The 21st Westminster Lecture on Transport Safety
ROADS, CASUALTIES AND PUBLIC HEALTH: THE OPEN SEWERS OF THE 21ST CENTURY

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ABOUT THE LECTURER

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INTRODUCTION

Thank you very much for inviting me. I am very glad to see the RAC up there because I am an RAC member who does not own a car and I was getting a bit narked by this, thinking “where is my money going?” I need it occasionally when I drive other peoples’ cars and now I feel my money is going to pay myself to eat tonight. It’s great that people sponsor these events.

I am just going to start by reading out part of a letter that appeared this morning in the Independent newspaper. I was having breakfast this morning thinking about doing this talk and worrying slightly if I was going to be going over the top somewhat, and then I read this letter and decided that I wasn’t. The letter is by Michael O’Hare and appears on page 7 of The Independent, today. In part of the letter, he says:

“…..there is no doubt that the number of road deaths worldwide per annum is astonishingly high. In the worst-case scenarios (which include pollution and extrapolated deaths in nations which don’t record specific car-related incidents) the estimate is 2.4 million people killed due to motor vehicles every year. This exceeds easily the annual military death toll from the First World War. Even the most conservative estimates, which include only road deaths reported in developed nations and only down to direct motor-vehicle accident, put the current annual road-death toll at 100,000 per year.

Within six months of the September 11th attacks on New York and elsewhere, it is estimated that the number of people subsequently killed on the roads because they chose not to fly because of the chance of a repeat atrocity had well exceeded the death toll caused by the terrorists on that day, an unintended and gruesome consequence of their actions.

It is clear that humans have a blind spot when it comes to road deaths…..”

I read that and I thought that – if anything – I am being a bit weak in what I am about to tell you in the argument I am going to try to make.

MY ARGUMENT

Every century comes with a major public health warning about the harm that we inflict on ourselves. In Britain in the nineteenth century it was the diseases we spread by tolerating open sewers. In the twentieth century it was tobacco that we slowly learnt to love then fear. In the twenty first century it is the way we tolerate how cars are allowed to travel on our roads.
My basic argument is quite simple. The argument comes not from being a road safety campaigner: it comes from being somebody who has spent a large part of his career looking at what it is that kills people at different times in our history. Every century has had a major killer. In the nineteenth century it was open sewers and poor public health which led to all kinds of disease being widespread. In the twentieth century the major killer, not just through lung cancer but also through heart disease and other routes, was tobacco - what is called the “tobacco epidemic”, and we are seeing the kind of down-stroke of that now along with the prevention of smoking in public places. In the twenty-first century the public health epidemic is and will be more roads. This is the argument. The question is: how long will it take us to recognise this and how slow will we be to treat it in this way? Obviously we have a long and proud history of campaigning but as yet road safety has not been put on the same kind of pedestal as public health once was and tobacco still is.

1. Manchester 178 years ago (Marx and Engels Collected Works: Volume 04, 1844-45)

This map (Figure 1) was drawn by a German young man whose father had sent him to Manchester in 1842 to help run his mill. The young German was slightly shocked at what he saw in Manchester. He was quite industrious. The book is called “The Condition of the Working Class of England” and the young man was Friedrich Engels. Little Ireland was a district in the middle of Manchester (area 8 on the map). I want to show you one quote that Friedrich Engels wrote of his experiences, and especially in Little Ireland, in 1842 in that book:

“As I passed through the dwellings of the mill-hands in Irish Town, Ancoats, and Little Ireland … found a whole street following the course of a ditch, because in this way deeper cellars could be secured without the cost of digging, cellars not for storing wares or rubbish, but for dwellings for human beings. Not one house of this street escaped the cholera.”

He said that a remarkable thing about this particular street was that the entrepreneurs had
chosen this ditch to build in because they did not have to dig the lower cellars out because the
ditch had already excavated the land so you could save money when you jerry built. As a result
people were literally living in sewage. This was the kind of thing that got Friedrich Engels angry
and got lots of public health campaigners angry and which, although it took about 100 years,
meant that we now have decent sewer systems; still not decent enough worldwide, as I show you
in a few minutes time, so it took a long time for us to realise this: that speculative building spreads
disease.

POOR SANITATION TODAY

Not a pleasant thing to talk about before lunch or dinner\textsuperscript{4}, but our sewage is still the biggest killer
of children worldwide today and still suffered everywhere. There are 82 million cases at any one time
of diarrhoea amongst children in the world. In Figure 2 above is a stretched map (a ‘cartogram’)
where the area is proportional to the number of cases. Eighty-two million is the whole area and you
can just make out Western Europe there - small, but still with cases. Obviously at any one time the
map makes clear that there are far more cases of diarrhoea amongst children in Nigeria than are
found across the whole of Western and Eastern Europe. I show this just to give you an idea how
prevalent remains deadly poor hygiene related ill health.

I am not saying that the problems of public health infection and issues of sewerage haven’t gone away.
At its height in Britain poor sanitation was key in maintaining high infant mortality and, as a result
Manchester’s life expectancy from 1801 to 1850 was the lowest ever seen recorded (bar pandemic),
calculated at 25.3 years, affecting a population of 235,000 people in 1841\textsuperscript{5}. In Liverpool registration
district itself, life expectancy in the 1880s was only 29 years of life, some 19 years lower than the
48 years recorded then in the affluent Clifton district of Bristol\textsuperscript{6}. In Glasgow in earlier years similarly
low rates as in Liverpool were recorded, as low as age 27 around 1840\textsuperscript{7}.

\textsuperscript{4} The talk preceded the annual dinner of the organisation which hosted it.
\textsuperscript{5} Szreter, S. and Mooney, G., 1998, Urbanization, mortality, and the standard of living debate: new estimates of the
expectation of life at birth in nineteenth-century British cities, Economic History Review, 51, 1, 84-112 (table 3).
\textsuperscript{6} Ibid (table 2).
\textsuperscript{7} Ibid (table 5).
We led the world with sewers. We led the world with public health and sewers because we had to. Because we industrialised first, we brought together so many people in such cramped conditions that we created the circumstances that were thus very bad. For about fifty years the life expectancy for Manchester was round about 25 years due to infant deaths. The only time I have seen reported an equivalent large-whole-city-population life expectancy as low as that is in Madras, in India, during the 1918/1919 flu pandemic. Those years were an exceptional period in Britain with large numbers of infant deaths. If you go to a Victorian graveyard, the one I know best is Undercliffe in Bradford, you will see the whole of Victorian society laid out in the gravestones. Social-types such as the owners of the largest mills – the titans such as Sir Titus Salt - had the biggest gravestones; smaller gravestones were reserved for the vast bulk of lesser people. And almost all of the 80,000 infants buried there have no gravestones because you couldn’t fit them in and because largely those who died were born to the poor or very poor.

3. Deaths due to Diarrhoea in the World today (Worldmapper map 379)

The map above shows the current worldwide distribution of part of the poor sanitation death toll, largely of children and very small children still dying incredibly preventable deaths from diarrhoea: 1.87 million a year.

And falling.

Getting better; and getting interventions, getting drips and fewer dying.

Even in the global recession this figure is finally beginning to go down. Western Europe has disappeared from this map of deaths in contrast to its size in terms of cases shown on Figure 2. Near where Europe has shrunk to near invisibility you can see Turkey, still reporting too many deaths, and you will see that Africa has a much larger share of world deaths than it has cases, and that the Congo (the largest dark red) in particular is very significant, as is India (although the overall child population there is far higher). So people are still dying as a result of poor public health, but not in rich countries any more.

8 Figures are derived from the World Health Organisation’s estimates which were due to be updated after the end of 2010. For all the detail on these numbers and our assumptions see: http://www.worldmapper.org/extraindex/text_causedeath.html

Public Health in Britain Today

The reason why I told you earlier the figures for Liverpool and Clifton in Bristol in the 1880s, is that we have to actually have to go back to the 1880s to find a gap in life expectancy as wide as we have currently have in Britain. The gaps between north and south in Britain in life expectancy are the widest gaps in Western Europe. The next widest gap was found in Germany shortly after the Wall fell but it was narrower, and the gap in Germany, despite the population of the east, has narrowed since 1990 whereas our gap has widened. This is the gap in years between the area where people live the longest, which is Kensington and Chelsea now, and the shortest which is Glasgow which is about 12.4 years, and it has been like it in recent years. In the very last year it actually stabilised if not narrowed (by just a week) but nobody noticed that. But it is a source of great shame to the last government that this gap widened. And the reason for showing you the gap today (Figure 4) is that a large contribution to the gap is the inequality between poor and rich areas in your chances of being killed on the roads.

In Britain the inequality gap is now 12.4 years, despite having dealt with sewage by today

4. The life expectancy gap between the extreme districts of Britain.

Now I realise that the damage done from accidents that don’t involve deaths and so on is widespread but I am going to concentrate on mortality because that is the way which we end up recognising that road safety is vehemently important.

Back again to sewage. In 1950 my mum was playing on the beach in Filey. Luckily she was not playing near the sewage outlet on the beach in Filey so she was not one of those children who contracted polio and died (Figure 5 includes for Britain some adults of a similar age to my mother dying prematurely today due to catching polio as a child).

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10 Recent statistics are easier to locate given so many sources now on the web. For the 1990s figures and analysis of the early trends found then see: Shaw M., Orford S., Brimblecombe, N. and Dorling, D. (2000) Widening inequality in mortality between 160 regions of 15 countries of the European Union, Social Science and Medicine 30, 1047-1058.

11 Just below Filey Brigg on the Yorkshire coast.
5. Deaths in the world today with Polio as underlying cause (Worldmapper map 384).

It took us a long time to learn to deal with sewage. We got it out of the back streets, we got it down the pipes and to get it off the beaches took over 100 years from when Friedrich Engels was writing about these English people who were building their house on top of open drains. The number shown in Figure 5 above is not a typo. It is only 831 people worldwide who die due to having originally contracted polio and most of these contracted the disease as a child. Polio has almost been eradicated. However, there is a typo here with the slide: it shouldn’t say ‘with polio’, it should have polio as the ‘underlying condition’. These are people who died recently in rich countries who had polio as a child, lived but suffered a premature death still because of the effects of polio: Ian Dury if you want an example from Britain. It takes a long time to deal with a public health disaster and the longer you take over it the more pain and unnecessary suffering are caused.

Road Traffic Today

With colleagues from the University of Bristol we recently calculated the inequality figures back until at least the early 1920s, and this is where we were shocked to find that our health gap in this country had become so wide. This is a gap involving people of all ages, but the deaths of children and infants are particularly important. And road safety is crucial in this because what occurs if you are in Sheffield where I live is that you will find a seven to one ratio between the mortality rates of one fifth of children in Sheffield from cars and the other, most geographically different, fifth. But experiences are more dramatically divided than that when you look more closely.

If you look at the wards around where I live, the three nearest wards, you find that not a single child has been killed over several years, or in fact has even being involved in an accident under the age of twelve. And the reason is because for almost all the day there are no children under the age of twelve on the streets. Not one. You don’t see them, because they are imprisoned in their homes. They will of course live and not be damaged, but this leads to the acceleration in this inequality while, worldwide, people driving cars and other vehicles are accelerating in importance as global killers.
6. Deaths in the world today due to Road Traffic Collisions (Worldmapper map 475).

You will be aware of the annual death toll shown in Figure 6 but many, many people are not. WHO estimates from a few years ago suggest that the number of people dying directly as a result of being hit (mostly) by cars is approaching 1.2 million, and rising rapidly as the car spreads around the world. Europe is not negligible in size on the map above, but India, China, Nigeria and Brazil suffer far more deaths in absolute terms. Worldwide and in Britain the car is our new major public health problem. It is the problem that is on the rise as our old public health problems are diminishing in importance.

PAST PUBLIC HEALTH PRIORITIES

Poverty, sanitation, health, inequality - pioneers:

- Friedrich Engels (communist) (1820-1895)
- Charles Booth (philanthropist) (1840-1916)
- Beatrix Potter (later Webb) (1858-1943)
- Seebohm Rowntree (Quaker) (1871-1954)
- Richard Doll (epidemiologist) (1912-2005)
- and Peter Townsend (sociologist) (1928-2009)

7. Some Pioneers who most helped improve our public health (a short list)\textsuperscript{12}.

Figure 7 lists the birth and death dates of a few characters I am going to tell you about. I have managed to cover the whole political spectrum here, and the lists start off with a communist or, more accurately, one of the men who invented communism but who also highlighted just how poor British public health was (Friedrich Engels). He is followed historically over at the other end of the political spectrum by Charles Booth. You may know Charles from his maps (one of which I will show you in a minute). He was a liberal philanthropist who joined the Conservative party in old age and was very concerned with poverty. His research assistant (who helped in drawing up the maps of poverty about 100 years ago) was a young lady called Beatrix Potter, who married someone called Sidney Webb and created the British Labour Party. Another young man who was involved in this tale was Seebohm Rowntree, whose Quaker family fortune still funds the office of the Liberal Democrat leader. Politics and health have always been interlinked. Next, on smoking, I am going to tell you a little bit about Richard Doll, an epidemiologist, and finally, on poverty and inequality, something of Peter Townsend who died last year and who was a sociologist.

Top right in Figure 8 is the famous map of London from the 1880s that Charles Booth commissioned and that people like Beatrix Potter as she was (not the one who drew pictures of hedgehogs, the other one) went out and surveyed. It shows some parts of London having servant-keeping classes and living in luxury up by the British Museum and other parts being ‘rookeries of the vicious semi criminal poor’ as they were called. Bottom right is a map of York drawn by Seebohm Rowntree, Joseph Rowntree’s son. And, on that, the dark green areas are the districts inhabited by the ‘servant-keeping classes’.

The key statistic of the time, all the way through the 1880s to at least 1905, was that one in ten of the children of the servant-keeping classes, just a hundred years ago, were dying in their first year of life.

As people began to realise that these deaths were caused by infection and disease, not acts of God, they could not leave the poor suffering in such bad conditions if they wanted their own children to have a better chance of survival. I think we can learn from these lessons and use what we know about past public health movements to do a better job today.

Twentieth Century Public Health

9. Two world wars, the smoking cloud, emancipation and repeated recessions\(^\text{14}\).

Figure 9 is the only slide I show on smoking, I will explain it in a little bit of detail. The X axis shows the passage of time from 1850 to around about now. The Y axis represents age, from the first year of life all the way up to people who make it to 100. People who just make it to 10, but die at that age contribute to the colour shown along the horizontal line of cells with the figure 10 to its left. The colour scale is the difference between how many men and boys died out of all those then alive at that age, the rate of male deaths at those ages, and the rate of female deaths. It is based on a billion people, people living in the richest countries of the world all added up together so you get more reliable estimates.

What you see in the past are lots of red: men and women being equally likely to die. Then we have an event where for a few years men between eighteen and their early thirties were much more likely to die than women. That’s the First World War. You can see it as a short vertical band of blues and green around 1914-1919. And, in the early 1940s, the second distinct vertical band of differently coloured cells is the Second World War. Later great green contours can be seen centred around people dying in their early 60s in the late 1970s - this is the smoking cloud, a smoking epidemic. It is men being twice as likely (or even 2.4 times and 2.3 times more likely) as women to die in their fifties or sixties because they had started smoking during the First World War, and/or for those who grew up in countries which saw the first boats arriving carrying mass machine rolled cigarettes. When you see it like this you can see how effective cigarettes were as a killer. We can only see the green smoking cloud in Figure 9 because it was not socially acceptable for women to smoke back then.

What’s new is the green smoking cloud and the roads becoming preeminent locations of younger death explain some of it.

You, however, are probably looking at more recent triangle of blues and purples. This is a three to one ratio now for young men. Obviously chances for everyone in these countries have got much better over time, but we are seeing something new for young adults recently, far fewer deaths than involved at older ages, but far more dramatic inequalities between young men and young women than see before outside wartime. There are a whole lot of reasons: it is overdoses on drugs, it’s suicide, it’s fights, it’s risky behaviour but we don’t help with how we allow our roads to be places where speeds (that humans never faced during our evolution) kill so often.

### Twenty-first Century Health Threats

I am going to show you a whole series of pie charts in a minute. The pie charts are described in more detail in a publication that comes out in a few months time in which Bethan Thomas (who drew the pie charts) and I wrote this about the cuts that are going to occur. And I am going to talk a bit about the cuts in the road safety budget, but the statement was one Bethan and I made about the cuts in general in writing on the changing situation in 2010:

“In June 2010 the Department for Communities and Local Government published what is likely to become one of the most infamous documents of the economic depression/recession. It was titled: ‘Local government contribution to efficiencies in 2010/11. . . .the cuts this document specified will result in more people, and especially young children, being killed. That is because road safety funding is to be cut by £37 million: £20.592m is proposed to be removed from the road safety revenue grant (paid out via area based grant) in the last four months of 2010/11 and a further £17.205m from the road safety capital grant originally due to be paid in May. This represents a reduction of 27 per cent in the revenue grant and all of the capital grant.’

An argument that I want to make today which many of you have heard before and which I think needs making more widely is that the way that we currently allow our roads to be doesn’t just harm those most likely to be hit by a cars, it actually reduces the freedom of almost everybody massively. It reduces the freedom of our children enormously particularly posh middle class children who no longer get to play in the way that I got to play, I was out on my trike at the age of six to go and explore my estate and went under the subway under what was at that point a six carriageway road at the age of six on my own. We don’t allow children to do that anymore. Perhaps rightly, but I don’t think we should live in that way.

Roads trap affluent children in their homes and are the main site of killing of poorer children. What is key is how large this contribution to death has become:

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10. Deaths of children aged 5 to 10 in Britain not attributed to disease (2006-2007)

Figure 10 shows the first of a series of pie charts. I have drawn this one to be very small because the numbers of deaths involved at these ages are very small, partly because we are cosseting children at these ages. These are just the external causes of death. This is the latest data, the 2006 and 2007 mortality rates by cause. As I give this lecture data for 2008 still has not been published let alone 2009. Figure 10 is showing you the relative importance of all the external non disease causes of death amongst children aged five to ten. The area of each slice of the pie is proportional to the number of deaths in Britain attributed to that underlying cause and also to the areas in the pie charts below (which are larger as far more children of older ages and young adults die than in the 5-10 age group). So when you worry about people killing children aged five to ten and when you hear about them dying in a house fire, or tragedies of drowning, you have to weigh those events against what you see in Figure 10. When you look at the figure and think of the deaths in children being hit by car vehicles, those who are in cars and die, and young child pedal cyclists – think of me aged six on my trike – think of actual potential victims to accompany each label on that chart. If you have children think of them, or think of yourself when at these ages. If we are worried about our children aged five to ten then we need to be much more worried about cars than pedal cycling. It is the collisions with cars that mostly kill.

Cutting Road Safety Spending

As to the government’s cuts to the road safety budget, £37m is nothing. Or to put it more precisely, it is about three quarters of the annual salary of Bob Diamond, the boss of Barclays Capital. It is a tiny amount of money. You would only cut this money from the road safety funding budget if you didn’t think road safety was a good idea, I think, although I am happy to argue this with you.
You might think that road safety is the kind of thing that you would actually not cut and say you were preserving some of the more important things, while cutting something else. I am shocked at the cuts. Especially as to how many people are losing their extremely lowly paid and very part-time jobs of those who man (but mostly woman) zebra and other assisted school crossings. If you know about Government budgeting and how everything adds up to billions, the savings these cuts make appears after the decimal point.

11. Underlying cause of all deaths of children aged 11 to 16 in Britain (2006-2007)

We should look at the cuts to road safety budgets and lollipop crossings in the context of Figure 11 which shows what most often kills all eleven to sixteen year olds who die in Britain. I know it is a complicated diagram but I wanted to put in every cause of death from which those eleven to sixteen year olds have died. Now, obviously, far fewer eleven to sixteen year olds die now than used to die, but that doesn’t stop how much we care, or how much we worry, or how important those deaths are, and all the illness, accidents and non-fatal suffering that is caused to the people of these ages who don’t die.

Look closely at Figure 11. You will see that the biggest slice of the pie is vehicle passenger or driver deaths, obviously driving illegally in most cases. The Figure also shows that at these ages pedal cyclists dying are a significant addition but fewer - I want you to remember that as you read on because I am going to show you pedal cyclist deaths as a proportion of all deaths at an older age and compare that to the numbers of pedestrians being hit and killed by vehicles. At these ages when considering road casualties you are considering about a fifth of all deaths, and the majority of those resulting from the most preventable causes. We pay millions of pounds worth of money for advanced medical research to try prevent mortality at these ages, to try to work out ways in which we could possibly further curtail mortality from causes such as childhood leukaemia while we still treat road collisions deaths as if they were largely unforeseeable accidents, as if they were as an act of God.

Let me turn to the reason why cars are no longer the greatest threat to five to nine year olds as they were for most of my career. I always used to say that cars are killing more five to nine year olds than anything else. It is because we now do really incarcerate our six, seven, eight and nine year olds so effectively that fewer under tens are killed on the roads today. And if you live in a posh middle class area, you can even start to see twelve years olds being walked to school, normally by mum (a large number of now driven, ironically due to road safety fears). And the reason we closet our young
teenagers now is because almost half of those who die from non-disease causes are due to road traffic 'accidents'. Compare the human road deaths shown in Figure 12 below to the prevalence of other 'external' causes that usually get the most press attention.

### 2006–07 external causes of death of 11 to 16 year olds, Britain

- **Other external causes**
- **Accidental drowning**
- **Falls**
- **Homicide**
- **Suicide & undetermined intent**
- **Pedestrian hit by vehicle**
- **Vehicle passenger or driver**
- **Pedal cyclist**
- **Deaths due to drugs**

### 12. Deaths of children aged 11 to 16 in Britain not attributed to disease (2006-2007)

By age ten cars have become the greatest danger to children living in Britain, and that danger then increases substantially with each child's subsequent birthday. Figure 12 shows the relative magnitude of risks by showing all the deaths due to external causes which have occurred to eleven to sixteen year olds across Britain in the two most recent years for which I had access to data. Parents know about the reality that Figure 12 makes visible, but they don't know it directly, they kind of hear it on the grapevine and it is all so obvious as you walk down the pavement – you see the cars going past fast.

### Freedom to Walk

The threat of death by collision reduces our freedom to move as children and we become more socially isolated. By the onset of adulthood the car and a small number of cases of suicide together account for half of all deaths at these young ages: nine deaths a week of 17, 18 and 19 year olds from these causes alone, almost all due to cars and their drivers (Figure 13). The numbers of deaths per week from such causes continue to rise throughout young adults’ twenties, only falling relative to other risks when these young adults reach their late thirties.

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18 The figures drawn by Bethan Thomas, see footnotes above, but here I have inverted the shading so they work as slides.
We always worry about our children. We are innately programmed to worry about our children. We are innately programmed as it is very sensible for us to worry about our children because our children had such a high chance in the past of being hurt, of getting diseases, dying of measles and other such things. The worry does not diminish because the world has become safer. The worry gets translated into more and more actions to try to make things safer but at an individual level. At an individual level we try to wrap our child, metaphorically, in cotton-wool, but we fail to do this at an aggregate level.

Around 30,000 people of all ages are killed or seriously injured on roads in Britain every year. In 2008 some 27,855,000 cars were registered to be driven on the country's roads. That rose slightly to 27,868,000 during 2009 (partly with government encouragement for new car buying with a 'scrappage scheme'). Very young adults now cycle less. Figure 14 shows just how much less. It is not that they cycle surrounded by some kind of force-field.

**Death at the transition to adulthood**

14. **Deaths of people aged 17 to 19 in Britain not attributed to disease (2006-2007)**

![Diagram showing external causes of death for 17 to 19 year olds in Britain (2006-2007).]
You will be grateful to know that I am not going to take us all through the age range up to our dotage, I will stop at mid twenties. I am particularly sorry about not having time to tell the whole story through the age ranges because I would have liked to have talked about so many pensioners being hurt as well. But I think that for campaigning purposes children have a certain capital. Things are not their fault. They didn’t decide to be born into a world at a time and in a place when you so commonly have one tonne of steel moving at forty miles per hour when you walk to school.

Figure 13 showed seventeen to nineteen years olds and all causes of death that most afflict them. Underlying how it differs from Figures 11 and 9 for earlier year, these older teenagers’ bodies have become much stronger; often the causes would have been congenital for some of the less likely causes now as by these ages those risks are largely past now. If you happen to be a parent and are worried about your seventeen to nineteen year olds, say you are sending them off to university, then the figures above suggest that there is one little thing above all other little things to tell them to be worried about: being a vehicle passenger or driver or dying in a car.

**Freedom to Cycle**

Please look again at Figure 14 and at how slight is the risk of dying as a pedal cyclist at these ages. Teenagers, they don’t cycle anymore. Fat, middle aged men like me cycle, and some younger children cycle, but we don’t anymore have our children these ages cycling. This often means the first time that they are on the road as a driver isn’t when in control of a pedal bike, but as a new car driver, which is not a good way to be on the road for the first time.

In comparison to almost any other way in which our older children and younger adults are likely to die, traffic collisions are becoming more important as a cause of death. If you are a really mean spirited neo-liberal economist, and you see the world through the lens of profit, then look at the threat of car collisions this way: you have just invested your maximum amount in the education and health of these people to get them to the point where they are going to be economically productive, then cars are the most likely thing that is going to damage your investment. Or think of how much student loan won’t be repaid and taxes not in future paid out due to a road death today? With a little inflation and the inclusion of multiplier effects you are talking millions of future pounds. As you can see I am trying to work out ways to talk to the new government, to think in their mind-set. Because one problem is that folk can be really callous, and some people are really callous. If you do a crude cost benefit analysis you can decide that it is not worth spending on intensive therapy unit beds and that a certain number of deaths on the road are worth the price to pay. But you have just got to get yourself out of that way of thinking and see the wider benefits of fewer road deaths.

**Reining in the Motor Industry**

Today we prioritise what is good for the motor industry over what is good for human beings. We do this because the industry has become a force in its own right as there is so much profit to be made from selling the dreams that go with cars. Take the ‘car scrappage scheme’. The car scrappage scheme actually resulted in more cars on our road than there was before. It was introduced because we felt we had to support the banks. And we had to support the car companies because what the car companies do, is not so much make cars, as sell debt.

General Motors was going to go under a few years ago because it was having trouble raising money, to loan people the money, to get them to buy cars, often cars sold as devices for protecting people! Buy a huge American car and your children are less likely to be injured within it during a collision as longer as the car or small lorry you hit is smaller. Such selling encourages both selfishness and an inability to see the aggregate effect. Imagine if cars had to be sold with health warnings such as some of these pie carts painted on their body work (like warnings printed on cigarette packets). I am not advocating that, but I think information about how dangerous road traffic is in comparison
to almost every other threat should just be information that is given out in schools, and should be known. Look again at the pie charts above and road casualties versus suicides (the second most greatest ‘external’ threat to 17 to 19 years olds). The road collision causalities are people who did not want to die. But sadly quite a few of those who died at their own hands did\textsuperscript{19} there is a lot you can do to reduce suicides, but almost everyone killed on the roads didn’t want to die. And, for the first time since 30mph was introduced, we are just beginning to better recognise that:

\begin{quote}
We want to encourage highway authorities to introduce, over time, 20 mph zones or limits into streets which are primarily residential in nature and into town or city streets where pedestrian and cyclist movements are high, such as around schools, shops, markets, playgrounds and other areas, … We want to draw attention to the initial evidence from the trial of wide area signed-only 20mph limits in Portsmouth, and want to make clear that 20 mph limits over a number of roads may be appropriate elsewhere.”
\end{quote}

(DfT circular December 2009)

We are moving forward very slowly. In terms of the equivalent to how we dealt with sewage we are in the 1840s, in the run up to the famous 1848 Public Health Act. Above is a quote from a circular from the Department of Transport in 2009, giving maybe a bit more than lukewarm support for 20mph in both residential and urban areas. But it is really leaving 20 mph devolved down to local government. When you go to local government and they tell you that with the cuts ‘everything is terrible’, and you say there is one thing you can do which would tackle the biggest killer of young people in your area very cheaply, they are still reticent. And I know there are problems about the funding and putting in the hard material (if you think speed bumps help) and all the rest of it, but we are beginning to finally move towards mass advocacy that 20mph is appropriate where roads are shared with nearby humans, especially human children. However, the greatest cull on the roads is of young adults:

**THE EPIDEMIOLOGY OF ROAD DEATH**

\begin{center}
\textbf{2006–07 all causes of death of 20 to 24 year olds, Britain}
\end{center}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{pie_chart.png}
\caption{15. Underlying cause of all deaths of people aged 20 to 24 in Britain (2006-2007)}
\end{figure}

\textsuperscript{19} It is particularly unfortunate that the label ‘external cause’ is included when ‘suicide’ is concerned. However, rates of suicide vary greatly between countries and even within countries so the majority of suicides are preventable as they are due to the social context in which people are living. They are just not as easily and obviously preventable as are road traffic deaths. For an estimate of how many suicides could be prevented in Britain if everyone had the life chances of the best-off of their age and sex, see: Dorling, D. and Gunnell, D. (2003) Suicide: the spatial and social components of despair in Britain 1980-2000, Transactions of the Institute of British Geographers, 28, 442-460.
Figure 15 above shows what have recently been the most common causes of mortality among twenty to twenty-four year olds in Britain. Deaths due to drugs are beginning to become an important cause, but road collision deaths are still far more common than drug overdoses. Death on the road is just as important (and far more preventable) as the other leading cause of mortality in young adulthood, which is suicide. We are beginning to get the medical evidence from epidemiological work on traffic accidents. If you think back to John Snow and cholera, at the advent of germ theory, pioneering epidemiological work continuing today but the context is very different:

“The introduction of 20 mph zones was associated with a 41.9% (95% confidence interval 36.0% to 47.8%) reduction in road casualties, after adjustment for underlying time trends. The percentage reduction was greatest in younger children and greater for the category of killed or seriously injured casualties than for minor injuries. There was no evidence of casualty migration to areas adjacent to 20 mph zones, where casualties also fell slightly by an average of 8.0%”

This quote taken from a Journal paper published last year. The ‘slight difference’ between this study and most epidemiological studies is that the ‘effect’ number isn’t a mere 0.041, or 4.1%, it is a massive 41.9%. A two fifths reduction in casualties from a single intervention! Now if you had a drug that gave you a 41.9% reduction in people suffering from an illness you would make a fortune, especially if that illness was something which affected quite a lot of people. These findings were released by Chris Grundy and colleagues last year in the British Medical Journal. Imagine how a two fifths reduction in road collision fatalities would alter the chart shown below in Figure 16 of the leading causes of mortality amongst twenty to twenty-four year olds in Britain. It has to be said again that these people have not chosen to try to die in contrast to those who have killed themselves. A 41.9% reduction would mean far few road deaths than deaths from drugs. Road accident reduction is something we can tackle relatively easily, far more easily than addiction to drugs or lonely human misery and despair.

![Diagram of 2006-07 external causes of death of 20 to 24 year olds, Britain](image)

16. Deaths of people aged 20 to 24 in Britain not attributed to disease (2006-2007)

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PACTS’ 21st Westminster Lecture and ETSC’s 12th European Transport Safety Lecture
We can even see the early implementation of the solution in place in many parts of London today. I would like to think of the map shown in Figure 17 below as like a map of the early sewage system, but updated for the twenty-first century. There must have been maps early on when we began to put sewers in, of which areas have sewers and which areas didn’t have sewers and where sewers were first covered and so on. Figure 17 is actually a map of where the 20mph zones are in London and you may be heartened to see that there are more than you may have thought. It is also heartening to discover that it turns out (if you read the academic paper) that the little blue areas in Figure 17 were the adjacent areas where the researchers checked to make sure that there was no contagion effect, that there weren’t more people being hit just outside those speed restriction areas. They found in the paper that there weren’t. Traffic calming does not displace the problem of speed. We are beginning to get the sound kind of medical evidence we need, and we are getting it in top-flight medical journals, which is much more important than seeing it published in transport journals. Road casualties are an issue of public health, not of transport planning.


We are also getting more ferocious campaigning. I was sent the flyer which is summarised in Figure 18 (below) a few months ago from RoadPeace. It suggests that the main road dangers come from middle-aged men and affluence, not young people wearing iPods. I will just let you read the rest of that argument. However, I do think the terms of the debate are changing and the dominant position of middle aged affluent car drivers is about to be undermined.
Campaigning for sanity

I am arguing here that we should see all this new medical evidence and more fervent charitable work in the context of those nineteenth century public health campaign to introduce decent sewers. Compare today’s road campaigners to the mavericks of two centuries ago who said you cannot have people living in the conditions of open sewage, or the mavericks who first said that smoking is very bad and that you have to control it. Those people were dismissed in the 1940s and 1950s and 1960s when the smoking companies spent a lot of money to try to say “we know it is a bit harmful but it is freedom, isn’t it? It’s freedom to smoke”. I think people will look back at RoadPeace’s message above and ask “why didn’t more people not understand what they were saying at the time?”

I have a few other predictions to make. I think we will remember the date (maybe 2025) when, for the first time, politicians decided to give a proper priority to vehicles. To say that when there is an accident, and it is not that clear what exactly happened, that the benefit of the doubt will be given to an individual above a bicycle, to a pedal cyclist above a motorbike, to the biker above a small car, a small car above a larger car, a large car above a lorry. So the larger and heavier the vehicle you are driving the more careful you will have to be: it is your responsibility.
19. A few predictions, hopefully at least for around the years 2025, 2030, 2040

I was recently shocked in Switzerland to watch (and this doesn’t happen over all Switzerland only in certain parts) a young child stand by the edge of the road. Next I saw a car come up and stop, because that’s what you do there, and they waited. They are waiting for a car to come from the other direction and stop, and when it did the child walked across the road between the stationary vehicles, because that’s what was normal there last year. We are a long way away from that, but me describing that to you as possible, is as ridiculous as somebody saying it is possible to have a waste water sewage system, or that it is possible not to have people smoking in public houses. It just depends on what you think about your children, and whether you see other people’s children as like your children, or as like you.

20. Extract from a larger table on road safety spending by local authority

<table>
<thead>
<tr>
<th>Local authority funding by intervention type</th>
<th>Thameside</th>
<th>Total (National)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Play schemes including traffic calming in vicinity and safer access</td>
<td>£280,000</td>
<td>£2,030,000</td>
</tr>
<tr>
<td>Pedestrian/cyclist facilities</td>
<td></td>
<td>£1,327,000</td>
</tr>
<tr>
<td>Engineering and traffic calming</td>
<td>£100,000</td>
<td>£5,347,000</td>
</tr>
<tr>
<td>Education, publicity and training</td>
<td>£91,000</td>
<td>£1,510,500</td>
</tr>
<tr>
<td>Home Zones</td>
<td>£200,000</td>
<td>£431,000</td>
</tr>
<tr>
<td>Watchman/VMS speed enforcement</td>
<td>£90,000</td>
<td>£341,200</td>
</tr>
<tr>
<td>Diversionary activities (clubs)</td>
<td>£30,000</td>
<td>£119,000</td>
</tr>
<tr>
<td>Car-seat schemes</td>
<td></td>
<td>£85,000</td>
</tr>
<tr>
<td>Research</td>
<td></td>
<td>£21,800</td>
</tr>
<tr>
<td>Total Budget</td>
<td>£791,000</td>
<td>£11,200,500</td>
</tr>
</tbody>
</table>

My added words in yellow, Thameside just shown as example

Danny Dorling PACTS Annual Lecture 23/11/2010
By 2030 I reckon pedestrianisation of large parts of the city centres will be normal and for requiring an excuse for 30 mph. And, for 2040 (although I am more pessimistic on this one), may be the point at which we hand over road safety to the Department of Health where it should be, rather than the Department of Transport where it currently is.

The table above (in Figure 20) comes from the work of Nicola Christie and colleagues, who produced a report for the DfT which was published in 2010. These figures are from just one part of one paper in the appendix where they were looking at the spending on a series of schemes for road safety. I put it up here as representative of the very small sums of money that I think have been very interestingly used in Tameside for a whole series of things including if I can spot it, ‘diversionary activities (clubs)’ costing £30,000 out of £19,000 spent nationally to try to get young people away from roads. Below I have taken one a single quotation from that report which I think is worth reading. And as you read this quote, you can maybe see how my mind works. I read this quote and thought of my mum on that beach in Filey. And the fact that if she had been any nearer to that sewage outboard pipe, I would not be here, because – although we had by her childhood got the sewage all the way to the beaches – we had not yet built the pipe far enough out for my mum and her friends to be safe from the sewage. So you may read the words below and say ‘it is extreme to start thinking of slowing speeds on main roads in residential areas too’, but I believe we are going to have to go through a continuous learning and catching up process, where what is impossible one year because inevitable in the long run. Nicola and her colleagues found that:

While most children are injured on the residential roads, these make up about 80% of the road length in the NRSI areas. When this is accounted for, the risk to the children is highest on the main roads. It is especially high per head of population of young people aged 16–24 years. The implication of this is that as much attention should be paid to pedestrian safety for people of all ages on main roads as on the residential network “ (Christie, et al. 2010) 21

We have to stop celebrating the car, seeing the car as a sign of achievement; seeing the kind of car you are in as a sign of achievement. I haven’t even started to talk about the pollution from cars and what that does, particularly to people who breathe in at exhaust-height-level, who are children. I haven’t talked about many things; about the wars we have to fight to get oil to run our cars; the fact that the oil is going to run out; or about the amount of debt people get into so that they can run a nice car and what effect that has on the rest of their life. I have not mentioned how it is the in countries where the car is worshipped most assiduously, we don’t have a decent public transport system; the main predictor in Japan as to whether you have a car or not, is whether you live in a city or not, not income. We will look back and wonder what we were thinking, especially at this precise moment when we really do know enough to do better. Accidents involving cars are responsible for more deaths among children and young adults in Britain than can be attributed to any other causes, just as open sewers were once seen as convenient and cheap, if a little loathsome, and tobacco was once widely tolerated, at some point in the future the antisocial and only very personal and short-term benefits of personal residential car transport will be more widely recognised. Cars provide instant gratification. A car standing on the drive outside of ‘your’ house is widely seen as a sign of success. But what is one person’s immediate convenience is a town’s congestion and a country’s major killer. And we know all this even before considering fumes, oil and car debt.

I think many of us have become attuned to the stupidities of our times, although you see very big differences in attitudes in different places and especially between different countries. So, although cars, and car drivers, and the car system we have invented may be the biggest killer of older children and young adults, we still celebrate (or the last government celebrated) what an achievement it was to see that number of road deaths fall slightly. It’s a bit like celebrating having slightly lower tar cigarettes.

I know lower tar cigarettes are slightly better than high tar cigarettes, but it is better not to smoke. You need to tell people that. Rejoicing at a small fall in road casualties today is a bit like celebrating putting a bit of a cover on the sewage system rather than getting the whole thing, the sewage (or cars moving at high speed) completely away from people.

If you had suggested in 1810, at the very start of the industrial revolution that in a century’s time the open sewers would have been covered over; that fresh water would be piped to houses, that individual latrines would be built for every property; they would have thought you mad.

If you had suggested too strongly in 1910, just before the First World War made cigarette smoking the national pastime, that in a century most adults would no longer smoke and it might even be illegal to smoke in any public building; they might have certified you. If you had suggested, in 2010, that within a century we will no longer live in towns and villages choked by cars, paving over gardens, even if all cars are electrically powered by batteries recharged from wind-farms; they might accuse you of taking a flight of fantasy.

However; what remains the same over time is our intolerance of suffering, of suffering ourselves and of the suffering of those around us. Slowly, one by one, the causes of the greatest damage to health are progressively removed. In this lecture I have tried to bring together maps, statistics and arguments to suggest that we should now view our road transport system in this way – as the greatest current avoidable toll on public health.

The deaths that I have been talking about are really only the tip of the problem. The problem extends, of course to non-fatal accidents, to the many major accidents, and the huge number of minor accidents. The problem is also the obesity that’s caused and rises because (amongst much else) people don’t get out on their trikes at the age of six. It’s the timidity that results should you begin to realise how dangerous the environment is outside you. And it’s this lack of freedom; taking away the freedom from children; the freedom from other adults; the freedom from older people; the freedom from people on their bikes to travel safely; the freedom for your bus to run on time because there are so many cars.

Finally for car drivers ourselves there is the collective stupidity of ending up stuck in traffic jams so very often because of the way we currently run things. I find it very hard to think of anything else in the Western world which has as bad an effect on our health and is as easy to begin to mitigate as our current car transport system. I find it very hard to believe that we won’t – in the very near future – change things quite dramatically. My concern is that we might be as slow as we were over the sewage, or have as many deaths as we had from tobacco, before we began to really target our current public health disaster.

Thank you very much for your attention.
Further Reading


Appendix – another study – published on the day that this talk was given:

Traffic at 30 mph is too fast for children's visual abilities, scientists reveal

Researchers are investigating children's perceptions of the speed of oncoming vehicles
A study by researchers at Royal Holloway, University of London reveals that primary school children cannot accurately judge the speed of vehicles travelling faster than 20 mph.

The researchers measured the perceptual acuity of more than 100 children in primary schools, and calculated the speed of approach that they could reliably detect. The results suggest that while adult pedestrians can make accurate judgments for vehicles travelling up to 50 mph, children of primary school age become unreliable once the approach speed goes above 20 mph, if the car is five seconds away.

Professor John Wann, from the Department of Psychology at Royal Holloway, who led the research, says: “This is not a matter of children not paying attention, but a problem related to low-level visual detection mechanisms, so even when children are paying very close attention they may fail to detect a fast approaching vehicle.”

The researchers are now looking at the potential for using virtual reality systems to make children more aware of the errors that may occur; but Professor Wann stresses that the simplest solution lies in traffic regulation: “These findings provide strong evidence that children may make risky crossing judgements when vehicles are travelling at 30 or 40 mph and in addition the vehicles that they are more likely to step in front of are the faster vehicles that are more likely to result in a fatality. Travelling one mile through a residential area at 20 mph versus 30 mph will only add 60 seconds to your journey time - we encourage drivers to take a minute and save a child’s life.”

The study, which is published in the international journal Psychological Science, is part of a larger project sponsored by the Economic and Social Research Council (ESRC), in order to understand the perceptual factors than can lead to pedestrian accidents. The research group has recently published brain imaging research in the Proceedings of the Royal Society to show that some of the key components for detecting collision events lie at the brain-stem level, which is a low-level early detection system, similar to that found in other animals, such as pigeons.

Royal Holloway’s research group ran demonstrations of their research studies in the London Science Museum over the summer where 500 visitors tried their tests. Related ongoing projects include a study sponsored by The Royal Society for the Prevention of Accidents (RoSPA) looking at the judgments of older drivers at road junctions, as well as a study looking at why motorcycles have a higher risk of being involved in accidents classified as ‘looked but failed to see’.

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