Available State Safety Data Resources

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Why are we using safety data?



PRIORITIZE INVESTMENTS

MONITOR PROGRESS

EVALUATE OUTCOMES



How are we defining "safety"?



Moving toward a "Safe System" and integrated health perspective



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



Spectrum of relevant injuries and injury data sources



RESEARCH CENTER

Table courtesy of Katie Harmon, UNC-HSRC



ta By irce	DMV crash data	EMS data from EMSPIC	ED data in NC DETECT	Trauma Reg- istry data
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MVC data sources identified and documented

- 1. Crash data (NC DMV)
- 2. EMS data (NC OEMS)
- Emergency department data (NC DETECT) 3.
- Hospital encounter data (NCHA)* 4.
- 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)

data owner's request



*Identified; not documented upon

Police-reported crash data

- How can I access it?
 - <u>https://www.arcgis.com/apps/dashboards/b0</u>
 <u>bb09fcff824e8da4e8cfe4f79b9b30</u>
 - Traffic Engineering Accident Analysis System (TEAAS): <u>https://connect.ncdot.gov/resources/safety/P</u> ages/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



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Unbelted Crashes	s: Teen Driver Crashes: 206.8k
	18.2k
	Motorcycles Trucks
	Alcohol-Involved Crashes: 61.4k
	Alcohol Drugs
	Additional Safety Resources
	About the Data Crash data in this dashboard includes all reported crashes in NC except those occurring in private vehicular areas or parking lots. This includes even low damage and no damage crashes, which differs from the \$1000 damage reporting threshold used in other crash publications, such as NC DMV Traffic Crash Facts'.
E145	
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Vision Zero Portal

 Safety Dashboard offers data, analytics, and visualizations



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



NC ZERØ

SELECT YEAR(S)	
2023	•
SELECT INJURY LEVEL	
K Killed	•
SELECT LOCATION	
 State County City LEL Region Planning Organization 	
NC	•
REPORTING DEPARTMENT	
(AII)	•
DATE OF LAST AVAILABLE DATA: 11/30/2023	1

Data presented herein may differ slightly from NCDOT published data due to differences in reporting and update frequencies. The intent of presenting these data is to provide insights and trends for general informational purposes only, and is not intended as official authoritative data. For any official reporting purposes, please contact



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





Emergency Department visit records

- How can I access it? \bullet
 - Local Health Department
 - State Syndromic Surveillance System, NC DETECT: https://ncdetect.org
- What should I be aware of? ullet
 - 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 ebikes



The North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT) is North Carolina's statewide syndromic surveillance system. NC DETECT was created by the <u>North Carolina Division of Public Health</u> (NC DPH) in 2004 in collaboration with the Carolina Center for Health Informatics (CCHI) in the UNC Department of Emergency Medicine to address the need for early event detection and timely public health surveillance in North Carolina using a variety of secondary data sources. Authorized users are currently able to view data from emergency departments, North Carolina Poison Control, and emergency medical services (EMS), as well as pilot data from select urgent care centers.

NC DETECT is designed, developed and maintained by CCHI staff with funding by the NC DPH. New functionality is added regularly based on end user feedback.

Please send questions to ncdetect@listserv.med.unc.edu.

Data Sources & Update Frequency





Includes pre-designed dashboards, table, and map generators

Counts by Definition

Date Range: 1/1/2017 - 12/31/2023 County: All NC Counties Source: NC DETECT; Generated: 1/21/2024



ED: Transport - Pedestrian vs. MVT = ED: Transport - Pedestrian-Related





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Trauma data

- How can I access it? \bullet
 - Through local Trauma Center or State Trauma Registry
 - https://cchi.web.unc.edu/datasources-for-motor-vehiclecrash-injury-in-north-carolina/
- What should I be aware of? \bullet
 - 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	
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Category		Field		Descripti
Demographic- Record Info		Record Compl	ete	Indicates record.
	Υ		Yes	
	Ν		No	
	Blank		Implie	d Yes
Demogra Record Ir	-	Facility		Displays code and
Demogra Record Ir		Initial Location		Indicates was adm
	2		Emerg	jency Dep
	3		Opera	ting Roon
	4		Intens	ive Care
	5		Step-D	Down Unit
	7		Telem	etry Unit
	8		Floor	
	9		Obser	vation Un
	10		Radio	logy
	11		Post A	nesthesia
	12		Specia	al Procedu
	13		Labor	and Deliv
	14		Pediat	tric ICU
	?		Unkno	own

ion

s the completeness status of

the unique hospital identifier d description for your facility.

s the initial location the patient nitted at your facility.

partment

m

a Care Unit

ure Room

very

EMS data

- How can I access it? igodot
 - 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? \bullet
 - 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

NATIONAL EMS DASHBOARD: TRAFFIC CRASHES



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.



THE UNIVERSITY OF NORTH CAROLIN

HIGHWAY SAFETY

RESEARCH CENTER

Carolina Center for Health Informatics

Department of Emergency Medicine in the School of Medicine



NC Transportation Safety & Public Health Data Dashboard

Transportation Safety & Public Health in North Carolina



Welcome to the NC Transportation Safety & Public Health Data Dashboard

Take a moment and imagine a North Carolina without motor vehicle crash injuries and fatalities. At first this may seem daunting. There are 107,642 miles of roadway across the state [1] and in 2019 alone over 250,000 crashes were reported [2]. However, in reality this idea is not so farfetched. The fight to reduce injuries and fatalities stemming from motor vehicle crashes is a "winnable battle" because there are known ways to prevent them [3]. This data dashboard takes a public health approach [4] to examining motor vehicle crashes in North Carolina and the health impacts to those involved.



Through our orientation modules, you will learn about the public health approach to road safety research, the causes of motor vehicle crashes, the safe systems approach to crash prevention, and the concepts of intervention equity and outcome disparities. These concepts are then applied to several topics of interest, including: child passenger protection, pedestrian injuries and fatalities, and the impact of the COVID-19 pandemic on motor vehicle crashes and health outcomes in North Carolina.

We hope that, through this approach, you will be able to better understand the crash-related stories within your community and, in turn, help bring North Carolina closer to its goal of zero motor vehicle related crashes and injuries!





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





Hospital encounter data (NCHA)

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

Frequency of child pedestrian injuries, by expected source of payment





Road User Type, Stratified by Hospital Admission Mecklenburg County (N=12,191)



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%)	1
C – Possible injury	488 (16%)	2,523 (84%)	C
O – No injury	20 (12%)	141 (88%)	ir
Total	2,582 (38%)	4,157 (62%)	

HIGHWAY SAF

50% of "B" injuries were defined as "serious"

61 pedestrians lassified as "Not njured" received nedical 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.







Moving toward a "Safe System" and integrated health perspective



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



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

	Risk assessment	
Road user exposure	Crash likelihood	Crash severity
The who, how, when and in what numbers are using the road; exposure to a potential crash.	Groups of factors affecting probability of a crash involving road users and/or road environment.	Groups of factors affecting probability of severe injury outcome in a crash.
Length, width	Separation of road user movements	
AADT, turning volumes		
Number of conflicting movements		
	Movement regulation/m	anagement
	Alignment and geometry	Impact angles
	Traffic - ir	ndividual - impact speeds
	Guidance, delineation	Vehicle design and mass
Vehicle occupants	Shoulders, roadsides	Barriers, hazard severity
Cyclists	Asset condition	n
Motorcyclists	Workload, fatigue	Emergency care
Pedestrians	Compliance, distraction	Seatbelts, helmets
	Gender, fitness to drive, age	

C Austroads 2015.

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 ulletcritical
- Many potential data sources/methods: ullet
 - 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 escooters? (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
Bike lane (image attached):	1
Trail (image attached):	1
Sidewalk (image attached):	1
Shared lane (image attached):	1

2	3	4	5
2	3	4	5
2	3	4	5
2	3	4	5
2	3	4	5

Efforts to Assess and Improve Data

MIRE (Roadway)

Model

Inventory of

Roadway

Elements

MMUCC (Crash)

Model

Minimum

 ${\bf U}niform$

 \mathbf{C} rash

Criteria





N O R T H C A R O L I N A Traffic Safety Information Systems **STRATEGIC PLAN**



Developed by the UNC Highway Safety Research Center in collaboration with the NC Traffic Records Coordinating Committee

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:
 - <u>https://www.arcgis.com/apps/dashboards/b0bb09fcff824e8da4e8cfe4f79b9b30</u>
 - 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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