Available State Safety Data Resources

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Why are we using safety data?

How are we defining “safety”?

Absence of Fatalities

Absence of Injuries

Absence of Exposure to Risks

Health, Wellbeing, Personal Security, Comfort, Freedom from Harassment and Harm

Moving toward a “Safe System” and integrated health perspective

Spectrum of relevant injuries and injury data sources

For each ***fatality*** reported, there are ~**85** medically attended ***injuries***

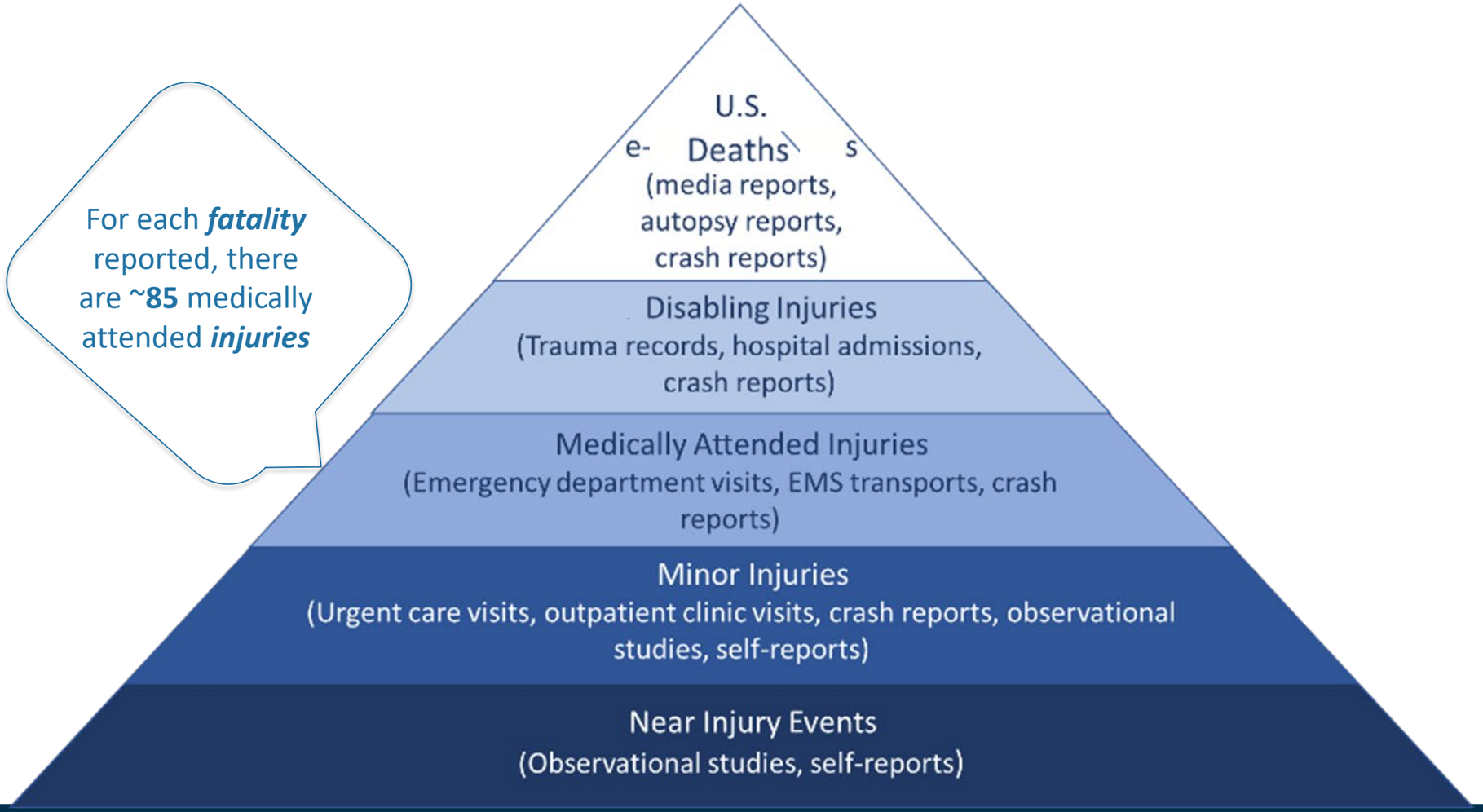


TABLE 1. Injury Data Available By Data Source

Data Source	DMV crash data	EMS data from EMSPIC	ED data in NC DETECT	Trauma Reg-istry data
KABCO	✓			
Primary impression		✓		
Triage notes			✓	
Primary symptom		✓		
Chief complaint		✓	✓	✓
Diagnostic codes			✓	✓
Disposition		✓	✓	✓
Glasgow Coma Scale (GCS)		✓		✓
Injury Severity Scores (AIS/ISS)				✓

Table courtesy of Katie Harmon, UNC-HSRC

MVC data sources identified and documented

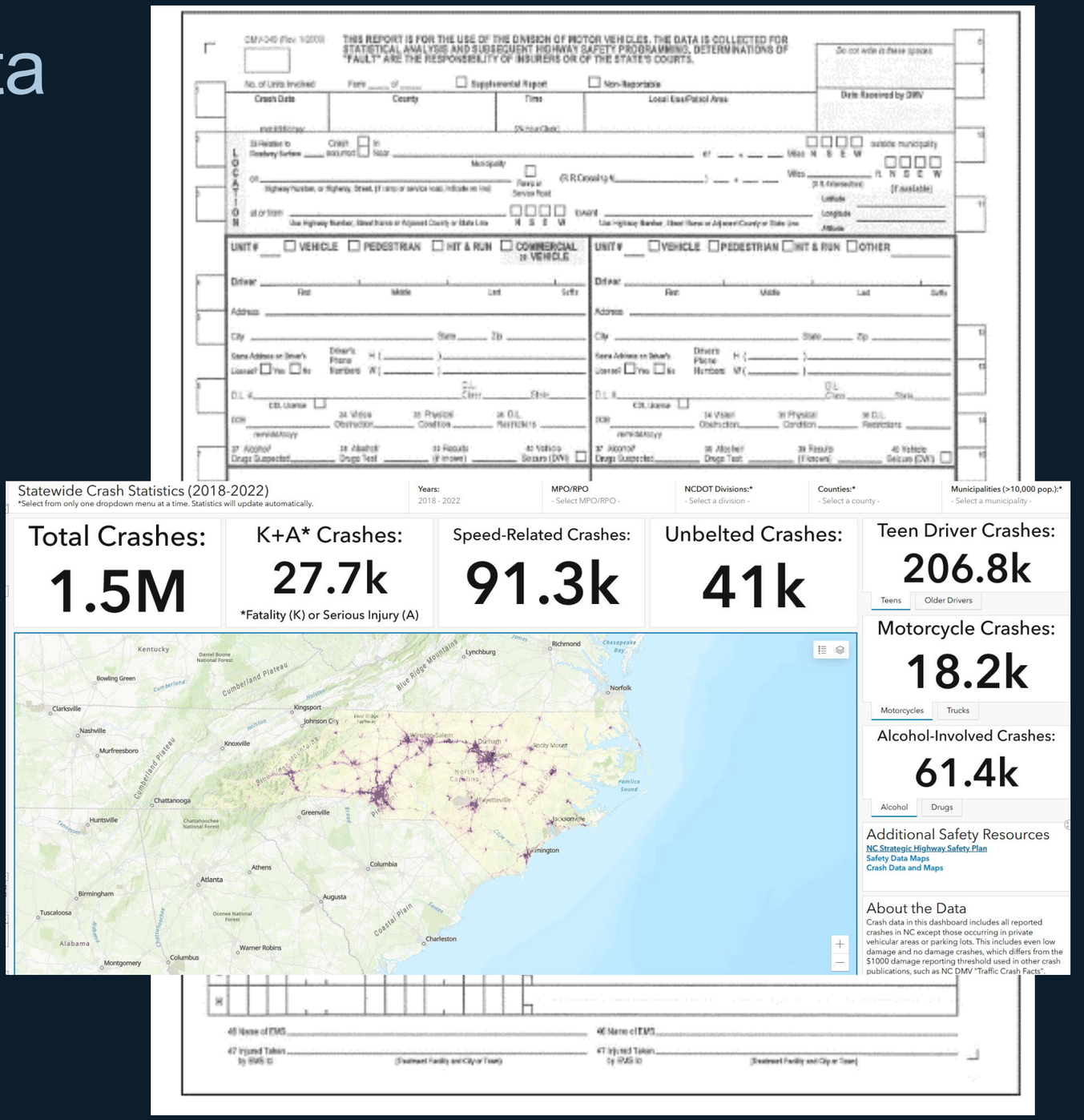
1. Crash data (NC DMV)
2. EMS data (NC OEMS)
3. Emergency department data (NC DETECT)
4. Hospital encounter data (NCHA)*
5. Hospital discharge data (SCHS)
6. Hospital discharge data (UNC Sheps)
7. North Carolina Trauma Registry data (NCTR)
8. BCBS/Medicaid claims data (UNC Sheps)
9. Death registration data (SCHS)
10. Medical examiners reports (OCME)
11. Fatality Analysis Reporting System (NHTSA)
12. Highway Safety Information System (FHWA)

*Identified; not documented upon data owner's request

Police-reported crash data

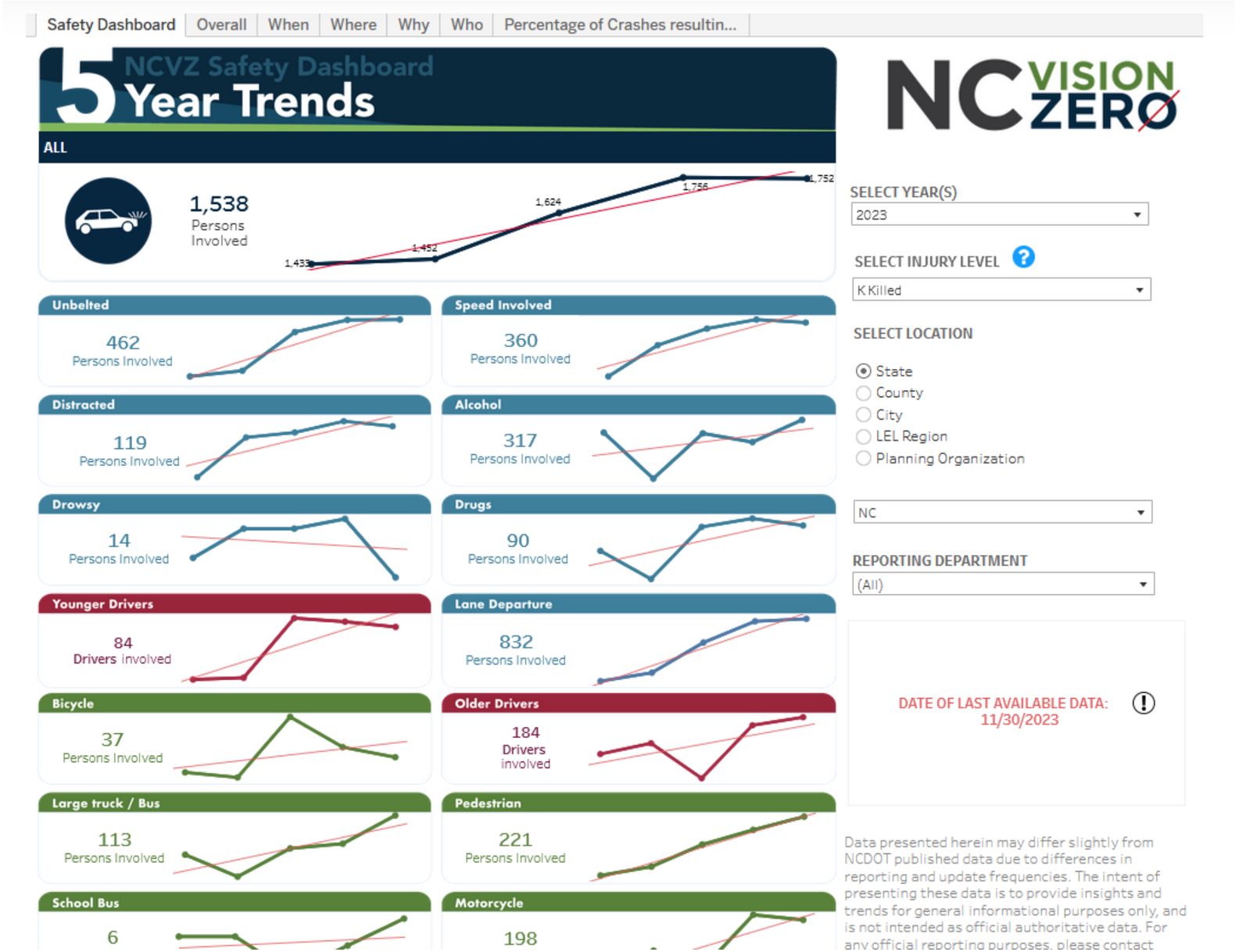
- How can I access it?
  - https://www.arcgis.com/apps/dashboards/b0bb09fcff824e8da4e8cfe4f79b9b30
  - Traffic Engineering Accident Analysis System (TEAAS): https://connect.ncdot.gov/resources/safety/Pages/TEAAS-Crash-Data-System.aspx
  - Data use agreement with DMV

- What should I be aware of?
  - Excludes crashes that occur off-road, including sidewalks, parking lots, trails
  - Most states lack an “e-scooter” code; could be coded as motorcyclist or pedestrian or something else; must search narrative text field to ID cases
  - Research has shown that incident underreporting is likely, particularly incidents involving children, older adults, migrant populations, communities of color, and indigenous groups



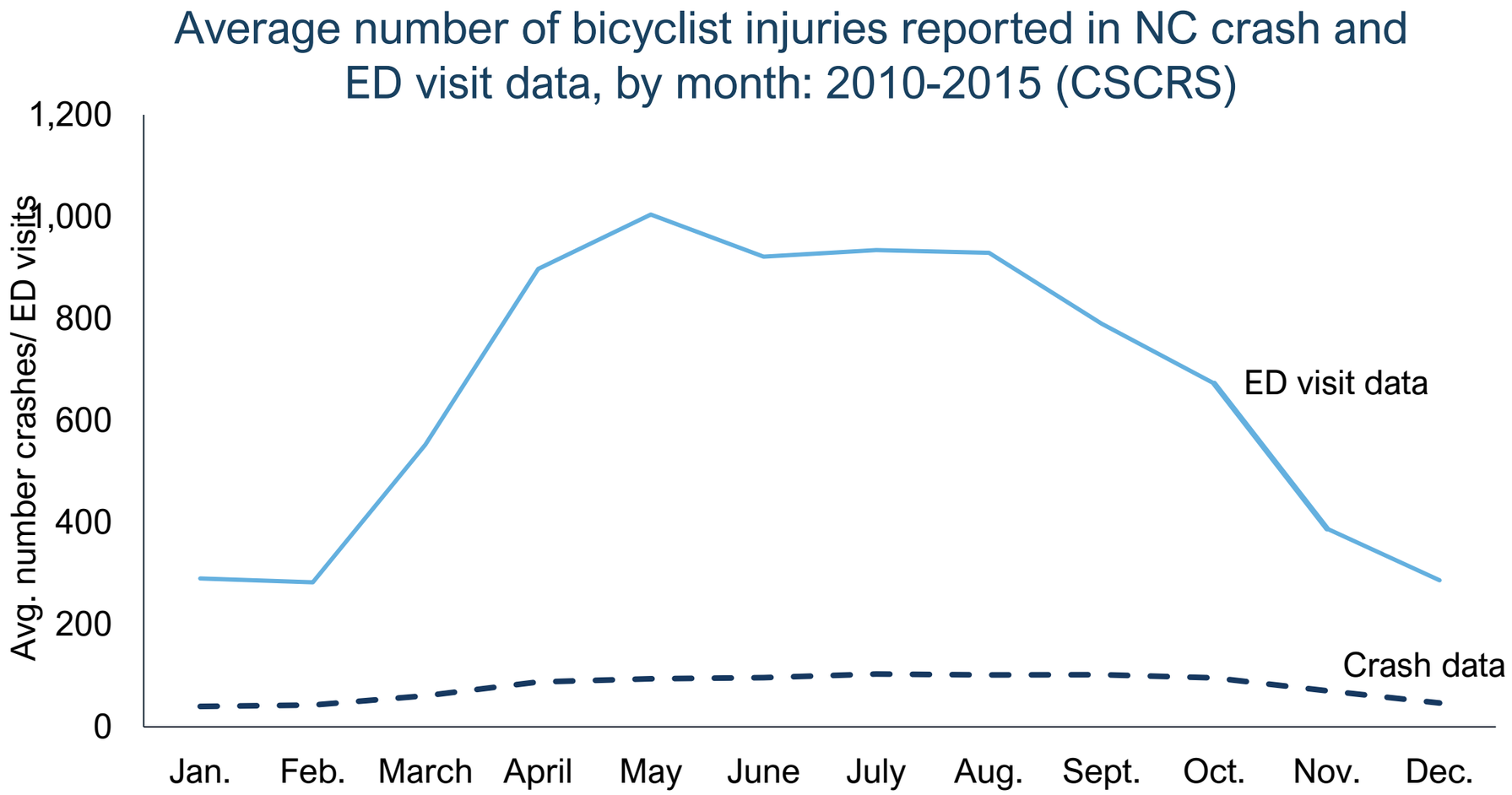
Vision Zero Portal

- Safety Dashboard offers data, analytics, and visualizations



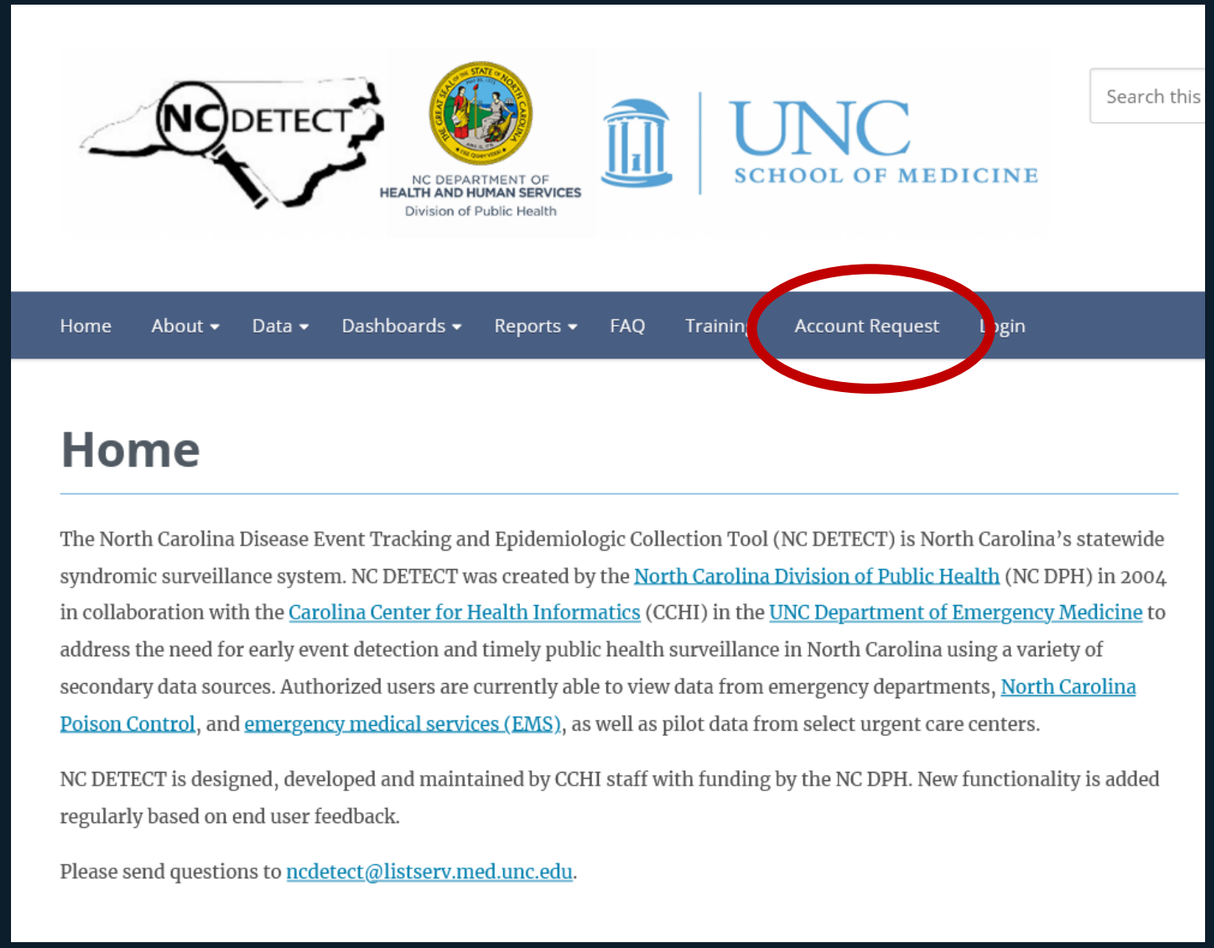
https://ncvisionzero.org/visualizations/safety-dashboard/

Police-reported crash and emergency data offer complementary sets of information

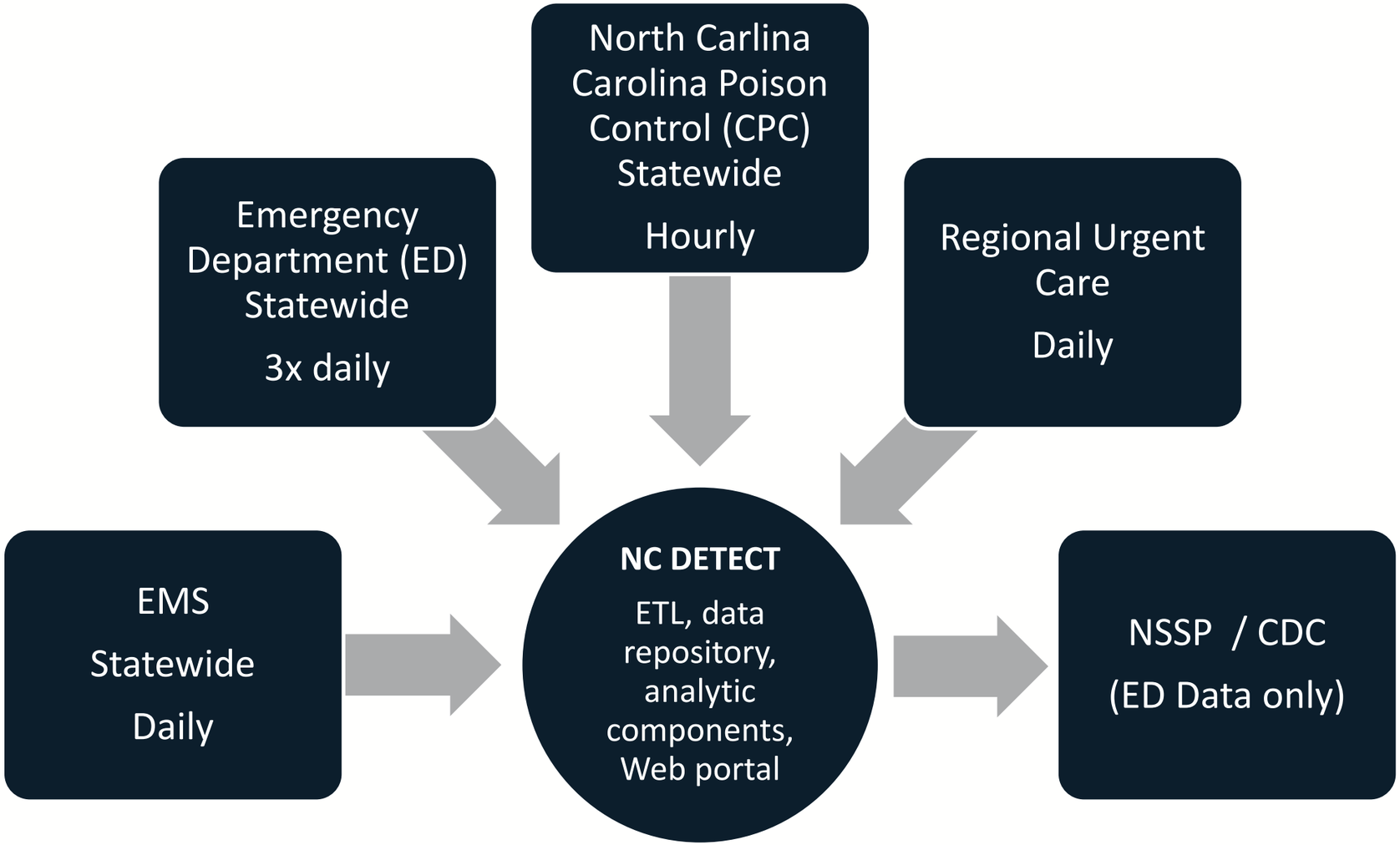


Emergency Department visit records

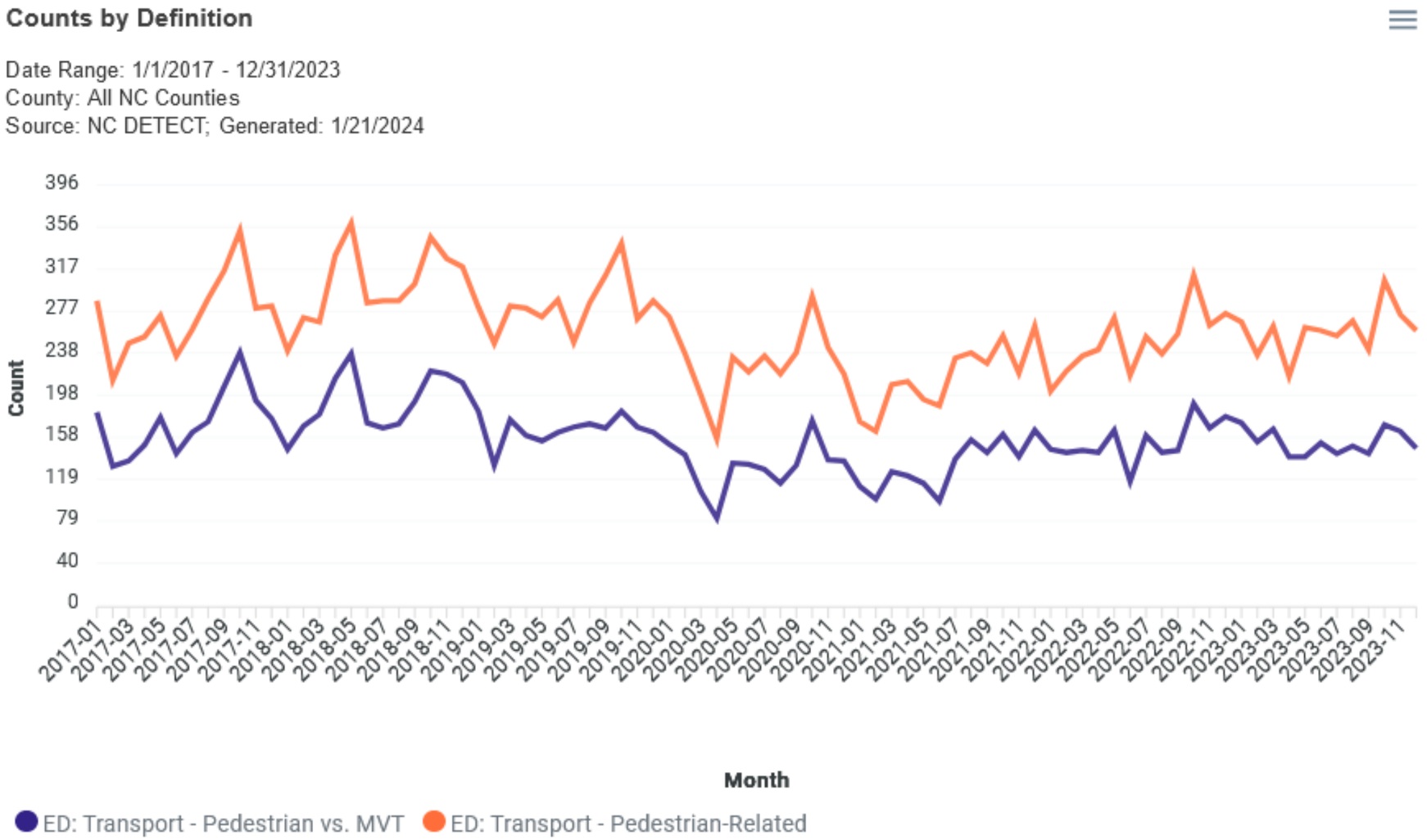
- How can I access it?
  - Local Health Department
  - State Syndromic Surveillance System, NC DETECT: https://ncdetect.org
- What should I be aware of?
  - Useful for monitoring trends and emerging issues (COVID, etc.)
  - Timely data about patient and injury mechanisms and diagnoses, but limited information about crash location/context
  - Standardized ICD-10-CM codes available for e-scooters and e-bikes



Data Sources & Update Frequency



Includes pre-designed dashboards, table, and map generators



Trauma data

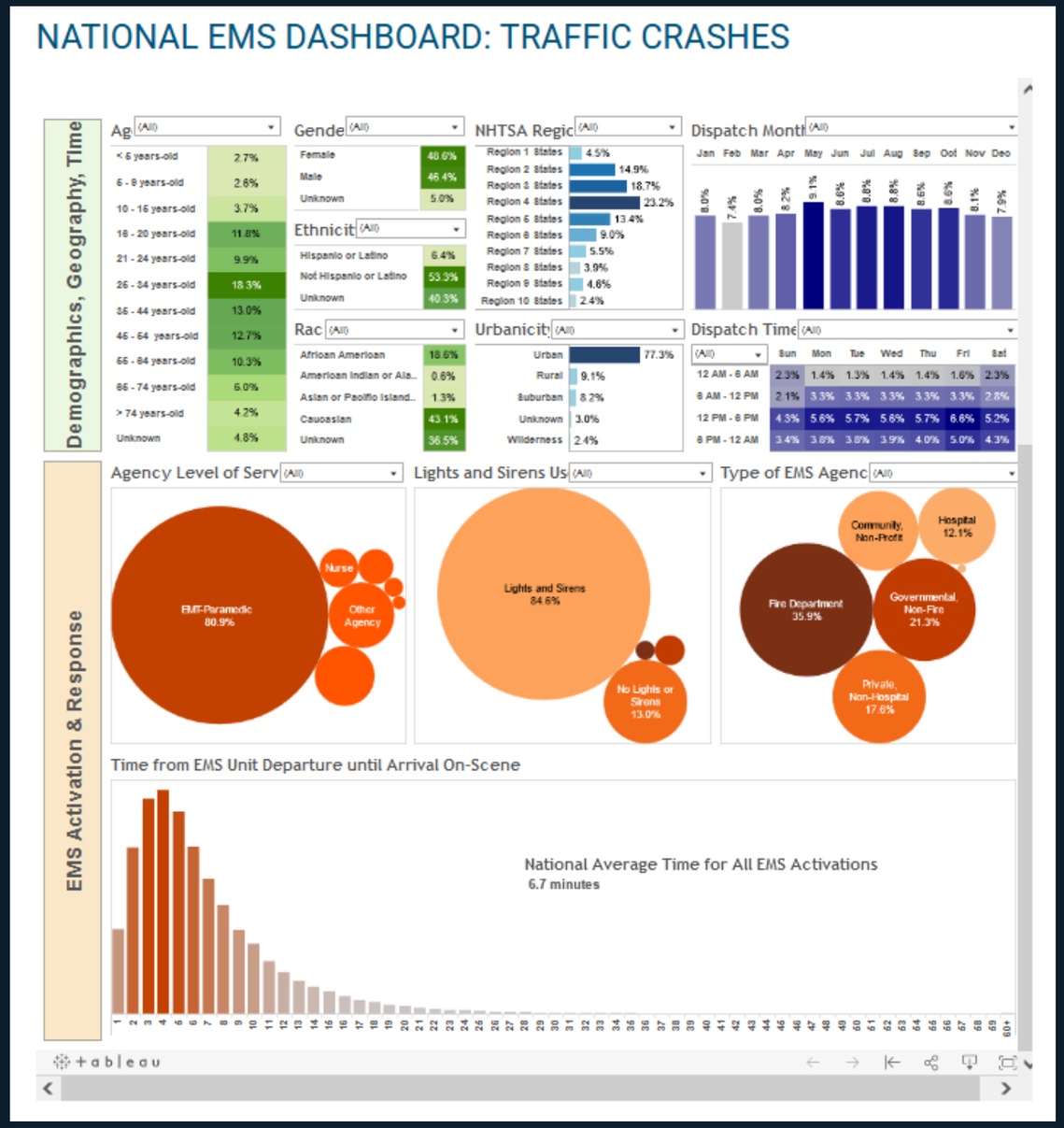
- How can I access it?
  - Through local Trauma Center or State Trauma Registry
  - https://cchi.web.unc.edu/data-sources-for-motor-vehicle-crash-injury-in-north-carolina/
- What should I be aware of?
  - Only include most severe cases, where patient requires hospitalization
  - Quality data about patient and injury outcomes, but limited information about crash location/context

Fields: North Carolina Trauma Registry

Category	Field	Description
Demographic-Record Info	Record Complete	Indicates the completeness status of record.
	Y	Yes
	N	No
	Blank	Implied Yes
Demographic-Record Info	Facility	Displays the unique hospital identifier code and description for your facility.
Demographic-Record Info	Initial Location	Indicates the initial location the patient was admitted at your facility.
	2	Emergency Department
	3	Operating Room
	4	Intensive Care
	5	Step-Down Unit
	7	Telemetry Unit
	8	Floor
	9	Observation Unit
	10	Radiology
	11	Post Anesthesia Care Unit
	12	Special Procedure Room
	13	Labor and Delivery
	14	Pediatric ICU
	?	Unknown

EMS data

- How can I access it?
  - State or local Office of Emergency Management (for geocoded data)
  - Office of Emergency Management Systems (NEMSIS) (for deidentified data)
- What should I be aware of?
  - NC EMS recently transitioned to NEMSIS 3.5 standard
  - Quality data on incident location and time and incident narratives are a rich source of information (e.g., restraint use)
  - Only a fraction of crashes involve EMS
  - Injury outcome data not as available or reliable as ED or trauma registry data
  - Highly variable in data quality and standardized elements

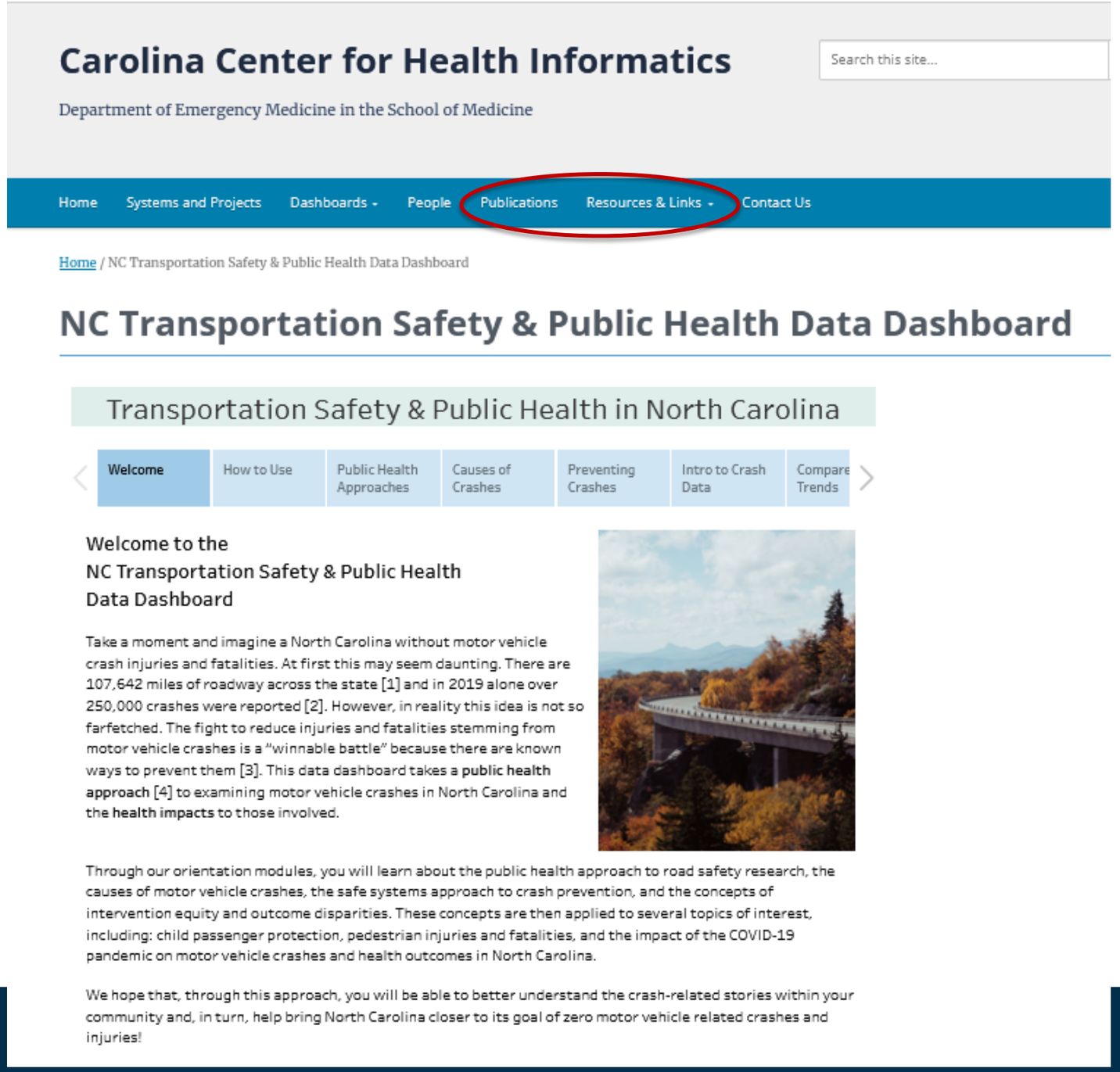


Source: https://www.ems.gov/national-ems-dashboard.html

What you'll find in this dashboard:

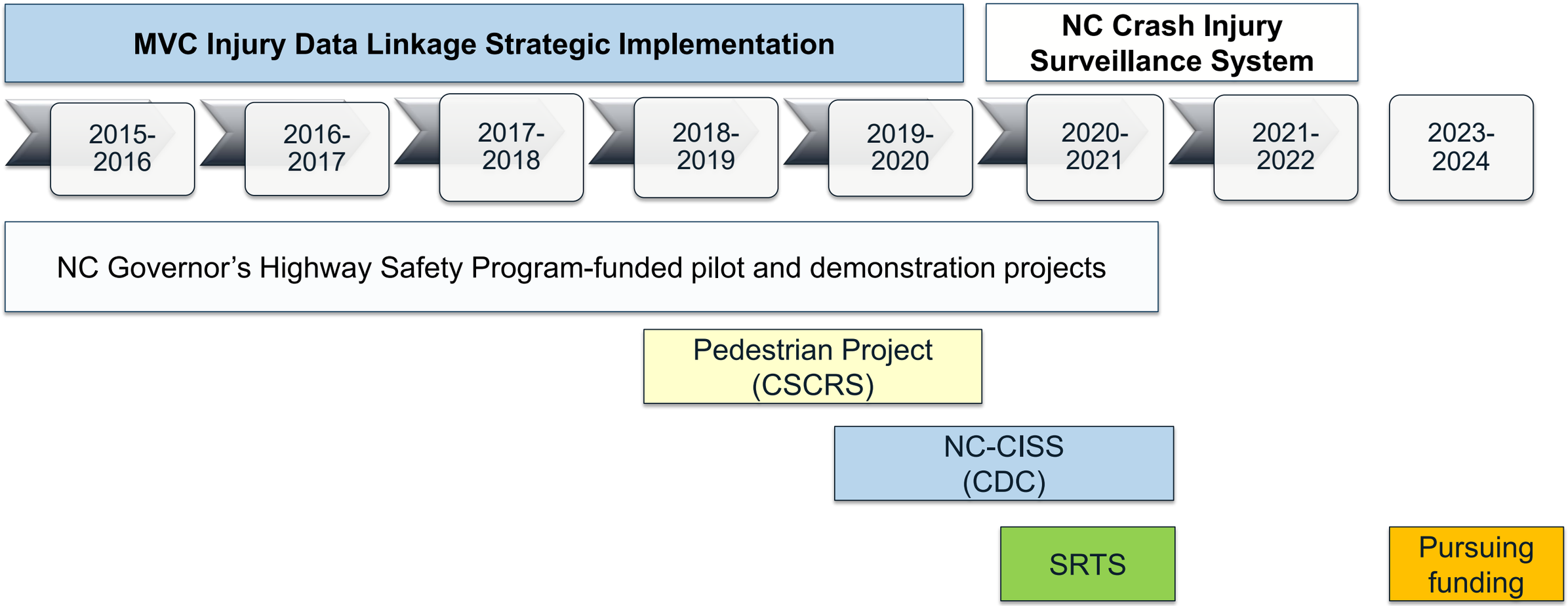
On the following dashboard pages you'll find motor vehicle crash (MVC) **data** from police crash report forms, emergency department visits, death certificates, and data linked across those systems. You'll find deeper dives on child, pedestrian, and COVID-19 topics. Lastly, you'll find key text and framing that may be useful when telling your own stories about MVCs.

Data you'll find	Police **Crash** Forms	Emergency Department **(ED) Visits**	**Fatalities** from Death Certificates	Lessons from **Linked Data**
Focus Topics	All Motor Vehicle **Crashes**	**Children-** involved Crashes	**Pedestrian-** involved Crashes	**COVID-19**
Framing you'll find	**Public health** approaches to MVC	**Disparities** & Equity	State & Local **Fact Sheets**	Data Explorer

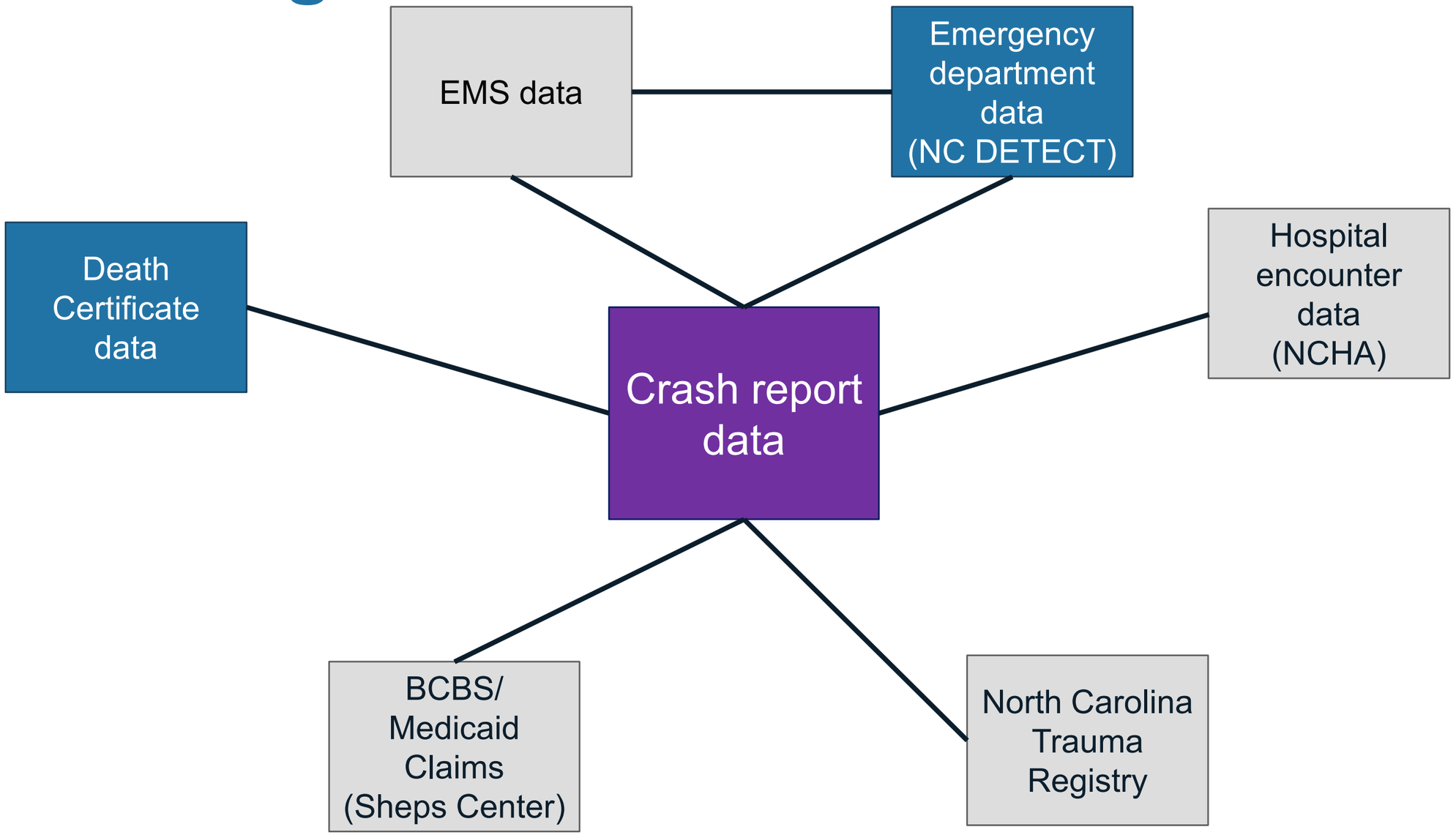


NC data linkage project timeline

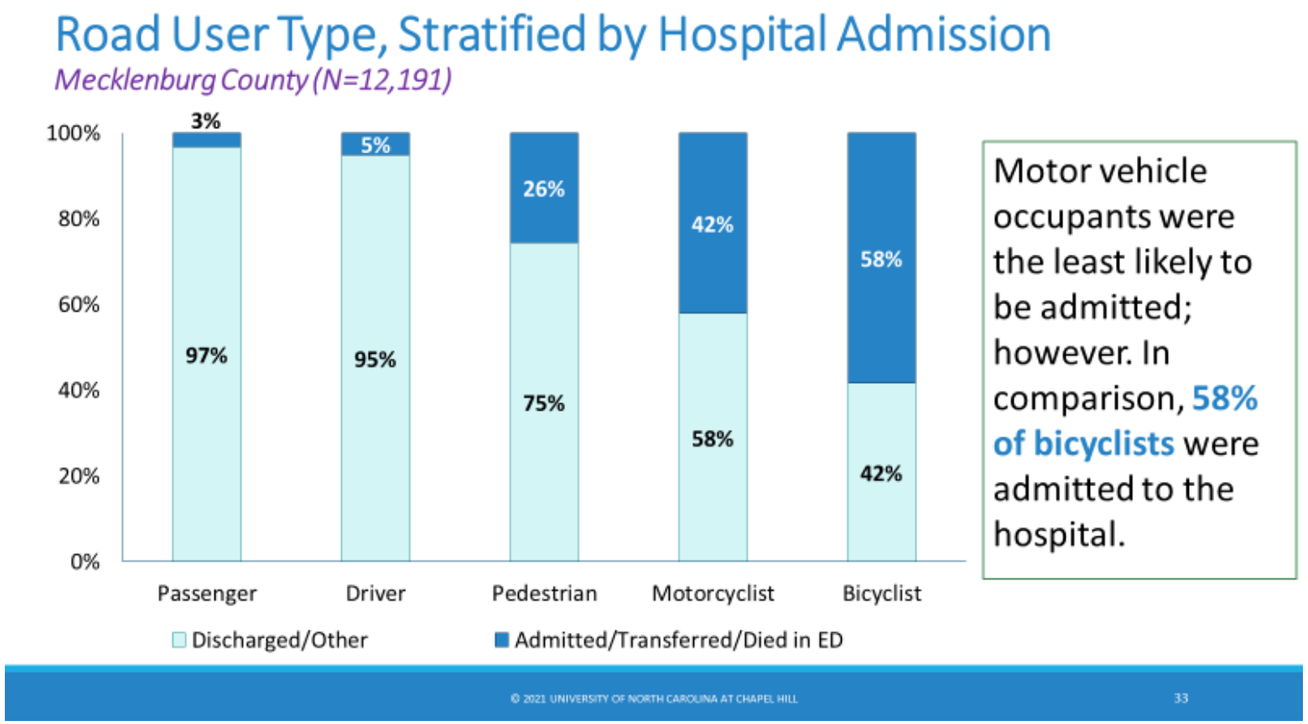
A collaboration of the Highway Safety Research Center, Carolina Center for Health Informatics, and Injury Prevention Research Center



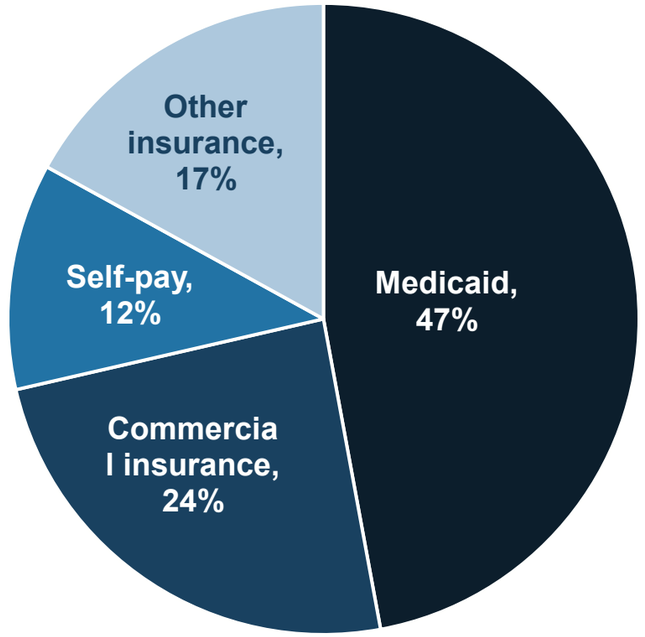
Data linkages



Linkage helps assess injury severity, healthcare usage, medical outcomes, and identify disparities



Frequency of child pedestrian injuries, by expected source of payment



15% of the NC population is covered by Medicaid

Linkage helps to assess KABCO accuracy

NC pedestrians treated in the ED after a police-reported MVC: CSCRS, 2010-2015

Police assigned injury severity (KABCO)	Serious or fatal injury (based on clinical assessment) N (%)	Non-serious injury (based on clinical assessment) N (%)
K - Killed	206 (100%)	0 (0%)
A – Suspected serious injury	437 (89%)	53 (11%)
B – Suspected minor injury	1,431 (50%)	1,440 (50%)
C – Possible injury	488 (16%)	2,523 (84%)
O – No injury	20 (12%)	141 (88%)
Total	**2,582 (38%)**	**4,157 (62%)**

50% of “B” injuries were defined as “serious”

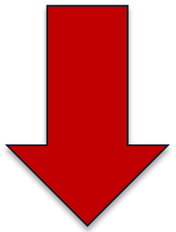
161 pedestrians classified as “Not injured” received medical treatment

Ongoing Work / Future Plans

1. Use these novel data sources to develop holistic traffic injury profiles and data visualizations for the State of N.C. and N.C. Vision Zero communities to demonstrate the added and critical benefit of health data for Safe System and Vision Zero work.
    - Initial meeting held 2/6/2024 with ITRE/NC Vision Zero Website and Data Dashboard team to discuss collaborative sharing of data visualizations and injury profiles
    - Prototyping of data visualizations underway

2. Develop a sustainability plan for incorporating novel health-related transportation safety data sources into routine Safe System-informed transportation safety activities, planning processes, and evaluation efforts.

How are we defining “safety”?



Absence of Fatalities

Absence of Injuries

Absence of Exposure to Risks

Health, Wellbeing, Personal Security, Comfort, Freedom from Harassment and Harm

Moving toward a “Safe System” and integrated health perspective

Data for Risk Assessment

- Commonly used data for risk assessment:
  - Land use
  - Roadway classification
  - Roadway width, # lanes, and posted speed
  - Horizontal alignment
  - Roadside hazards
  - Intersection and/or access density
  - Traffic volumes (including cars, bikes, peds, etc.)

- Data sources:
  - Road asset management databases
  - Aerial imagery
  - GIS layers

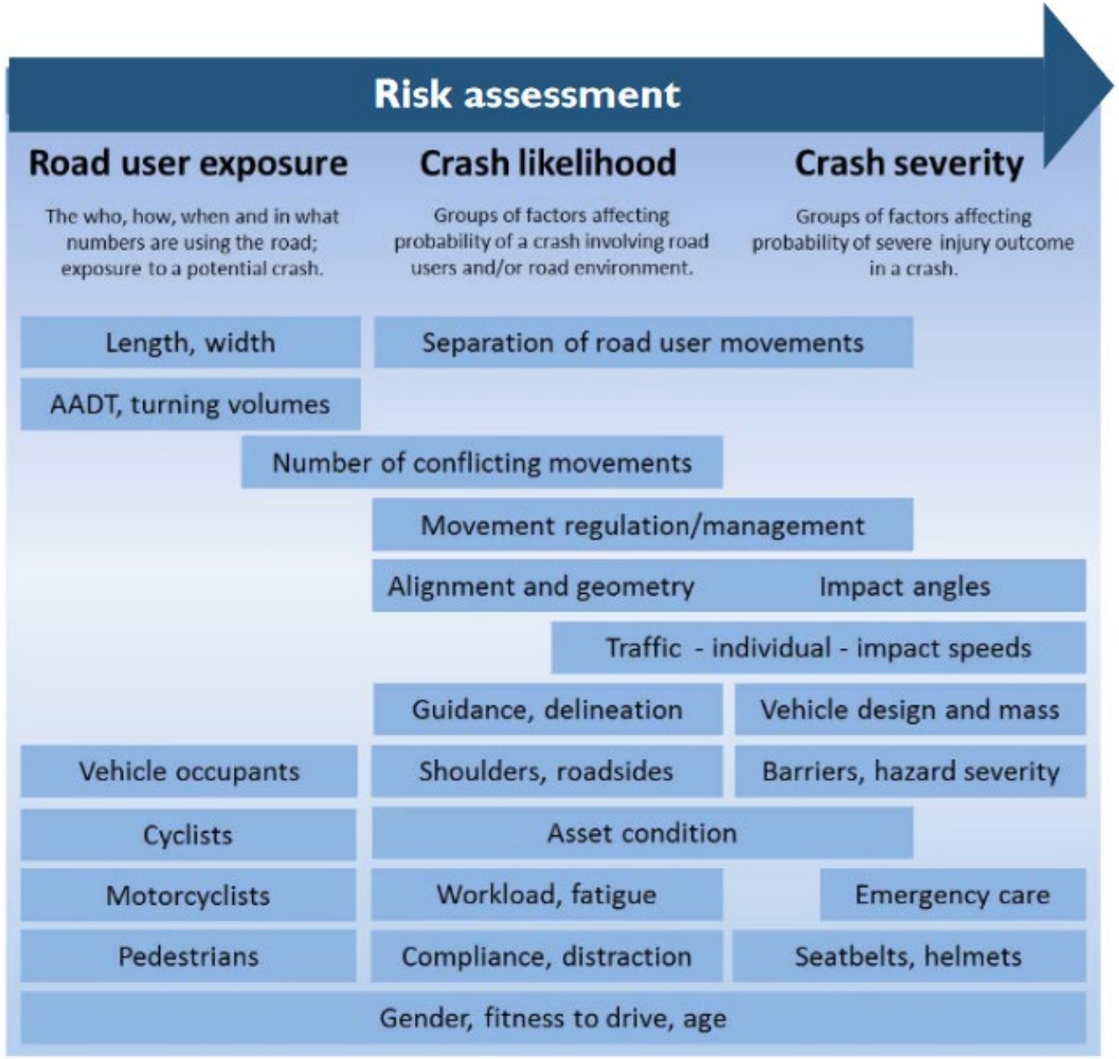


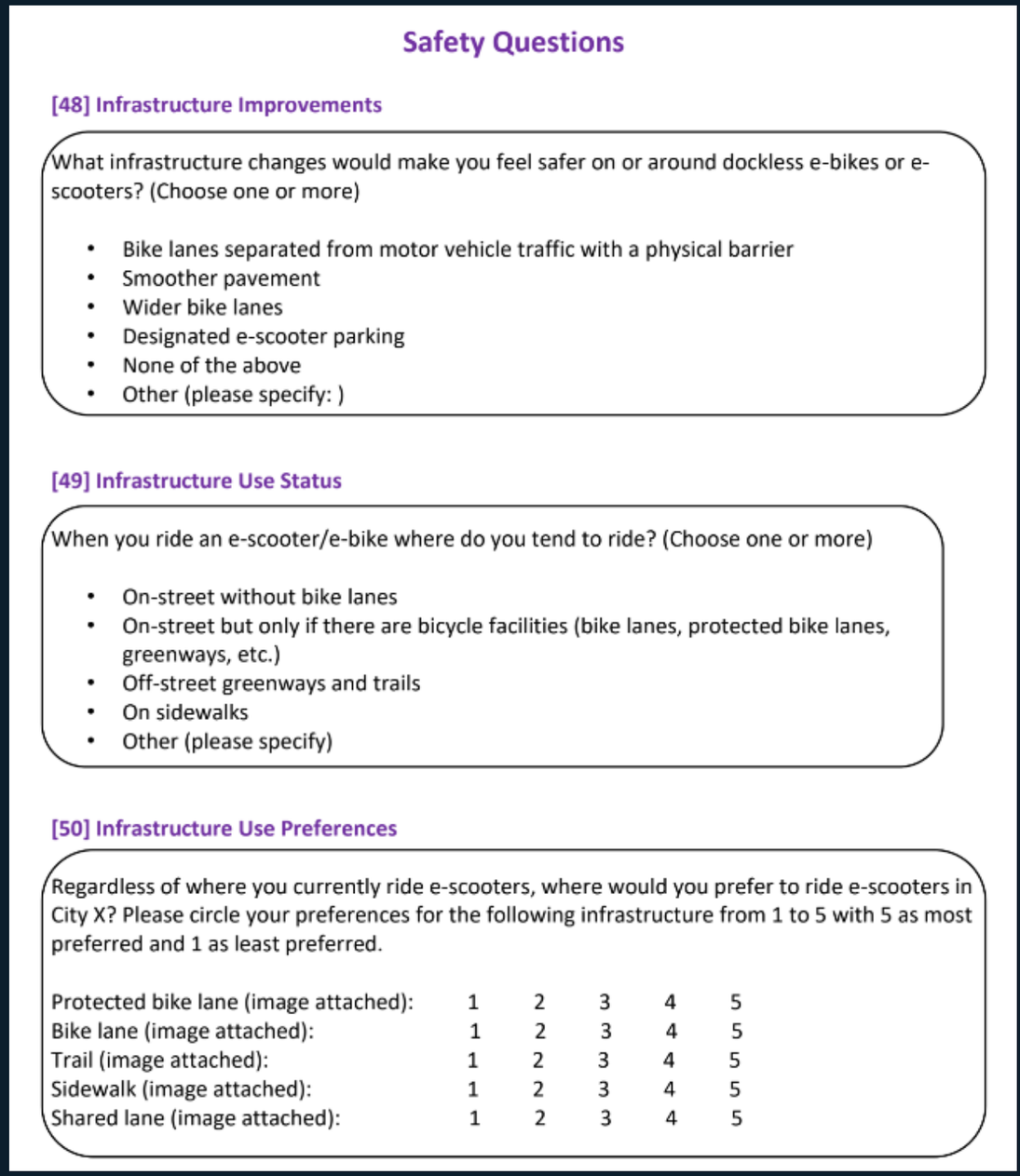
Figure 3. Graphic. Risk assessment framework.

Source: *A Safe System-Based Framework and Analytical Methodology for Assessing Intersections* (FHWA, 2021)

Reminder: Fatality, injury, and risk data measure un-safety, not safety

- **Community data and input on safety is critical**

- Many potential data sources/methods:
  - Intercept surveys and field-based research
  - In-app feedback
  - Phone/web-based data collection
  - Focus groups
  - Town halls



Safety Questions

[48] Infrastructure Improvements

What infrastructure changes would make you feel safer on or around dockless e-bikes or e-scooters? (Choose one or more)

- Bike lanes separated from motor vehicle traffic with a physical barrier
- Smoother pavement
- Wider bike lanes
- Designated e-scooter parking
- None of the above
- Other (please specify:)

[49] Infrastructure Use Status

When you ride an e-scooter/e-bike where do you tend to ride? (Choose one or more)

- On-street without bike lanes
- On-street but only if there are bicycle facilities (bike lanes, protected bike lanes, greenways, etc.)
- Off-street greenways and trails
- On sidewalks
- Other (please specify)

[50] Infrastructure Use Preferences

Regardless of where you currently ride e-scooters, where would you prefer to ride e-scooters in City X? Please circle your preferences for the following infrastructure from 1 to 5 with 5 as most preferred and 1 as least preferred.

Protected bike lane (image attached):	1	2	3	4	5
Bike lane (image attached):	1	2	3	4	5
Trail (image attached):	1	2	3	4	5
Sidewalk (image attached):	1	2	3	4	5
Shared lane (image attached):	1	2	3	4	5

Source: Yi Wen, UT-K, CSCRS Research Project R26

Efforts to Assess and Improve Data

M I R E (Roadway)

Model

Inventory of

Roadway

Elements

M M U C C (Crash)

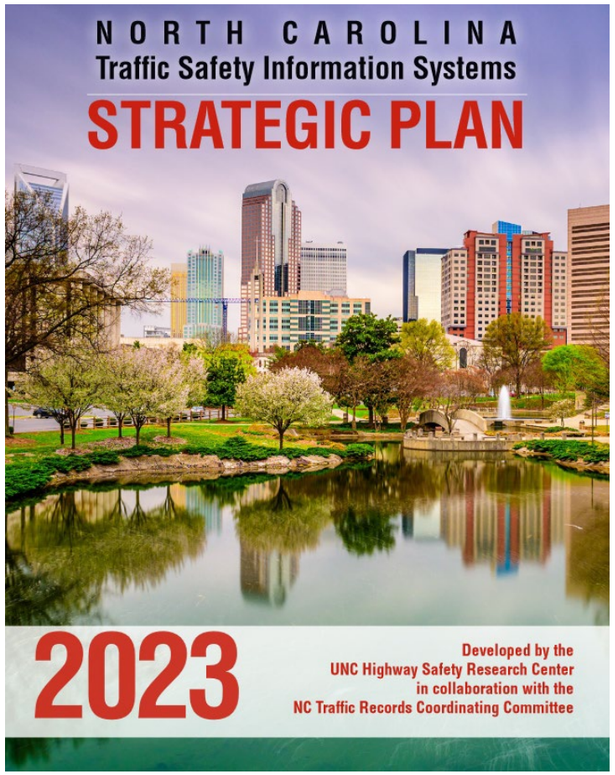
Model

Minimum

Uniform

Crash

Criteria



Key Resources

- ED Data Resources: https://ncdetect.org
  - Includes training videos for using NC DETECT
- Police Reported Crash Data Resources: https://connect.ncdot.gov/resources/safety/Pages/TEAAS-Crash-Data-System.aspx
  - Training available for using TEAAS data
- Crash, Injury, and Health Data Dashboards:
  - https://www.arcgis.com/apps/dashboards/b0bb09fcff824e8da4e8cfe4f79b9b30
  - https://ncvisionzero.org/visualizations/safety-dashboard/
  - https://cchi.web.unc.edu/nc-transportation-safety-public-health-data-dashboard/
- Traffic Safety Information Systems Strategic Plan: https://connect.ncdot.gov/groups/NCTRCC/Documents/2023%20TRCC%20Strategic%20Plan.pdf

Thank you!

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