

DREAD RISKS

- REPORT OF STUDY CONDUCTED ON BEHALF OF HSE BY:
 - Sue Chilton
 - Michael Jones-Lee
 - Hugh Metcalf

DREAD RISKS

- HISTORY
- THEORY
- STUDY
- RESULTS
- IMPLICATIONS

DREAD RISKS

- **HISTORY**

- HSE, DOT, and OTHERS
- CONUNDRUM OF VALUATIONS
- Jones-Lee et al 1985
- Sunstein 1997
- HSE DREAD RISK PHASE 1, 2,
PROJECT

DREAD RISKS

- **THEORY UNDERLYING PREVIOUS STUDIES**

- WELFARE ECON: Public Sector Investment should reflect Preferences.
- Measure by WTP – Max.
- In Safety, Agg. WTP for (small) improvements
- e.g. 1 in 100,000 for each of 100,000 people
- If mean deaths prevented is 1
- And mean WTP for group is £10
- Then Aggregate WTP is £1,000,000
- Termed Value of Preventing a Statistical Fatality, VPF
- or, Value of a Statistical Life, VSL.

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- Relative values: VPF Road £1.25million

	Pre-ladbroke grove	Post-ladbroke grove
$V_{pf_{rl}}/v_{pf_{rd}}$	0.834	1.003
$V_{pf_{pf}}/v_{pf_{rd}}$	0.923	0.960
$V_{pf_{df}}/v_{pf_{rd}}$	0.926	0.890

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- **BASELINE RISKS**

- CAR DRIVER/ PASS. 1400 in 50m.
 - TRAIN PASS. 40 in 50 m.
 - DOMESTIC FIRE 400 in 50 m.
 - FIRE IN PUBLIC PLACE 30 in 50 m.
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- SO IF RELATIVE PARITY IN VPF'S SOMETHING OTHER THAN BASELINE IS DRIVING VALUATION PROCESS.

DREAD RISKS

- **STUDY**
- FOCUSED ON PREMATURE DEATHS FOR CERTAIN QUICK CAUSES!
- CAR DRIVER or PASSENGER.
- TRAIN PASSENGER.
- DOMESTIC FIRE
- FIRE IN PUBLIC PLACE
- HAZARDOUS PRODUCTION PLANT
- PEDESTRIAN
- MURDER
- DROWNING
- ACCIDENT IN THE HOME

DREAD RISKS

- OBJECTIVE

- To identify how degree of risk exposure and respondents' feelings towards type of accident affect choice over level and type of risk people are willing to expose themselves to.
- Ran focus groups in Norwich, Newcastle, Edinburgh and London. Total sample size 160.

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- Informed participants about HSE and project in very broad terms.
- Introduced accidents
- Stressed:
- ‘die immediately or fairly soon thereafter.’
- Vague descriptions.
- Be selfish!

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- Given a personal risk assessment sheet.
- **1. PEDESTRIAN IN A ROAD ACCIDENT**
- **The average person faces a 800 in 50 million risk of dying each year as a pedestrian in a road accident.**
- **I think I have**
- ***“a much higher than average risk of dying”***
- ***“a slightly higher than average risk of dying”***
- ***“about the same risk of dying”***
- ***“a slightly lower than average risk of dying”***
- ***“a much lower than average risk of dying”***

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- Contextless R-R trade off sheets personalised.
- Thought experiments:
- Strategies (3) Discuss...
- Dummy Sheet X vs Y very close..

- Contextless trade offs
- First choose between a 10 increase in either.
- Then increase risk, still prefer or switch?

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- Break:
- Effect of age on choice of programmes.
- Complete R-R contextless trade offs

- Feelings towards different accidents.
- Most/least dreaded.

- Ranking exercise
- Write up thoughts.

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- Complete contextual trade offs.
- Have info on baseline risk
- Ranking
- Thoughts
- Personal exposure

- Two sets
- $S = 10$ increments
- $B = 30$ increments

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- **INFERRING THE DREAD EFFECT**

	<u>Contextless</u>		<u>Context</u>	
• Individual	A	B	A	B
• 1	10	10	20	10
• 2	10	10	20	10
• 3	10	400	10	200
• 4	10	400	10	200
• 5	400	10	800	10
• 6	400	10	800	10

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- RESPONSE PATTERNS ARE SYMMETRICAL BETWEEN A AND B FOR CONTEXTLESS
- SO DERIVED RATIO SHOULD BE 1
- SUBSTANTIAL DREAD EFFECT FOR B RELATIVE TO A, SHOULD SHOW UP

- FOR INDIV 3
- DENOTE $R^A = 10/10 = 1$
- AND $R^B = 10/400 = 0.025$ AS INDICES

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- 3 APPROACHES
- A) TAKE THE VALUATION RATIO V^A/V^B
TO BE RATIO OF SUM OF R^A AND R^B
SCORES.
- B) V^A/V^B IS MEAN OF INDIVIDUAL R^A/R^B
RATIOS
- C) COMPUTE INDIVIDUAL V^A/V^B RATIOS
TAKE MEAN.

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- Applying these approaches to our six person society yields:
- Approach (a) (b) (c)
- Contextless ratio 1 13.6
- Dread ratio 0.74 0.5 0.5
- So approach (a) satisfies both desiderata
- And (b) and (c) can produce very large context effects.

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- **Results relative to Pedestrian Accident**

• Accident	Ranking	Approach (a)
• Pedestrian.	1.00	1.00
• Accident in home	1.00	1.00
• Car driver & passenger	1.22	1.58
• Train	1.33	3.54
• Fire public place	2.32	2.79
• Pedestrian	1.00	1.00
• Car driver & passenger	1.10	1.06
• Hazardous plant	1.39	1.56
• Drowning	1.53	1.54
• Domestic fire	2.00	1.29

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- **Qualitative Follow Up.**
- Objectives:
 - Gain insight into understanding of risk-risk
 - Did respondents appreciate strategies
 - Could they explain their responses
 - Determine whether consistent strategies had been applied.

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- Using:
 - Current absolute roads figure
 - Relative valuations
 - Mean baseline levels of risk
 - Mean dread effects
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- Ran regression to give indicative values for baseline and dread impacts.

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- **Indicative results.**

• VPF	BASELINE	DREAD
• ROADS (S)	60%	40%
• ROADS (B)	69%	31%
• RAIL	2%	98%
• PUBLIC FIRE	2%	98%
• DOMESTIC FIRE	34%	66%