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Addressing the Roadway Safety Crisis: Building Safer Roads for All

Introduction

Thank you for the opportunity to testify on this critical issue concerning the safety and welfare of all those who travel our roadways both in Florida and nationally. I dedicated my last 12 of 28 years at the Florida Department of Transportation (FDOT) on improving transportation safety in the State of Florida. During my last 5 years at FDOT (2011-2016), the Secretary asked that I lead the pedestrian and safety initiative at FDOT. During my time as State Roadway Design Engineer (1995-2000), I felt the numbers of deaths and serious injuries were an unacceptable cost of travelling our roadways both in Florida and nationally. The Secretary specifically recruited me back in 2011 due to his knowledge of my passion concerning transportation safety.

When I returned in 2011, I began the shift of FDOT away from a focus on moving motor vehicles without delay and congestion, which contributed to the enormous loss of life and serious injuries on our system. In 2014, I was able to convince the entire executive team at FDOT that we needed to adopt Complete Streets and move from a one size fits all street design to designing the right street in the right place, and to require modern roundabouts be evaluated before signalizing intersections due to their safety benefits in reducing fatalities and serious injuries.

When designing streets in more urban locations where there is more demand for walking, our street design should focus on safe speeds and safe roads, which results in improved safety for all users. In the following pages, I have provided more information to support my experience and include recommendations to this Committee to reduce fatalities and serious injuries on our roadways throughout our country.

Background of the Challenge

Our current road system is designed to move cars at higher speeds than necessary and without delay, with less consideration of impacts to communities or quality of life for those who live along those corridors. The cost of this singular focus of the last 60 plus years of road building is a predictable but preventable loss of about 100 people per day in the U.S.

Transportation safety has improved generally since 1975, but that vast majority of that improvement is attributed to incorporation of safety measures for the occupants, such as air bags and structural changes to vehicle design which results in the kinetic energy from crashes being absorbed by the vehicle instead of the passengers. However, for vulnerable roadway users, such

as pedestrians, bicyclists, and motorcyclists, who have no such protection, fatalities and serious injuries continue to rise especially in the sunbelt states where development patterns of sprawl and separated land use force all of the travel demand on a limited network of roads, resulting in multi-lane high speed roads and excessively large intersections.

Those of us in the engineering community have been led to believe for decades that following the higher ranges of the design criteria outlined in the American Association of State Transportation Officials (AASHTO) Geometric Design of Highways and Streets created a safe transportation system. While attending a national meeting of the AASHTO Subcommittee on Design when I was the State Roadway Design Engineer at FDOT, we were surprised to find out that the design criteria was not based on safety research but based on maintaining the design speed and operating capacity of the roadways for vehicle travel. That conventional wisdom is unfortunately still very prevalent in the industry, resulting in high-speed multi-lane roads nationally, thereby reducing safety for all users, but especially vulnerable users.

Design engineers have and continue to believe that our design criteria are intended to reduce crashes and there is some validity to that, such as reducing risk of crashes for run off the road and lane departure crashes, but the data proves that the prevention of all crashes is almost a lost cause. Consequently, FDOT, Federal Highway, and many cities across the country are moving to a Vision Zero or Safe Systems approach which I will cover later. As an example, Florida Department of Transportation more recent focus on improving transportation safety and Complete Streets has resulted in guidance on speed management with the goal to reduce fatalities and serious injuries. Streets will be designed to be more self-enforcing, causing drivers to drive at reduced speeds on corridors where there are existing safety concerns and land development patterns that support lower speeds.

Societal Costs

Transportation fatalities and serious injuries have become identified nationally as a public health crisis that is entirely preventable. For more than 60 years, motor vehicle crashes were the leading cause of injury-related death among young people. In 2021, an estimated 42,915 people died, a 10.5% increase from 2020. An estimated 2.3 million were seriously injured, with both disabling and non-disabling injuries.

Definition of Serious Injury from FHWA:

- Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Crush injuries
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
- Significant burns (second and third degree burns over 10% or more of the body)

- Unconsciousness when taken from the crash scene
- Paralysis

The cost assigned to fatalities is calculated to be $11,148,000 (National Safety Council 2019) which includes loss of wages/productivity, medical expenses, vehicle damage, and other associated costs. The cost of a disabling crash is $1,218,000 whereas a property damage cost is assessed at $51,000, further supporting the efforts to move from a focus on just reducing crashes to eliminating fatalities and serious injuries. The cost to society nationally was an estimated $463 billion in 2020 based on estimates from the National Safety Council.

A New and Proven Approach

Over the past 20 years, several nations and cities around the world have adopted the Safe Systems approach. This approach begins with a commitment to eliminate fatalities and serious injuries among all road users and uses road design to manage speed to reduce the kinetic energy from crashes, so people are less likely to be killed or injured when crashes occur.

While the U.S. differs in cultural and historical context from nations with the longest experience with a Safe System approach, their new approach to transportation safety has resulted in reductions of fatalities between 18-80%. These gains in reducing the loss from crashes is difficult to ignore. We may think that this is because their historic focus on transportation was less focus on automobile travel, but they were also focused on vehicle travel speed and capacity. However, their government agencies decided that the loss of life from traffic crashes was too high, which led to their adoption of Safe Systems approach to transportation safety.

In 1994, Europe and the United States had similar traffic death rates, but by 2020 Americans were over three times more likely to die on the road than Europeans. Today, 12 people are killed in traffic per 100,000 annually in the U.S., compared to 4 per 100,000 in the Netherlands and Germany, and only 2 per 100,000 in Norway. The difference reflects more aggressive programs across Europe to reduce speeds, greater investment in mass transit and stricter drunk driving enforcement.

While I was the Transportation Director at the City of Orlando, we adopted Vision Zero and produced a Vision Zero Action Plan. Based on our analysis, we found that three segments of roadway in our six commissioner districts accounted for between 28-79% of the fatalities and serious injuries. We had 61 fatalities and over 2,700 serious injuries between 2015-2017. By focusing on these relatively small number of corridors, my expectation is that taking the Vison Zero approach to transportation safety would result in a double-digit reduction in fatalities and serious injuries within the City. While some may believe that enforcement could solve that problem alone, funding constraints means that we only had seven traffic division officers to cover the 119 square miles of Orlando 24/7.

While towns, cities, and county governments own nearly 80% of road-miles. States own most of the remainder. In the City of Orlando, approximately 75% of the high injury network was on the

state roadway system, so this problem can only be addressed through collaboration between state DOT's and local agencies, ideally with additional financial support from USDOT/FHWA.

Recommendations

The Safe Systems approach is a way to achieve Vision Zero. The recommendations and approach are shared by both philosophies and have the potential to provide dramatic reductions in fatalities and serious injuries nationally. Vision Zero and Safe Systems have only been in the U.S. since 1994, with most of those cities adopting this approach in the last five to 10 years, yet some cities such as Washington, DC, New York, and San Francisco have already seen double digit reductions in fatalities and serious injuries.

The Safe System concept is new to most authorities that are responsible for road systems in the U.S., and detailed guidance will be needed to stimulate and steer progress in implementation. FHWA has provided safety training to FDOT such as "Designing for Pedestrian Safety" and "Developing a Safety Action Plan" while I was leading the safety initiative at FDOT. I recommend that the training be updated to be more of a Safe Systems approach and expanded to reach more state DOT's, especially in the Sunbelt, where the issue is more pervasive. Finally, I have included the following additional recommendations.

- Require that Safe System principles be followed when federal funds are used for road design and operation.
- Incentivize and support adoption of the Vision Zero/Safe System approach as the basis for safety strategies at federal, tribal, state, and local levels, including dedicated funding for FHWA Proven Safety Countermeasures such as road diets, protected or physically bike lanes, and roundabouts, when used as part of a Safe Systems approach.
- Conduct a multiyear nationwide incentive-funded program for states to establish Safe System demonstration projects with before and after data collection to validate engineering, education, and enforcement solutions.
- Develop and conduct a national Vision Zero/Safe System awareness and education campaign that is culturally sensitive, based on evidence and monitor effects on traffic safety behavior, since driver behavior is a significant element in crash causes.
- Safe System principles need to be incorporated into the American Association of State Highway and Transportation Officials (AASHTO) Policy on Geometric Design, the Highway Safety Manual, and the Manual on Uniform Traffic Control Devices.
- Shift the focus on eliminating congestion and reducing travel time to improving travel time reliability, improving accessibility, and reducing Vehicle Miles Travelled (VMT) to reduce fatalities and serious injuries at the federal and state level.
- Develop a Safe System toolbox to support proactive, systemic implementation of the Vison Zero/Safe Systems approach in urban, suburban, and rural environments.
- Develop materials and outreach to assist state DOTs in adopting and implementing Vision Zero/Safe System principles and monitor results.

Thank you for the opportunity to speak today and share my experience and passion to improve safety both in Florida and across the entire U.S.