



NHTSA

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

Serious Injury Data: Collection, Analysis, Use

September 27, 2022

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A background image showing the interior of a car, including the steering wheel, dashboard, and a hand on the wheel. The image is overlaid with a semi-transparent blue filter. On the right side, there is a vertical blue line with four circular nodes containing the numbers 1, 2, 3, and 4, corresponding to the list items.

1

Serious Injury: US Context

2

Serious Injury: US Collections

3

Serious Injury: Data Uses

4

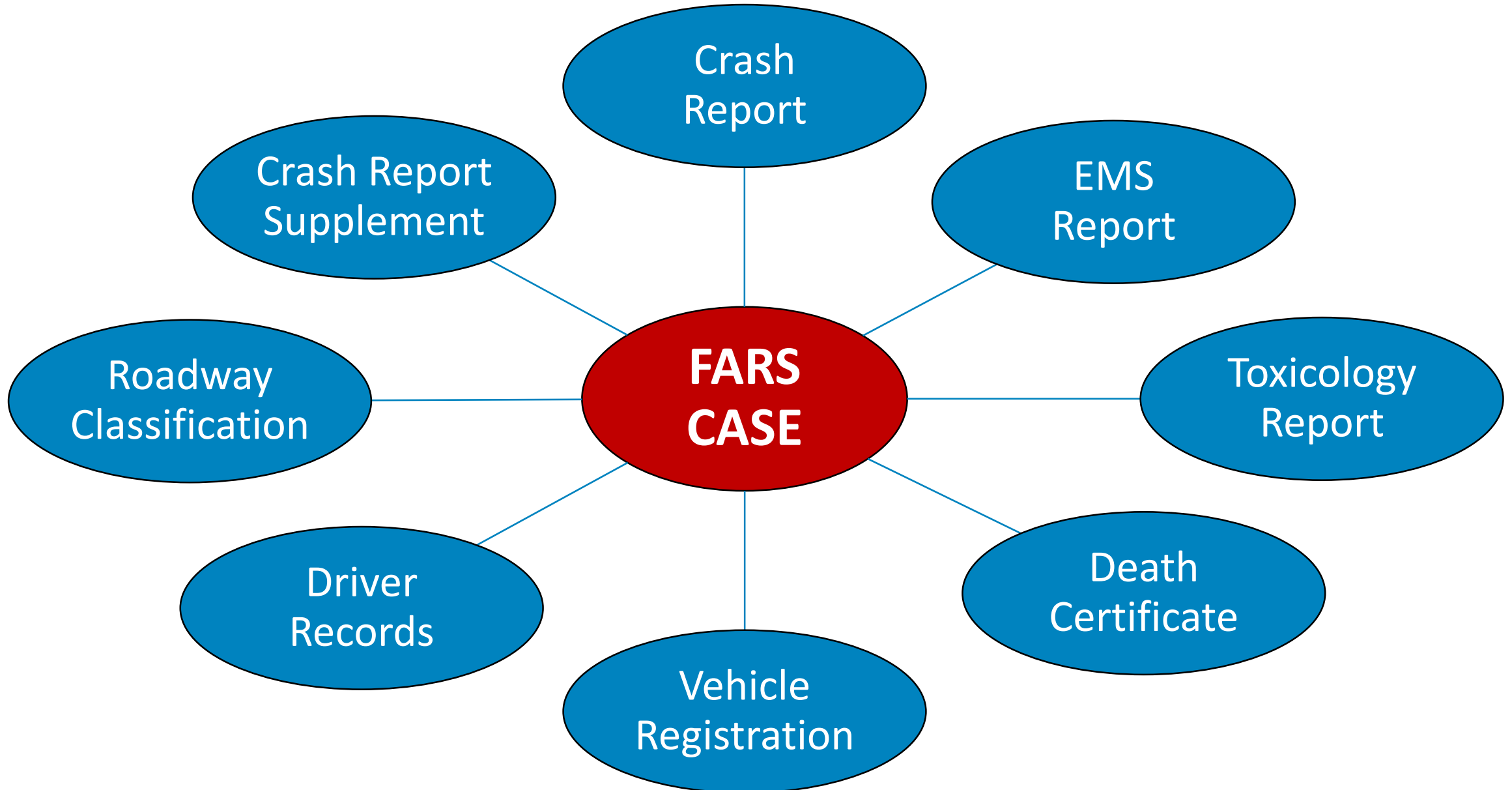
Where to Find More

Serious Injury Data Collections

- Fatality Analysis Reporting System (FARS)
- Crash Report Sampling System (CRSS)
- Crash Investigation Sampling System (CISS)
- Crash Injury Reporting Engineering Network (CIREN)
- Special Crash Investigations (SCI)



Anatomy of a FARS Case



Crash Report Sampling System

Sample of police-reported crashes involving:

- All types of motor vehicles
- Motorists and Non-motorists
- Property-damage crashes
- All injury severities
- KABCO injury coding

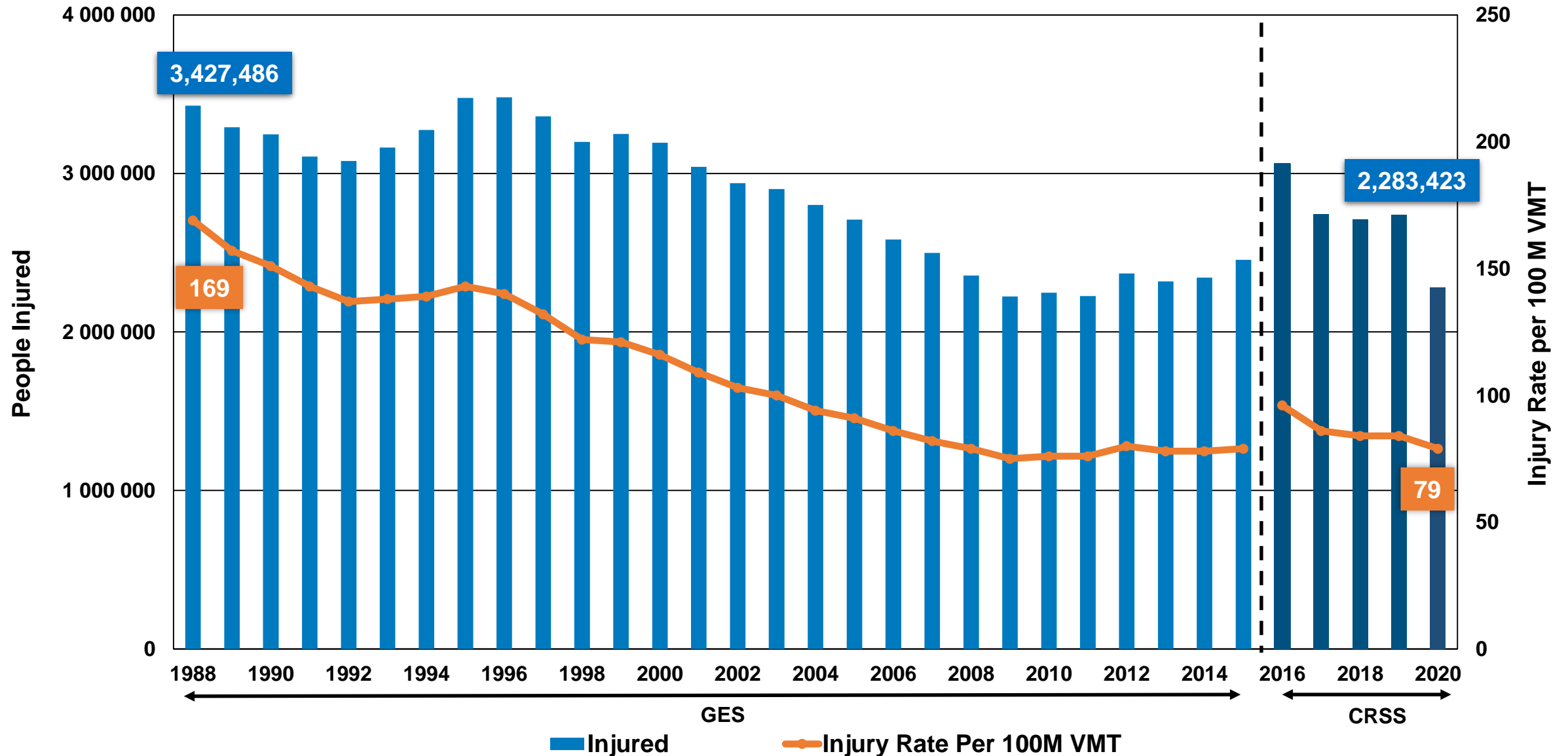


3



People Injured and Injury Rates Per 100 Million VMT

9



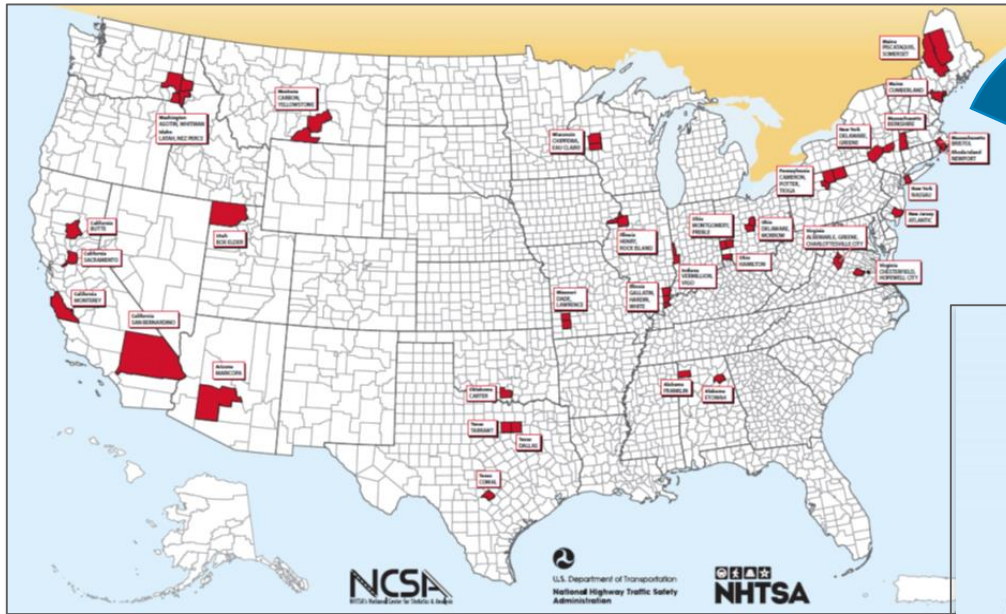
Crash Investigation Sampling System

- Representative sample of police-reported crashes involving at least one passenger vehicle towed from the scene
- Trained crash technicians collect detailed data, document scene, measure crush on vehicles, and interview occupants
- Used for countermeasure development
- ~4,000 cases annually
- Over 600 data elements
- AIS 2015 coding
- Injury causation scenarios

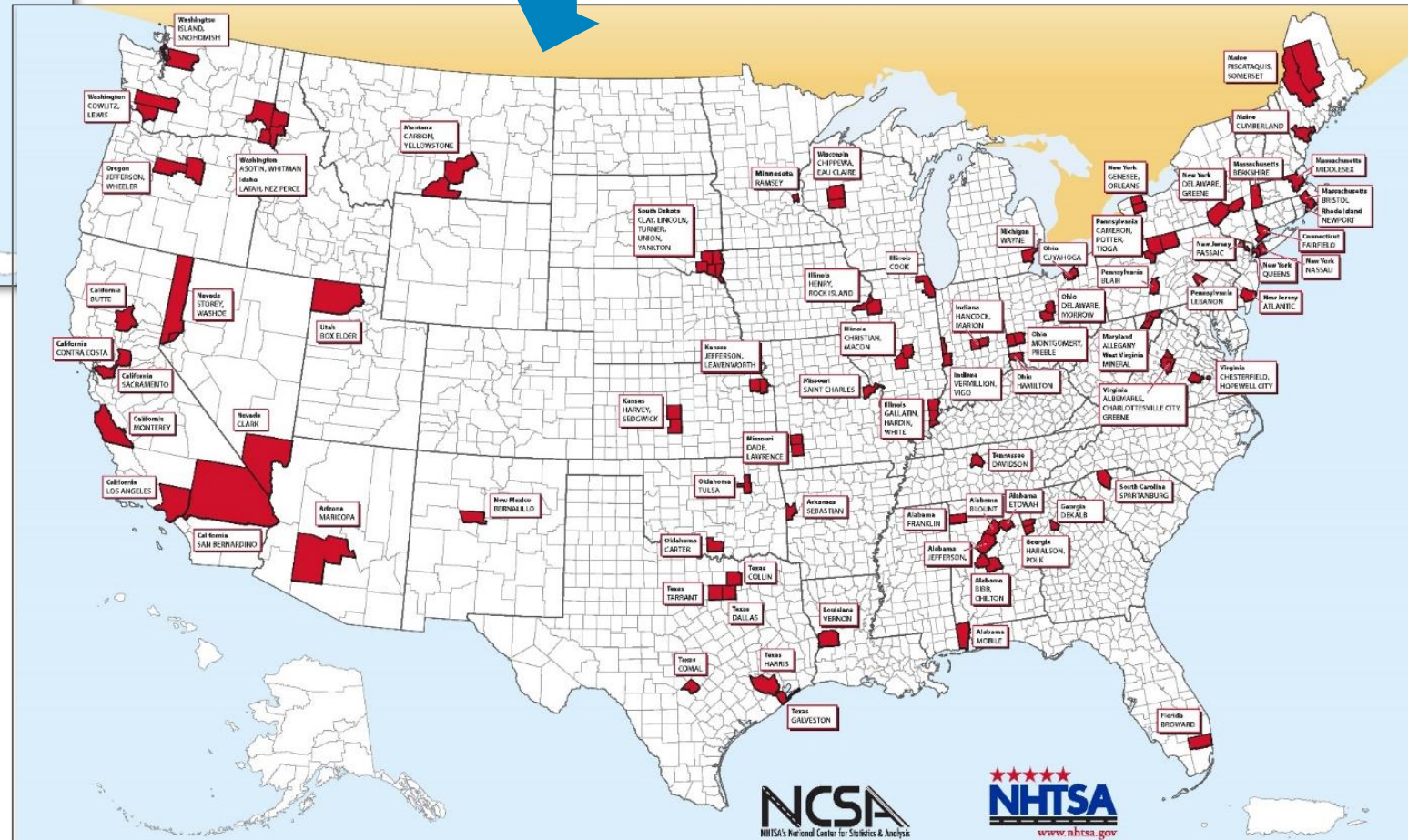


CISS Data Collection Sites

11



Presently: 32 sites



Ultimately: 73 sites

Special Crash Investigation

- Investigations include any incidents (crash & non-crash) of interest to the agency, particularly: Office of Defects Investigation, Vehicle Safety Research, & Rulemaking
- Cases are identified and initiated solely on agency need
- Includes ADS, ADAS and electric/battery powered vehicles
- High-profile or mass casualty events like school bus & motorcoach crashes are coordinated with the National Transportation Safety Board



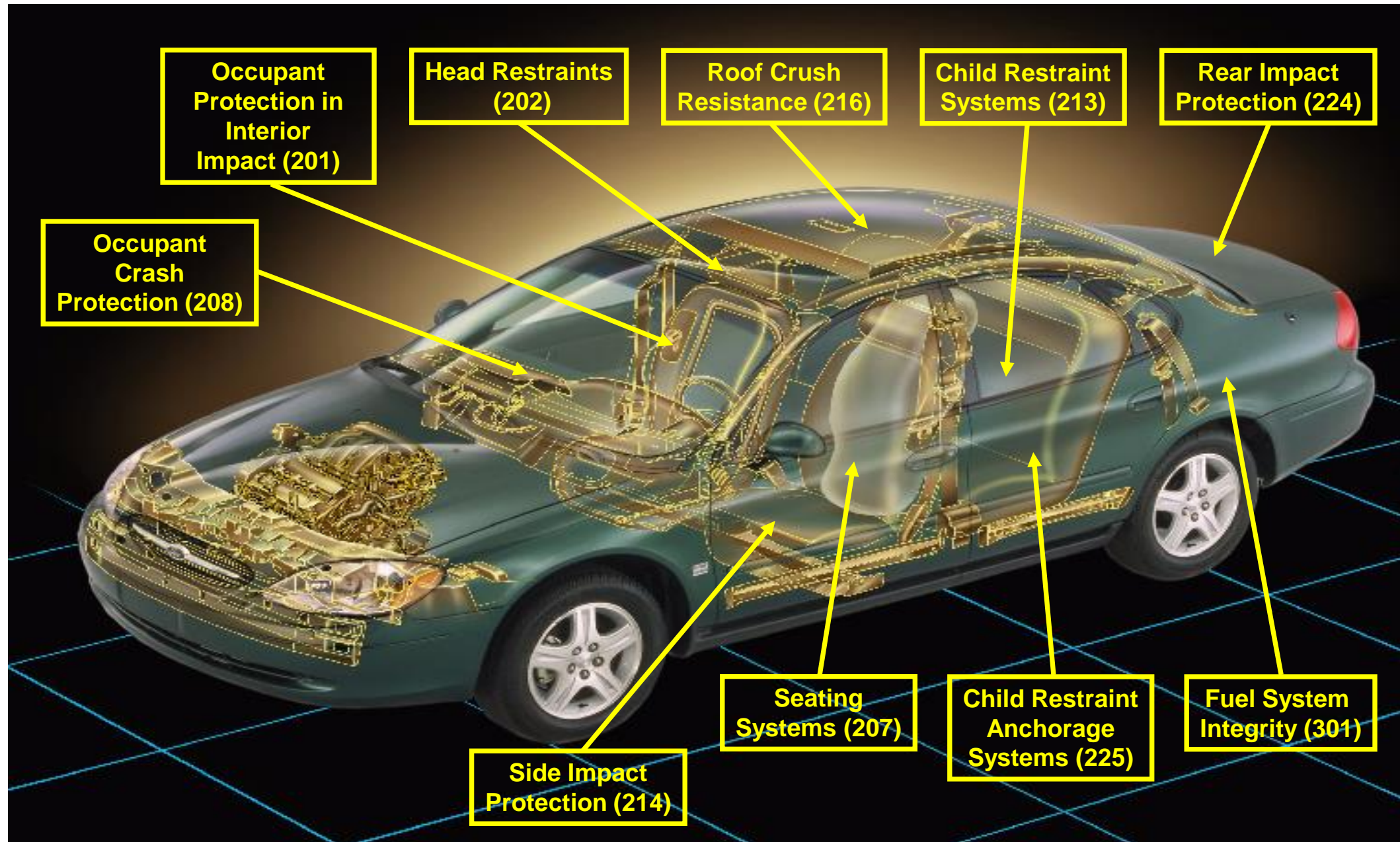
- Purposive sample
- ~180 crashes/year
- Case initiated from patient
- Full inspection of case subject's vehicle
- Full access to acute care records and imaging
- AIS 2015 coding plus comprehensive, in-depth engineering/medical review and injury causation assessment



- Research Reports & Notes
 - “MAIS (05/08) Injury Probability Curves as Functions of Delta V”
 - “Female Crash Fatality Risk Relative to Males for Similar Physical Impacts”
 - “Passenger Vehicle Occupant Injury Severity in Police-Reported Crashes by Vehicle Age and Model”
- Regulatory Analyses & Evaluations
 - Target Crash Population for Crash Avoidance Technologies in Passenger Vehicles
 - Evaluation of Child Restraint System Effectiveness

Federal Motor Vehicle Safety Standards

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KABCO to MAIS Translators

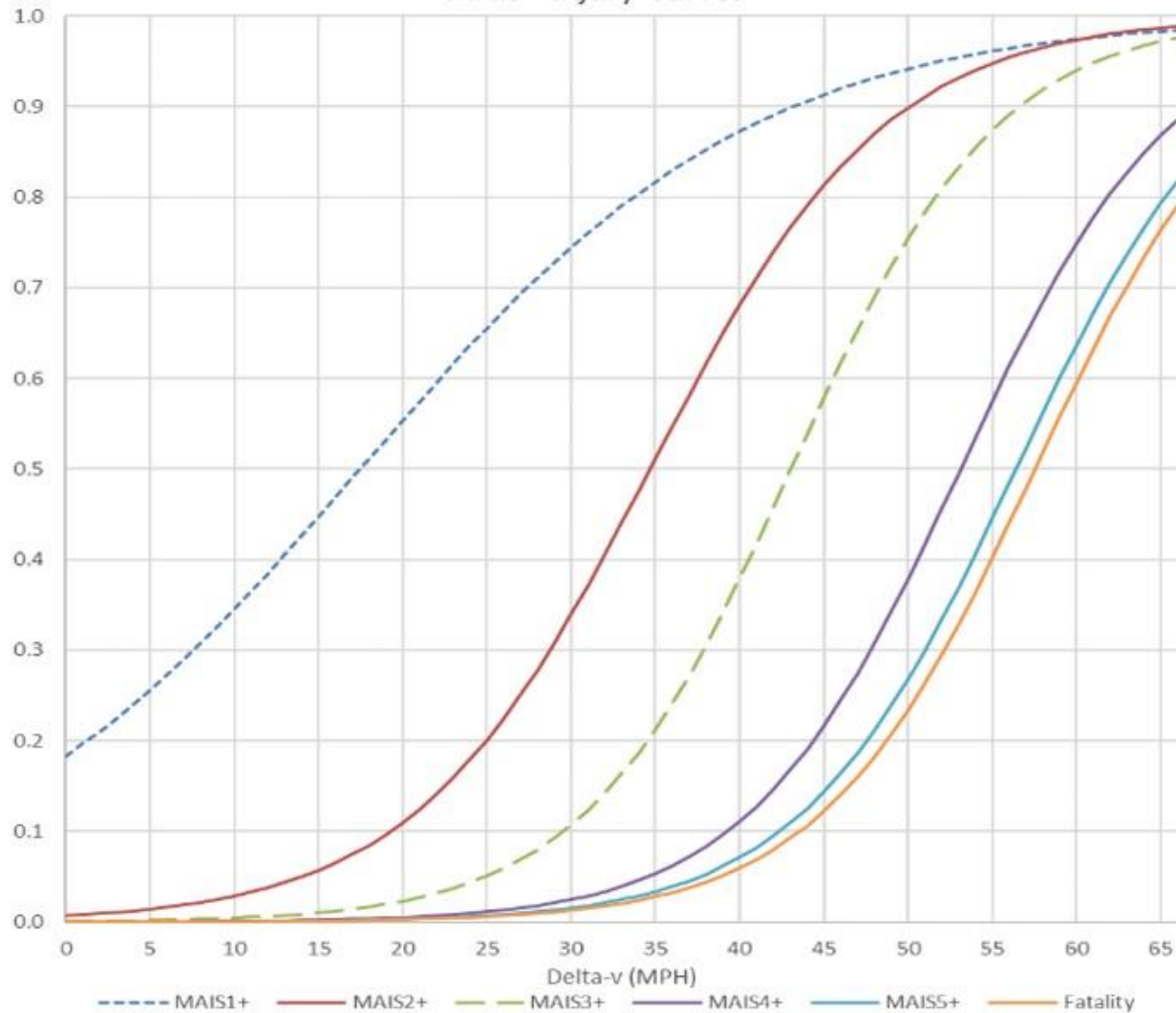
MAIS	Police-Reported Injury Severity System					
	O	C	B	A	K	U
	No Injury	Possible Injury	Non Incapacitating	Incapacitating	Fatality	Injured, Severity Unknown
0	0.93125	0.39052	0.12585	0.06124	0.00000	0.46375
1	0.06623	0.52986	0.69183	0.30749	0.00000	0.44712
2	0.00238	0.05901	0.13621	0.30145	0.00000	0.06042
3	0.00014	0.01862	0.03942	0.24822	0.00000	0.02437
4	0.00000	0.00159	0.00539	0.04765	0.00000	0.00436
5	0.00000	0.00036	0.00023	0.02664	0.00000	0.00000
Fatality	0.00000	0.00005	0.00107	0.00731	1.00000	0.00000
Total	1.00000	1.00001	1.00000	1.00000	1.00000	1.00002

Source: 2017-2019 CISS and 1982-1986 Old-NASS

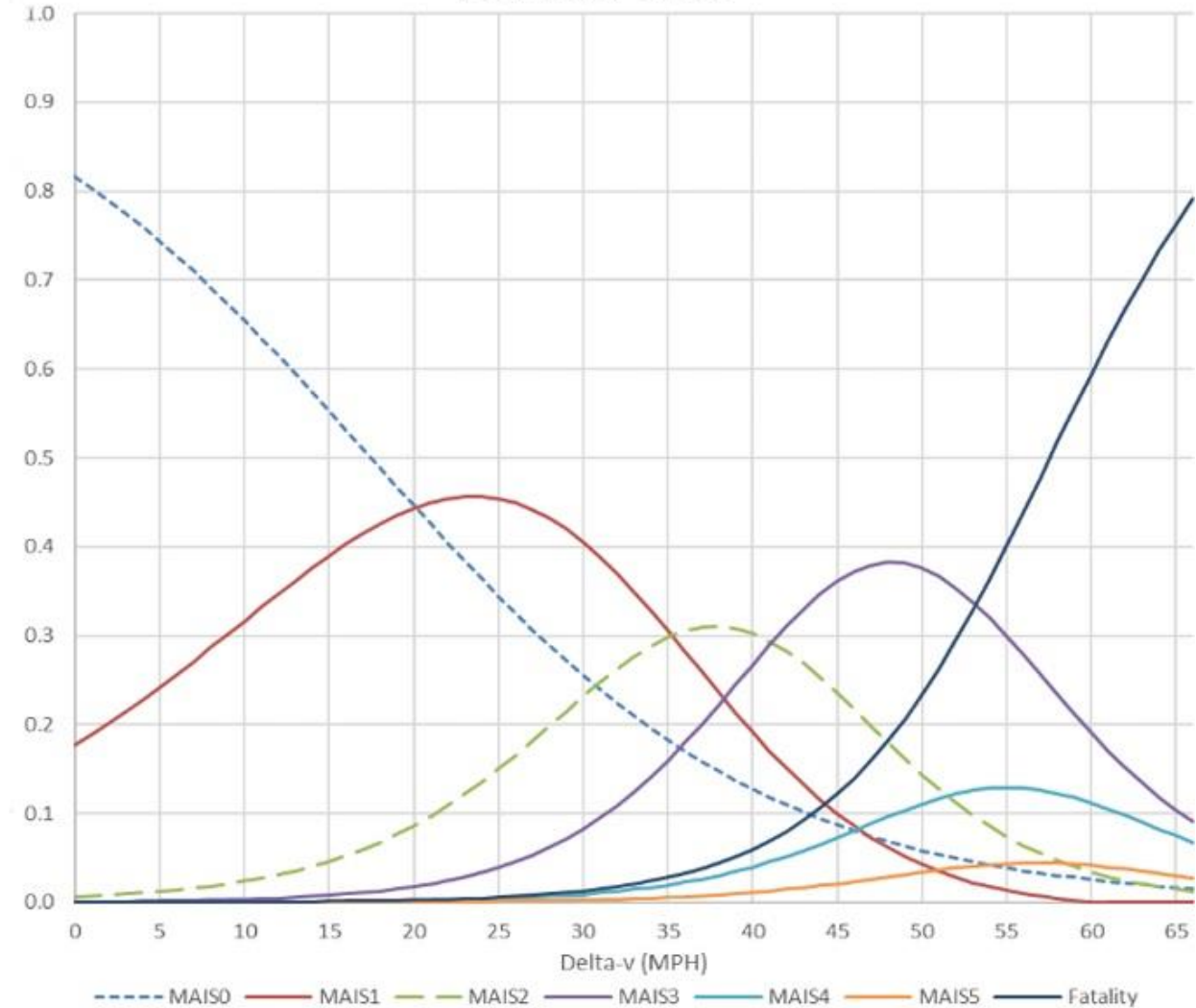
Frontal Crash Risk

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MAIS+ Injury Curves



MAIS Injury Curves



Sample Design & Weighting Details

- CRSS: Design Overview, Analytic Guidance, and FAQs
 - <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812509>
- CRSS: Sample Design and Weighting
 - <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812706>
- CISS: Design Overview, Analytic Guidance, and FAQs
 - <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812801>
- CISS Sample Design and Weighting
 - <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812804>



Thank you!

For more data and assistance please visit or email:

<https://cdan.dot.gov/> | NCSARequests@dot.gov