



FEHR & PEERS

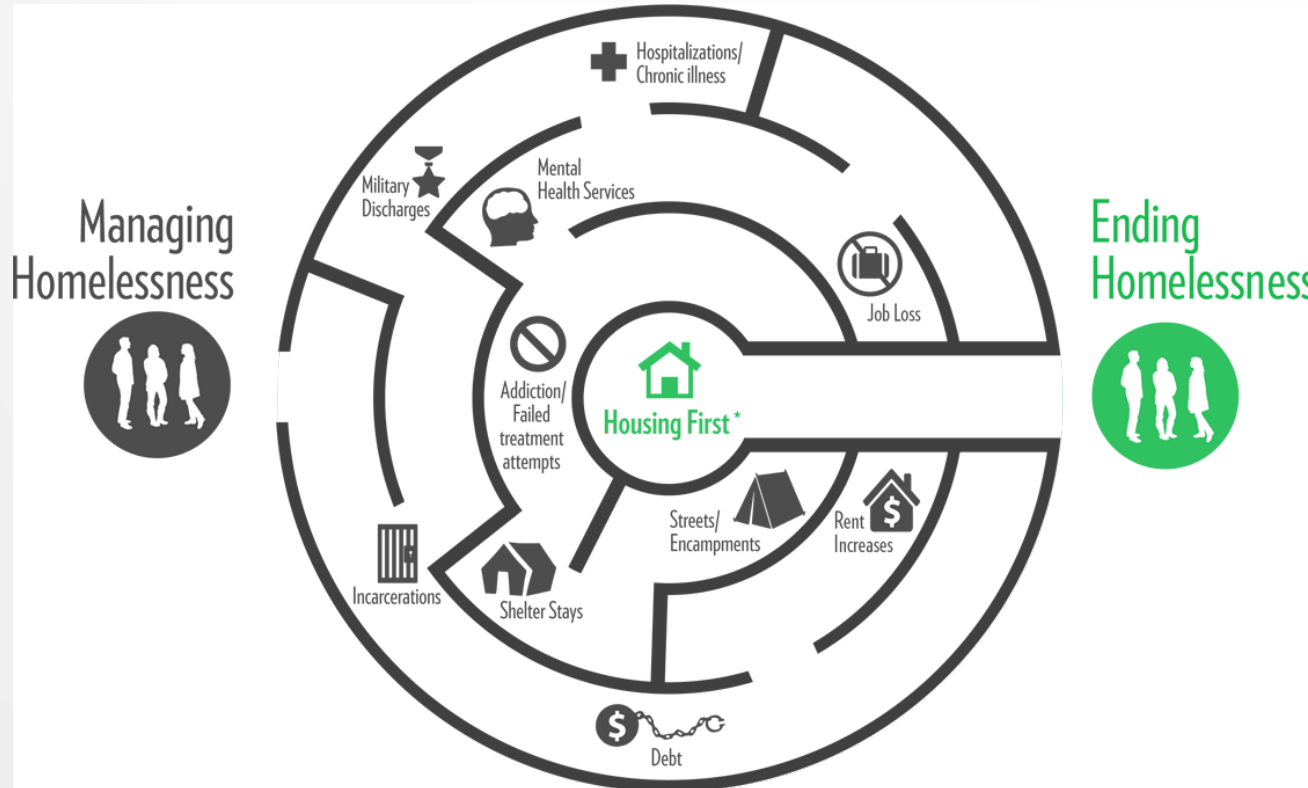
Nicole Waldheim, Principal

TPB Roadway Safety Summit

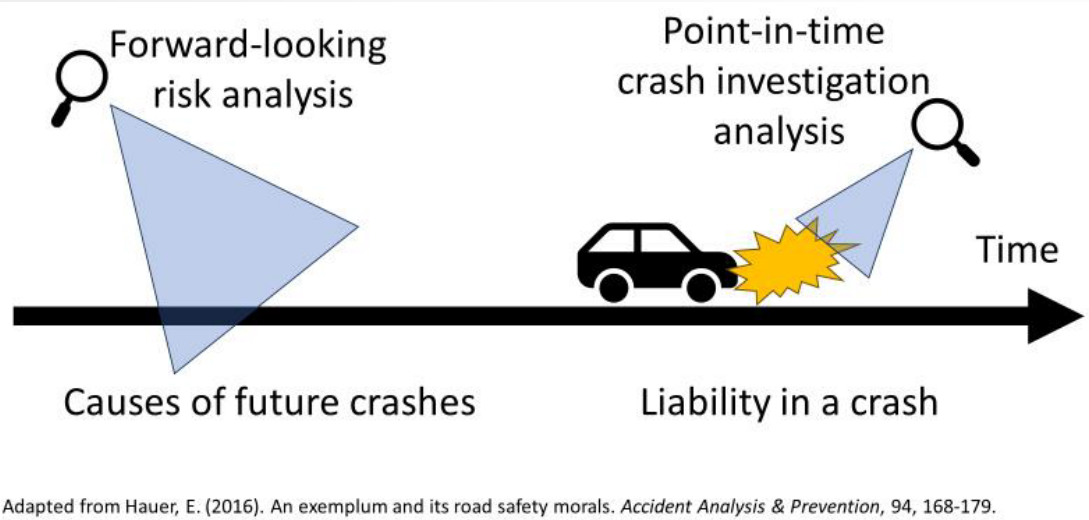
System Level Crash Considerations

October 31, 2024

Systems Thinking



Safe System Thinking



Flipping the 'E' to a 'W'

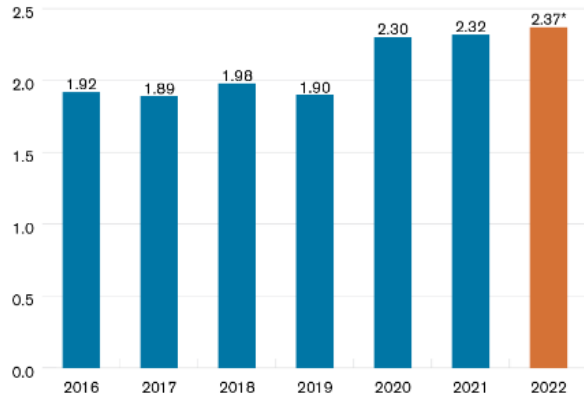
- Introduction to the 'Ws' of Safety
 - Who, Where, Why, When, What, Which
- Extending the Collision Timeline to Understand Root Causes

National System Level Trends – Vulnerable Road Users

Pedestrian Fatality Rate Increased Yet Again in 2022

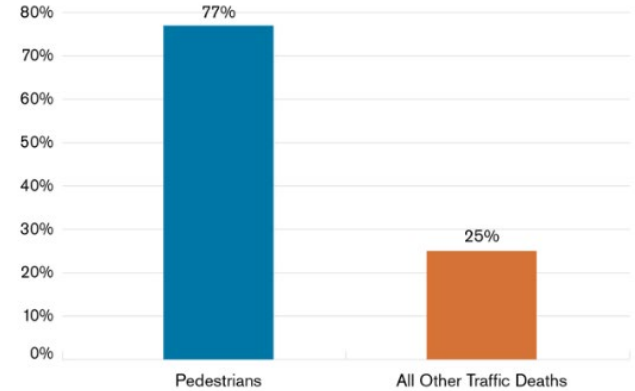
U.S. Pedestrian Fatality Rate per One Billion VMT

* Projected



Pedestrian Deaths Are Increasing Faster Than All Other Traffic Fatalities

Percent Increase in Number of Traffic Deaths, 2010-2021



National System Level Trends - Speed

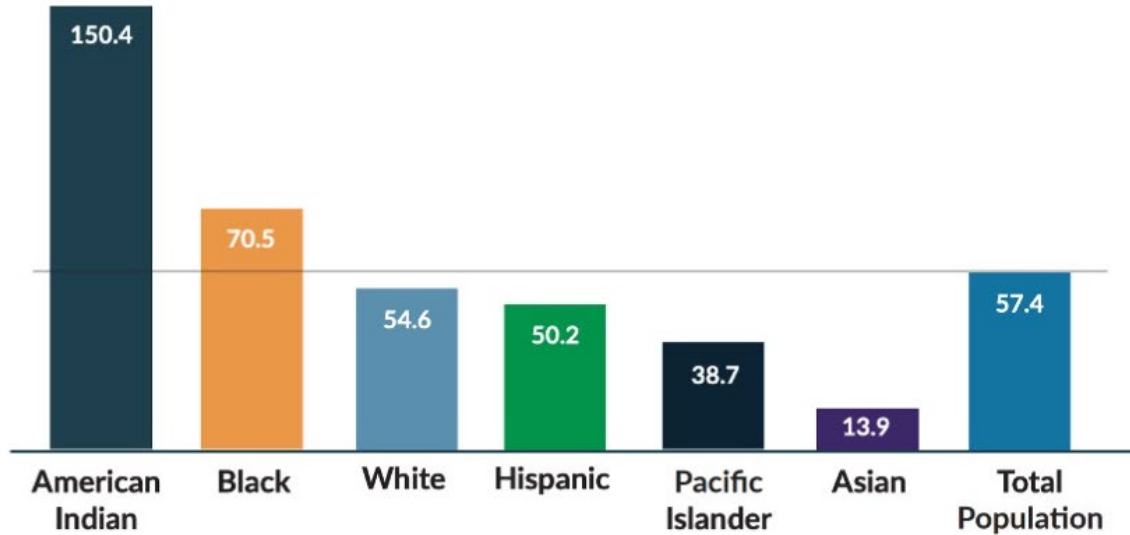
The Core Problem: Kinetic Energy Risk

- Exposure
- Likelihood
- Severity



National System Level Trends - Equity

Total U.S. Traffic Deaths per 100,000, 2016-2020



National Safety Level Trends - Livability

Movement in Place



Source: Transport for New South Wales (2016).

Complete Streets

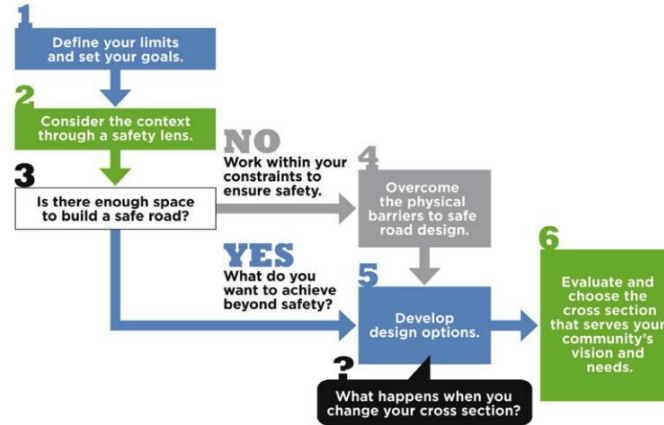
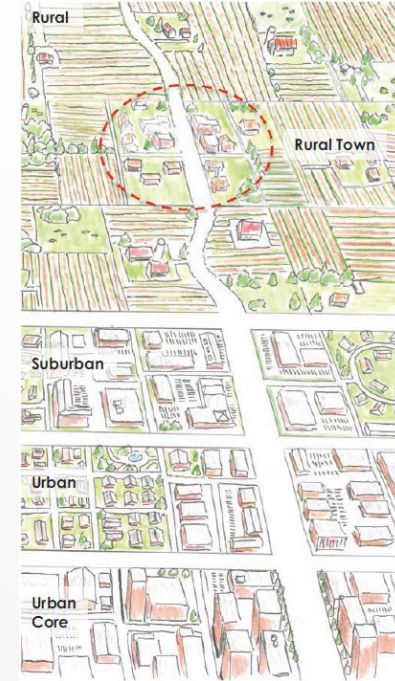


Figure S-1. Decision-Making Framework for Roadway Cross Sections.

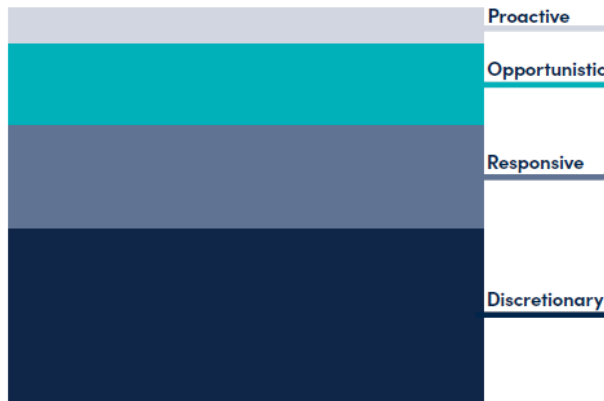
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Context Classification

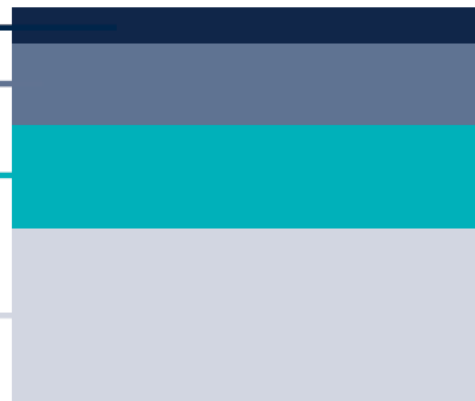


National System Level Trends - Funding

Existing Spending



Future Spending



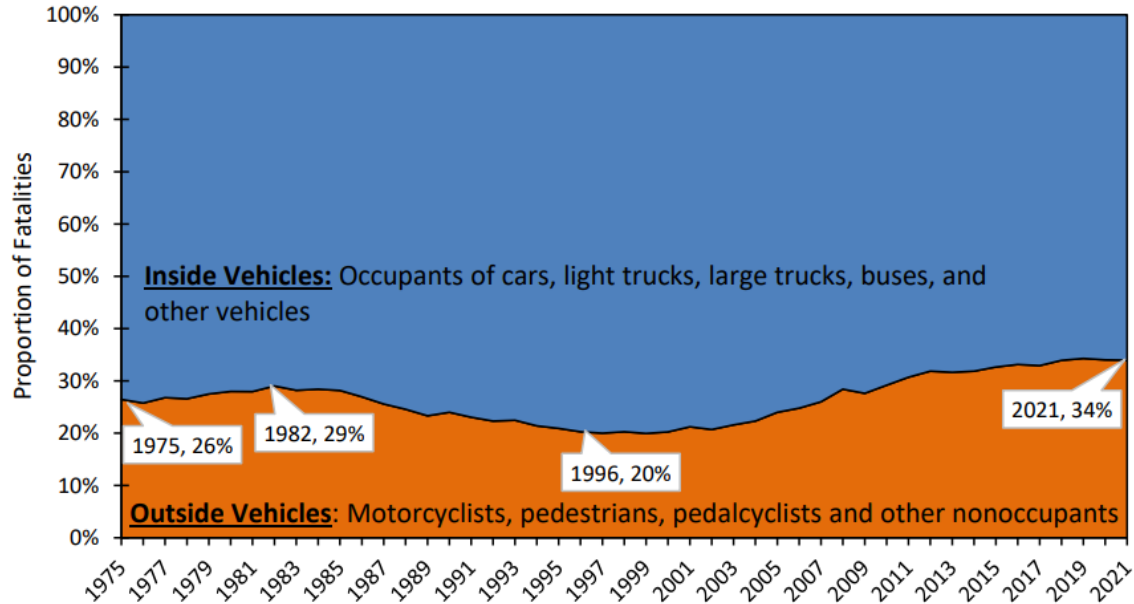
PROACTIVE FUNDING
SOURCES INCLUDE SAFE STREETS FOR ALL GRANTS, SAFE ROUTES TO SCHOOL GRANTS, HIGHWAY SAFETY IMPROVEMENT PLAN (SYSTEMIC FOCUSED), AND CAPITAL SPENDING PLAN (CSP).

OPPORTUNISTIC FUNDING
SOURCES INCLUDE REPAVING, AGENCY COLLABORATION AND COST SHARING, DEVELOPER CONTRIBUTIONS, AND OTHER CAPITAL PROJECTS (E.G., MAINTENANCE)

RESPONSIVE FUNDING
SOURCES INCLUDE HIGHWAY SAFETY IMPROVEMENT PLAN GRANTS (HOT SPOT FOCUS), AND VISION ZERO HIGH INJURY NETWORK PROJECT FUNDS.

DISCRETIONARY FUNDING
SOURCES INCLUDE ANNUAL CAPITAL PLAN SURPLUS BUDGET (AS APPLICABLE) AND OTHER ANNUAL/ ONGOING FUNDING SOURCES

National System Level Trends - Vehicles

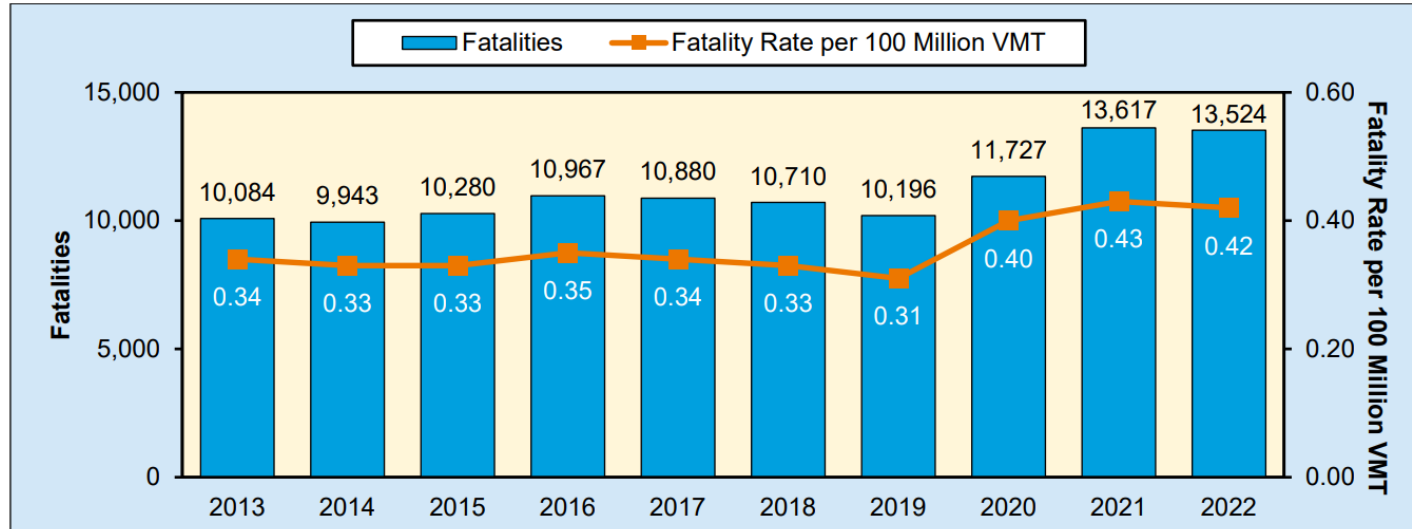


Source: FARS 1975-2020 Final File, 2021 ARF

Figure 5. Proportion of Traffic Fatalities Inside/Outside Vehicles, 1975-2021

National System Level Trends - Impairment

Figure 1. Traffic Fatalities and Fatality Rate per 100 Million VMT in Alcohol-Impaired-Driving Crashes, 2013–2022



Sources: FARS 2013–2021 Final File, 2022 Annual Report File (ARF); VMT – Federal Highway Administration (FHWA)

Notes: NHTSA estimates BACs when alcohol test results are unknown. The number of alcohol-impaired-driving fatalities in 2020 changed from 11,718 to 11,727 due to vehicle type classification revisions.