

focus on... public policy

LÉA-ROBACK
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Road traffic and health

NUMBER **1**

NEGATIVE EFFECTS OF TRAFFIC ON HEALTH



In many regards, automobiles are detrimental to health. Nevertheless, traffic keeps increasing. In 2006, in an attempt to find solutions to problems caused by automobiles, the City of Stockholm conducted a trial implementation of a traffic congestion charge. The manner in which municipal authorities proceeded largely persuaded the population to accept this measure. In August 2007, the congestion charge was reintroduced on a permanent basis in Stockholm.



ROAD TRAFFIC ISSUES AND POPULATION HEALTH

THE STOCKHOLM EXAMPLE: TRIAL IMPLEMENTATION OF A CONGESTION CHARGE

TRAFFIC-RELATED HEALTH ISSUES

Road accidents

The numbers of injuries, disabilities and deaths caused by road accidents are substantial. The figures speak for themselves: In 2001 injuries were the leading cause of death for Canadians aged 1– 44 (1), most of which were due to road accidents (2). In 2003 and 2004 in Ontario, 46% of all injuries and 38% of deaths due to injury resulted from car accidents (4). Every year in Québec, there are 50 000 people injured in road accidents and 600 to 700 deaths (5).

These problems are not decreasing. Quite the reverse. Automobile traffic is constantly increasing, and the number of injuries is directly linked to volume: the more cars in circulation, the more injuries due to road accidents. Yet, terrorism scares people but cars do not. In

Organisation for Economic Co-operation and Development (OECD) countries, the death rate from road injuries is 390 times higher than the rate of deaths caused by acts of international terrorism.

Cars and pollution

Air pollution also causes adverse health effects that can be attributed to cars. Indeed, fuel combustion increases air contaminants: nitrogen oxides, volatile organic compounds and particulate matter. Numerous studies demonstrate the health effects of these contaminants (5). In Canada, these substances cause nearly 5900 deaths a year (5). A study measuring the effects of pollution in France, Switzerland and Austria assessed that in the long term, transportation-

related pollution causes more deaths than do road traumas (5).

Cars and the greenhouse effect

Car pollution is also partly responsible for climate change. Cars contribute largely to greenhouse gas emissions; in 1994 in the Montréal metropolitan area, greenhouse gases attributable to transportation stood at 47%⁵. The latest report of the Intergovernmental Panel on Climate Change (IPCC), published in February 2007, estimated that there is a 90% probability that greenhouse gases caused by human activity are responsible for most global warming⁶. The consequences of this warming trend, especially heat waves, can affect health by exacerbating cardiovascular, respiratory and neurological disorders or provoking heatstroke (5). Moreover, a rise in temperatures increases concentrations of certain air pollutants, which aggravates the health effects of pollution.



Cars linked to inactivity

Physical inactivity and the probability of overweight or obesity are higher among motorists than among people who use public transport, walk or cycle. The health effects are clear, as seen in the results of a study showing that Danes “who do not cycle to work display a general mortality rate 40% higher than that of adults who cycle to work.” (5).

THE ROLE OF PUBLIC POLICIES AND ROAD TRAFFIC

Road traffic keeps increasing. In Québec, for example, the number of trucks increased by 109% between 1990 and 2003, to 1 437 000 vehicles. The number of automobiles increased by 13% from 1998 to 2003 while population growth during the same period was only 2% (5).

From a public health perspective, in preventive and economic terms, reducing road traffic is of great interest. There are several ways of reaching this objective, including road tolls, extended public transport services, park-and-ride policies, and promotion of walking and bicycling.



THE SWEDISH EXAMPLE: TRIAL IMPLEMENTATION OF A CONGESTION CHARGE THAT WON SUPPORT

The City of Stockholm chose road tolls as one measure to reduce traffic congestion. The innovative approach adopted by the City to implement this measure largely contributed to the population's favourable response to the toll.

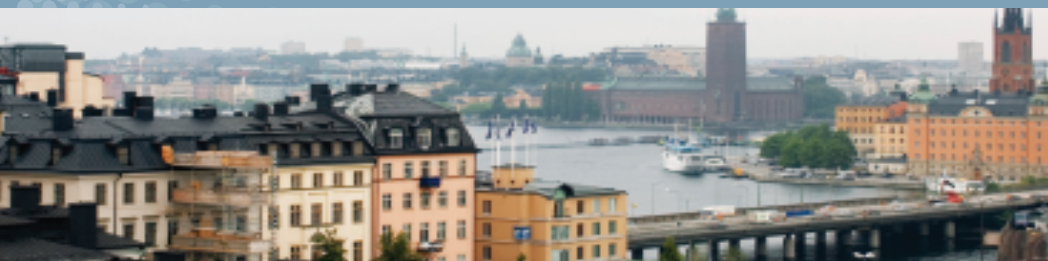
A success on many levels

Prior to the trial, a majority of motorists in Stockholm were against the congestion tax.

In the referendum, 51.3% of the inhabitants of Stockholm voted in favour of it (7).

Objective was to reduce traffic volume by 10% to 15%.

Result: 20% reduction, and 50% at certain control points (8). 10% increase in the use of public transportation (8). Travel time cut in half, in some cases (8).



Elements in the success of this experiment

1. A TRIAL

- Implementation of favourable conditions: In August 2005, public transport services and park-and-ride facilities were expanded.
- Seven-month trial period—January to July 2006—to give the population time to become familiar with the measure and to make adjustments.
- Massive information campaign about how the system works.
- According to the media, the population's attitude changed progressively and became more positive during the trial period.
- Evaluation of all aspects of this measure: traffic volume, changes in travel habits, health effects, effects on the regional economy, social costs and benefits, and others.

2. CONSULTATION

- A referendum measured public opinion shortly after the trial.
- High rate of participation since the referendum was held in conjunction with national and municipal elections.

Fact sheet

FINANCIAL ASPECTS

- 3.8 billion Swedish krona, or \$600 million, paid entirely by the Swedish government.
- Almost half of this sum was used to improve public transport.
- Monthly income from the congestion tax of \$11 million reinvested in public transport.

FEES

- Cameras automatically read vehicle license plates at control points, with no need for vehicles to stop.
- Monday to Friday, from 6:30 a.m. to 6:30 p.m.
- Charges from \$1.50 to \$3.00 per passage, depending on the time of day
- Maximum of \$9.00 a day.
- Some vehicles, such as hybrids and ambulances, are exempted from the charges.

BILLING METHOD

- Photographs of license plates with time indication added.
- Direct payment via an electronic onboard unit affixed to the car that automatically debits the account. Possible to pay by telephone, over the Internet, and in some shops.

STOCKHOLM

The city: 765,000 inhabitants, 188 km², only 18 control points since Stockholm is a chain of islands, which made it easier and cheaper to install toll booths when compared with London, where there are 200 control points; approximate number of vehicles entering and exiting Stockholm city centre every day: 560,000.

The metropolitan area: 1.8 million inhabitants, 6500 km², 26 municipalities

MONTRÉAL

Island (agglomeration of Montréal): 1,854,442 inhabitants, 500 km², 19 control points, approximate number of vehicles entering and exiting the island of Montréal every day: 1,300,000.

Metropolitan Montréal: 3.6 million inhabitants, 4360 km², 82 municipalities

REFERENCES

1. Federal/Provincial/Territorial Sub-Committee on Injury Prevention and Control, *Report on Proposed National Priorities for Injury Prevention and Control*, 2001; www.injurypreventionstrategy.ca/downloads/NatPrioritiesDec2001.doc
2. Health Canada, *Statistics and Trends*; www.injurypreventionstrategy.ca/downloads/HCC_stat.pdf.
3. N. Wilson and G. Thomson, "Deaths from international terrorism compared with road crash deaths in OECD countries"; www.injuryprevention.com, and N. Wilson and G. Thomson, "The epidemiology of international terrorism involving fatal outcomes in developed countries (1994-2003)", in *European Journal of Epidemiology*, 2005; 20:375-81.
4. Ontario Trauma Registry, Canadian Institute for Health Information, *Major Injury in Ontario, Report 2005*. www.ipcc.ch/SPM2febo7.pdf.
7. City of Stockholm, Referendum results (in Swedish) *Resultat från folkomröstningen - hela staden*, <http://www.stockholm.se/Extern/Templates/PageWide.aspx?id=109698>
8. *Official site of the Trial Implementation of a Congestion Tax in Stockholm, Evaluation Reports*, www.stockholmsforsoket.se

LINKS

Swedish government, Official site : [Sweden.se](http://www.sweden.se), Web page on car toll trial (in English): http://www.sweden.se/templates/cs/Article_____14227.aspx

Swedish Road Administration, on the permanent reintroduction of the toll (in English): http://www.vv.se/templates/page3_____17154.aspx

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