

# The Value of Preventable Injury Fatality (VPF) in New Zealand:

## Do we need a new VPF study?

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# In this presentation I will cover

1. Why is ACC interested in the Value of Preventable Fatality (VPF)
2. What have we done to date
3. Issues found
4. New initiative to develop and test a new VPF survey

## Why interest in VPF?

It has been argued that....

- the burden of injury is adequately described epidemiologically
- effort would be better spent on estimating effectiveness of interventions and the cost-benefit of different types of intervention

(Currie, Kerfoot, Donaldson, et al., 2000)

## We bother because...

- Cost is an “order of magnitude indicator”, and VPF is a key component of the cost estimates
- Cost is a mechanism for decision-makers to:
  - Quantify the size of a problem in economic terms using a single metric understood by many
  - Justify intervention
  - Assist in the prioritisation of expenditure on prevention
  - Evaluate the effectiveness of expenditure on prevention (Rice, 2000; Rice & Associates., 1989)

# What have we done

- Critical review:
  - Use of health welfare economic methods in injury prevention prioritisation
  - the Value of Preventable Fatality (VPF) / Value of Statistical Life (VoSL)
    - what is VPF?
    - is it the same for all injury areas?
    - is there an agreed New Zealand VPF?
  - NZ cost of injury studies
    - is there any commonality?
  - Identification of key issues – e.g. need for sensitivity analyses in cost of injury studies

# Work has resulted in two publications



**New Zealand Injury Prevention Strategy**  
Rautaki Ārai Whara o Aotearoa

**Five-year Evaluation**  
The costs of injury in New Zealand and methods for prioritising resource allocation



**Wren, J., and Barrell, K., 2010. The Costs of Injury in New Zealand and Methods for Prioritising Resource Allocation: A background briefing paper to inform the evaluation of the New Zealand Injury Prevention Strategy. New Zealand Injury Prevention Secretariat, ACC**

[newzealand.govt.nz](http://newzealand.govt.nz)

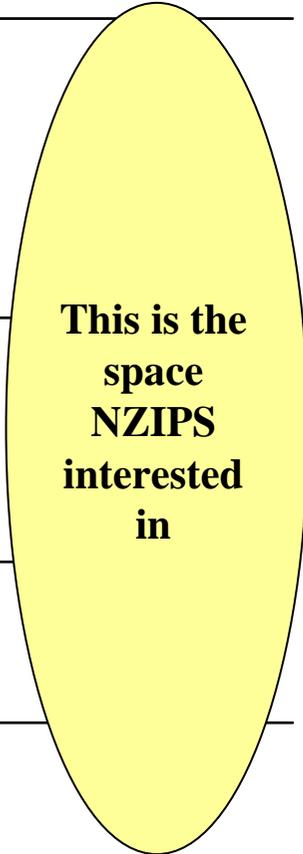
**New Zealand Injury Prevention Strategy**  
Rautaki Ārai Whara o Aotearoa

**Five-year Evaluation**  
New Zealand estimates of the total social and economic cost of “all injuries” and the six priority areas respectively, at June 2008 prices



**O’Dea, D. and Wren, J. (2010). New Zealand Estimates of the Total Social and Economic Cost of “All Injuries” and the Six Priority Areas Respectively, at June 2008 Prices: Technical Report Prepared for NZIPS Evaluation. Accident Compensation Corporation, Wellington, New Zealand. February 2010.**

# Typical New Zealand Cost of Injury (COI) Matrix (DoL, 2004)

Cost Categories / Cost Perspectives	Individuals and Families	Employers	Government	Society
Treatment and Rehabilitation Costs				 <p>This is the space NZIPS interested in</p>
Output & Productivity Costs				
Human Costs				
Total Costs				

**This category typically 50% to 70% of total social costs**  
**(Access Economics, 2008)**



# Sensitivity Analysis: Impact of VPF



- Choice of VPF (Human Cost) typically accounts for 50% to 70% of Total Social Costs in the literature (Access Economics, 2008)
- There is considerable international debate about how to measure the VPF
- Typically a 50% variation in the VPF for different types of injury events and other health conditions in the literature

(Access Economics, 2008; Miller and Guria, 1991; Leung and Guria, 2006; BERL, 2007)

# Three Main Methods to Quantifying Human Costs (Intangible costs)

1. Human Capital
2. Willingness to Pay (Revealed Preference)
3. Willingness to Pay (Stated Preference / Contingent Valuation)

WTP methods are the preferred approach to estimating social costs

The \$ value derived by WTP methods is usually referred to as :

- historically Value of Statistical Life (VoSL), and more recently as Value of Preventable Fatality (VPF)

# What is Willingness to Pay?

- Willingness to Pay typically asks: How much are you willing to pay to prevent the risk of a fatal or serious injury to an immediate family member?
- The question is always asked in the context of a stated level of risk and risk reduction within stated contingencies (usually cost or other trade-offs (i.e. other opportunities / benefits forgone))
- The payment value is always expressed in \$, and represents the statistical average value / person

# Is there a New Zealand Value of Preventable Fatality?

Yes, but only for all official Government Transport Sector (road, aviation, maritime) evaluations. The VPF was set by Government in 1991 @ \$2 million at 1 April 1990 prices (New Zealand Gazette)

VALUE is updated annually, NOW EQUATES TO **\$3,352,400** at June 2008 prices

BUT....

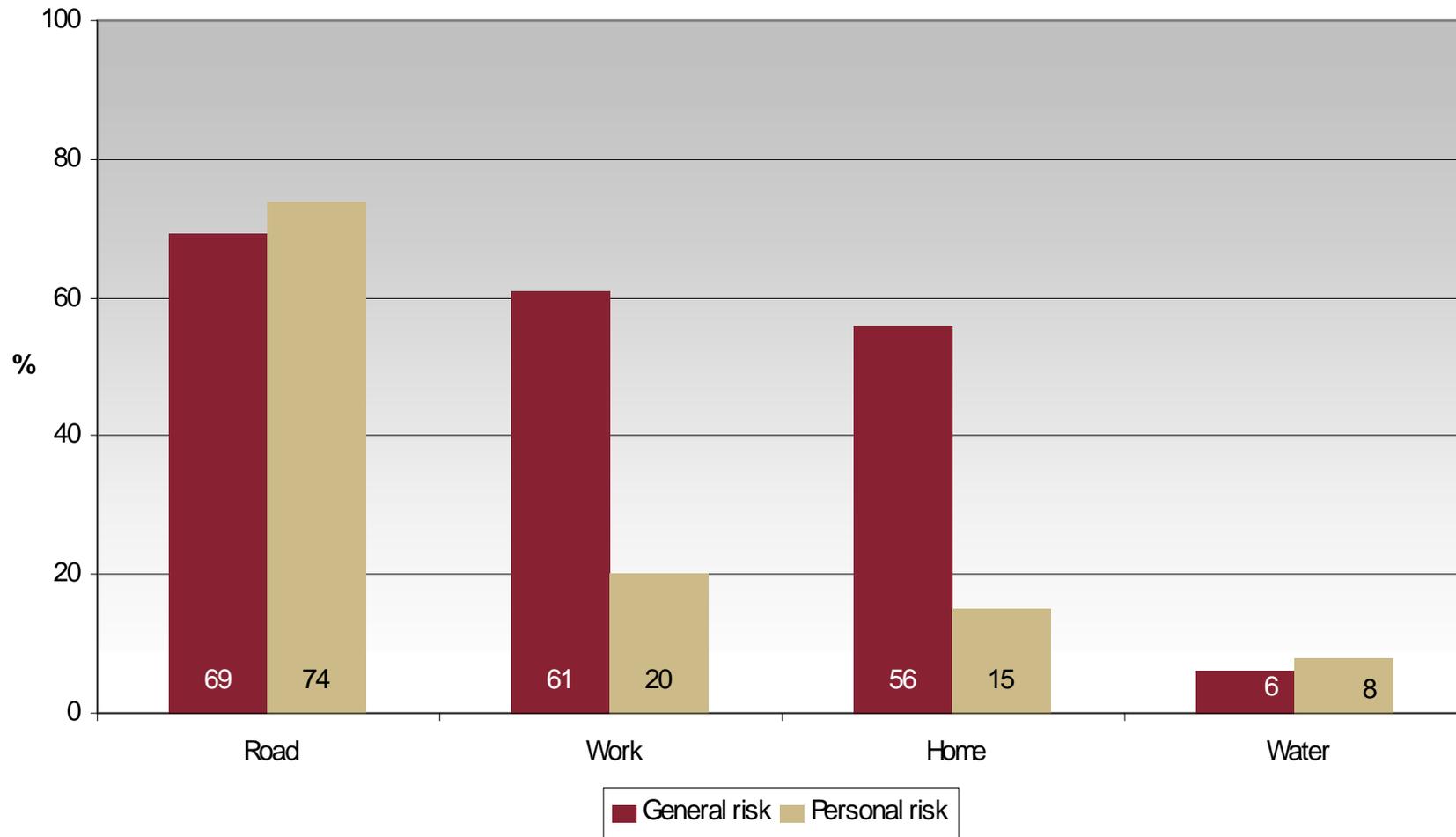
## Is the Transport VPF applicable to other injury areas?

Good evidence VPF is not the same ...

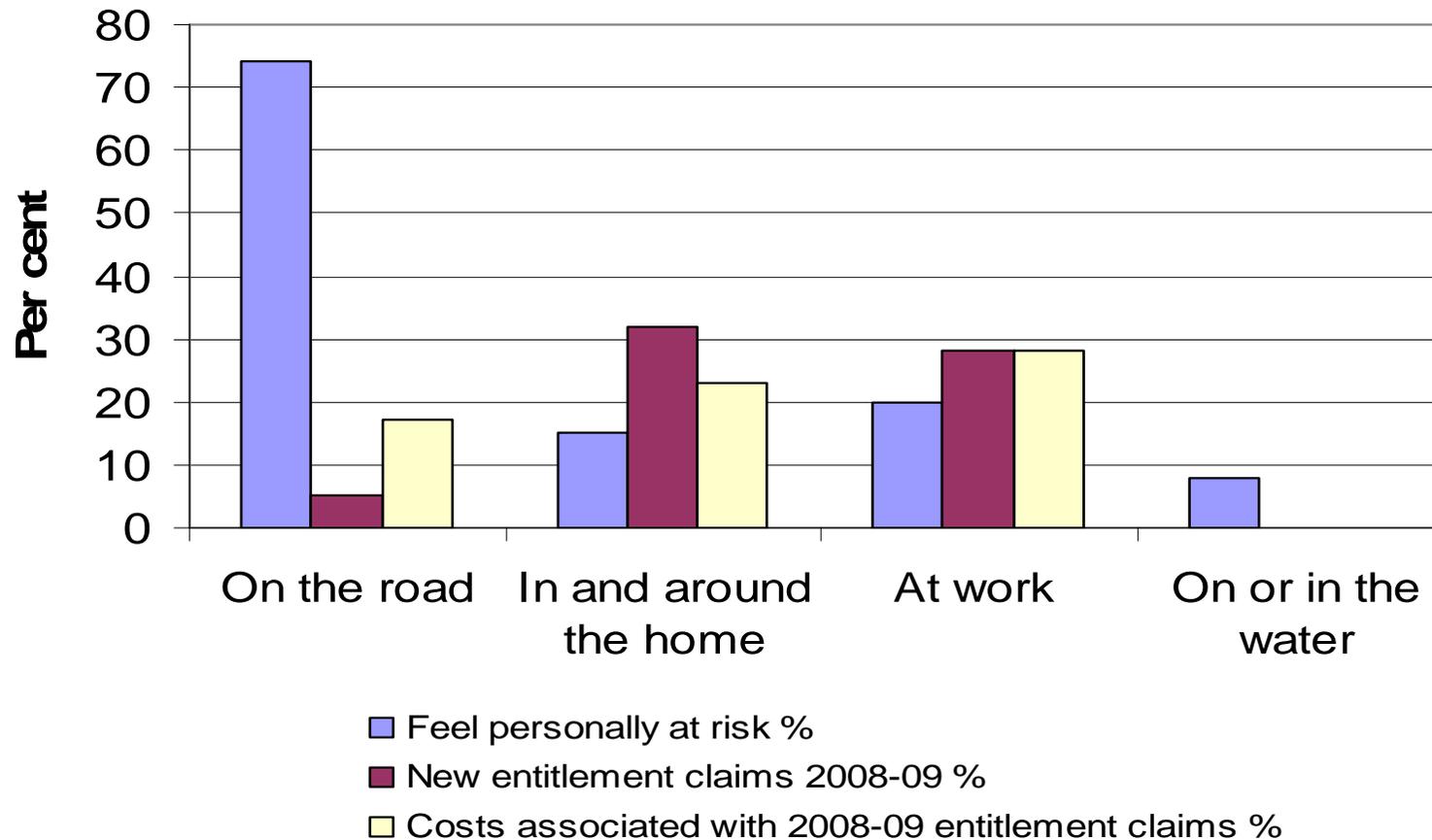
International Literature – VPF is related to factors such as:

- Perceptions of risk and individual ability / responsibility to control for different types of injury
- Wealth of person / nation
- Family size
- VPF changes over time
- Significant variation between studies

# Does the population accurately understand the risk of injury? (NZ Safety Culture Survey, 2009)



# New Zealanders are over-estimating the risk on the road and under-estimating the risk in the home and at work (2009 Safety Culture Survey)



# Sensitivity Analysis: Critical Assumptions

Choice of :

- **Value of Preventable Fatality**
- Discount rate (the Time Value of Money) and period of return on investment
- Estimate of Size Effect of Intervention

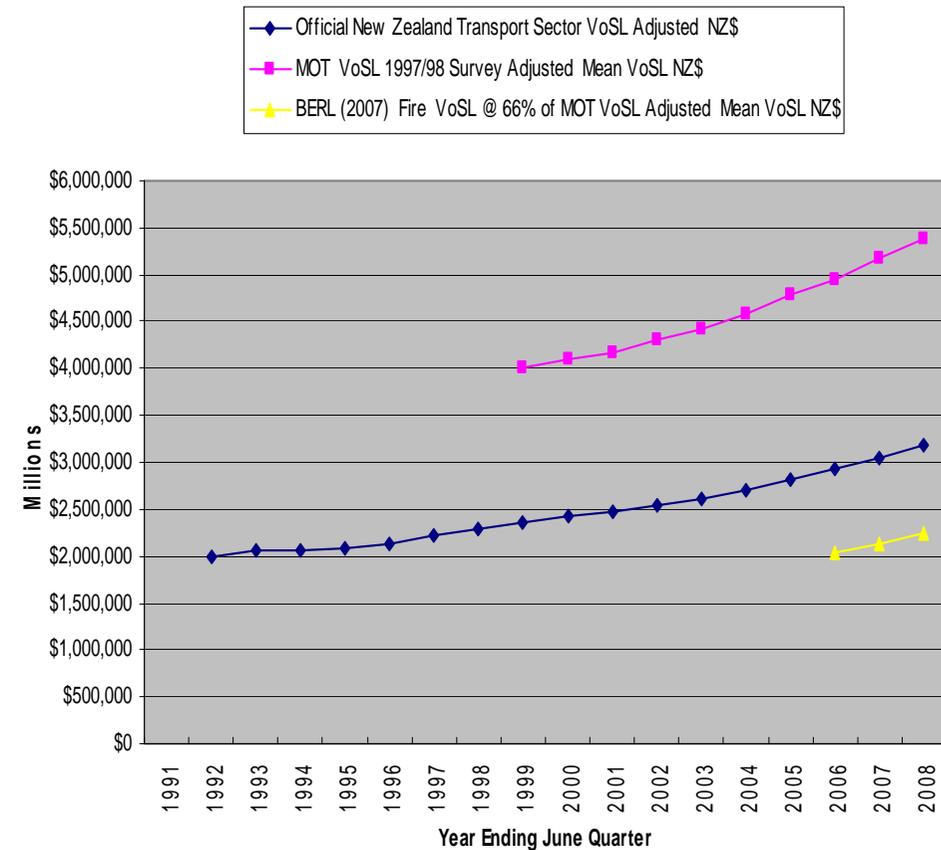
are critical input values that significantly influence the total social cost / benefit output values of the model

# Impact of choice of VPF: New Zealand Evidence



- Survey of VPF for preventing Home Fire Fatalities found to be 56% to 62% of Transport Sector VPF (BERL, 2007)
- MoT 1997/98 VPF Survey found a higher VPF of \$5 million @ June 2008 prices compared to the current official transport Sector VPF of \$3.5 million set in 1991

Official New Zealand Transport Sector Value of Statistical Life Compared to MOT Survey 1997/98 and Fire Service Fire VoSL Survey 2007



# Review of New Zealand COI Studies: Some key findings

- tend to be written to inform policy decision-making
- use the Transport Sector VPF as the measure of social cost
- the Willingness to Pay (revealed preference) has become the de-facto method to measure social / human cost since it was first used by the MOT in 1989/90

# Review of New Zealand COI Studies: Some key findings

- very good evidence to suggest that the MOT method for estimating the cost of injury by severity (fatal, serious, other) needs significant updating
- results are not comparable with each other and cannot be used to generate a “total social cost of all injury and for the six priority areas”
- very large range in estimates – even as high as 10 fold difference

# From VOSL to value per life year...



- A key issue
  - Assumption (for example in O’Dea & Wren 2010) that VOSL Year is the same for all irrespective of age and type of injury / health event
  - However, is the assumption valid?

# Can we have a standard VOSLY for all ages and health issues?

## Evidence is mixed:

Argued in the international literature that VPF / VOSLY varies by factors such as

- Perceptions of level personal and general risk
- Individual ability / responsibility to control for different types of risk
- Wealth of person / nation
- Family size
- Type of health issue e.g. Cancer, CVD, Type of Injury (transport, suicide, fire)
- Immediacy of health issues
- Type of policy issue (health, environment, transport)

## NZ VPF Survey's suggest

- MoT 1989/90 survey respondents ranked preference for paying to prevent a drowning fatality significantly lower than road related fatality
- No conclusive evidence that NZers are willing to pay more to prevent a child fatality
- Evidence suggests pay less for elderly
- Those with no children willing to pay more to prevent a child fatality
- Those with higher incomes willing to pay more
- Those with larger families and lower incomes willing to pay less
- 35% of respondents willing to pay something to protect general public
- Survey response samples small (between n= 560 and 750)

(Evidence from analysis of three NZ VoSL Surveys: Two by MOT 1989/90 & 1998/99 and one by BERL for NZ Fire Service 2007)

# Is VPF / VOSLY constant?

## Some conclusions

OECD (2010) statistical meta analysis of wide range of VPF survey's found

- Some significance was found related to whether or not the risk was latent or immediate, whether it affected private individuals or their household members as opposed to the public at large, whether the risk was related to cancer and the size of the risk itself.
- No consistent relationships between VSL and whether the risk was acute or chronic, whether degree of suffering was mentioned in the survey, degree of individual control over the risk, or age.

(Lindhjem, H., Navrud, S. and Braathen, N. A. (2010). Valuing lives saved from environmental, transport and health policies: A meta analysis of stated preference studies. Paris. OECD.)

## Next Steps:

- Based upon the work that it has done, ACC Research believes there is a significant case for a new New Zealand VPF survey (Wren & Barrel, 2010).
  - Dr Jagadish Guria has recently argued (NZIER, 2010) that “the methods currently used...are flawed....An investment now...to re-estimate the VOSL....could have big pay-offs....”

## ACC Research has...

- Has commissioned Research New Zealand to develop and test a new VPF survey for delivery in CAPI and Internet mode
- Auckland University will provide peer review
- A Government Inter-agency Advisory group comprising MOT, DOL and MOH is in the process of being established to provide advice and oversight of the initiative
- Due to have a tested survey ready for piloting early in 2012
- Piloting will depend upon funding and extent of support from government agencies and external stakeholders (such as yourselves) for the initiative

# Questions?

## New Zealand Injury Prevention Strategy

Rautaki Ārai Whara o Aotearoa

### Five-year Evaluation

The costs of injury in New Zealand and methods for prioritising resource allocation

