and commuting to work, income and earnings, and housing and shelter costs.
[4] This includes persons who live on Indian reserves and in other Indian settlements, permanent residents, non-permanent residents such as refugee claimants, holders of work or study permits, and members of their families living with them. The survey excludes foreign residents, persons living in institutionalized and non-institutionalized collective dwellings and full-time members of the Canadian Forces stationed outside Canada.
[5] For example: Statistics Canada, *Education and occupation of high-income Canadians* (Minister of Industry: 2013), catalogue no. 99-014-X2011003 at p. 9, Statistics Canada, *Persons living in low-income neighbourhoods* (Minister of Industry: 2013), catalogue no. 99-014-X2011003 at p. 10 and Statistics Canada, *Income Composition in Canada* (Minister of Industry: 2013), catalogue no. 99-014-X2011003 at p. 18.

> National Household Survey (NHS) users should take into account the fact that the two sources represent different populations. The target population for the 2006 Census long form includes usual residents in collective dwellings and persons living abroad whereas the target population for the NHS excludes them. Moreover, the NHS estimates are derived from a voluntary survey and are therefore subject to potentially higher non-response error than those derived from the 2006 Census long form.
>
> **Comparing income data from the National Household Survey to other sources:** When comparing income indicators from one source to another, users should be aware that the methodology of how the information was collected, the concepts used and response patterns can affect the comparability of income information. Given the sensitivity of most income indicators to such methodological differences, users should use caution. when comparing income estimates from the NHS to other household income surveys, administrative data or 2006 or earlier censuses.[6]

It should be noted that the *Globe & Mail* was very critical of the NHS in its article entitled "Canada's voluntary census is worthless. Here's why" (Oct. 4, 2013). The main criticisms logged by the newspaper were that some of the response rates to the survey varied by location, socioeconomic status (SES), family status, etc. with people who had higher levels of education, higher-status jobs, higher incomes and older people exhibiting higher response rates.

An article by the University of Regina's *Graduate School of Public Policy* concentrated on the impact on western Canada of the NHS versus the prior Census surveys in its article entitled "Response Rates to the National Household Survey" in the **Western Policy Analyst,** June 2013, vol. 4, issue 5. The lower response rates mean that whereas the mandatory Census (i.e. 2001 and 2006) sampled enough people to warrant publication of information, the NHS' lower response rates meant that only two-thirds of the sampled population could be relied upon to publish the results. The fact, too, that the NHS was voluntary (whereas the Census was mandatory) means that non-response bias is a higher factor with the NHS – there is a much larger portion of the population who could choose to simply not respond compared to the previous Census surveys. This problem makes it more difficult to measure changes over time. For instance, any unusual or unexpected trend that emerges with the NHS has to be prefaced with the caveat that it could be due to non-response error rather than an actual change in facts or circumstances. The other possible problem identified by the University of Regina's *Graduate School of Public Policy* is that when other surveys use the Census as a benchmark to adjust other surveys to be representative (such as the *Labour Force Survey* and the *Survey of Household Finances*), the NHS will be a less useful tool to do this adjustment analysis because of the voluntary nature of the survey and the potential non-response bias.

Having acknowledged these criticisms, forensic economists still want to obtain the 2011 NHS data, given that the last Census was done in 2006 and pertained to the 2005 year. While the 2011 NHS data may not be ideal, it is definitely worth looking at. The fact that data sources have disadvantages does not invalidate them; it simply means that the data must be, at certain times, viewed with caution and it is important to know what some of the data limitations are comprised of.

[6] Statistics Canada, *Income Composition in Canada* (Minister of Industry: 2013), catalogue no. 99-014-X2011003 at p. 18.

Custom Tabulations Ordered by Brown Economic

The custom tabulations obtained by forensic economists from the 2011 NHS data differ from the data available online at the Statistics Canada's website. The reason for this is that the online data allow *some* variables to be "cross-tabulated", i.e., the data represents combined characteristics (such as gender, age and income level for Canada) but do not "nest" the data with as many characteristics as forensic economists prefer. In the example I just gave, the cross-tabulation reflects only *two* variables under which income level is reported: gender and age. Custom tabulations allow forensic economists to cross-tabulate additional demographic characteristics (as many as six). The common variables that are combined include:

- Gender
- Age group (age acts as a proxy for years of work experience and/or tenure)
- Educational level
- Occupation code according to the *National Occupational Classification for Statistics* ("NOC" or "NOC-S")
- Work activity (part-time, full-time, and "all work activity"[7])
- Geography (cities, provinces and average across Canada)

These are the six key characteristics that labour economists traditionally cross-tabulate. Narrowing the samples sizes any further than the six variables above make them too small to report results while maintaining confidentiality and data quality.

Not all custom tabulations are the same. Forensic economists can stipulate their own age groups, education levels and occupation codes and select different geographical areas. For instance, the custom tabulation age groups can be broken into 5-year intervals, 10-year intervals, and 20-year intervals (one of the differences between online data and custom data). For our custom tabulation we have selected the following age groups and education levels:

- Total – 15 years and over
- 15 to 24
- 25 to 29
- 25 to 34
- 30 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 and older

- Total - highest certificate, diploma or degree
- No certificate, diploma or degree
- High school graduation certificate or equivalent
- Apprenticeship or trades certificate or diploma
- College, CEGEP or other non-university certificate or diploma
- Bachelor's degree
- University certificate or diploma above bachelor's
- Degree in medicine, dentistry, veterinary medicine or optometry
- Master's degree
- Earned doctorate

[7] "All work activity" data includes individuals employed on a full-time full-year, full-time part-year, part-time full-year, and part-time part-year basis.

In comparison to the *2006 Census* data, which relied on the 2006 NOC-S, our 2011 NHS custom tabulation will be based on the 2011 NOC data.[8] For data by occupation level, our custom tabulation is likely one of the largest, because we opted to include all categories: 10 broad occupations groups; 47 major groups; 140 minor groups; and 520 unit groups. This totals 718 different occupation titles, with detail at the 4-digit occupation code level. Differences between custom tabulations will arise if, for instance, an expert requested only 252 occupation titles. These will be more aggregated because they will be only at the 3-digit level, whereas 718 titles yield information at the 4-digit level. The specificity of obtaining 4-digit level income data cannot be underestimated. (Recall that even at the 4-digit level, the Census data includes approximately 8 to 12 job titles in *each* 4-digit occupation code. For more commentary on this aspect of the Census data, see **Brown's Economic Damages Newsletter,** "Matching data sources to plaintiff salaries", March 2009, vol. 6, issue #2).

The selection of geographical areas also differs amongst forensic economists. Some experts only request data by province, so they average income across all cities and town across each province. This has the benefit of making the custom tabulation smaller (and more affordable). We have requested data for Canada; all of the provinces; combined the Atlantic provinces as a special key geographical area; and many key Census Metropolitan Areas ("CMAs") and Census Areas ("CAs"), such as:[9]

St. John's CMA (001)
Charlottetown CA (105)
Halifax CMA (205)
Saint John CMA (310)
Moncton CMA (305)
Fredericton CA (320)
Ottawa – Gatineau CMA (505)
Toronto CMA (535)
Winnipeg CMA (602)
Regina CMA (705)
Saskatoon CMA (725)
Calgary CMA (825)
Edmonton CMA (835)
Wood Buffalo CA (860)
Red Deer CA (830)
Lethbridge CA (810)
Medicine Hat CA (805)
Penticton CA / Kelowna CMA / Vernon CA / Kamloops CA
Vancouver CMA (933)
Victoria CMA (935)
Whitehorse CA (990)
Yellowknife CA (995)

The final demographic variable is work activity. As noted above, we requested data for three demographics: part-time workers; full-time workers; and "all work activity". One of the key things about the NHS definition of "full-time" is that it includes workers who are paid for 30 hours or more per week. This is another reason why additional data sources become useful – in most cases, 30 to 34 hours per week is *not* considered full-time work. So what we end up with is a measure of "full-time" which likely includes some part-time workers. How many are in each occupation code depends on the job titles included in the code, and the propensity of part-time work in each occupation.

[8] The National Occupational Classification (NOC) 2011 updates both the *National Occupational Classification* 2006 of *Human Resources and Skills Development Canada* (HRSDC) and Statistics Canada's *National Occupational Classification for Statistics* (NOC-S) 2006. This revised edition eliminates the differences between the two former systems. The first use of the NOC 2011 was in the 2011 *National Household Survey*.
[9] Between the 2006 Census and the 2011 NHS there were only a few changes to the demographic boundaries. Charlottetown, Ottawa-Gatineau, Red Deer, Penticton and Kamloops experienced boundary changes of -1.19%, -0.25%, -0.46%, 4.64%, and 0.09% respectively.

Accuracy of income data

Similar to the 2006 Census, the 2011 NHS asked respondents "does this person give Statistics Canada permission to use the income information available in his/her tax files for the year ending December 31, 2013?"[10] This is important as it moves the NHS data out of the realm of self-report to independent corroboration (this option is only available to those who filed a tax return for the year ending December 31, 2010 and assumes the tax filer is accurate).[11] Introduced in 2011, the NHS also asked respondents questions about their net capital gains or losses.[12] This variable was previously referred to in the census as an exclusion to investment income. Net capital gains or losses are included as an alternate variable (total income plus net capital gains or losses) and not in the regular concept of total income as dissemination in standard census products.[13]

Self-employed income from the 2011 NHS

In addition to data for wage earners, we have also commissioned a table with information about the income of self-employed persons. This would include sole proprietors[14] (who file T1 general returns, similar to wage earners) and owners who are paid salaries from an incorporated business. We also requested data for self-employed persons with and without paid help. This data is cross-tabulated by industry rather than occupation, using the 2007 NAICS which includes 425 industry groups.[15] We retained the other demographic characteristics as well, including gender, age, and geography.[16] We also requested that data on dividend income be added to the self-employed income, adjusted for the gross-up rate used for tax purposes.

Major Field of Study Data

In addition to the custom tabulation described above, Brown Economic has also obtained a data set that cross-tabulated income with a category called "Major field of study", based on the 2011 Classification of Instructional Programs ("CIP"), which includes 432 educational programs.[17] This data allows us to construct age-earnings profiles, for men and women, for various categories that are different from occupation or industry. Major field of study data is helpful when the claimant is currently in school or is intending on pursuing a program of study but the occupation codes do not capture the study program properly. Some of the 432 categories under "major field of study" which we have obtained include:

[10] The Canada Revenue Agency fields used when computing wages for non self-employed persons were: line 101, T4 earnings, line 104 "other exempt income", and line 5363, "Canadian Indian exempt income". Including line 104 is reasonable, since it includes employment income not reported on a T4 slip (such as tips and occasional earnings); net research grants; clergy housing allowance; foreign employment income; wage-loss replacement income from long-term disability plans (which are a proxy for earnings); veteran's benefits; some GST/HST and QST rebates; royalties for work or invention; amounts received from a supplementary unemployment benefit plan; taxable benefits for premiums paid to a group term life insurance plant; employee profit sharing; and medical premium benefits. The large majoring of these flow from employment (the others, such as veteran's benefits; come GST/HST and QST rebates, are likely so small as to have a negligible impact.

[11] For wage earners who report income on line 101, tax filings will be accurate because Canada Revenue Agency receives the corroborating T4 summary from employers showing the income on each employee's T4.

[12] Net capital gains or losses received from the sale of capital property, including mutual funds (non-taxable capital gains or losses on the sale of a principal residence are excluded.

[13] Statistics Canada, *National Household Survey Dictionary, 2011* (Minister of Industry: 2013), catalogue no. 99-000-X2011001 at p. 147.

[14] The Canada Revenue Agency fields used for net income of sole proprietors include the following fields on the T1 general return; 135 (business income), 137 (professional income), 139 (commission income), 143 (fishing income) and 122 (limited partner net income).

[15] Data from the *2006 Census* was based on the 2002 NAICS 431 industry groups.

[16] We have not retained education level as a demographic characteristic for self-employed persons as education level is not as important for self-employed persons as for wage earners in determining the magnitude of income.

[17] Note data from the *2006 Census* was based on the 2000 Classification of Instructional Programs that included 423 programs.

- Student counselling and personnel services
- Drama/theatre arts and stagecraft
- Aboriginal and foreign languages, literature and linguistics
- Theology and religious vocations
- Communication and media studies
- Peace studies and conflict resolution
- Museology/museum studies
- Taxation
- Pharmacology and toxicology
- Ocean engineering
- Masonry/mason
- Animal sciences
- Osteopathic medicine/osteopathy (DO)
- Public health
- Military science, leadership and operational art

These individual educational groups are useful because the 2011 NHS combines occupations together into one, 4-digit NOC-S code. And the 4-digit codes are the most specific available to users. For example, demolition driver, football player and swimmer are classified together in occupation code NOC **F151 , "Athletes".** Typically, the market for football players can make for very different income levels than for demolition drivers and swimmers.

Lastly, the major field of study programs provide data for occupational titles that are obscure and certainly not available separately, such as crafts/craft design, folk art and artisanry. It also provides some interesting categories in the health field, such as "bioethics/medical ethics", "energy-based and biologically-based therapies", and "movement and mind-body therapies". In contrast, the NOC-S combines all types of health related occupations together. In projecting incomes of health professionals, it matters a great deal what *type* of health profession the plaintiff was operating. The "major field of study" data categorizes jobs in terms of function. In addition to the 718 major and minor groups of occupational titles NOC 2011 titles, the "major field of study" data we have purchased offers an additional 432 groupings. It is simply an alternative way of categorizing the data, but it allows for more specificity and therefore better matching to the plaintiff in question.

Additional characteristics of 2011 NHS custom tabulation from Brown Economic

The other augmentation we have made to our table of salaries for wage earners is we not only obtained the "average" income, we have obtained income estimates at "Quartile 1", "Quartile 2" and "Quartile 3". This will allow us to analyze the data in case the plaintiff is below or above average – we can compare his/her income to the quartiles to make this determination.

UPDATING NON-PECUNIARY AWARDS FOR INFLATION (JANUARY 2014, CANADA)

		Non-Pecuniary Damages - Sample Awards				
Year of Accident/	"Inflationary"	$10,000	$25,000	$50,000	$75,000	$100,000
Year of Settlement or Trial	Factors*					
January 2013-January 2014	1.010	$10,102	$25,255	$50,509	$75,764	$101,019
Avg. 2012-January 2014	1.011	$10,106	$25,265	$50,530	$75,795	$101,060
Avg. 2011-January 2014	1.026	$10,259	$25,649	$51,297	$76,946	$102,595
Avg. 2010-January 2014	1.056	$10,558	$26,395	$52,790	$79,186	$105,581
Avg. 2009-January 2014	1.075	$10,746	$26,866	$53,732	$80,597	$107,463
Avg. 2008-January 2014	1.080	$10,797	$26,993	$53,986	$80,979	$107,973
Avg. 2007-January 2014	1.103	$11,034	$27,584	$55,168	$82,752	$110,336
Avg. 2006-January 2014	1.127	$11,269	$28,173	$56,346	$84,519	$112,692
Avg. 2005-January 2014	1.149	$11,495	$28,737	$57,473	$86,210	$114,947
Avg. 2004-January 2014	1.175	$11,749	$29,374	$58,747	$88,121	$117,495
Avg. 2003-January 2014	1.197	$11,968	$29,920	$59,839	$89,759	$119,679
Avg. 2002-January 2014	1.230	$12,298	$30,746	$61,491	$92,237	$122,982
Avg. 2001-January 2014	1.258	$12,576	$31,440	$62,881	$94,321	$125,762
Avg. 2000-January 2014	1.289	$12,893	$32,232	$64,463	$96,695	$128,926
Avg. 1999-January 2014	1.324	$13,244	$33,110	$66,220	$99,330	$132,439
Avg. 1998-January 2014	1.347	$13,473	$33,683	$67,366	$101,049	$134,732
Avg. 1997-January 2014	1.361	$13,607	$34,018	$68,037	$102,055	$136,074
Avg. 1996-January 2014	1.383	$13,828	$34,569	$69,139	$103,708	$138,277
Avg. 1995-January 2014	1.405	$14,046	$35,114	$70,228	$105,343	$140,457
Avg. 1994-January 2014	1.435	$14,347	$35,868	$71,736	$107,604	$143,472
Avg. 1993-January 2014	1.437	$14,371	$35,927	$71,853	$107,780	$143,707
Avg. 1992-January 2014	1.464	$14,639	$36,598	$73,196	$109,795	$146,393
Avg. 1991-January 2014	1.486	$14,857	$37,142	$74,284	$111,426	$148,568
Avg. 1990-January 2014	1.569	$15,693	$39,232	$78,465	$117,697	$156,930
Avg. 1989-January 2014	1.644	$16,444	$41,111	$82,221	$123,332	$164,442
Avg. 1988-January 2014	1.726	$17,264	$43,159	$86,319	$129,478	$172,638
Avg. 1987-January 2014	**1.796**	$17,957	$44,893	**$89,785**	$134,678	$179,571
Avg. 1986-January 2014	1.874	$18,740	$46,849	$93,699	$140,548	$187,397
Avg. 1985-January 2014	1.953	$19,525	$48,813	$97,626	$146,439	$195,252
Avg. 1984-January 2014	2.030	$20,299	$50,747	$101,494	$152,241	$202,988
Avg. 1983-January 2014	2.117	$21,173	$52,931	$105,863	$158,794	$211,725
Avg. 1982-January 2014	2.242	$22,415	$56,038	$112,076	$168,114	$224,152
Avg. 1981-January 2014	2.483	$24,827	$62,068	$124,137	$186,205	$248,274
Avg. 1980-January 2014	2.793	$27,929	$69,822	$139,643	$209,465	$279,287
Avg. 1979-January 2014	3.076	$30,758	$76,895	$153,789	$230,684	$307,579
Jan. 1978-January 2014	**3.503**	$35,034	$87,585	$175,171	$262,756	**$350,342**

$89,785= $50,000 x 1.796 represents the dollar equivalent in January 2014 of $50,000 based on inflation increases since 1987. Similarly, $350,342 (=$100,000 x 3.503) represents the dollar equivalent in January 2014 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).

Consumer Price Index — Unemployment Rate

From Jan 2013 to Jan 2014* (rates of inflation)		For the month of Jan 2014	
Canada**	1.5%	Canada:	7.0%
Vancouver:	0.2%	Vancouver:	6.3%
Toronto:	1.8%	Toronto:	8.4%
Edmonton:	2.2%	Edmonton:	5.5%
Calgary:	3.1%	Calgary:	4.8%
Halifax:	1.5%	Halifax:	6.8%
St. John's, NF:	2.5%	St. John's, NF:	5.6%
Saint John, NB:	1.6%	Saint John, NB:	6.4%
Charlottetown:	3.2%	Charlottetown (PEI):	11.3%

* Using month-over-month indices. Source: Statistics Canada

** 12 month rolling average up to January 2014 is 1.0% (see table above).

Brown Economic Consulting Inc.

HEAD OFFICE
#216, 5718-1A Street South West
Calgary, AB T2H 0E8
T 403.571.0115 F 403.571.0932

#907, 1128 Sunset Drive
Kelowna, B.C. V1Y 9W7
Toll 1.800.301.8801

1701 Hollis Street, Suite 800
Halifax, NS B3J 3M8
Toll 1.800.301.8801

Email help@browneconomic.com
Web www.browneconomic.com