Climate change

Policy at the crossroads: climate change and injury control

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Climate change policy presents unprecedented opportunities for injury control

Two hundred years ago London was a cesspit. The streets were awash with sewage, and London stank. By July 1858 the smell from the Thames at Westminster was so strong that Parliamentarians concluded that the House of Commons was ''unusable.''[1] Infectious disease was a deadly scourge, but it was the ''great stink'' of 1858 that helped secure the £3.5 million needed to sort out London's sewage. The engineer Joseph Bazalgette was commissioned to design and build an elaborate system for the disposal of London's sewage.[1] Policy on sewage disposal did more to improve the health of Londoners than any health policy that century. Despite erroneous theories of infectious disease causation, environmental public health measures, in particular new sewage disposal and water supply systems, revolutionized public health in Europe.[2]

The stink has gone, but London's streets are now blighted by vehicle exhaust fumes, and road traffic injury is the contemporary scourge. Each year in Greater London, there are about 6000 pedestrian and 3000 cycle casualties.[3] However, the key concern for transport policy is not traffic injuries but climate change. For Ken Livingstone, the Mayor of London, climate change and how to avert it informs all his policy decisions on transport.[4] Could climate change policy provide opportunities for injury control in the way that sewage policy revolutionized the control of infectious disease?

Climate change is a reality. Many parts of the world are already suffering from it, and evidence points to an accelerating process of impacts if preventive action is not taken urgently.[5 6] The recently published Stern review provides an economic framework to inform policy on climate change and has been endorsed by politicians worldwide.[7] The review compares the costs of stabilizing the climate with the consequences of not doing so and concludes that the costs of action are low compared with the costs of inaction. The review argues that efforts to reduce greenhouse gas emissions should continue until the costs of doing more outweigh the extra benefits. However, the review also recognized that any co-benefits of climate change policies must also be taken into account as they have the potential to substantially reduce the costs to the global economy of reducing greenhouse gas emissions.

Transport is over 95% oil dependent and accounts for 14% of global greenhouse gas emissions.[8] The transition to a low-carbon, low-energy transportation system involving substantially increased levels of active transport (walking and cycling) is key to averting catastrophic climate change, but also has the potential to bring considerable health co-benefits. Road traffic crashes account for over one million deaths each year, with ten times as many people seriously injured, and urban air pollution, much of which is transport related, causes upwards of 750 000 deaths annually.[9] Reductions in the volume and speed of traffic, particularly in cities, could mitigate climate impacts, reduce injury rates, and improve air quality. Because road danger is a strong disincentive to walking and cycling, safer streets may lead to a virtuous circle of increasing levels of active transport. This increase will have important consequences for physical activity and personal energy balance and would impact importantly on rates of obesity, diabetes, and cardiovascular disease. Other potential co-benefits include reduced noise, less congestion, and energy security. The decarbonization of transport is key to averting climate change and has huge potential to improve public health.[8]

Figure 1 shows the relationship between transportation fuel consumption and road traffic injury deaths in the US between 1981 and 2003. Because the short-term association between fuel consumption and road traffic injury deaths is obscured by the long-term trends in both variables, the standard time series method of differencing has been used to de-trend both variables The correlation between transportation fuel consumption and road death rates is statistically significant ($r = 0.471$, $p = 0.027$). The r^2 value of 0.22 implies that 22% of the variation in traffic injury death rates can be explained by variations in transportation fuel consumption. The most likely explanation for the association is that road deaths are a function of the amount of travel and thus exposure to risk. Using a Poisson regression model, we estimate that if transportation fuel consumption had been cut by 7% in 1990 (the reduction that would have been required under the Kyoto Protocol assuming the same proportional reduction across all sectors), there would have been 16 386 fewer traffic deaths in the US in 2003 and 80 030 fewer US road deaths between 1990 and 2003 had this reduction been maintained. This represents a substantial injury control co-benefit of climate change policy, results that are consistent with previous research.[10–12]

The benefits of low-carbon transportation and the prioritization of walking and cycling would be particularly evident in cities in low- and middle-income countries where most journeys are on foot or by bicycle. These modes are now under threat as urban elites expropriate more and more road space for motorized vehicles leading to rising road danger. In Nairobi, the share of trips by bike has fallen from 20% in the 1970s to 0.5% in 2004.[13] However, there are exceptions. The Mayor of Bogotá, Enrique Penalosa, resisted advice to build a highway at a cost of US$600 million but instead installed a bus system that carries 700 000 people a day at a cost of $300 million and created hundreds of pedestrian-only streets, parks, plazas, and bike paths. Bogotá shows clearly that enlightened transport policy can particularly benefit the poor.[14]

In economic terms, climate change is a major externality arising from use of fossil fuel energy—a market failure that now presents us with one of the greatest threats that humanity has ever faced. The global burden of road traffic injury is also an externality arising from use of fossil fuel energy in the transportation sector. Because of the growth in traffic volumes worldwide, many people are now exposed to levels of kinetic energy that can and do result in serious bodily injury. Climate change policy presents unprecedented opportunities for injury control. However, to date the injury control community has been slow to appreciate and exploit the synergies. Preoccupied with comparatively trivial downstream concerns, such as road safety education for children, it has lost sight of the big picture and fiddles while the world burns.[15]

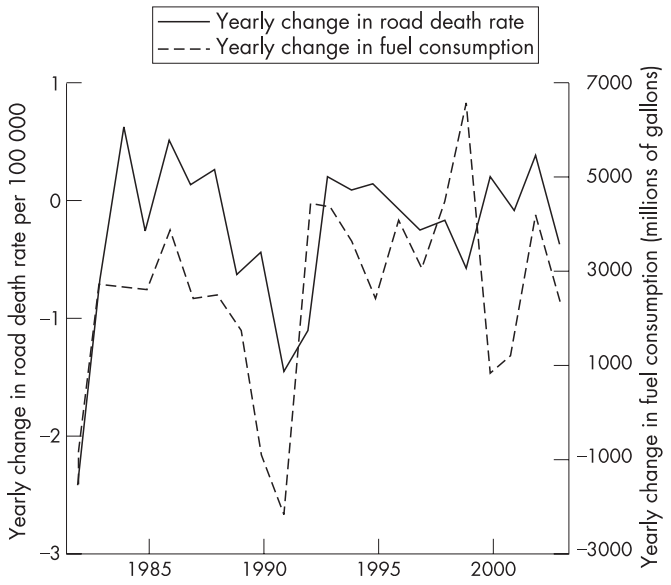

Figure 1 Relationship between transportation fuel consumption and road traffic injury deaths in the US between 1981 and 2003.

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