

Excerpts from Moving Beyond the Vision Zero Slogan 2022

A 2016 report supported by the National Cooperative Highway Research Program (NCHRP) revealed that in most places in the U.S., **policy makers have endorsed the terminology of Vision Zero without actually applying its underlying principles** (4). [page one]

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The positive outcomes in both countries demonstrate the effectiveness of the Safe System approach. In Sweden, the number of road deaths was **halved and the number of deaths for car occupants decreased by 60% during 2000 to 2010** (23). In the Netherlands, the Sustainable Safety vision has been credited with a **30% decrease in road deaths from 1998 to 2007** (24). [page three]

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Weijermars and Wegman (24) investigated numerous Dutch traffic safety measures implemented from 1998 through 2007. He found that the **measures prevented 300 to 400 fatalities with a cost–benefit ratio of 4:1**. [page three]

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However, road fatalities in both Safe System countries declined much more rapidly than in the United States. Even though those two countries started with fatality rates of half the level of the U.S. in 1985, they still managed to reduce the fatality rate per capita by 64% for the Netherlands, and by 78% for Sweden, compared with a 40% decline in the U.S. To further investigate the underlying factors in this disparity, we calculated fatality risk per 1 million road users for three separate classes of road users: vehicle occupants, pedestrians, and bicyclists as shown in Figure 2. Figure 2a shows the risk of fatality for pedestrians based on the mode-share-based risk measure. **The U.S. started with a much higher risk of fatalities for pedestrians than for car occupants in 1989 to 1991, and this gap had since not closed significantly. Based on raw numbers, there was a 51% increase in pedestrian fatalities from 2009 to 2019, signaling a deteriorating environment for pedestrians in the U.S. in recent years.** [pg four]

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The fatality rates for pedestrians and bicyclists [in Netherlands and Sweden] are now only 14% and 8% of those in the U.S., respectively. It is also startling to note that in both countries, the rates of fatalities for these nonmotorized users are significantly lower than that for car occupants in the U.S. [pg four]

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Overall, the results suggest that Sustainable Safety in the Netherlands and Vision Zero in Sweden have coincided with significant road safety improvement. What is more interesting is

that the **so-called vulnerable road users in the Netherlands and in Sweden are now as safe as the protected motorized users in their respective countries and much safer than motorized users in the U.S.**, as shown in Figure 3. Overall, the results suggest that Sustainable Safety in the Netherlands and Vision Zero in Sweden have coincided with significant road safety improvement.

This discrepancy can be explained by safer people, safer roads, safer vehicles, safer speeds, and better postcrash care in these better performing countries.

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For example, there is evidence showing that the popularity of light trucks on U.S. roads is responsible for many pedestrian deaths (33). But no updated federal safety standards for passenger vehicles have yet included pedestrians in vehicle safety ratings. In contrast, the European Union has implemented strict regulation concerning pedestrian safety in car design and assessment of the pedestrian protection performance (34). Another important difference is the adoption of widespread traffic calming such as 30 km/h (18.8 mph) zones on local streets in these countries. More than 75% of all local streets in the Netherlands had speed limits of 30 km/h or less in 2017 (35). Lower impact speeds have given nonmotorized users a higher chance of surviving on the road. [pg five]

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In 1997, the Swedish Parliament also adopted a Safe System strategy called Vision Zero. It unambiguously declared non-tolerance for road casualties by stating that: “Vision Zero means that eventually no one will be killed or seriously injured within the road transport system” (27). **The basic principles in Vision Zero include preventability of traffic deaths; focusing on system failure rather than human error; change in thinking from collision reduction to injury prevention; data-driven decisions; shared responsibility between system and design; stimulating the automotive industry to build safer vehicles; and the acknowledgment that “saving lives is cheap and achievable”** (38). These two visions of Safe Systems share similar goals but also have different points of emphasis. In this discussion we follow a framework of **five road safety principles** developed by the Dutch Sustainable Safety, which are **functionality of roads; (bio)mechanics; psychologies; responsibility; and learning and innovating**. The first three principles stress design thinking and the last two principles focus on organizational functions. Following this overview of these five elements, additional elements that are more explicitly expressed in the Swedish approach are discussed, including the “zero death goal” and the concept that **saving life is cheap**.

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Therefore, one important principle in the Safe System approach is that the presence of nonmotorized users should govern design speed. For instance, in the Netherlands the safe speed should be 15 km/h (9.3 mph) where the conflicts are highly likely to be with vulnerable road users, as in local streets. The safe speed should be 30 km/h (18.6 mph) where conflicts with vulnerable road users on roads or at intersections are probable, including situations with bike lanes. [page seven]

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This approach is in stark contrast to that in the U.S. where design speeds, and therefore, design, are determined based on the “85th percentile speed” or the speed at which 85% of drivers are expected to travel on a given street type. Allowing vehicle behavior to dictate road design violates this basic principle of Sustainable Safety. Therefore, a target speed approach that is more aligned with this principle is gaining favor in some parts of the U.S. [page seven]

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For example, in the U.S. we have seen innovation in many municipalities that adopted policy such as a “complete streets” policy or a “target speed” approach to setting design speeds. However, **these efforts are often overruled by state agencies that are more focused on moving traffic than on safety.** A Sustainable Safety approach at the state level would start to get state agencies to think more systematically about safety by aligning their design and planning with the principles of Sustainable Safety [page eight]

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This principle is also expressed in Sweden’s approach which states that a data-driven method should be employed to study the causes of fatal and severe injury crashes. Sweden designated intermediate- or long-term national targets that can help track and advance the process each year. The analysis is shared at annual conferences attended by stakeholders (43). **Another lesson from these countries comes from their setbacks in pursuing a vision of zero road death.** The Netherlands has successfully reduced traffic fatalities by 65% from 1986 to 2017. However, recent trends show that progress has slowed, and the number of traffic deaths has decreased more sharply among motorists than among cyclists over the past two decades, perhaps because of more e-bike use by older bikers (44). This is a reminder that striving for Vision Zero is a continuous process rather than an end state. [page eight]

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In the U.S., one fundamental and ongoing issue relates to the lack of available exposure data for pedestrians and bicyclists in most cities and states. Also, although the National Automotive Sampling System’s General Estimates System (NASS-GES) provides limited sources for nonfatal crashes, there is no complete nationwide database for road injury crashes (46). The lack of a reliable and robust data source is potentially one of the largest obstacles for professionals wishing to examine appropriate policies and countermeasures (47). For example, when road safety practitioners examine the causes of fatal bike crashes and all-injury bike crashes, limited data may lead to misunderstandings about the key mechanisms. [page eight]

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There are many inexpensive options in road safety measures, and tactical urbanism is one such method. **Tactical urbanism**, also known as do-it-yourself (DIY) urbanism, uses

low-cost, short-term interventions to catalyze long-term goals and improvements in road safety (48). It provides communities with affordable ways to reimagine the use of public space and improve the road safety for cyclists and pedestrians in particular. [page nine]

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It has been almost a decade since the first group of jurisdictions in the U.S. officially adopted Vision Zero policy. Now more than 40 cities have committed to Vision Zero across the country (49). However, the U.S. pathway toward Safe Systems is complicated by this country's long history of automobile dependence where planning has prioritized cars and largely ignored nonmotorized users' need for safe facilities, as Handy (50), Ahangari et al. (51), and other scholars have suggested. **One encouraging sign is that in November 2020, the U.S. Department of Transportation (U.S. DOT) Pedestrian Safety Action Plan addressed needed actions for pedestrian safety under a Safe System approach (52).** In January 2022, the U.S. DOT announced a departmentwide adoption of the Safe System approach in the National Roadway Safety Strategy (53). Many of the interventions resulting from the Sustainable Safety principles are not new to the American context, but they have been implemented sparsely or in a piecemeal fashion. The Sustainable Safety paradigm relies on thinking about how these various policy, design, and institutional considerations work together to create a holistic environment where each element complements and reinforces other elements to lessen the vulnerability of road users of all types. **Achieving Vision Zero in the U.S. requires a paradigm shift away from current thinking about transportation toward a system where speed is less exalted and safety and placemaking are elevated. This conceptual shift is taking place at municipal level but still needs supports from state actors (54).** [page nine]

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The results reported in this paper suggest that to pursue the goal of Vision Zero, **the following should be prioritized:** A paradigm shift from current thinking about transportation safety toward a systematic thinking about road system and crash factors is needed. This includes but is not limited to diminishing the tendency toward victim blaming in the media and improving engineering and planning education with more Sustainable Safety thinking. More reliable and consistent databases must be developed across the country to help with the process of learning and innovating in road safety policy. The insufficiency of data and lack of a reliable and robust data source looms as one of the larger obstacles for professionals wanting to examine appropriate policies and countermeasures (47). There is a need to promote organizational coordination between different disciplines and collaboration among federal, state, and municipal agencies. Work is needed to increase confidence in the goal of zero road death through public communication. [page nine]