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Factors Contributing to the Decrease in Traffic Fatality Rates for Young People in America

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Claiming over one million lives a year around the world, road traffic fatality is a major global public health concern (WHO, 2013). For this reason, several international institutions including the Organization for Economic Cooperation and Development (OECD), the World Bank, and the World Health Organization (WHO) closely track road fatality trends in individual countries. Over the last four decades, road fatalities in almost all developed countries have decreased. This decrease is attributable to many factors including improvements in vehicle technology, emergency response technologies and medical treatment; and more stringent enforcement of road safety regulations (Ahangari, Outlaw, Atkinson-Palombo, & Garrick, 2014; Hakim, Shefer, Hakkert, & Hocherman, 1991; Noland, 2003; Page, 2001). However, considerable variation exists in both the rate of improvement and the absolute values of road traffic fatality across different countries, even for those with similar levels of development.

The US, in particular, has underperformed most of its peers. Figure 1 shows that the average annual improvement in road traffic fatality in the US over the last four decades was just over 2%. This rate of improvement is less than half of that achieved by the best performing countries—Germany and the Netherlands— both of whom improved at annual rates of just over 4.5%. Prior research into the underperformance in the US has examined the potential role of latent factors such as safety culture, infrastructure conditions and safety polices on changes in road fatality levels (Ahangari, Atkinson-Palombo, & Garrick, 2015). However, very little research has examined trends in traffic safety by age cohort, even though the existence of public policies directed towards different age groups suggests that the various age groups should have different rates of improvement.

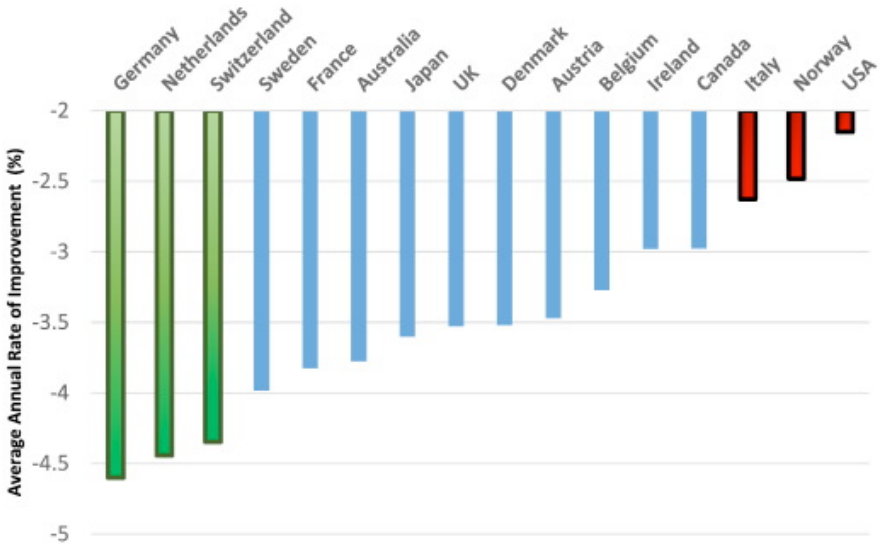

Fig. 1. Average annual improvement in traffic fatality (1970–2010)

In this study we analyzed the fatality rate for different age cohorts in developed countries to better understand how road traffic fatality patterns vary across countries by age cohort. One

very specific question that we sought to answer is how the US is doing relative to its peers for the various age cohorts. Using data for selected years between 1990 and 2010 (1990, 1995, 2000, 2004, and 2010), we compared changes in the rate of traffic fatality over time, as well as the absolute level of traffic fatality for six age groups in the US and 15 other developed countries (Australia, Austria, Belgium, Canada, Denmark, France, Germany, Ireland, Italy, Japan, Norway, Sweden, Switzerland, and the UK). We used the OECD's terminology for age grouping, which is as follows: Children: Age 0–14, Youngster: Age 15–17, Late teens: Age 18–20, Young adult: Age 21–24, Adult: Age 25–64, and Senior: Age + 65.

To better understand how fatality patterns vary across countries and by age cohort, we have identified the best-performing country for each age cohort. This analysis will help policy-makers identify which countries and for what age groups significant improvements have been achieved in traffic safety. Subsequent research will be needed to pinpoint exactly which policies were responsible for the improvements, which may then help other countries emulate the success of the best performing countries.

In January 2015, following the lead of New York City and San Francisco, AASHTO and the USDOT announced that zero deaths was the official policy of the US federal government transportation safety system (USDOT, 2015). This policy envisions zero deaths as the ultimate road safety goal. Having a better understanding of the traffic fatality trends of the various age cohorts—and to what extent the US is lagging other countries—is a crucial first step to identifying policies that may lead to more rapid improvements in road safety. Given that the zero deaths policy was inspired by Sweden's Zero Death Vision program, announced in 1997, looking at initiatives in other developed countries would seem to be a natural starting point for innovative policies (Johansson, 2009). Furthermore, the findings of the benchmarking analysis for different age groups may help policymakers to develop a more effective road map toward a zero death goal by examining strategies and policies in the best performing countries for each age group.

The analysis of the fatality rate allows some insight into how the US diverged from other developed countries in terms of road fatality. The US fatality rate for the various age groups was from 2 to 2.5 times higher than the best performing country in 1990 while in 2010 these ratios jumped to between 3.5 and 5.0. The most substantial divergence occurred for Children. In 2010, the road fatality rate for Children in the US was 5.1 times that of the UK (the best performing country), compared to a ratio of 2.2 in 1990. This means that Children in the US have five times the risk of dying in a road traffic incident than their peers in the UK. Among all groups, Youngsters (15–17) in the US performed best compared to other age groups. In 1990 the rate for this age cohort was 2.5 higher than the best country and was the worst performing age cohort in relative terms. After two decades, the relative performance of this group improved comparing to other age groups.

Our research findings illustrate tremendous variations in road fatality rates (both in terms of the absolute values and the rates of improvement over time) among different age cohorts in all of the 16 countries we studied. The conceptual framework that we have sketched out explains why road traffic fatality rates may vary by age, and how policies may shape these patterns. Accordingly, it is important to monitor road safety performance for different age

cohorts to understand how these age cohorts contribute to data for the population as a whole.

The benchmarking analysis, the results of which were verified by robust statistical method of panel modeling, reveals that in both the Children and the Seniors age groups, the UK not only has the lowest fatality rate but also had the highest rate of improvement. This suggests the need to conduct in-depth analyses into why the UK has had such good outcomes for these age groups in order to identify and assess potential changes in policies targeted towards these age cohorts that could be replicated by other countries. In recent decades the UK has invested heavily in educating road users to improve safety. In one of the most notable projects, the UK Department of Transportation developed "Education Think", a comprehensive online interface. This portal provides access to a series of educational materials in the form of video, animations, games, and publications for children in various age categories including Under 5, 5–7, and Over 7 years. This tool provides families, schools, and communities with the resources to teach children about road safety in an efficient manner. Initiatives such as these could potentially have a substantial effect on road fatalities for specific age cohorts (UK Department of Transport).

Likewise, having achieved the biggest improvement from 1990 to 2010 for Young Adults, Switzerland became the safest place for this age group. This suggests further investigation to determine what led to these improvements to determine if there were any age-specific policies that other countries could replicate. Similarly, for Youngsters and Late teens, Sweden (with the lowest fatality rate) and Japan (with the highest rate of improvement) warrant further investigation. For Adults, the two countries to investigate are again Sweden (because it has the lowest fatality rate) and Austria (because it achieved the highest rate of improvement).

Looking specifically at the US, our analysis shows that safety improvements for Youngsters was much higher than other age groups, and closely tracked peer countries. This strong performance for this age group may stem from earlier research from Sivak (1983) and Loeb (1987), which inspired the adoption of GDL programs. In sharp contrast, Children and Seniors in the US compare very poorly to peer countries. For example, in 2010, a Child in the US was a stunning five times more likely to experience a road traffic fatality than a Child in the UK. This startling statistic suggests an immediate need to explore further the causes and potential solutions to these disparities. This is especially important if the US is to achieve the ambitious goals set out in Zero Vision initiatives.

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