

UTC Spotlight

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Achieving the Vision of Zero Roadway Deaths Through the Safe System Approach

In recent years, the U.S. has experienced an epidemic of roadway injuries and fatalities, especially when compared with rates in other high-income nations. One strategy U.S. policymakers have utilized to combat the problem is the introduction of Vision Zero plans affirming a commitment to implement actions to reach zero traffic-related deaths. The Collaborative Sciences Center for Road Safety (CSCRS), the safety-focused University Transportation Center (UTC) headquartered at the University of North Carolina (UNC) Highway Safety Research Center (HSRC), has conducted extensive research on Vision Zero plans and how to support them using the Safe System approach to road safety.

Why a Vision Zero plan?

The U.S. roadway fatality rate is three times that of Ireland, Israel, Japan, Netherlands, and Spain; and four to five times that of the United Kingdom, Sweden, Singapore, and Norway¹. In the first half of 2021 alone, motor vehicle deaths increased by 16 % compared with the previous year, according to the National Safety Council.

Many U.S. communities are adopting ambitious safety goals known as Vision Zero plans to address this public health crisis. A Vision Zero plan demonstrates a commitment to implement efforts to reduce traffic fatalities and serious injuries to zero. A typical plan can include such elements and steps as collecting data for road user safety assessments, guidance for processes and organization, community engagement, and the development of partnerships to achieve goals. In the U.S., Vision Zero has been adopted by numerous cities including Durham, NC; Richmond, VA.; New York City, NY; Austin, TX; and Seattle, WA.

¹ International Transport Forum. [2020]. Road Safety Annual Report. https://www.itf-oecd.org/sites/default/files/docs/irtad-road-safety-annual-report-2020_0.pdf



Source: <https://pixabay.com/photos/roundabout-street-traffic-shield-3770663/>

Figure 1: Richmond, VA, Vision Zero efforts include a strong focus on speed management, which includes an emphasis on street design changes and evaluation of automated enforcement tools.

The concept of Vision Zero has even been codified into legislation and policies on the national level. For example, the bipartisan Infrastructure Investment and Jobs Act that became law in November 2021 included a provision allowing the U.S. Department of Transportation (USDOT) to offer grants for implementing Vision Zero plans. USDOT's National Roadway Safety Strategy released in January 2022 mentions the need to "strive for zero roadway fatalities," that "Zero is the only acceptable number of deaths" on our national roadways.

CSCRS research connects Vision Zero with the Safe System approach

As part of CSCRS's mission to create and exchange knowledge to advance transportation safety through a multidisciplinary, systems-based approach, CSCRS researchers have conducted research exploring Vision Zero efforts through the lens of a Safe System.

A key example, the project “[Strengthening Existing and Facilitating New Vision Zero Plans](#),” produced the [Vision Zero Plan Library](#), an inventory of existing U.S. Vision Zero plans. The project team conducted an analysis of these plans, identifying common features of high-quality plans. The findings motivated the development of a [Guide to Developing a Vision Zero Plan](#), which offers evidence-based recommendations. For instance, applying the Safe System approach to Vision Zero focuses roadway safety efforts on ways to effectively:

- design for the humans in the system;
- recognize the importance of speed and energy transfer in safety;
- employ proactive tools to manage risks across an entire roadway network or population; and
- foster integrated, collaborative, and coordinated action.

This research team also bridged research into practice, working with local coalitions involved in the North Carolina Vision Zero program and utilizing additional decision-making support tools, including an Implementation Checklist and a Safety Procedures resource. The team has presented research findings at local, statewide, and national events, and produced peer-reviewed publications and case studies on Vision Zero issues.

Another outcome this project identified is the need for further work on how Vision Zero is implemented nationwide. This has resulted in the funding of a new project, “[U.S. Vision Zero Implementation](#),” which is abstracting communities participating in Vision Zero programs. Still another new project, “[Integrating systems thinking tools into Vision Zero and Safe Systems approaches](#),” will lead to the development of materials to reinforce Vision Zero and Safe System approaches. The project “[Implementing Safe Systems in the United States: Guiding principles and lessons from international practice](#),”

completed in 2018, provided a foundation of Safe System research and exploration of practices from other countries.

CSCRS has explored other ways to marry the elements of a Safe System with a movement toward zero roadway deaths including:

- partnering with organizations, such as the Vision Zero Network, Equitable Cities, Institute of Transportation Engineers, and National Safety Council’s Road to Zero Coalition, to create and share additional resources related to a Safe System;
- building the [Creating Safer Systems and Healthier Communities: Resource Hub](#) with information on research-to-practice innovation;
- holding the 2021 [Safe Systems Summer Learning Series](#) that provided space for dialogue on what is still needed for Safe System approaches to meet community safety, health, and equity needs; and
- co-hosting the April 2019 [Safe Systems Summit: Redefining Transportation Safety](#), a two-day conference held in Durham, NC, devoted to exploring the changing nature of traffic safety challenges.



Figure 2: Community engagement is a crucial part of any Vision Zero plan.

Dan Burden <http://www.pccbikemages.org/details.php?picid=74>

About This Project



The Collaborative Sciences Center for Road Safety is led by HSRC in collaboration with the UNC Department of City and Regional Planning and the UNC Injury Prevention Research Center. This national safety UTC unites leading transportation research, planning, public health, data science, robotics, and engineering programs at: Duke University; Florida Atlantic University; University of California, Berkeley; University of North Carolina, Chapel Hill; and University of Tennessee, Knoxville. For more information about CSCRS and projects described in this article, and to sign up for the CSCRS newsletter, visit www.roadsafety.unc.edu.

This newsletter highlights some recent accomplishments and products from one University Transportation Center. The views presented are those of the authors and not necessarily the views of the Office of the Assistant Secretary for Research and Technology or the U.S. Department of Transportation.

