

THE VALUE OF LIFE

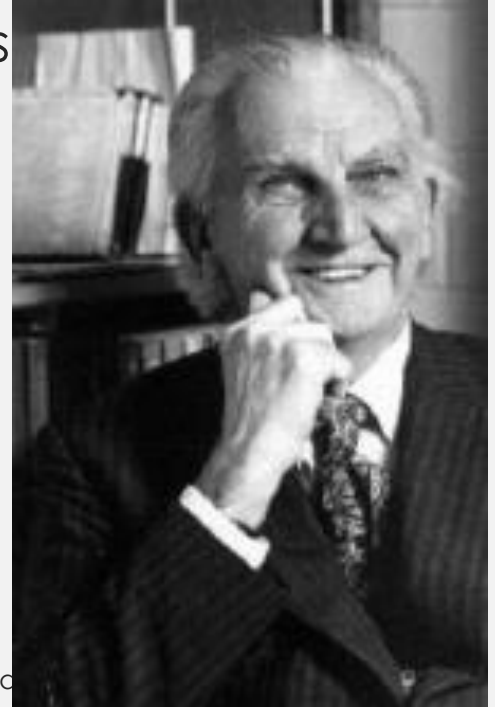
A MULTIDISCIPLINARY APPROACH

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ECONOMIC EDUCATION

The economist/philosopher Kenneth Boulding says

“Mathematics brought *rigor* to economics.
Unfortunately, it also brought *mortis*.”



Kenneth Boulding (photo from The International Peace Research Association)

ECONOMIC EDUCATION

Paul Ferraro, and his colleague Laura Taylor posed a multiple-choice question about opportunity cost to 270 undergraduates who had taken an introductory economics course, 88 people who had never taken an economics course, and then 199 Ph.D. economists at the American Economics Association annual meeting.

Right answer:

Ph.D.s:	21.6%
Undergraduate students:	7.4%
Never econ:	17.2%

If they'd just guessed, a quarter of them should have gotten it right.

“So as far as we can tell, we're leaving no measurable trace on our students.

THE QUESTION

Opportunity cost: The value of what you give up for doing what you are doing: the next best alternative.

“You won a free ticket to see an Eric Clapton concert (which has no resale value). Bob Dylan is performing on the same night and is your next-best alternative activity. Tickets to see Dylan cost \$40. On any given day, you would be willing to pay up to \$50 to see Dylan. Assume there are no other costs of seeing either performer. Based on this information, what is the opportunity cost of seeing Eric Clapton?”

- (a) \$0
- (b) \$10
- (c) \$40
- (d) \$50

SHOULD ETHICS BE PART OF ECONOMICS?

I think so.

But time limitations make it hard

Most is limited to business courses: don't do illegal stuff.

Economists use value and price as guides to make decisions.



THE IDEA

Use a profound, engaging foundational idea, applicable and expandable to many areas. What is the value of a human life?

A student-centered approach to instruction. Puts them in charge of decisions.

I originally used it for introducing topics in principles of microeconomics classes.

Instructors guide the discussion and use a predominantly Socratic approach of having the students answer their questions.

The following example shows the way I use it in class, but also gives ideas for other subjects.

THE VALUE OF LIFE

Why do we need to put a value on human life?

Distinguish between price and value

Average value of life: willingness to pay to reduce risk of death.
Used in cost-benefit analysis, environmental regulations, etc.

Individual value: used for compensations, tort law, reparations (e.g. September 11 US compensation fund)

In some cases, there is an actual price (e.g. slave trade and market for organs)

THE VALUE OF LIFE

The value of Life: Average vs. individual. Can't be infinite as infinite resources can't be used to save one life!

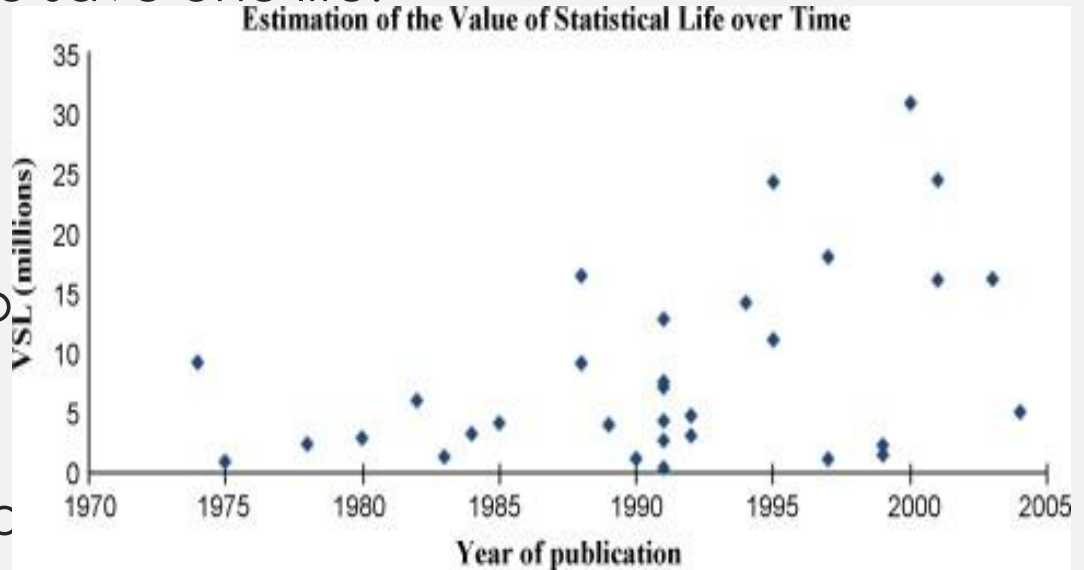
It's an average

US:

Between \$7.9 to \$9.6 million

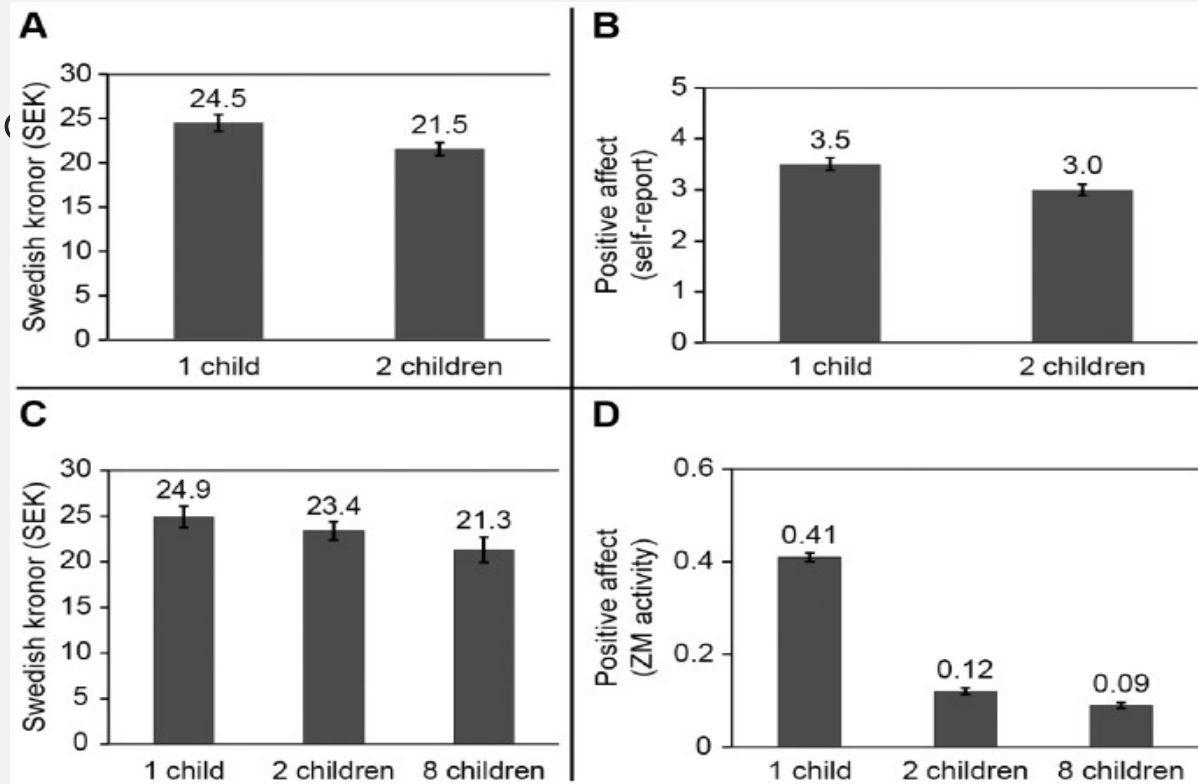
New Zealand:

Between \$2 and \$4.1 million



WHY DO WE VALUE ONE MORE THAN MANY?

Charitable donation



CASE STUDY: THE FORD PINTO

Sold in US between 1971 and 1981 - tendency to explode when rear ended

The “Pinto Memo”: Installing safety screen \$11 x 12.5 mil cars - Cost of \$137 mil. Benefit, saving 180 lives at \$275,000 per life (cost of litigation) or \$49.5 mil.

Ford decided not to install the safety screen

Over 200 people died.

A higher value of human life would have changed
The outcome of the cost-benefit analysis.

Trade-off safety/affordability



THE VALUE OF LIFE: OVERVIEW OF THE EXERCISE

Ask few precise questions: Is there a difference between value of price? What gives value to human life?

Look at examples (US centered, in this case):

9/11 compensation, \$500,000 to \$8,6000,000

Afghan civilian victims of War in Afghanistan: \$1,000 to

Applications: Insurance claims, tort law, etc.



Kenneth

Feinberg

<https://www.reuters.com/article/us-usa-afghanistan-civilians/how-much-is-an-afghan-life-worth-that-depends-idUSKBN16R0A5>

<https://www.cnn.com/2013/07/27/us/september-11th-victim-aid-and-compensation-fast-facts/index.html>

THE ACTIVITY

Divide students in small groups (3 to 4).

Ask them to list what variables are important to give value to human life.

**Nowadays
people know
the price of
everything
and the value
of nothing.**

OSCAR WILDE

COMMON VARIABLES LISTED

More Common

- Age
- Gender
- Income
- Number of Dependents
- Wealth
- Standing in society
- Health
- Nationality

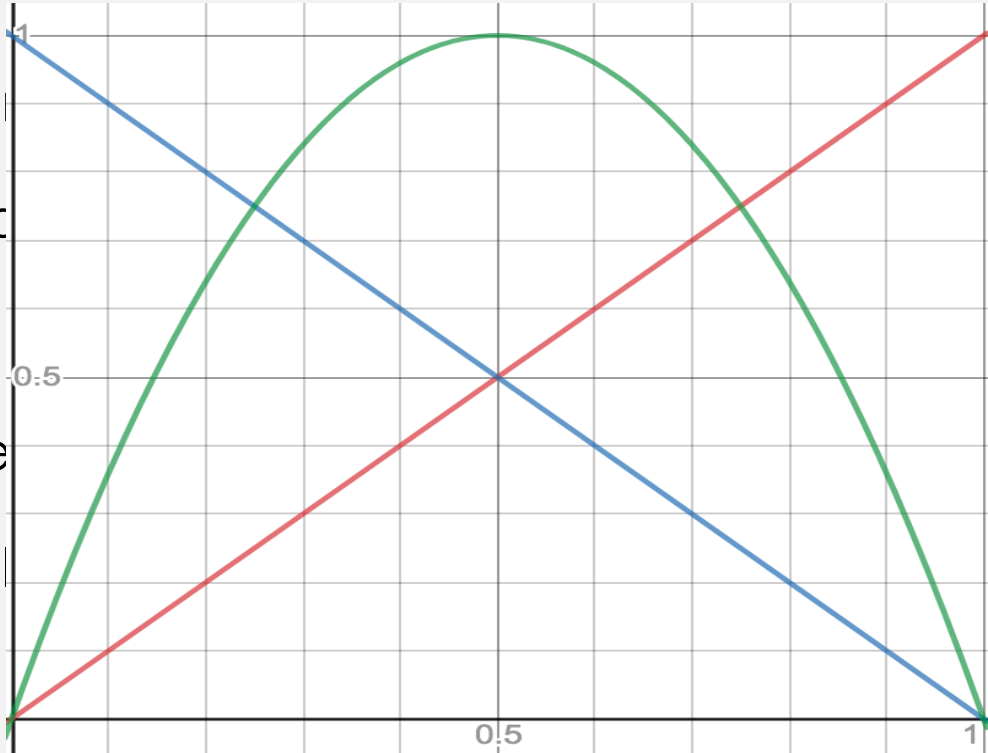
Less Common

- Ethnicity
- Immigration Status
- Religion
- Others

Any other you'd like to suggest?

WE HAVE THE VARIABLES. WHAT NEXT?

How do you measure the
Continuous, discrete, binc
Measurement problems.
Use “age” as an example
What age is more valuabl
Why?



AGE, HEALTH AND HEALTHCARE COSTS (US)

Question for “The Ethicist”: “At 65 years old, I am facing a final diagnosis for lung cancer and the prospect of a 15% survival rate. If this is confirmed, would it be ethical to put myself through painful long-term treatment and to have the people who love me endure this? At my age, is it ethical to consume the health care dollars involved? What is the tipping point to elect aggressive care? Thirty percent? Sixty percent? G. M.”

Part of the answer: “Current health policy devotes enormous resources to end-of-life care rather than, say, wellness throughout life. Some studies suggest that 25% of Medicare money is spent on people in the last year of life, 40% of that in the mast month.”

WHAT DO WE DO WITH THE VARIABLES?

In the end, which variables are objectively measurable?

Do variables that are hard to measure matter?

What to do after a series of variables is agreed upon?

What do you do with them: arithmetic mean vs geometric mean: philosophical implications? (Similar to the Human Development Index calculated for each country by the United Nations Development Program).

WHEN ETHICS MEETS MATHEMATICS...

Should we use an arithmetic or a geometric mean? Implications.

Arithmetic & Geometric Means

Arithmetic Mean (average)

$$AM = \frac{a_1 + a_2 + a_3 + \dots + a_n}{n}$$

Geometric Mean

$$GM = \sqrt[n]{a_1 a_2 a_3 \dots a_n}$$

e.g. Find the *AM* and *GM* of 4 and 25

AM = 14.5, GM = 10

WHAT USUALLY HAPPENS

In the end, lost income over expected lifetime and dependents is the only measurable variable and in which there is agreement.

That was the formula used by the US government to compensate victims of the September 11, 2001 terrorist attacks.

This, obviously, raises many other questions. Children, elderly, etc.

There isn't a clear answer, but life requires decisions to be made.

APPLICATION TO OTHER SUBJECTS

Mathematics and Statistics

History

Philosophy and Ethics

Anthropology and Sociology

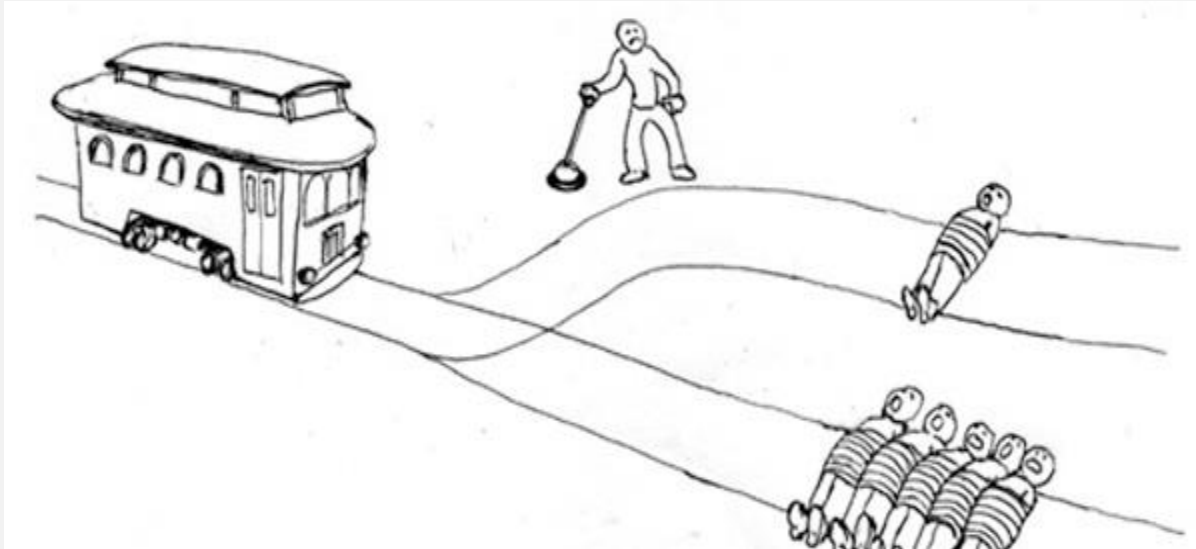
Literature

Biotechnologies (should we design our children?)

Engineering and technology (driverless cars)

AN EXAMPLE: SELF-DRIVING CARS

The trolley problem in real life: Variations.



CONCLUSION

Pros

Multidisciplinary flexible and easily adaptable

Student involvement is usually very high

Students bring up the exercise later in the semester

Cons

Hard to create a meaningful assessment

Can be time consuming

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QUESTIONS?

