

2024



NORTH CAROLINA
Department of Transportation

North Carolina Strategic Highway Safety Plan Update



May 10, 2024

The North Carolina Strategic Highway Safety Plan (SHSP) 2024 Update reinforces North Carolina's commitment to roadway safety. This plan builds on the successes and lessons learned from past SHSPs and uses a data- and stakeholder-driven approach to identify the top contributing factors to roadway crashes statewide. The result is a forward-looking plan for reducing fatalities and serious injuries on North Carolina's roadways.

The 2024 Update's data analysis process included an examination of crash trends, social and demographic trends, and equity considerations as well as other statewide and local plans. Over 75 safety partners, representing nearly 50 different groups from across North Carolina, confirmed the identified safety challenges and provided their unique perspectives on the opportunities for improving roadway safety. State agencies, city governments, Metropolitan and Rural Planning Organizations, public health agencies, research organizations, not-for-profits, advocacy groups, and many more partnered in the update process.

North Carolina's update process emphasized the shared responsibility across the diverse range of organizations and agencies to address the complex problems of roadway safety. The result is an SHSP that reflects the inclusive process and the partners' vision for all roadway users to travel safely in our state.

Please join us in working collaboratively toward the 2035 goal of reducing fatalities and serious injuries in half, moving towards zero by 2050. The signatories support the process implemented to develop the North Carolina SHSP 2024 Update and the vision of zero traffic fatalities on North Carolina's roadways.

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J. R. Hopkins

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Date 05/10/2024

J.R. Hopkins, P.E.

Secretary

North Carolina Department
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Yolonda K Jordan

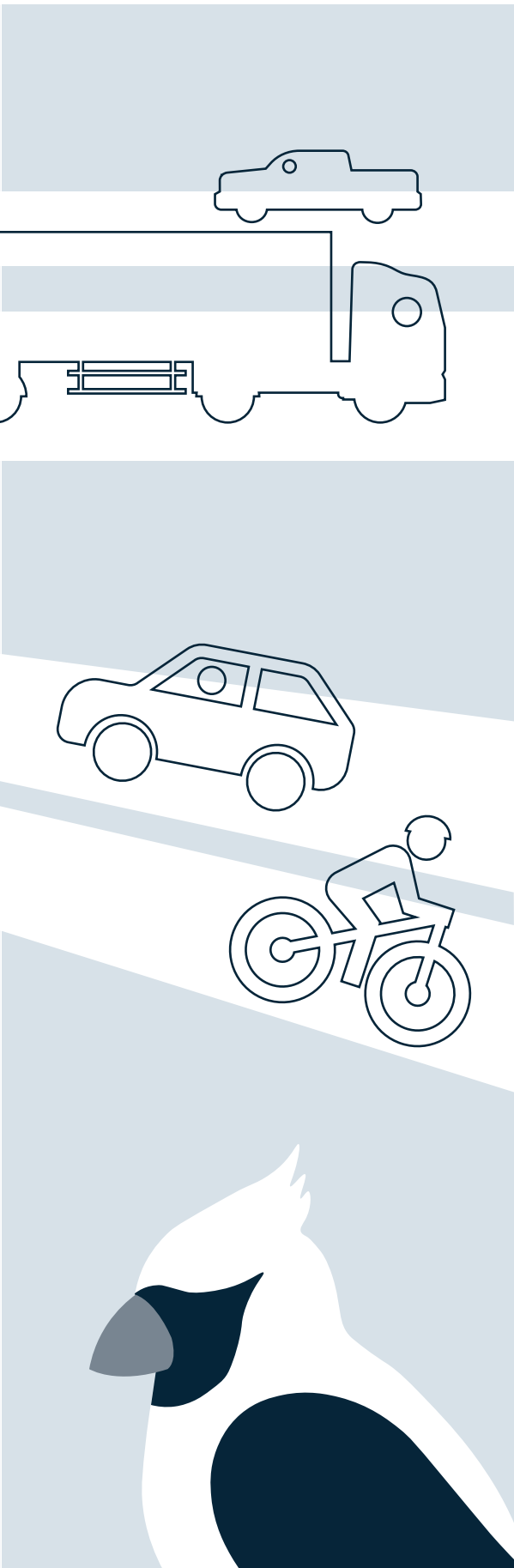
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Acknowledgments

The 2024 North Carolina Strategic Highway Safety Plan (SHSP) is a result of the collaboration of safety stakeholders from across the state. Partners representing diverse organizations and agencies developed strategies and supporting actions to reduce crashes and the resulting fatalities and serious injuries. They are committed to implementing the SHSP over the next 5 years.

100 Black Men of Greater Charlotte

AARP

Bike Durham

BikeWalk NC

Burlington-Graham MPO

Capital Area MPO

City of Apex

City of Charlotte

City of Durham

City of Fayetteville

City of Mebane

City of Raleigh

City of Rocky Mount

City of Wilmington

City of Winston Salem Bicycle/Pedestrian/
Active Mobility Advisory Committee

Durham-Chapel Hill-Carrboro MPO

East Carolina University: Research for Older
Adult Driver Initiative

Federal Highway Administration

Federal Motor Carrier Safety Administration

Greensboro Department of Transportation/MPO

Greenville Urban Area MPO

Institute for Transportation Research
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National Highway Traffic Safety Administration

NC Chamber of Commerce

NC Conference of District Attorneys

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NC Department of Health and Human Services
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Congestion Management

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Peanut Belt RPO

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Safe Kids North Carolina

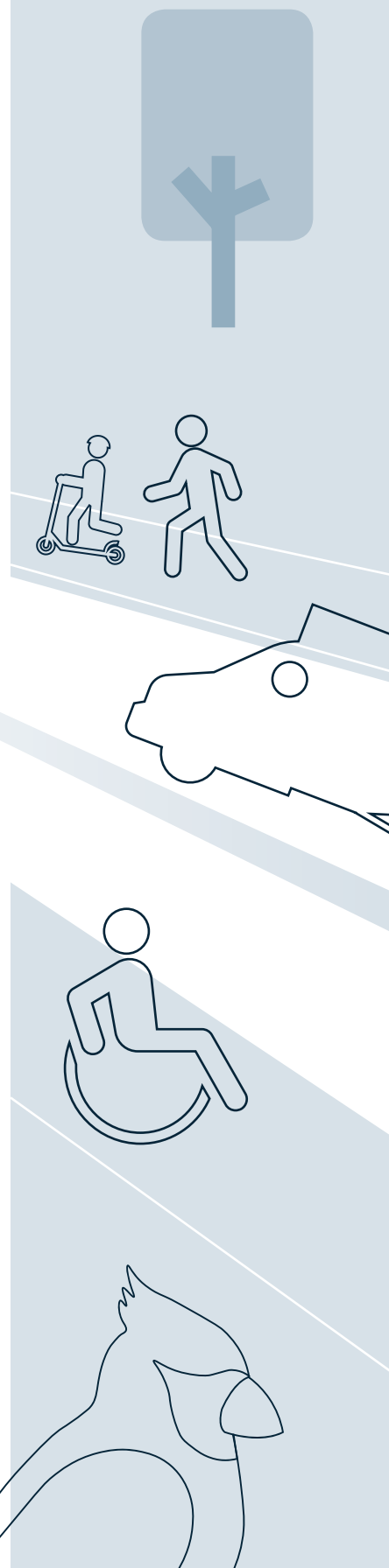
Town of Benson

University of North Carolina Highway
Research Center

University of North Carolina Injury Prevention
Research Center

Acronyms

BIL	Bipartisan Infrastructure Law
BAC	Blood Alcohol Concentration
ECHS	Executive Committee for Highway Safety
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
GDL	Graduated Driver's Licensing
HRRR	High Risk Rural Road
HSIP	Highway Safety Improvement Program
HSP	Highway Safety Plan
MPO	Metropolitan Planning Organization
NCDMV	North Carolina Division of Motor Vehicles
NCDOT	North Carolina Department of Transportation
NCDPI	North Carolina Department of Public Instruction
NC GHSP	North Carolina Governor's Highway Safety Program
NC OSBM	North Carolina Office of State Budget and Management
NHTSA	National Highway Traffic Safety Administration
RPO	Rural Planning Organization
SEDC	State Electronic Data Collection
SMART	SMART (Specific, Measurable, Attainable, Responsible, Time-bound)
SS4A	Safe Streets and Roads for All
SHSP	Strategic Highway Safety Plan
TDI	Transportation Disadvantaged Index
VMT	Vehicle Miles Traveled
VRU	Vulnerable Road User
VRUSA	Vulnerable Road User Safety Assessment



2024

Vision, Mission, and Goal > > > > >

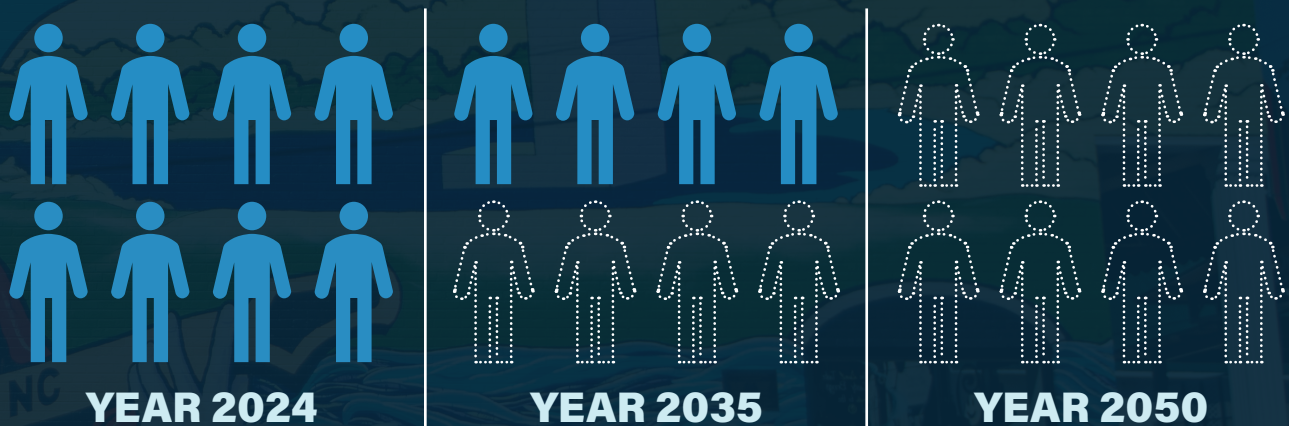


North Carolina is a Vision Zero state; even one fatality or serious injury on our roadways is unacceptable. The vision provides the long-range ideal. The mission expresses the safety stakeholders' motivation and commitment to this Plan. The goal is both ambitious and achievable with a clear timeline for accomplishment.

VISION: Through our partnerships, we foster safety awareness and provide safe access throughout North Carolina for all users and modes of travel such that everyone arrives safely at their destination.

MISSION: Establish a collaborative, strategic approach to the identification and implementation of safety improvement programs and policies to achieve the statewide goals to reduce fatalities and serious injuries related to crashes on North Carolina's transportation system.

GOAL: Reduce fatalities and serious injuries by half by 2035, moving towards zero by 2050.





Welcome to North Carolina

From the rolling hills of the Blue Ridge Parkway to the barrier islands of the Outer Banks, North Carolina's geographically, economically, and culturally diverse population relies on the state's vast transportation network to connect communities and businesses and to keep up with growing demands.

In 2023, North Carolina was the fifth fastest growing state in the country.¹ In a state with so much natural beauty, a strong economy, innovation and research, thriving communities, and leading institutions, there has been an increase in the number of people who want to call North Carolina home. With such rapid growth, we need a transportation system that can serve an increasing number of travelers and connect people safely to their destination, whether for a daily commute or vacation travel. Roadways play an important role in connecting the state's urban metros to more rural areas. Despite having high growth areas, North Carolina is a rural state—one in three North Carolinians live in a rural area and depend on a connected roadway network to get them to their destination.² **The North Carolina Department of Transportation (NCDOT) is responsible for approximately 80,000 centerline miles of roadway, making North Carolina's roadways the second largest publicly-owned network in the country.**

In addition to population growth, North Carolina has experienced many changes in the last 5 years. Events around the world changed how we socialize, work, and travel. North Carolina's unique transportation needs are influenced by the state's diverse geography, regional cultures, and demographic shifts. The Strategic Highway Safety Plan (SHSP) is a plan that identifies safety problems and opportunities, establishes statewide goals, and outlines implementable solutions to meet those goals.

The 2024 North Carolina SHSP Update (hereinafter referred to as the 2024 Update) is a refresh to the 2019 Update and the fifth iteration of the plan since 2004. This is the second 5-year update, as required by federal regulations. The SHSP is an NCDOT-led plan but its success is the **responsibility of the statewide safety partners**. The update, implementation, and monitoring of the SHSP relies on participation and contributions from stakeholders representing diverse safety needs, populations, and geographies.

¹ <https://www.osbm.nc.gov/blog/2023/12/20/north-carolinas-strong-population-growth-continues#:~:text=According%20to%20the%20US%20Census,added%20to%20North%20Carolina's%20population>

² <https://www.osbm.nc.gov/blog/2023/01/09/making-sense-new-urban-area-definitions#:~:text=At%203%2C474%2C661%2C%20North%20Carolina%20had,were%20defined%20for%20each%20decade>



The SHSP: A Path to Safety

*'Highway' may be in the name of the plan, but the SHSP is broad in its reach and addresses traffic-related fatalities and serious injuries on **all public roads** in North Carolina. With that in mind, the statewide plan also has ties to federal and local programs and plans.*

Federal Initiatives

At the federal level, the SHSP is part of the Federal Highway Administration's (FHWA's) Highway Safety Improvement Program (HSIP), which is an overarching program to reduce fatalities and serious injuries on the nation's public roadways. Each state receives HSIP funding to develop programs and projects to improve safety on their roadways and is required to submit an annual report summarizing the state DOT's implementation and effectiveness of its HSIP. NCDOT's HSIP emphasizes three programs: Roadway Departure, Intersections, and Pedestrian and Bicycle Safety.

NCDOT and FHWA represent the infrastructure side of transportation safety, while the North Carolina Governor's Highway Safety Program (NC GHSP) and the National Highway Traffic Safety Administration (NHTSA) are responsible for safety initiatives related to human behavior. Under NHTSA requirements, NC GHSP develops a triennial Highway Safety Plan (HSP) and promotes highway safety awareness programs and initiatives. The safety priorities presented in the SHSP directly align with safety priorities in the HSP.

Special Rules

The 2021 Bipartisan Infrastructure Law (BIL) continued two existing Special Rules and introduced one new Special Rule under the HSIP: High-Risk Rural Road (HRRR), Older Drivers and Pedestrians, and Vulnerable Road User (VRU) Safety. The continued HRRR Special Rule applies to any roadway NCDOT defines as a functionally classified rural collector (major or minor) or a rural local road that has a significant safety risk as identified through a field review, safety assessment, road safety audit, or local knowledge and experience.

Under the continued HRRR Special Rule, NCDOT is required to monitor the fatality rate for 2-year periods and identify any increases in rates. Similarly, the continued Older Drivers and Pedestrians Special Rule requires NCDOT to monitor for significant increases in the fatality rates for drivers and pedestrians 65 years of age or older. Based on the data analysis, both special rules apply to North Carolina in the current 2-year reporting period (as of publication of the SHSP in 2024).

The new VRU Safety Special Rule focuses on non-motorist safety and is a new FHWA requirement for all states per BIL. All states are required to complete a Vulnerable Road User Safety Assessment (VRUSA) as part of their SHSP.

Statewide Initiatives

Various statewide plans like the Statewide Transportation Plan, Commercial Motor Vehicle Safety Plan (CMVSP), Statewide Multimodal Freight Plan, and regional long-range transportation plans all connect back to the SHSP. As part of a coordinated transportation planning effort, the SHSP provides strategic direction for other local and state plans by establishing consistent safety goals and objectives that support a performance-based highway safety program. Development and implementation of plans requires funding from a range of sources including core federal safety funding mechanisms (infrastructure and behavioral), the HSIP, and discretionary funding and grants.

Local and Regional Initiatives

Safety planning is also taking place at the local and regional levels. Since 2019, many local and regional governments have joined the safety planning movement, including an additional 12 North Carolina towns, cities, counties, and Metropolitan Planning Organizations (MPOs) becoming Vision Zero Communities in the past 5 years. As of early 2024, North Carolina has 21 communities officially participating in Vision Zero as part of the North Carolina Vision Zero state collaborative funded by NC GHSP.

In 2021, BIL established the Safe Streets and Roads for All (SS4A) grant program with \$5 billion available to communities from 2022 to 2026. As of early 2024, 28 communities in North Carolina received SS4A grants after 2 of the 5 funding cycle awards—totaling over \$12.3 million for planning, demonstration, and implementation grants. These funds were distributed to a mix of communities in urban and rural settings. In addition to federal discretionary grants, local governments and regional planning organizations have developed safety plans using HSIP funding provided by NCDOT. Many communities are using discretionary grants or NCDOT funds to develop new or update existing safety action plans, many of which pull from the established goals and objectives of the SHSP.

With NCDOT supporting comprehensive safety action plans for local governments and MPOs and additional funding opportunities from SS4A, the number of North Carolina communities with safety action plans is expected to grow significantly. Over the course of the next 5 years, the SHSP can be a resource for safety professionals in various capacities. The 2024 Update can bridge the gap between local and federal planning by aligning efforts with the goals, vision, safety priorities, and solutions outlined in the SHSP. By coordinating safety planning efforts across the state, North Carolina can make notable strides towards achieving zero roadway fatalities and serious injuries by 2050.



Safety Improvements are a joint effort across many state, regional, and local partners.

Safe System Approach

Federal, state, and local leaders are exploring a fundamental shift in how we identify and address traffic safety problems. Part of this shift is adopting the Safe System Approach. The Safe System Approach recognizes that humans are vulnerable and make mistakes. A Safe System is designed, operated, and maintained so that those mistakes never lead to death or serious injury. All transportation stakeholders share responsibility in creating a safe system. This includes proactive and redundant strategies to address risks before they lead to deaths or serious injuries.

North Carolina has incorporated the 5 elements of the Safe System Approach—Safe People, Safe Roads, Safe Speeds, Post-Crash Care, and to a lesser extent, Safe Vehicles—either directly or indirectly in previous SHSP emphasis areas, data analysis, and strategies. The 2019 Update noted the importance of educating safety partners on the Safe System Approach as an early step towards implementing the approach in North Carolina.

In the 2024 Update development, North Carolina safety partners rededicated themselves to the core objectives with a strong emphasis on the principles that shape the Safe System Approach. The principles form the basis of the approach and represent a significant shift from traditional safety approaches.³ The Emphasis Area Working Group members developed the 2024 strategies and supporting actions with the intention of:

- Preventing deaths and serious injuries, rather than preventing crashes.
- Encouraging designs that accommodate for human mistakes and limitations.
- Reducing system kinetic energy.
- Emphasizing shared responsibility, rather than individual responsibility.
- Proactively identifying and addressing risk, rather than reacting based on crash history alone.

The inclusion of the Safe System Approach in the 2024 Update is most evident in comprehensive sets of strategies that address the various Safe System Approach principles, focus on preventing the most severe crashes, and promote a multi-pronged and multi-disciplinary approach to improving roadway safety in North Carolina. **This approach will lead to a transportation system that encourages all stakeholders—planners, designers, operators, advocates, and road users—to make the safe choice, by making it the easy choice.**



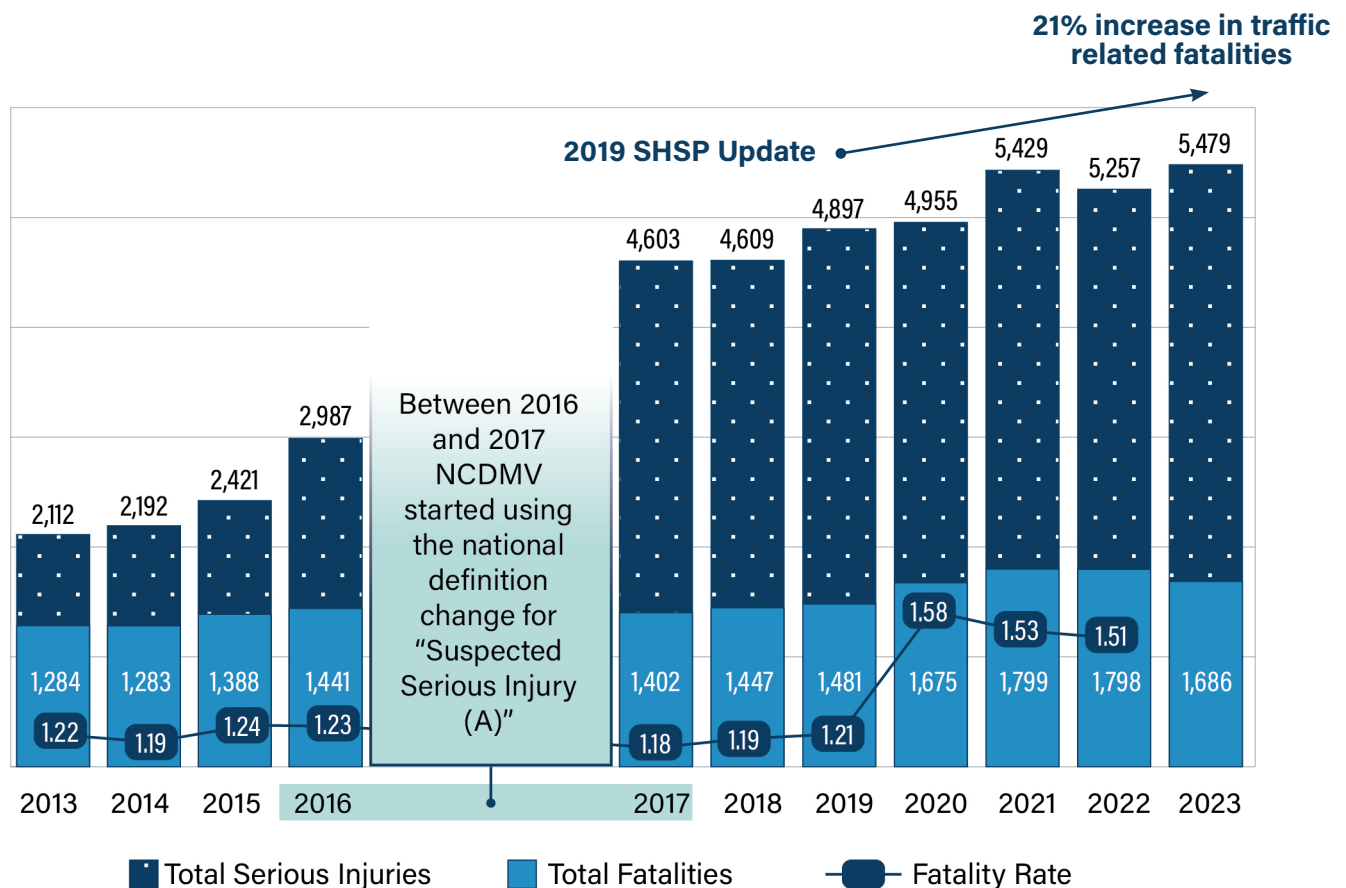
³ <https://www.transportation.gov/NRSS/SafeSystem>

Data Drive: The Road Behind Us

The SHSP Update is, first and foremost, a data-driven process. This plan uses safety and safety-related data to identify trends in the state, diagnose problems, develop targeted strategies, and supporting actions that transportation safety stakeholders will implement. The following sections provide an overview of general trends in North Carolina that can help inform a broader discussion about safety. Each emphasis area has its own unique data profile and characteristics that build on these data.

Traffic-related fatalities have increased by nearly 21% since the 2019 Update, based on 5-year rolling averages in 2018 and 2023. This reflects a sharp increase in 2020 when stay-at-home conditions were prevalent, and fatalities have remained higher since then. When the amount of motor vehicle travel in North Carolina is considered—known as vehicle miles traveled (VMT)—fatality rates have also increased relative to 2019, although the trend has shown a slight decline in recent years.

Serious injuries have also greatly increased since 2016. Although this is partially due to a change in the suspected serious injury definition used in crash reporting that year, the increase has remained persistently high despite the slight decrease in fatalities.



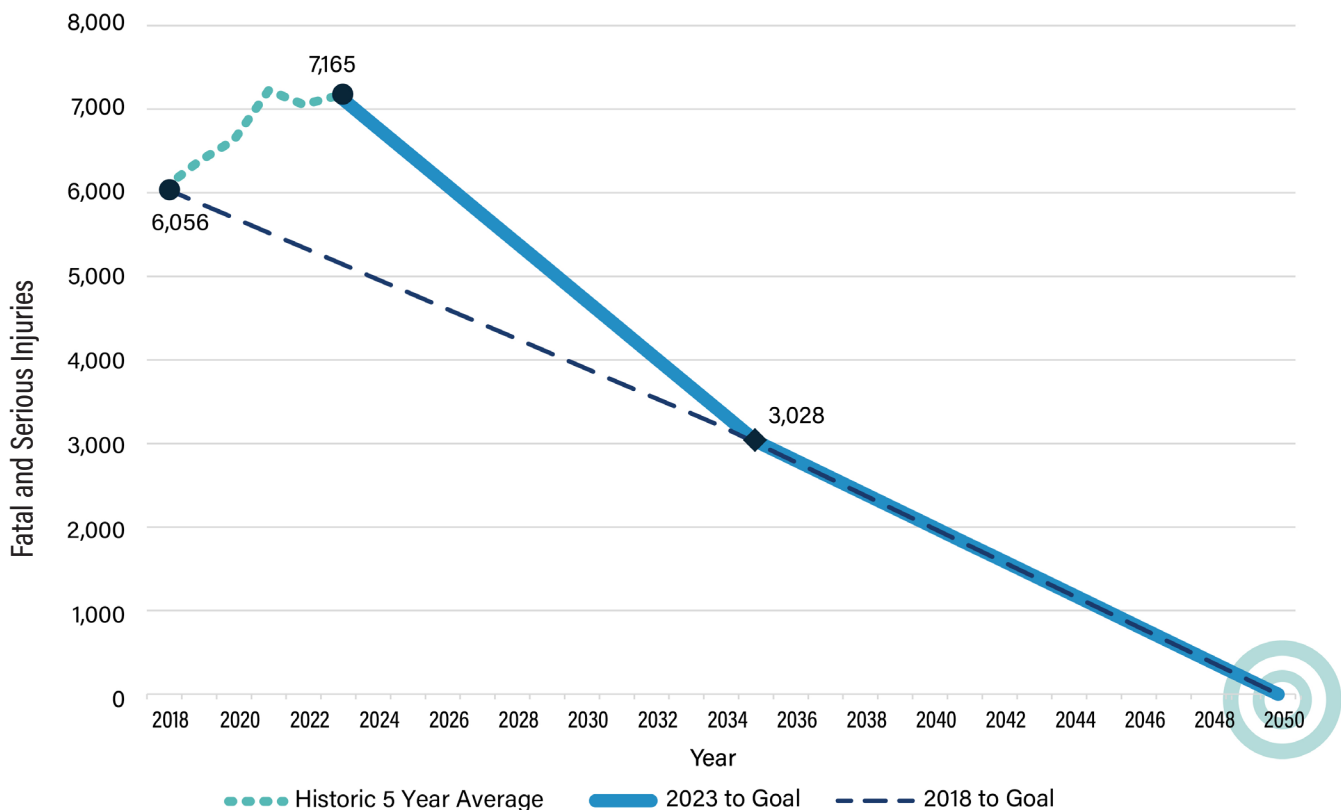
*The total number of fatalities and serious injuries and fatality rate by year, over the past 10 years (2013 - 2023).
Sources: FHWA Highway Statistics Tables VM-2. (2017 to 2022); NC Crash Database as of April 2024 (2016 to 2023);
HSIP 2022 Report (2013 to 2016).*

Making Up Lost Ground

Because it is updated every 5 years, the SHSP is reactive to the data trends in the preceding years while balancing proactive approaches to address future safety concerns. The SHSP goal is intended to be broad and tie back to the mission: reducing fatalities and serious injuries to zero. Previous North Carolina SHSPs have updated the goal slightly with each iteration to reflect the fluctuation in data trends and safety needs at the given time. The 2019 goal—reduce the fatalities and serious injuries by half by 2035, and moving towards zero by 2050—was measurable, specific, and the first NC SHSP zero-based goal.

In the 2024 Update, the North Carolina Executive Committee for Highway Safety (ECHS) unanimously voted to retain the previous goal, including the target years. This is a significant step in further solidifying the commitment to achieving a safe system. Given the upward trend over the past 5 years, North Carolina now must make significant strides to first return to the 2019 starting point and then close the gap towards zero. The figure below illustrates the path to zero in the next 25 years.

In order to return to the path set in 2019, North Carolina would need to experience a 9% decrease in fatalities each year.

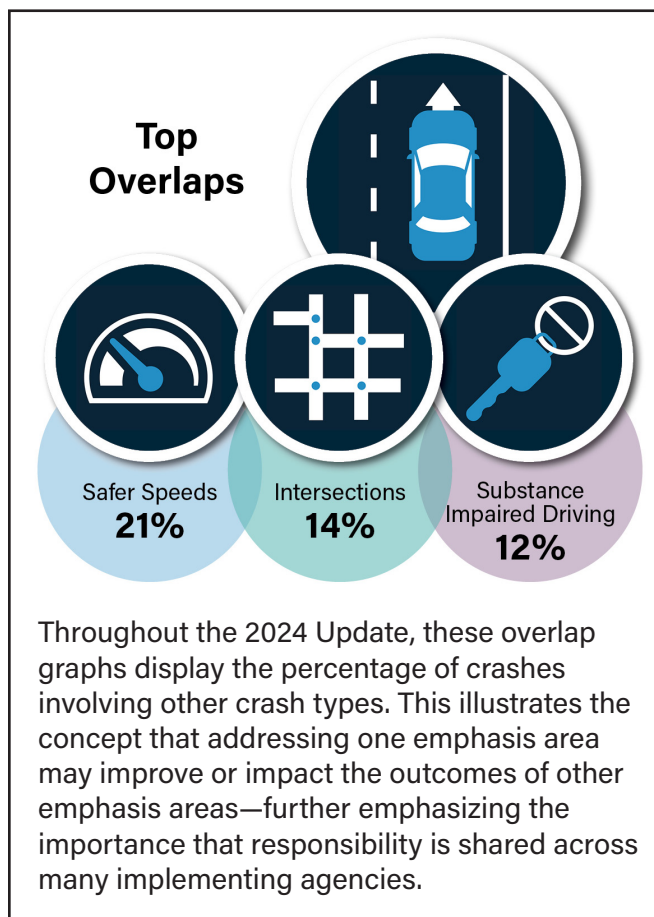


The estimated number of lives saved every year to achieve the goal of reducing the fatalities and serious injuries by half by 2035 and moving towards zero by 2050. The graph illustrates the discrepancy between the goal based on the 2019 Update and the 2024 Update. Sources: NC Crash Database as of January 2024 (2017 to 2023); Previous NC SHSP (2014 to 2018 Average).

One role of the SHSP is to identify emphasis areas, which are roadway safety elements or concerns that have the greatest potential for reducing fatalities and serious injuries. In other words, significant strides in these emphasis areas would reduce severe crashes, the related risks, and move the needle towards zero.

The 2019 Update tracked 11 emphasis areas, 10 of which relate to specific travel modes, road users, behaviors, and crash types that can be measured in North Carolina's crash data. These represent key contributing factors present in the state's most severe crashes. However, redundancy is crucial. Although emphasis areas have standalone sections in this plan, actions that address one emphasis area, such as reducing speeds, can have benefits in other areas, such as reducing the potential for a lane departure. The 2019 Update noted that several emphasis areas can contribute to a single crash, and...

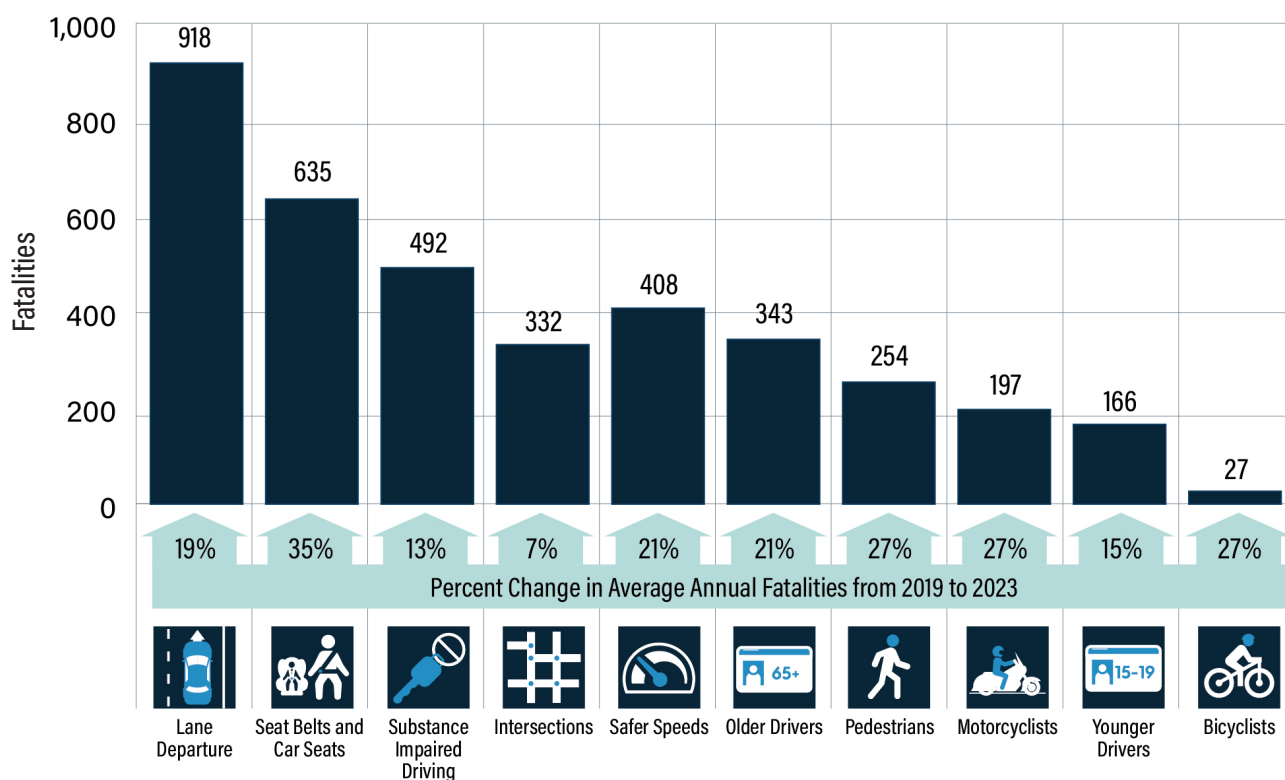
...a key goal of the 2024 Update is to proactively target multiple factors that could converge and lead to severe outcomes.



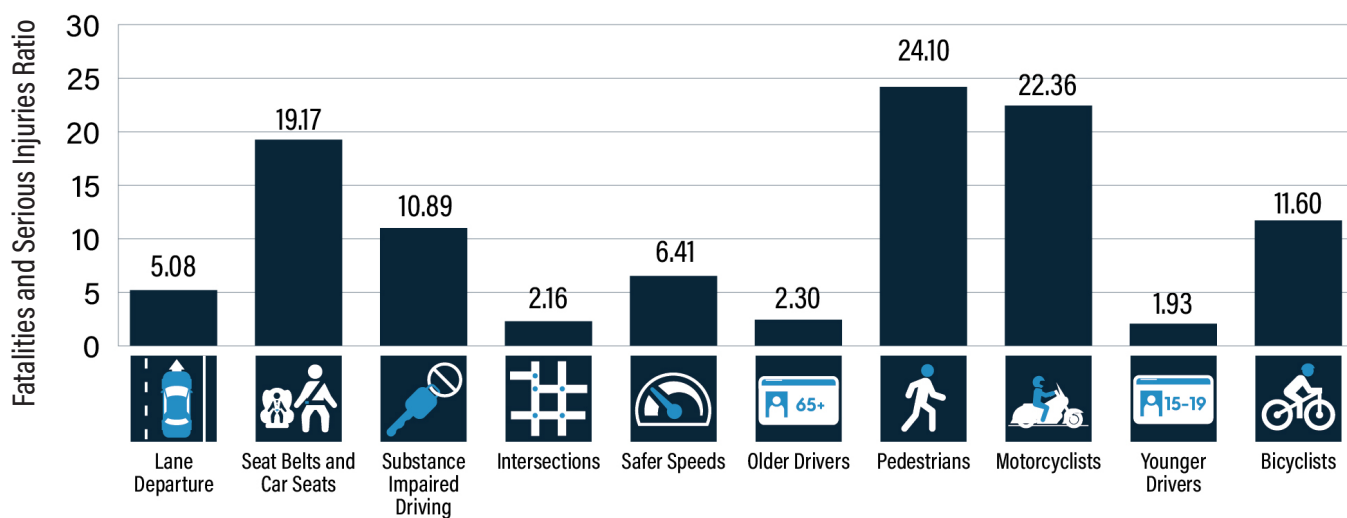
As with total fatalities and serious injuries, fatalities that involve SHSP emphasis areas are also on the rise—5-year rolling averages have increased for all emphasis areas between the 2019 and the 2024 updates. Lane departure, seat belts and car seats, and substance impaired driving are some of the leading contributing factors for severe crashes in North Carolina. However, vulnerable road users, such as bicyclists and pedestrians, are key road users for reducing fatalities on North Carolina's roads.

Although non-motorist crashes represent a minority of crashes in North Carolina, typically around 1% of the total, they tend to result in more severe outcomes and represent a greater share of all fatalities and serious injuries. **In 2023, non-motorists represented 18% of all roadway fatalities.**

The figures on the following page illustrate the severity of emphasis area fatalities (Ks) and serious injuries (As). For example, pedestrians, motorcyclists, and bicyclists represent emphasis areas with lower total fatalities and serious injuries. However, on a crash-by-crash basis, these crash types result in more frequent severe outcomes.



The average annual fatalities by emphasis area and the percent change in the average annual fatalities between 2019 and 2023. Source: NC Crash Database as of April 2024 (2016 to 2023); Previous NC SHSP (2014 to 2018 Average).



The ratio of the fatalities and serious injuries to total crashes, representing the severity of crashes by emphasis area. Source: NC Crash Database as of April 2024 (2017 to 2023).

The data presented here is important for two reasons. First, it emphasizes the importance of examining the crash data in several ways. If only considering total crash counts, many types of roadway safety concerns would be missed—especially those of the most vulnerable. Second, this underscores the importance of context—one safety solution does not fit all safety needs and challenges. The types of crashes and contributing factors will vary across the state.

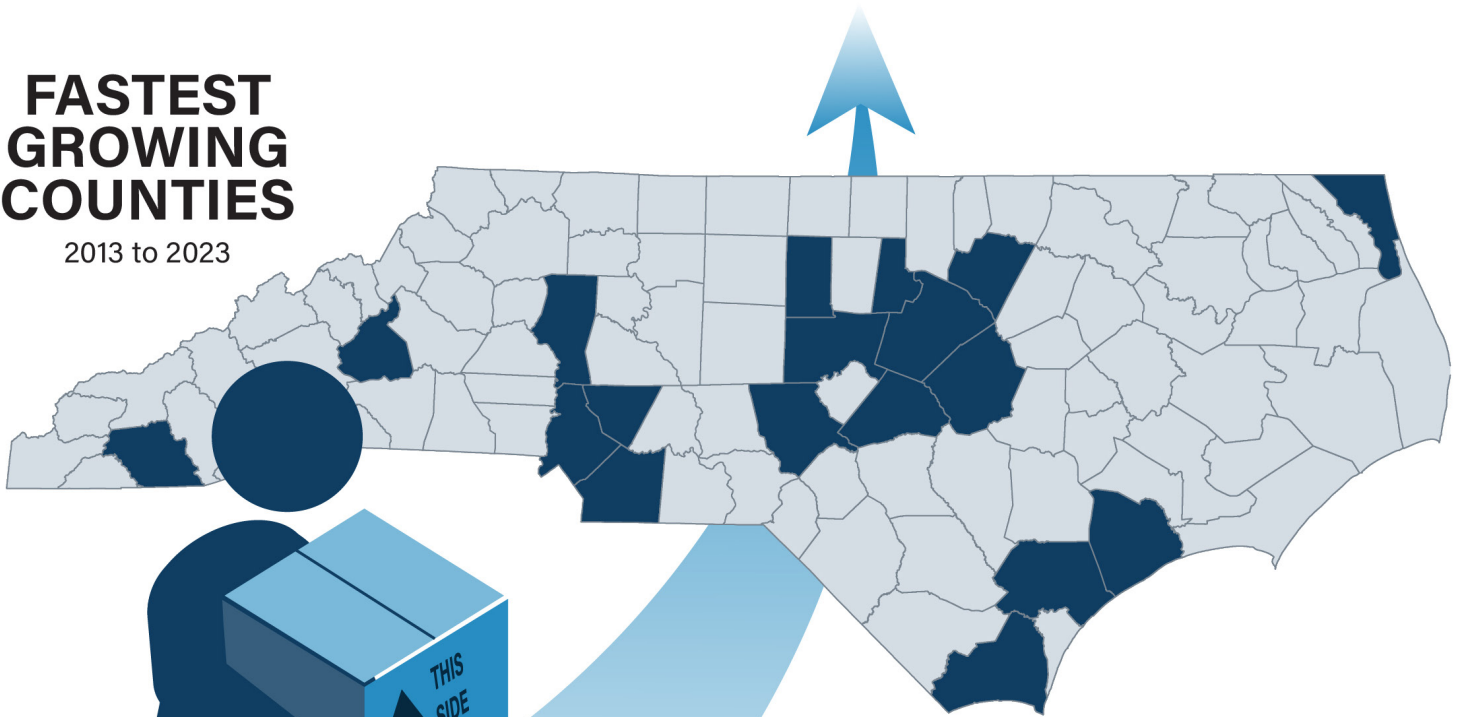
North Carolina's Growth

North Carolina continues to trend as a fast-growing state. In 2023, North Carolina added 140,000 new residents, making it the fifth fastest growing state in the country. As of the 2020 Census, 10.47 million people call North Carolina home. This is projected to grow to 11.7 million residents by 2030. This is reflected in the demographic and travel pattern data, as urban and metropolitan counties have seen dramatic increases in population. The regions currently experiencing the highest population growth are in major urban centers and their suburbanizing neighbors.

With more residents come more drivers, pedestrians, bicyclists, and other road users, and population growth affects many aspects of the cultural landscape. This macro-level trend shows that the key to enhancing road safety in North Carolina is focusing on localized data by region and emphasis areas. Safety trends in rapidly urbanizing neighborhoods are not the same as those in more rural communities. Tailored strategies, grounded in data-driven insights, are essential for impactful interventions.

FASTEST GROWING COUNTIES

2013 to 2023



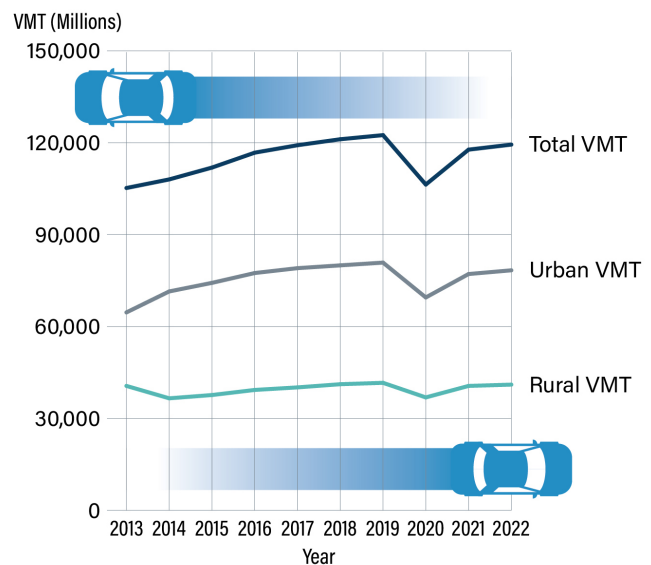
27% Johnston	19% Chatham
27% Brunswick	18% Mecklenburg
25% Cabarrus	18% Durham
22% Wake	17% Union
20% Currituck	17% Iredell

Population Increase

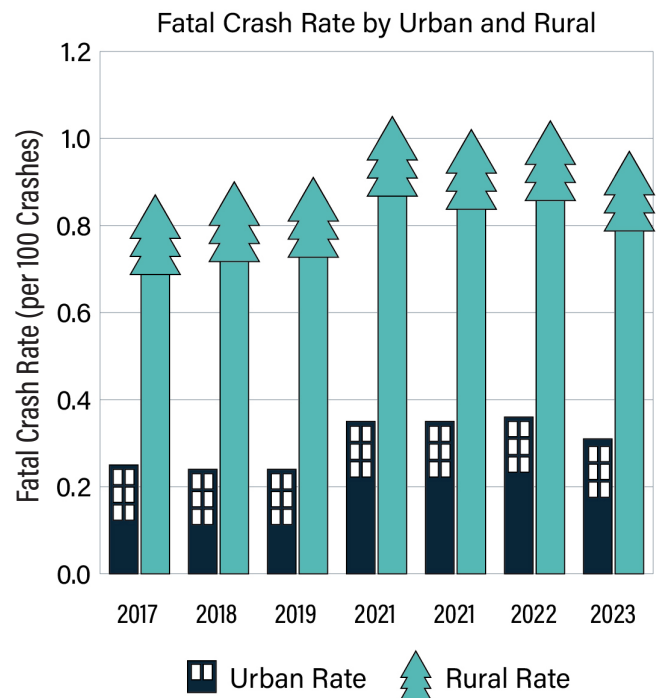
As 2020 underscored, there are other societal shifts and trends affecting both urban and rural communities. VMT declined sharply in 2020 as a result of stay-at-home conditions. The downward trend in VMT coupled with the increase in fatal crashes resulted in a sharp increase in the fatality rate, illustrating the compounding effects of moments of cultural significance.

Paralleling the rapid growth in the state's urban areas, urban VMT is nearly double rural VMT in any given year. Urban VMT also decreased the most significantly in 2020. In the years since, vehicle travel has largely rebounded to 2019 levels with anticipated growth for the foreseeable future. Although urban areas tend to have more vehicles on the road (and more crashes), rural areas tend to experience more severe crashes on a per crash basis. Again, context matters when considering how best to improve safety across the state.

Population increases also impact travel mode choices. Urbanizing communities leads to more people biking, walking, and taking transit every day, and this is reflected in reported commuting trends data. Furthermore, when and how people get around North Carolina has been shown to change over time. Stay-at-home conditions in 2020 encouraged remote work options, and this trend has affected urban, suburban, and rural areas alike. As North Carolina plans for zero severe crashes, changes in how, when, and where people travel should be closely monitored.



*Changes in VMT trends for rural and urban settings and total for the state over the last 10 years.
Source: FHWA Highway Statistics Tables VM-2.
(2013 to 2022)*



Fatal Crash Rate (per 100 crashes) by Urban and Rural (2017 to 2023). Source: NC Crash Database as of April 2024 (2017 to 2023)

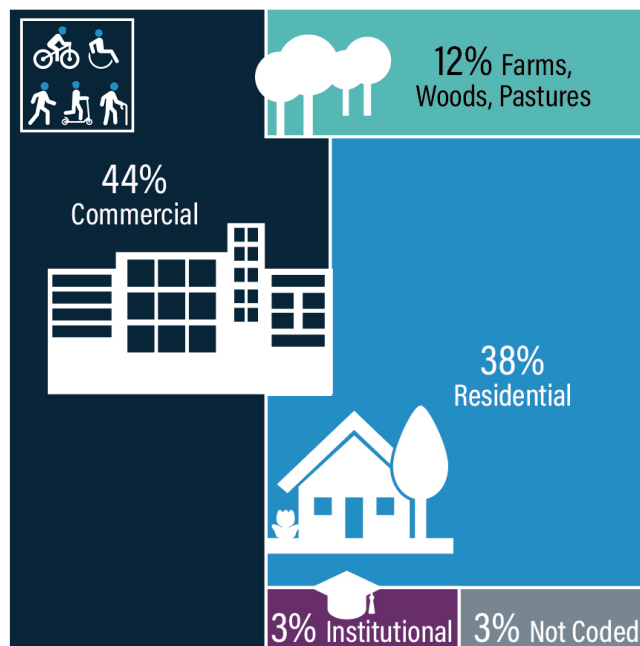
Context Matters in Crash Outcomes

When and how people get around North Carolina has been shown to change over time—this trend has affected urban, suburban, and rural areas alike.

The closeness of destinations in urban and suburban areas encourages personal mobility and with that, an increase in non-motorist crashes compared to rural areas. Residential and commercial land uses tend to experience more non-motorist crashes than other land uses. Communities with the highest percentage of transit, bicycle, and walking commuters—like Boone, Carrboro, Chapel Hill—can use this understanding to focus on safety improvements that consider these interactions.

NCDOT's VRUSA further illustrates how **personal mobility** safety can vary greatly within urban and suburban areas. Speed is a major factor in crash severity, and mid-block collisions tend to be more severe than intersection-related collisions. This is often the result of driver expectations, and the speed at which the vehicle is traveling—drivers may not be anticipating non-motorists at mid-block locations and vehicles typically slow when approaching an intersection.

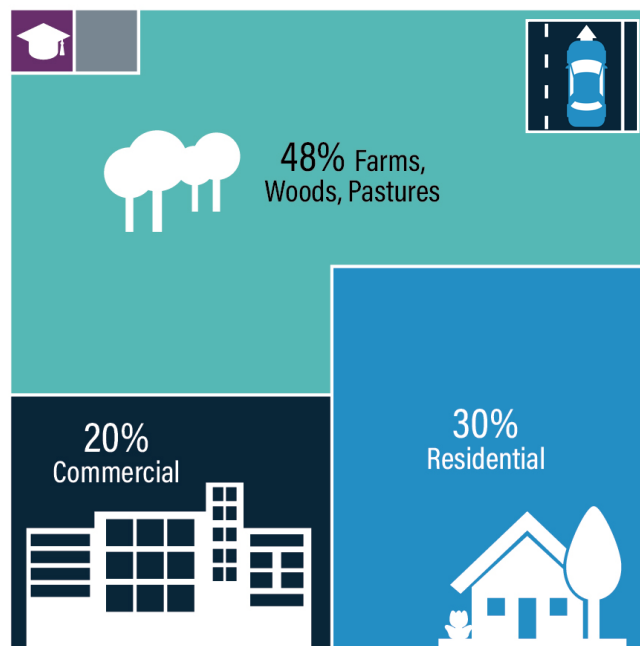
On the other hand, the predominate crash types in more rural communities may be very different. **Lane departure**, which accounts for the most severe crashes in the state, is a major contributing factor in rural settings, particularly on relatively low volume, two-lane roads. Compared to other states, North Carolina had the 3rd highest number of rural, non-interstate fatalities, highlighting the safety challenges in rural areas.



Typical land use contexts where bicyclist and pedestrian crashes occur, illustrating the unique relationship between urban settings and non-motorized roadway users.

Source: VRU Safety Assessment.

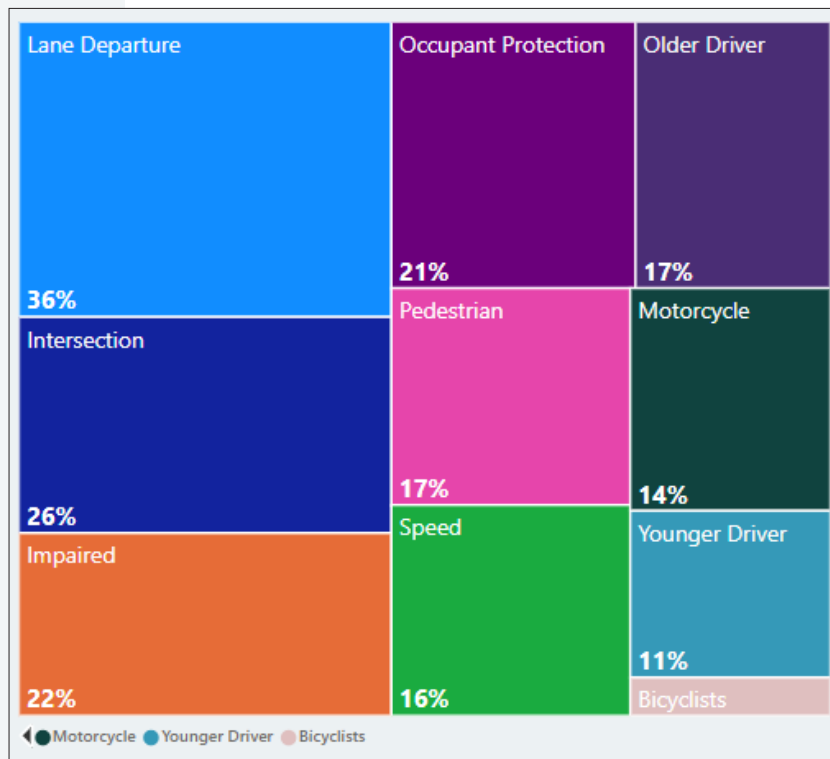
<2% Institutional and Industrial



Typical land use contexts where lane departure crashes occur, illustrating the unique relationship between rural settings and crashes. Source: VRU Safety Assessment.

The Urban Context—Big Picture

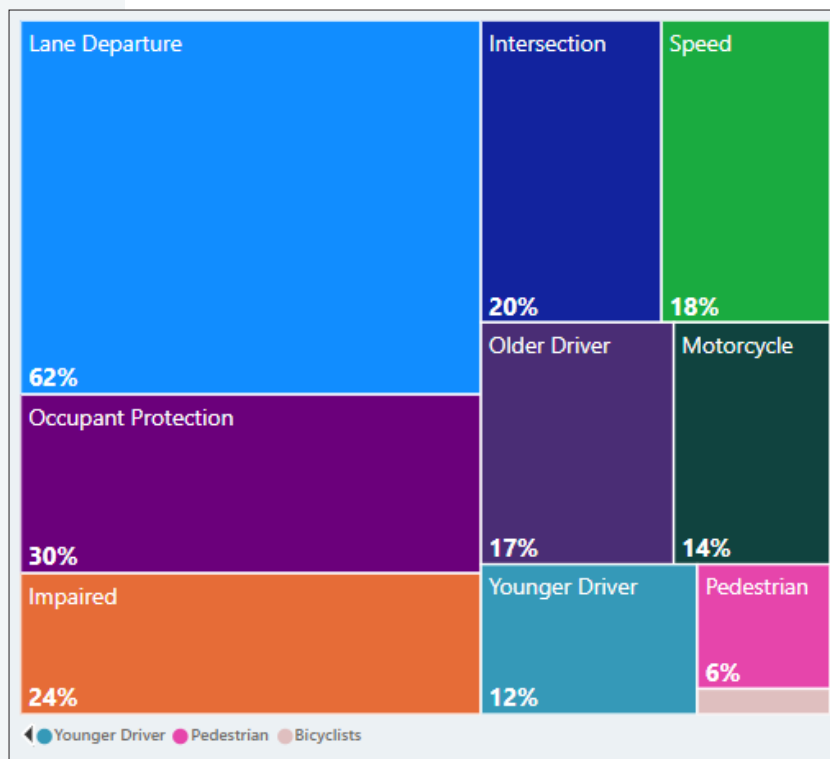
Urban and urbanizing communities are likely to see safety concerns that reflect their context and conditions. A greater presence of non-motorists, pedestrians, bicyclists, and other personal mobility travel modes in urban areas translates to their involvement in a greater share of severe collisions than in more rural areas. This is largely a result of more non-motorists using the roadway in a typical day.



Urban Fatal and Serious Injuries by Emphasis Area.
Source: NC Crash Database as of April 2024 (2016 to 2023).

The Rural Context—Big Picture

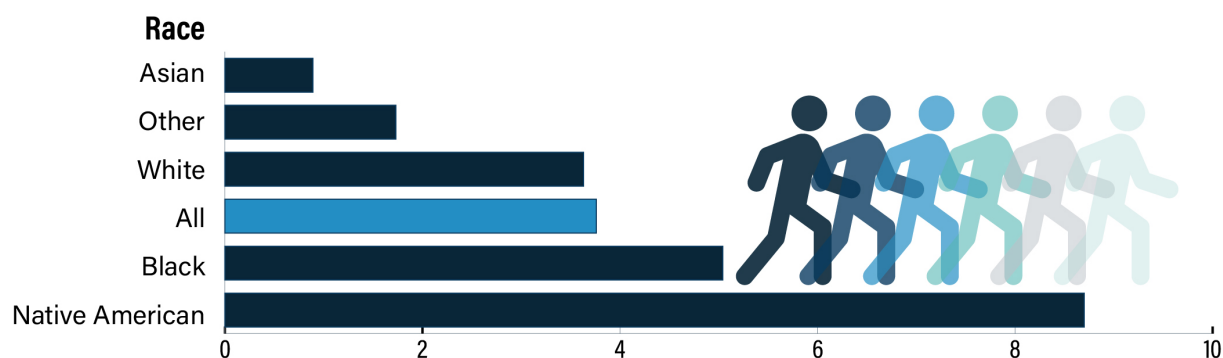
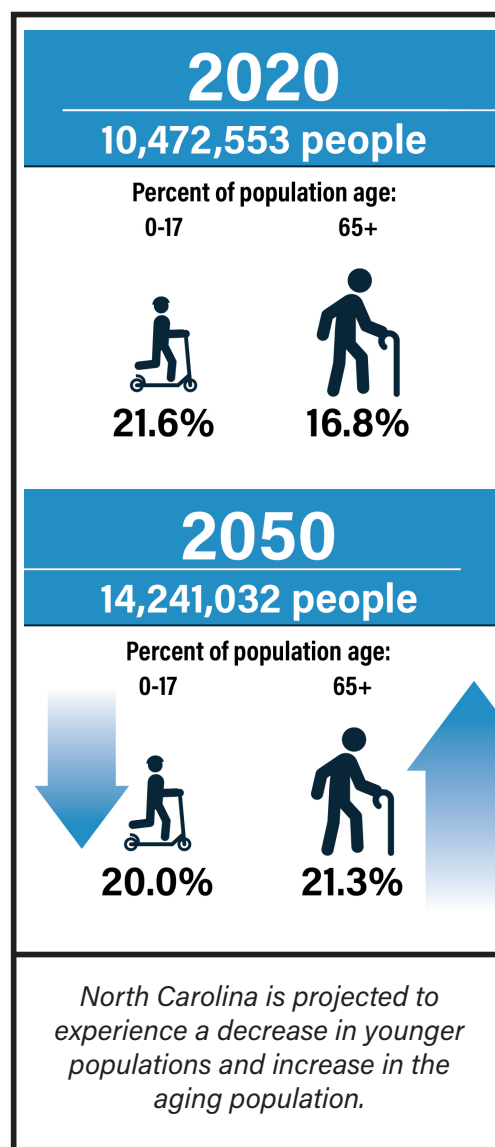
Although North Carolina is urbanizing, rural communities also have unique safety dynamics that are important to address. For instance, although urban areas see twice as many crashes as rural areas, rural areas have twice as many fatalities and serious injuries as urban areas. Higher crash rates involving lane departure, higher speeds, and unbelted occupants in rural areas are potential causes for this disparity.



Rural Fatal and Serious Injuries by Emphasis Area.
Source: NC Crash Database as of April 2024 (2016 to 2023).

Traffic safety issues impact individual North Carolinians in different ways. Not all communities are affected by severe crashes equally, as evident in crash rates by race, as well as by age. Data indicate notable overrepresentations of fatalities and serious injuries for Black persons and Native American persons. It is important to understand and address the issues that increase these groups' exposure to crashes. Examples of these issues include the locations of underrepresented communities and the types and conditions of transportation facilities within them. This plan recognizes the connection between equity with numerous other issues that impact traffic safety, and accordingly includes recommendations for partnerships between transportation and non-transportation stakeholders to address equity in traffic safety.

North Carolina is growing, but it is also aging. As the state's population ages, older drivers, pedestrians, and bicyclists will make up a greater share of the traveling public. Older pedestrians involved in a crash tend to have more severe outcomes than their younger counterparts. As this age group is projected to make up a larger portion of the total population, it will be critical to implement effective strategies to respond to this population shift.



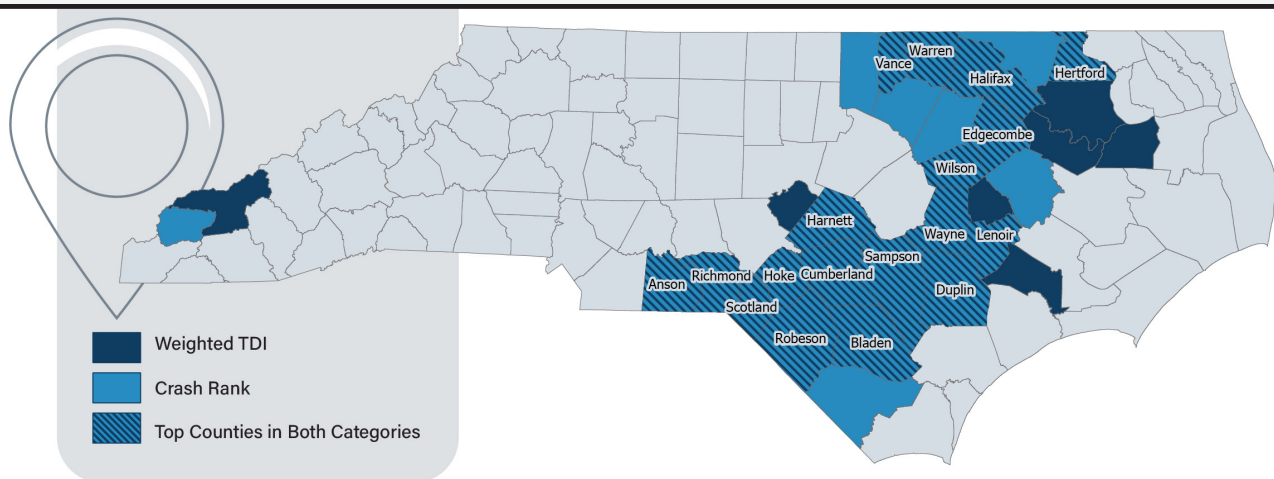
Fatalities and serious injuries per capita by race and ethnicity in North Carolina, illustrating the disproportionate impact on underrepresented communities. Source: NC Crash Database as of April 2024 (2017 to 2023).

Transportation Disadvantage Index

NCDOT developed the Transportation Disadvantage Index (TDI) to “help inform decisions aimed at improving disadvantaged communities’ transportation access and mobility.”⁴ The TDI includes a series of relative metrics that compare local communities to the county, regional, and statewide averages. TDI can be represented as a cumulative score of the following seven components at the US Census Block Group scale. Each block group is scored between 1 - 3 for each component, weighted to reduce double counting, then summarized to produce a cumulative score ranging from 0 - 21. Higher scores convey a greater level of transportation disadvantage compared to other areas in the state. TDI components include:

1. Population age 15 and under
2. Population age 65 and over
3. People in poverty below 150% of poverty line
4. Zero-vehicle households
5. Adult population with a disability
6. Black, indigenous, and persons of color (BIPOC) population
7. Limited English Proficiency (LEP) households

From a safety perspective, NCDOT TDI scores and historic disadvantage have a strong correlation with traffic safety. Many of the most disadvantaged communities in the state also are communities with persistent safety concerns. These overlaps are not purely coincidental, but often the byproducts of past decisions and policies that have inadvertently furthered disadvantages, including increasing exposure to unsafe mobility and accessibility, for many of these communities. Understanding this history is important not only for corrective measures but also to prevent recurrences. With this knowledge, the North Carolina traffic safety community can use the TDI and other tools to inform the strategies and supporting actions included in the SHSP. As stakeholders formulate approaches to improve safety for all North Carolinians, the TDI and other data sources can be leveraged to inform where special accommodations should be made to maximize the strategy’s effectiveness. This approach can lead to solutions that are inclusive and systematically address the legacy of disadvantage.



*Counties that reflect both a higher level of transportation disadvantage and number of fatalities and serious injuries.
Sources: NC Crash Database as of April 2024 (2017 to 2023), U.S. Census Bureau (2022).*

⁴ <https://storymaps.arcgis.com/stories/7e3bbd00fe014a77b5f1620334209712>

Many Voices, One Shared Goal

Stakeholder involvement is a core aspect of the SHSP process, and this plan is for all safety partners in North Carolina to work together on for the next 5 years.

Following initial data analysis, the 2024 Update involved a stakeholder-driven process to review the initial results and provide insights on additional safety concerns. The 2024 Update initiated this involvement with a three-part Safety Series where speakers from state, local, and federal agencies and partner organizations presented on key safety-related topics in North Carolina. The virtual events occurred weekly in August 2023 and presentations included an overview of the 2022 North Carolina Seat Belt Study, a hospital research study that revealed the breadth of impairment in motor vehicle crashes, federal guidance on speed safety cameras, and local-level efforts to develop and implement data-driven safety improvements.

The Safety Series culminated in an in-person SHSP Workshop focused on North Carolina's progress towards reducing fatalities and serious injuries since the 2019 Update and laying the foundation for the 2024 Update. The September workshop emphasized the Safe System Approach and the role each stakeholder has in developing and implementing the SHSP in North Carolina.

The next step was to convene Working Groups charged with reviewing the data, establishing the name and the vision for the selected emphasis areas, and developing the strategies and supporting actions. Working Groups were formed to represent the different elements of the Safe System Approach and to capture diverse perspectives on the topics (participating agencies are listed beginning page 70). Each group met virtually a minimum of three times, with one cross-over meeting between Intersections; Safer Speeds; and Pedestrians, Bicyclists, and Personal Mobility to review opportunities for collaboration.

Stakeholders convened again in March 2024 for the second in-person workshop where they received updates on safety data analysis and provided feedback on the draft 2024 Update that was circulated in advance of the event. Representatives from the Emphasis Area Working Groups provided brief presentations on their groups' vision for safety in North Carolina and their process for identifying the strategies. The remainder of the workshop was dedicated to further refining the Emphasis Area Action Plans.

Through every step in the process the safety partners' input shaped the vision of safety in North Carolina and the key strategies and supporting actions in the 2024 Update.



2024 Emphasis Areas

The 2024 Update continues the 2019 Update goal of reducing fatalities and serious injuries in North Carolina, moving towards zero. As part of refining and updating the SHSP to better position the state to reach its goal and eliminate severe crashes, the 2024 Update narrowed its focus and explored policies and partnerships to leverage change. Notably, safety partners reduced the number of emphasis areas from 11 in 2019 to 9 in 2024. Other changes include updated speed-related and occupant protection-related emphasis area names to better reflect the intended goals and visions of the strategies and supporting actions.

The 2024 emphasis areas include:



Lane Departure



Intersections



Pedestrians,
Bicyclists, and
Personal Mobility



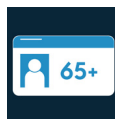
Seat Belts and
Car Seats



Substance
Impaired Driving



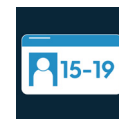
Safer Speeds



Older Drivers



Motorcyclists



Younger Drivers

The emphasis areas and the associated strategies are detailed beginning on page 25. These quick-reference pages are intended to be stand-alone documents that stakeholders can use to better understand the emphasis area, including the associated crashes and characteristics. The reference pages include:

- **Building a Safer System:** Introduces the emphasis area, including key themes, associated data, and a description of how the emphasis area contributes to achieving a Safer System.
- **Doubling Down on What Works:** Spotlights a current program or policy in North Carolina that is actively addressing the emphasis area.
- **Data Analysis:** Highlights relevant data analysis of total fatalities and total serious injuries from 2014 - 2023 and identifies related emphasis areas in terms of fatalities.
- **Weighted TDI Map:** Displays the weighted TDI scores for each county where higher scores are represented by darker colors indicating a greater level of transportation disadvantage. Counties with the highest total number of fatalities and serious injuries and/or the highest fatality and serious injury rates are labeled.
- **The Crossroads of Data and Vision:** Provides context for the data. This section incorporates equity, highlighting those communities that are overrepresented in a crash type and highlights where crashes are occurring.
- **Emphasis Area Strategies:** Details the strategies that stakeholders and partners will implement to achieve the emphasis area objective and reduce fatalities and injuries. Strategies are **SMART**: they are **S**pecific with a statewide impact and will help make progress towards zero. They are **M**easurable, supported by data, and their effectiveness can be measured. They are **A**ttainable and there are structures in place that support implementation. They have champions who are **R**esponsible for their implementation. They are **T**ime-bound and implementation can occur within the next 5 years.

Emphasis Area Action Plans

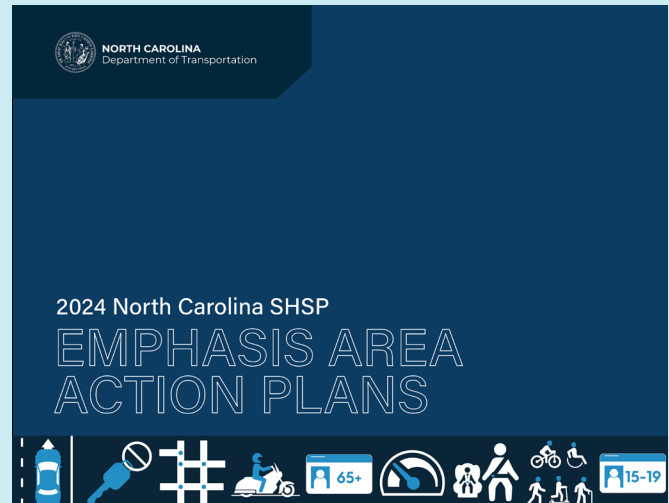
The Emphasis Area Action Plans present a path forward to implementation. The Action Plans include strategies (how North Carolina will achieve the objectives) and supporting actions (the next steps to implement the strategy). Other details include champions who will lead or support implementation, the anticipated timeline for implementation, the opportunity for equity considerations, and opportunities for coordination among emphasis areas.

The Emphasis Area Action Plans are presented as a compendium to the 2024 Update—a concise summary of the key information that the Emphasis Area Working Groups used to develop the content. Safety stakeholders can download a standalone version of the Emphasis Area Action Plans and promote the ideas to other partners, track progress towards the goals, and turn the concepts into reality.

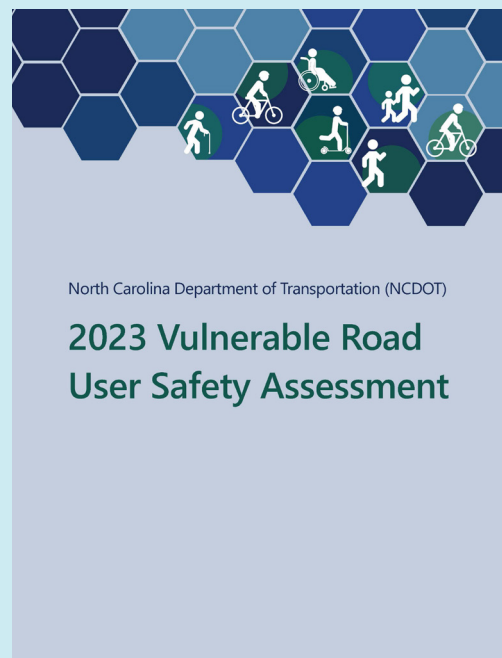
VRUSA

NCDOT's VRUSA included a data-driven analysis of VRUs (generally understood to be pedestrians and bicyclists), key findings from consultations with the state's MPOs and Rural Planning Organizations (RPOs), and a list of strategies to address identified deficiencies. The VRUSA is a component of the SHSP and is in the Pedestrians, Bicyclists, and Personal Mobility Emphasis Area Action Plan.

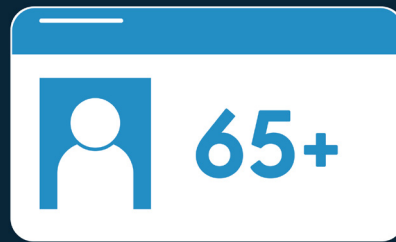
The strategies developed through the VRUSA effort represent NCDOT's primary focus and responsibility for improving pedestrian, bicyclist, and personal mobility user safety over the next 5 years. Many of the strategies and supporting actions developed by the SHSP Emphasis Area Working Group complement or mirror those strategies. There are other strategies that are not reflected in the VRUSA but will be championed by NCDOT Divisions and other safety partner organizations.



[Click here to read the Emphasis Area Action Plans](#)



[Click here to read the VRUSA](#)



EMPHASIS AREAS



LANE DEPARTURE

EA DEFINITION: Crashes that occur due to a driver leaving their lane. Includes run-off-road, fixed object, head-on, rollover, and sideswipe-opposite direction crash types.

EA GOAL: Reduce lane departure-related fatalities and serious injuries by half by 2035, moving towards zero by 2050.



Building a Safer System

A lane departure event can result in different types of crashes, including run-off-road, fixed object, head-on, rollover, and sideswipe-opposite direction. The consequences of a vehicle leaving its lane can be severe, sometimes resulting in a serious injury or death. These crash types can involve errant vehicles striking roadside objects such as trees, colliding with other vehicles, or overturning.

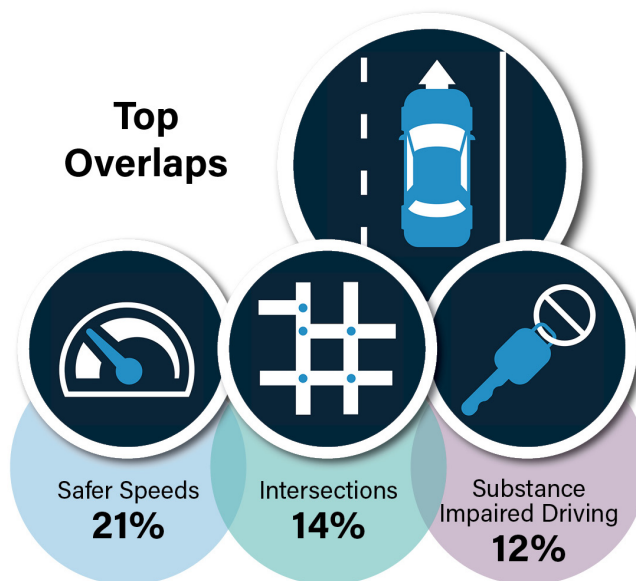
Lane departure crashes continue to be a major concern for road safety in North Carolina. While approximately one-fifth of all crashes in the state involve lane departure, they make up more than half of all fatalities. The majority of lane departure crashes are in rural areas despite these areas making up a quarter of the state's population. There is a greater tendency to speed in rural areas due to lower traffic volumes and flat, open roadways. With increased speed, there is a greater likelihood of a fatality or serious injury resulting from a crash. Rural areas also have lower levels

of trauma care available, leading to more severe outcomes for rural travelers involved in crashes.

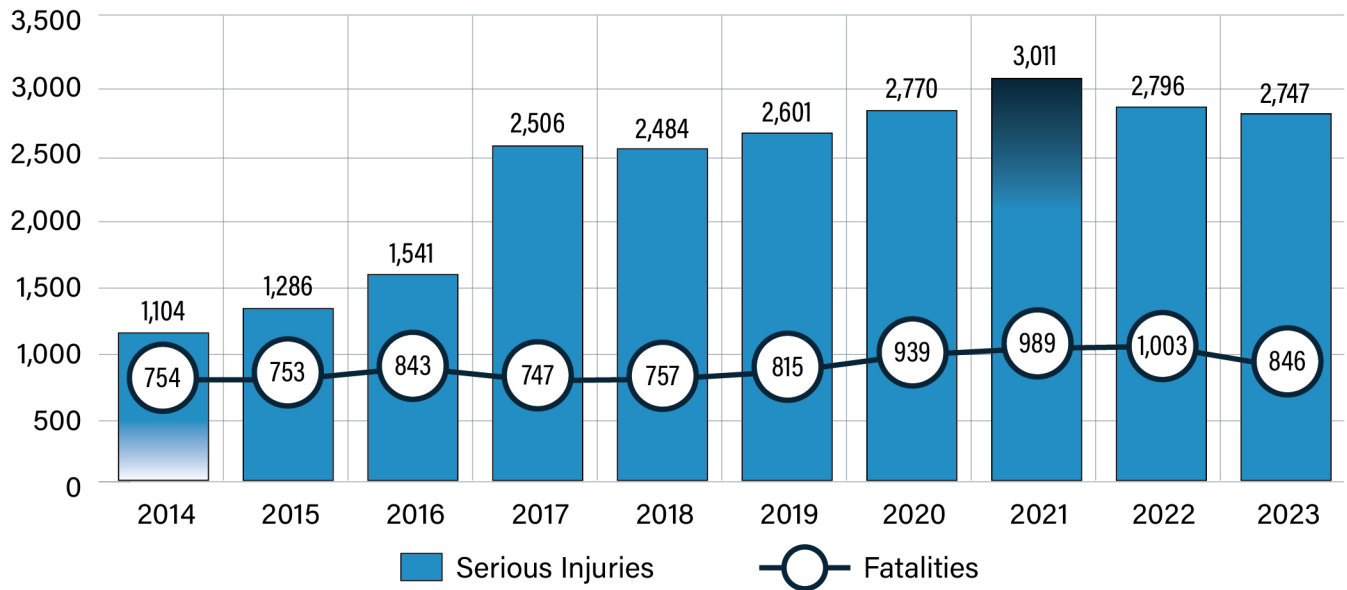
The Safe System Approach elements frame the types of activities that could help to address lane departure crashes. Roads could be designed or improved with geometry to assist drivers with staying in the lane, such as edgeline and centerline rumble strips. Education and outreach activities could promote Safe Road User behavior. Improvements to post-crash care can shorten response times, particularly in remote areas. Technological improvements such as vehicle lane detection systems could reduce the occurrence of these severe crashes. And lastly, managing speed, and the resultant kinetic forces in crashes, can greatly improve the survivability of a crash. This emphasis area has a close relationship with the Safer Speeds emphasis area, which is reflected in the direct connection between the strategies.

Doubling Down on What Works

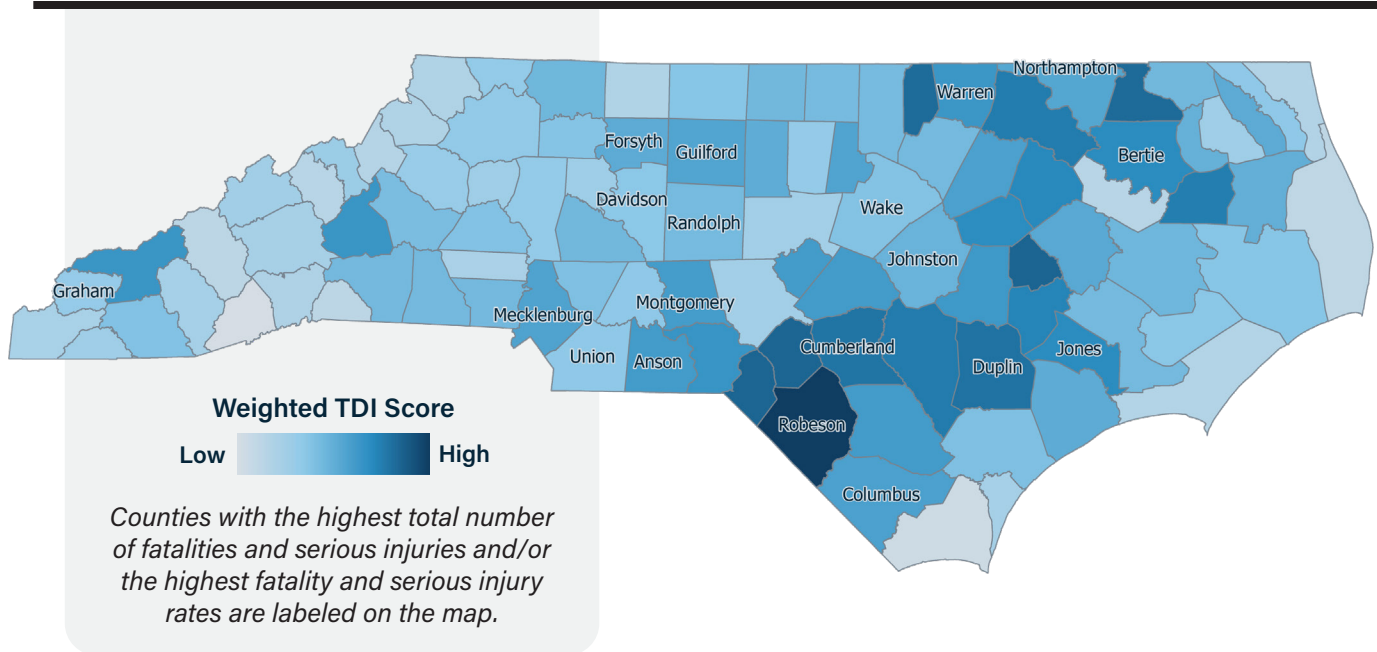
NCDOT actively conducts research and monitors advancements in treatments that mitigate lane departure crashes. These research efforts have provided insights on where and how NCDOT and its partners can best apply effective, proven countermeasures. Such treatments include long-life pavement markings which have proven to be successful in North Carolina. NCDOT uses thermoplastic lane markings, which are more durable and better at reflecting headlights, thanks to embedded glass beads in the plastic paint.⁵ These markings help drivers better navigate the roads and curves, particularly at night or in low visibility conditions such as rain. NCDOT and its partners will continue to track new advancements and research that help to inform the selection and application of treatments to address lane departure crashes.



⁵ Long-Life Pavement Markings Decrease Crashes, NCDOT Study Found



Total Lane Departure-Involved Fatalities & Serious Injuries (Last Decade).
Sources: NC Crash Database as of April 2024 (2016 to 2023); HSIP 2022 Report (2013 to 2015).



Top Counties of Lane Departure-Involved Fatalities and Serious Injuries.
Sources: NC Crash Database as of April 2024 (2017 to 2023), U.S. Census Bureau (2022).



The Crossroads of Data and Vision

Detailed data analysis revealed the following key contributing factors to crashes involving lane departure:⁶

- 76% of lane departure fatal and serious injury crashes occur in rural areas; 64% of which involve a fixed object.
- 53% of rural, two-lane fatal and serious injury lane departure crashes occurred on a curve.
- 62% of all motor vehicle fatalities involve lane departure.
- 54% of all teen motor vehicle fatalities involve lane departure.

Stakeholders' vision of addressing lane departure in North Carolina included:

- Continue improving data quality and analysis to identify contributing factors in lane departure crashes and the impact of interventions to address such crashes.
- Implement effective, safe road design and traffic control with the latest technological innovations.
- Manage travel speeds to reduce the amount of kinetic energy in crashes, thereby increasing the likelihood of crash survivability.
- Increase coordination among organizations, particularly between statewide and regional and local entities to enhance project identification and prioritization.
- Promote safe road user behavior through outreach and training programs.

Strategies



Implement lane departure countermeasures.



Continue research to better understand the contributing factors in lane departure crashes and to identify opportunities to mitigate the problem.



Conduct outreach to educate the public, agencies, and officials on critical issues related to lane departure crashes.

As of 2023, NCDOT Traffic Safety Unit has allocated over \$1M to curve signing projects. An evaluation of curve signing enhancements at 56 curves on two-lane roadways indicated a 35% reduction in total crashes, a 33% reduction in lane departure crashes, and a 41% reduction in fatal and injury crashes. Examples of NCDOT enhancements include new chevrons, curve warning signs, advisory speeds, Brightside reflective posts, or by adjusting existing signing placement, size, or type.

⁶ NC Crash Database as of 04/14/24



Image Credit: VisitNC.com

INTERSECTIONS

EA DEFINITION: Crashes occurring at intersections or considered intersection-related, including driveways, alleys, and on- and off-ramp terminal crossroads.

EA GOAL: Reduce intersection-related fatalities and serious injuries by half by 2035, moving towards zero by 2050.



Building a Safer System

In 2023, there were 360 deaths and 1,367 serious injuries at intersections in North Carolina. The proportion of the state's fatalities and serious injuries that occur at intersections increased by 2% between 2017 and 2023. Responding to this increase, North Carolina's HSIP prioritizes intersection treatments.

There are approximately 380,000 intersections in North Carolina and these locations account for 23% of all crashes, 20% of all fatalities, and 23% of all serious injuries (2017-2023). In the most recent year of available crash data (2023), signalized intersections and stop-controlled intersections account for two-thirds of intersection crashes (46% and 31% respectively). When focusing on fatal and serious injuries, 72% occurred at a signalized or stop-controlled intersection. Certain maneuvers tend to lead to increased risk of severe injury, with the two highest crash types in fatal and serious injuries being angle crashes (32%) and left-turn crashes (28%). People walking and bicycling accounted for 9% of fatalities and serious injuries at intersections (2017-2023). Of these crashes, 26% involved a driver who was impaired and 13% involved an older driver. Intersections in rural areas

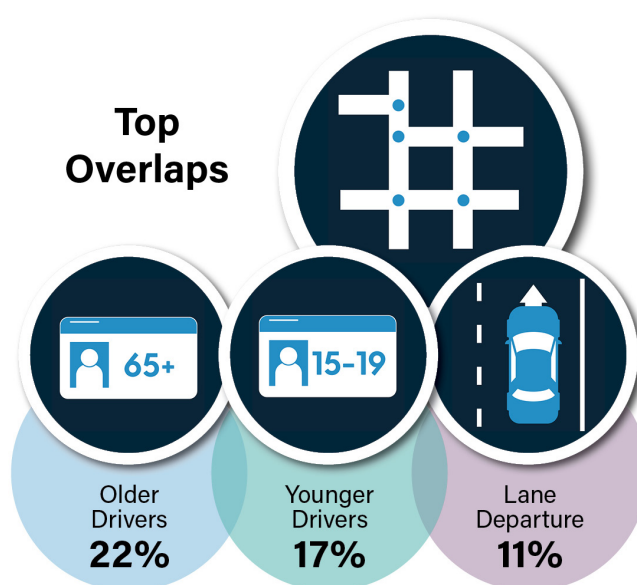
made up 27% of fatal and serious injury crashes that involved people walking and bicycling.

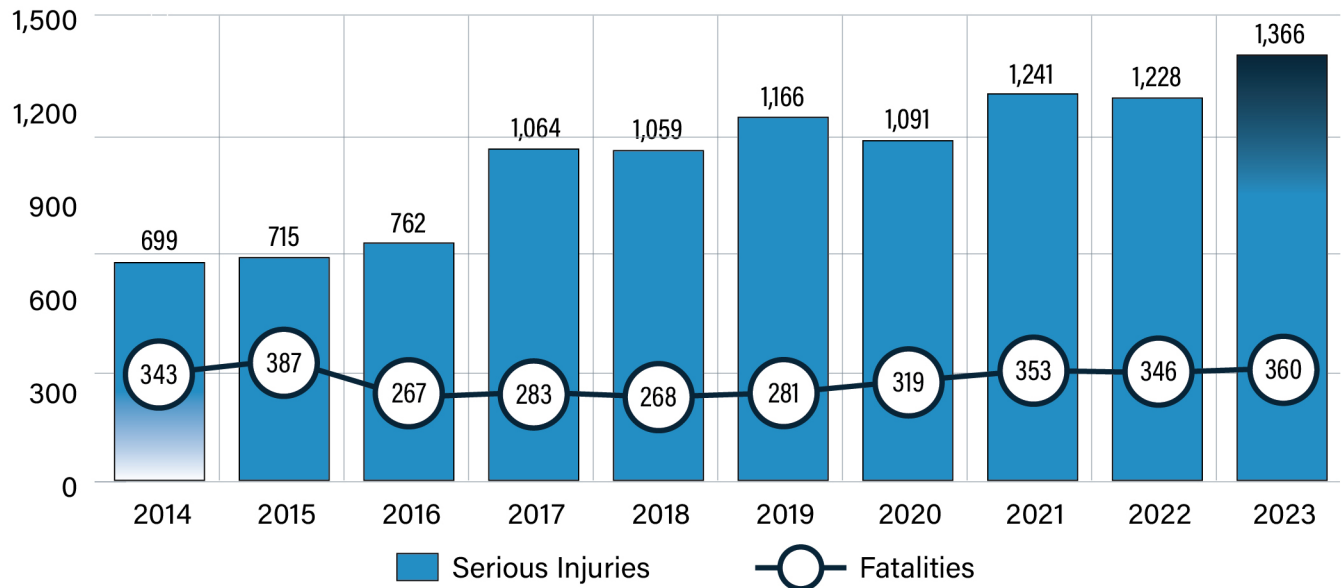
Intersections have an inherent risk of collision since they are locations where travel paths of various road users conflict. When a crash occurs, the impact forces (and therefore, the severity of the collision) are a function of the crash angle, speeds, and mass differential of the objects. The principles of the Safe System Approach should be considered to address these factors. Because humans are vulnerable, managing the impact forces (kinetic energy) is fundamental to preventing higher severity crash outcomes. Designers should consider how to decrease speeds through an intersection, and in the case of vulnerable road users, separate users with dedicated facilities and times to cross the street. Roadway designers and planners should share responsibility by considering safety in the project development process and proactively design safer intersections that reroute or eliminate higher-risk opportunities for conflict (such as left-turning movements). Ongoing education and training are needed both in how to navigate various types of intersections (including walking and biking from a young age) and how to design safer intersections for all users.

Doubling Down on What Works

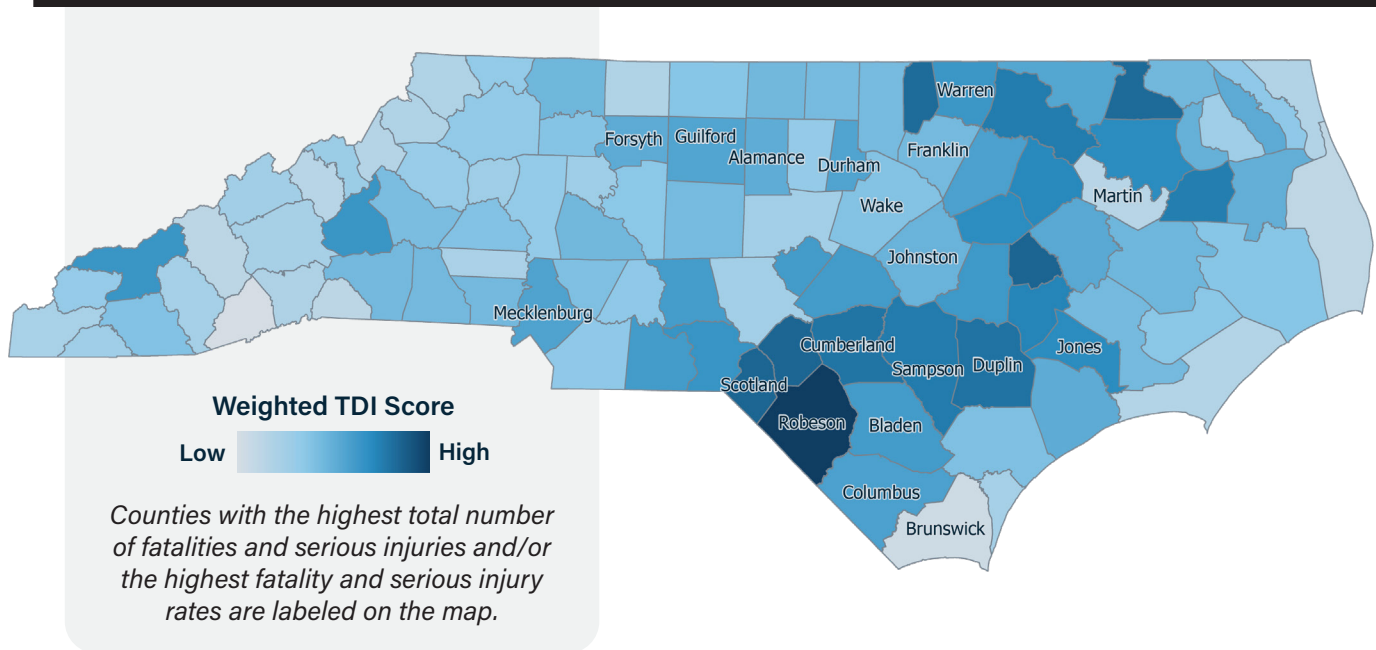
The City of Greenville's Traffic Safety Task Force (TSTF) is a multidisciplinary group of stakeholders committed to reducing roadway fatalities and serious injuries. The TSTF's implementation of safety improvements, such as high-visibility crosswalks, traffic delineators, flexible post delineators, and increased enforcement in higher crash-risk areas, helped move Greenville from the highest crash ranked city in the state (in 2016-2017) to ranking 8th in 2020. The TSTF members include Greenville Police Department, East Carolina University (ECU) Health Medical Center's Eastern Carolina Injury Prevention Program, Greenville Engineering Department, ECU Health, ECU Police, Greenville MPO, and NCDOT.

Top Overlaps





Total Intersection-Involved Fatalities & Serious Injuries (Last Decade).
Sources: NC Crash Database as of April 2024 (2016 to 2023); HSIP 2022 Report (2013 to 2015).



Top Counties of Intersection-Involved Fatalities and Serious Injuries.
Sources: NC Crash Database as of April 2024 (2017 to 2023), U.S. Census Bureau (2022).



The Crossroads of Data and Vision

Detailed data analysis revealed the following characteristics and key contributing factors to crashes involving intersections:⁷

- In 2023, left-turn crashes (31%) and angle crashes (29%) were the most prevalent crash type for fatalities and serious injuries at intersections.
- For two- and four-lane roads, 31% of intersection crashes occur on a roadway with a posted speed limit of 55 mph or higher, but these same roads account for 54% of fatal and serious injury crashes (2018 to 2022).
- Fatal and serious injury intersection crashes are overrepresented for roads functionally classified as a collector. These are roads that provide connection or circulation between residential, commercial, and/or industrial areas and arterials (i.e., urban and rural roads that provide a high level of mobility, with relatively higher volumes and speeds) (2018 to 2022):
 - Major collectors account for 13% of total crashes, but 18% of fatal and serious injury crashes.
 - Minor collectors account for 2% of total crashes, but 4% of fatal and serious injury crashes.
 - Combined, both major and minor collectors account for 15% of total crashes, but 22% of fatal and serious injury crashes.

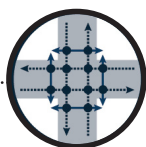
Stakeholders' vision of intersection safety in North Carolina included:

- Reduce frequency and severity of intersection crashes.
- Slow speeds to minimize the impact of a crash if it does occur.
- Implement low-cost, quick-build intersection designs and countermeasures with proven safety effectiveness and consider all roadway users.
- Increase awareness and reduce aggression between all users of the roadway.
- Provide education and training for public acceptance and understanding of intersection design, and for transportation professionals in state-of-the-practice methods and tools.

Strategies



Increase implementation of all-way stop intersections at appropriate locations.



Consider the exposure of pedestrians, bicyclists, and users of personal mobility when designing intersections and manage speeds at conflict points.



Increase implementation of quick-build intersection safety countermeasures.



Support ongoing and new campaigns for public acceptance of intersection safety treatments and designs.



Educate roadway designers, planners, law enforcement, and officials/decision-makers on intersection design principles proven to reduce fatalities and serious injuries.

⁷ NC Crash Database as of 04/14/24



PEDESTRIANS, BICYCLISTS, AND PERSONAL MOBILITY

EA DEFINITION: Pedestrians, bicyclists, and users of personal mobility, which includes transportation modes such as scooters, skateboards, assistive devices, and other emerging mobility options that lack physical protection from other vehicles.

EA GOAL: Reduce pedestrian, bicyclist, and personal mobility fatalities and serious injuries by half by 2035, moving towards zero by 2050.

Doubling Down on What Works

In 2023, NCDOT's Signing and Delineation Unit began developing practitioner-focused guidance on a wide variety of pedestrian-, bicyclist-, and transit-oriented treatments. This will serve as a springboard for developing other guidance documents to increase the implementation of these treatments.

Various agencies and organizations throughout the state have developed valuable education materials on a broad range of topics, from how law enforcement can effectively capture crash information to teaching children safe pedestrian and bicyclist behaviors. There is an opportunity to expand the delivery of these materials across the state.



Building a Safer System

Nearly every North Carolinian is a pedestrian, bicyclist, or personal mobility user at some point in their daily life. This includes bicycling to school or along a greenway, walking to access transit service or from a parked car to a restaurant, rolling in a wheelchair to the grocery store, riding an e-scooter to an event or appointment, or using some other mode of personal mobility. Many North Carolinians rely on these modes as their primary—or only—form of transportation. These modes present many benefits: they reduce roadway congestion and emissions, promote an active lifestyle, are generally cost-effective, and can ultimately lead to an increased sense of community when they are fully integrated into the transportation system.

There are several emerging topic areas that affect pedestrians, bicyclists, and personal mobility users. Micromobility—commonly e-scooters and e-bikes—is an increasingly important consideration, especially in urban areas. Over the past 10 years,

many cities and college campuses throughout the state have introduced shared micromobility systems and these systems have seen millions of user trips collectively.⁸ But with this influx of micromobility come new challenges with how to incorporate users safely and effectively into the transportation system.

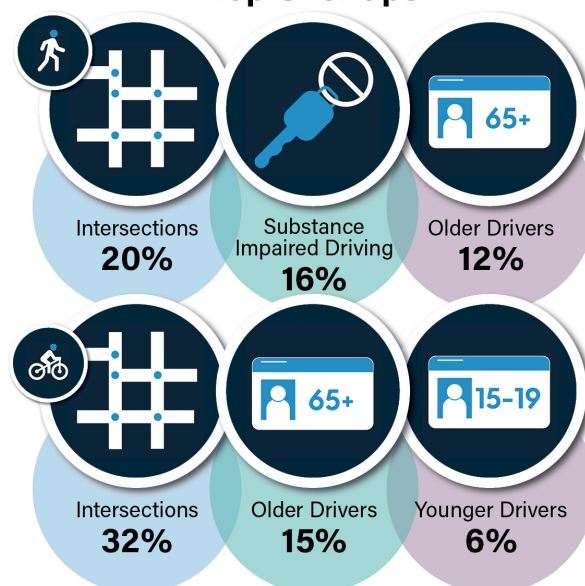
Additionally, there are many emerging treatments and strategies to improve pedestrian, bicyclist, and personal mobility user safety, from innovative traffic control devices to advanced data and analysis tools. These are promising, but there is a need for formalized guidance to increase their implementation across the state.

The Safe System Approach notes that humans are vulnerable, and that the human body has a limited tolerance to crash forces. Pedestrians, bicyclists, and personal mobility users are at increased risk for fatality or serious injury in the event of a crash due to their inherent lack of protection when compared to drivers and passengers of motor vehicles.

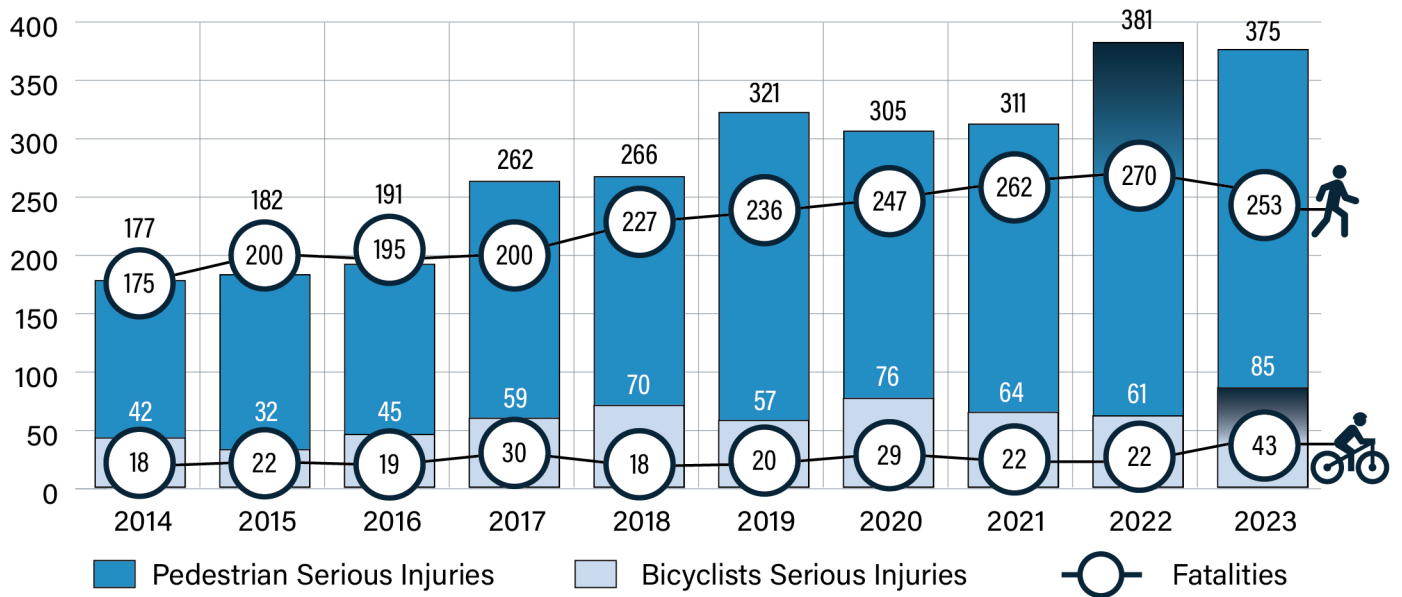
Data Analysis

The VRUSA analysis of 10 years of pedestrian and bicyclist crash data (from 2012 to 2021) shows that North Carolina has seen some fluctuation in the total number of pedestrian crashes, with a peak in 2018, subsequent decreases in 2019 and 2020, and then a slight increase in 2021. The data analysis for the SHSP, as shown in the graphic on the following page, goes beyond this timeline to include 2022, which had a significant increase in serious injuries. Bicyclist crashes, on the other hand, have steadily declined. However, when focusing on fatal and serious injury crashes, the data shows that 2021 represented a 10-year high for pedestrians, and the overall trend is increasing for both pedestrians and bicyclists. Across the state, crashes involving a pedestrian or bicyclist were more likely to result in a fatality or serious injury than crashes that did not involve a pedestrian or bicyclist. Looking at the people involved, black pedestrians and bicyclists and male pedestrians and bicyclists were both overrepresented in terms of crash occurrence.

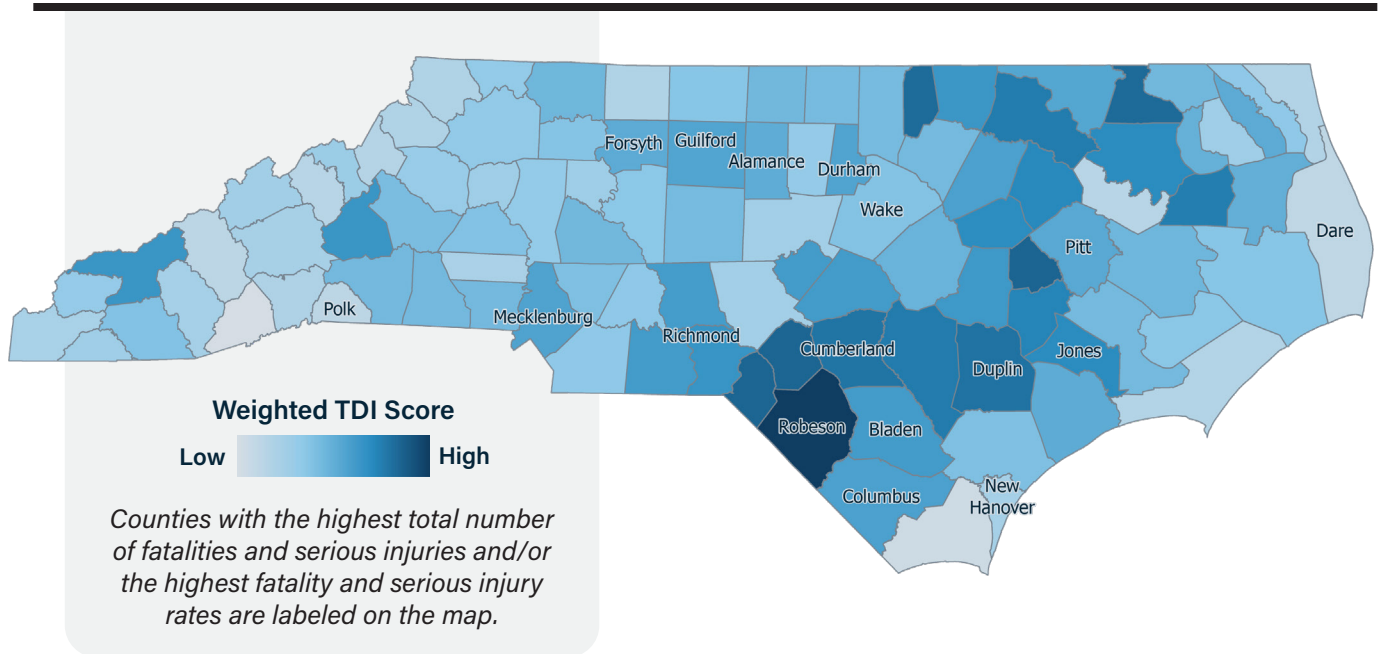
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8 <https://www.ncdot.gov/about-us/how-we-operate/finance-budget/nc-first/Documents/nc-first-briefs-edition-7.pdf>



*Total Pedestrians, Bicyclists, and Personal Mobility-Involved Fatalities & Serious Injuries (Last Decade).
Sources: NC Crash Database as of April 2024 (2016 to 2023); HSIP 2022 Report (2013 to 2015).*



*Top Counties of Pedestrians, Bicyclists, and Personal Mobility-Involved Fatalities and Serious Injuries.
Sources: NC Crash Database as of April 2024 (2017 to 2023), U.S. Census Bureau (2022).*



The Crossroads of Data and Vision

Detailed data analysis and results from the VRUSA revealed the following key contributing factors to crashes involving pedestrians, bicyclists, and personal mobility users:⁹

- 46% of fatal or serious injury pedestrian and bicyclist crashes occurred on arterial roadways, while only 8% of road miles in North Carolina are classified as arterials.
- 73% of fatal or serious injury pedestrian and bicyclist crashes occurred at non-intersection locations, such as along roadways or crossing midblock.
- 69% of fatal or serious injury pedestrian and bicyclist crashes occurred in non-daylight conditions.

Stakeholders' vision of pedestrian, bicyclist, and personal mobility safety in North Carolina included:

- Increase communication and collaboration between state, regional, and local agencies, as well as advocacy groups and other organizations, in improving pedestrian, bicyclist, and personal mobility safety.
- Explore and use innovative data sources, tools, and analysis methods.
- Find solutions to common obstacles to funding pedestrian, bicyclist, and personal mobility safety projects.
- Educate and interface with key populations, including law enforcement officers, elected officials, and students.

Strategies



Develop and adopt formal policies, practices, and guidance documents supporting the implementation of pedestrian- and bicyclist-focused safety improvements.



Improve pedestrian, bicyclist, and personal mobility data collection practices to support safety analysis and decision-making.



Improve funding and project development strategies that support effective multimodal safety infrastructure.



Explore, demonstrate, and implement innovative and emerging tools to support improving safety for pedestrians, bicyclists, and users of personal mobility devices.



Develop and promote public education programs that support education for all road users on safety for pedestrians, bicyclists, and personal mobility users.

⁹ NC Crash Database as of 04/14/24



SEAT BELTS AND CAR SEATS

EA DEFINITION: Crashes involving unrestrained or improperly restrained motor vehicle occupants.

EA GOAL: Reduce unrestrained or improperly restrained fatalities and serious injuries by half by 2035, moving towards zero by 2050.



Building a Safer System

Each year, in-vehicle technologies that protect passengers continue to appear on the market, yet seat belt use remains a consistent challenge. The 5-year average annual number of unbelted fatalities in North Carolina **increased by 35%** between 2014 to 2018 and 2018 to 2023—more than any other emphasis area. The number of unbelted fatalities in North Carolina **increased by 34%** between 2018 and 2022—the second highest increase among all other emphasis areas. The 2024 Update shifts the focus from occupant protection to Seat Belts and Car Seats to more directly commit the state to addressing the core safety challenges. Between 2017 to 2023, 36% of motor vehicle fatal crashes involved an unrestrained driver or occupant. Consistent and correct restraint use throughout all phases of life is vital to North Carolina's commitment to the reduction of fatalities and serious injuries; the name change of this emphasis area reflects North Carolina's dedication to restraint use for all ages.

Seat belt compliance appears to increase with age. Within the age group of 13- and 14-year-olds, 59% of passenger vehicle occupants killed were unbelted (2017-2021).¹⁰ For the older cohorts, 38% of adults aged 55-64 and 31% of adults aged 65-74 were unrestrained.

Creating a culture of consistent and correct restraint use begins with North Carolina's youngest passengers. This emphasis area focuses on North Carolinians through all phases of life, from the parents putting their children in car seats to the 16-year-old with a brand-new driver's license to older drivers maintaining good seatbelt habits.

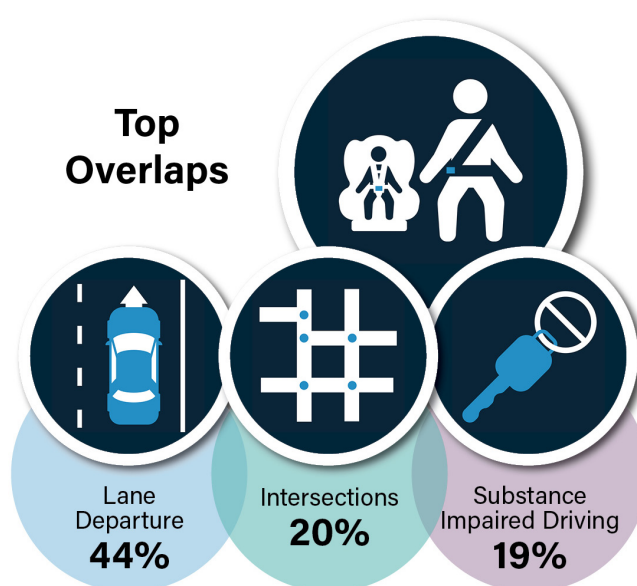
One of the core principles of the Safe System Approach is that humans are vulnerable and proper restraint use is proven to mitigate crash impacts. North Carolina believes that death and serious injuries are unacceptable, and access to car seats and knowledge on proper installation is a key preventative measure.

Despite the evolving safer vehicle technologies, proper restraint use remains one of the safest tools available for vehicle occupants. Therefore, redundancy is crucial for increasing awareness, understanding, and use of seat belts and car seats. Consistent messaging from medical providers, social services, day cares, and other touch points with families, paired with enforcement strategies and expanded programming, will reinforce the importance of seat belts and car seats for occupants for all ages.

Doubling Down on What Works

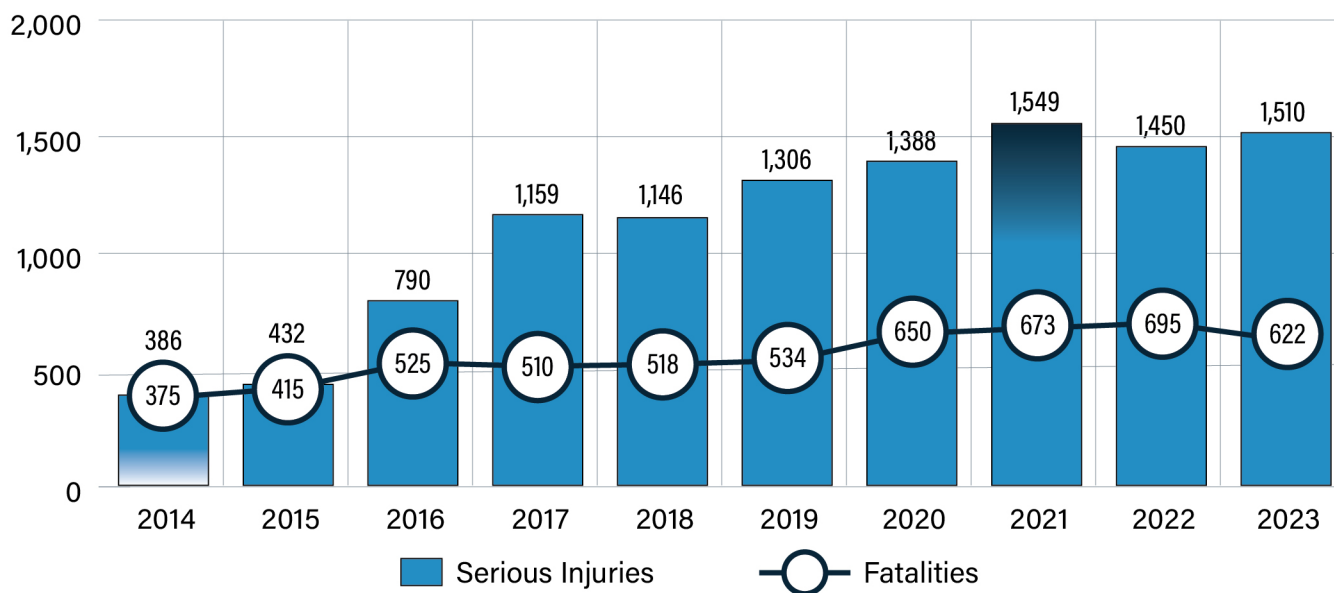
Child Passenger Safety Technicians are certified car seat experts who have studied curriculum written by NHTSA in collaboration with National Child Passenger Safety Board and Safe Kids Worldwide. During the class they learn the about installation options, vehicle differences, harnessing procedures, and more. They practice hands-on exercises where an instructor checks to make sure they understand what they are doing and why.¹¹

North Carolina has 3,200 trained Child Passenger Safety technicians, the greatest number of registered technicians nationally.

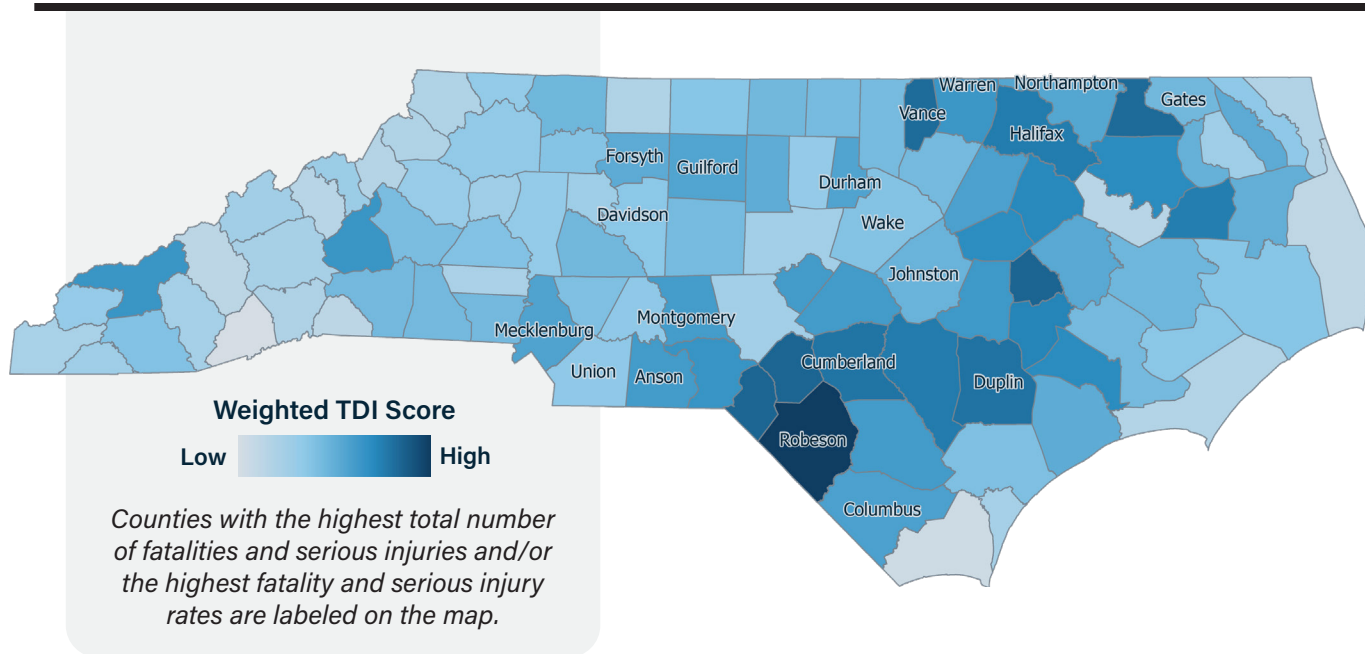


¹⁰ https://explore.dot.gov/views/DV_FARS_OP/OccupantCharacteristics?%3Aembed=y&%3AisGuestRedirectFromVizportal=y

¹¹ <https://saferide4kids.com/cps-technician/>



Total Unbelted-Involved Fatalities & Serious Injuries (Last Decade).
Sources: NC Crash Database as of April 2024 (2016 to 2023); HSIP 2022 Report (2013 to 2015).



Top Counties of Unbelted-Involved Fatalities and Serious Injuries.
Sources: NC Crash Database as of April 2024 (2017 to 2023), U.S. Census Bureau (2022).



The Crossroads of Data and Vision

Detailed data analysis revealed the following key contributing factors to crashes involving unrestrained or improperly restrained occupants:

- The 2023 North Carolina Seat Belt Study observed a 92.2% combined driver and front right seat passenger seat belt usage rate, up from 88.4% in 2019.¹²
- FARS data between 2017 and 2021:¹³
 - 46% of passenger occupants and 44% of drivers killed were unrestrained.
 - 49% of male vehicle occupants killed were unrestrained.
 - 47% of children 20 years and younger killed were unrestrained.
- In 2021, 51% of pickup truck occupants killed were unrestrained.¹⁴

Stakeholders' vision of increased seat belt and car seat usage in North Carolina included:

- Increase proper use of restraints for all occupants, regardless of the seat position or vehicle type.
- Promote more access to education about appropriate types of car seats and proper installation.
- Increase access to free car seats as part of recidivism efforts.

Strategies



Increase seat belt use and car seat use statewide.



Strengthen statewide Child Passenger Safety Program.



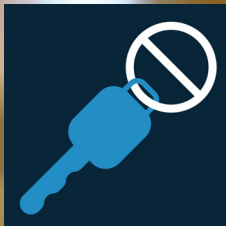
Improve Child Passenger Safety outreach to at-risk and underserved communities.

In 1993, North Carolina became the first state to implement "Click It or Ticket," an education and enforcement initiative to remind motorists that wearing a seat belt can save your life. The initiative aims to increase driver seat belt usage rates and reduce fatalities across North Carolina.

¹² <https://www.clickitorticket.org/Style%20Library/assets/nc-seat-belt-survey-2023.pdf>

¹³ FARS (2017 - 2021)

¹⁴ <https://cdan.dot.gov/DataVisualization/DataVisualization.htm>



SUBSTANCE IMPAIRED DRIVING

EA DEFINITION: Crashes that involve a driver in which alcohol or drug impairment is suspected or detected.

EA GOAL: Reduce substance impaired driving-related fatalities and serious injuries by half by 2035, moving towards zero by 2050.



Building a Safer System

Any level of alcohol, THC, or other substances impacts a driver's physical and cognitive ability to drive safely. Educational campaigns in North Carolina like NC GHSP's *Booze It & Lose It* encourage drivers to plan for a safe ride and deters them from choosing to get behind the wheel if they are impaired. Should they make the decision to drive while impaired, widespread and effective enforcement coupled with adjudication works to keep impaired drivers off the roadway. These efforts have helped reduce impaired driving; only 5% of crashes involve substance impaired driving. However, substance impaired driving accounts for nearly 23% of fatal and serious injury crashes in our state.

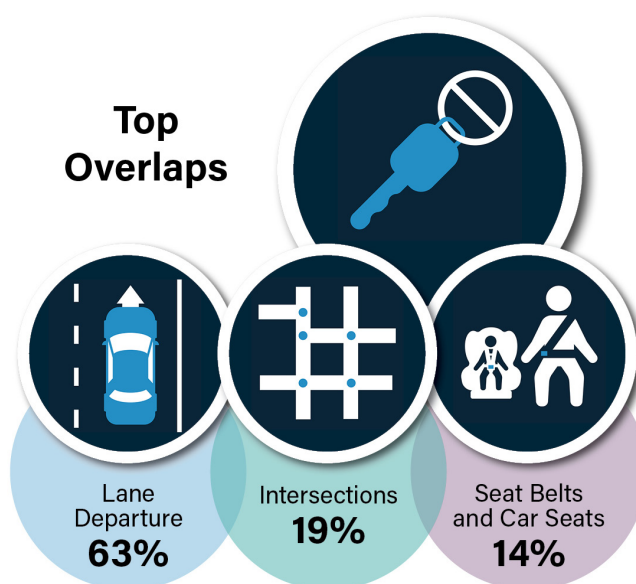
The average annual impairment-related fatalities in North Carolina have risen by 13% since the previous SHSP. According to NHTSA's research,¹⁵ supported by Atrium Health, and based on findings from blood samples drawn from motor vehicle crash victims admitted to trauma centers and the Medical Examiner's Office in the Charlotte area, 55% of drivers, 51% of passengers, and 55% of

pedestrians tested positive for drugs or alcohol.¹⁶ This is much higher than previously thought based on the crash data, which reported impairment was involved only in 23% of fatal and serious injury crashes.

The 2024 Update emphasizes the importance of preventing impaired driving within the Safe System Approach. NC GHSP continues to develop education materials for the public to plan for a safe ride before choosing to drink and drive. However, increasing partnerships between agencies will help reach broader audiences and strengthen the message. The message also needs to be expanded to include THC and its impact on safe driving. As more communities across North Carolina offer open container areas in their downtown districts, there is an opportunity for cities and towns to partner with NC GHSP and increase messaging surrounding the *Booze It & Lose It* campaign. Enforcement and prosecutors can also be partners to properly detect if a driver is alcohol or THC impaired through expanding training to both groups on the medical effects of impairment and to increase the number of drug recognition experts (DREs) in the state.

Doubling Down on What Works

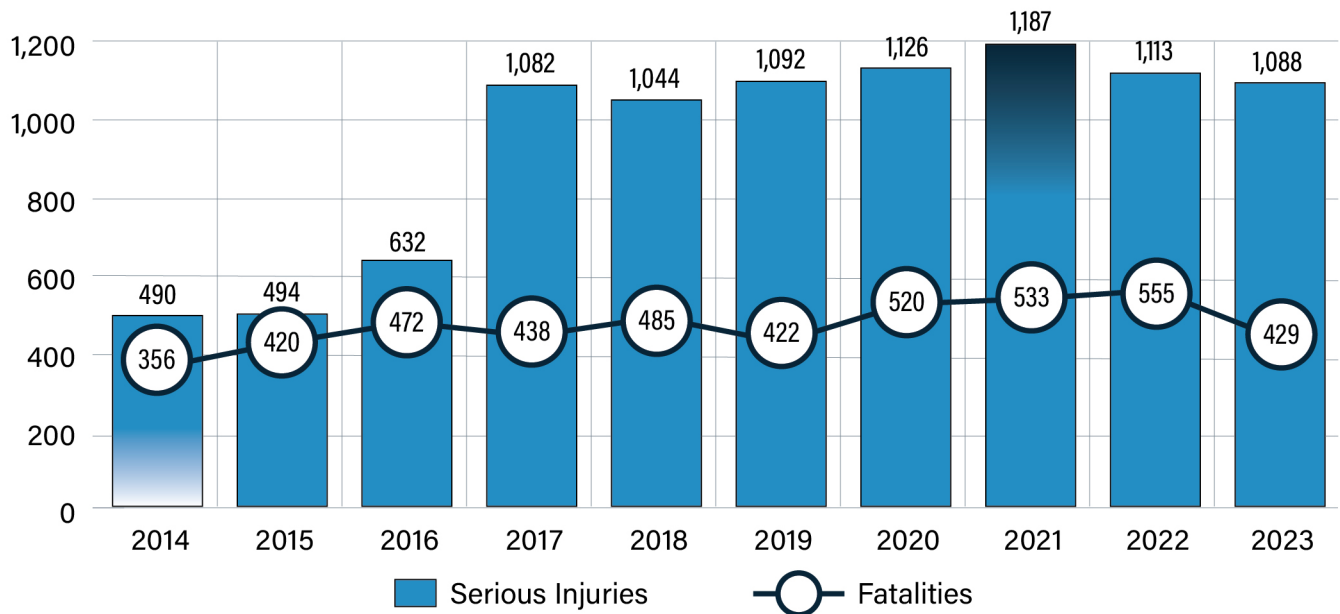
NC GHSP partners with cities and towns in North Carolina each year to launch their annual *Booze It & Lose It* campaign. The campaign educates drivers about planning for a safe ride in advance and never driving while impaired. The partnership also includes state and local law enforcement, which enhance their patrols throughout the campaign. As an example, NC GHSP partnered with the town of Zebulon for the 2023 Holiday Campaign after seeing an increase in impaired vulnerable road user crashes. The campaign, focused on planning ahead for a safe ride, strengthened the relationship between agencies and the public.



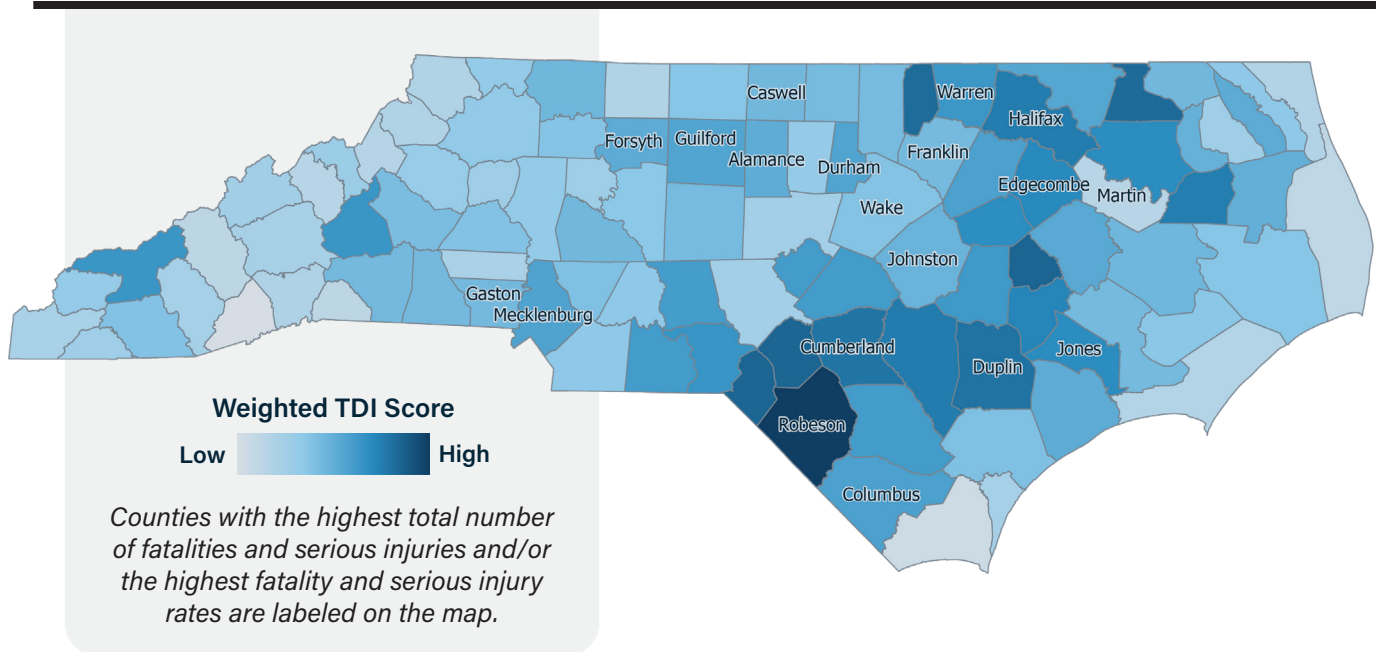
¹⁵ NHTSA. (2022, December). Alcohol and Drug Prevalence Among Seriously or Fatally Injured Road Users. DOT HS 813 399.

https://www.nhtsa.gov/sites/nhtsa.gov/files/2022-12/Alcohol-Drug-Prevalence-Among-Road-Users-Report_112922-tag.pdf

¹⁶ Atrium Health, Janice Williams presentation as part of NC SHSP Safety Series presentation.



Total Substance Impaired Driving-Involved Fatalities & Serious Injuries (Last Decade).
Sources: NC Crash Database as of April 2024 (2016 to 2023); HSIP 2022 Report (2013 to 2015).



Top Counties of Substance Impaired Driving-Involved Fatalities and Serious Injuries.
Sources: NC Crash Database as of April 2024 (2017 to 2023), U.S. Census Bureau (2022).



The Crossroads of Data and Vision

Detailed data analysis revealed the following key contributing factors to crashes involving substance impaired driving:¹⁷

- 84% of substance impaired crashes involved alcohol.
- 85% of substance impaired fatal and serious injury crashes involved alcohol.
- 23% of substance impaired crashes involved drugs.
- 26% of substance impaired fatalities and serious injuries involved drugs.

Stakeholders' vision of reduced substance impaired crashes in North Carolina included:

- An educated public that understands how substances impact the ability to walk, bike, or drive even when below the legal limit.
- Enhance prosecutor and law enforcement officer training to properly identify and report alcohol and drug impairment on the NCDMV short form.
- Lower the 0.08 blood alcohol concentration (BAC) limit and establish limits for THC levels while driving.
- Strengthen the use of ignition interlock devices for any Driving While Impaired conviction.
- Improve trauma center and crash data integration to reduce recidivism.

Strategies



Work with the North Carolina Governors Highway Safety Program to educate the public on the risks of impaired driving.



Increase training for prosecutors and law enforcement officers on different forms of impaired driving.



Increase the number of drug recognition experts (DRE) across the state.



Strengthen intervention policies to reduce recidivism.



Research lowering BAC levels for driving in North Carolina.

"Booze It & Lose It" has created increased awareness of the dangers and the consequences of drinking and driving through innovative education campaigns and extensive enforcement of impaired-driving laws. During each campaign, law enforcement agencies increase the number of patrols and officers in an area, set up checking stations, and use local news media to reach out to drivers.

¹⁷ NC Crash Database as of 04/14/24



SAFER SPEEDS

EA DEFINITION: Crashes where the reporting officer noted the driver's contributing circumstances as "exceeding authorized speed limit" or "exceeding safe speed for conditions."

EA GOAL: Reduce speed-related fatalities and serious injuries by 50 percent by 2035, moving towards zero by 2050.

Building a Safer System

Previous SHSPs have focused on "speeding," when drivers travel over the posted speed limit or too fast for the roadway conditions. While it is important to curb speeding, the 2024 Update shifts the focus to address and prevent speeding and also promote safer speeds. The concept of safer speeds emphasizes the role of speed as a contributing factor in a fatal or serious injury crash, regardless of the posted speed limit. Creating a transportation system that features safe speeds surely depends on drivers obeying the posted speed limit. Roadway designers and operators have the shared responsibility of creating infrastructure that encourages these safe speeds. This reframes the concept of 'exceeding safe speed for conditions' to be about more than the weather or other dynamic conditions. It also considers the

context and surrounding land use and the effects of roadway design on user behavior. For example, while a vehicle may be traveling at the posted speed limit of 40 mph at the time of a crash, it may not be traveling at a safe speed if the crash involved a pedestrian in an area with pedestrian activity. Alternately, a road may have a posted speed limit of 30 mph due to the surrounding land use context, but if it features certain characteristics like wide lanes then it may inherently feel like a faster road, resulting in drivers exceeding the posted speed limit.

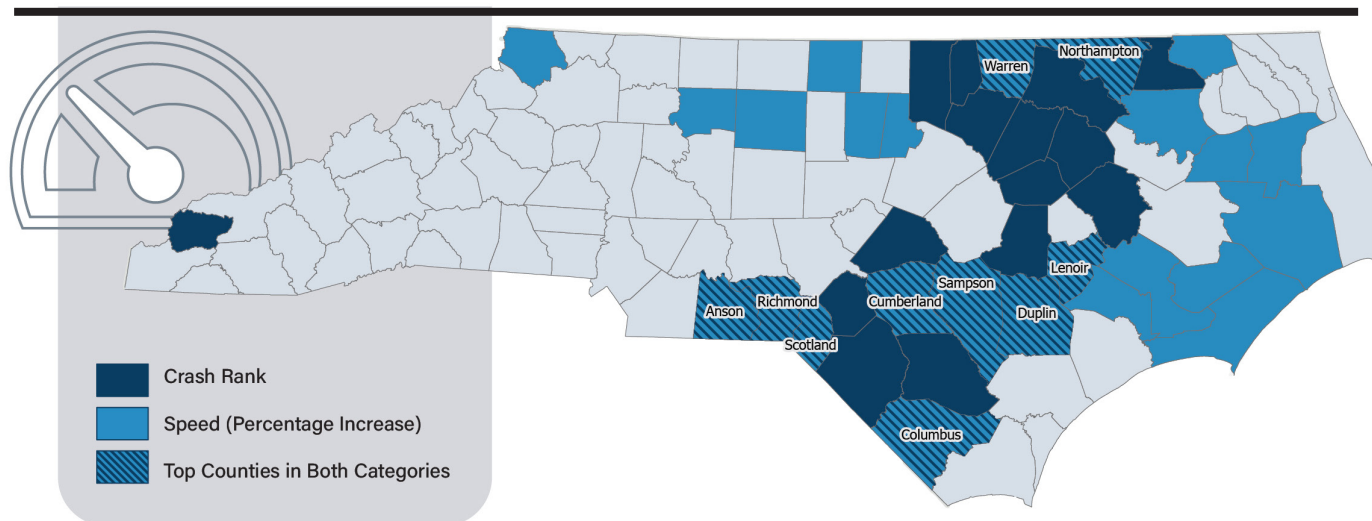
NCDOT has the authority to set the speed limit on state-owned roads, with statutory speed limits set at 35 mph inside municipal limits and 55 mph outside of municipal limits. Cities can set speed limits higher or lower on the roads they own.¹⁸ Land use, geometric design, pedestrian volume, bicyclist activity, and driveways are all considered when



NCDOT reviews a road for setting a speed limit. Rural roads in North Carolina present another safety challenge, with 67% of speed-related fatalities and serious injuries occurring on rural roads. NCDOT is currently conducting speed studies on approximately 50,000 miles of rural roadways at the rate of 1,500 miles per year.

Safe speeds are a key element of the Safe System Approach because speed impacts crash severity.

Achieving safer speeds will be a result of updating roadway design elements, implementing speed limit setting practices that account for context, public education, and expanded enforcement efforts.¹⁹ This 2024 Update acknowledges this and highlights strategies that will contribute to a system that encourages safer speeds and thereby reduces the severity of crashes.

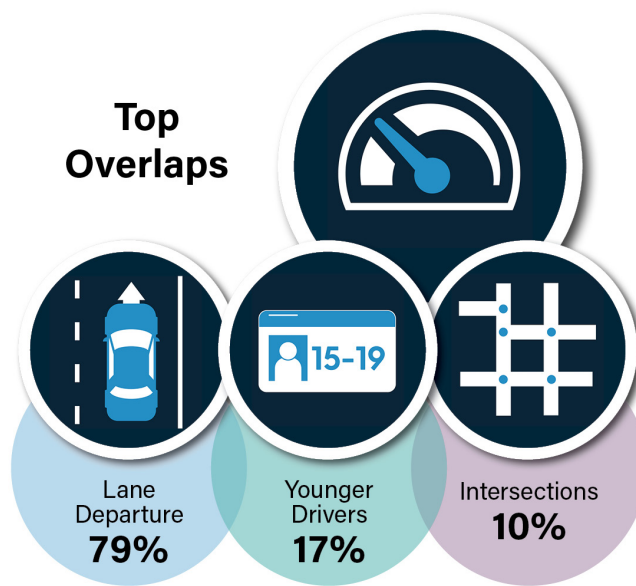


Top 25 Counties for Crash Rank and Percent Increase in Weekday Speed.
Source: NCDOT 2022 Traffic Crash Facts, StreetLight Average County Weekday Speed (2019-2022).

Doubling Down on What Works

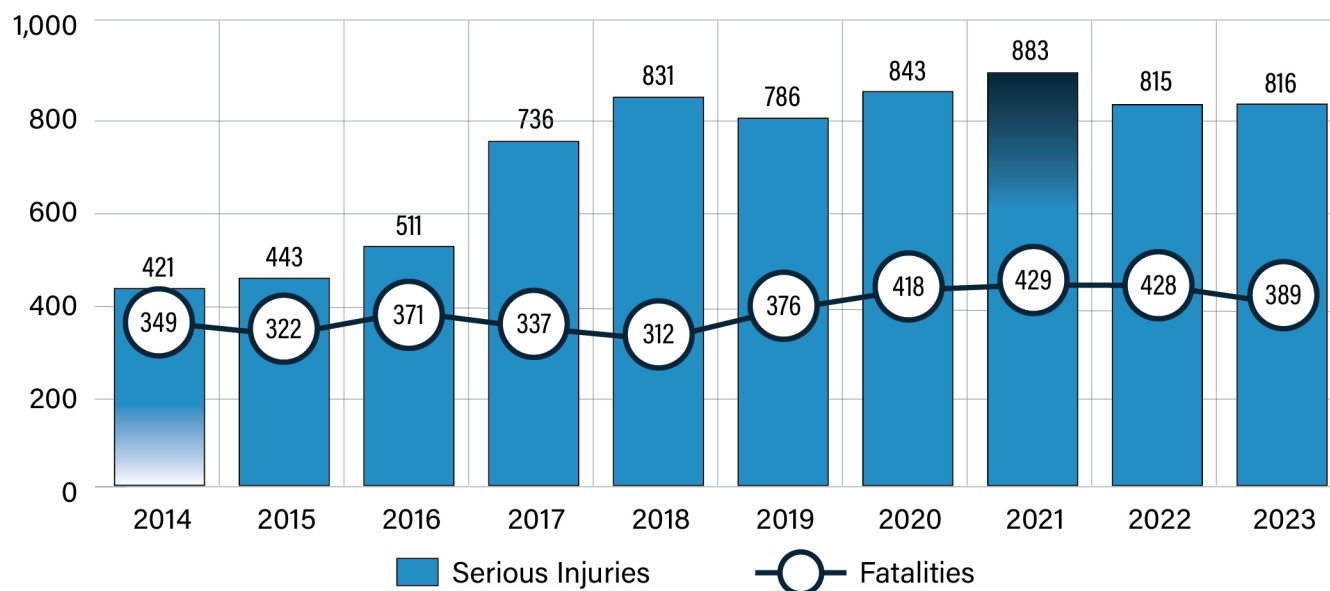
NC GHSP is currently providing over \$3.3 million in grants to 33 communities addressing speed-related offenses/crashes. The two primary types of programs are high-visibility enforcement and traffic safety enforcement initiatives. These programs provide support to enhance law enforcement patrol coverage to reduce the number of speeding-related crashes. Other programs include law enforcement training for speed measurement instruments and driving instructors, as well as legal counseling to identify high-risk drivers based on previous driving infractions.

Top Overlaps

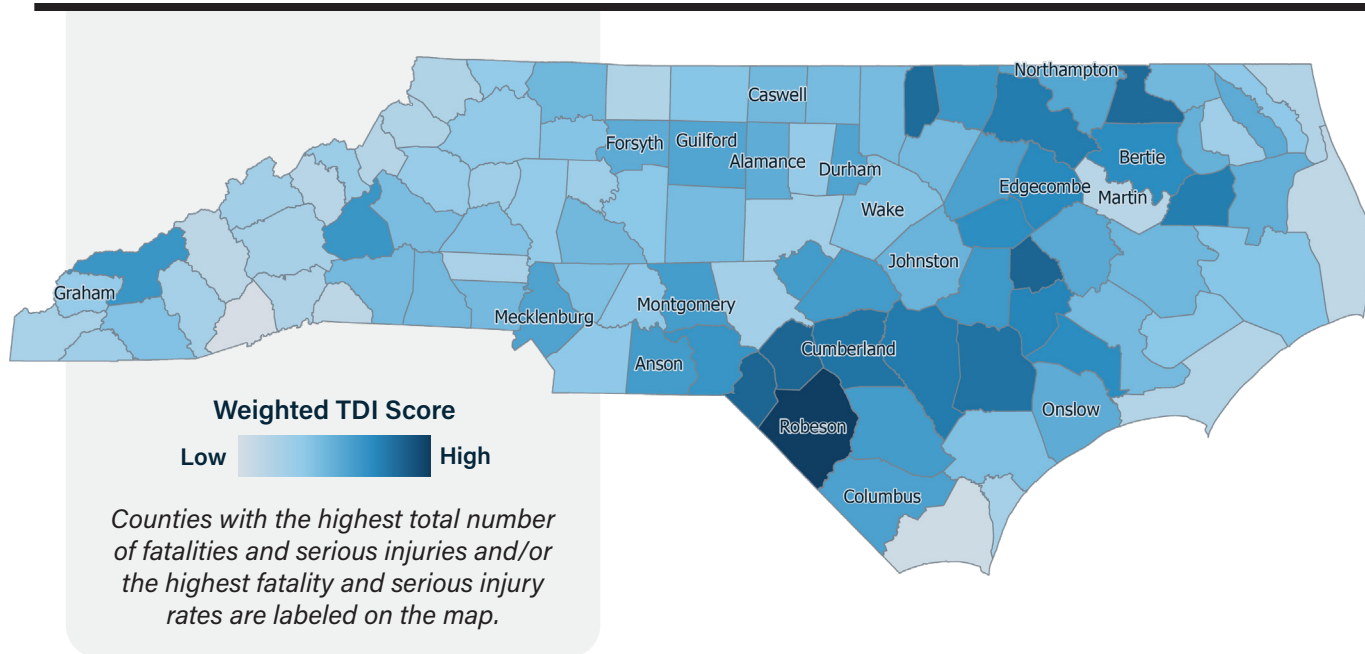


¹⁸ https://www.ncleg.gov/enactedlegislation/statutes/html/bysection/chapter_20/gs_20-141.html

¹⁹ <https://www.transportation.gov/sites/dot.gov/files/2022-02/USDOT-National-Roadway-Safety-Strategy.pdf>



Total Speed-Involved Fatalities & Serious Injuries (Last Decade).
Sources: NC Crash Database as of April 2024 (2016 to 2023); HSIP 2022 Report (2013 to 2015).



Top Counties of Speed-Involved Fatalities and Serious Injuries.
Sources: NC Crash Database as of April 2024 (2017 to 2023), U.S. Census Bureau (2022).



The Crossroads of Data and Vision

Detailed data analysis revealed the following key contributing factors to crashes involving speed:

- 69% of unbelted, speed-related fatalities and serious injuries occurred in rural areas.²⁰
- In 2022, 22% of speeding drivers involved in fatal crashes had a BAC of 0.15 or higher.²¹
- Between 2018 and 2022, 36% of speeding drivers involved in fatal crashes had a previous recorded crash.²²
- 49% of male and 38% of female drivers aged 15 to 20 and killed in fatal crashes were speeding.²³

Stakeholders' vision of safer speeds in North Carolina included:

- Create a system that encourages slower speeds, and behavior change will follow.
- Invest in self-explaining roadways, rather than reliance on deterrence alone.
- Train and educate engineers, planners, and decision-makers on selecting appropriate speeds for the context.
- Improve and expand speed data collection to inform decision-making.
- Adopt speed safety cameras as an effective tool to supplement enforcement practices and other speed management strategies.

Strategies



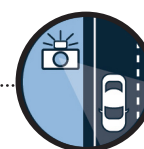
Improve speed-related data collection, completeness/coverage, accessibility, and applications.



Use the results of data analysis to identify and address speed-related issues.



Enhance state-local partnerships in addressing speed-related issues.



Implement and expand the use of available technology options to enforce and limit speeds for highway safety in North Carolina.

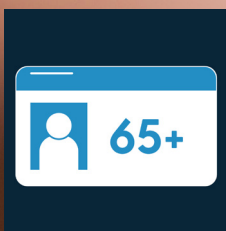
Watch for Me NC is a comprehensive education and communications program, in partnership with local communities aimed at reducing the number of pedestrians and bicyclists hit and injured in crashes with vehicles.

²⁰ NC Crash Database as of 04/14/24

²¹ FARS (2022)

²² FARS (2018 - 2022)

²³ FARS (2018 - 2022)



OLDER DRIVERS

EA DEFINITION: Crashes involving older drivers (ages 65 and older).

EA GOAL: Reduce older driver-involved fatalities and serious injuries by half by 2035, moving towards zero by 2050.

Building a Safer System

New studies of older driver skills have emerged since the 2019 Update, and universities and medical professionals are working to evaluate the needs of older drivers. Current research finds that three functions affect the ability of older drivers as they navigate the road—vision, cognition, and motor function.²⁴ With increasing age, decreasing abilities may contribute to common crash types at intersections, curves, and when overtaking other vehicles or merging lanes.²⁵ To assist drivers with vision and cognition issues, proven engineering countermeasures should be implemented, such as larger typeface for signage on roads and brighter lighting at intersections. These types of countermeasures not only improve the driving experience for older drivers but also improve the driving experience for all drivers.

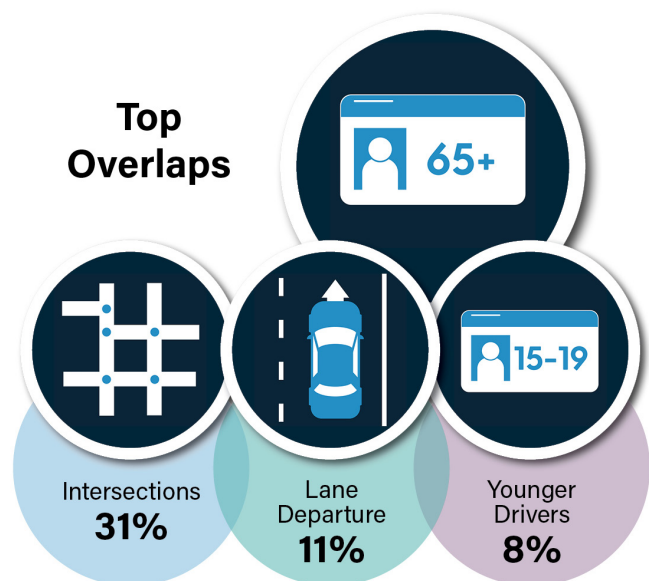
North Carolina law currently requires drivers aged 66 and older to renew their licenses every 5 years. The Medical Review Unit at the NCDMV also

assesses older adults' fitness to drive. Losing the ability to drive is a major life-changing event and there are actions in this emphasis area to support access to alternative transportation options, including designing walkable neighborhoods and promoting other transportation options. Some of the strategies and actions in this emphasis area recommend engaging social service agencies to provide transportation assistance to aging adults.

Addressing safety needs and challenges for people in all stages of their life cycle is a key step in a systems approach to safety. Making physical changes to infrastructure to consider the vulnerabilities of older adults falls within the element of Safe Roads within the Safe System Approach. Actions in this emphasis area, such as monitoring and updating the license renewal process so older drivers who want to continue to drive can remain safe on the road, further support the Safe Road Users element.

Doubling Down on What Works

Formal courses specifically for older drivers have shown success in improving the performance of older drivers.²⁶ Such courses, offered by private companies and organizations, provide training in basic safe driving practices and how to adjust driving to accommodate age-related cognitive and physical changes. These courses may also include material to introduce the driver to the ever-evolving set of new technologies in vehicles.²⁷

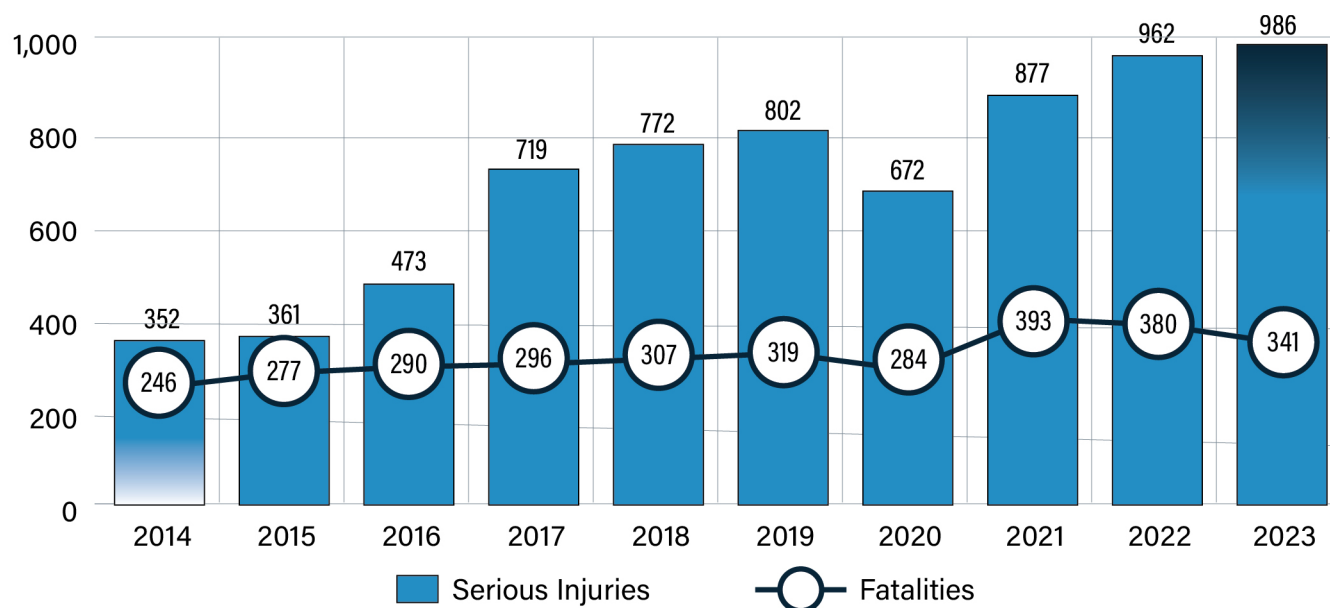


²⁴ <https://www.ghsa.org/issues/mature-drivers>

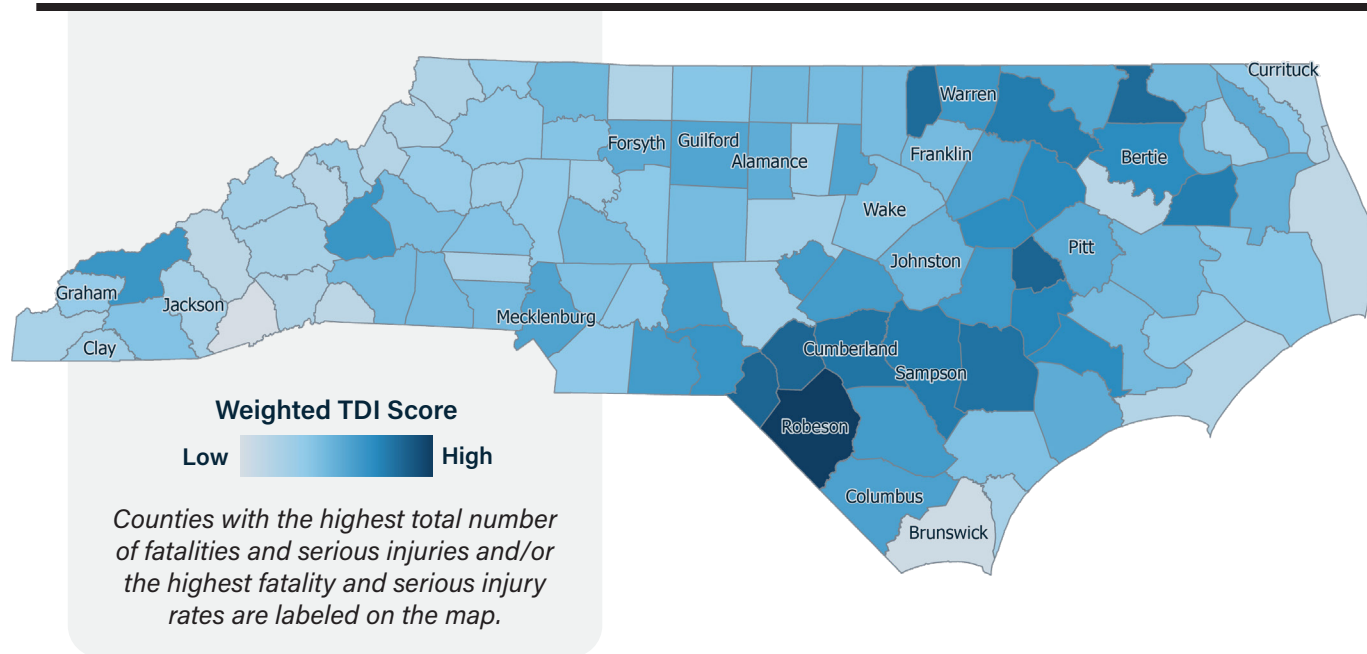
²⁵ <https://www.iihs.org/topics/older-drivers>

²⁶ <https://www.nhtsa.gov/book/countermeasures-that-work/older-drivers/countermeasures/other-strategies-behavior-change/formal-courses-older-drivers>

²⁷ <https://www.aarp.org/auto/driver-safety/locations.html>



Total Older Driver-Involved Fatalities & Serious Injuries (Last Decade).
Sources: NC Crash Database as of April 2024 (2016 to 2023); HSIP 2022 Report (2013 to 2015).



Top Counties of Older Driver-Involved Fatalities and Serious Injuries.
Sources: NC Crash Database as of April 2024 (2017 to 2023), U.S. Census Bureau (2022).

The Crossroads of Data and Vision

Detailed data analysis revealed the following key contributing factors to crashes involving older drivers:²⁸

- 64% of older driver fatal and serious injury crashes occur in rural areas.
- 33% of older driver fatal and serious injury crashes occurred at intersections, and 36% of those were left turns.
- 20% of distracted driving crashes involved an older driver.
- 14% of bicyclist involved crashes involved an older driver.

Stakeholders' vision of older driver safety in North Carolina included:

- Continue improvements to programs to address medically at-risk older drivers.
- Strengthen programs to provide training for older drivers.
- Promote greater awareness of older driver issues through outreach and training programs.
- Implement roadway design that accounts for the abilities of older drivers.

Strategies



Design a roadway system that better accommodates the needs of older drivers.



Implement strategies and programs that assess cognitive abilities of older drivers and identify adequate alternatives to driving.



Educate older drivers on factors that increase crash risk and alternatives to driving.



Educate the public and agency stakeholders on older driver issues.

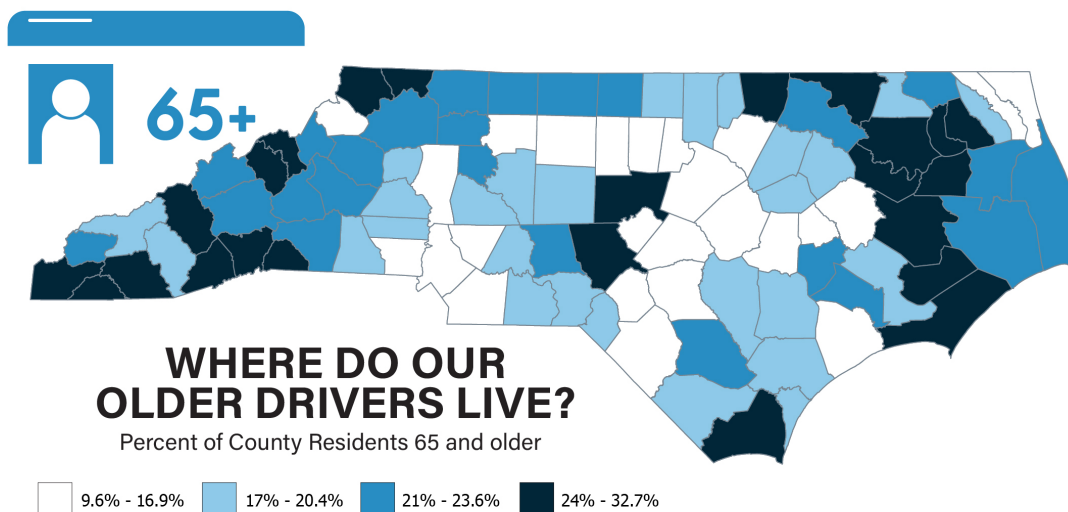




Image Credit: VisitNC.com

MOTORCYCLISTS

EA DEFINITION: Crashes involving motorcyclists. Motorcycles are defined as a two-wheeled motor vehicle having one or more riding saddles, and sometimes a third wheel for the support of a sidecar. The sidecar is considered a part of the motorcycle.²⁹

EA GOAL: Reduce motorcyclist-involved fatalities and serious injuries by half by 2035, moving towards zero by 2050.



Building a Safer System

Much like driving a motor vehicle, motorcyclist safety is impacted by the environment and driver behavior (both the rider and other road users)—yet riding a motorcycle requires additional physical skills, reaction times, and awareness. Motorcyclists are also unique in their physical vulnerabilities as they travel at speeds similar to other motor vehicles but are exposed much like pedestrians or bicyclists. While motorcyclists account for only 1.2% of all crashes in North Carolina, they represent **14% of the fatalities**.

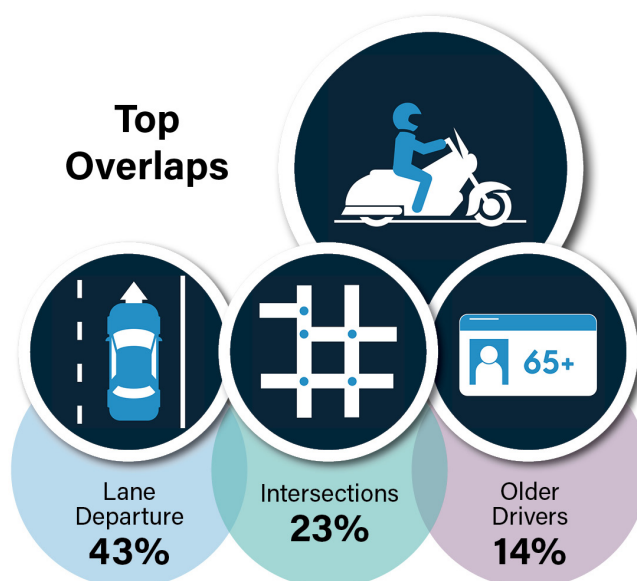
To receive a motorcycle endorsement in North Carolina (in addition to a valid driver's license), riders are required to pass a written test and either pass a road test or show successful completion of a riding course.³⁰ Skills training is encouraged, but not required. Novice riders are more at risk for crashes in the first months after receiving their endorsement. Older and returning riders are at greater risk when they return to riding after

a hiatus.³¹ However, unlike novice motor vehicle drivers, motorcyclists cannot learn with someone else on the vehicle. And even those with riding experience may face challenges that impact their safety, including road maintenance practices that change surface friction or new roadway designs that make maneuvering a motorcycle more challenging.

The 2024 Update reemphasizes the importance of considering motorcyclist safety within the Safe System Approach. No death is acceptable and motorcyclist fatalities are disproportionately high. Motorcycle manufacturers continue to improve bike technologies like automatic braking systems and lane detection. And newer motor vehicles now have enhanced technologies to detect motorcyclists on the roadway. Yet, more education for drivers and riders is needed to build greater awareness and create safer road users. Education expands to post-crash care responding to and treating motorcyclists involved in a crash. Engineers can also continue to create safer roads that protect motorcyclists.

Doubling Down on What Works

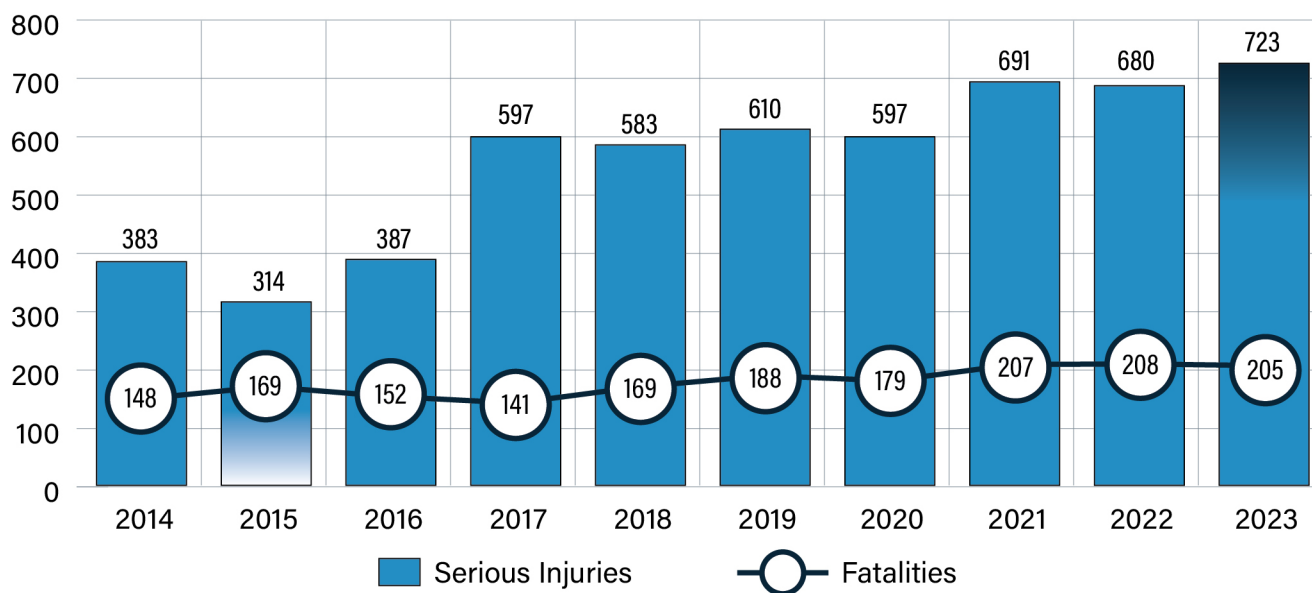
BikeSafe NC, in collaboration with the NC State Highway Patrol and supported by NC GHSP, offers free Rider Skills Days to assess rider skills and provide advice to improve motorcyclist safety and enhance the riding experience. Classes include classroom-based discussions and on-the-road ride-outs and are taught by police motorcyclists. Since 2018, the program is an acceptable court diversion program in all 100 counties and 100 District Attorney offices.



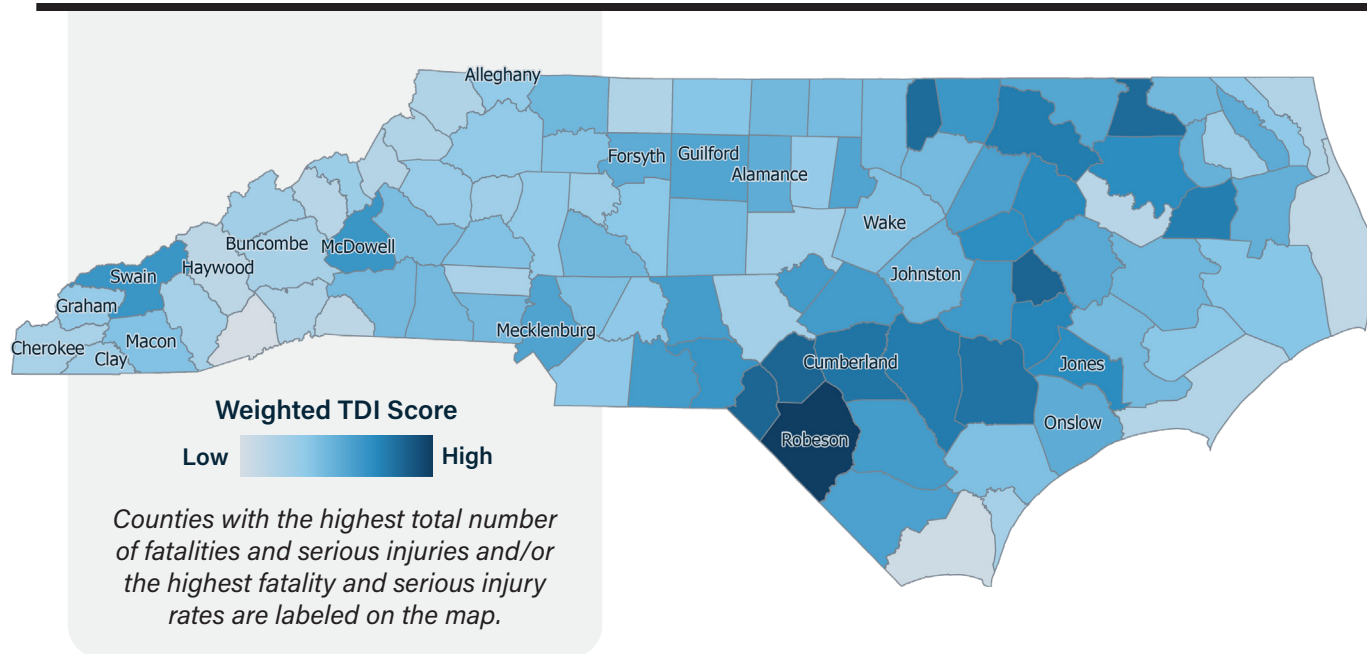
29 <https://connect.ncdot.gov/business/DMV/DMV%20Documents/DMV-349%20Instructional%20Manual.pdf>

30 <https://www.ncleg.gov/Laws/GeneralStatuteSections/Chapter20>

31 <https://www.sciencedirect.com/science/article/abs/pii/S0022437522000913?via%3Dihub>



Total Motorcyclists-Involved Fatalities & Serious Injuries (Last Decade).
Sources: NC Crash Database as of April 2024 (2016 to 2023); HSIP 2022 Report (2013 to 2015).



Top Counties of Motorcyclists-Involved Fatalities and Serious Injuries.
Sources: NC Crash Database as of April 2024 (2017 to 2023), U.S. Census Bureau (2022).



The Crossroads of Data and Vision

Detailed data analysis revealed the following key contributing factors to crashes involving motorcyclists:³²

- 59% of motorcyclist fatalities occurred outside an intersection.
- 36% of motorcyclists were killed in a curve.
- 49% of all motorcyclist crashes occurred in rural areas, but represent 63% of fatal and serious injury motorcyclist crashes.
- 91% of motorcyclists killed were helmeted.³³

Stakeholders' vision of motorcyclists' safety in North Carolina included:

- Enhance officer training to better understand the nuances of motorcyclist crashes and contributing factors.
- Improve data governance and data collection that will contribute to comprehensive datasets and a data quality management program on motorcyclist behaviors and characteristics.
- Establish infrastructure and maintenance practices that consider the unique needs of motorcycles.
- Create safer riders by expanding existing training to account for riding different bikes and differing levels of experience.
- Promote safe rider practices, like proper helmet use and use of personal protective equipment (PPE).

Strategies



Build a foundation to strengthen motorcycle endorsement/training practices, legislation, and policy.



Improve data collection to better understand motorcycle crash and injury contributing factors.



Update highway design policies and practices to accommodate the unique vulnerabilities and characteristics of motorcyclists.



Update maintenance and operation policies and practices to accommodate the unique vulnerabilities and characteristics of motorcyclists.

North Carolina Alliance for Safe Transportation (NCAST) is a statewide association of safety advocates created with insurance industry partners and supported by NC GHSP. NCAST is focused on influencing driver behaviors and encouraging safe use of North Carolina's transportation network.

³² NC Crash Database as of 04/14/24

³³ FARS (2018-2022)



YOUNGER DRIVERS

EA DEFINITION: Crashes involving younger drivers (ages 15 to 19).

EA GOAL: Reduce younger driver-involved fatalities and serious injuries by half by 2035, moving towards zero by 2050.

Building a Safer System

Motor vehicle crashes continue to be a leading cause of death among young people in North Carolina. Compared to adults, young drivers are somewhat overrepresented in fatal crashes. **Young driver crashes comprise 10% of all fatalities despite the fact that young people make up less than 7% of the population in North Carolina.**

The Graduated Driver's License (GDL) program in North Carolina has been the key initiative to improve young driver safety across the state. The GDL program follows a three-tiered structure of restrictions designed to encourage younger drivers to attain an adequate level of on-the-road driving experience before earning full driving privileges. In January 2024, the learner permit period was shortened from 12 months to 9 months; however, the effect of this change is not yet known. There

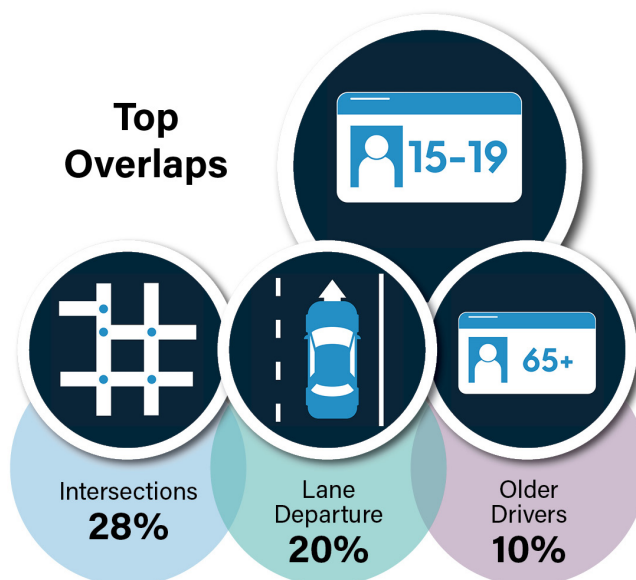
continues to be a concern that many teens are waiting until after they turn 18 to obtain their driver license, which would allow them to bypass the GDL program requirements.

Crashes involving younger drivers overlap with several other emphasis areas, as these drivers make up a significant proportion of lane departure, intersection, speed, and occupant protection-related crashes. The strategies and actions in the other emphasis areas will help to address younger driver safety. In turn, the various younger driver outreach and education actions in this section can incorporate themes and topics from the other related emphasis areas.

The relationships among emphasis areas falls within the Safe System principle of Redundancy is Crucial.

Doubling Down on What Works

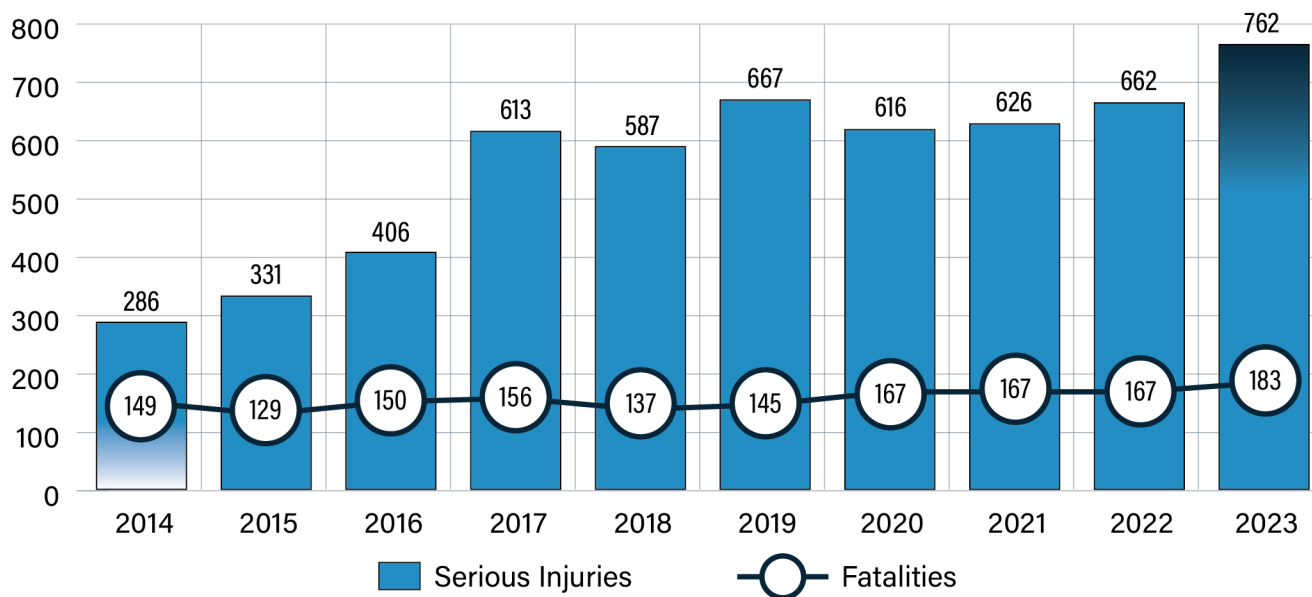
Following North Carolina legislation enacting the GDL in 1997, fatal and serious injury crashes for 16 year olds decreased by 46%.³⁴ UNC was the leader in developing the GDL, which is now adopted by all but 2 states. The success of the program can be attributed to providing younger drivers opportunities to gain experience during the critical early years of learning, while also minimizing risks like driving with other younger drivers or during nighttime conditions.³⁵



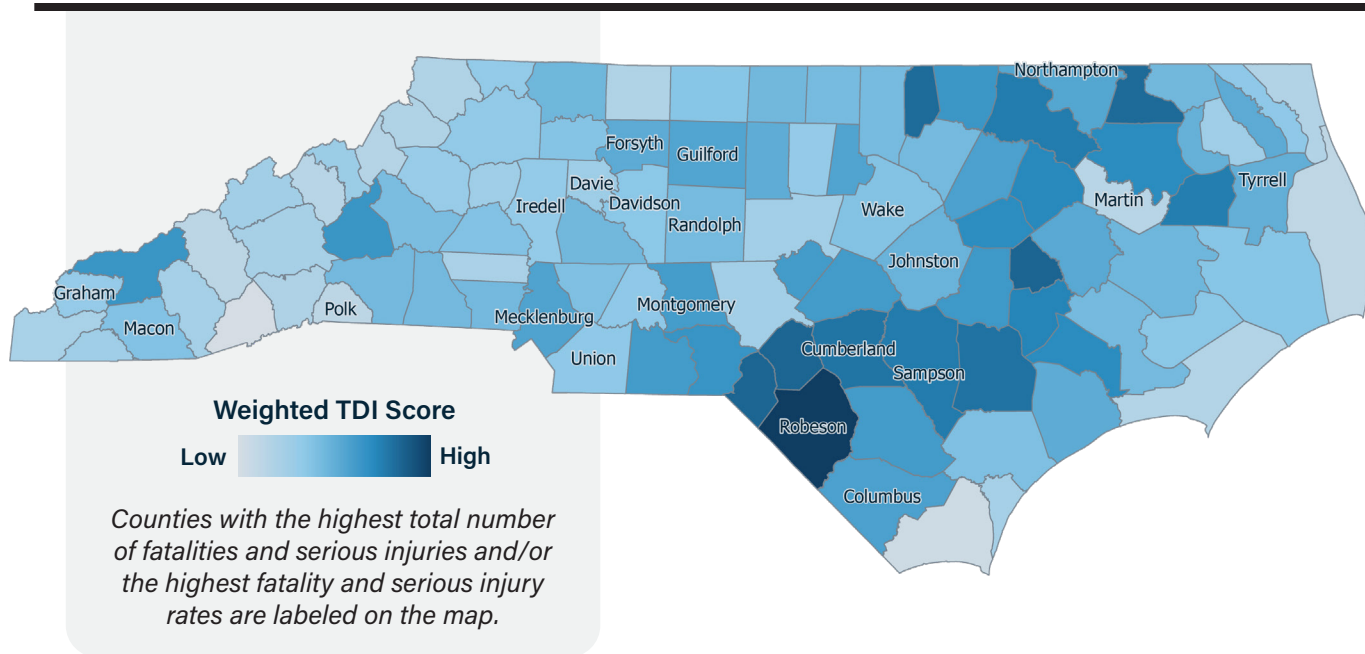
The Town of Winterville established a traffic garden in Hillcrest Park to serve as an educational resource to teach road safety in a protected environment. The traffic garden features a scaled-down roadway, which includes crosswalks, bike lanes, and railroad crossings to help everyone learn traffic rules. The traffic garden helps to shape a child's experience of the built environment and help grow their safety knowledge.

³⁴ https://www.ncteendrivers.org/wp-content/uploads/2023/04/GDL_NC_factsheet_April2023.pdf

³⁵ <https://www.ncteendrivers.org/gdl25/>



Total Younger Driver-Involved Fatalities & Serious Injuries (Last Decade).
Sources: NC Crash Database as of April 2024 (2016 to 2023); HSIP 2022 Report (2013 to 2015).



Top Counties of Younger Driver-Involved Fatalities and Serious Injuries.
Sources: NC Crash Database as of April 2024 (2017 to 2023), U.S. Census Bureau (2022).

The Crossroads of Data and Vision

Detailed data analysis revealed the following key contributing factors to crashes involving younger drivers:³⁶

- 20% of younger driver-related crashes involved distraction.
- 20% of younger driver-related crashes involved lane departure.
- 53% of younger drivers killed in crashes were in lane departure crashes.
- 28% of younger driver-related crashes occurred at intersections.
- 17% of speed-related crashes involved younger drivers.
- 44% of younger driver-related fatalities were unbelted.

Stakeholders' vision of younger driver safety in North Carolina included:

- Emphasize the practice of driving at safe speeds to younger drivers.
- Implement more comprehensive training opportunities for younger drivers.
- Continue to implement outreach programs.

Strategies



Reinforce the driver education curriculum and licensing procedures to promote safe driving habits and how to share the road with all users.



Continue research to better understand the contributing factors in younger driver crashes and to identify opportunities to mitigate the problem.



Educate the public and agency stakeholders on younger driver issues and safe driving habits.

BikeWalk NC is a membership organization advocating for people who walk and bicycle. They lead two notable ongoing programs. NC Friendly Driver Program provides important information to help motorists safely co-exist with bicyclists and other vulnerable road users.

NC Bicycle Safety Quiz is an educational tool provided to teach adults, children, motorists, and truck drivers how to share the road safely. The interactive quizzes cover safety techniques and relevant state laws using images and short explanations for each answer.

Setting the Course

The 2024 Update sets the course for safety initiatives through 2029, but the real progress is accomplished in the everyday work of North Carolina's safety leaders. Throughout the update process, partners and stakeholders emphasized the importance of implementing the plan and monitoring progress—the SHSP is only as good as the tangible efforts implemented across the state. The following outlines the process for implementing the 2024 Update.

Implementing the Plan

The North Carolina Executive Committee for Highway Safety (ECHS) is responsible for maintaining the SHSP. Founded in 2003, leadership from various state and local agencies are tasked with implementing, evaluating, and coordinating multidisciplinary policies and programs to improve safety.

The ECHS is not alone in the SHSP implementation—**safety is a shared responsibility**. Implementation is dependent on other leaders in positions to shift decision-making and investments, advocates to support legislative actions, stakeholders with a voice to raise awareness and start or continue conversations, and champions who take ownership of the 2024 Update.

Following the 2024 Update, leaders and decision-makers representing the agencies responsible for implementing change will be asked to conduct an initial assessment of the strategies and supporting actions to identify priority items to advance first. Implementation Working Groups comprised of select agency leaders may be formed following the initial assessments, within the first year of the 2024 SHSP cycle. There are existing committees and groups such as NC GHSP's Impaired Driving Task Force, NC Department of Instruction's (NCDPI) Driver Education Advisory Committee, the Occupant Protection Task Force, and the NC TRCC who are actively working towards similar initiatives. There are opportunities to coordinate efforts or identify agency leaders for Implementation Working Group participation.

The first task of the Implementation Working Groups could be to develop Implementation Plans that expand on the Emphasis Area Action Plans and formalize detailed next steps towards implementation, establish a schedule for implementation, and identify metrics for measuring outputs and outcomes. The Implementation Plans could identify who is responsible for progress, which groups or agencies will provide support and coordination, and identify who else should be informed or involved in the effort. Implementation Working Groups may also be tasked with monitoring progress and reporting on other relevant safety-related efforts across the state.

Monitoring Progress

Progress will be tracked, evaluated, and documented using several mechanisms.

Staying Informed: Biannual updates from agency leaders or Implementation Working Groups to track progress, document challenges, and measure outputs may be provided to the ECHS. Ongoing, planned updates could help maintain the focus on advancing safety and collectively achieving our goals. By documenting challenges, the ECHS and safety partners can more readily adjust ongoing efforts or pivot to emerging safety needs.

Increasing Transparency: The 2024 Update may include enhancements to the webpage and related functionalities, including annual crash data updates to monitor progress towards long-term goals. Data dashboards and evaluation report cards could track the progress towards implementation through the emphasis area metrics identified by agency leaders or developed by Implementation Working Groups.

Continual Engagement: The ECHS, NCDOT, and safety partners may continue the SHSP conversation through broader annual meetings. Agency leaders and Implementation Working Groups may share individual progress reports and NCDOT could share results from updated data trend analysis. Together, the groups could celebrate successes and refocus on the evolving safety needs in North Carolina.

Vision for the Future

The 2024 Update is a comprehensive framework for North Carolina to reduce fatalities and serious injuries in the next 5 years. Yet, in consideration of the Safe System principle that safety is proactive, many stakeholder discussions were focused on the end goal of zero and the collaborative efforts and advance planning that needs to occur in the future. This section presents a collection of future-focused themes and programs that stakeholders identified as important opportunities to develop into potential strategies in the coming years.



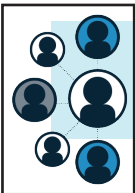
Theme: Promote transit systems as a transportation safety solution.

In 2023, North Carolina received a \$1.09 billion discretionary federal grant to design and build the first segment of a passenger rail line connecting North Carolina and Virginia. This is a substantial step forward in investing in enhanced transit systems in our state. This is both a safety- and equity-based solution, because increased modes that shift away from motor vehicles can improve safety. Additionally, increased access to transit systems can also improve connections for people living in rural communities and serve as an affordable transportation option to older adults aging in place and those in zero or one vehicle households.



Theme: Monitor and prepare for the impacts of new vehicle technologies.

NCDOT and other partners continue to prepare for the impacts of automated vehicle technologies on the roadway and consider the demands on the infrastructure to support these vehicles. Concerns also extend to the driver's ability to override a system and what this means for drivers' education in the future. North Carolina can also capitalize on in-vehicle technologies as safety solutions. In 2023, NHTSA proposed expanding the seat belt warning systems to other seating positions and to include both audio and visual warnings—a rule that could greatly influence the safety concerns related to unrestrained drivers and occupants in North Carolina. Other states and private organizations are also exploring technologies to address driver behavior, specifically those of repeat offenders. Speed governors and intelligent speed assistance devices present an opportunity to address speeding-related crashes.



Theme: Partner with advocates and special interest groups to implement policy changes.

There are many advocates and groups with a shared vision of safety for North Carolina that have influence on legislation and therefore, the future of safety in North Carolina. Strengthened adjudication for traffic violations like speed and red-light running would increase personal incentives for safer behaviors (especially for repeat offenders). In recent years, red-light cameras have gained a negative public perception with many programs being removed, although the safety benefits are well-documented. Partnerships are needed to modify the law to ease implementation of red-light running cameras. In addition to advocating for policy changes and setting up an automated enforcement program, supporting actions could include providing best practices to lobbyists and legislators, conducting focus groups to develop a targeted public campaign, and learning from the successes from other cities and states.

In North Carolina, texting while driving is illegal, per N.C. General Assembly code § 20-137.4A. It is also illegal for drivers under the age of 18 to use cellphones while driving. A hand-held cell phone ban combined with statewide enforcement would help discourage cell phone-related distracted driving.



Theme: Build on the successes to implement from the bottom up through education and awareness.

As the number of local and regional safety action plans continues to grow across the state, NCDOT, FHWA, and other transportation agencies have an opportunity to build upon successes and lessons learned. Transparent and well-marketed implementation, monitoring, and evaluation can promote innovative safety solutions or provide other communities with sample language or approaches to educate elected officials and the public.

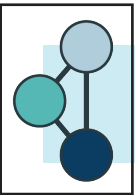
As North Carolina continues to build a culture of safety and adopt a Safe System Approach, consideration should be given to how we engage and educate future engineers, planners, and safety partners in the state. Through experiences and course work, emerging professionals are key to increasing safety in the future.



Theme: Capitalize on the funding opportunities and maintain momentum.

There has never been a better time for safety investments. The BIL increased funding for federal, state, and local safety programs, including the \$5 billion SS4A program for local safety plans and projects. While current funding programs provide a great opportunity to invest in safety, future funding for dedicated safety programs and projects is uncertain. As such, there is a need to increase partnerships, adopt the Safe System Approach, and integrate safety in all transportation projects. By integrating safety throughout the planning and project development process, there will be less reliance on reactive standalone safety projects and more opportunities to proactively address safety issues.

One such opportunity is the State Electronic Data Collection (SEDC) Program, which provides funding to upgrade and standardize state crash data systems to enable electronic data collection, improve intrastate data sharing, and facilitate electronic data transfers to NHTSA. NCDOT and the North Carolina Department of Information Technology (NCDIT) have partnered to modernize crash reporting, management, and analysis capabilities. North Carolina should consider opportunities to expand this effort with an SEDC grant.



Theme: Strengthen the relationship between land use, planning, and safety.

In a broad sense, the 2024 Update is focused on the context in which crashes occur—the safety challenges and solutions differ by the roadway type, the geography, and much more. More specifically, the Safer Speeds Working Group emphasized the potential opportunity that lies within identifying roadway design target speed thresholds for road functional classification and land use context combinations. The vision is to develop functional classifications and land use combinations and then identify design speeds and target speed thresholds that would consider current and desired or future mode shares. To accomplish this vision, North Carolina needs to establish the foundational elements, such as collecting more and better land use data and improved data on future mode splits.

THC

Theme: Support and encourage research at the national level on the medical effects of THC on driving.

The 2024 Update acknowledges that impairment includes THC, though it is not legal in North Carolina, there are legal forms of intoxicating hemp products available without restrictions or age limits. Preliminary research from Atrium Health identified a high number of crash victims contain illegal substances in their systems. North Carolina has also legalized marijuana usage on the Cherokee reservation, which could have impacts on the roads surrounding the reservation. In an election year and changing political climate, THC could be legalized in North Carolina in future years. Ongoing research should explore establishing legal levels of THC to address current concerns and prepare for possible future increases in this type of drug use.



Theme: Strengthen adjudication for traffic violations.

Data analysis showed trends of recidivism (repeat offenders) in several unsafe driver behaviors, including speeding, impairment, and improper seat belt or car seat use. Effective and consistent intervention strategies through policy and legislation are needed to bridge the gap between a driving violation and adjudication to reduce recidivism. A change is needed in the perspective of the public, law enforcement officers, prosecutors, and judges to disincentive repeating unsafe behaviors. Strengthening adjudication for traffic violations (especially repeat offenders) like speed and red-light running would increase personal incentives for safer behaviors.



Theme: Continue monitoring emerging research on effective strategies for improving roadway safety.

Roadway safety partners continue to monitor ongoing research efforts to identify the potential safety benefits of new roadway designs, safety improvements, policies, and programs. The Emphasis Area Working Groups emphasized the importance of tracking the literature and identifying opportunities for implementation in North Carolina.

Emphasis Area Working Group members also identified specific research-related questions of interest that could address identified safety problems in North Carolina. Some of those questions included the following:

- The impact of increasing speed limits on access-controlled highways on speed-related crashes and fatalities.
- The application of new roadway design features, such as techniques to mitigate lane departure concerns, safety effectiveness of modular roundabouts and mini-roundabouts, and speed management approaches.
- Improved understanding of driver behaviors, such as compliance with traffic control devices, proper seat belt and restraint use, and motorcycle rider characteristics and proper gear choices (e.g., helmet use, foot protection, full body gear).

Glossary

Bipartisan Infrastructure Law (BIL)

The President's Bipartisan Infrastructure Law (BIL), also referred to as the Infrastructure Investment and Jobs Act (IIJA), makes historic investments in the transportation sector: improving public safety and climate resilience, creating jobs across the country, and delivering a more equitable future.

Countermeasure

A proposed improvement that can be provided along a roadway or at an intersection that may address a current safety concern. A countermeasure usually has research that supports its use for a specific type of roadway segment or intersection.

Driving While Impaired (DWI)

Operating a motor vehicle while under the influence of alcohol or drugs to the point that renders a driver incapable of operating the motor vehicle safely.

Fatality

Deaths resulting from injuries sustained in a specific road vehicle crash (Fatality Accident Reporting System [FARS] reporting—within 30 days after the crash, NC reporting—within 12 months after the crash).

Fatality Analysis Reporting System (FARS)

A nationwide census providing NHTSA, Congress, and the American public yearly data regarding fatal injuries suffered in motor vehicle traffic crashes.

Federal Highway Administration (FHWA)

An agency within the USDOT that supports the construction, maintenance, and preservation of the nation's highways, bridges, and tunnels.

Graduated Driver Licensing (GDL)

A program of tiered restrictions designed to allow young drivers to safely gain driving experience before obtaining full driving privileges.

High-Risk Rural Road (HRRR)

A rural collector (major or minor) or a rural local road that has a significant risk as identified through a field review, safety assessment, road safety audit, or local knowledge and experience.

Highway Safety Improvement Program (HSIP)

A federal-aid program with the goal of reducing fatalities and serious injury crashes on all public roadways.

Kinetic Energy

The energy of a moving object is defined as kinetic energy, and kinetic energy is directly proportional to the object's mass and velocity. The human body has limits for tolerating crash forces; when kinetic energy exceeds a certain threshold, a fatal or serious injury occurs. The Safe System Approach framework prioritizes accommodating human injury tolerances by designing and operating transportation systems to reduce kinetic energy transfer in the event of a crash. The reduction in kinetic energy transfer can be achieved primarily through speed management.

Lane Departure

Any crash that occurs due to a driver leaving their lane and includes run-off-road, fixed object, head-on, rollover, sideswipe, and opposite direction crash types.

Metropolitan/Rural Planning Organization (MPO/RPO)

A federally-mandated and federally-funded policy-making organization that is made up of local officials and governmental transportation authorities in a region. The organization is responsible for prioritizing and determining future transportation projects that would be beneficial to the future growth and prosperity of the region.

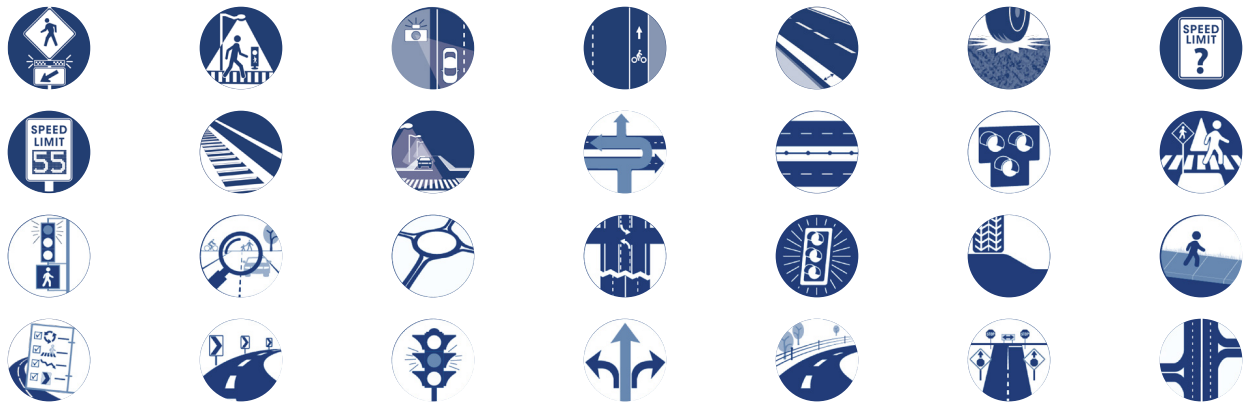
A mode of transportation that can be provided by a very light vehicle, such as a shared bicycle, an electric scooter, or an electric skateboard.

An agency within the USDOT with the goal of saving lives and preventing injuries from vehicle-related crashes.

Any driver at least 65 years of age or older.

When a person traveling uses a vehicle or device fit for a singular person's use. For example, walking or the use of a bicycle can be considered personal mobility.

The Proven Safety Countermeasures initiative (PSCi) is a collection of 28 countermeasures and strategies effective in reducing roadway fatalities and serious injuries on our Nation's highways. These strategies are designed for all road users and all kinds of roads—from rural to urban, from high-volume freeways to less traveled two-lane state and county roads, from signalized crossings to horizontal curves, and everything in between. Each countermeasure addresses at least one safety focus area—speed management, intersections, roadway departures, or pedestrians/bicyclists—while others are crosscutting strategies that address multiple safety focus areas.



The BIL established the Safe Streets and Roads for All (SS4A) discretionary program with \$5 billion in appropriated funds over 5 years, 2022-2026. The SS4A program funds regional, local, and tribal initiatives through grants to prevent roadway deaths and serious injuries.

Safe System Approach

USDOT adopts a Safe System Approach as the guiding paradigm to address roadway safety. The Safe System Approach has been embraced by the transportation community as an effective way to address and mitigate the risks inherent in our enormous and complex transportation system. It works by building and reinforcing multiple layers of protection to both prevent crashes from happening in the first place and minimize the harm caused to those involved when crashes do occur. It is a holistic and comprehensive approach that provides a guiding framework to make places safer for people. This is a shift from a conventional safety approach because it focuses on both human mistakes AND human vulnerability and designs a system with many redundancies in place to protect everyone. USDOT's National Roadway Safety Strategy and the Department's ongoing safety programs are working towards a future with zero roadway fatalities and serious injuries. In support of this approach, safety programs are focused on infrastructure, human behavior, responsible oversight of the vehicle and transportation industry, and emergency response.



Safe People

Objective of a Safe System Approach to encourage safe, responsible driving and behavior by people who use our roads and create conditions that prioritize their ability to reach their destination unharmed. Enabling people to be safer includes actions to encourage safer behaviors among the driving public, commercial drivers, and all road users. People generally use the roadway system in a safe manner on any given trip, but mistakes, lapses in judgment, and other more significant risky behaviors still occur.



Safe Roads

Objective of a Safe System Approach to design roadway environments to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users. Roadway design strongly influences how people use roadways. The environment around the roadway system—including land use and the intersections of highways, roads, and streets with other transportation modes such as rail and transit—also shapes the safety risks borne by the traveling public.



Safe Vehicles

Objective of a Safe System Approach to expand the availability of vehicle systems and features that help to prevent crashes and minimize the impact of crashes on both occupants and non-occupants. The role of vehicle safety performance in avoiding or mitigating the harm of crashes cannot be overstated. Seat belts and air bags, for example, prevented an estimated 425,000 fatalities in traffic crashes since they were first required through regulatory requirements.



Safe Speeds

Objective of a Safe System Approach to promote safer speeds in all roadway environments through a combination of thoughtful, equitable, context-appropriate roadway design, targeted education, outreach campaigns, and enforcement.



Post-Crash Care

Objective of a Safe System Approach to enhance the survivability of crashes through expedient access to emergency medical care, while creating a safe working environment for vital first responders and preventing secondary crashes through robust traffic incident management practices.

State Transportation Improvement Program (STIP)

A federally-mandated program operated by the NCDOT that identifies the schedule and funding for planned roadway projects throughout the state.

Speed Limit

Speed limit is defined as the maximum (or minimum) speed applicable to a section of highway as established by law or regulation. In the United States, there is no longer a national maximum speed limit; speed limits are established by state or local governments.

Speeding

NHTSA considers a crash to be speeding related if any driver in the crash was charged with a speeding-related offense or if a police officer indicated that racing, driving too fast for conditions, or exceeding the posted speed limit was a contributing factor in the crash. In the context of speed management, speeding is defined as exceeding the posted speed limit or driving at a speed that is too fast for conditions.

Transportation Disadvantage Index (TDI)

NCDOT developed the Transportation Disadvantage Index (TDI) and Environmental Justice (EJ) maps and interactive dashboards to help staff and external partners understand and visualize transportation disadvantage and the disproportionate impact of transportation barriers on communities of color, as well as help inform policies, planning, and project development decision making.

Unrestrained

A driver or passenger not held in place by a seat belt, device, or other restraint systems.

Vehicle Miles Traveled (VMT)

A measure used in transportation planning. It measures the amount of travel for all vehicles in a geographic region over a given period of time, typically a one-year period.

Vision Zero/Towards Zero Deaths

A traffic safety initiative in many states and municipalities with the goal of reducing all crash-related fatalities and serious injuries to zero.

Vulnerable Road User (VRU)

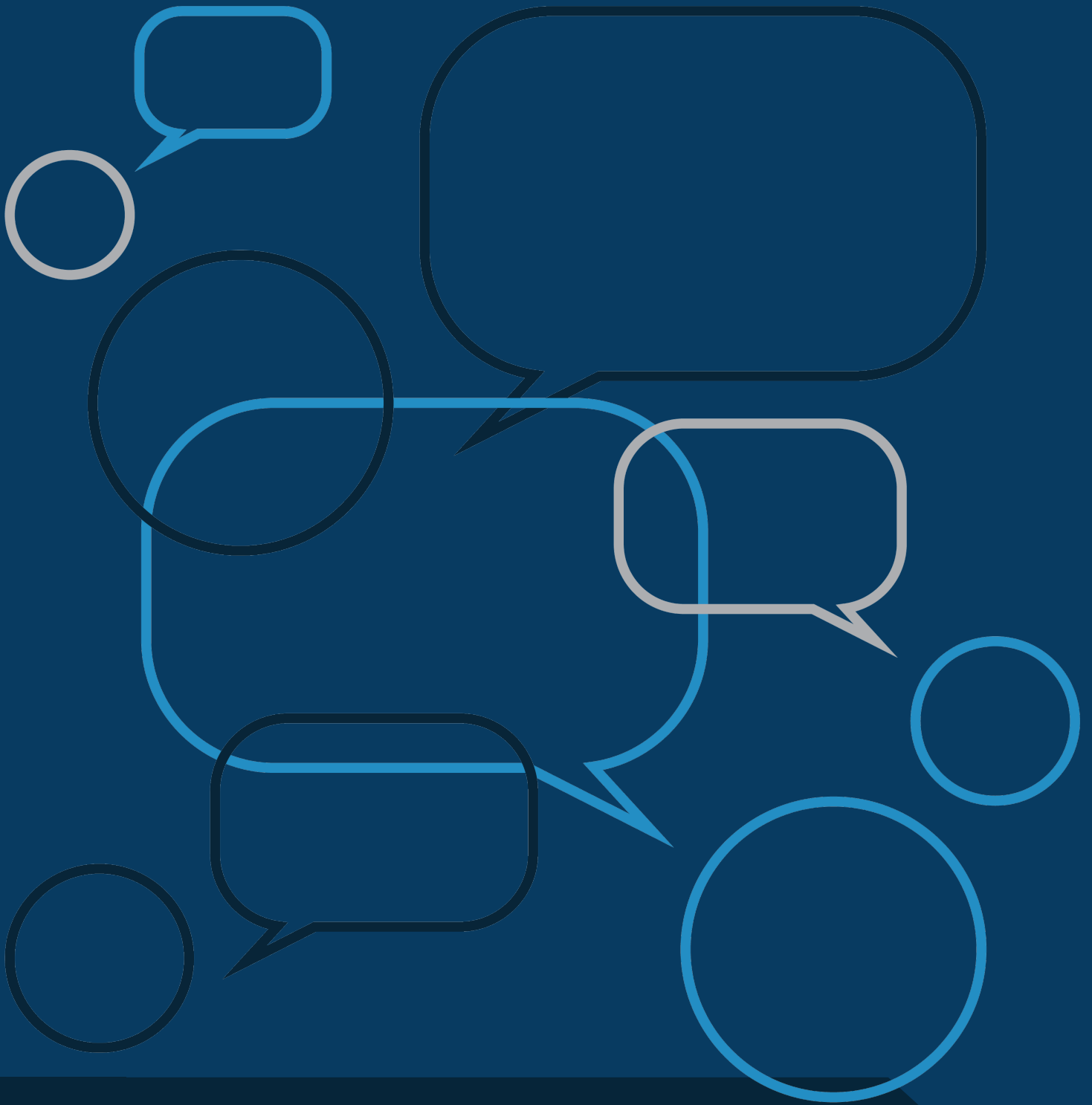
A non-motorist with a fatality analysis reporting system (FARS) person attribute code for pedestrian, bicyclist, other cyclist, and person on personal conveyance or an injured person that is, or is equivalent to, a pedestrian or pedalcyclist as defined in the ANSI D16.1-2007.

Vulnerable Road User Safety Assessment (VRUSA)

An assessment of the safety performance of a state with respect to vulnerable road users and the plan of the state to improve the safety of vulnerable road users as described under 23 U.S.C. 148(l).

Younger Driver

Any driver ages 15 to 19.



Emphasis Area

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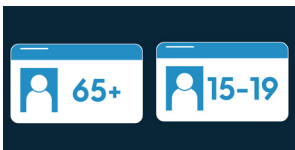
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Thank you



NORTH CAROLINA
Department of Transportation

