Background

- The Crash Investigation Sampling System (CISS) began data collection in 2016
  - NASS-CDS replacement (1979-2015)

- From 2018-2023, CISS included 32 nationally-representative sites (PSUs) across the country

- CISS was a sample of police-reported motor vehicle crashes where at least one passenger vehicle is towed from the crash scene 2016-2023
  - Beginning 2024, changes to scope and more sites
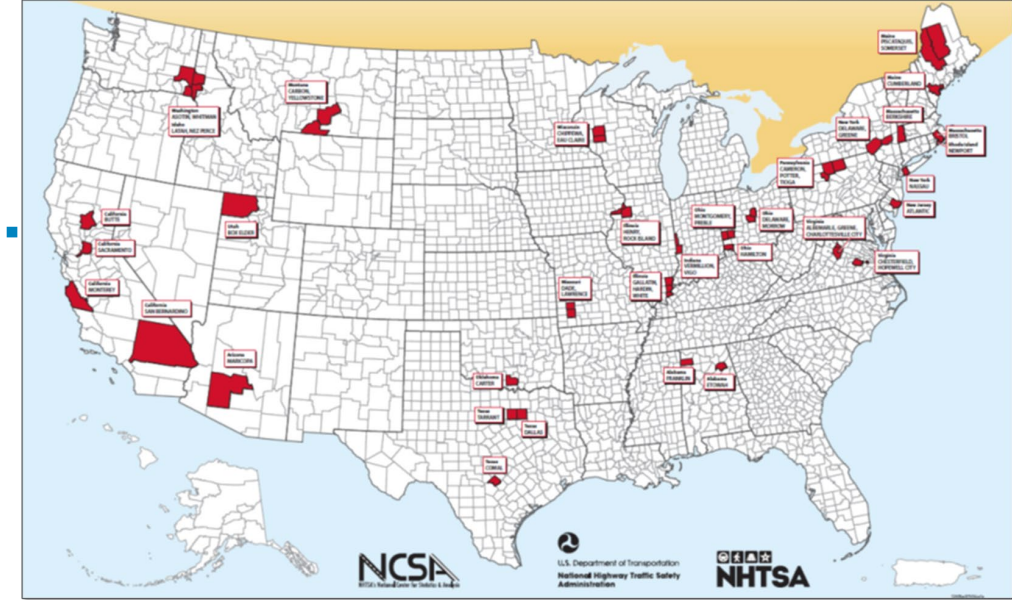
Background

- CISS is an investigation-based program where data is collected from:
  - Vehicle inspections (crush, occupant contacts, EDR if applicable, etc.)
  - Scene inspections (including scaled diagrams)
  - Occupants (including medical records)

- Since 2016 CISS has published 21,615 cases

- NHTSA has over 31,000 EDR files from crashes

2023 CISS Data Released in December

- In 2023 CISS, 3,997 police-reported crashes were investigated where at least one passenger vehicle was towed from the scene
  - This represents an estimated 2.55M police-reported crashes

- In the 3,997 crashes, 7,037 towed vehicles were involved

- The towed vehicles involved 7,833 occupants

What's in the CISS Data

- CrashViewer
  - Coded data, images, CDR reports
  - https://crashviewer.nhtsa.dot.gov/

- CISS data files (FTP site)
  - SAS and CSV files
  - https://www.nhtsa.gov/file-downloads?p=nhtsa/downloads/CISS/

- NHTSA Crash Stats
  - https://crashstats.nhtsa.dot.gov/
- NHTSA Field Crash Investigation Coding and Editing Manual
- CISS Analytical User's Manual
- Overview of Crash Investigation Sampling System
  - Summary of crash, vehicle, and occupant estimates
- Virtual CISS Databook
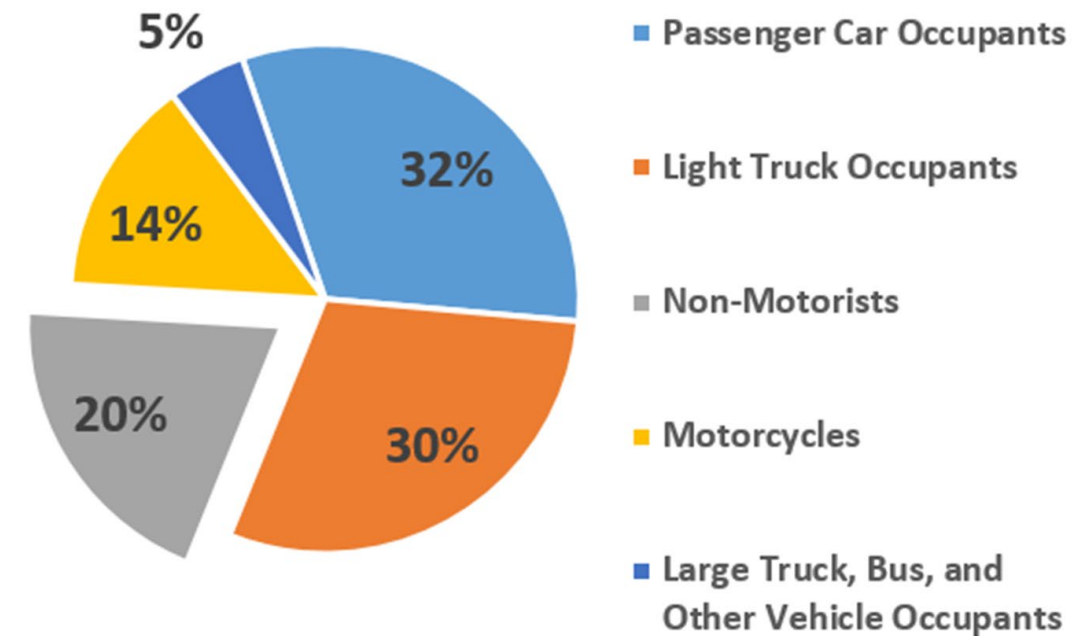 - Weighted and unweighted frequencies of all data elements in CISS

What's in the CISS Data

- 2017-2023
  - Involved a towed light passenger vehicle

- 2024 (40 sites)
  - Involved towed light passenger vehicle, or
  - Nonmotorist received a police-reported K, A, or B injury severity

- 2025 (49 sites)
  - Involved towed light passenger vehicle, or
  - Nonmotorist received a police-reported K, A, or B injury severity, or
  - Motorcycle occupant received police-reported K, A, or B injury severity
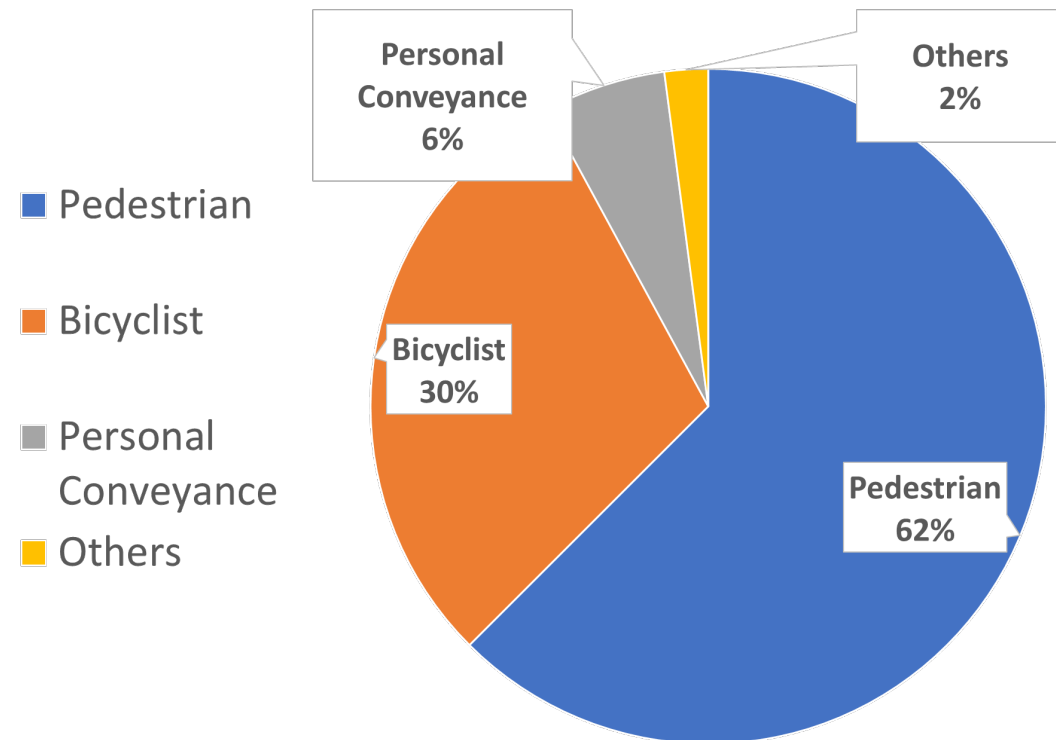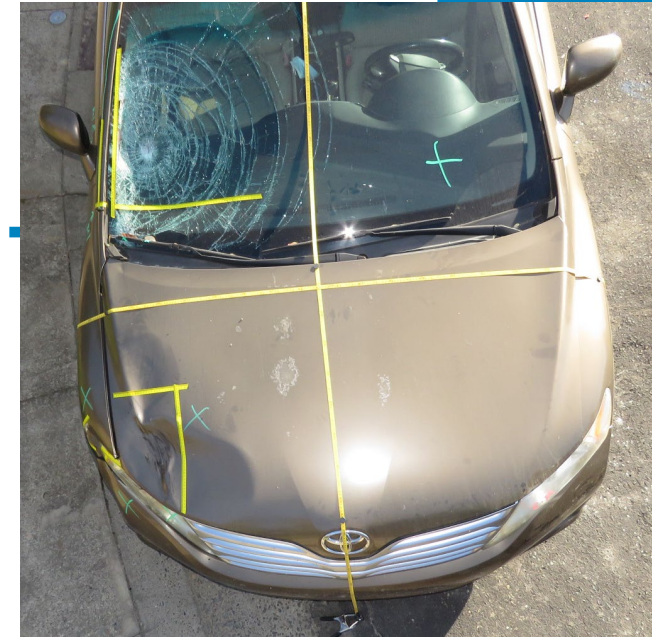
CISS Expansion

- New Funding
  - Funded the expansion of CISS to capture all crash types

- In addition to CISS expansion, MUST maintain current operations at existing sites while also focusing on:

  1) Adding sites
  2) Expanding scope that includes all crash types; and
  3) On-scene investigation protocols

Traffic Fatalities
Source: 2021 FARS

- 5%
- 32%
- 14%
- 20%
- 30%

- Passenger Car Occupants
- Light Truck Occupants
- Non-Motorists
- Motorcycles
- Large Truck, Bus, and Other Vehicle Occupants

CISS Nonmotorist Data Collection

- Nonmotorist target allocation 7% of total cases
  - Approximately 375 nonmotorist cases in 2024

- Collecting data to support:
  - Crashworthiness
  - Crash Avoidance
  - Infrastructure
  - Human behavior

- Pedestrian
- Bicyclist
- Personal Conveyance
- Others

Personal Conveyance 6%

Others 2%

Bicyclist 30%

Pedestrian 62%

CISS Nonmotorist Data Collection

- Building on previous NHTSA pedestrian work

- CIREN Pedestrian Pilot

- Vulnerable Road User In-depth Crash Investigation Study (VICIS)
  - 93 cases collected at 4 CISS sites
  - CIREN Injury and Engineering Centers
    - Wake Forest University, Medical College of Wisconsin
    - Code injuries
    - Perform injury causation analysis
    - Determine kinematic trajectories
    - Review crash avoidance calculations

Figure 3
Percentage of Total Fatalities Who Were Pedestrians, by State, 2020
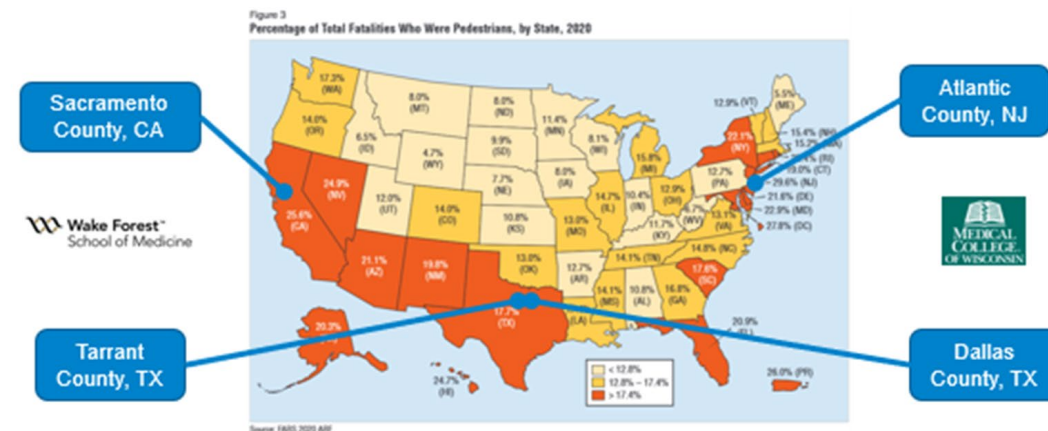
CISS Nonmotorist Data Collection

- Crashworthiness
  - Contacts, kinematic trajectory, vehicle-nonmotorist interaction, injuries
- Crash Avoidance
  - Speeds, detection distance, reveal time, weather
- Infrastructure
  - Roadway features, pedestrian facilities, streetlighting
- Human Behavior
  - Driver and nonmotorist interviews, distractions, impairment, trip information, risk-taking behavior

CISS Motorcycle Data Collection

- Motorcycle target allocation 6% of total cases in 2025

- Each new crash type requires multiple updates to the system

- Variable development and data collection procedures

  - Leaning heavily on previous studies

  - Pre-study data collection

  - Additional training for investigators

- Modifications by NCSA Math Analysis

- IT updates

CISS 73 PSUs

- Estimating with 73 PSUs CISS could collect data on ~11,000 cases per year!

- Data on entire crash types population

Crash Investigation Sampling System

73 Phase III Data Collection Sites

Update on Special Crash Investigations

- Special Crash Investigations targets ~80-100 cases per year
- Agency interest (vehicles reported in automated mode at time of crash, air bag anomalies, E-bike crashes, electric vehicle fires, Move Over Law crashes, etc.)
- Since 2022 have been seeking frontover crashes:
  - Vehicles starting from a stop
  - Nonmotorist struck by front plane
  - Typically, less than 5 mph

Questions?

___

Thank You

John.Brophy@dot.gov