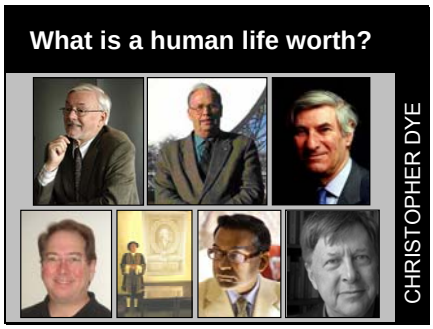
Slide 1



{Note: this lecture is based on many sources, some of which are quoted directly alongside the slides. Ask for a list of references if you need them: dyec@who.int.}

A lecture with this title could be given by any of my fellow Gresham professors. But this is a physic lecture and I shall approach the question from the perspective of health economics. I'm going to argue that our lives are valued in terms of money, whether we like it or not, implicitly and explicitly.

Slide 2

The lecture revolves around 8 key ideas: (1) "Intrinsic value" refers to the moral and philosophical view that life is sacred and can have no monetary value placed upon it; I use the term "extrinsic" to refer to the actual monetary value placed upon it, implicitly or explicitly, when decisions are made from an economic perspective. (2) When resources (money) are limited, we must choose how to deploy them – spending money on one thing (person) means not spending it on another. That presents a question about how the decision is made; we have to minimize, maximize or otherwise optimize. (3) Both for illness and death, we have to trade one event off against another, which means that we need to choose conversion rates, and a common currency, which may (cost-benefit) or may not (cost-effectiveness) be money. (4) The way lives are valued depends on whether we are talking about a specific life (you, or someone closely related to you, and relatedness determines value, as we shall see), or an anonymous life. (5) Carpe diem was first expressed by Horace: "While we're talking [indeed, while I'm talking], envious time is fleeing: seize the day, put no trust in the future" (Odes Book I). The notion that tomorrow is not as valuable as today – reflected in our behaviour including the way we value our lives -- is captured in economics by discount rates (usually 3-5%, based on the long-term growth of US govt bonds). (6) Advocates of the precautionary principle suggest that we should take no risks; I will argue that risk taking is unavoidable. (7) The value of any life depends, in part, on the condition of the population at large. We all face and take uncertain risks; the risk will become reality for the (un)fortunate few, but we are all willing to pay to cover the risk that it will happen to number one. That is the basis of insurance (and also of gambling in e.g. lotteries). (8) Last but not least, luck affects your monetary value, in ways that some will consider to be unfair.

Slide 3

Value of human life is variable, and marketable

These ideas will come up during the several parts of this story about how the values of our lives are measured in monetary terms. I will try to persuade you that the monetary value of life is variable, within and between individuals, and marketable. The commodity known as Osama bin Laden increased dramatically in value after 9/11, but it's worth shopping around to get the best value for money. As for the question of value dead or alive, I will come to that shortly.

Slide 4

Measuring the value of human life

I will start with some conventional ideas about how lives are valued: private insurance, and then public investment in protecting anonymous people.

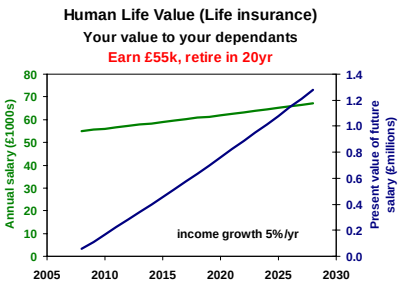
Slide 5

Risk, roulette and health insurance

Type of Gamble	Expected average value relative to amount bet
Roulette	You lose 5% of each bet
Large group health insurance	You lose 10% of each bet
Individual health insurance	You lose 40% of each bet, the price of "peace of mind"

Welcome to life's lottery. Lotteries and insurance work take advantage of the principle of sharing the risk of rare events in large populations. You are gambling to win (lottery), or to protect yourself against loss (insurance). In a sense, insurance companies are interested not in the value of individuals, but in the value of whole populations. For an anonymous life, if there are 100 people in this room, 1 of you will die within the next year (deaths 6/1000, a bit bigger for an older population). We don't know who, but we're all aware of that, and we all want financial protection against it, which we are willing to pay for. I am willing to contribute because that person might be me.

Slide 6



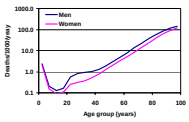
To work out what you need for life insurance, find out the present value of your earnings (mainly salary) up to retirement, allowing for growth in wages. Human Life Value is defined as the present value of all future income that you could expect to earn for your family's benefit. It also includes other value you expect to contribute, less personal expenses, life insurance premiums and taxes up to your planned retirement date. In its simplest form, life insurance is your monetary value to your dependants. If you have none (and you have another savings scheme), you don't need insurance.

Slide 7

You protect your life by paying much less than you are worth

Insurance companies work with the value of large populations, not the value of individuals (risk transfer)

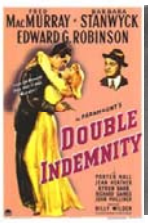
1000 non-smoking men
£100,000 insurance policy
Age 25: 0.35 die/yr
Age 35: 0.66 die/yr
Average: 0.5 die/yr
Payout = 0.5 x £100,000 = £50,000
Premium > £50/person/yr (> admin, salaries)



The good news about risk sharing is that you only have to pay (a bit more than) your proportional share of the risk; you protect the value of your life by paying much leas than you worth. Recent mortality tables predict that roughly 0.35 in 1,000 non-smoking males aged 25 will die during the first year of coverage after underwriting. At the end of 10 years the mortality of that 25 year-old, non-smoking male is 0.66/1000/year. Consequently, in a group of one thousand 25 year-old males with a £100,000 policy, all of average health, a life insurance company would have to collect approximately £50 a year from each of a large group to cover the relatively few expected claims (0.35 to 0.66 expected deaths in each year x £100,000 payout per death = £35 per policy). Administrative and sales commissions need to be added for this to make business sense. A 10-year policy for a 25 year old non-smoking male person with preferred medical history may get offers of £90 per year for a £100,000 policy in the competitive life insurance market (Wikipedia, Life insurance). The inset shows the changing death rates for men and women by age in the UK. Notice the bump for young men; their relatively high death rate suggests that they place lower value on their lives, a point to which I return later.

Slide 8

Indemnity: making a killing



An important piece of advice in life insurance is that you should not be worth more dead than you are alive. Just as you can bet on anything you can choose your own level of insurance, up to a point (The Grim Bookmaker). Is it worth paying the premium for double indemnity (double the dividend)? The 1944 story of Double Indemnity was based on a 1927 crime by a married Queens (NYC) woman and her lover. Ruth Snyder persuaded her boyfriend Judd Gray to kill her husband, after having her spouse take out a big insurance policy — with a double-indemnity clause. The murderers were swiftly arrested.

Slide 9

Black widows

Two elderly women conspired to murder homeless men collecting $2.8 million in life insurance

And murder for insurance has not gone out of fashion – witness the case of the Black Widows who murdered 2 homeless men in LA. They stood to make $2.8m, but were convicted last week.

Slide 10

How much would you be willing to pay to extend your life?

Contingent valuation
What are you willing to pay to reduce risk of death ?

Hedonic choice
Revealed preference e.g. how much extra pay to take extra risk?

Insurance (Human Life Value) is about providing monetary cover against personal loss – your value to yourself, on behalf of your next of kin. But you are also valued by society. The reason is that society must decide – through government – how much it's worth spending to protect people against risk e.g. from road accidents, environmental pollutants. Protection is only worth what people are willing to pay for it. There are 2 ways to find out. One is to ask directly, through "contingent valuation". The problem with this it that it's hard to judge without context. If I ask you what you would pay to reduce your risk of death by 1%, you would find it hard to give a meaningful answer. Even if I ask the more reasonable question: how much would you pay to extend your life by one year, you may not be able to answer accurately. And anyway, what people say is not always what they do. A better method is through the choices that are actually made – revealed preference. What extra salary would you ask for to take a riskier job? I'll give you another example in a moment, but let me also mention some consequences and caveats. (1) Notice that you cannot refuse to play the game. (2) Neither method refers to the value of the life of an identified person (i.e. the value of changing the risk of mortality from one to zero). (3) Willingness to accept compensation for a higher risk is a function of income. This is a fact of life, as are, unfortunately, large income differences. Thus, a risk to a poor person is valued less than the same risk to a rich person. You may find this objectionable, but what you actually object to in this case is the underlying distribution of income (Fankhauser). (4) The pictures here point to at least one major caveat: those who accept riskier jobs could be born risk-takers who place lower values on their lives than others, and thus undervalue the lives of others (Pictures: Free climbing; some days you feel you'll do anything to avoid other commuters.)

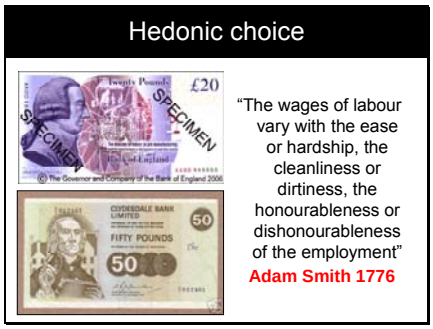
Slide 11

Value of a Statistical Life
Contingent valuation

- Willingness to pay up to **£5000** on average to cut chance of death (e.g. by fire) by **0.1%**
- $5000 is the "point of indifference"
- Value of life = 1000×$5000 = **£5 million**
- Mayor of a town of 1000 people will not spend **£6 million** on (e.g. fire) equipment to save one life
- Where does **£5000** come from?

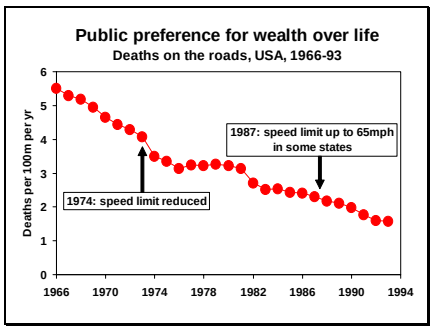
Would Ken Livingstone invest £50k to pay for new fire equipment for London? Would Boris Johnson replace bendy buses?

Slide 12



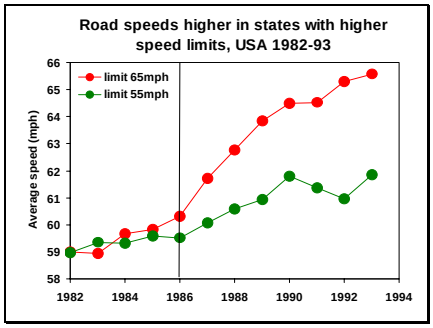
Hedonic choice and revealed preference: riskier jobs in return for higher wages? Adam Smith said it in 1776.

Slide 13



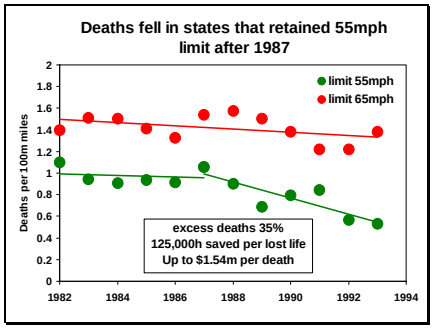
In 1987 the federal government permitted states to raise the speed limit on their rural interstate roads, but not on their urban interstate roads, from 55 mph to 65 mph for the first time in over a decade. Since the states that adopted the higher speed limit must have valued the travel hours they saved more than the fatalities incurred, this experiment provides a way to estimate an upper bound on the public's willingness to trade off wealth for a change in the probability of death (Ashenfelter).

Slide 14



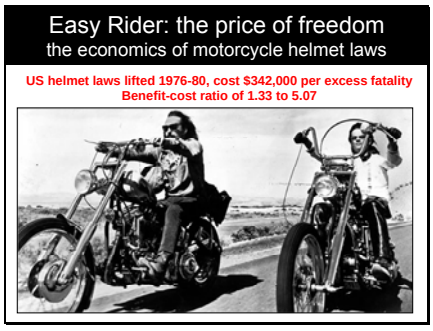
Road speeds went up everywhere during the 1980s, but they went up faster in the states where the speed limits were increased.

Slide 15



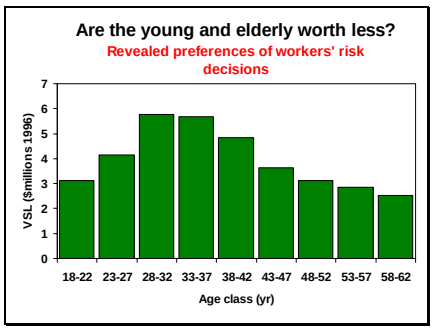
What were the consequences? The graph shows annual fatality rates on rural interstates from 1982-1993. For states that increased to the 65 mph speed limit, fatalities fell relatively slowly: so the 65 mph speed limit is associated with a substantial relative increase in fatality rates. The 65 mph limit increased speeds by approximately 3.5% (i.e., 2 mph), and increased fatality rates by roughly 35%. In the 21 states that raised the speed limit and for whom we have complete data, the estimates suggest that about 125,000 hours were saved per lost life. Valuing the time saved at the average hourly wage implies that adopting states were willing to accept risks that resulted in a savings of $1.54 million (1997$) per fatality.

Slide 16



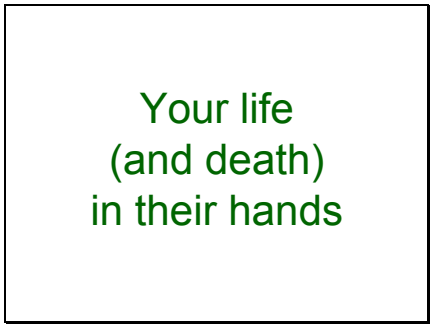
Similarly, when helmet laws were lifted between 1976-80, under pressure from "civil liberty" groups, 48 states in the USA experienced a cost (medical, legal, funeral, productivity) of around $342,000 per excess fatality of annual net savings. Helmet laws in the USA had a benefit-cost ratio of 1.3 to 5.1. Helmet laws have cut deaths in developing nations (Hyder).

Slide 17



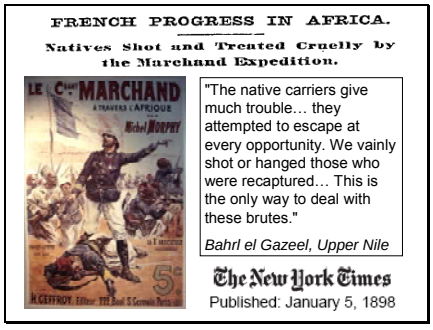
"Revealed preference" studies show that we do not value people equally, and this is also true of different age groups. Using data from US Occupational Safety and Health Administration reports, workers' compensation injury reports, death certificates, and medical examiner reports, it has been possible to develop a comprehensive database on job-related fatalities. For each death, there is information on the worker's age group and industry that we use in constructing the fatality risk variable. The aggregate result is that maximum value is given to adults aged 28-38 years – in this study $5-6m (Aldy & Viscusi). Fro life insurance, you will adjust policy according to personal need; in VSL studies everyone is treated the same way. Under some circumstances, society values your life more than you do

Slide 18



HLV and VSL are standard valuation procedures, though not without controversy. Under other circumstances, you may find yourself in the wrong (low value) market…

Slide 19



The more distantly related, genetically and culturally, the less valuable you are perceived to be. The Fashoda Incident (Sudan) in 1898 was the climax of territorial disputes between the UK and France in Eastern Africa. A French force set out from Brazzaville under Major Jean-Baptiste Marchand with orders to secure the area around Fashoda as a French protectorate. Their epic 14-month trek across the heart of Africa was accompanied by various reports of brutality upon the disposable natives (Wikipedia).

Slide 20

Revealed value of life in different populations

COMPENSATION FOR AFGHAN WAR VICTIMS

Nationality	In nominal $'s	GDP PPP$s/GDP US $'s ratio	in PPP US $'s
Italian	$2,000,000	1.09	$2,180,000
Chinese	$ 150,000	4.58	$ 687,000
Indian (Bhopal)	$3,200	5.01	$16,032
Afghans @ lifetime earnings	$ 3,300 - $ 5,000	~5*	$16,500 - $25,000
Afghans @ Karzai amount	$200	~5	$1,000

Another area of pricing is in compensation. Looking around the world, the variation is extraordinary. These data were assembled to make about about the pitiful compensation given to the families of killed Afghan soldiers. President Karzai's offer of compensation per dead Pashtun (Afghan) was about 1/300th the value of a Toyota Land Cruiser (Herold).

Slide 21

Union Carbide's Bhopal disaster

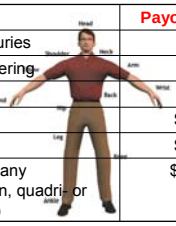
The Indian data in the preceding slide are from the Bhopal disaster. In December 1984, the Union Carbide pesticide plant in Bhopal, India, leaked poisonous methyl isocyanate gas, killing at least 15,000 men, women and children. Hundreds of thousands more were permanently maimed. Union Carbide is now owned by the Dow Chemical Corporation. Twenty years later, amid charges of corruption, graft and suppression of medical and environmental research about the tragedy, the victims are still not adequately compensated and cared for. In 1984, the Wall Street Journal' noted that Indians don't expect compensation for Bhopal because "the certainty of reincarnation satisfies the Hindus; for the Moslems, what God wills, God wills." The Times of India noted that about $40,000 was spent on the rehabilitation of every sea otter affected by the Exxon Valdez oil spill in Alaska.

Slide 22

Meat charts: the price of injury

Consulting the "how-much-man", payouts by Manitoba Public Insurance

Damage	Payout (any age)
Healing injuries	$ 0
Pain & suffering	$ 0
Finger	$ 3,000
Leg	$ 10,000
Eye	$ 25,000
Maximum (any combination, quadri- or paraplegia)	$ 100,000



The compensation to be awarded from industrial and other accidents is often judged from a so-called "meat chart". As one example, Manitoba Public Insurance works like this: (1) There is no compensation for pain and suffering. (2) Body parts are assigned an arbitrary value, e.g. a finger is worth $3000, a leg is worth $10,000, an eye is worth $25,000. The "meat chart" equalizes the value of different body parts so that in real terms they are worth approximately the same. So, while the severity of multiple injuries is arguably multiplicative, injuries are compensated on a linear scale. The maximum compensation for any type of injury is $100,000. There is a big difference between being quadriplegic and paraplegic, but the compensation is about the same over time (themanitoban.com).

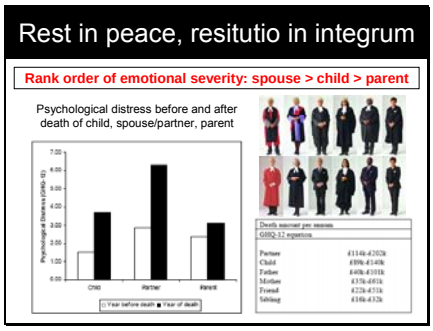
Slide 23

Compensation to British soldiers injured in Iraq works in roughly the same way. The Ministry of Defence does not offer soldiers the same compensation payouts as those on offer to civilians, who are eligible for payments of up to £500,000. Payouts to troops remain capped at £285,000. Lump sums are paid at 100% of the compensation for the first injury, but 30% for the 2nd injury and 15% the 3rd. The MoD says support for life means total compensation is actually much more; under new proposals, full compensation will apparently be paid for all injuries (www.telegraph.co.uk).

Slide 24

The public debate over compensation got more interesting last week when an Iraqi teenager was awarded £2m compensation after accidentally being shot when aged 13. This precedent is undoubtedly going to be mentioned again in court in the near future.

Slide 25



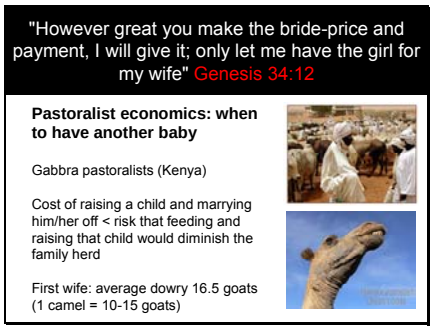
But what should the compensation for injury or loss of life be? Can objective assessments be made e.g. in tort cases? A tort occurs where there is a breach of a duty fixed by civil law, such as medical negligence. The law allows a tort victim to claim compensation, and the underlying principle is restitutio in integrum. The claimant should be restored, by the payment of compensatory damages, to their original position. Many of the valuable things in life -- love, friendship, health -- come without price-tags attached. If their financial value is to be judged, therefore, some method has to be found for assigning pecuniary amounts in situations that do not appear to have any intrinsically financial aspect. In most countries, judges set damages, and they do so by using rules of thumb with ad hoc conceptual foundations. This study proposes to improve on that by measuring how many happiness points are gained on average by a higher income of £X pounds, and how many happiness points are lost by the death of a loved one, and then calculating the ratio of the two. Doing so provides a statistical measure of the marginal rate of substitution between the pleasure of money and the pain from the death of a loved one. Emotional losses are greatest from the death of a spouse; the second-worst in severity are the losses from the death of a child; the third-worst is the death of a parent. The paper explores how happiness regression equations might be used in

tort cases to calculate compensatory damages for emotional harm and pain-and-suffering.

Slide 26

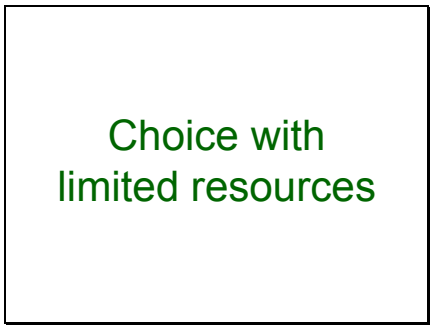
Slavery commonly has an explicit price. Anti-Slavery International published some of these prices, contemporary examples being $40 for a young man from Mali and about $1000 for a young HIV-negative Thai woman recruited to prostitution. Interestingly, plantation owners of mid 19th century America kept excellent records of the price of slaves, which are very large in today's prices (up to $38,000).

Slide 27



Payment for brides (dowries) are not slavery, but they do put a price on lives in a special set of circumstances. The romantic notion in the title is from Genesis 34 and suggests no upper limit to a dowry. In reality, pastoralists and others do the home economics: the probable benefits of raising a child must exceed cost, or net family value will diminish. Factored into this costing exercise is the fact that the average dowry for a first wife is 16-17 goats, or a tad more than 1 camel (Mace).

Slide 28



Human Life Value (HLV), the "Value of a Statistical Life" (VSL), and compensation put monetary values on life in different ways. Another approach, based on cost-effectiveness analysis (CEA), says that the explicit valuation of life is too controversial. Instead we should start with the money, not with the health problem or life value, and acknowledge that we live in a finite world (limited resources). We ask how much healthy life can we buy with a fixed amount of money.

Slide 29

Although CEA shies away from placing a monetary value directly on illness or death, on the grounds that it avoids controversial decisions, it ends up valuing life anyway. Here's how. First we try to put different illnesses, like rabies and heart attacks, in the same (non-monetary) currency.

Slide 30

Currency of illness and death: DALYs and QALYs

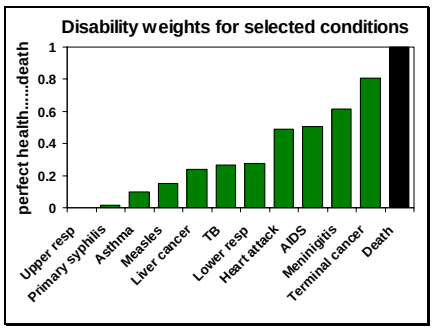
HOW TO COMPARE RABIES WITH HEART DISEASE?

DISABILITY-ADJUSTED LIFE YEAR (DALY)

DALY = YEARS LOST TO ILLNESS
× DISABILITY WEIGHT
+ YEARS LOST BY DEATH

The choices include DALYs and QALYs (disability- and quality-adjusted life years; cup half empty or half full). Both DALYs and QALYs ostensibly offer a way fairly to allocate resources to alleviate suffering, where we try to relive the maximum suffering for a given price. The problems of using DALYs are numerous, including the following…

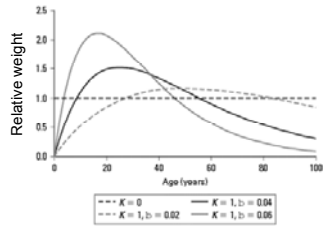
Slide 31



Controversial weighting assumptions about how to measure suffering (disability weights).

Slide 32

Children and the elderly valued less by society?



Age-Weighting Function in the Disability Adjusted Life Year (DALY)

Age weighting has also provoked a critical response. It has been argued that there is a broad social preference to value a year lived by a young adult more highly than a year lived by a young child or an older adult. Not everyone agrees that the youngest and oldest ages should be given less weight; nor do they agree on the relative magnitude of the differences (Murray). Criticisms of age weights are of 5 kinds: (1) unacceptable on equity grounds and every year of life is of equal value, (2) not empirically based and have not been validated for large populations, (3) do not reflect social values; for example, the DALY values the life of a newborn about equally to that of a 20-year-old, whereas the empirical data suggest a fourfold difference, (4) result in more YLL for deaths at all ages from birth to 39 compared with discounted YLL not weighted by age, (5) add an extra level of complexity to burden of disease analysis that obscures the method and makes little overall difference to the rankings of diseases and injuries. Murray argues that age weights are not in themselves inequitable, because everyone potentially lives through every age, and that they do reflect legitimate societal priorities (Global Burden of Disease Project, www.dcp2.org). Indeed these are the same preferences as revealed through VSL, though they have been removed from some DALY calculations.

Slide 33

Cold and calculating…

DALYs: a 2-car collision (Kolb)

	Years of healthy life lost
4 killed	
10 yr girl	70
8 yr boy	73
38 yr mother	46
42 yr old father	33
Subtotal	**222**
2 injured	
45 yr woman – head injury (36 yr × .725 disability)	26
55 yr man – fractured rib (0.115 yr × .199 disability)	0.02
Subtotal	**26.02**
Total	**248.02**

Here is an example of how life and death is turned into a single number: a 2-family car crash that costs about 248 healthy years of life (Carol Kolb). With calculations of this kind, someone will ask what it costs to save 248 life years lost by various methods, and which is the best value for money. The answer may not be to spend money on traffic safety. In CEA, it's bad luck if you suffer from a costly condition. Notice also that life is valued in a different way from the earlier examples of speed limits and motorbike helmets. Which do we prefer? They give different answers about what to spend money on.

Slide 34

TheObserver

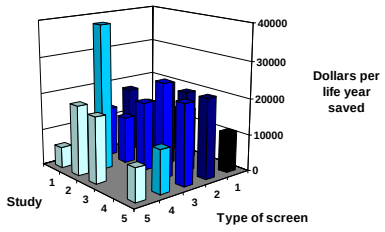
"GPs warned over failure to diagnose cancers" April 13 2008

- Late diagnosis - why the UK has poorer survival rates than other countries in Europe
- More than 1,900 patients - 55 a month - suffered a missed or late diagnosis
- Children and women most likely victims
- Patients waited up to 23 months to have condition confirmed because of diagnostic errors
- Hospital blunders added to delays
- Breast, bowel, lung cancer likeliest to involve botched diagnosis; X-rays, biopsies, blood tests misfiled or misread

Prompted by these newspaper headlines in last Sunday's Observer economists of cost-effectiveness will ask: what would it cost to improve cancer diagnosis so as to increase the chance of cure for some of these 1900 patients? Then: is it best to spend the money on that or on something else?

Slide 35

Cost-effectiveness of colorectal cancer screening $10-25k/life year saved



"I wish I has the voice of Homer to sing of rectal carcinoma" (Haldane). For cancers of the colon and rectum, cost-effectiveness ratios for screening (compared with no screening) by any of the usual procedures are between $10,000 and $25,000 per life-year saved. So is that worth the money?

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NICE or nasty?

- NICE = National Institute for Health and Clinical Excellence
- Threshold of about £30,000 per QALY? (formal figures not made public)
- New health interventions with incremental cost > £30,000 per additional QALY gained likely to be rejected as cost-ineffective
- USA ≈ threshold $50,000 per QALY?

CEA gives one solution to the question of preference, but it does not tell us how to allocate a finite quantity of money. It says formally: spend on the cheapest until the condition is eradicated, or until it is no longer the cheapest. We have to get round the problem by setting thresholds for cost-effectiveness. We might agree that, say, £30,000 per QALY is an operational threshold. This is a judgment that puts cost-effectiveness against affordability, in a way that is not fully objective.

Slide 37

Raising (and lowering) the stakes

You can adjust the monetary value of your own life in various ways. Here are some example, which mix the valuation methods described above.

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"You can see why these people would have hated to die worse than anybody"

Gardner, Dupont Estate

And the will to do so may depend on how you feel about your status in society. While touring the magnificent old Dupont estate (Delaware), Steven Landsburg overheard an awestruck gardener mutter, "You can see why these people would have hated to die worse than anybody." Life is dear, but life is dearer when you're rich.

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"Fully functional kidney for sale. You can choose either kidney. Buyer pays all transplant and medical costs. Of course, only one for sale, as I need the other one to live. Serious bids only." *Hchero, Florida*

Top bid: $5.7 million

Auctioning your body, bit by bit. In this case the web auctioneer stopped the illegal bidding. Should this be illegal? It's a contract between 2 consenting adults. Government regulations adjust the value of our lives – why should they?

Slide 40

The price of life: contract killing

Murders in Moscow or St Petersburg

Oct 2006	journalist Anna Politkovskaya
Sep 2006	banker Andrei Kozlov
Oct 2005	banker Alexander Slesarev
Jul 2004	Forbes' editor Paul Klebnikov
Oct 2002	governor Valentin Tsvetkov
Nov 1998	MP Galina Starovoitova
Mar 1995	journalist Vladislav Listyev

Following my earlier reference to Osama bin Laden, contract killing is clearly big business. These are probable recent examples from Russia. For obvious reasons, price lists are hard to come by. However…

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The price of life: contract killing
Australian Institute of Criminology

Attempted murders 1989-2002	163
Payment per "hit"	A$12,700
Range	A$380 – A$76,000
Reason #1	"intimate relationship"
Method #1	shooting


A study by the Australian Institute of Criminology found that, of 162 attempted or actual contract murders in Australia from 1989 to 2002, the most common reason for murder for hire was "in relation to the dissolution of an intimate relationship" (angry spouses and jilted lovers). Other motives were money, silencing a witness, general revenge, drugs and organized crime rivalry. The average payment for a "hit" was A$12,700, the lowest A$380 and the highest A$76,000. The most commonly used weapons were firearms. Contract killings accounted for 2% of murders in Australia during that time period (cf 5% of all murders in Scotland from 1993 to 2002). The number of "hits" is slowly rising with an average now of 7 attempted and 5 completed each year.

Slide 42

Cost of a pack of cigarettes

Tobacco	£1
Tax	£3
Value of life lost	£10-100 (men)
	£5-50 (women)

Smoke 20/day for 40 years
Earn £50,000/year
Lose 4 years
Cost/pack = £114

There are slower ways to damage your health, and lower the value of your life. Cigarette smoking is one of them. The mortality cost of smoking based on labour market estimates of the value of statistical life by smoking status, intensity, age and gender, gives an estimate of the private mortality cost of smoking of £111 per pack for men and £47 per pack for women (based in US$ in 2006), with a 3% annual discount rate. At discount rates of 15% or more, the cost decreases to under £12 per pack.

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Wages for risk-takers: lives of smokers and drug users are valued less

Category of worker	Earnings/year for zero death risk (1984$)	Value of statistical life
Don't smoke Don't do drugs	$355	$7.10m
Drugs	$122	$2.44m
Cocaine	$45	$0.91m
Smoke	$16	$0.33m

"Statistical life" analysis also suggests that smokers and drug users value their lives less. Individuals who are both non-smokers and non-drug users work in the safest jobs and receive the highest compensating wage differentials for job-related risk. Smokers and drug users and smokers have been found to require lower wage-risk tradeoffs, as compared to those classified as non-smokers and non-drug users. Estimates of VSL are nearly 3 times higher for those classified as non-smokers and non-drug users than for drug users (Gill).

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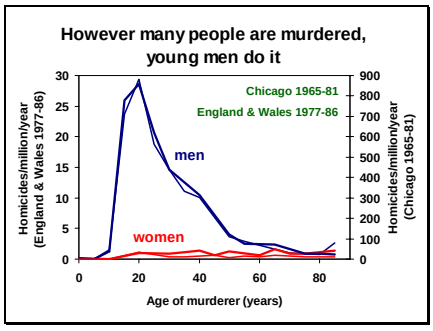
Why are drug users and cigarette smokers (apparently) worth less?

- Choose jobs that pay higher wages but carry greater risk?
- Riskier jobs encourage more cigarette smoking?
- Smoking and drug use are markers for other risk prone behaviours



Why are drug users and cigarette smokers (apparently) worth less? Here are three possibilities: (1) Drug users take more risks than non-drug users. (2) Job risks encourage greater consumption of cigarettes and drugs. Moreover, drug use may contribute directly to higher rates of job-related death. (3) Cigarette smoking and drug use are markers for other risk-prone behaviours.

Slide 45

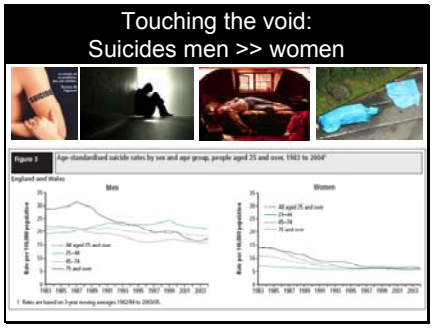


Some people clearly do take more risks with their health than others; one interpretation is that they value their lives less. I referred earlier to the higher death rate among young men than women. It may be that they do not value their lives less, but rather than risk-taking is more successful as a general strategy. Some people die, but on average risky behaviour is more successful. Is murder by young men explained by this phenomenon?

Slide 46

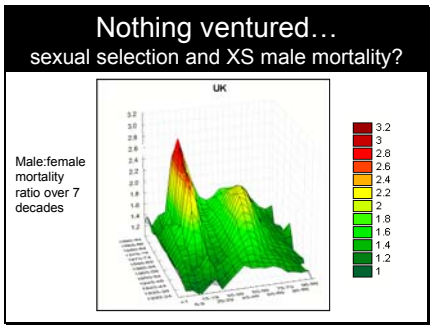
Young men murder, and are also murdered. Here are the data for England 1993-7 on who is murdered. We see high rates among young men, where about a third of all homicides are due to open wounds and injuries to blood vessels of head, neck and trunk, and about 15% to injuries to heart, lung and intrathoracic organs, injuries which are consistent with stabbing. (By the way, the highest homicide rates in both sexes are in infants, with 44/million/yr in males and 35/million/yr in females. Over 60% of all infant killings are due to skull fracture or intracranial injury; UK Office of National Statistics).

Slide 47



Men kill themselves too (much more than women), and recently especially young men. Is suicide and early male death is an evolutionary product, where net benefit exceeds risk?

Slide 48



Young men appear to value their lives less by taking risks, causing excess mortality (compared with women). There is a simple (possible) explanation if we switch currencies, from cash to genes: taking risks is on average a better strategy for reproduction, but with the ultimate penalty for some. Evolutionary research has described how sex differences in mortality are explained by traits shaped by sexual selection interacting with cultural and environmental factors. In species where females make a greater parental investment, they tend to be more discriminating in mate choice, so the reproductive success of males depends largely on their ability to compete for mating opportunities either by winning fights with other males or by presenting displays preferred by females. The genetic fitness benefits of these outcomes tend to increase the prevalence of genes that promote male risk-taking and competitive ability at the expense of decreased investment in repair capacity and disease prevention. This is the evolutionary reason why females live longer on average in most animal species. It illustrates how natural and sexual selection can maximize the survival of genes, sometimes at the expense of the survival of individuals. If male mortality rates could be reduced to those for females, this would eliminate over one-third of all male deaths below age 50 (Kruger & Nesse).

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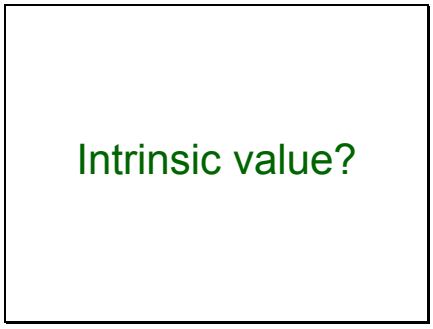
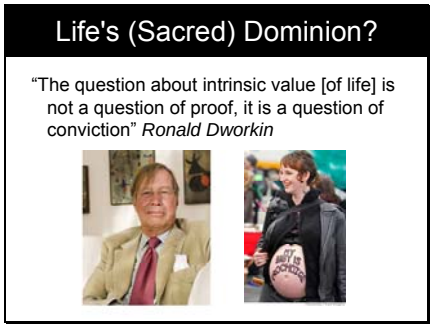


Finally, "intrinsic value". How do we bring economics alongside ethical and moral positions? With the respect to the economics of valuing life, here are a few dissenting voices.

Slide 50



Ronald Dworkin, giant in legal philosophy and author of Life's Dominion, argues that the abortion controversy can be settled once we expressly acknowledge that we are all united in our belief in the intrinsic value of human life. It is not at all clear that this is true (Lazarev). Intrinsically valuable things are supposedly valued independently of whether people want, need, desire or enjoy them. There are various interpretations of "intrinsic value". In any event, it is clear that different instruments are used to make decisions about abortion. Ethical, emotional, philosophical, and moral, but also economic decisions are also made about abortion, which fall outside the definition of

"intrinsic".

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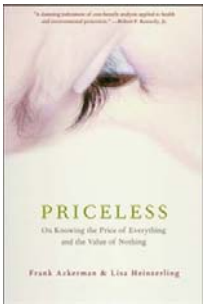

"A TIMELY CORRECTIVE TO THE CURRENT INFATUATION WITH COST BENEFIT ANALYSIS AND THE DERELICT LOGIC USED TO DEFEND IT"

The authors of the recent book "Priceless" object to many of the economic criteria on which health and life are valued. When the state of Oregon tried to rationalise its healthcare system using QALYs they ranked treatment for thumb sucking and dental problems ahead of that for ectopic pregnancy, cystic fibrosis, and AIDS. Using QALYs also devalued the lives of elderly people (who have fewer QALYs to live) and disabled people (who have reduced QALYs). Undoubtedly some wrong choices can be made. But the fact is that choices must be made; rather than retreat from them, the challenge is to get them right.

Slide 52

The price of caution, the cost of taking risks

"It is not meaningful to put a dollar value on human life" (Ackerman)

Clash over environmental regulations e.g. arsenic in water. Regulatory decisions should be:

1. Precautionary on serious threats
2. Moral not economic imperatives
3. Holistic, contextual, not atomistic
4. Fairness to the poor & powerless

According to Ackerman & Heinzerling, cost-benefit analysis of health and environmental protection rests on an implausible process of monetization of priceless benefits. Human life, health, the natural world, and the well-being of future generations are priceless – not infinite in value, but fundamentally incommensurable with money. They make 4 points about the way regulatory decisions are made in environmental health, but all can be contested. Two examples. On (1), we can rarely be fully precautionary; we must take some level of risk. The question is how much. On (2), the challenge is to decide how a moral perspective should place constraints on economic analysis; the former does not invalidate the latter.

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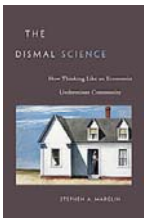
The Dismal Science: How Thinking Like an Economist Undermines Community
by Stephen Marglin



"… the rational, calculating, self-interested individual with unlimited wants for whom society is the nation state."

Lastly, Stephen Marglin's argument in The Dismal Science is that economics — with its focus on an individual's preferences, the freedom to engage in activities to promote his or her well-being, and the pursuit of self-interest variously construed — perverts a natural moral order: "the foundational assumptions of economics are in my view simply the tacit assumptions of modernity. The centerpiece in both is the rational, calculating, self-interested individual with unlimited wants for whom society is the nation-state." And what modernity shunned was "community" (Weintraub). Like Weintraub, I do not find the basic argument compelling.

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What is a human life worth?
$40 – $6,000,000

- Economic decisions affecting health and survival made by individuals and society give life monetary value
- Lives are valued unequally in a market, and in a finite world
- Decision-making is not fully objective
- Ethics and morals put constraints on -- but do not invalidate -- economic analysis
- Face the choices, judge the risk, hope for luck

So what is a human life worth? We are unavoidably victims of economic thinking. Refusal to put a value on life is tantamount to denial. Economic decisions affecting health and survival made by individuals and society give life monetary value. Lives are valued unequally in a market (you're worth more if and when you're in demand), and in a finite world. Ethics, emotions and morals put constraints on economic valuations, but cannot eliminate or wholly invalidate them. My advice then is: face the choices, judge the risk, hope for luck.