VINCENTS Cumpston Sarjeant
CONSULTING ACTUARIES

# Personal Consumption Percentages in Australia - Current Tables for 2018

**Michael J Lee CA, Julia Bossert CA and Corey Plover ***

## EXECUTIVE SUMMARY

This paper utilises the most recent Household Expenditure Survey data collated by the ABS (2015 / 2016) to prepare current personal consumption percentages, and also incorporates many of the suggestions from our peers on the allocation of expenditure items.

The most recent data released by the ABS shows that compared to the previously published 2009 / 2010 data, household incomes have increased, and the most significant increases in expenditure predominately relate to items which are non-divisible in nature (e.g. Mortgage Repayments, Education, Household Services and Operations (e.g. Child Care), Other Capital Housing Costs (e.g. Rental Properties)). In contrast, expenditure on many items of personal consumption (divisible items) such as alcohol, tobacco and clothing have not materially increased or have declined. As a result, the personal consumption percentages have decreased since the publication of our previous paper in February 2016.

Consistent with our previous papers on this topic, we have calculated personal consumption percentages that are expressed as a percentage of after-tax household income, and therefore allows for the possibility that a household may not spend every dollar that it earns (i.e. that it accumulates savings).

We highlight the following two (2) issues which should be given specific considerations based on the individual circumstances of each matter to which the percentages are to be applied:

(i) Our personal consumption percentages have been prepared based on the assumption that the only savings in motor vehicle costs as a result of the death of the deceased would be a proportion of fuel costs, and repairs and maintenance. Should the information regarding the deceased's household indicate that an additional motor vehicle was exclusively used by the deceased prior to their death and then disposed of as a result of the death of the deceased, we are of the opinion that the percentages stated below should be increased by, on average, 4.3%; and

(ii) We are of the opinion that the personal circumstances of the deceased's intended retirement should be considered. Should it be the case that the household's income level would likely result in the deceased being a "self-funded" retiree, we are of the opinion that a deduction should be made to the calculated loss of financial dependency to represent the savings arising from the household no longer being required to fund the deceased's retirement.

The following tables set out our estimates of personal consumption based on differing levels of income and household composition:

2 PARENT FAMILIES – PERSONAL CONSUMPTION EXPRESSED AS PERCENTAGE OF AFTER-TAX HOUSEHOLD INCOME

| Weekly Income (before tax) | | Number of Children | | | |
|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 |
| 1st Decile | $ 339 | N/A | N/A | N/A | N/A |
| 2nd Decile | $ 590 | N/A | N/A | N/A | N/A |
| 3rd Decile | $ 823 | 25.1% | N/A | N/A | N/A |
| 4th Decile | $ 1,101 | 23.0% | 18.9% | 16.1% | 14.2% |
| 5th Decile | $ 1,429 | 21.9% | 18.0% | 15.4% | 13.5% |
| 6th Decile | $ 1,792 | 21.3% | 17.5% | 14.9% | 13.1% |
| 7th Decile | $ 2,204 | 19.8% | 16.2% | 13.8% | 12.1% |
| 8th Decile | $ 2,758 | 17.7% | 14.5% | 12.4% | 10.8% |
| 9th Decile | $ 3,559 | 17.4% | 14.2% | 12.1% | 10.7% |
| 10th Decile | $ 6,295 | 15.0% | 12.3% | 10.5% | 9.2% |
| **All Households** | **$ 2,086** | **19.2%** | **15.8%** | **13.4%** | **11.8%** |
| **** Adjustment for additional motor vehicle (if exclusively used by the deceased): Add 4.3% to above percentages*** | | | | | |

**Table 1**

1 PARENT FAMILIES – PERSONAL CONSUMPTION EXPRESSED AS PERCENTAGE OF AFTER-TAX HOUSEHOLD INCOME

| Weekly Income (before tax) | | Number of Children | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| 1st Decile | $ 339 | N/A | N/A | N/A |
| 2nd Decile | $ 590 | N/A | N/A | N/A |
| 3rd Decile | $ 823 | N/A | N/A | N/A |
| 4th Decile | $ 1,101 | 32.3% | 25.4% | 21.3% |
| 5th Decile | $ 1,429 | 30.7% | 24.2% | 20.3% |
| 6th Decile | $ 1,792 | 29.8% | 23.4% | 19.5% |
| 7th Decile | $ 2,204 | 27.7% | 21.7% | 18.1% |
| 8th Decile | $ 2,758 | 24.7% | 19.4% | 16.2% |
| 9th Decile | $ 3,559 | 24.3% | 19.1% | 15.9% |
| 10th Decile | $ 6,295 | 21.0% | 16.4% | 13.7% |
| **All Households** | **$ 2,086** | **26.9%** | **21.1%** | **17.6%** |

**Table 2**

**N/A – we do not believe personal consumption percentages for these deciles / household compositions can reliably be used and therefore have excluded them from our calculations**

## A CHRONOLOGY OF STUDIES

We note the following relevant chronology in relation to the recent studies / developments in relation to dependency / personal consumption percentages in Australia:

| | | |
|---|---|---|
| Circa 2001 | - | Richard Cumpston and Hugh Sarjeant issue paper entitled *"Dependency percentages for two-parent families"* utilising the 1998 / 1999 Summarised Household Expenditure Survey (**Cumpston and Sarjeant paper and tables**). |
| 2002 | - | Professor Luntz's 4th edition of *"Assessment of Damages for Personal Injury and Death"* incorporating the Cumpston and Sarjeant tables is published. |
| April 2009 | - | Hugh Sarjeant and Paul Thomson issue a paper entitled *"Dependency percentages for two-parent and one-parent families"* utilising the 2003 / 2004 Summarised Household Expenditure Survey (**Sarjeant and Thomson paper and tables**). |
| January 2012 | - | Michael J Lee and Julia Bossert issue a paper entitled *"Dependency Percentages in Australia Revisited – Estimating Personal Consumption using Statistical Data"* utilising the 2009 / 2010 Detailed Household Expenditure Survey for income quartiles (**Lee and Bossert 2012 paper and tables**). |
| January 2015 | - | Michael J Lee and Julia Bossert issue a paper entitled *"Personal Consumption Percentages in Australia – Current Tables for 2015"* ("the 2015 paper") utilising the 2009/2010 Detailed Household Expenditure Survey for income deciles (**Lee and Bossert 2015 paper and tables**). |
| February 2016 | - | Michael J Lee, Julia Bossert and Corey Plover issue paper entitled *"Agreed statistical tables for loss of financial dependency in Australia"* (**Agreed paper and tables**) in which Cumpston Sarjeant abandon previous tables they have produced and agree with the Lee and Bossert 2015 tables. |

## THE LATEST HOUSEHOLD EXPENDITURE DATA

The data used in our previous papers are based on the 2009 / 2010 Household Expenditure Surveys whereas the Luntz tables are based on the 1998 / 1999 Household Expenditure Surveys. This data is evidently outdated (the latter by around 17 years).

We have obtained household expenditure data from the ABS based on 2015 / 2016 Household Expenditure Data which is categorised by income deciles (i.e. the data is divided into ten income groups).

WHAT HAS CHANGED IN THE LAST SEVEN YEARS?

We make the following general observations about the changes in income and expenditure since the 2009 / 2010 survey (2010 HES) upon which we based the Lee and Bossert 2015 paper and tables.

**Changes in Household Income**

Since the 2010 HES income for the average household has increased by approximately 24%.

**Changes in Household Expenditure Patterns**

The changes in Household Expenditure are summarised by the ABS as follows:

**KEY FINDINGS**

**Table 1 - AVERAGE WEEKLY HOUSEHOLD SPENDING(a)(b), Australia, 2009-10 and 2015-16**

| | 2009-10 | 2015-16 | Change 2009-10 to 2015-16 | |
|---|---|---|---|---|
| **Expenditure Category** | $ | $ | $ | % |
| **Goods and Services** | | | | |
| Current housing costs (selected dwelling) | 223 | 279 | 56 | 25.1 |
| Domestic fuel and power | 33 | 41 | 8 | 25.8 |
| Food and non-alcoholic beverages | 204 | 237 | 33 | 16.1 |
| Alcoholic beverages | 32 | 32 | (c)-0.40 | (c)-1.2 |
| Tobacco products | 13 | 13 | (c)0.27 | (c)2.2 |
| Clothing and footwear | 44 | 44 | (c)-0.63 | (c)-1.4 |
| Household furnishings and equipment | 57 | 58 | (c)0.87 | (c)1.5 |
| Household services and operation | 35 | 45 | 10 | 29.6 |
| Medical care and health expenses | 66 | 82 | 17 | 25.6 |
| Transport | 193 | 207 | 14 | 7.2 |
| Communication | 42 | 47 | 4 | 9.9 |
| Recreation | 154 | 172 | 18 | 11.6 |
| Education | 31 | 44 | 13 | 43.5 |
| Personal Care | 24 | 29 | 5 | 19 |
| Miscellaneous goods and services | 86 | 97 | (c)11 | (c)12.9 |
| Total goods and services expenditure | 1,236 | 1,425 | 189 | 15.3 |
| **Selected other payments** | | | | |
| Income tax | 260 | 383 | 123 | 47.3 |
| Mortgage repayments principal (selected dwelling) | 49 | 71 | 21 | 43.5 |
| Other capital housing costs | 100 | 124 | (c)24 | (c)24.3 |
| Superannuation and life insurance | 74 | 77 | (c)3 | (c)4.6 |

(a) Expenditure has **not** been adjusted for inflation over time
(b) Additional broad expenditure classification for Communications and Education were developed for the 2015-16 cycle. Estimates for 2009-10 have been concorded to reflect these new categories
(c) The difference between 2009-10 and 2015-16 is not statistically significant

**Figure 1**

Based the generalised categories, it would appear the major increases in expenditure predominantly relate to items which are non-divisible in nature (e.g. Mortgage repayments, Education, Household Services and Operations (e.g. Child Care), Other Capital Housing Costs (e.g. Rental properties)).

In contrast, expenditure on many items of personal consumption (divisible items) such as alcohol, tobacco and clothing have not materially increased or have declined.

THE UPDATED ABS DATA

**Income Groups**

In relation to the above, we note household expenditure is categorised based on the following income deciles:

| Description | Weekly Income (Before-tax) | Annual Income (Before-tax) |
|---|---|---|
| 1st Decile | $ 339 | $ 17,696 |
| 2nd Decile | $ 590 | $ 30,798 |
| 3rd Decile | $ 823 | $ 42,961 |
| 4th Decile | $ 1,101 | $ 57,472 |
| 5th Decile | $ 1,429 | $ 74,594 |
| 6th Decile | $ 1,792 | $ 93,542 |
| 7th Decile | $ 2,204 | $ 115,049 |
| 8th Decile | $ 2,758 | $ 143,968 |
| 9th Decile | $ 3,559 | $ 185,780 |
| 10th Decile | $ 6,295 | $ 328,599 |
| **All Households** | **$ 2,086** | **$ 108,889** |

**Table 3**

We acknowledge that the data relates to household expenditure in 2015 / 2016 and, whilst labelled "detailed tables", is in a summarised form and not the "micro data" upon which the statistics are produced.

We also note the following other issues in relation to the statistical data:

(i) The profile of persons within the 1st and 2nd deciles would appear to predominantly comprise of single person households who are not employed and receive income primarily from government pensions and allowances. The average age of persons in this group is 62 years of age. We would place little value on the data in estimating personal consumption in loss of financial dependency cases and accordingly have not produced percentages for these deciles;

(ii) The profile of persons within the 3rd decile would appear to predominantly comprise of households with couples without dependent children. The average age of adults in this group is 57 years of age and over half of households in this group receive income primarily from government pensions and allowances. We are of the opinion that caution should be exercised in relying upon this data to estimate personal consumption in loss of dependency cases where children are dependants;

(iii) The profile of persons within the 4th and 5th deciles would appear to predominantly comprise of households with couples with and without dependent children who receive income primarily from employment. The average age of adults in this group is 50 years of age;

(iv) The profile of persons within the 6th to 8th deciles would appear to predominantly comprise of households with couples with and without dependent children, with a higher proportion of households with dependent children compared to lower deciles. Household income in these groups is primarily received from employment with some government pensions and allowances (presumably family tax benefits). The average age of adults in these groups is 45 years of age;

(v) The profile of persons in the 9th and 10th deciles would appear to predominantly comprise of households with couples with and without dependent children. Household income in these groups is primarily received from employment and income from government pensions and allowances is minimal. The average age of adults in these groups is 47 years of age; and

(vi) The data does not outline the number of motor vehicles owned and operated in each income decile.

Any conclusions drawn from the available statistical data regarding dependency would appear to be most reliable when applied to households of a similar composition.

## FEEDBACK / CRITICISMS OF PREVIOUS PAPERS

Since the publication of our previous papers, we have received feedback from a number of our colleagues and peers who work within the forensic accounting area. The majority of the feedback we have received has been in support of the approach we have adopted and the resultant personal consumption percentages. However, we acknowledge that the support has not been universal and address the areas of criticism.

In the main the criticisms have fallen in three categories, namely:

(i) It is different from and / or more complicated than the previous approach contained within Professor Luntz's 4th edition of "Assessment of Damages for Personal Injury and Death" (**Differing Approach**);

(ii) The allocations of what Household Expenditure constitutes personal consumption (**Allocations**); and

(iii) The methodology that should be adopted in determining personal consumption (**Preferred Methodology**).

We address each of these issues separately hereunder.

DIFFERING / MORE COMPLICATED APPROACH

It is suggested that because the approach adopted (namely consumption percentages based on income levels) differs from a constant dependency percentage as set out in Professor Luntz's 4th edition of "*Assessment of Damages for Personal Injury and Death*" it is alleged to be more complicated and should not be accepted. The alleged complication is that we use percentages depending on income as opposed to one single percentage regardless of the level of household income.

In our opinion, this argument (regardless of the validity or otherwise) is not a sufficient reason to disregard a position. The common law itself has developed over the years by challenging previously held positions, refining positions and in cases rectifying positions that were wrong. Further, we disagree that a methodology which results in a flawed outcome (as we assert the previous dependency percentages to be) should continue to be used solely on the basis that it is perceived to be "simpler".

We highlight that the consulting firm Cumpston Sarjeant Consulting Actuaries, who were the authors of the previously published tables, are of the opinion that all previous tables are outdated and that the Agreed Tables should be used as they more accurately measure personal consumption / loss of financial dependency.

ALLOCATIONS

Following feedback received and extensive discussions with our colleagues / peers regarding the household expenditure allocations, we agree with and have incorporated some of the suggestions provided to us in regard to the categorisation of personal expenditure items. As detailed in our methodology section, we have now introduced the categories of "Partly Divisible" and "Mostly Divisible" and have amended a number of our expense categorisations (refer ***Appendix 1***).

We acknowledge that we have not adopted all of the amendments which were suggested to us, most commonly in respect of the treatment of household items such as blankets and cutlery; nor do we agree with an alternative proposed method of dealing with child-care expenses whereby they are apportioned across all family members (including adults).

Further, we continue to be of the opinion that motor vehicle expenses should be considered on a case by case basis and, as detailed below, additional personal consumption should only be added in the situation where a motor vehicle was exclusively used by the deceased.

THE PREFERRED METHODOLOGY

The fundamental criticism of our approach would appear to be whether personal consumption should be expressed as a percentage of household after-tax income ("the income approach") or as a percentage of total expenditure ("the expenditure approach").

In our opinion, the expenditure approach should not be adopted for the following reasons:

(i) It is contrary to accepted economic principles and data (**Economic Principles and Data**);

(ii) It is contrary to amounts of the personal consumption in the HES (**HES Data**); and

(iii) It is contrary to other studies in this area (**Other Studies**).

We address each of the aforementioned reasons below:

**Economic Principles and Data**

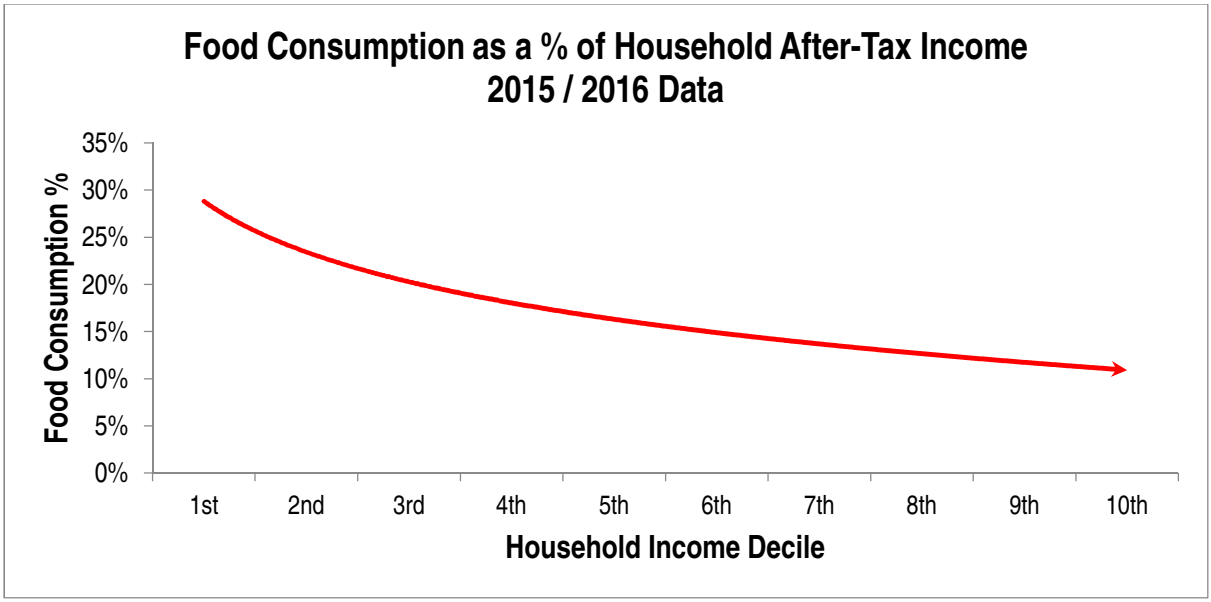
General Economic Principles

In our previous papers we expressed reservations regarding the underlying methodology of the expenditure approach (i.e. as adopted in the previously published tables), whereby the percentages are determined by dividing personal consumption by total household expenditure. Such an approach implicitly assumes that a household consumes all of its income and does not save. This is often referred to as a "constant" consumption approach.

We strongly disagree with the implicit assumption that in every instance, every additional dollar earned by a household will be consumed. As Keynes stated in his 1935 book *"The General Theory of Employment, Interest and Money"*:

> *"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 the average, to increase their consumption as their income increases but not by as much as the increase in the income"*

The latest statistical data continues to support his proposition. We provide the following graphical depiction of food as a percentage of household after-tax income:




**Graph 1**

The above graph demonstrates that as income increases, food consumption as a percentage of household income decreases. That is, food consumption is **not** a constant percentage of household income.

Whilst the above graph relates specifically to food consumption, the available statistical data would indicate that this proposition applies to all categories of personal consumption. Accordingly, in our opinion the adoption of a "constant" consumption percentage across all income levels is contrary to the available empirical data and therefore an inappropriate basis for the calculation of personal consumption / loss of dependency percentages.

Savings

As previously noted, one of the implicit assumptions of the expenditure approach is that households consume all of their income and do not save.

In our opinion this is an inappropriate assumption and inconsistent with available empirical data.

In this regard we note that the authors of the Reserve Bank of Australia discussion paper entitled *"Household Savings in Australia"* also took a similar approach using household expenditure data to conclude that:

> *"As might be expected, households' saving ratios tend to increase with income, while saving is found to decrease with wealth and gearing."*

**HES data**

Common ground

It is common ground between the expenditure approach and the income approach that the first step to estimate personal consumption is to analyse the HES data and allocate each item into the respective categories (i.e. divisible, non-divisible, semi-divisible, etc).

Difference between approaches

The expenditure and income approaches differ when selecting the denominator for calculating the applicable percentage.

In our opinion the appropriate denominator is after-tax household income. That is, the deceased's personal consumption percentage can be estimated as follows:

$$\frac{\textit{Statistical level of personal consumption}}{\textit{Household level of after-tax income}}$$

This is consistent with the calculations of financial dependency being undertaken on after-tax income.

In contrast, the previous expenditure based approach uses total expenditure (excluding items such as life insurance, mortgage payments etc.) in place of household after-tax income (i.e. as the denominator). We do not understand the rationale of excluding certain items of expenditure and note by excluding those items the consumption percentages increases by approximately 8%.

We agree that such an approach would be appropriate if information were available regarding the total expenditure of the household however in our experience this is rarely the case.

In our opinion, our preferred approach of calculating personal consumption as a percentage of household after-tax income provides consistency between the bases on which the percentages are calculated and to which they are applied (ie. personal consumption is calculated as a proportion of household after-tax income, and the resultant percentages are applied to household after-tax income).

The discrepancy resulting from using the expenditure based approach

In our opinion, an expenditure based approach results in a material discrepancy in the estimate of loss of financial dependency.

To illustrate the problem we set out the following example, using the Average Household with two-parents. For ease, we have adopted our allocations in order to demonstrate the problem with the approach.

In this situation, the analysis of the household expenditure results in estimated personal consumption of an adult as being the following dollar amounts:

| Number of Children | Amount |
|---|---|
| 0 | $ 319 |
| 1 | $ 261 |
| 2 | $ 223 |
| 3 | $ 196 |

**Table 4**

By adopting the expenditure based approach the consumption percentages derived are as follows:

| Number of Children | Total Expenditure (less Excluded Items) | Personal Consumption | Consumption % |
|---|---|---|---|
| 0 | $ 1,425 | $ 319 | 22.4% |
| 1 | $ 1,425 | $ 261 | 18.3% |
| 2 | $ 1,425 | $ 223 | 15.7% |
| 3 | $ 1,425 | $ 196 | 13.7% |

**Table 5**

Those percentages are then applied to household after-tax income as follows to derive an amount of personal consumption of an adult:

| Number of Children | After-tax Income | Consumption % | Personal Consumption |
|---|---|---|---|
| 0 | $ 1,690 | 22.4% | $ 378 |
| 1 | $ 1,690 | 18.3% | $ 310 |
| 2 | $ 1,690 | 15.7% | $ 265 |
| 3 | $ 1,690 | 13.7% | $ 232 |

**Table 6**

Based on the tables above, it is apparent that:

(i) In the first instance, the HES data estimates personal consumption of an adult to be between $196 and $319 per week; and

(ii) Using total expenditure (less excluded items) as the denominator (i.e. the expenditure based approach) results in estimates of personal consumption between $232 and $378 (i.e. approximately 20% higher than the empirical data).

In our opinion, the expenditure based approach scales the empirical data of the HES by a significant and unjustifiable degree.

Our analysis suggests the expenditure based approach overestimates personal consumption by approximately 45% in the 10$^{th}$ decile and underestimates personal consumption by approximately 43% in the lowest decile.

**Other Studies**

As noted in our previous papers, there have been numerous studies undertaken in Australia, the United States and Canada[1]. Those studies appear to use very similar methodologies that are utilised in the assessment of the loss of financial support suffered upon wrongful death. We have summarised the findings at ***Appendix 2*** of our paper.

The following table sets out the range of levels of personal consumption percentages under each study:

| Study Authors (Year) | Number of Children and Percentage of Income | | | |
|---|---|---|---|---|
| | 0 | 1 | 2 | 3 |
| Brown (2012) | 11.7% - 51.8% | 10.4% - 39.2% | 9.1% - 36.8% | 8.6% - 25.0% |
| Krueger (2015) | 8.8% - 61.2% | 7.9% - 42.0% | 7.9% - 39.1% | 7.7% - 31.5% |
| Ruble, Patton & Nelson (2002) | 13.2% - 46.5% | 11.8% - 35.0% | 10.1% - 32.2% | 10.0% - 30.4% |

**Table 7**

Whilst we do not suggest that the actual percentages in those papers should be adopted in Australia it is apparent from the studies that personal consumption as a percentage of weekly income decreases as household income increases.

We are therefore of the opinion that these studies support our assertion that the constant consumption model is incorrect and should not be adopted.

CONCLUSION

In conclusion, we agree that some additional categories of expenditure would assist in allowing for improved estimations of personal consumption. As detailed in our methodology section, we have introduced the categories of "Partly Divisible" and "Mostly Divisible" to take account of this feedback.

We remain of the opinion that the expenditure based approach which assumes constant consumption percentages is incorrect and should not be adopted for the following reasons:

(i) It is contrary to accepted economic principles and data;
(ii) It arbitrarily changes the level of personal consumption from the underlying information by using an incompatible denominator; and
(iii) It is at odds with other studies on the topic.

[1] See generally Ruble, Michael R, Patton, Robert T, and Nelson, David M, "*Patton-Nelson Personal Consumption Tables 2000-2001: Updated and Revised*", Journal of Forensic Economics 15(3), 2002, pp. 295-301, Brown, C.L. (2012) "*Personal Consumption Rates for Canada: Update of 2000 PCRs Using 2007-08 Survey of Household Spending data*" Journal of Forensic Economics 23(2), 2012, pp. 135-157 and Krueger, Kurt V. "*Personal Consumption by Family Type and Household Income*", Journal of Forensic Economics 25(2), 2015, pp. 203-220.

# METHODOLOGY

## GENERAL METHODOLOGY ADOPTED / ALLOCATION RULES

Consistent with our previous paper, on the basis that financial dependency is generally upon a parent / adult we have excluded expenditure which relates specifically to children (e.g. childcare fees).

Subsequent to our 2015 paper we have consulted with other colleagues in relation to household expenditure categories and allocations. Whilst we do not agree with all suggestions provided, we have amended a number of our categorisations and introduced the additional categories of "Partly Divisible" and "Mostly Divisible" expenditure to enable improved estimations of personal consumption.

Accordingly, in undertaking our calculations, we have assumed that household expenditure generally falls into the following categories:

- Divisible Expenditure;
- Mostly Divisible Expenditure *(New Category)*;
- Semi-Divisible Expenditure;
- Partly Divisible *(New Category)*;
- Non-Divisible Expenditure;
- Support for Others; and
- Asset Accumulating Expenditure.

We attach as ***Appendix 1*** a table which outlines the detailed expenditure classifications under each heading and our assumptions and make the following general observations:

### Divisible Expenditure

Divisible expenditure relates to expenses which are divisible amongst the household members.

In relation to expenditure ordinarily incurred by adults only (e.g. tobacco, alcohol and gambling) we have assumed that expenses should be shared among the adult members of the household and do not relate to children.

We acknowledge that it is likely there may be economies of scale in relation to food and consumables which we have classified as divisible expenditure but are unable to ascertain the extent.

### Mostly-Divisible Expenditure

Mostly-divisible expenditure relates to items which have both fixed and variable components. In our opinion, such expenditure is for the general benefit of the household but also a component of the expenditure could represent consumption of the deceased. For the purposes of our calculations we have assumed that 25% of the expenditure is non-divisible and 75% is divisible (e.g. overseas holidays).

### Semi-Divisible Expenditure

Semi-divisible expenditure relates to items which have both fixed and variable components. In our opinion, such expenditure is for the general benefit of the household but also a component of the expenditure could represent consumption of the deceased. For the purposes of our calculations we have assumed that half the expenditure is non-divisible and the other half is divisible (e.g. motor vehicle fuel).

### Partly-Divisible Expenditure

Partly-divisible expenditure relates to items which have both fixed and variable components. In our opinion, such expenditure is for the general benefit of the household but also a component of the expenditure could represent consumption of the deceased. For the purposes of our calculations we have assumed that 75% of the expenditure is non-divisible and 25% is divisible (e.g. electricity).

### Non-Divisible Expenditure and Support for Others

Non-divisible expenditure relates to items that are fixed in nature and would not be saved as a result of the death of a person. In the main, these are best represented by housing and occupancy costs but also include purchase costs for assets such as motor vehicles and expenditure which is support for others (e.g. gifts or donations).

### Asset Accumulating Expenditure

In our opinion it is important to acknowledge that some items of expenditure may be saved as a result of the death of an adult but in doing so the corresponding asset will cease to be accumulated (e.g. personal superannuation contributions). In our opinion, it is appropriate to treat this expenditure as non-divisible.

### Adult Expenditure

Consistent with our previous approach and other studies, we have assumed that consumption of an adult would be twice that of a child.

## CALCULATION OF REVISED PERSONAL CONSUMPTION PERCENTAGES

Based on the methodology and classifications outlined above, we determined the dollar value of the expenditure which is directly attributable to, and would be saved in the absence of, one adult member of the household.

We then divided this by the total household after-tax income in order to derive the personal consumption of the deceased as a percentage of the after-tax household income.

We have again limited our tables to households with up to 3 children. For families with 4 or more children, we suggest that it would not be unreasonable to adopt the percentages for 3 children households for the purposes of calculating personal consumption.

Further, due to the reasons outlined above, we have not calculated percentages for deciles 1 and 2 and have limited our calculations for the 3rd decile to 2 person households with no dependants.

2 PARENT FAMILIES – PERSONAL CONSUMPTION EXPRESSED AS PERCENTAGE OF AFTER-TAX HOUSEHOLD INCOME

| Weekly Income (before tax) | | Number of Children | | | |
|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 |
| 1st Decile | $ 339 | N/A | N/A | N/A | N/A |
| 2nd Decile | $ 590 | N/A | N/A | N/A | N/A |
| 3rd Decile | $ 823 | 25.1% | N/A | N/A | N/A |
| 4th Decile | $ 1,101 | 23.0% | 18.9% | 16.1% | 14.2% |
| 5th Decile | $ 1,429 | 21.9% | 18.0% | 15.4% | 13.5% |
| 6th Decile | $ 1,792 | 21.3% | 17.5% | 14.9% | 13.1% |
| 7th Decile | $ 2,204 | 19.8% | 16.2% | 13.8% | 12.1% |
| 8th Decile | $ 2,758 | 17.7% | 14.5% | 12.4% | 10.8% |
| 9th Decile | $ 3,559 | 17.4% | 14.2% | 12.1% | 10.7% |
| 10th Decile | $ 6,295 | 15.0% | 12.3% | 10.5% | 9.2% |
| **All Households** | **$ 2,086** | **19.2%** | **15.8%** | **13.4%** | **11.8%** |
| **** Adjustment for additional motor vehicle (if exclusively used by the deceased): Add 4.3% to above percentages*** | | | | | |

**Table 8**

1 PARENT FAMILIES – PERSONAL CONSUMPTION EXPRESSED AS PERCENTAGE OF AFTER-TAX HOUSEHOLD INCOME

| Weekly Income (before tax) | | Number of Children | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| 1st Decile | $ 339 | N/A | N/A | N/A |
| 2nd Decile | $ 590 | N/A | N/A | N/A |
| 3rd Decile | $ 823 | N/A | N/A | N/A |
| 4th Decile | $ 1,101 | 32.3% | 25.4% | 21.3% |
| 5th Decile | $ 1,429 | 30.7% | 24.2% | 20.3% |
| 6th Decile | $ 1,792 | 29.8% | 23.4% | 19.5% |
| 7th Decile | $ 2,204 | 27.7% | 21.7% | 18.1% |
| 8th Decile | $ 2,758 | 24.7% | 19.4% | 16.2% |
| 9th Decile | $ 3,559 | 24.3% | 19.1% | 15.9% |
| 10th Decile | $ 6,295 | 21.0% | 16.4% | 13.7% |
| **All Households** | **$ 2,086** | **26.9%** | **21.1%** | **17.6%** |

**Table 9**

**N/A – we do not believe personal consumption percentages for these deciles / household compositions can reliably be used and therefore have excluded them from our calculations**

## HOW TO CALCULATE FINANCIAL LOSSES

Mathematically the loss of financial dependency is calculated as follows:

**Step 1 Determine the Deceased's Personal Consumption (DPC)**

Determine the before and after-tax pool of total household income

Identify the appropriate range of percentages / adopt a percentage

Multiply the after-tax pool of income by consumption percentage

**Step 2 Determine the deceased's notional after-tax income (DNE)**

**Step 3 Determine loss of financial dependency (DNE – DPC)**

We have attached as ***Appendix 3*** a series of examples of how to use the approach.

## PUTTING LEVELS OF CONSUMPTION CALCULATED INTO PERSPECTIVE

As previously noted, whilst statistical "percentages" in all studies have been adopted to estimate consumption and dependency, these values have actually been determined with reference to actual dollar values and then simply calculated as a percentage of an appropriate denominator (e.g. the total after-tax household income).

We are of the opinion that this approach will assist practitioners to consider the reasonableness of the amounts calculated and adjust them as required based on the available information with respect to the deceased's personal lifestyle.

As an example, we note the decision of *Norris* v *Routley* [2015] NSWSC 883 wherein the adoption of the expenditure approach (i.e. the "Luntz tables") resulted in an estimate of the deceased's personal consumption being $3,885 per week or $202,052 per year. This amount was asserted to be unreasonably high and not representative of the deceased's personal consumption. In the Court of Appeal matter, Mr Lee estimated the deceased's personal consumption to be approximately $1,100 per week.

Based on the ABS data we note the following underlying estimates of personal consumption as a dollar value:

2 PARENT FAMILIES – PERSONAL CONSUMPTION EXPRESSED AS A DOLLAR AMOUNT

| Weekly Income (before tax) | | Number of Children | | | |
|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 |
| 1st Decile | $ 339 | N/A | N/A | N/A | N/A |
| 2nd Decile | $ 590 | N/A | N/A | N/A | N/A |
| 3rd Decile | $ 823 | $ 200 | N/A | N/A | N/A |
| 4th Decile | $ 1,101 | $ 235 | $ 193 | $ 165 | $ 145 |
| 5th Decile | $ 1,429 | $ 278 | $ 229 | $ 195 | $ 172 |
| 6th Decile | $ 1,792 | $ 327 | $ 268 | $ 228 | $ 200 |
| 7th Decile | $ 2,204 | $ 365 | $ 299 | $ 255 | $ 223 |
| 8th Decile | $ 2,758 | $ 397 | $ 325 | $ 277 | $ 243 |
| 9th Decile | $ 3,559 | $ 493 | $ 404 | $ 344 | $ 302 |
| 10th Decile | $ 6,295 | $ 671 | $ 549 | $ 468 | $ 410 |
| **All Households** | **$ 2,086** | **$ 325** | **$ 266** | **$ 227** | **$ 199** |

**Table 10**

1 PARENT FAMILIES – PERSONAL CONSUMPTION EXPRESSED AS A DOLLAR AMOUNT

| Weekly Income (before tax) | | Number of Children | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| 1st Decile | $ 339 | N/A | N/A | N/A |
| 2nd Decile | $ 590 | N/A | N/A | N/A |
| 3rd Decile | $ 823 | N/A | N/A | N/A |
| 4th Decile | $ 1,101 | $ 329 | $ 259 | $ 217 |
| 5th Decile | $ 1,429 | $ 391 | $ 307 | $ 257 |
| 6th Decile | $ 1,792 | $ 457 | $ 358 | $ 299 |
| 7th Decile | $ 2,204 | $ 510 | $ 400 | $ 333 |
| 8th Decile | $ 2,758 | $ 555 | $ 435 | $ 363 |
| 9th Decile | $ 3,559 | $ 689 | $ 540 | $ 451 |
| 10th Decile | $ 6,295 | $ 936 | $ 734 | $ 612 |
| **All Households** | **$ 2,086** | **$ 455** | **$ 357** | **$ 298** |

**Table 11**

## SENSITIVITY OF ASSUMPTIONS – MOTOR VEHICLES

We note that our calculations are based on a series of assumptions. In our opinion, the most material assumption relates to motor vehicles. Our estimates of personal consumption are based on the assumption that the only savings in motor vehicle costs as a result of the death of the deceased would be a proportion of fuel costs, and repairs and maintenance.

We note that considerable debate has ensued as to whether our tables should be presented on the underlying assumption that households have two motor vehicles, one of which was exclusively for the use of the deceased. This would appear to be based on recent Census data which suggests that, on average, households on Census night had garaged approximately 1.8 motor vehicles.

Whilst we acknowledge these statistics, our preferred position is to start with tables based on one (1) motor vehicle and make an allowance for any additional motor vehicles (if necessary) for the following reasons:

(i) The Census data includes company motor vehicles which are paid for by an employer and therefore not a cost to the household or personal consumption;

(ii) The Census data includes motor vehicles which are also for the benefit of dependent children still living at home;

(iii) The Census data includes motor vehicles which are owned and operated by non-dependent children still living at home; and

(iv) In our experience Income Tax deductions for motor vehicles is prevalent.

If it was assumed that additional savings did exist (e.g. the household had one less vehicle following the death of the deceased), then we would estimate that personal consumption would increase by, on average, **4.3% of the after-tax income of the household.**

## ALLOWANCE FOR POST RETIREMENT CONSUMPTION

As noted in our previous papers we do not agree with any approach that applies a dependency percentage to superannuation contributions. Instead we propose that to the extent that a portion of the deceased's income was being used to fund their own retirement, it may be appropriate to make an allowance for the savings in the deceased's personal consumption from the date of their retirement to their notional life expectancy.

Whether such a deduction is appropriate is dependent on numerous issues and any loss of financial dependency on items such as an age pension also requires consideration.

Obviously the level of consumption needs to be considered in light of the deceased's intended lifestyle during retirement, of which available income is a significant factor.

We note the paper titled *'Expenditure Patterns in Retirement'* authored by the Australian Institute of Superannuation Trustees and the Australian Centre for Financial Studies would appear to suggest that one method for targeting an appropriate level of income in retirement was an income replacement ratio as follows:

> *"Income replacement ratios*
>
> *Internationally, retirement income adequacy is often expressed as a ratio of pre-retirement income. Replacement ratios are a top-down estimate of the annual income required to achieve a standard of living in retirement equivalent of that achieved while in employment. They have the benefit of acknowledging that a desirable level of retirement income is likely to vary depending [on] previous experience."*

The World Bank's target wage-replacement rate for Households suggests 54% of final pre-retirement income as appropriate.

Accordingly, we would propose that a starting point would be to determine the personal consumption based on relevant percentage and 54% of the pre-retirement income.

For illustrative purposes, based on the following assumed facts:

*Life Expectancy 20 years*

*Age 35 years and 32 years to retirement*

*Personal Consumption $275*

an allowance for post retirement consumption would be determined as follows:

| **Description** | | **Amount** |
|---|---|---|
| Life Expectancy at normal retirement | A | 20 years |
| Relevant 5% multiple of 20 Years | B | 666 |
| Weekly Personal Consumption | C | $ 275 |
| Present Value | B x C | $ 183,150 |
| 5% Deferred Factor – Retirement age to present (32 years) | D | 0.210 |
| **Present Value of Savings** | **B x C x D** | **$ 38,462** |

**Table 12**

CONCLUSION

We are of the opinion that personal consumption / dependency is best estimated by having regard to the deceased's actual personal expenditure. However, in instances where specific information / instructions in this regard are not available, the statistical approach for calculating the deceased's personal consumption may be of assistance to the Court.

However, we believe that a more reliable estimate of the rate of personal consumption than historically relied upon can be determined with reference to the more recently available and detailed statistical data. Further, consideration should be given to the likely types of savings that would be obtained following the death of the deceased and, if necessary, making adjustments to the statistical percentages.

In our opinion, the percentages derived in this paper better represent the rates of personal consumption. Our findings demonstrate that personal consumption (as a percentage of household income) decreases as family size and income levels increase, which is consistent with our experience in relation to matters of this nature and findings of studies undertaken in Canada and United States, and the previous study in Australia.

25 January 2018

## About the Authors

**Michael J Lee** is a Director in Vincents' Forensic Accounting unit. He is a Chartered Accountant and also possesses a Bachelor of Commerce. His primary area of expertise is the calculation of economic loss resulting from personal injury disputes, dependency / compensation to relatives claims. He has in excess of 20 years of experience as a forensic accountant and previously worked as a tutor in mathematics and statistics. He is often called upon to provide expert opinion in matters involving overseas claimants and dependency claims by plaintiffs and defendants.

**Julia Bossert** is a Senior Associate in Vincents' Forensic Accounting unit. She is a Chartered Accountant, accredited Business Valuation Specialist and also possesses a Bachelor of Actuarial Studies and Bachelor of Commerce. She works in all areas of forensic accounting including family, commercial and insurance litigation, including the assessment of economic loss, loss of financial dependency and cost of funds management.

**Corey Plover** is a Principal of Cumpston Sarjeant. He is an Actuary and Fellow of the Institute of Actuaries. He possesses an Honours degree in Actuarial Studies and a Bachelor of Science. He works in insurance matters calculating financial losses and funds management. He also provides regular advice to a variety of general insurance clients in areas of provision setting, premium rating and capital management.

## Acknowledgments

The authors also wish to acknowledge the suggestions and advice from Professor Harold Luntz, Dr Sirko Harder, Cara L Brown, Kurt V Krueger, and numerous of our colleagues / peers.

## References

Australian Bureau of Statistics Catalogue 6530.0 - Household Expenditure Survey, Australia: Summary of Results, 2009-10 extracted from www.abs.gov.au

Australian Bureau of Statistics Catalogue 6530.0 - Household Expenditure Survey, Australia: Detailed Expenditure Items, 2009-10.

Australian Bureau of Statistics Catalogue 6530.0 - Household Expenditure Survey, Australia: Detailed Expenditure Items, 2015-16.

Australian Bureau of Statistics Catalogue 6523.0 - Household Income and Income Distribution, Australia, 2009-10 extracted from www.abs.gov.au

Brown, C.L. (2012) "Personal Consumption Rates for Canada: Update of 2000 PCRs Using 2007-08 Survey of Household Spending data" Journal of Forensic Economics 23(2), 2012, pp. 135-157.

Finlay, R and Price, F, "Household Saving in Australia", Research Discussion Paper, Reserve Bank of Australia, 2014.

Keynes, John Maynard, "The General Theory of Employment, Interest and Money", Cambridge, Massachusetts, Harcourt, Brace and Company, 1935.

Krueger, Kurt V. "Personal Consumption by Family Type and Household Income", Journal of Forensic Economics 25(2), 2015, pp. 203-220.

Luntz, H, "Assessment of Damages for Personal Injury and Death (3rd edition,)" LexisNexis Butterworths, 1990.

Luntz, H, “Assessment of Damages for Personal Injury and Death (4th edition,)” LexisNexis Butterworths, 2002.

Ruble, Michael R, Patton, Robert T, and Nelson, David M, “Patton-Nelson Personal Consumption Tables 2000-2001: Updated and Revised”, Journal of Forensic Economics 15(3), 2002, pp. 295-301.

Sarjeant, H and Thomson, P, “Dependency percentages for two-parent and one-parent families 2003-2004”, extracted from www.cumsar.com.au

The Australian Centre for Financial Studies and Australian Institute of Superannuation Trustees “Expenditure patterns in retirement”, August 2016.

World Bank Policy Research Report “Averting the Old Age Crisis”, Oxford University Press, 1994.

# APPENDIX 1

## ALLOCATIONS OF EXPENDITURE

**Divisible**

Food and non-alcoholic beverages nfd, Bread, Flour, Cakes, biscuits, puddings and related products, Cereals and pasta, Meat (excluding fish and seafood) nfd, Processed meat (including ham, bacon and sausages), Beef and veal, Mutton and lamb, Pork (excluding bacon and ham), Poultry, Game, Offal, Other meat (excluding fish and seafood), Fish and seafood nfd, Fish and seafood, Eggs and egg products, Dairy products, Edible oils and fats, Fruit and nuts nfd, Fresh fruit, Canned, frozen and bottled fruit, Dried fruit and nuts, Vegetables nfd. Fresh vegetables, Frozen vegetables, Other vegetables, Sugar, Syrups, honey, jams, jellies and desserts, Confectionery, Spices, herbs, sauces, spreads, and other food additives, Canned spaghetti and baked bean, Packaged prepared meals, Non-alcoholic beverages nfd, Soft drinks and packaged waters, Fruit and vegetable juice, Tea and coffee, Food drinks, Cordials and unpackaged milk based beverages, Meals out and fast foods, Other food and non-alcoholic beverages, Clothing nfd, Men's clothing, Women's clothing, Boys' clothing, Girls' clothing, Infants' clothing, Other clothing, Footwear, Clothing and footwear services, Accident and health insurance, Health practitioner's fees, Medicines, pharmaceutical products and therapeutic appliances nfd, Medicines and pharmaceutical products, First aid supplies, therapeutic appliances and equipment, Other medical care and health expenses, Public transport fares, Fare and freight charges (excluding holidays and public transport), Delivery and freight charges, Communication equipment, Sports fees and charges, Cultural fees and charges, Toiletries and cosmetics, Personal care services.

**Divisible (Adults only)**

Alcoholic beverages nfd, Beer, Wine, Spirits, Other alcoholic beverages, Tobacco products, Gambling, Tertiary and other education fees.

**Non-Divisible**

Rent payments, Mortgage repayments - interest component (selected dwelling), Rate payments, House and contents insurance, Repairs and maintenance payments to contractors, Repairs and maintenance (materials only), Other current housing costs, Furniture and floor coverings, Blankets, household linen and household furnishings (excluding ornamental furnishings), Ornamental furnishings, Cooking stoves, ovens, microwaves, hot plates and ranges, Whitegoods and other electrical appliances (excluding stoves and related), Non-electrical household appliances, Glassware, tableware, cutlery and household utensils, Tools and other household durables, Household non-durables, Household services, Repair and maintenance of household durables, Hire of household durables, Household appliance repairs insurance, Accident and health insurance, Motor vehicle purchase*, Other vehicle purchase*, Vehicle registration and insurance*, Motor vehicle parts and accessories purchased separately*, Vehicle charges (including hire of accessories)*, Postal charges, Audio-visual equipment and parts, Other recreational and educational services (excluding holiday expenses), Animal expenses, Fees, Other miscellaneous services.

# APPENDIX 1

**Semi-Divisible**

Telephone and facsimile charges, Other recreational and educational equipment, Hire of recreational and educational equipment, Repair of recreational and educational equipment (excluding audiovisual equipment), Holidays-Australia (selected expenses), Stationery equipment, Other miscellaneous goods.

**Mostly-Divisible**

Motor vehicle fuel, lubricants and additives, Home computer equipment (including pre-packaged software), Blank and pre-recorded media (excluding pre-packaged computer software), Books, newspapers, magazines and other printed material, Holidays-overseas (selected expenses).

**Partly-Divisible**

Electricity, gas, heating oil and wood - excluding gas for BBQs (selected dwelling), Electricity, gas, heating oil and wood - excluding gas for BBQs (other property), Other domestic fuel and power, Internet charges, Interest payments on selected credit services (excluding loan payments for selected dwelling.

**Support for Others**

Education fees for primary and secondary schools, Child care services.

**Asset Accumulating**

Payments for other property, Mortgage repayments - principal component (selected dwelling).Other capital housing costs and Superannuation and life insurance.

** Where it is assumed that a household has 2 vehicles, these expenses are assumed to be Divisible (Adults only)*

# APPENDIX 2

## OVERSEAS STUDIES

There have been numerous studies undertaken in the United States and Canada. Those studies appear to use very similar methodologies that are utilised in the assessment of the loss of financial support suffered upon wrongful death.

Notable studies include, but are not limited to, the following:

> *Brown, C.L. (2012) "Personal Consumption Rates for Canada: Update of 2000 PCRs Using 2007-08 Survey of Household Spending data" Journal of Forensic Economics 23(2), 2012, pp. 135-157.*
>
> *Krueger, Kurt V. "Personal Consumption by Family Type and Household Income", Journal of Forensic Economics 25(2), 2015, pp. 203-220.*
>
> *Ruble, Michael R, Patton, Robert T, and Nelson, David M, "Patton-Nelson Personal Consumption Tables 2000-2001: Updated and Revised", Journal of Forensic Economics 15(3), 2002, pp. 295-301.*

Brown's study relates to Canada whereas Krueger and Ruble, Patton and Nelson's studies relate to the United States of America.

A summary of the findings of each study is set out in the proceeding pages.

The conclusion is similar to our findings, specifically, consumption is not constant regardless of the level of income derived but instead, the trend whereby personal consumption as a percentage of weekly income decreases as household income increases.

# APPENDIX 2



## Appendix A

Table A-1
Base PCRs, Based on Before-tax Income Level (Canadian 2007-08 dollars)

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

# APPENDIX 2

**Krueger**



Table 8
Personal Consumption as a Percent of Household Income, 2011–13 Dollars

| Household income | Husband in H/W earning family | Wife in H/W earning family | Husband in earning H/W, 1 child family | Wife in earning H/W, 1 child family | Husband in earning H/W, 2 child family | Wife in earning H/W, 2 child family | Husband in earning H/W, 3 child family | Wife in earning H/W, 3 child family | Husband in retired H/W family | Wife in retired H/W family | Single earning parent, 1 child family | Single earning person living alone |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $15,000 | 60.4% | 61.2% | 40.9% | 42.0% | 37.3% | 39.1% | 31.5% | 31.5% | 56.6% | 57.4% | 52.0% | 86.6% |
| $20,000 | 48.4% | 49.3% | 33.8% | 34.8% | 31.1% | 32.7% | 26.8% | 27.0% | 47.3% | 48.3% | 47.0% | 75.3% |
| $25,000 | 40.7% | 41.7% | 29.1% | 30.1% | 27.1% | 28.5% | 23.6% | 23.9% | 41.2% | 42.2% | 43.5% | 67.5% |
| $30,000 | 35.3% | 36.3% | 25.8% | 26.8% | 24.2% | 25.4% | 21.3% | 21.7% | 36.8% | 37.9% | 40.8% | 61.8% |
| $35,000 | 31.3% | 32.4% | 23.3% | 24.2% | 22.0% | 23.1% | 19.5% | 19.9% | 33.4% | 34.5% | 38.6% | 57.3% |
| $40,000 | 28.2% | 29.3% | 21.3% | 22.2% | 20.2% | 21.3% | 18.1% | 18.6% | 30.7% | 31.9% | 36.9% | 53.7% |
| $45,000 | 25.8% | 26.8% | 19.7% | 20.6% | 18.8% | 19.8% | 16.9% | 17.4% | 28.5% | 29.7% | 35.4% | 50.7% |
| $50,000 | 23.7% | 24.7% | 18.4% | 19.3% | 17.6% | 18.5% | 16.0% | 16.4% | 26.7% | 27.9% | 34.1% | 48.2% |
| $55,000 | 22.1% | 23.0% | 17.3% | 18.1% | 16.6% | 17.5% | 15.1% | 15.6% | 25.2% | 26.3% | 33.0% | 46.0% |
| $60,000 | 20.6% | 21.6% | 16.3% | 17.1% | 15.7% | 16.6% | 14.4% | 14.9% | 23.9% | 25.0% | 32.0% | 44.1% |
| $65,000 | 19.4% | 20.3% | 15.5% | 16.2% | 14.9% | 15.7% | 13.8% | 14.3% | 22.7% | 23.8% | 31.1% | 42.4% |
| $70,000 | 18.3% | 19.2% | 14.7% | 15.5% | 14.2% | 15.0% | 13.2% | 13.7% | 21.7% | 22.8% | 30.3% | 40.9% |
| $75,000 | 17.3% | 18.2% | 14.0% | 14.8% | 13.6% | 14.4% | 12.7% | 13.2% | 20.8% | 21.8% | 29.6% | 39.5% |
| $80,000 | 16.5% | 17.4% | 13.5% | 14.2% | 13.1% | 13.8% | 12.2% | 12.8% | 19.9% | 21.0% | 28.9% | 38.3% |
| $85,000 | 15.7% | 16.6% | 12.9% | 13.7% | 12.6% | 13.3% | 11.8% | 12.3% | 19.2% | 20.3% | 28.3% | 37.2% |
| $90,000 | 15.0% | 15.9% | 12.4% | 13.2% | 12.2% | 12.9% | 11.4% | 12.0% | 18.5% | 19.6% | 27.7% | 36.2% |
| $95,000 | 14.4% | 15.3% | 12.0% | 12.7% | 11.8% | 12.4% | 11.1% | 11.6% | 17.9% | 19.0% | 27.2% | . |
| $100,000 | 13.9% | 14.7% | 11.6% | 12.3% | 11.4% | 12.1% | 10.8% | 11.3% | 17.3% | 18.4% | 26.7% | . |
| $105,000 | 13.4% | 14.1% | 11.2% | 11.9% | 11.0% | 11.7% | 10.5% | 11.0% | 16.8% | 17.8% | 26.3% | . |
| $110,000 | 12.9% | 13.7% | 10.9% | 11.6% | 10.7% | 11.4% | 10.2% | 10.7% | 16.3% | 17.4% | 25.8% | . |
| $115,000 | 12.4% | 13.2% | 10.6% | 11.2% | 10.4% | 11.1% | 10.0% | 10.5% | 15.9% | 16.9% | 25.4% | . |
| $120,000 | 12.0% | 12.8% | 10.3% | 10.9% | 10.2% | 10.8% | 9.7% | 10.2% | 15.5% | 16.5% | 25.1% | . |
| $125,000 | 11.7% | 12.4% | 10.0% | 10.6% | 9.9% | 10.5% | 9.5% | 10.0% | 15.1% | 16.1% | 24.7% | . |
| $130,000 | 11.3% | 12.0% | 9.8% | 10.4% | 9.7% | 10.2% | 9.3% | 9.8% | 14.7% | 15.7% | 24.4% | . |
| $135,000 | 11.0% | 11.7% | 9.5% | 10.1% | 9.4% | 10.0% | 9.1% | 9.6% | 14.4% | 15.4% | 24.0% | . |
| $140,000 | 10.7% | 11.4% | 9.3% | 9.9% | 9.2% | 9.8% | 8.9% | 9.4% | 14.1% | 15.0% | 23.7% | . |
| $145,000 | 10.4% | 11.1% | 9.1% | 9.7% | 9.0% | 9.6% | 8.8% | 9.2% | 13.8% | 14.7% | 23.5% | . |
| $150,000 | 10.1% | 10.8% | 8.9% | 9.5% | 8.8% | 9.4% | 8.6% | 9.1% | 13.5% | 14.4% | 23.2% | . |
| $155,000 | 9.9% | 10.5% | 8.7% | 9.3% | 8.7% | 9.2% | 8.4% | 8.9% | 13.2% | 14.1% | 22.9% | . |
| $160,000 | 9.6% | 10.3% | 8.5% | 9.1% | 8.5% | 9.0% | 8.3% | 8.8% | 12.9% | 13.9% | 22.7% | . |
| $165,000 | 9.4% | 10.1% | 8.3% | 8.9% | 8.3% | 8.8% | 8.1% | 8.6% | . | . | . | . |
| $170,000 | 9.2% | 9.8% | 8.2% | 8.7% | 8.2% | 8.7% | 8.0% | 8.5% | . | . | . | . |
| $175,000 | 9.0% | 9.6% | 8.0% | 8.6% | 8.0% | 8.5% | 7.9% | 8.4% | . | . | . | . |
| $180,000 | 8.8% | 9.4% | 7.9% | 8.4% | 7.9% | 8.4% | 7.7% | 8.2% | . | . | . | . |

# APPENDIX 2



Table 3 (2000-01)
Incremental Consumption Cost Percentage

| Income Level | Family Size 1 Low — High | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | | Male | | | |
| 20,000 | 91.7 — 103.7. | 45.5 | 34.1 | 31.6 | 29.5 |
| 25,000 | 82.4 — 93.3 | 39.7 | 30.3 | 27.8 | 26.2 |
| 30,000 | 75.5 — 85.7 | 35.5 | 27.5 | 25.1 | 23.8 |
| 35,000 | 70.2 — 79.7 | 32.3 | 25.4 | 23.0 | 21.9 |
| 40,000 | 65.8 — 74.8 | 29.7 | 23.6 | 21.4 | 20.4 |
| 45,000 | 62.2 — 70.8 | 27.7 | 22.2 | 20.0 | 19.1 |
| 50,000 | 59.1 — 67.4 | 25.9 | 21.0 | 18.8 | 18.1 |
| 55,000 | 56.5 — 64.4 | 24.4 | 20.0 | 17.9 | 17.2 |
| 60,000 | 54.2 — 61.8 | 23.2 | 19.1 | 17.0 | 16.4 |
| 65,000 | 52.2 — 59.6 | 22.1 | 18.3 | 16.3 | 15.7 |
| 70,000 | 50.3 — 57.5 | 21.1 | 17.6 | 15.6 | 15.1 |
| 75,000 | 48.7 — 55.7 | 20.2 | 17.0 | 15.0 | 14.6 |
| 80,000 | 47.2 — 54.0 | 19.4 | 16.4 | 14.5 | 14.1 |
| 85,000 | 45.9 — 52.5 | 18.7 | 15.9 | 14.0 | 13.6 |
| 90,000 | 44.6 — 51.1 | 18.1 | 15.4 | 13.5 | 13.2 |
| 95,000 | 43.5 — 49.8 | 17.5 | 15.0 | 13.1 | 12.8 |
| 100,000 | 42.4 — 48.6 | 16.9 | 14.6 | 12.7 | 12.5 |
| 110,000 | 40.5 — 46.5 | 16.0 | 13.9 | 12.1 | 11.9 |
| 120,000 | 38.9 — 44.6 | 15.1 | 13.2 | 11.5 | 11.3 |
| 130,000 | 37.4 — 43.0 | 14.4 | 12.7 | 11.0 | 10.8 |
| 140,000 | 36.1 — 41.5 | 13.8 | 12.2 | 10.5 | 10.4 |
| 150,000 | 34.9 — 40.2 | 13.2 | 11.8 | 10.1 | 10.0 |
| | | *Female* | | | |
| 20,000 | 91.7 — 103.7 | 46.5 | 35.0 | 32.2 | 30.4 |
| 25,000 | 82.4 — 93.3 | 40.6 | 31.1 | 28.4 | 27.1 |
| 30,000 | 75.5 — 85.7 | 36.3 | 28.3 | 25.7 | 24.6 |
| 35,000 | 70.2 — 79.7 | 33.0 | 26.1 | 23.5 | 22.7 |
| 40,000 | 65.8 — 74.8 | 30.5 | 24.3 | 21.8 | 21.1 |
| 45,000 | 62.2 — 70.8 | 28.3 | 22.8 | 20.4 | 19.9 |
| 50,000 | 59.1 — 67.4 | 26.6 | 21.6 | 19.3 | 18.8 |
| 55,000 | 56.5 — 64.4 | 25.1 | 20.6 | 18.3 | 17.9 |
| 60,000 | 54.2 — 61.8 | 23.8 | 19.6 | 17.4 | 17.1 |
| 65,000 | 52.2 — 59.6 | 22.6 | 18.8 | 16.6 | 16.4 |
| 70,000 | 50.3 — 57.5 | 21.6 | 18.1 | 15.9 | 15.7 |
| 75,000 | 48.7 — 55.7 | 20.7 | 17.5 | 15.3 | 15.2 |
| 80,000 | 47.2 — 54.0 | 19.9 | 16.9 | 14.8 | 14.7 |
| 85,000 | 45.9 — 52.5 | 19.2 | 16.3 | 14.3 | 14.2 |
| 90,000 | 44.6 — 51.1 | 18.6 | 15.9 | 13.8 | 13.8 |
| 95,000 | 43.5 — 49.8 | 18.0 | 15.4 | 13.4 | 13.4 |
| 100,000 | 42.4 — 48.6 | 17.4 | 15.0 | 13.0 | 13.0 |
| 110,000 | 40.5 — 46.5 | 16.4 | 14.3 | 12.4 | 12.4 |
| 120,000 | 38.9 — 44.6 | 15.6 | 13.6 | 11.8 | 11.9 |
| 130,000 | 37.4 — 43.0 | 14.8 | 13.1 | 11.3 | 11.4 |
| 140,000 | 36.1 — 41.5 | 14.2 | 12.6 | 10.8 | 10.9 |
| 150,000 | 34.9 — 40.2 | 13.6 | 12.1 | 10.4 | 10.5 |

# APPENDIX 3

## EXAMPLES OF THE HOW TO USE APPROACH

**Example 1**

| | | |
|---|---|---|
| *Material facts* | *Bill Smith (deceased)* | *$ 62,500 before-tax per year / $ 947 after-tax per week* |
| | *Wilma Smith* | *$ 75,000 before-tax per year / $1,103 after-tax per week* |
| | *Household Income* | *$137,500 before-tax per year / $2,050 after-tax per week* |
| | *2 children* | |

Mathematically the loss of financial dependency is calculated as follows:

**Step 1 Determine the Deceased's Personal Consumption (DPC)**

- Determine the before and after-tax pool of income
- Identify the appropriate range of percentages / adopt a percentage
- Multiply the after-tax pool of income by consumption percentage

**Step 2 Determine the deceased's notional after-tax income (DNE)**

**Step 3 Determine loss of financial dependency (DNE – DPC)**

Step 1 - Determine consumption of deceased (DPC)

*Household Income of $137,500 before-tax per year equates to $2,634 before-tax per week which is between the 7th and 8th deciles.*

*Personal consumption percentage for a family with two children is between 12.4% and 13.8% - refer Table 7. Adopt 12.7%.*

*Personal consumption = $2,050 after tax x 12.7% or $260 per week.*

Step 2 - Determine the deceased's notional after-tax income (DNE)

*$62,500 before-tax per year equates to $947 after-tax per week.*

Step 3 - Determine the loss of financial dependency (DNE - DPC)

*Loss of Dependency = $947 - $260 or $687 per week*

# APPENDIX 3

**Example 2**

| | | |
|---|---|---|
| *Material facts* | *Bill Smith (deceased)* | *$ 95,000 before-tax per year / $1,347 after-tax per week* |
| | *Wilma Smith* | *$ 95,000 before-tax per year / $1,347 after-tax per week* |
| | *Household Income* | *$190,000 before-tax per year / $2,694 after-tax per week* |
| | *1 child* | |

Mathematically the loss of financial dependency is calculated as follows:

**Step 1 Determine the Deceased's Personal Consumption (DPC)**

- Determine the before and after-tax pool of income
- Identify the appropriate range of percentages / adopt a percentage
- Multiply the after-tax pool of income by consumption percentage

**Step 2 Determine the deceased's notional after-tax income (DNE)**

**Step 3 Determine loss of financial dependency (DNE – DPC)**

Step 1 - Determine consumption of deceased (DPC)

*Household Income of $190,000 before-tax per year equates to $3,640 before-tax per week which is between the 9th and 10th deciles.*

*Personal consumption percentage for a family with one child is between 12.3% and 14.2% - refer Table 7. Adopt 14.1%.*

*Personal consumption = $2,694 after tax x 14.1% or $380 per week.*

Step 2 - Determine the deceased's notional after-tax income (DNE)

*$95,000 before-tax per year equates to $1,347 after-tax per week.*

Step 3 - Determine the loss of financial dependency (DNE - DPC)

*Loss of Dependency = $1,347 - $380 or $967 per week*

# APPENDIX 3

**Example 3**

| | | |
|---|---|---|
| *Material facts* | *Bill Smith (deceased)* | *$ 45,000 before-tax per year / $733 after-tax per week* |
| | *Wilma Smith* | *$ 70,000 before-tax per year / $1,040 after-tax per week* |
| | *Household Income* | *$115,000 before-tax per year / $1,773 after-tax per week* |
| | *3 children* | |
| | *Have an additional Motor vehicle used exclusively by the deceased* | |

Mathematically the loss of financial dependency is calculated as follows:

**Step 1 Determine the Deceased's Personal Consumption (DPC)**

- Determine the before and after-tax pool of income
- Identify the appropriate range of percentages / adopt a percentage
- Multiply the after-tax pool of income by consumption percentage

**Step 2 Determine the deceased's notional after-tax income (DNE)**

**Step 3 Determine loss of financial dependency (DNE – DPC)**

Step 1 - Determine consumption of deceased (DPC)

*Household Income of $115,000 before-tax per year equates to $2,203 before-tax per week which is approximately the 7th decile.*

*Personal consumption percentage for a family with three children is 12.1% - refer Table 7.*

*Have additional motor vehicle so increase personal consumption percentage by 4.3%.*

*Personal Consumption percentage is therefore 12.1% plus 4.3% for motor vehicle or 16.4%*

*Personal consumption = $1,773 after-tax x 16.4% or $291 per week.*

Step 2 - Determine the deceased's notional after-tax income (DNE)

*$45,000 before-tax per year equates to $733 after-tax per week.*

Step 3 - Determine the loss of financial dependency (DNE - DPC)

*Loss of Financial Dependency = $733 - $291 or $442 per week*

# APPENDIX 3

**Example 4**

| | | |
|---|---|---|
| *Material facts* | *Wilma Smith (deceased)* | *$67,500 before-tax per year* |
| | *No Spouse* | |
| | *Household Income* | *$67,500 before-tax per year / $1,009 after-tax per week* |
| | *2 children* | |

Mathematically the loss of financial dependency is calculated as follows:

**Step 1 Determine the Deceased's Personal Consumption (DPC)**

- Determine the before and after-tax pool of income
- Identify the appropriate range of percentages / adopt a percentage
- Multiply the after-tax pool of income by consumption percentage

**Step 2 Determine the deceased's notional after-tax income (DNE)**

**Step 3 Determine loss of financial dependency (DNE – DPC)**

Step 1 - Determine consumption of deceased (DPC)

*Household Income of $67,500 before-tax per year equates to $1,293 before-tax per week which is between the 4th and 5th deciles.*

*Personal consumption percentage for family with two children is between 24.2% and 25.4% - refer Table 8. Adopt 24.7%.*

*Personal consumption = $1,009 x 24.7% or $2494 per week.*

Step 2 - Determine the deceased's notional after-tax income (DNE)

*$67,500 before-tax per year equates to $1,009 after-tax per week.*

Step 3 - Determine the loss of financial dependency (DNE - DPC)

*Loss of Financial Dependency = $1,009 - $249 or $760 per week*

# APPENDIX 3

**Example 5**

| | | |
|---|---|---|
| *Material facts* | *Wilma Smith (deceased)* | *$155,000 before-tax per year* |
| | *No Spouse* | |
| | *Household Income* | *$155,000 before-tax per year / $2,048 after-tax per week* |
| | *3 children* | |

Mathematically the loss of financial dependency is calculated as follows:

**Step 1 Determine the Deceased's Personal Consumption (DPC)**

- Determine the before and after-tax pool of income
- Identify the appropriate range of percentages / adopt a percentage
- Multiply the after-tax pool of income by consumption percentage

**Step 2 Determine the deceased's notional after-tax income (DNE)**

**Step 3 Determine loss of financial dependency (DNE – DPC)**

Step 1 - Determine consumption of deceased (DPC)

*Household Income of $155,000 before-tax per year equates to $2,969 before-tax per week which is between the 8th and 9th deciles.*

*Personal consumption percentage for family with three children is between 15.9% and 16.2% - refer Table 8. Adopt 16.1%.*

*Personal consumption = $2,048 x 16.1% or $330 per week.*

Step 2 - Determine the deceased's notional after-tax income (DNE)

*$155,000 before-tax per year equates to $2,048 after-tax per week.*

Step 3 - Determine the loss of financial dependency (DNE - DPC)

*Loss of Financial Dependency = $2,048 after-tax- $330 or $1,718 per week*