



PROVING ECONOMIC LOSS WHEN INJURY ISN'T OBVIOUSLY MANIFEST & MAGNITUDE OF IMPACT UNKNOWN AT SETTLEMENT

There are many injury cases involving semi-serious or serious injuries, which do not immediately manifest their consequences at the time of settlement. For instance, the claimant could have resumed his/her previous job, or found a sympathetic employer, or employed other strategies to mitigate his/her losses - but may be underperforming, working fewer hours, or be less productive or less "competitive" in the marketplace. Alternatively, the plaintiff's industry could be in an "upswing" after the incident, obscuring any downward trend due to lost productivity or lost (overtime) hours of work. This has been common in many cases we have seen in Alberta in the past 5 years - particularly for those employed in the construction industry or the oil & gas industry.

Many counsel (and plaintiffs) find that they are unable to demonstrate a tangible economic loss for the above-noted reasons. However, they have been provided with medical and/or vocational reports that point to ongoing impairments in the future that these experts believe will reduce the plaintiff's earning capacity.

In such cases, we suggest applying percentage (%) wage deficits to the claimant's current earnings level using data from Statistics Canada's *Participation and Activity Limitation Survey* ("PALS"). The PALS survey is a follow-up to the 1991 HALS (*Health and Activity Limitation Survey*). These wage deficits have now been accepted in court, though their applicability to self-employed persons may be less persuasive. The deficits differ by degree of severity¹ (mild, moderate, severe, very severe)² and by type (agility, hearing, mobility, pain,³ seeing, speech, and "other"⁴).

¹ The categories of disability level came from a derived variable "DEGREE" which is derived from an index measuring the severity of disability. The index is constructed on the basis of an individual's responses to the filter questions (Section A) and screening questions (Section B) of the PALS questionnaire. It represents a score of the respondent's degree of severity over all types of disability (e.g. mobility, sensory, or mental). Examining the distribution of the global severity index scores that are constructed using all questions for each type of disability in the PALS 2001 questionnaire creates the four levels of severity, mild, moderate, severe and very severe. For each type of disability, there were two types of questions asked: intensity and frequency. Points were assigned to each question based on severity, the maximum score being given for someone who is totally disabled in all areas. The product of intensity and frequency was used then to measure severity. The distribution was then divided into deciles. The first decile corresponds to the 10% of people with the lowest disability scores. Then the second decile corresponds to the next 10% of people with the lowest disability score, and so on.. The average score was calculated for each decile and a plot of this average score as a function of the decile was produced. The severity levels were then determined by graphical means. The interpretation of these disability levels is as follows: person in Level 1 are less disabled than persons in Level 2, who in turn are less disabled than persons in Level 3 and so on. For practical purposes, these levels were assigned names: "mild," "moderate," "severe," and "very severe." These measures of severity are not directly comparable to those produced for the HALS 1991 that were based on points awarded the number of functions that an individual reports that he/she had trouble or complete inability to perform. The scores are summed across all functions. A score of "0" indicates no disability; 1-4, mild disability; 5-10, moderate disability and greater than 10, severe disability.

² The disability variables that are used to represent the seven different types of disability come from seven derived variables, "DEG_AGIL", "DEG_HEAR", "DEG_MOBP", "DEG_OTHER", "DEG_PAIN", "DEG_SEEP", and "DEG_SPCH" which were created from individual responses to disability screening questions in section B of the PALS questionnaire. (Source: *User's Guide to the Public Use Microdata File PALS 2001 Appendix C pp. 309-312*)

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Table 1 shows the wage deficits by *severity* of disability.

Table 1: Earnings Gaps for Males, and Reduced Probability of Participation⁵ for Females, by SEVERITY of Disability, Canada, 1991 & Earnings Gaps, 2001

Severity of Disability	2001 PALS		1991 HALS ⁶	
	Males	Females	Males	Females
MILD	-15%	-21%	-10%	-7% on LFP ⁷
MODERATE	-23%	-29%	-18%	-10% on LFP
SEVERE	-33%	-40%	-25%	-17% on LFP
VERY SEVERE*	-49%	-57%	N/A	N/A

*This is a new category derived by the 2001 PALS. It was not used in the 1991 HALS classification.

Table 2 shows the percentage deficits based on *type* of disability. The 2nd column for both males and females report the results of the “t-statistics”, or rather the statistical test for significance.⁸ All of the wage gaps are statistically significant. It is important to note that the HALS and PALS surveys cannot be “produced” like other Statistics Canada catalogues, because they are micro data CD-ROMs that contain the confidential raw data collected from the surveys.⁹

	MALES		FEMALES	
	Marginal Effect	t-Statistic	Marginal Effect	t-Statistic
Agility				
<i>Less Severe</i>	-22.18%	-3.47	-34.88%	-4.47
<i>More Severe</i>	-46.45%	-3.11	-52.63%	-3.22
Hearing				
<i>Less Severe</i>	-14.82%	-2.86	-32.95%	-5.36
<i>More Severe</i>	-16.68%	-2.12	-27.24%	-2.45
Mobility				
<i>Less Severe</i>	-23.58%	-3.77	-29.52%	-4.27
<i>More Severe</i>	-27.12%	-2.15	-41.36%	-2.67
Pain				
<i>Less Severe</i>	-17.09%	-4.43	-21.63%	-4.41
<i>More Severe</i>	-24.66%	-3.03	-33.46%	-3.42
Seeing				
<i>Less Severe</i>	-26.48%	-3.29	-38.26%	-4.01
<i>More Severe</i>	-36.42%	-2.25	-20.85%	-1.11
Speech				
<i>Less Severe</i>	-41.10%	-3.91	-35.33%	-2.48
<i>More Severe</i>	-45.52%	-4.86	-48.23%	-3.52
Other				
<i>Less Severe</i>	-36.25%	-5.84	-35.07%	-4.27
<i>More Severe</i>	-42.04%	-3.74	-44.86%	-3.28

*Statistical Significance Occurs when t-stat > 1.645 or 5% Interval

³ Limited in the amount or kind of activities one can do because of a long-term pain that is constant or reoccurs from time to time, for example, recurrent back pain. (Source: *User's Guide to the Public Use Microdata File PALS 2001*, appendix G).

⁴ The category of “other” consists of: “learning”, “memory”, “developmental”, “psychological”, and “unknown”. (Source: *User's Guide to the Public Use Microdata File PALS 2001* Appendix G). For confidentiality reasons related to the PUMF, 5 types of disabilities were reclassified into the “other” disabilities category.

⁵ Econometric analysis of this dataset has been performed in conjunction with J.C.H. Emery, PhD, a labour economics professor at the University of Calgary.

⁶ Due to a motor vehicle accident.

The wage gaps in Tables 1 and 2 above have been derived from empirical testing known as “regression analysis”. This is a long-standing econometric technique used by economists to isolate the quantifiable impact of a variable (in this case, disability) on another variable (in this case, earnings or labour force participation). The regression analysis used to derive the above-noted results is based on the Heckman two-stage method and correct for sample selection bias.¹⁰

In the economic assessments, we apply the percentage wage gaps to the plaintiff’s expected annual earnings in the future. These wage gaps represent the impact of the severity or type of disability possessed by the plaintiff, revealed by completing two questionnaires - one for the PALS, another for the HALS. One of the key assumptions in using this method is that the plaintiff’s disabilities have to be similar to the disabilities reported by the average Canadian respondent from the PALS and HALS. Justice Veit makes this clear in her decision in *Dabrowski v. Robertson*.¹¹

[155] Had the court concluded that Ms. Robertson was to some degree negligent with respect to the accident, it would have concluded that, as of the date of trial, Mr. Dabrowski had, essentially, recovered from the accident: as of the date of trial, Mr. Dabrowski held a truck driving job that is similar to the job he had before the accident, he is making more money than he made at the time of the accident, his depression and anxiety are manageable, as is his highway driving at speed phobia...

[157] Nonetheless, the court would have gone on to conclude that Mr. Dabrowski had established, through Cara Brown’s HALS/PALS analysis, that it was possible that he would suffer some loss of income in the future, although that loss would be based on a minor or moderate level of disability rather than the severe level of disability used by Ms. Brown.

(i) **The HALS/PALS analysis**

[158] Had the court concluded that Mr. Dabrowski was entitled to recovery, *it would have agreed with Mr. Dabrowski’s economist, Cara Brown, on her endorsement of the HALS/PALS approach to using statistical data to predict the probable effect of disability of a member of the labour force.* (Emphasis added) This approach is particularly important in a situation such as the one here where Mr. Dabrowski eventually returned to the labour force, and was earning more money at the time of trial than he had been earning at the time of the accident. As Ms. Brown puts it:

The impairment suffered by the plaintiff may not have translated into a loss of earnings because of a ‘boom’ in the plaintiff’s industry (generating increase in earnings beyond the pre-incident income levels regardless of the plaintiff’s reduced capacity).

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⁷ LFP = labour force participation. Wage gaps could not be calculated, so the estimation of the impact on women remained with labour force participation. This is used as a proxy for loss of wages. It likely understates the impact on wages.

⁸ A statistical “test of significance” is a procedure by which sample results are used to verify the truth or falsity of a hypothesis (i.e., does disability reduce earnings?) in a permanent and significant way such that we are confident that examining a similar data set with different observations we would find a similar relationship rather than a transient or insignificant difference.

⁹ These answers are from 50,000+ Canadians, and coded so that statistical packages, like SAS or SPSS, tabulate the data for use by social scientists. As such, there is no “data” per se that we can provide in relation to these databases. If someone wishes to obtain the “data”, s/he must purchase the PUMF CD-ROMs from Statistics Canada for \$3000 each (and sign a license agreement) which prohibits the purchaser from disseminating the data or circulating copies of the CD-ROM.

¹⁰ See, for instance, Ernst R. Berndt, *The Practice of Econometrics Classic and Contemporary* (Massachusetts: Addison-Wesley Publishing Company), 1991. For explicit model formulation and statistical significance tests relating to the results in the table below, see C.L. Brown, *Damages: Estimating Pecuniary Loss* loose-leaf (Aurora, Ontario: Canada Law Book), 2007, chapter 5.

¹¹ (2007) ABQB 522 (CanLII). This author testified on behalf of the plaintiff in this matter. In this case, Justice Veit did not find the defendant liable, so did not award damages.

[159] Where a victim of negligence is a member of the labour force, or is expected to become a member of the labour force, it is appropriate to recognize the potential loss of income from employment separately from the award that is made for the disability itself in the pain and suffering award for non-pecuniary damages. In this way, the additional potential loss to earning power which is borne by a victim of negligence who is, or who expects to be, employed can be fairly compensated. A person who has no attachment to the labour force and a person who is attached to the labour force who both lose a leg are not entitled to the same award of damages.

[160] In this case, Dr. Jomha has provided evidence to the effect that Mr. Dabrowski should expect to feel the results of his ankle injury permanently.

[161] On this issue, the court notes, as well, that Ms. Robertson's economist...does not disagree with either the validity of the HALS/PALS input or the regressive analysis undertaken by Ms. Brown. His only concern is limited to the observation that, where much is known about an individual litigant, that specific information rather than generalized information of the type found in the surveys, should be preferred.

[162] I do not disagree with [the opposing expert's] concern. However, even accepting Ms. Brown's approach, I would not, as she has, classified Mr. Dabrowski's impairment as 'severe' or "very severe". In modifying her approach, I would have relied on Ms. Brown's own standards:

The validity with which the HALS or PALS data represents the plaintiff's reduced earning capacity in the future depends on medical or vocational prognostications about the plaintiff and the degree of severity the plaintiff will suffer, such severity being defined by the HALS and PALS surveys.

[163] Here, I would place Mr. Dabrowski's impairment in the moderate category.

[164] In the result, the court has estimated Mr. Dabrowski's future loss of income at \$50,000.00.

Justice Veit used a similar analysis in *Robinson v. Lefebvre*.¹² Veit, J. awarded an income loss based on a HALS type approach:

...there is a wage gap between a person who has the kind of mild/moderate functional disability for employment purposes suffered by Mr. Robinson (the inability to cut his toe nails does not have an impact on his employability) and a fully able-bodied worker. That wage gap is in the range of 3-6%. In the circumstances here, this results in a probable yearly deficit for Mr. Robinson in the range of \$3,000 - \$3,500.

Lomas, J. adopted a similar approach in *Jones v. Cheesebrough*¹³ as Veit, J. did in *Robinson*.

In order to ensure that there is an evidentiary link between the plaintiff in question and the respondents to the HALS and PALS surveys, the plaintiff should complete the questionnaires. We provide these to the plaintiff. They have been taken directly from Statistics Canada's documentation. Both questionnaires have to be returned to the Brown Economic office for scoring.¹⁴

¹² ABQB 659. This author testified on behalf of the defendant in this matter.

¹³ [2003] A.J. No. 324 2003 ABQB 196, para. 98. This author testified on behalf of the plaintiff in this matter.

Cara Brown presented at the Western Economic Association International (WEAI) conference in Seattle in June/July 2007 at a session for the National Association of Forensic Economists (NAFE). Her topic was "*Assessing disability losses: using Canada's HALS & PALS databases to estimate wage deficits.*"

The HALS/PALS deficit approach is ideally suited to high-income earners. This is because these claimants suffer in the litigation process from the notions that, if they resume working, are making "enough" money, instead of focusing on restitution. The wage gap analysis explained in this paper applies to losses regardless of the absolute income values. For instance, say the wage gap equals \$10,000 per year: this analysis ignores whether it is a loss between \$30,000 and \$20,000, or whether it is a loss between \$210,000 and \$200,000. The results would be the same - so this analysis focuses on the *magnitude* of the *deficit* between the without- and with-incident income streams rather than the absolute values of income levels.

This analysis is especially appealing given that the number of high-income individuals in Canada has increased over the past 12 years (from 1992 to 2004), as has the variation in what is considered "high-income".¹⁵ Unlike analyses performed about low-income individuals and families, there is far less devoted to high-income individuals and families. One of the reasons for this is that the survey data have small sample sizes, since people in this category are fewer in number. The other reason is that there is no commonly accepted definition of "high income", especially when inflation erodes earnings. Examples of commonly applied nominal thresholds include \$250,000 (the highest income grouping used for many years by Canada Revenue Agency); \$150,000 (used in Statistics Canada's census tables); and \$113,804 (the top federal tax rate threshold in 2004).

As noted above, there is a lot of variation within the "high-income" individuals group. In 2004, those who earned \$37,000 were in the top third (33%) of the income population. However, those in the top 1% earned \$181,000 and those in the top 0.6% earned \$250,000.¹⁶ The predominant threshold is generally those involving the top 10% or the population (or less).

The top 1% experienced major increases in income from 1992 to 2004, particularly compared to the prior decade. In 1982, the top 5% of individual incomes were 322% times the median income; in 2004, this had increased to 364% times the median income. More significantly, the top 0.01% income threshold for individuals was 55 times larger than the median; by 2004, this had increased to 115 times the median. In dollar terms, this translates into an average income of \$133,000 in 1982 for the top 5% of individuals; by 2004, this figure was \$178,000. The top 0.01% of earners reported income of \$2,903,000 in 1982; by 2004, this had increased to \$5,920,000. Not only did these individuals report higher income by 2004, there were more of them: in 1982, the proportion of individuals reporting \$100,000 or more stood at 2.6%; by 2004, this had risen to 3.7%.

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¹⁴ The PALS 2001 questionnaire is not available from Statistics Canada. It is based on D. Faucher, *PALS 2001 Disability Scale for Adults*, January 29, 2002; and consultations with senior analysts at Statistics Canada. It is reproduced in C.L. Brown, *Damages: Estimating Pecuniary Loss* loose-leaf (Aurora, Ontario: Canada Law Book), 2007, appendix 5-2, pages 5-48 to 5-48.23. The scoring instrument for the PALS 2001 questionnaire resides with Brown Economic Consulting Inc.

¹⁵ This data has been summarized from an article authored by Brian Murphy, Paul Roberts and Michael Wolfson, "High-income Canadians" *Perspectives on Labour and Income*, Statistics Canada Winter 2007.

¹⁶ Source: Statistics Canada, T1 Family File, 2004.

High-income thresholds: Canadian versus American earners

Up to the first two-thirds of the income distribution, Canadian families equaled or surpassed their American counterparts in the mid-1990s. This pattern changes once we analyze the top 10% of earners. While the top 5% of Canadian families who filed in 2004 had an income of at least \$154,000, the 5% threshold for the U.S. was only slightly larger, at \$165,000 (using purchasing power parity values, not nominal currency). However, at the top 0.01%, the threshold in Canada is approximately \$4.3 million compared with \$9.4 million in the U.S.

Sources of income: wages or investment income?

Interestingly, the highest-income individuals increased their proportion of income from employment at a considerably faster rate between 1982 and 2004: the top 1% from 59 to 74%, and the top 0.01% from 36 to 62%. Both groups experienced decreases in the proportion of investment income - the top 1% derived 33% of income from investments in 1982 but only 10% in 2004. The top 0.01% derived 43% of income from investments in 1982, but only 14% in 2004.

Characteristics of high-income earners in Canada

The socio-demographic characteristics of high-income earners in Canada differ markedly from the overall population. Of the 1.2 million Canadians who make up the top 5% of income recipients, 75% are men. Only 1 in 9 (11%) in the top 0.01% of income recipients were women in 2004.

The other characteristics are not unexpected. The majority of high-income individuals are older (in the 45 to 64 year old age group), which we would expect because of the age-earnings curve, which typically shows earnings increasing with age, then plateauing. Half of the top 5% live in Ontario; 18% live in Quebec, 15% in Alberta, and 13% in BC. 75% of high-income individuals are married.

The top 1% had average income of \$366,000 with net worth of \$1.9 million, roughly 5 times income. Interestingly, spending on housing and vehicles declines as income increases. 80% of those with the lowest incomes spent 31% on these items whereas the top 1% spent only 16%. The top income families had 61% of their net worth in financial assets, compared with 37% for the bottom 80%. However, pension assets are more evenly distributed (21% of net worth for the top 1% of families, 32% for the bottom 80%). This reinforces the tendency for plaintiffs to enjoy fringe benefits in the form of group insurance and retirement contributions, since they tend to vary more so by firm size and industry sector than by the usual human capital characteristics (eg., education, occupation and income level).

ANNOUNCEMENTS


- Cara Brown has been invited to present at the Canadian Institute's *Motor Vehicle Accident Litigation* conference in Calgary on January 29, 2008
- Cara Brown has been invited to present at the Canadian Institute's **8th National Summit on Institutional Liability for Assault & Abuse** in Toronto on April 1, 2008.

UPDATING NON-PECUNIARY AWARDS FOR INFLATION (NOVEMBER 2007, 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
November 2006-November 2007	1.021	\$10,207	\$25,518	\$51,037	\$76,555	\$102,074
Avg. 2005-November 2007	1.040	\$10,397	\$25,993	\$51,986	\$77,980	\$103,973
Avg. 2004-November 2007	1.063	\$10,628	\$26,569	\$53,139	\$79,708	\$106,277
Avg. 2003-November 2007	1.083	\$10,825	\$27,063	\$54,127	\$81,190	\$108,253
Avg. 2002-November 2007	1.112	\$11,124	\$27,810	\$55,621	\$83,431	\$111,241
Avg. 2001-November 2007	1.138	\$11,376	\$28,439	\$56,878	\$85,317	\$113,755
Avg. 2000-November 2007	1.166	\$11,662	\$29,154	\$58,309	\$87,463	\$116,618
Avg. 1999-November 2007	1.198	\$11,980	\$29,949	\$59,898	\$89,847	\$119,795
Avg. 1998-November 2007	1.219	\$12,187	\$30,467	\$60,935	\$91,402	\$121,869
Avg. 1997-November 2007	1.231	\$12,308	\$30,771	\$61,541	\$92,312	\$123,083
Avg. 1996-November 2007	1.251	\$12,508	\$31,269	\$62,538	\$93,807	\$125,076
Avg. 1995-November 2007	1.270	\$12,705	\$31,762	\$63,524	\$95,286	\$127,047
Avg. 1994-November 2007	1.298	\$12,977	\$32,444	\$64,887	\$97,331	\$129,775
Avg. 1993-November 2007	1.300	\$12,999	\$32,497	\$64,994	\$97,490	\$129,987
Avg. 1992-November 2007	1.324	\$13,242	\$33,104	\$66,208	\$99,313	\$132,417
Avg. 1991-November 2007	1.344	\$13,438	\$33,596	\$67,192	\$100,788	\$134,384
Avg. 1990-November 2007	1.419	\$14,195	\$35,487	\$70,974	\$106,461	\$141,947
Avg. 1989-November 2007	1.487	\$14,874	\$37,186	\$74,371	\$111,557	\$148,743
Avg. 1988-November 2007	1.562	\$15,616	\$39,039	\$78,078	\$117,117	\$156,156
Avg. 1987-November 2007	1.624	\$16,243	\$40,607	\$81,213	\$121,820	\$162,427
Avg. 1986-November 2007	1.695	\$16,951	\$42,377	\$84,753	\$127,130	\$169,506
Avg. 1985-November 2007	1.766	\$17,661	\$44,153	\$88,306	\$132,459	\$176,612
Avg. 1984-November 2007	1.836	\$18,361	\$45,902	\$91,804	\$137,706	\$183,608
Avg. 1983-November 2007	1.915	\$19,151	\$47,878	\$95,756	\$143,634	\$191,512
Avg. 1982-November 2007	2.028	\$20,275	\$50,688	\$101,376	\$152,064	\$202,752
Avg. 1981-November 2007	2.246	\$22,457	\$56,143	\$112,285	\$168,428	\$224,571
Avg. 1980-November 2007	2.526	\$25,262	\$63,156	\$126,312	\$189,467	\$252,623
Avg. 1979-November 2007	2.782	\$27,821	\$69,554	\$139,107	\$208,661	\$278,214
Jan. 1978-November 2007	3.169	\$31,689	\$79,224	\$158,447	\$237,671	\$316,895

\$81,213 = \$50,000 x 1.624 represents the dollar equivalent in November 2007 of \$50,000 based on inflation increases since 1987. Similarly, \$316,895 (= \$100,000 x 3.169) represents the dollar equivalent in November 2007 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 Nov 2006 to Nov 2007* (rates of inflation)		For the month of November 2007	
Canada**	2.5%	Canada:	5.9%
Vancouver:	1.4%	Vancouver:	4.2%
Toronto:	2.5%	Toronto:	6.6%
Edmonton:	5.1%	Edmonton:	4.3%
Calgary:	4.3%	Calgary:	3.0%
Halifax:	2.8%	Halifax:	5.1%
St. John's, NF:	2.4%	St. John's, NF:	6.7%
Saint John, NB:	3.2%	Saint John, NB:	5.3%
Charlottetown:	3.0%	Charlottetown (PEI):	11.2%

* Using month-over-month indices. Source: Statistics Canada
 ** 12 month rolling average up to November 2007 is 2.1% (see table above).

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