



## Effective Public Health Practice Project Summary Statement

December 2005

This is a summary statement written to condense the work of the authors of a systematic review. The reference for the full review is below. The intent of this summary is to provide an overview of the findings and implications of the full review. For more information on individual studies included in the review, please see the review itself.

**Reference for Review in APA:** Egan, M., Petticrew, M., Ogilvie, D., Hamilton, V. (2003). **New roads and human health: a systematic review.** *American Journal of Public Health, 93*(9), 1463-1471.

**Issue:** With a national average of 550 vehicles per 1,000 people (Transport Canada, 2004) and the continuing urbanisation of the population (Statistics Canada, 2001), road design and traffic operations have important implications for the well-being of most Canadians. New road construction in response to the traffic congestion associated with motor vehicle dependency is a contentious policy issue. Transport investment strategies emphasising expansion of the national highway system to support economic development is criticised for failure to safeguard the health of Canadians and their environment (The Livable Region Coalition, 2004; David Suzuki Foundation, 1999). The impact of new roads on human health and well-being is largely unknown.

**Review Content Summary:** A systematic review was conducted to synthesise evidence of the impact of new road construction on human health and well-being. Human health impact was defined to include injury, illness and psychosocial effects. New road construction included the building of roads, road bridges or tunnels where none existed, conversion of gravel tracks into hard-surface roads and addition of lanes to existing roads, and excluded the road construction process. The majority of identified studies examined the impact of new roads on disturbance among local residents (n=21) or the effects of new roads on road injuries (n=11). No attempt was made to pool data from individual studies in a meta-analysis. The results suggest that new road construction has a range of positive and negative effects on human health. The effects vary according to type of road and population under consideration. No firm conclusions can be reached from the studies summarised, but they suggest that new roads may decrease injury rates and increase disturbance among local residents. Bypasses appeared to decrease disturbances in bypassed areas.

**Comments on this review's methodology:** A comprehensive set of electronic databases and other sources was searched to identify unpublished studies and those published in any language. Poor electronic referencing of transport studies necessitated greater reliance on non-electronic search methods than usual. Prospective or retrospective studies with historical or contemporaneous controls were eligible for the review, as were before-after studies and qualitative studies. Three independent reviewers assessed relevance and methodological rigour but level of agreement was not reported. The methodological quality of the studies was low, with

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disturbance studies subject to more problems than injury studies. The reviewers identified common weaknesses including non-random sampling, low response and follow-up rates, over-reliance on inadequately tested survey instruments, lack of controls or adjustment for confounders, and lack of long-term prospective studies. Although it was possible to identify direction of effects in the disturbance studies, heterogeneity in measurement of outcomes prevented comparison of effect sizes among studies. A bias favouring measurement of the health effects among urban residents was identified in the review.

**Evidence points *ARE NOT* weighted or ranked according to strength**

<b>What's the evidence?</b>	<b>Implications for practice and policy:</b>
<ul style="list-style-type: none"> <li>&gt; Measures of the effects of new road construction on human health and well-being have focused primarily on disturbance among local residents or road injuries.</li> <li>&gt; Road injury incidence and disturbance level vary according to the type of road and population under consideration.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Public health needs to clarify the wide range of human health consequences of road construction and implement assessment of the health impacts in communities affected</li> </ul>
<ul style="list-style-type: none"> <li>&gt; There is limited evidence that disturbance is reduced by out-of-town bypasses, especially among residents in small towns when volume of traffic is reduced. However, noise disturbance and community severance are increased for residents living near major urban roads and bypasses.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; The health impacts of road transportation policies have implications beyond the road user. More robust research is required to inform decision makers about the health impacts of road transportation policies.</li> </ul>
<ul style="list-style-type: none"> <li>&gt; There is limited evidence to suggest that new major urban roads, bypasses and new roads connecting urban centres may decrease road injuries, but the overall magnitude and significance of the observed decrease was not established.</li> </ul>	<ul style="list-style-type: none"> <li>&gt;</li> </ul>
<ul style="list-style-type: none"> <li>&gt; Evidence of adaptation to new road construction is limited and inconsistent.</li> </ul>	<ul style="list-style-type: none"> <li>&gt;</li> </ul>
<p><b>General Implications:</b>            More rigorously designed prospective studies of the wider health impacts of new road construction are required.            Costs and benefits of new road construction and alternative traffic reduction strategies should be compared.</p>	

**Cost Benefit or Cost-Effectiveness Information:** Not included in review.

**References Used to Outline Issue:**

- Transport Canada. (2004). Transportation Canada Annual Report 2004. [On-line]. Available: [http://www.tc.gc.ca/pol/en/report/anre2004/7D\\_e.htm](http://www.tc.gc.ca/pol/en/report/anre2004/7D_e.htm)
- Statistics Canada (2001) 2001 Census Analysis Series – A profile of the Canadian population: where we live. [On-line]. Available: [http://geodepot.statcan.ca/Diss/Highlights/Text\\_e.pdf](http://geodepot.statcan.ca/Diss/Highlights/Text_e.pdf)
- The Livable Region Coalition. (2004). Will Freeway Expansion Kill the Livable Region? Questions about the B.C. Government's Port Mann and Highway 1 proposal for the Vancouver Region. [On-line]. Available: [http://www.best.bc.ca/LRC\\_Final\\_1.pdf](http://www.best.bc.ca/LRC_Final_1.pdf)
- David Suzuki Foundation (1999). Taking the High Road: Sustainable Transportation for the 21<sup>st</sup> Century. [On-line]. Available: [http://www.davidsuzuki.org/files/trans\\_eng.pdf](http://www.davidsuzuki.org/files/trans_eng.pdf)

**Other References on this Topic:**

- Dora, C. (1999). A different route to health: implication of transport policies. *BMJ*, 318, 1686-1689. [On-line]. Available: <http://bmj.bmjournals.com/cgi/reprint/318/7199/1686>

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