Welcome!
Advisory Council on Traffic Safety

February 14, 2024

Note: Today's meeting will be recorded for record keeping purposes only

DEPARTMENT OF TRANSPORTATION

DEPARTMENT OF PUBLIC SAFETY
STATE OF MINNESOTA

DEPARTMENT OF HEALTH

Welcome and Introductions

- Chairs' Welcome and Introductions
- Approve Today's Agenda
- Approve Minutes from December 13 Meeting

Foundations of the Safe System Approach

- Presentation: Overview of the Safe System Approach
  - *Ken Johnson, Minnesota Department of Transportation*
- Member discussion following presentation
  - *Where are opportunities to better integrate Safe System into your work?*
  - *What challenges exist when you think about the Safe System approach?*
  - *How should the Council incorporate Safe System into their work/structure?*

Safe System Approach – An Overview
Advisory Council on Traffic Safety

Ken E. Johnson

Office of Traffic Engineering

DEPARTMENT OF TRANSPORTATION

Questions to ponder

Discussion after the presentation

- *Where are opportunities to better integrate Safe System into your work?*
- *What challenges exist when you think about the Safe System Approach?*
- *How should the Council incorporate Safe System into their work/structure?*

Background

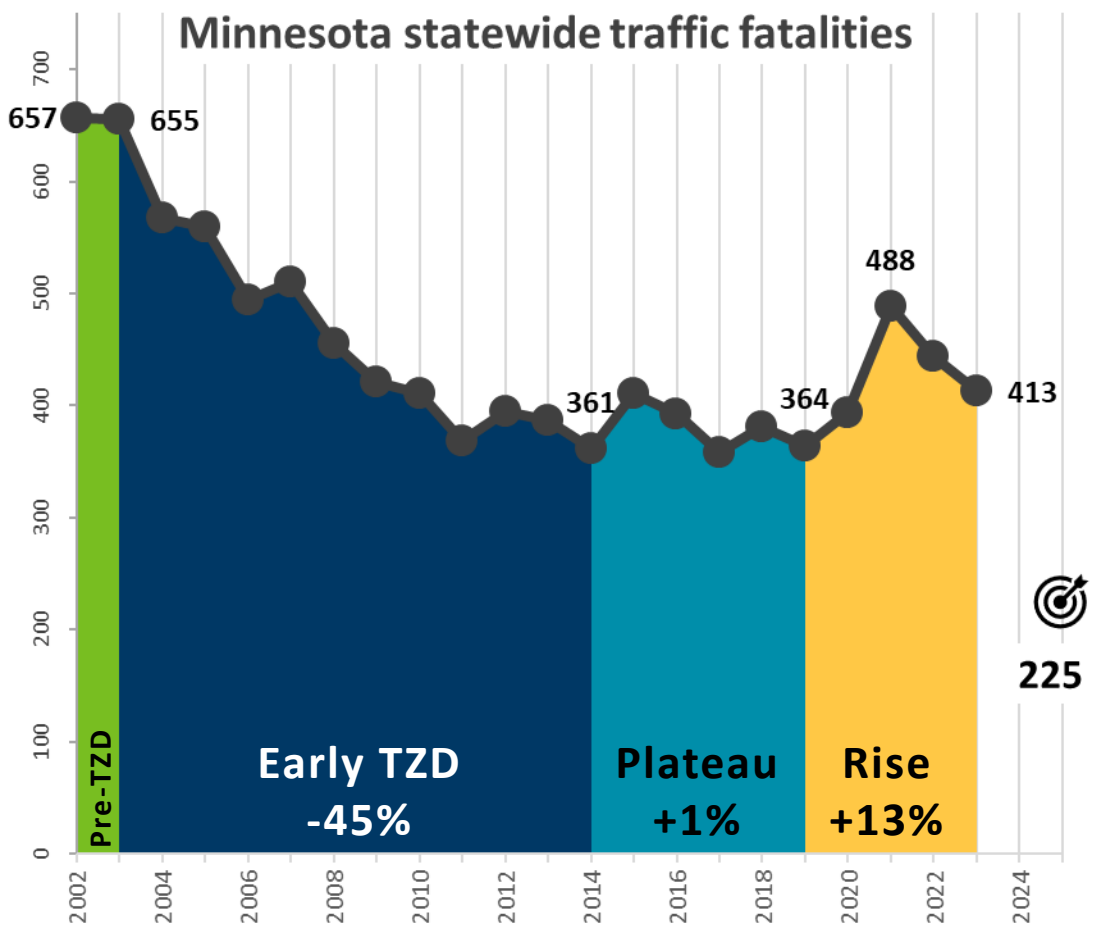
- TZD's commitment to safety
  - Clearly identified in the Minnesota Strategic Highway Safety Plan; as well as MnDOT's Vision, Mission, and Strategic Plan

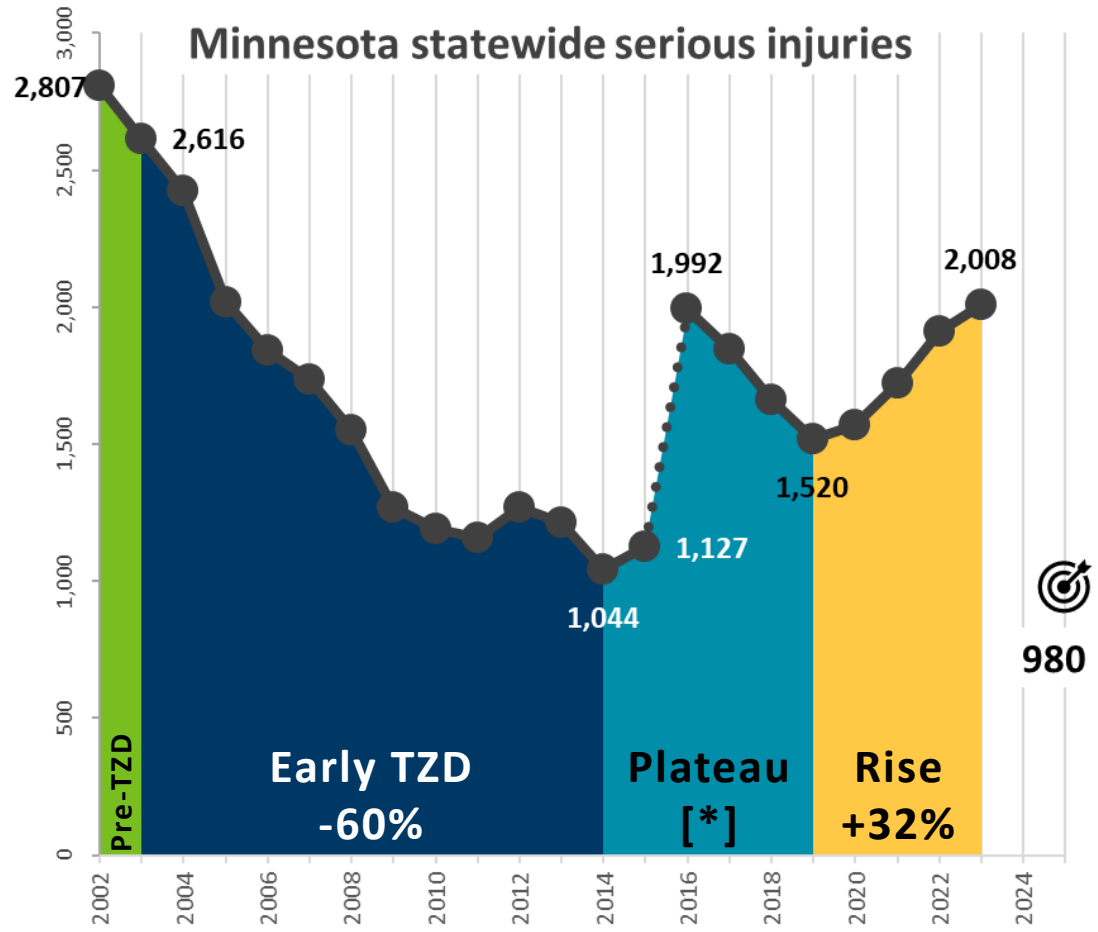
  Develop a roadway system that reduces the risk of life changing crashes by implementing a Safe System approach

- Fatal and serious injuries have plateaued and increased
- Safety performance measures – Minnesota has not been meeting these goals
- We have to do things differently – doing the same will not help Minnesota reduce fatal and serious injuries

Why a new approach?

preliminary as of 02/12/24





* Minnesota implemented a new crash reporting system in 2016 that increased the number of reported serious injuries

Not just numbers…

As of February 14th, 44 (preliminarily) people have died on Minnesota roadways, compared with 22 at the same time last year.

Here are just a few from the past couple of weeks:

- An 83-year-old female driver was killed when her car collided with a truck at a highway and county road intersection.
- A 16-year-old male driver slid off a county road, crossed the centerline into a ditch and hit a tree. He died five days later from injuries sustained in the crash.
- An 11-year-old male pedestrian was struck and killed by a bus while standing or walking in the travel lane of a county highway.
- A 22-year-old male and a 19-year-old female were killed in a crash where their vehicle left the roadway and crashed into multiple trees.

A New Direction

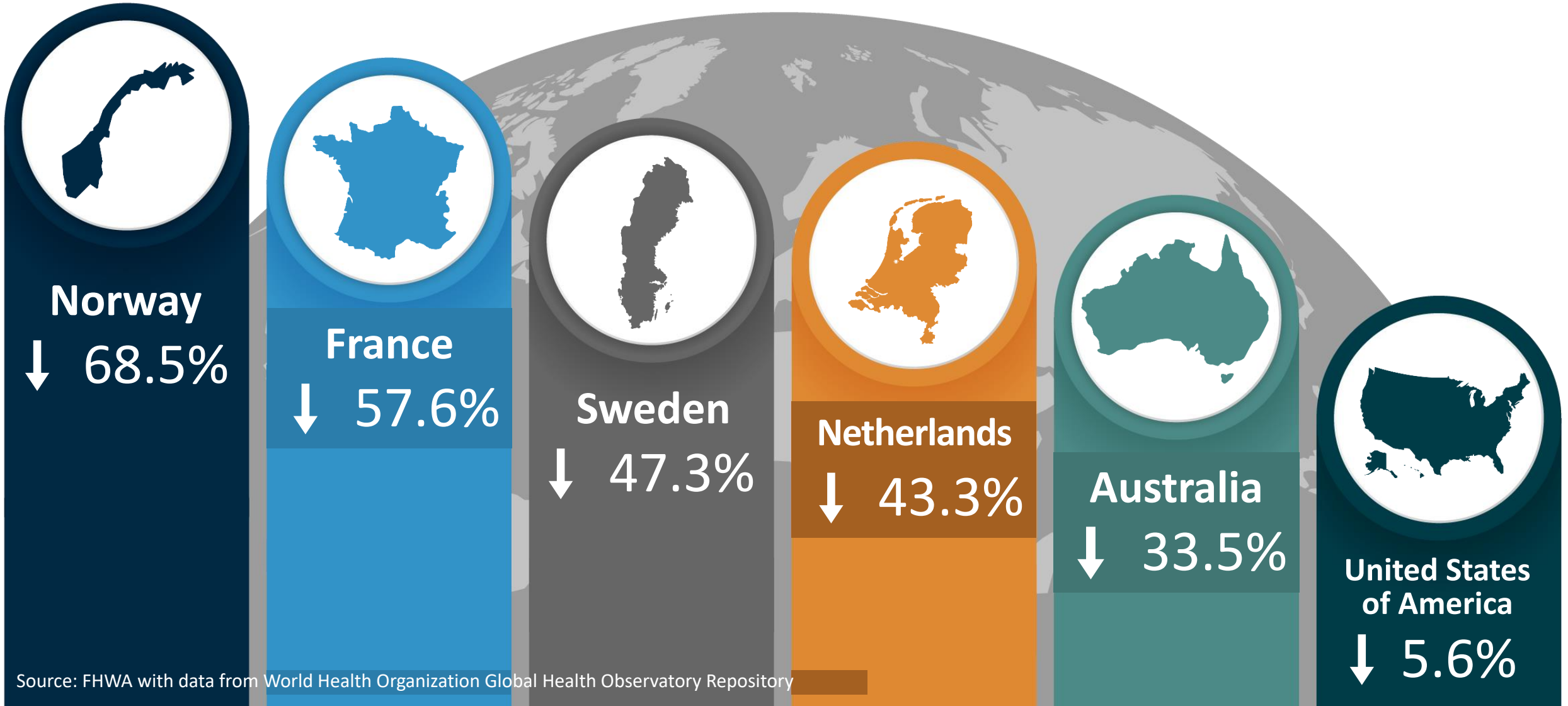
The Safe System approach aims to eliminate fatal and serious injuries for all road users by:

Accommodating human mistakes

Keeping impacts on the human body at tolerable levels

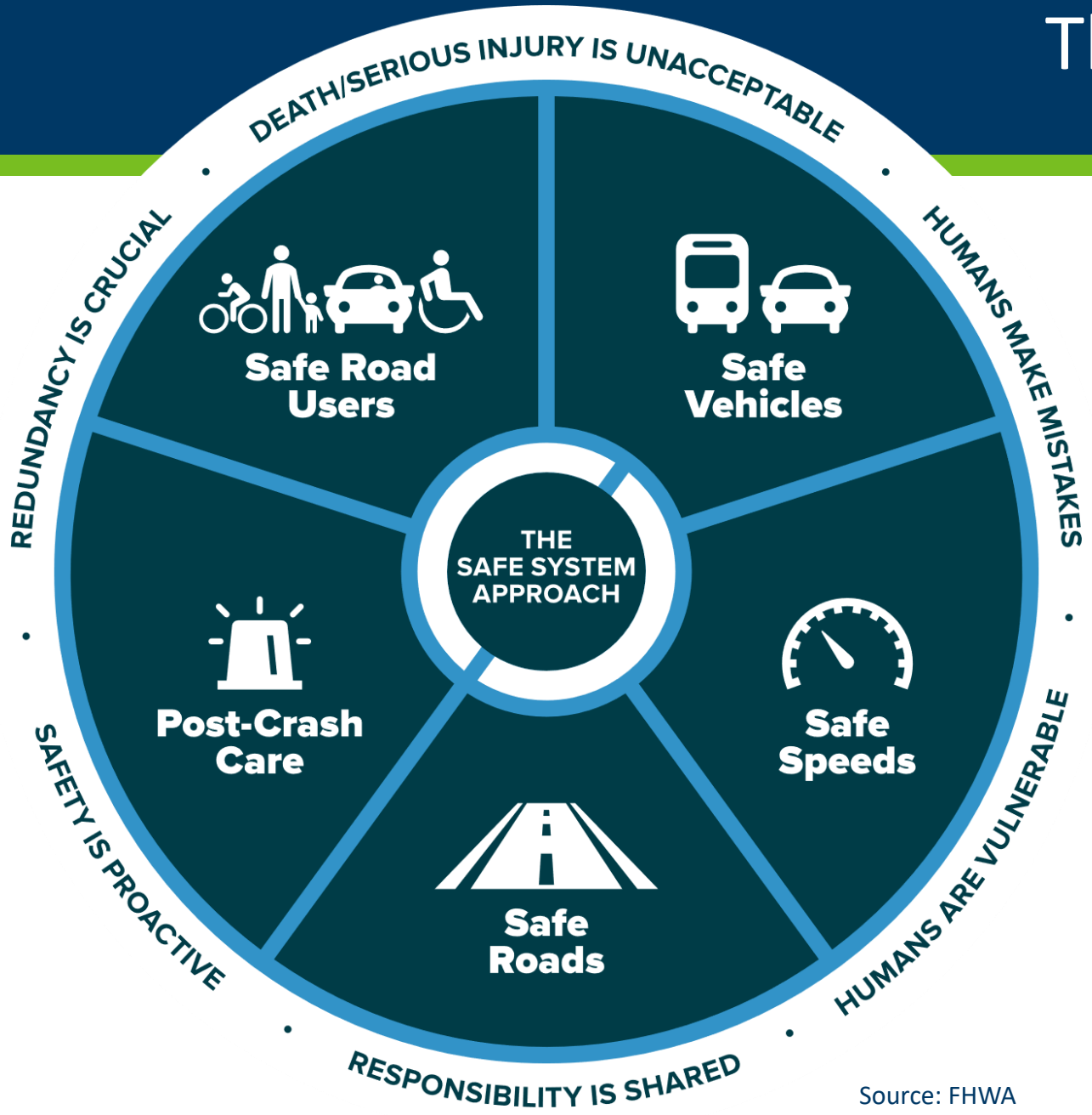
SUCCESSFUL SAFE SYSTEM ADOPTERS

Changes from 2000 to 2019.



Source: FHWA with data from World Health Organization Global Health Observatory Repository

The Safe System Approach



Source: FHWA

The 6 Safe System Principles

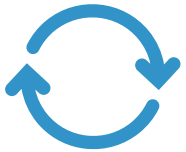
Death/serious injury is unacceptable

Humans make mistakes

Humans are vulnerable

Responsibility is shared

Safety is proactive

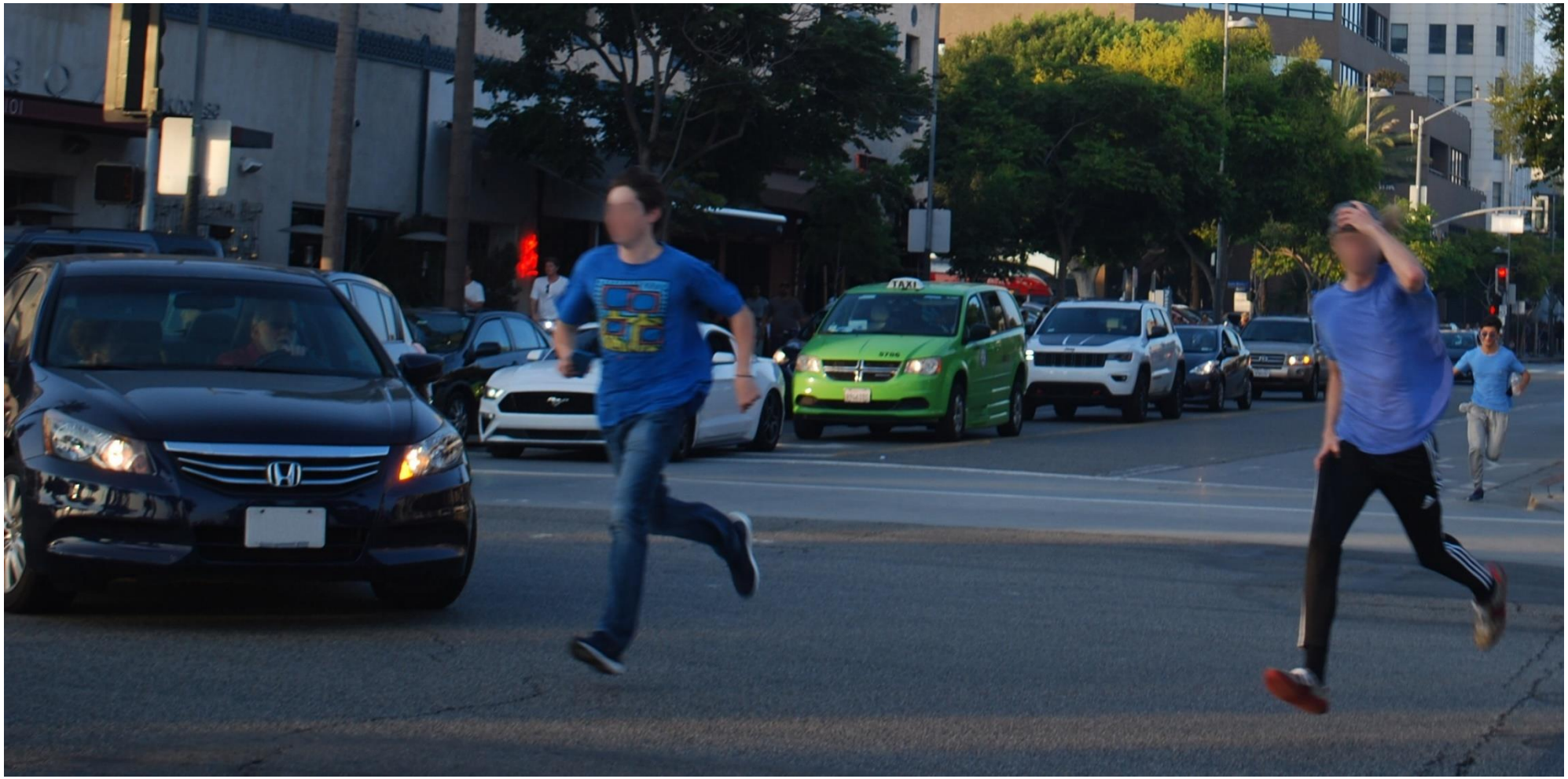


Redundancy is crucial

Death/Serious Injury is Unacceptable

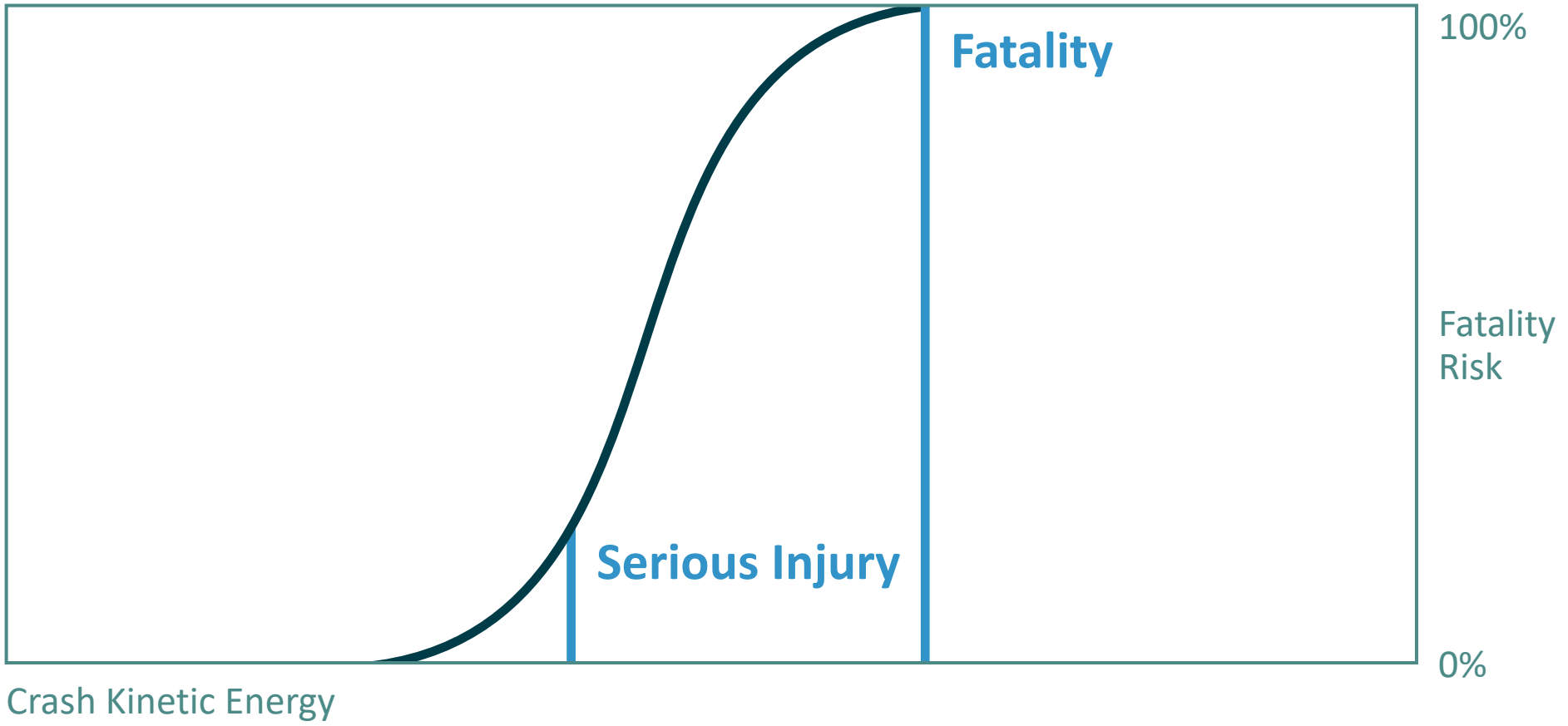
Source: Vision Zero Network

People Make Mistakes



Source: Fehr & Peers

Humans are Vulnerable



Source: FHWA

Responsibility is Shared

Road agencies - Engineering

Planners, designers, builders, operators, maintenance workers

Enforcement

Education

Emergency services

Vehicle manufacturers

Road users

Safety is Proactive

Identify risks

Mitigate risks

Redundancy is Crucial

Safe road users

Safe vehicles

Safe speeds

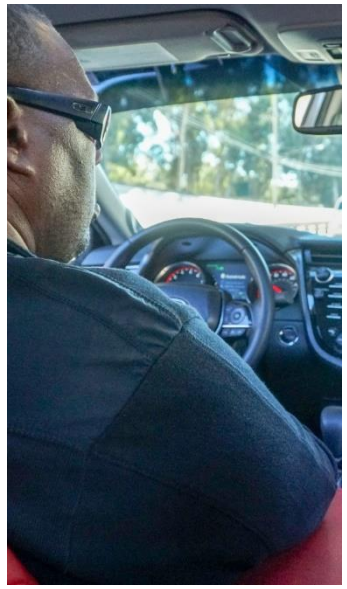
Safe roads

Post-crash care

Safe Road Users

Walk

Bike



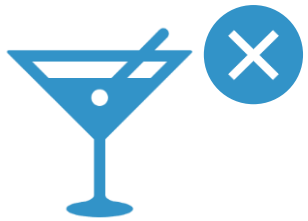
Drive

Transit

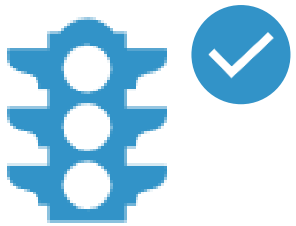
Other

Source for all images: Fehr & Peers

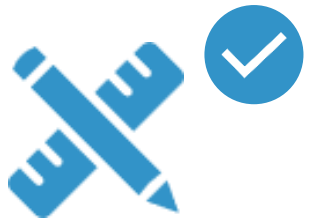
Safe Road Users (continued)



Not distracted or impaired

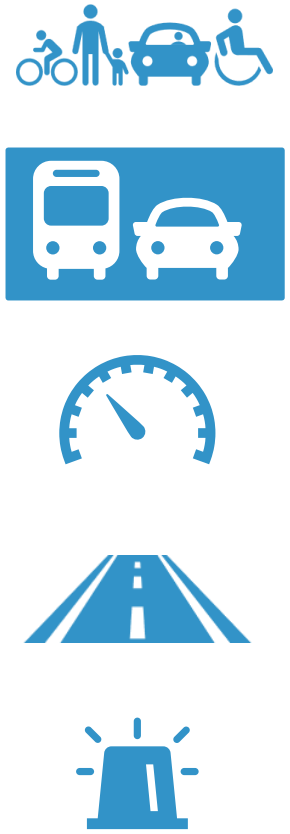


Follow rules



Act within the limits of the road design

Safe Vehicles



Active safety

Measures to reduce the chance of a crash occurring

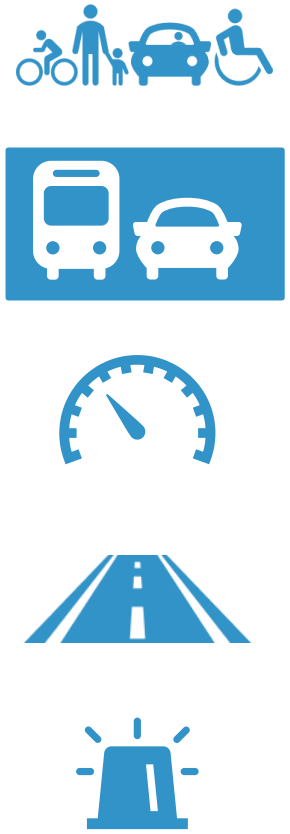
- Lane departure warning
- Autonomous emergency braking

Passive safety

Protective systems for when crashes do occur

- Seatbelts and airbags
- Crash-absorbing vehicle crumple zones

Safe Vehicles (continued)



Other road user safety

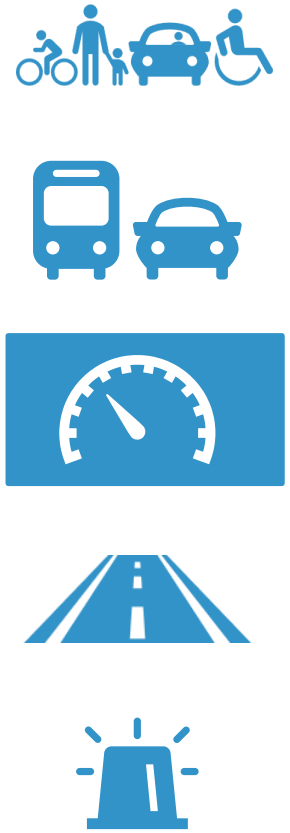
Measures that protect other road users

- Bicyclist and pedestrian detection
- Vehicle size and design

New technology

Leveraging connected and automated vehicle (CAV) technology to improve safety

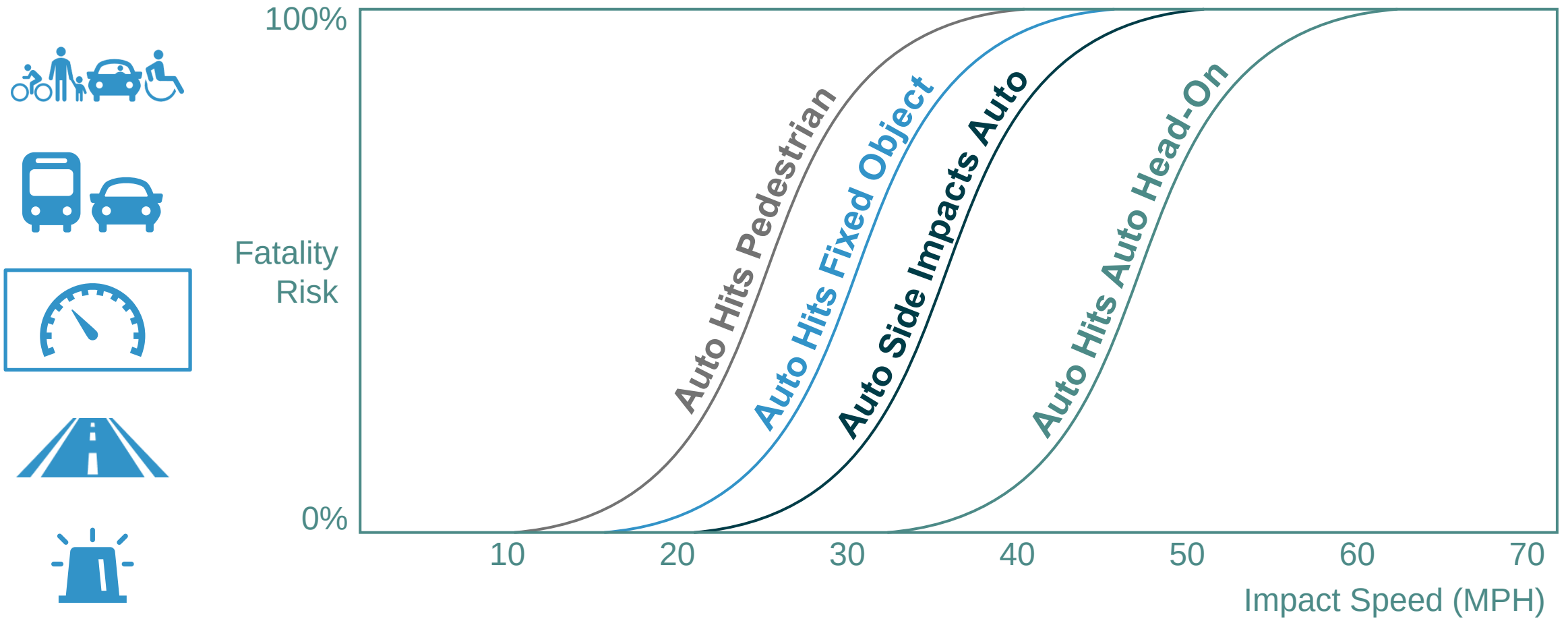
Safe Speeds



> “Speed is at the heart of a forgiving road transport system. It transcends all aspects of safety: without speed there can be no movement, but with speed comes kinetic energy and with kinetic energy and human error come crashes, injuries, and even deaths.”

Organization for Economic Co-operation and Development

Safe Speeds: Fatality Risks

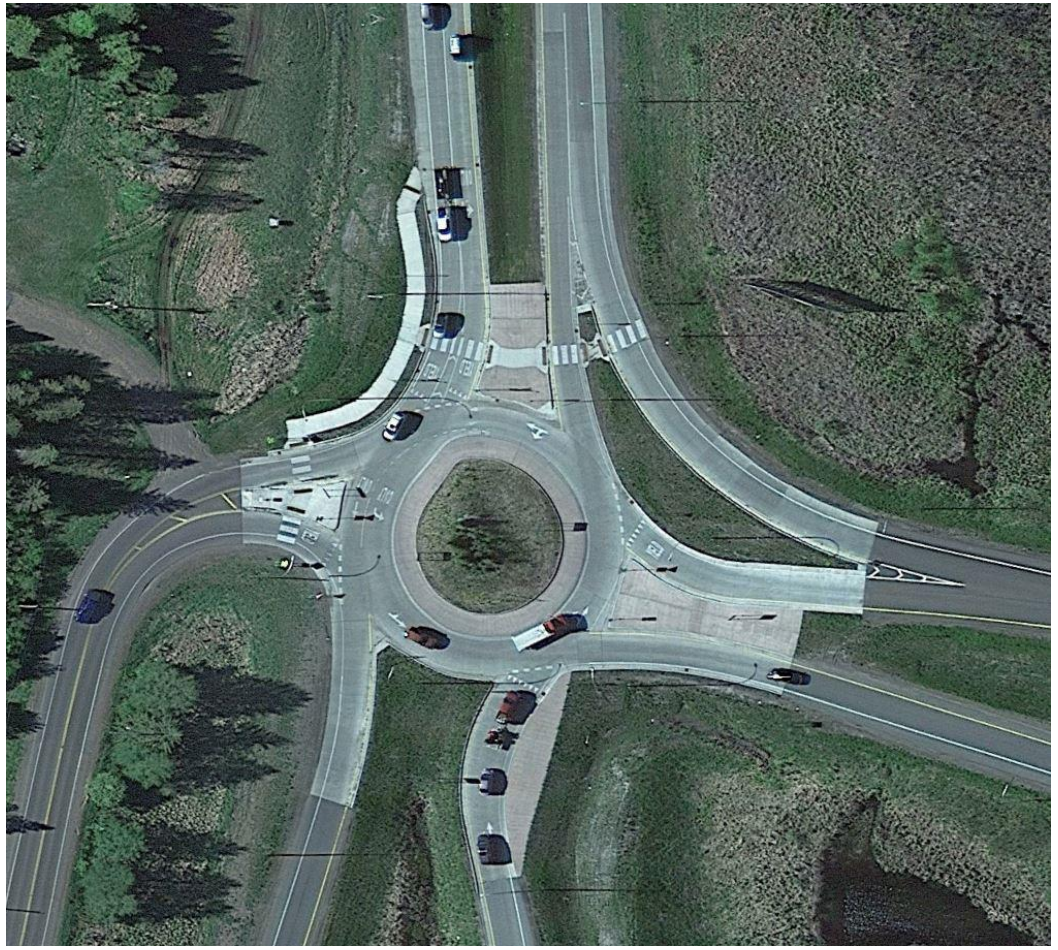


Source: FHWA. Adapted from graphic created by Australian Roads and Traffic Authority of New South Wales.

Safe Speeds: treatments that minimize injuries

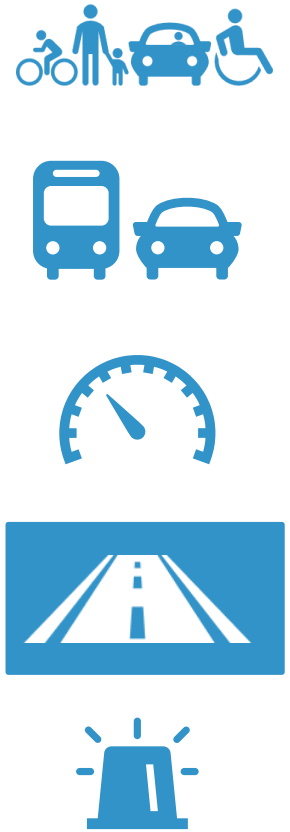
Speed through typical intersection

Speed through Safe System intersection



I-35 and Highway 33 in Cloquet

Safe Roads



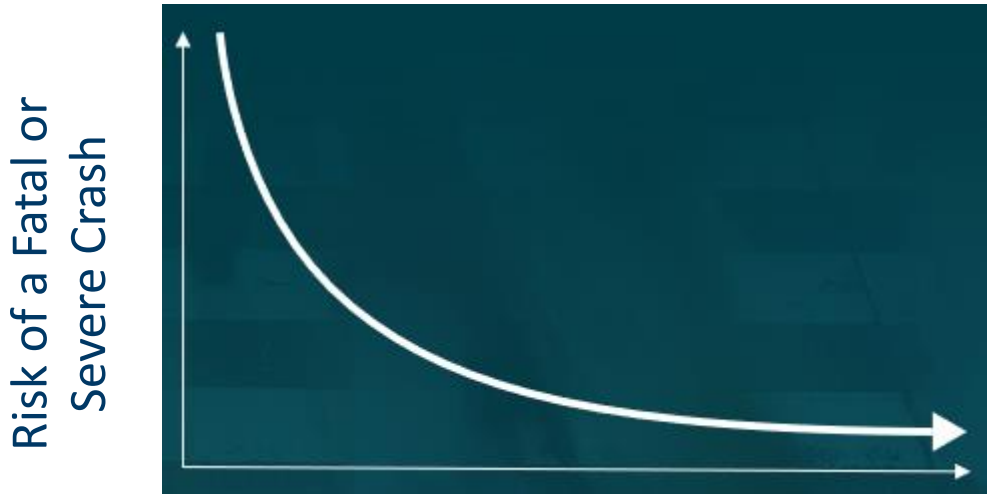
Safe roads are designed and operated to:

1. **Prevent crashes among all users**
2. **Keep impacts on the human body at tolerable levels**

Thoughts on the Safe Roads Element

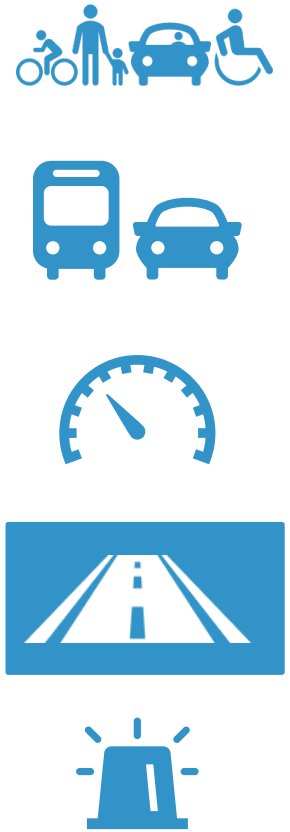
Think of “Safe Roads” as a continuum – not an absolute

- The aim is to design and operate roads to continuously approach toward creating a Safe System by implementing features appropriate for the intended and actual road use and speed environment
  - Reduce the likelihood of error
  - Reduce the consequences of error



Source: FHWA

Safe Roads: Avoiding Crashes



Avoiding crashes involves:

Separating users in space

Separating users in time

Increasing attentiveness and awareness

Source for all images: Fehr & Peers

Safe Roads: Crash Kinetic Energy

Managing crash kinetic energy involves:

Managing speed

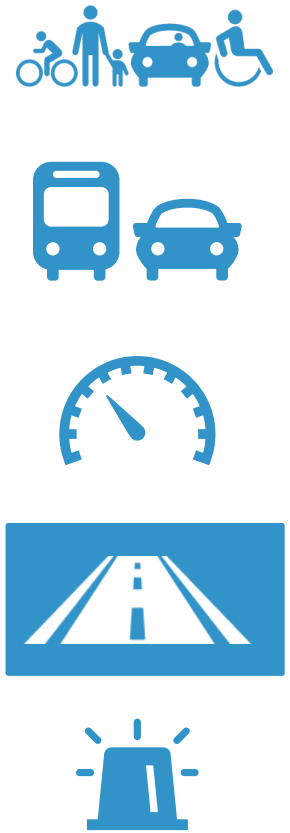
Managing crash angles

Managing crash energy distribution

Source: Fehr & Peers

Source: FHWA

Safe Roads: All Aspects of the Roadway System



Safe roads include all aspects of the roadway system:

Design

Construction

Maintenance

Operation

Source: FHWA

Safe Roads through complete streets

Highway 61, Grand Marais, MN

- Increase attentiveness and awareness of all modes

Safe Roads through complete streets

Highway 28, Glenwood, MN
Separate users in space

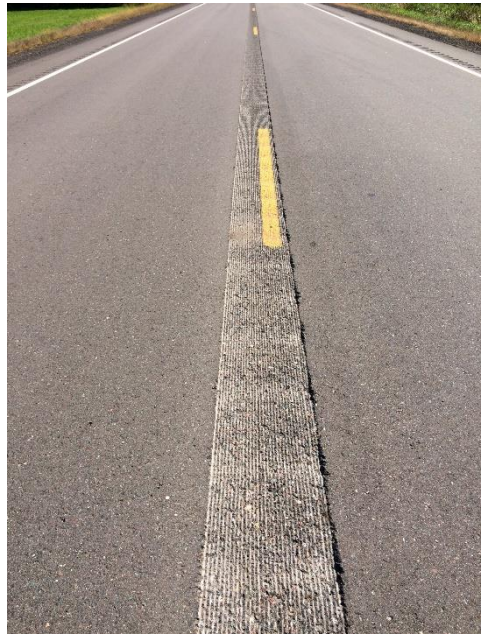
Safe Speeds and Safe Roads

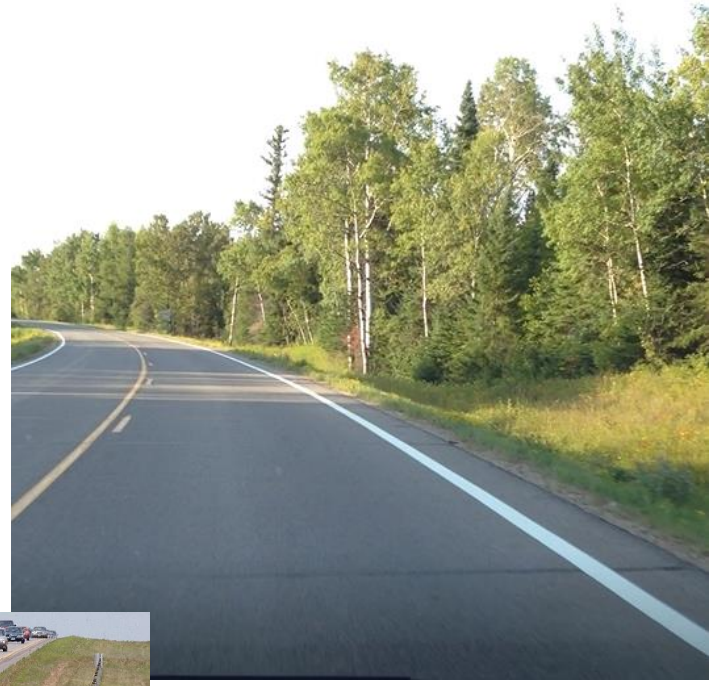
Highway 19, New Prague, MN

Safe Speeds and Safe Roads

East Cascade Avenue, River Falls, WI

Safe Road design elements





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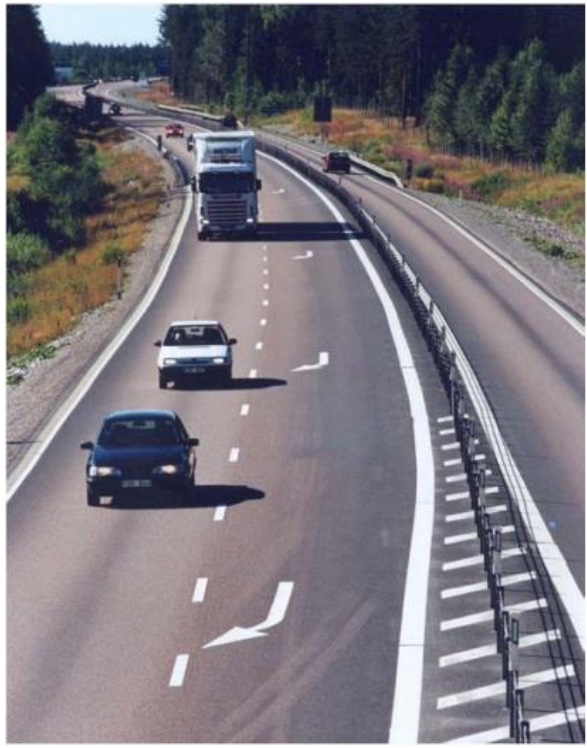
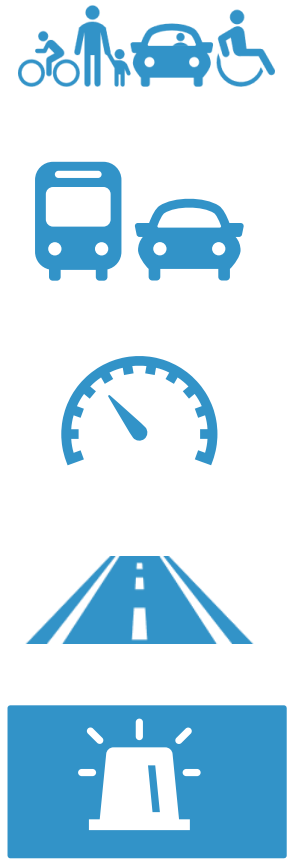


Post-Crash Care: Traffic Incident Management



First responders

Medical care

Crash investigation

Source: Ron Moore

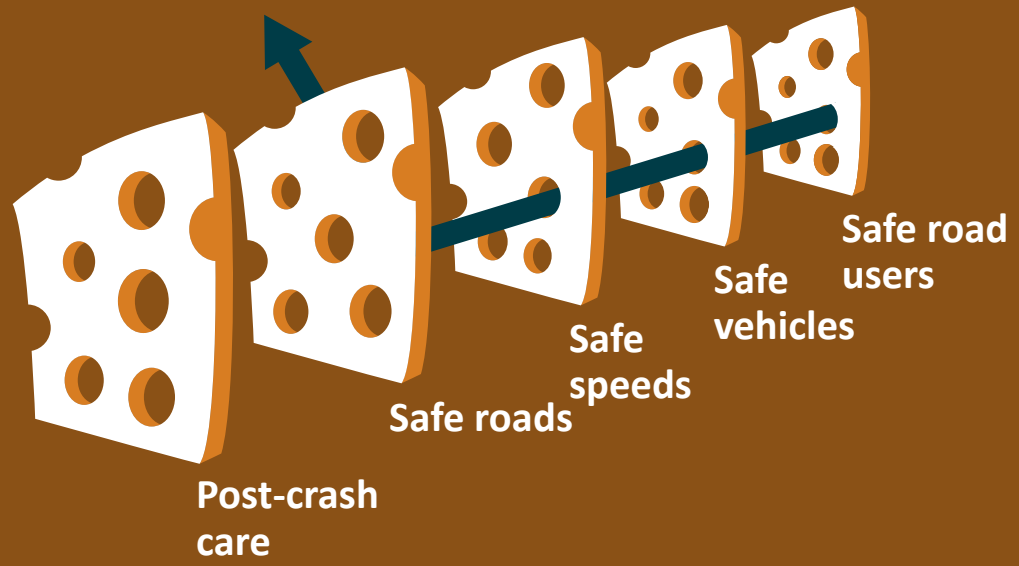
Post-Crash Care: Other Aspects

Post-crash care extends to actions after TIM returns a crash scene to normal conditions:

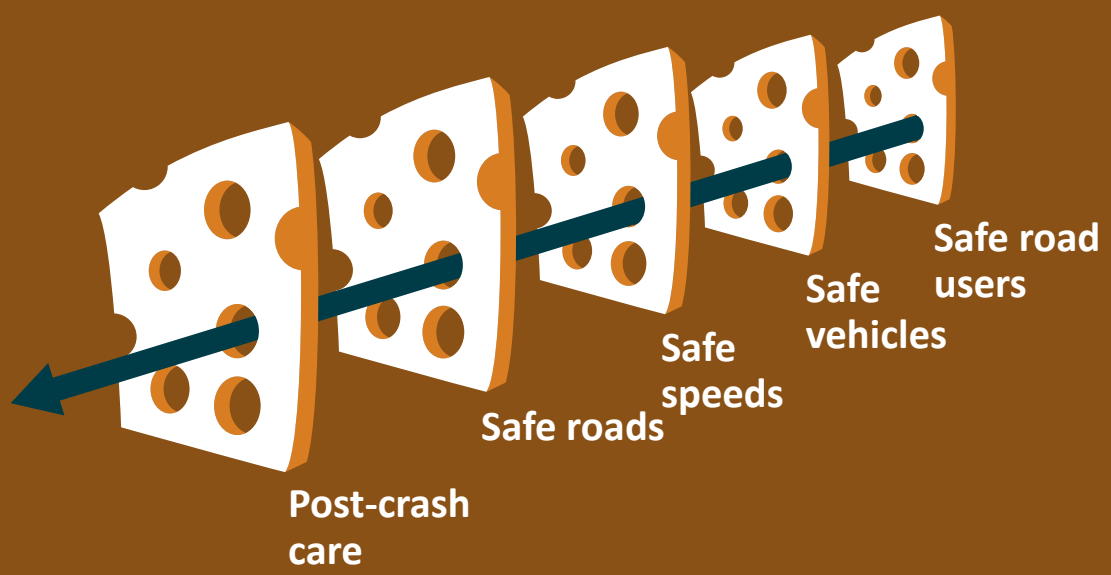
- Media
- Engineering
- Justice

The 5 Safe System Elements Create Redundancy

The "Swiss Cheese Model" of redundancy creates layers of protection



Death and serious injuries only happen when all layers fail



Source: FHWA

Things we have been doing…

- TZD Partnerships
- Federal Safety Funding – much of it going to locals (where the majority of life-changing crashes occur)
- District Safety Plans and County Road Safety Plans
- Rumbles
- Roundabouts
- J-turns
- Enhanced edgelines
- Road Safety Audits

Shared Responsibility

Implementing the Safe System approach is our shared responsibility, *and we all have a role*.

Source: Fehr & Peers

Source: Arlington County, VA

Source: Fehr & Peers

Source: Fehr & Peers

Zero is our goal.
The Safe System Approach is how we get there.

Discussion

Member Discussion

- Where are opportunities to better integrate Safe System into your work?
- What challenges exist when you think about the Safe System approach?
- How should the Council incorporate Safe System into their work/structure?

Working Group Updates

- Strategic Highway Safety Plan
  - *Derek Leuer, Minnesota Department of Transportation*
- Safe Road Zone and Rural High Risk Roadways
  - *Derek Leuer, Minnesota Department of Transportation*

Working Group Updates

- **Strategic Highway Safety Plan**
  - Currently 11 Members Volunteered
  - Paul Aasen, Luis Flores, Chris Hartzell, Kristine Hernandez, Pete Hosmer, Lisa Kons, Col. Matt Langer, Annette Larson, Judge Kerry Meyer, Cheryl Quinn, Michael Wojcik
  - Support: Whitney Mason, Michelle Pooler, Tim Burkhart, Major Joe Dwyer, Major Jeff Huettl, Mike Hanson

Working Group Updates

- **Strategic Highway Safety Plan**
- Met on February 9th
- Discussed the following:
  - What is the SHSP
  - Interaction between SHSP, ACTS, and ACTS Work Group
  - Potential Recommendations from ACTS Work Group to ACTS
  - Does the SHSP become the “playbook” for ACTS?
  - Can the ACTS Work Group eventually emphasize what SHSP Action Item we work on?

Working Group Updates

- Strategic Highway Safety Plan
  - *Derek Leuer, Minnesota Department of Transportation*
- **Safe Road Zone and Rural High Risk Roadways**
  - *Derek Leuer, Minnesota Department of Transportation*

Working Group Updates

Safe Road Zone and Rural High Risk Roadways

- Group has met three times (January 8, January 22, February 5th)
- Reviewed Legislation, Intent, Constraints, Goals
- Focused on setting “Program Purpose” and how to achieve that.
- Developed the Rural High Risk Roadways Program and Solicitation
  - $10M ready for safety projects on Minnesota Trunk Highways
  - Goal to “Reduce Speeds and Conflicts on Rural Highways”

Working Group Updates

Rural High Risk Roadways

- Known Constraints
  - Must be spent on the Trunk Highway Network
  - Must be “let” by June 30, 2026
  - Definition of Rural; State Aid: “area outside municipal boundaries of 5,000 or more”
  - Project types suggested: Roundabouts, J-turns, horizontal curve delineation, dynamic speed feedback signs in transition zones, curb extensions, median refuge islands, trails/sidewalks, bike lanes. (Not exclusive list)

Working Group Updates

Rural High Risk Roadways

- Solicitation is ready to go!
- (Likely) Open February 14 through March 29th
- Local Agencies and MnDOT can apply for funding
- Scoring rubric developed
- 5 volunteers have agreed to help score
  - Paul Aasen, Becky Putzke, Rahya Giesler, Clevan Duncan, and Cheryl Quinn

Working Group Updates

Safe Road Zones

- Solicitation is in development
- Local Agencies and MnDOT can apply for funding
- $1M for establishment of zone and $1M for added enforcement
- Can be used for studies, infrastructure, education, social media campaigns, etc
- Next meeting is February 26, 2024

Break

Traffic Safety Data Requests

- Multi-Agency Data Response Team
  - *Catherine Diamond, Minnesota Department of Health*
- Summary of Responses from Council Members and Next Steps
  - *Catherine Diamond, Minnesota Department of Health*

Multi-Agency Data Response Team Members

- Brian Harmon, *Office of Traffic Safety, Minnesota Department of Public Safety*
- Derek Leuer, *Office of Traffic Engineering, Minnesota Department of Transportation*
- Angela Seley, *Office of Traffic Safety, Minnesota Department of Public Safety*
- Erik Zabel, *Injury and Violence Prevention, Minnesota Department of Health*

Initial Questions

- What data would be helpful for you and for this committee?
- How do we best use data to prioritize our efforts to most effectively reduce the greatest number of life changing crashes?
- How would you like to use the Data Analytics Center provided for in the 2023 Legislative Session?

Summary of Responses

- The data response team reviewed all responses to the data request survey, and evaluated each of them on two dimensions:
  - **Data Availability**
    - How easy is it to get access to the data needed to answer the questions?
  - **Project Complexity**
    - How close are the questions to work we are already doing at the state?
- Following are the categories we developed for each dimension…

Summary of Responses

- **Data Availability**
  - **Easy**: Already have data in formats we are accustomed to analyzing
  - **Moderate**: Data available in some form, but has yet to be obtained or put into analyzable format. This includes instances of existing databases maintained by different agencies that have never been or are not routinely combined. The new Data Analytics Center may assist with some of these combinations.
  - **Hard**: Data either not currently available, or would require substantial resources to collect or obtain. Includes commercial data sets and instances where manual review of information might be required to collect data.

Summary of Responses

- **Project Complexity**
  - **Simple**: Involves questions we're already asking or situations we're already monitoring.
  - **Moderate**: Involves questions we may not have fully addressed before (or only touched on briefly), but have given some thought or are not too far away from current efforts. Would require some time to complete, but could probably fit into existing staffing and budgetary constraints.
  - **Difficult**: Involves questions well outside current work processes, and would require new research efforts and additional resources to address adequately.

Summary of Responses

Data Availability

Project Complexity	Easy	Moderate	Hard
Simple	Vulnerable Road User Crash Seasonality Historical Data for VRUs Urban Travel Speed vs. Design Speed Risk Factor ID	Drug Prevalence & Concentration School Zone Crashes Citation Data Analyses Work Zone Speed Analysis	"Suspected" Distracted Driving Racial Data on Non-Fatal Crashes
Moderate	In-Depth Contributing Factors Analyses Risk Factors by Age, Gender, VMT Intersection Info on K/A Crashes Pedestrian Death Analysis	Crashes by Uneducated Drivers Vehicle Weight in Crashes Variations in Road Engineering Near Schools Effects of Intersection Design DL Records & Crash Records Comparison	Cell Phone Location/Speed Near-Miss Tracking Private Industry Safety Comparisons
Difficult		Design Speed Effect on Investment Design Speed Effect on Public Health Health data on substance use and crashes	Non-Insured Motorists Misuse of Auto Assist Systems International Comparison of Traffic Death Rates Effects of Automobile Dependency

Summary of Responses

Project Complexity Simple/Data Availability Easy

- Data likely on hand
- May require a little effort to repackage to specifically address ACTS questions
- Estimated turnaround time for each request: 2-4 weeks

Summary of Responses

Examples of **Project Complexity Simple/Data Availability Easy** Requests:

- Vulnerable Road User (VRU) Crash Seasonality
- Historical Crash Count Data for VRUs
- Urban Travel Speed vs. Design Speed
- Basic Risk Factor Identification
- Most crash, fatality & serious injury counts by broad demographic or dimensional characteristics will fit here. Examining relationships between those characteristics may take longer.

Summary of Responses

One Category Moderate/Other Simple or Easy

- At least some data on hand
- Likely to require some analysis that has not been done yet (at least comprehensively)
- If Data Availability is Moderate, data used may not directly address every question, but should provide at least some rough direction
- Estimated turnaround time for each project area: 2-6 months

Summary of Responses

Examples of **One Category Moderate/Other Simple or Easy** Requests:

- Drug Prevalence & Concentration
- School Zone Crashes
- Citation Data Analyses
- Work Zone Speed Analysis
- In-Depth Contributing Factors Analyses
- Risk Factors by Age, Gender, VMT

Summary of Responses

More Examples of **One Category Moderate/Other Simple or Easy** Requests:

- Intersection Information on Fatal & Serious Injury Crashes
- In-Depth Analysis of Pedestrian Deaths (testing hypotheses of Star Tribune article)
- We already do a number of analyses like these, so there may be similar topics where we already have information on hand that can be adapted

Summary of Responses

Project Complexity Moderate/Data Availability Moderate

- Likely at least six months to a year away from having relevant data
- Data Analytics Center likely to be able make data available as part of their efforts
- Once data are available, project complexity remains moderate
- Estimated turnaround time for each project area: 4-6 months after data become available

Summary of Responses

Examples of **Project Complexity & Data Availability Moderate** Requests:

- Crashes Involving Drivers without Driver Education
- Impact of Vehicle Weight or Bumper Height on Crashes
- Variations in Road Engineering Near Schools
- Effects of Intersection Design
- Comparison of Driver’s License Records & Crash Records

Summary of Responses

Either Category Difficult or Hard

- Likely requires additional resources to obtain or collect data
- Would benefit from greater clarification of problem definition
- ACTS to provide guidance on prioritization
- May benefit from RFP process to gain needed resources
- Any results likely at least 18-24 months away from successful mobilization of needed resources

Summary of Responses

Examples of **Either Category Difficult or Hard** Requests:

- Analysis of Cell Phone Location/Speed Data
- Near-Miss Tracking
- Private Industry Safety Comparisons
- Design Speed Effect on Investment or Public Health
- Health Data on Substance Use and Crashes

Summary of Responses

More Examples of **Either Category Difficult or Hard** Requests:

- Effects of Non-Insured Motorists
- Misuse of Auto Assist Systems
- International Comparison of Traffic Death Rates
- General Effects of Automobile Dependency
- “Suspected” Distracted Driving (mainly a data collection problem)
- Racial Data on Non-Fatal Crashes (data collection problem)

Summary of Responses

A Couple of Tips/Caveats:

- While there are notable exceptions, our experience shows that countermeasure development tends to be best served by analysis of more serious crashes (fatalities and serious injuries). All-crash analyses, while interesting, tend not to be as useful.
- While basic count requests may include closer to real-time data, more detailed analyses are likely to end at the most recent year for which full-year data are available.

Member Discussion

- Is this a useful framework to help understand the nature of data requests and the likely responses to them? Are there ways we can make it better?

- How can we help you prioritize the data you feel we most need to pursue?

- We'd like to propose that a short "data dive" be added to the agenda of each upcoming Council meeting so we can bring you up to speed on the topics about which we are most data literate. Which such topics seem most important to you?

Near-Term Projects and Ideas

- What's the one thing that you wish we'd do (or be doing) right now to improve traffic safety?

- If we are serious about _____, then we will _____.

Public Comment

Public comment is limited. The number of commenters and length of time permitted is at the discretion of the chair, and is subject to change.

Thank You

DEPARTMENT OF TRANSPORTATION

DEPARTMENT OF PUBLIC SAFETY STATE OF MINNESOTA

DEPARTMENT OF HEALTH