

**Setting One's Sights:
Exploring the Dynamics of Goal Selection in Road Safety Policy**

Anthony Perl and Christopher Berry

Address for correspondence: Dr. Anthony Perl, Director, Urban Studies Program, Simon Fraser University, 515 W. Hastings Street, Vancouver, BC V6B 5K3, Canada; aperl@sfu.ca.
Christopher Berry is at the University of Calgary.

Abstract

Travel by automobile is manifestly the most dangerous activity that most citizens of developed economies routinely engage in, highlighting the value of trying to explain why some governments address this risk quite differently than do others. This article compares the ways in which Canada sets objectives for managing risk on its roads with alternative European and American targets. The manuscript tests the hypothesis that countries selecting concrete policy goals, which identify specific targets in terms of specific numbers of road deaths and injuries, will pursue more ambitious outcomes than countries that adopt goals stated in relation to another reference point, such as the number of vehicle-kilometres traveled, or the incidence of particular behaviour such as impaired driving or seat belt use. Relative policy goals are shown to translate into less ambitious anticipated results, thus reducing public officials' exposure to future criticism for having fallen short of their commitments. Public officials who set concrete policy goals may be motivated by a combination of greater perceived political legitimacy and administrative capacity compared to counterparts who embrace relative policy goals, raising implications that are worthy of further exploration.

1.0 Introduction

Travel by automobile is the most dangerous activity citizens of developed countries routinely undertake. Yet some governments address this risk quite differently than others. This paper compares the ways in which Canada seeks to manage risk on its roads with alternative European and American strategies, to test the hypothesis that policy goal selection is related to the levels of political legitimacy and administrative capacity that are perceived by key policy actors.

The way in which organizations seek to manage and mitigate risk has now been explored for over a generation. Slovic and his colleagues pioneered analyzing the ways in which risk can be understood by noting that such perceptions are inherently contextual. They pointed out that “Our society accepts activities or technologies, not risks. That acceptance depends on the costs and benefits of the technology in question and the available alternatives...” (Slovic, *et. al.*, 1982: 89)

Road safety merits attention as a window on policy goal selection because the automotive transportation context combines considerable perceived benefits with relatively high levels of danger. In Canada, automobile accidents killed 2,778 people in 2003, and caused 222,260 serious injuries. (Transport Canada, 2004) For Canadian males aged 10 to 24, and females aged 10 to 29, motor vehicle accidents pose the greatest risk of death from any cause. (Statistics Canada, 1999) Government is thus faced with the challenge of mitigating a risk which does not trigger acute public concern.

While the absolute level of road deaths and injuries might seem worthy of ambitious policy interventions, Covello suggests that a steep discount is applied to risks associated with mundane activities and familiar technologies. Automobile travel thus appears safe in comparison to the dangers arising from more exotic technologies whose failure could produce spectacular disasters, such as airplane crashes or nuclear reactor meltdowns. (Covello, 1989) Hewitt echoes this interpretation by placing Canadian traffic accidents in the category of “chronic dangers” which occur frequently but on a dispersed scale, and thus do not draw much attention. (Hewitt, 2000)

Road safety policy efforts thus tend to fall somewhere between the “zero tolerance” for accidents underlying the aviation or nuclear energy risk management paradigms, and benign neglect. The public perception of road carnage as something that happens to bad or unlucky drivers means that governments would not normally be pressed to make road safety a top priority. Yet an expectation remains that government will do something to make roads and autos safer, if for no other reason than keeping unlucky or unsafe drivers from impinging on the general population’s security. The question of how far a government will go to improve road safety reveals the importance of policy goal selection as a window into the interplay of the cultural, political, and administrative dynamics that shape transportation (and other) policy. When different approaches to managing risk on the roads are compared, two alternative approaches to defining goals become apparent. The difference between goals that are identified in terms of concrete outcomes (e.g., road deaths and injuries) and those that are expressed in relation to other activities (e.g., as a percent of vehicle kilometers traveled, or frequency of impaired driving or seat belt use) turns out to be important in understanding how high governments are prepared to aim in setting their sights for future policy results. These objectives reflect the confidence that elected officials (and their closest advisors) have in the often

competing views of experts from different disciplines (e.g., traffic engineering, psychology, or public health).

Ways of expressing road safety goals reveal more than just different accounting and measurement schemes. They also show how governments approach the challenge of improving safety outcomes in a domain where nonlinear responses to risk mitigation are well documented. Sam Peltzman (1975: 682) first identified that regulatory measures intended to improve road safety could encourage drivers to take greater risks, because “the effect of making safety devices available (let alone mandatory) is to lower ... the probability of death given an accident.” For example, drivers can adjust their behaviour and take additional risks due to advances in vehicle safety technology (e.g., seat belts, air bags, anti-lock brakes) or road infrastructure (e.g., divided, limited access highways).

John Adams (1995) notes that such compensating behaviour is often underestimated, leading to policy outcomes that fall short of goals once the safety-enhancing measures stimulate an upswing in risk-taking such as driving at higher speed or traveling in poor weather conditions. As seen by Wilde (1982: 219-220), who originated this theory of risk homeostasis, “... lasting accident reduction ... cannot be achieved by means of merely providing road users with more opportunity to be safe, but that *safety can be enhanced by measures that increase people's desire to be safe.*” Policy makers must thus identify their particular culture's risk “thermostat” and adopt a strategy that seeks to reduce people's tolerance for driving risks so that they will not compensate for safer vehicle technology and road designs.

Recent neurological research findings confirm the models put forward by Peltzman, Wilde, and Adams concerning risk compensation behaviour. Hsu *et. al.* have found that neural circuits in the amygdala, the orbitofrontal cortex, and the striatum regions of the brain respond differently when subjects work through game theory exercises that present uncertain and ambiguous circumstances, compared to simulations that present quite risky, but clear, circumstances. (Hsu, 2005) They hypothesize that human brains thus function differently when processing stimuli that convey a sense of uncertainty, compared to processing stimuli associated with risk. The fact that technology and policy addressing road safety reduce the ambiguity about complex risk factors can thus change people's thinking about road use at a neurological level in ways that make road users more comfortable with risk.

One dimension of road and traffic safety that has received little attention to date is whether different approaches to setting policy goals might be significant in understanding how governments frame their decisions under different cultural constructions of, and cognitive responses to, risk. Given the financial resources and political capital that must be spent to implement policy, the degree to which outcomes are judged susceptible to policy influence could affect the framing of goals. Some jurisdictions have embarked on road safety programs that embrace specific goals, while others have not. We suggest that such a difference in approach is not trivial.

This article identifies an interesting policy pattern that emerges when comparing different jurisdictions' road safety goals. Governments with varying political dynamics and administrative capacity appear to express their road safety policy objectives in either of two ways, identifying concrete or relative goals as the way to measure their efforts. And when these goals are projected into *anticipated* (as opposed to actual) outcomes, it turns out that most jurisdictions specifying concrete outcomes are aiming for more ambitious safety results than those most jurisdictions that have opted to set relative goals.

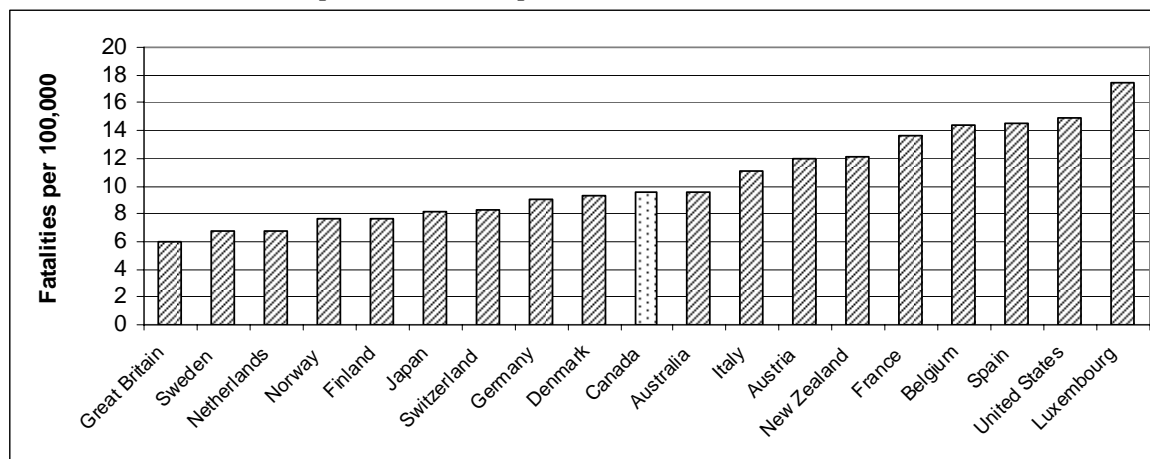
We hypothesize that this duality in framing of road safety policy goals is itself influenced by two particular political and organizational factors. On the one hand, public officials' perception of political legitimacy is positively correlated with their level of ambition, and hence the propensity to set concrete policy goals. On the other hand, public officials gauge their government's administrative capacity when considering how high to aim their policy goals. Agencies with a track record for effective implementation could inspire policy makers to consider more ambitious goals while those that have demonstrated problems in program delivery could induce a preference for less ambitious outcomes expressed as relative policy goals.

2.0 Defining the Problem and Targeting the Solution: Two Approaches to Selecting Policy Goals

No single metric can capture the "bottom line" of policy effectiveness in road safety. Rivara, et. al., (1999) summarize an extensive road safety literature that reveals justifications for focusing on a diverse and not entirely compatible range of safety measures

We have adopted the measure of fatalities per 100,000 population as the most effective way of comparing road safety policies across nations with a high level of motorization. Figure 1 below presents the fatalities per 100,000 population for eighteen OECD nations. Canada falls squarely in the middle of this range. In theory, this position could enable lesson drawing from both "above," where options from more successful jurisdictions provide guidance on measures that could yield fewer deaths and from "below," where problematic policy instruments and approaches could be avoided. But if Canada's position enables a great degree of policy learning, dramatic improvements from such lesson drawing are not anticipated in the goals that have been envisioned for road safety in 2010.

Figure 1
Fatalities per 100,000 Population, Selected OECD Countries, 2000



Source: OECD Transport Division RTR Program. (2002) *Road Safety Performance -- Trends and Comparative Analysis*, OECD International Road Transport Accident Database (IRTAD) at: <http://www.oecd.org/dataoecd/56/32/2487308.pdf>

Our comparison of road safety policies among OECD countries reveals two distinct types of goal setting strategy. Some governments appear prepared to make commitments that make it easy to hold officials accountable in the short term (e.g., within the current government's

mandate). Such a design usually endorses numerical milestones whose attainment is envisioned as an important step in solving the policy problem. We label such an approach **concrete goal selection** and would anticipate that it is more likely to occur in policy formulation where a high degree of societal consensus regarding the importance of the problem is apparent *and* where government officials have a high level of confidence in their ability to implement solutions.

Another approach to setting policy goals can be found in the example of nations where outcomes are expressed as relationships to a particular reference point. A measure of outcomes that exist before the intended policy intervention is typically chosen as the benchmark against which progress will be made. Such an approach to goal setting is more common when policy actors are less certain about either the legitimacy of addressing a particular policy problem or their government's administrative capacity to achieve results. We label this type of approach **relative goal selection**.

A typology of policy goal selection and the key administrative and political dynamics that are associated with it is sketched out below. The institutional configurations we summarize in Table 1 below can influence the ways in which policy makers consider what to do about road safety challenges in relation to other jurisdictions' efforts in this policy domain. In the section that follows, we present what these different approaches yield in terms that can be compared.

3.0 Setting Policy Goals for Road Safety in Ten Nations

To gain an understanding of what difference these two approaches to setting road safety policy goals might make, it is important to express anticipated outcomes in comparable terms. Table 2 depicts the number of road deaths per 100,000 population that ten nations have deemed acceptable in setting their particular safety goals. When viewed comparatively, this range of anticipated outcomes provide evidence that concrete policy formulations are often associated with more ambitious road safety results. Developing this estimate required some simplifying assumptions discussed in a methodological footnote¹. These anticipated outcomes are not meant to predict actual road safety results, but rather to expose what outcomes policy makers expect they should be aiming for.

When we examine the range of results that are projected to arise from different policy goals by 2010, we see Canada maintaining its position near the median of national road safety performance. These projected outcomes appear in Figure 2 below, with nations that have set concrete policy goals indicated in black, those with relative goals indicated in gray. These

¹ Table 2 was constructed by first determining what each nation's road safety goal would yield in terms of projected deaths. For countries which have identified concrete goals, these targets were used directly. In countries that have set relative goals, projected deaths were calculated by taking the number of fatalities during the year from which they have based their goal, and reducing it by the percentage which they have stated as their goal. Population data was gathered from the CIA database, and was then multiplied by the expected growth rate of the population, compounded year by year at the same rate up to the target year. Since population growth projections for specific years between 2005 and their target year were not available, a steady growth rate has been assumed during each year of the particular time period. The target year goal is then divided by the forecast population level to produce a target of fatalities per 100,000. This is the rate that would be reached in the target year selected by each nation, with no further change to policy goals between that time and 2010.

results reveal that nations choosing concrete policy goals are found predominantly below the mean of projected fatalities while those that set relative targets are found largely above the mean.

Table 1
Policy Goal Selection and Institutional Configuration

	Jurisdictional Cohesion	Admin. Capacity	Political Legitimacy	Political Autonomy	Nations
Concrete Goal Selection	Unitary or Centralized	Reliable	Strong	If Necessary: Population Often Aligned With Leadership	Sweden Norway Netherlands New Zealand Japan
Relative Goal Selection	Decentralized	Less certain	Potential	If Possible: Uncertainty Among Leaders Regarding How Far to Get Ahead of Population	United States United Kingdom Denmark Austria Canada

While our research does not assign causality to the relationship between the expression of goals and anticipated policy performance, we will offer evidence that the outcomes revealed in Figure 2 are more than coincidentally related to the political structure and administrative organization detailed in Table 1. We will elaborate the consistent administrative and political attributes of those nations that have set concrete road safety goals as a group, and then explore the administrative and political parallels among countries that have set relative goals.

4.0 Concrete Goal Adopters

Among those nations that have adopted concrete road safety goals, Sweden has specified the most ambitious target. The goal of putting an end to deaths from motor vehicle accidents in Sweden's "Vision Zero" policy framework presents the ultimate assertion of government's confidence in its ability to resolve a policy problem, the equivalent of committing to cure cancer or to end poverty. Such a clear expression of commitment leaves little room for future backsliding – without the potential for criticism regarding policy failure.

Table 2
Road Safety Targets for Ten Nations

Country	Target Year	Projected Death Target, At Target Year	Projected Death Target, Adjusted for 2010 ⁷	2005 Population, July est. (millions)	Population Growth Rate (2005) est.	2010 Population (millions)	Fatalities Per 100,000 (2010)
<i>Concrete Goal Adopters</i>							
Sweden	2007	269 ¹	269	9.0	.17%	9.1	2.96
Netherlands	2010	750	750	16.4	.53%	16.9	4.45
Norway	2012	200	223	4.6	.40%	4.7	4.97
Japan	2010	7,566 ²	7,566	127.4	.05%	127.7	5.92
New Zealand	2010	300 ³	300	4.0	.02%	4.3	7.07
<i>Relative Goal Adopters</i>							
United Kingdom	2010	2,236	2,236	60.4	.28%	61.3	3.65
Denmark	2012	299 ⁴	345	5.4	.34%	5.6	6.24
Austria	2005	577 ⁵	577	8.2	.11%	8.2	7.01
United States	2008	33,457 ⁶	31,067	295.7	.92%	309.6	10.03
Canada	2010	2,076	2,076	32.8	.90%	34.3	6.05

Notes: Population, Population Growth Rates: United States, Central Intelligence Agency. *The World Fact Book*. (2005) at <http://www.cia.gov/cia/publications/factbook/>

Target year, target information: Canada, 27-31,

¹50% reduction over 1996 levels (537 deaths) (Europa, 2002)

²Reduce fatalities by 1500 over 2000 figures by 2010 (9066) (Japan, 2005)

³No more than 300 by 2010. (New Zealand, 6, 2003)

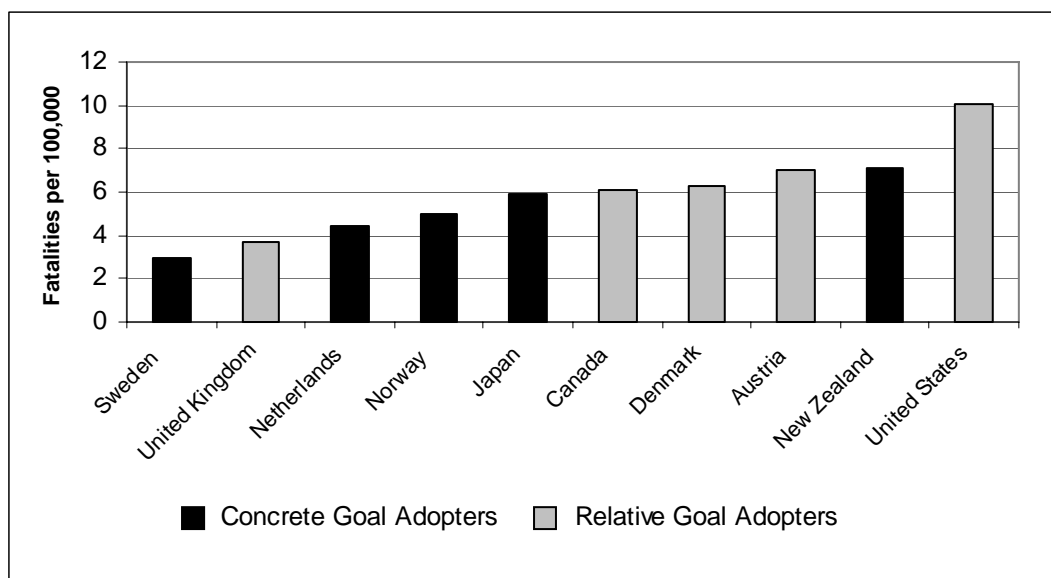
⁴40% reduction over 2000 levels (498 deaths) (Europa, 2002c)

⁵40% reduction over 1998 levels (963 deaths) (Europa, 2002b)

⁶20% reduction over 2000 levels (41,821 deaths) (United States, ii, 2001)

⁷Assuming that progress towards goal is linear, uniform, and continues after targets have been met. The two exceptions are Sweden and Austria, which as of 2004 are not likely to meet their projected goals by their target dates.

Figure 2
Anticipated Fatalities per 100,000 Population, 2010



Sweden's timetable for the complete eradication of deaths on the road remains open ended – offering some political insulation for the officials making this commitment. But Sweden has identified a major milestone enroute to the eradication of road deaths, a 50% drop in the number of casualties by 2007 compared to 1996 figures. (Transport Canada, 2003: 7). Meeting this milestone would keep Sweden well ahead of other nations' road safety performance, both in the 2007 target year and afterwards. These policy ambitions are built upon a political context where risk reduction measures carry high legitimacy and a solid administrative foundation.

Sweden's National Road Administration, the authority responsible for the road transportation system, and Parliament have a long track record of work on road safety initiatives dating from the 1950s. The National Road Administration originally advanced a goal of zero road deaths in 1996, and prepared a memorandum elaborating and justifying this policy in January 1997. Dr. Claes Tingvall, Director of Traffic Safety for the Swedish National Road Administration, became a high profile champion of the Vision Zero approach, drafting a memorandum that made the case for ending all road transportation deaths as a public policy goal. Sweden's parliament passed legislation in response to this memorandum in October 1997. (Andersson, 2003)

The Netherlands has also adopted an ambitious concrete goal in road safety, without yet considering an end to automotive fatalities. The Dutch target, as established in "From A to Better: National Traffic and Transport Plan 2001-2010," is for no more than 750 deaths by 2010. (Netherlands, Ministerie van Verkeer en Waterstaat, 2001) This concrete goal selection builds upon previous policy initiatives that identified relative goals for road safety. In 1986, the "Second Traffic and Transport Structure Plan 1990-2010" called for a 50% reduction in death and 40% reduction in injuries over 1986 figures by 2010. The LRSP plan's death reduction target was achieved by 2000, while the target for injury reductions was not. (Netherlands, Ministry of Transport, Public Works and Water Management, 1986: 22)

In 1997, policy implementation moved into a new phase of coordination, when a covenant was signed between the Minister of Transport and a number of local authorities to jointly implement a program called "Start-Up to Sustainably Safe". This collaborative approach sought to clarify the ways in which different levels of government would pursue road safety goals by enumerating specific responsibilities. In 1998, the Dutch Parliament adopted a new Traffic and Transport Act that integrated the 1986 Long-Term Road Safety Plan into a National Traffic and Transport Plan (NTTP). The previously noted, "From A to Better: National traffic and Transport plan 2001-2010" called for no more than 750 road deaths by 2010. Dutch experience thus suggests that establishing clear roles and responsibilities for different levels of government can contribute to the shift from relative to concrete policy goals.

Norway's concrete policy goal of no more than 200 road deaths by 2012, down from 275 in 2001, leaves little room for doubt that public officials in that country are confident about continuing their achievements. Norway justifies its road safety ambitions by recognizing casualties on the road as "a serious problem to society." (Norway, Ministry of Transport and Communications, 2002: 5) Meeting this goal could put Norway ahead of the Netherlands by 2012, unless the Dutch move on to set even more ambitious goals before that time.

Japanese road safety policy goals have been expressed as concrete outcomes for quite some time. Responding to public pressure over a sharp rise in road fatalities, the government passed the "Traffic Safety Policies Law" in 1970, which established the framework for five year plans. These plans, set by the "Fundamental Traffic Safety Program," have set concrete goals every five years since 1971. The first and second five year plans were successful; however, subsequent five year plans have not been. In fact, fatalities increased over 10,000 under the third five year plan (Japan, Traffic Safety Policy Office Management and Coordination Agency, 1998). In 2003, Prime Minister Koizumi, who is the chairman of the Central Committee on Traffic Safety Measures, declared that it was "his intention to make Japan's roads the 'safest in the world' by bringing the annual number of road deaths below 5,000 in a ten year period." (Japan, Directorate General for Policies on Cohesive Society, Cabinet Office, 2004:6). The Seventh Five Year Plan sets a different concrete goal, presumably en route to a goal below 5,000 for the Eighth Five Year Plan.

New Zealand is the only OECD nation in our sample with a concrete road safety goal that is above the mean expected outcomes per 100,000 population. New Zealand's "Road Safety to 2010" document calls for no more than 300 fatalities and 4,500 hospitalizations by 2010. (New Zealand, Ministry of Transport, 2003: 5) The plan sets specific goals for fatalities and hospitalizations in different regions. New Zealand's administrative capacity is also unique because the dedicated organization responsible for road safety also has power over enforcement. The New Zealand Road Safety Authority was responsible for education and support services, as well as for allocating money for policing. (New Zealand, Land Transport Safety Authority, 2003: 19) This fiscal capacity is significant. When New Zealand added 225 police officers for highway patrol, deaths fell by 24%. (New Zealand, Land Transport Safety Authority, 2003: 9) In 2004, its power was enhanced when it was merged with the department responsible for engineering to create a new entity: Land Transport New Zealand. Another crown entity, the Road Safety Trust, enjoys enhanced legitimacy as it is funded with a portion of licensing fees. The Trust distributes money for local road safety initiatives. (New Zealand, Road Safety Trust, 2005)

New Zealand did not have concrete road safety goals until recently, which may help to explain its position in these projected outcomes relative to other nations with concrete goals.

The preceding plan, “The National Road Safety Plan 1995” had a relative goal “aimed at achieving a level of safety consistent with the highest levels of safety experienced in the world.” (New Zealand Land Transport Safety Authority, 2000: 4) In 1998, the Land Transport Safety Authority put out its fourth working paper entitled “Safety Directions: Setting Road Safety Targets” in which their entire target setting model was laid out. The authors differentiated between a forecast and a target – and acknowledged that the purpose of a target is to motivate progress towards a goal, as well to measure progress and assign accountability should failure occur. They identified risk as the only factor that they can affect through intervention. (New Zealand, New Zealand Land Transport Safety Authority, 1998: 3) In 2000, they consulted the public to determine if their target was too ambitious, not ambitious enough, or acceptable, as well as how it should be funded. (New Zealand Land Transport Safety Authority, 2000: 22) Ultimately this consultative approach to risk management was implemented, and a goal was selected.

5.0 Relative Goal Adopters

Among the nations having expressed road safety policy goals in relative terms, the United Kingdom is projected to achieve the most impressive outcomes by 2010. The policy, “Tomorrow’s Roads: Safer for Everyone” calls for a 40% reduction in drivers “killed or seriously injured” by 2010, with a 50% reduction in deaths and serious injuries among those under 16. (United Kingdom, Department for Transport, 2000) While the available evidence does not allow us to infer a definitive intent, the United Kingdom’s policy formulation could provide a chance to declare success in the event that only one element of the goal (e.g., reduction in serious injury) were to be met.

By way of contrast, Canada’s similar formulation of multiple goals supporting an overall objective of having “the safest roads in the world,” which is detailed below, includes an explicit acknowledgement that achieving the goal requires attaining each of the specified subtargets. We thus adopted this approach when projecting the UK’s goal of a full 40% reduction in deaths road deaths in Table 2, even though such parity was not made explicit. In the event that the UK’s measure of road safety achievement were to be interpreted being met by the accumulation of smaller percentage reductions in deaths and serious injuries, the ranking in Figure 2 would show a higher level of deaths per 100,000 population in 2010, favouring our interpretation that relative goal adopters are less ambitious in anticipating policy outcomes.

Taking the 40% reduction in deaths and serious injuries to imply a 40% decrease in road deaths by 2010, the U.K.’s results would be second only to Sweden’s achievements. But the means used to attain this goal will differ from approaches taken by nations that have expressed their goals in concrete terms. Great Britain aims to make use of policy ‘carrots’ that encourage subordinate local governments to reach targets for the UK’s relative goals. Local Public Service Agreements (LPSAs) must contain twelve goals that reflect national government policy. One of these goals has to be transportation related, and many local authorities have selected specific road safety targets. Successful local governments receive additional funding. (United Kingdom, Department for Transport, 2002: 10) For instance, the Department for Transport identified that creating 20 mile per hour zones around crossings would improve safety, and allocated £3.5 million to local authorities to implement such crossings. (United Kingdom, Department for Transport, 2002: 77) The additional advantage of a unitary state structure in England is that child education and busing initiatives, critical for reducing child road casualties, can be

coordinated horizontally across one level of government, involving only two departments. This relative ease of coordination also eases the establishment of road safety goals that pertain to children.

By defining their road safety objective in relative terms, British policy makers maintain considerable political and administrative flexibility in pursuit of their goal. Successes can be highlighted through successful risk communication strategies that bolster public support for both the goal and its attainment by raising awareness of the road safety challenge. This strategy of adopting a relative road safety target as a way to raise public awareness about the benefits of safer roads, without inciting blame on the government in the event that policy goals fall short is congruent with the claim put forward by Powell and Leiss (1997) that there is a "...gap that separates the unfolding scientific description of risks and the public understanding of those same risks." Leiss argues that expert assessments of risk are rarely definitive in themselves, and the gaps between expert knowledge and public perceptions can form the basis for political conflict, often between the general public and experts, over managing risk, either by advancing it, or by constraining it. (Leiss, 2001: 10, 103) Under these circumstances, advancing toward and attaining relative policy goals would generate political capital that can be leveraged to pursue subsequent goals. Blame avoidance for policy setbacks is easier when outcomes reveal a percentage shortfall rather than a specific number of deaths.

Denmark's relative goal is outlined in "Every Accident is One Too Many". The plan endorses Sweden's "Vision Zero", but identifies Denmark's goal as reducing the number of deaths and serious injuries by 40 percent by 2012 over 1998 figures. (Denmark, Danish Road Safety Commission, 2000: 5) Denmark's relative goal of a 40 percent reduction in deaths and serious injuries appears to have been formulated to close the gap between Denmark's past road safety results and those nations that have been identified as appropriate peers. The current Danish road safety plan notes that "...Sweden – and to a certain extent United Kingdom and Norway – boast a level of road deaths per inhabitant which is approximately 40 percent lower than ours". (Denmark, Danish Road Safety Commission, 2000: 5) The intent is to catch up.

However, Denmark has selected the relative goal of a 40 percent fatality reduction in the past. In Denmark's 1988 "Road Safety Policy Action Plan", the goal was a similar 40 percent reduction in fatalities and injuries over the 1986-1987 average by 2000, which would have yielded no more than 427 deaths and 7,624 injuries respectively. This level was not attained, leading the government to try again, and maintain a relative target rather than staking out an exact target. (Denmark, Ministry of Transport: 2000: 1)

Austria's Road Safety Programme for 2002 – 2010 adopted the goal of a 40% reduction in fatalities relative to 1998. The goal was justified in economic terms, with a clear statement that "We cannot afford to continue having accident rates in Austria that result in socio-economic costs currently amounting to 3.6 billion Euro annually." (Austria, Ministry for Transport, Innovation, and Technology, 2004: 10) The government notes that while fatalities have fallen by nearly 40% over 1961 levels, "By European comparisons, it could be seen that, at best, Austria lies in the middle. The "best" countries have death rates nearly half [those of] Austria." (Austria, Ministry for Transport, Innovation, and Technology, 2004: 11) Austria's plan sets out a number of recommendations and cites past progress, noting considerable progress in reducing fatalities since 1972. But the measures and milestones that are to be used in implementation remain unspecified, suggesting that political and administrative uncertainty about how far to go remains an issue.

As the world's most mobile, and most motorized, society, the United States produces an imposing number of road casualties. Critics have long noted the automobile's high death and injury levels, and even compared the carnage on America's roads (unfavourably) with wartime casualties. (Burby, 1971: 5; Kay, 1997: 103) The political controversy arising from the massive number of deaths might be sufficient to dissuade public officials from choosing concrete policy goals in road safety, and embrace the target of a 20% reduction over 2000 deaths by 2008. American transportation performance is often measured in relative terms, from energy use to environmental impact to economic output, reflecting the dominance of mobility in American society. Transportation policy goals that are defined in relative terms are seen to enable adaptation to societal demands, and mitigation of recognized risks, without challenging the leading role of mobility in America's economy and culture. Relative goals in America's road safety policy make it less likely that implementation will consider mechanisms that would seek to reduce or otherwise limit mobility.

6.0 Canada's Position: Ambitious Flexibility

Canada's overarching policy goal to "have the safest roads in the world" is stated in its Vision for Road Safety. (Transport Canada, 2002) This suggests a sense of considerable ambition, but also a desire for flexibility in attaining such an outcome. Canada's policy goal presents considerable relativity in aiming for "... a 30% decrease in the average number of road users killed or seriously injured during the 2008 – 2010 period (compared to 1996 – 2001)." (Transport Canada, 2001a: 10) The strategy is to be pursued through program specific subtargets, such as increasing seat belt use or reducing drunk driving. These subtargets are identified as contributing to overall road safety and offer the opportunity to connect a national ambition with subnational implementation mechanisms, anticipating that certain provincial jurisdictions will be more enthusiastic, or capable, in pursuing certain subtargets. While such flexibility may advance Canadian road safety within our national policy framework, it is not clear how such an approach would leapfrog Canada into global leadership on having the world's safest roads.

Explaining Canada's embrace of ambitious flexibility in formulating road safety policy requires understanding the ways in which Canadian policy actors interact and assess the political legitimacy and administrative capacity that frame their policy options. The place to look for such evidence is at the level of a "policy community," the set of public and private policy actors that converge to address a problem or issue that has been identified as being worthy of government's attention. (Coleman and Skogstad, 1990) In seeking explanations for the retreat from highway expansion in the 1980s and railway privatization during the 1990s, Dudley and Richardson (2000) have identified transport policy communities as the place where individuals, ideas, interests, and institutions interact to create major breaks with past objectives and outcomes. Available evidence points to the policy community playing a key role in the formulation of road safety targets.

Given Canada's federal structure and practices, every policy community will be greatly influenced by a set of beliefs that transcends their specific problem area. Policy communities will reflect the institutionalized rivalry between Ottawa and the provinces, as well as tensions between municipalities and their provincial "masters." Canada's policy implementation reveals strong evidence of how federalism affects the capacity of policy communities to attain substantive goals that may be well supported as ends, but where the means of achieving them are in dispute. It is this capacity constraint that has oriented the road safety policy community to

support the relative articulation of goals, a strategy that political leaders will support as long as the prospect of overcoming such capacity constraints appears uncertain.

The Canadian Council of Motor Transport Administrators (CCMTA) forms the nucleus of Canada's road safety policy community. (Canadian Council of Motor Transport Administrators, 2005a) Federal, provincial and territorial government departments, insurance corporations, and automotive manufacturers are all active in CCMTA's deliberations. The CCMTA council comprises representatives from each provincial department of transport and the federal government. The council's standing committees address drivers and vehicles, road safety research and policy, and compliance and regulatory affairs. (Canadian Council of Motor Transport Administrators, 2005b) They coordinate regulatory efforts, and collect and share information and strategy. This organization would thus be one place to gauge the dimensions of road safety policy legitimacy and capacity in Canada.

CCMTA is also a focus for non-governmental organizations advocating positions in road safety. Since the federal government regulates vehicle safety standards, auto manufacturers and suppliers engage in policy deliberations through the Automotive Industry Association and Canadian Vehicle Manufacturer's Association. Other groups include Mothers Against Drunk Driving (MADD), the Traffic Injury Research Foundation and the private insurance industry.

The CCMTA reveals an administrative structure where implementation is fragmented among multiple public and quasi-public actors. Transport Canada has the power to set safety standards, for instance the specifics regarding vehicle standards for inter-provincial shipments, or the minimum requirements for a vehicle to be deemed road worthy. (Transport Canada, 2005) But Canada's national government relies on many other departments and agencies for enforcing its road safety standards. Effective federal enforcement depends on cooperation by the RCMP as well as the provincial departments of transportation, quasi-public insurance corporations, where they exist, both local and provincial law enforcement, and vehicle manufacturers.

Although the federal government can take responsibility for developing a national road safety strategy and promulgating key regulations, it has negligible capacity to enforce these regulations. Canada's two most populous provinces, Ontario and Quebec, have autonomous provincial police services, which carry out the enforcement of any road safety policy. Major municipalities across Canada also operate their own police forces. In jurisdictions where the Royal Canadian Mounted Police (RCMP) and a local police force co-exist, the RCMP tends to focus on larger scale criminality such as organized crime or fraud schemes, and leave traffic law enforcement to the municipal police. Many rural communities and smaller centres contract with the RCMP for their local policing. In these communities, the police enforcement capacity is determined by what the rural community is prepared to pay, rather than law enforcement priorities of higher government, such as road safety.

This configuration of overlapping responsibilities has shaped Canada's articulation of road safety policy. Policy community participants recognize the constraints of what Fritz W. Scharpf has elsewhere labeled the "joint decision trap," a situation where overlapping jurisdiction requires different levels of government to accept consistent policy priorities. (Scharpf, 1997: 10-15) In the absence of consistent priorities, policy implementation can be blocked by even a single dissenter, hence the trap that joint decision creates for policy with the potential for controversy.

The administrative consequences of a joint decision trap can be seen at work in the two major road safety policy initiatives that fed into Ottawa's "Vision for Road Safety 2010" framework. These initiatives, the National Occupant Restraint Program (NORP) and the Strategy to Reduce

Impaired Driving (STRID), illustrate classic incrementalism, exhibiting the successive limited comparison pattern described by Lindblom as ‘the science of muddling through’. (Lindblom, 1959: 87) Canada’s policy community initiated specific policy efforts before formulating an overarching strategy. Drunk driving laws, followed by seat belt legislation, were put forward independently and were loosely linked, rather than integrated into any formal plan. (Transport Canada, 2001b:1) These efforts resulted in a decline from 6,061 fatalities in 1975 (Transport Canada, 2001c) to 3,651 fatalities by 1989. (Transport Canada, 2004) NORP was initiated in 1989 with a goal of achieving 95% seat belt use by 1995. (Canadian Council of Motor Transport Administrators, 2001a: 1)

STRID followed in 1990, with a stated goal “to reduce by 20% the number of traffic fatalities involving impaired drivers by the year 1995”. (Canadian Council of Motor Transport Administrators, 2001b: 1) Very few jurisdictions were able to implement STRID, and the program failed to make a significant impact on the number of impaired driving fatalities, which accounted for 39% of Canada’s road fatalities in 1995. (Canadian Council of Motor Transport Administrators, 2001b: 2) NORP was more effective, particularly in cities. By the mid 1990s, Canada ranked first out of 16 countries in urban seatbelt use. (International Road Traffic and Accident Database, 1997) These mixed results highlighted the capacity constraints on road safety policy that led policy makers to define future goals in more flexible terms.

The result was Vision 2001. Published in 1996, it introduced the overarching goal of “making Canada's roads the safest in the world.” (Transport Canada, 1999) The Vision had four basic aims: “raise public awareness of road safety issues”; “improve communication, cooperation and collaboration among road safety agencies”; “toughen enforcement measures”, and; “improve national road safety data collection”. (Transport Canada, 1999: 1) There were no metrics attached to any of these overarching objectives, and no targets set for attaining them. The two existing programs, NORP and STRID, were carried forward and relabeled NORP 2001 and STRID 2001. Most provinces supported this specific policy reformulation. (Transport Canada, 2001c) STRID 2001 set a goal of a 20% reduction in the number of alcohol related road deaths from the 1990-1995 average by 2001. NORP 2001 set a goal of 95% seat belt use. (Transport Canada, 2001c)

The reformulated NORP and STRID initiatives made progress toward their goals, but fell short. In 2001, 90.1% of occupants in light vehicles were restrained, falling short of the 95% goal. The 10.3% decrease in alcohol related road deaths over the 1990-1995 period was well short of the 20% goal elaborated in STRID 2001. (Transport Canada, 2001c) The four general aims of Vision 2001 were never translated into specific targets, so no data were available to evaluate the Vision 2001 plan’s effectiveness on these counts. However, the death rate on Canada’s roads did improve between 1996 and 2001. Gross fatalities fell from 3,091 to 2,781, while gross injuries fell from 230,890 to 221,121. (Transport Canada, 2004) The consensus in the policy network was thus to maintain the vision’s general orientation, and pursue it with a range of programs that could meet diverse policy priorities in different jurisdictions. The question of how far such an approach would bring Canada remained very open among the policy community.

But from an external reference point, if the ten countries identified in Figure 2 managed to attain all of their projected targets, Canada would achieve sixth place among road safety results. Sweden would have the safest roads in the world with just 2.98 fatalities per 100,000 people. Moreover, as Sweden’s stated long term vision is to have zero deaths, Canada would eventually need to aim for road transportation that was free of fatalities. Whether such a goal

could be endorsed by the Canadian policy community is unclear, given the institutional constraints on achieving the policy interventions that would need to be overcome.

7.0 Conclusions

When it comes to managing risk in one of the most ubiquitous, yet dangerous, daily activities in developed nations, the goals and targets that policy makers have set for road safety programs turn out to vary by design. Some nations express their ambitions in concrete measures, while others seek relative expressions of desired outcomes. We have found evidence to suggest that when policy makers perceive both the legitimacy of their intervention and government's capacity to influence change as being high, road safety goals will be defined as concrete targets. And for the most part, these goals will be more ambitious than nations that have opted to express their goals as relative measures. Relative goals appear to be associated with concerns about either the legitimacy of government action on road safety, or the capacity of government to address that problem, or a combination of both. Relative policy goals appear to offer more "wiggle room" needed to avoid conflict about the legitimacy of a policy problem or the administrative capacity to address it.

In Sweden, Japan, New Zealand, Norway and the Netherlands we have identified both a political culture that supports risk reducing initiatives and an administrative capacity that inspires confidence when it comes to setting safety targets. The concrete goals that have been selected appear both popular and attainable. Even when efforts to meet them fall short, as occurred in Japan, policy actors feel comfortable in pursuing concrete targets. And in all cases except for New Zealand, the concrete goals that have been expressed reflect ambitions that are above the mean in our ten nation sample.

The United Kingdom, United States, Austria, Denmark, and Canada have identified their road safety goals in relative terms, reflecting concerns about the legitimacy of this policy problem - or capacity, or both. With the exception of the U.K., these relative targets translate into anticipated outcomes that are below the mean in our ten nation sample. Policy makers in these nations may well hope to leverage success in meeting these relative goals to pursue more ambitious future outcomes. Canada's embrace of relative goal selection reflects a tension between the high legitimacy of pursuing road safety initiatives in a safety conscious culture and the administrative constraints of delegated implementation in a decentralized federation. As our assessment has shown, how a jurisdiction expresses its policy goals can make a difference in the sights that are set, and ultimately in the results that are achieved

References

- Andersson, Magnus, 2003. *Nollvision eller nollillusion?* Uppsala: Cajoma Consulting.
- Adams, John, 1995. *Risk*. London: University College London Press.
- Austria, Ministry for Transport, Innovation, and Technology, 2004. *Austrian Road Safety Programme 2002-2010*. Vienna: Ministry of Transport, Innovation and Technology.
- Burby, John, 1971. *The Great American Motion Sickness, Or Why You Can't Get There From Here*. Boston: Little Brown and Company.
- Canadian Council of Motor Transport Administrators, 2005a. *English Landing Page*. Ottawa: CCMTA, at "<http://www.ccmta.ca/english/index.html>"
- Canadian Council of Motor Transport Administrators, 2005b. *Standing Committees* Ottawa: CCMTA at <http://www.ccmta.ca/english/standingcommittees/standingcommittees.html>
- Canadian Council of Motor Transport Administrators, 2001a. *Canadian Council of Motor Transport Administrators: NORP Strategy, Background* Ottawa: CCMTA. at: <http://www.ccmta.ca/english/norp/norp-strategy.htm#background>.
- Canadian Council of Motor Transport Administrators, 2001b. *Strategy To Reduce Impaired Driving (STRID) 2010*. Ottawa: CCMTA.
- Coleman, William D. and Grace Skogstad. 1990. *Policy communities and public policy in Canada: a structural approach*. Mississauga: Copp Clark Pitman.
- Covello, V. T., 1989. "Informing People About Risks from Chemicals, Radiation, and Other Toxic Substances: A Review of Obstacles to Public Understanding and Effective Risk Communication," in W. Leiss, ed., *Prospects and Problems in Risk Communication*, Waterloo, Ontario: University of Waterloo Press.
- Denmark, Danish Road Safety Commission, 2000. *Every Accident is One Too Many* Copenhagen: Danish Ministry of Transport for the Danish Road Safety Commission.
- Denmark, Ministry of Transport, 2000. *Report to the Danish Parliament from the Minister of Transport on the Road Safety Commissions New Objectives* Copenhagen: Danish Ministry of Transport
- Dudley, Geoffrey and Jeremy Richardson, 2000. *Why Does Policy Change? Lessons from British transport policy 1945 – 1999*. London: Routledge.
- Hewitt, Kenneth, 2000. "Safe place or 'catastrophic society'? Perspectives on hazards and disasters in Canada," in *The Canadian Geographer*, vol. 44, issue 4, pp. 325 – 341.
- Hsu, Ming, *et. al.*, 2005. "Neural Systems Responding to Degrees of Uncertainty in Human Decision Making," *Science*, 310, pp. 1680 – 1683.
- Japan, Cabinet Office, Directorate General for Policies on Cohesive Society, 2004. *White Paper on Traffic Safety in Japan 2004*, abridged version. Tokyo: Cabinet Office and International Association of Traffic and Safety Sciences.
- Japan, Traffic Safety Policy Office Management and Coordination Agency, 1998. *White Paper on Traffic Safety in Japan '98*. Tokyo: Traffic Safety Policy Office Management and Coordination Agency.
- Kay, Jane Holtz, 1997. *Asphalt Nation: How the Automobile Took Over America and How We Can Take It Back*. New York: Crown Publishers.
- Leiss, William, 2001. *In the Chamber of Risks: Understanding Risk Controversies*. Toronto: McGill-Queen's University Press.

- Lindblom, Charles E, 1959. "The Science of "Muddling Through" *Public Administration Review*, 19, (2).
- Netherlands, Ministerie van Verkeer en Waterstaat, 2001. *NVVP 2001. From A to Better, National traffic and Transport plan 2001-2010*, (in Dutch). The Hague: Ministerie van Verkeer en Waterstaat.
- Netherlands, Ministry of Transport, Public Works and Water Management, 1986. *Second transport structure plan*, The Hague: Ministerie van Verkeer en Waterstaat.
- New Zealand, Land Transport Safety Authority, 2003. *Community Road Safety Strategy*. Wellington: Land Transport Safety Authority.
- New Zealand Land Transport Safety Authority, 2000. *Road Safety Strategy: Overview, A Consultation Document*. Wellington: National Safety Committee, Land Transport Safety Authority.
- New Zealand, New Zealand Land Transport Safety Authority, 1998. *Safety Directions: Setting Road Safety Targets*. Wellington: Land Transport Safety Authority.
- New Zealand, Ministry of Transport, 2003. *Road Safety to 2010*. Wellington: Ministry of Transport.
- New Zealand, Road Safety Trust , 2005. *Landing Page* Wellington: Road Safety Trust At: <http://www.roadsafety.govt.nz/>.
- Norway, Ministry of Transport and Communications, 2002. *Road Safety in Norway Strategy 2002-2011*. English Summary. Oslo: Ministry of Transport and Communications.
- Peltzman, Sam, 1975. 'The Effects of Automobile Safety Regulation,' *The Journal of Political Economy*, 83, pp. 677 – 726.
- Powell, Douglas and William Leiss, 1997. *Mad Cows and Mother's Milk: the Perils of Poor Risk Communication*. Toronto: McGill-Queen's University Press.
- Rivara, Frederick P., Diane C. Thompson, and Peter Cummings, 1999, Effectiveness of Primary and Secondary Enforced Seat Belt Laws, *American Journal of Preventive Medicine*, 16(1S): pp. 30 – 39.
- Scharpf, Fritz W., 1997. *Games Real Actors Play: Actor Centered Institutionalism in Policy Research*, Boulder: Westview Press.
- Slovic, Paul, Baruch Fischhoff, and Sarah Lichtenstein, 1982. 'Why Study Risk Perception,' *Risk Analysis*, 2, pp. 83 – 93.
- Statistics Canada, 1999. *Leading Causes of Death at Different Ages, Canada*. Ottawa: Statistics Canada.
- Transport Canada, 2005. *Motor Vehicle Safety Standards*. Ottawa: Transport Canada. at http://www.tc.gc.ca/acts-regulations/GENERAL/m/mvsa/regulations/mvsrg/toc_mvsg.htm
- Transport Canada, 2004. *Canadian Motor Vehicle Traffic Collision Statistics 2003*. Ottawa: Transport Canada.
- Transport Canada, 2003. *Road Safety Vision 2010, 2002 Annual Report*. Ottawa: Transport Canada.
- Transport Canada, 2002. *Road Safety Vision 2010*. Ottawa: Transport Canada.
- Transport Canada, 2001a. *Road Safety Vision 2001, 2000 Update*, Ottawa: Transport Canada.
- Transport Canada, 2001b. *Canada's Road Safety Targets*. Ottawa: Transport Canada.
- Transport Canada, 2001c *Road Safety in Canada 2001* Ottawa: Transport Canada.
- Transport Canada, 1999. *Road Safety Vision 2001: 1998 Annual Report*. Ottawa: Transport Canada.

- United Kingdom, Department for Transport, 2002. *Child Road Safety: Achieving the 2010 Target*. London: Department for Transport
- United Kingdom, Department of Transport, 1997 *IRTAD Special Report: The Availability of Seat Belt Wearing Data in OECD Member Countries (1995)*. London: Department of Transport.
- United Kingdom, Department for Transport, 2000. *Tomorrow's Roads: Safer for Everyone*. London: Department for Transport.
- Wilde, G. J. S., 1982. 'The Theory of Risk Homeostasis: Implications for Safety and Health,' *Risk Analysis*, 2, pp. 209 – 225.