RUTGERS UNIVERSITY
New Jersey State Policy Lab

September 2025

# Crash Data Availability and Best Practices Across the U.S.: Lessons for New Jersey


*Authors:*

Hannah Younes, Ph.D.
*Rutgers University–New Brunswick*

Robert B. Noland, Ph.D.
*Rutgers University–New Brunswick*


## Crash Data Availability and Best Practices Across the U.S.: Lessons for New Jersey

**September 2025**

**Suggested Citation:**

Younes, Hannah and Noland, Robert B. **Crash Data Availability and Best Practices Across the U.S.: Lessons for New Jersey.** 2025. New Jersey State Policy Lab. New Brunswick, NJ: Rutgers University.

Retrieved from https://policylab.rutgers.edu/publications/

We would like to thank the New Jersey State Policy Lab for funding this work. The New Jersey State Policy Lab is an independent research center operated by the Bloustein School of Planning and Public Policy and the School of Public Affairs and Administration at Rutgers University. Elizabeth Cooner, Ed.D. serves as Executive Director of the New Jersey State Policy Lab, and Megan McCue serves as Public Relations Specialist. While the Office of the Secretary of Higher Education administers the partnership that funds the New Jersey State Policy Lab, the contents of this report do not necessarily represent the policy of the Office of the Secretary of Higher Education and you should not assume endorsement by the State of New Jersey, elected leadership, or other employees of the State of New Jersey. Any omissions or errors are the sole responsibility of the author(s).

Additionally, we thank Rutgers MCRP Graduate Students Md. Shahadat Hossain, Maham Khurshid, Halleigh Johnston, and Rebecca Levitsky for their efforts in supporting conduct interviews, analyzing crash data sources, and aiding in report writing and editing.

# Table of Contents

# Abstract

**Objective:** While fatal crashes are available through the Fatality Analysis Reporting System (FARS) and are readily available to the public, many states do not make their crash data easily accessible for the public and the research community. The public has an interest in knowing when and where crashes occur, partly so they can demand that authorities improve safety. Researchers have an interest in being able to download data and conduct analyses to better understand mechanisms that lead to crashes and assist decision makers in designing effective policies. The objective of our study is to document the state of crash data availability throughout the country and to determine the best practices for crash data management and procedures for making data open and easily accessible.

**Methods:** We reviewed two main dimensions of crash data, raw crash data and dashboards, by scouring the internet and reaching out to relevant stakeholders. We also conducted structured in-depth interviews of those responsible for crash data in selected states and various users of the data.

**Results:** We compiled a comprehensive nationwide database of open crash data characteristics for states and cities that provide such data. The database is available publicly online in an effort to increase data transparency. Our interviews with stakeholders uncovered multiple issues beyond transparency, including quality control, usability, data linkages, data analysis, collaborations between stakeholders, and other political and financial constraints.

**Conclusions:** Conclusions from our analysis include: (1) the importance of linking crash data with other datasets (e.g., injury surveillance data), (2) the need for partnerships and collaborations between universities, advocates, and agencies, and (3) challenges with management of quality control. We present the results of our quantitative and qualitative work to offer best practices and Vision Zero guidance for state policy makers and traffic crash data experts.

# Executive Summary

Traffic safety is a critical concern in New Jersey where annual traffic crashes typically exceed 200,000, according to the New Jersey Department of Transportation (NJDOT), with many of them resulting in non-fatal injuries that have lifelong impacts on victims. Currently, this data is not easily accessible. Researchers, advocates, and the public have an interest in accessing up-to-date crash data with geographic and contextual information in order to identify areas with safety concerns, conduct analyses, and advocate for effective policies.

This study included a survey of all states to analyze practices surrounding crash data availability and reporting, as well as interviews with subject matter experts, including state DOT staff, transportation advocates, public health professionals, and university researchers. The interviews revealed key themes that are critical for understanding how traffic crash data can be used to improve road safety. A central issue emphasized by nearly all stakeholders is the need for non-fatal crash data. While data on fatal crashes is available through the Fatality Analysis Reporting System (FARS), information on non-fatal crashes, which make up over 99% of all crashes, is not easily accessible. During interviews, advocacy groups, public health professionals, and local researchers stressed that focusing solely on fatalities misses a significant portion of the safety challenges on roadways.

An additional key theme throughout interviews was the importance of publicly available dashboards that display all crashes and allow users to filter for certain roadway or crash characteristics. These dashboards allow the public, decisionmakers, and advocates to better access and interpret crash data. Interviewees emphasized that most of the users of these dashboards were interested in localized areas, including specific neighborhoods or intersections. Dashboards and maps provide a way for communities to understand exactly where crashes are happening, identify priority areas for safety improvements, and advocate for policy changes to help prevent future crashes. Many states have been slow to implement such tools and, when they do exist, often fail to include geocoded or timely data, limiting their effectiveness.

**Quality, transparent, and accessible data helps to inform policy and empowers communities.** The findings from the interviews and review of crash data sharing practices across the U.S. suggest that the policies of many states are not supporting the national goals of roadway safety and Vision Zero. Still, the interviews revealed several best practices that could provide opportunities for improving crash data throughout the United States:

## 1. Data Accessibility and Publicly Facing Dashboards

Statewide traffic safety dashboards that include geocoded data, real-time updates, and interactive maps can empower advocates, researchers, and the general public to access detailed crash information and make informed decisions about where to prioritize safety interventions. While providing raw crash data is important for researchers, dashboards should also be designed to include maps, summary reports, and querying options.

## 2. Non-Fatal Crash Data and Data Integration

While the public can access fatal crash data using the USDOT FARS platform, these crashes make up less than 1% of all reported crashes. Data on fatal crashes alone shows a small subset of the larger picture. Analyzing fatal crashes alone is not enough to develop a comprehensive understanding of traffic safety problems. Additionally, integrating other datasets, such as roadway information, school zone conditions, hospital data, etc., can help identify effective safety interventions and policy changes.

## 3. Data Quality and Standardization

The quality of crash data collection and reporting varies significantly from state to state. One of the most pressing issues is the inconsistency in geocoding crash locations. New Jersey should take steps to improve the accuracy and consistency of geocoding, potentially through partnerships with universities or other research institutions to ensure that crash data is correctly mapped. Additionally, the state should work to ensure that data reporting is timely, focusing on creating a near-real-time data submission process—other states have seen success in this area with electronic reporting systems that are being implemented in New Jersey.

# Introduction

One of the cornerstones of U.S. transportation policy is to "Make our transportation system safer for all people" as expressed in the U.S. Department of Transportation (USDOT) strategic plan (USDOT, 2022). Motor vehicle-related injuries are one of the leading causes of death in the United States (CDC, 2021) and has risen over the last decade, especially deaths of pedestrians (NHSTA, 2024). The U.S. has the highest rate of traffic fatalities among developed countries, according to the International Road Traffic and Accident Database, which compiles fatality data for 35 countries (ITF, 2024). To understand the impact of various safety policies implemented throughout the country, good quality data is needed. This data must be easily accessible and digestible to the research community, the public, and decision makers.

The National Highway Traffic Safety Administration (NHTSA) defines a crash as an event "resulting in injury or damage, involving one or more motor vehicles on a highway that is publicly maintained and open to the public for vehicular travel" (NHTSA, 1974). Reporting thresholds for property-damage-only crashes vary by state. Most states require reporting for property damage in excess of $250-$3,000 depending on the state, but a few have other requirements—such as Pennsylvania, which requires a vehicle to be disabled, and Ohio, which has no minimum reporting requirement (Pierce and Skrabanek, 2024). Crash data are used to identify locations with safety issues, allocate enforcement resources, educate the public, and assist in the prioritization of safety projects or programs competing for limited resources (FHWA, 2010). States that prioritize good data collection expand and improve the ability for local agencies, advocates, and other stakeholders to make decisions regarding roadway safety (FHWA, 2010). The NHTSA recognizes six data quality attributes: timeliness, accuracy, completeness, uniformity, integration, and accessibility (Osbourn et al., 2024). These attributes are major themes in our research.

One motivation for this study was to investigate crash data accessibility in the United States for use in our own research projects. Accessibility evaluates the ability of data users to obtain data (Osbourn et al., 2024). Accessibility is one of the most critical quality data attributes—all the efforts to improve a crash database's timeliness, accuracy, completeness, uniformity, and integration are a missed opportunity if the data is not accessed and used by the stakeholders and decision makers who need it (Scopatz et al., 2017). The Fatality Analysis Reporting System (FARS) is the only nationally available dataset but only includes crashes that have fatal injuries (https://www-fars.nhtsa.dot.gov/).

There is no nationwide dataset of injury and property-damage-only (PDO) crashes, although NHTSA has maintained the General Estimates System which samples crashes from 60 areas around the country, seeking to develop a representative sample (Shelton, 1993; NHTSA, 2001). This sampling approach does not allow for detailed analysis of specific crash locations and is only suitable for tracking national trends. Non-fatal crashes account for over 99% of crashes (NHTSA, 2024) and are of paramount importance in determining hazardous intersections and corridors for safety interventions and preventing more severe and fatal crashes. Given the role of states in collecting and maintaining crash data, we sought to evaluate the state of the practice in crash data accessibility. We scoured state databases for crash data, noting whether (1) the data was available open-source and (2) there was an easy-to-use dashboard where most questions could be answered. We thought of whom the main users of the data might be and whether they would have access to the data (and to what extent).

We also conducted structured in-depth interviews of those responsible for crash data in selected states and various users of the data. Our objective was to understand how data is made available, and in some cases, why it is not made available. We uncovered multiple issues beyond transparency, including quality control, usability, data linkages, data analysis, collaborations between stakeholders, and other political and financial constraints. As we discuss, best practices in crash data go beyond availability.

# Data Methods

## Databases, Dashboards, and Crash Data Review

We reviewed two main dimensions of crash data: raw crash data and dashboards. Raw crash data is useful for researchers and transportation professionals to analyze traffic safety and trends, identify priority areas, and document factors influencing crashes including estimation of crash modification factors (FHWA, 2010; Imprialou and Quddus, 2019; Mannering and Bhat, 2014). Dashboards and interactive maps are vital for advocates and for the public to understand crash data in a user-friendly way. The search for publicly accessible crash data was done for all fifty states and the District of Columbia primarily using the Google Search engine. Most of the states with open crash data were identified in this way, but there were a few states where further research was required to find accessible crash data (if it existed). We supplemented our internet search by asking during interviews, as well as by emailing various DOTs, and inquiring on LinkedIn. We acknowledge we may have missed sources in some states, but our inability to easily find the data, if actually publicly available, is in itself an issue. We documented what is available using ArcGIS online,[1] which allows anyone to access the platform.

## Structured Interviews with Stakeholders

We recruited participants for structured interviews by three mechanisms: We advertised the study both during the Transportation Research Board Annual Meeting in January 2024 and in the February 2024 Association of Transportation Safety Information Professionals (ATSIP) Newsletter, and we used a snowball recruiting method during our interviews by asking if respondents knew people that we could interview in other states. We had an excellent response to our requests to interview and have interviewed 37 people from 25 states and one respondent from abroad. We received approval from the Rutgers University Institutional Review Board (IRB) (study ID: Pro2023002066) to conduct this study, which was exempt from full review. All subject responses are fully anonymous so that no interviewee (or their employer) can be identified. All subjects provided verbal consent to participate.

Interviews took place via Zoom and lasted about 60 minutes. People interviewed included Department of Transportation (DOT) personnel, Department of Public Health (DPH) personnel, State Police, Metropolitan Planning Organizations

1 Link to interactive map and data download: https://arcg.is/0OCaPa0

(MPO), advocacy groups, and university researchers (Table 1). The interviewees included stakeholders with an interest in crash data and the diversity in state data availability. Of the 25 states spanned in our interviews, 13 had open data, seven had limited open data (e.g., few records could be downloaded, no geocoded information), and five did not have any open crash data download portal.

A strength of employing an interview methodology is that we can capture detail and nuance not otherwise captured in systematic surveys (Ralph and White, 2024). A drawback of such a method is that we cannot comment on the representativeness of the views. A systematic survey could offer more representativeness but would offer considerably less substance and insight on crash data best practices. Furthermore, interviews, and free-flowing conversations, help capture "unknown unknowns" or things that survey authors would not think of asking (Ralph and White, 2024). Interviewees were asked general questions about how crash data is collected in their state, whether a dashboard is available for analysis, and whether data is open source. We also asked about challenges their state faced regarding crash data in terms of quality issues, availability, collaborations, and other financial/legislative barriers. Advocates were asked a slightly different set of questions, related more to the accessibility and usability of the data and their collaboration with various stakeholders.

**Table 1: Respondents Stakeholder Type**

| Stakeholder | Number Interviewed |
|---|---|
| **State Department of Transportation** | 16 |
| **Advocacy group** | 9 |
| **University Researcher / Faculty** | 7 |
| **State Department of Safety / State Highway Patrol** | 2 |
| **Metropolitan Planning Organization** | 2 |
| **State Department of Public Health** | 1 |

# Results and Discussion

## Availability of Non-Fatal Crash Data

***"In [a mid-sized city], there are about five fatal bicycle crashes a year. It's not enough to tell us where we need to make infrastructure changes. The difference between an injury and a fatality is often a matter of a few feet, vehicle size, or how someone was hit."***
– Avocate, Private Data State

FARS provides publicly available data for all fatal crashes in the United States. As mentioned earlier, fatal crashes make up a very small proportion of crashes (< 1%) and it is important not to rely solely on analyzing fatal crashes for decisionmaking. Based on our own research and conversations with stakeholders, a majority of states release some type of de-identified crash data to the public either open-source or by request. Under the federal law 23 U.S.C., Section 407, the information displayed in dashboards and in downloadable crash data is not subject to discovery and cannot be admitted into evidence in any federal or state court proceeding. This ensures that states can freely collect and analyze safety data and provide that data to the public without fear that the information will be used against the state in litigation.

Interviewees highlighted the importance of non-fatal crash data in making decisions about safety interventions. An MPO interviewee said that "*from an analysis perspective, there isn't a critical number of fatal crashes to analyze trends by locations.*" One interviewed advocate described that a difference of one or two feet is all it takes to decide whether a motor vehicle will brush a cyclist or severely/fatally injure a cyclist, and that there is randomness to injury severity. Another advocate mentioned an incident where "*a woman recently had a life altering (amputation-related) injury. That's not counted in FARS because it wasn't fatal. But that type of data is still important to consider.*"

Data availability varies widely by state, and even by city. Our review of data availability identified three non-mutually exclusive categories in which data is made available:

1. Anonymized raw data
2. Dashboards for analysis
3. Summary reports

As of Spring 2025, we identified 21[2] states plus the District of Columbia that have publicly accessible raw crash data with geocoded information, with numerous

2 The states with downloadable are: Colorado, Connecticut, Delaware, Georgia, Illinois, Iowa, Maryland, Massachusetts, Minnesota, Nevada, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Vermont, Virginia, and Washington. Since the writing of this report, SC removed their downloadable data, but is expected to put out a new dashboard and data portal in 2026.

fields, including non-fatal crashes, for multiple years. Eight[3] more states had statewide data publicly available for download, with limitations (e.g., no geocoded information, limited number of records downloadable, etc.). As for analysis and visual platforms, 42 states and the District of Columbia provide some type of crash data dashboard for public use. The information provided in the dashboards varies widely, some provide detailed maps, while others just provide summary statistics. We documented what is available (Figure 1, p. 11) and sought to identify the best practices currently available for public access. During our interviews, we did find that in most cases, including those states without open-source data downloads, relevant stakeholders, such as advocates, consultants, and researchers, can have access to the data by requesting it, though for the research community they often must be funded for a state research project.

In those states with the most open data, raw anonymized data is downloadable, and an interactive map/dashboard is provided for analysis. In the least open-data states, summary reports of annual crash data may be available to view. There are varying degrees of openness, with many states willing to provide raw data upon written request. We did not test how responsive states are when requests are made and how long it takes to receive the data, although evidence from interviews shows that requests are not always answered. We documented the information for all of the state dashboards (or interactive/clickable maps in the absence of a dashboard) and raw crash data exports (Figure 1).

Interviews with practitioners revealed several reasons why some state DOTs choose to make crash data available to the public or not. Some states, such as Connecticut and Georgia, maintain comprehensive dashboards that allow users to query records and export raw data. On the other hand, some interviewees from state DOTs and law enforcement agencies expressed concerns about sharing crash data with the public, citing issues such as the potential for misinterpretation of the data and privacy concerns. This tension between the desire for transparency and the need to ensure data integrity is a significant barrier to data availability (Table 2).

**Table 2: Reasons for Sharing and Not Sharing Public Data (Quotes from Interviews)**

| To share? | Or not to share? |
|---|---|
| *"It allows [advocacy] groups to really have a voice. That data is indisputable."*<br>— University Researcher, Public Data State | *"We've had people use our data to make wild [false] claims."*<br>— State DOT, Limited Public Data[4] |
| *"If you are worried about data being misused, the best thing is to release it."*<br>— State DOT, Public Data State | *"[Most] people wouldn't know what to do with the data if they had access to it."*<br>— State DOT, Limited Public Data[5] |
| *"The data belongs to the taxpayers. We didn't see a reason not to share it."*<br>— State DOT, Public Data State | *"We have chosen not to have it available publicly. It's such a large database, we don't want it misinterpreted."*<br>— State DOT, Limited Public Data[6] |

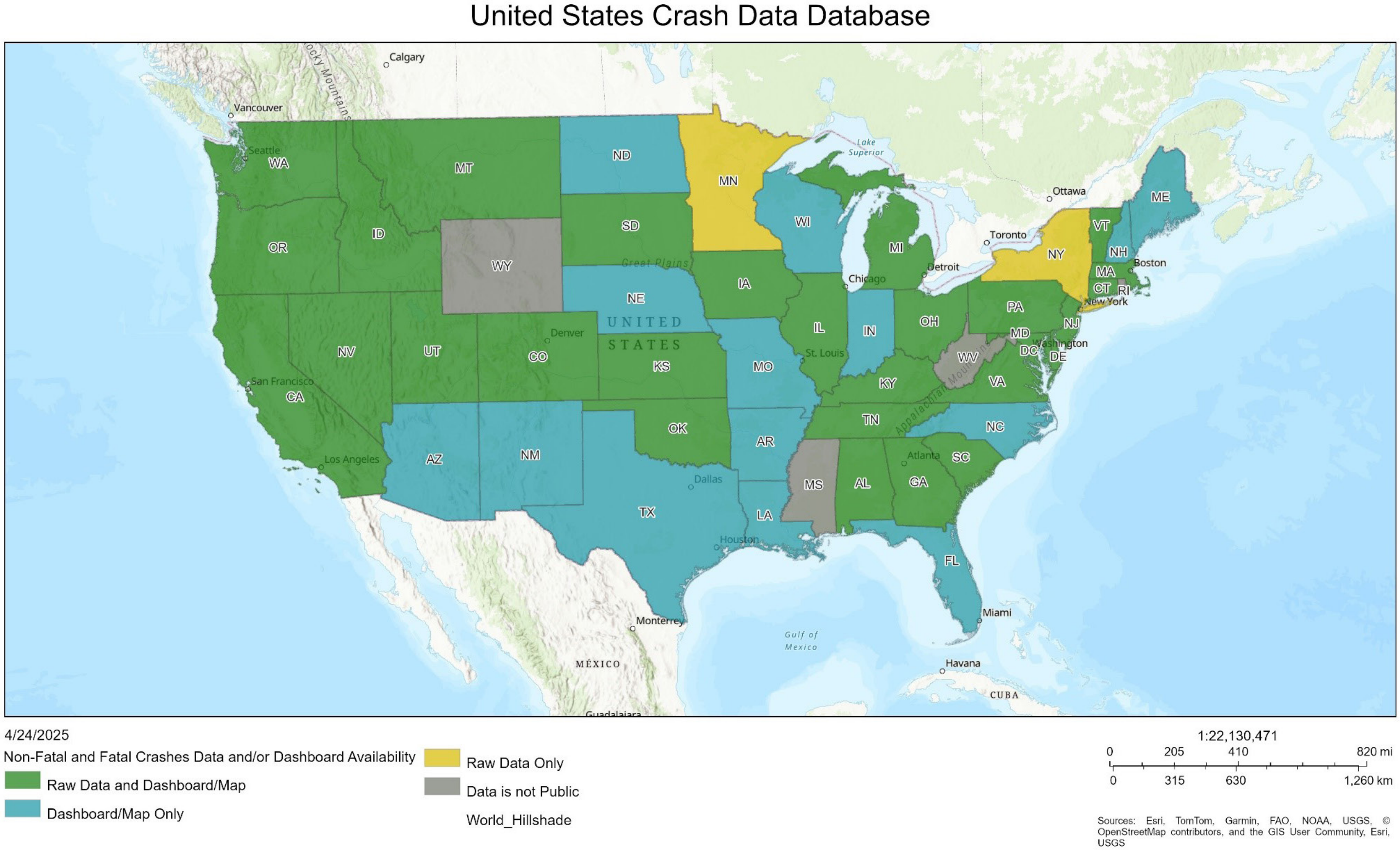
3 The states with limited downloadable data are: Alabama, California, Idaho, Kansas, Kentucky, Michigan, Montana, New Jersey, New York, and Texas.

4 In this state, the DOT does not release public data. However, some raw data files are available through State Police, a separate entity.

5 In this state, limited downloads are available in a PDF format.

6 In this state, raw data is not up to date and has limited information on crashes.

**Figure 1: Raw Crash Data and Dashboard/Map Availability by State (as of May 2025)**[7]




## Dashboards and Interactive Maps

Most queries regarding crash data can be answered with the availability of a dashboard. Dashboards generally include statistics and graphs on crash characteristics (e.g., severity, substance use, collision type), have some querying capability, and may include an interactive mapping platform. Based on our conversations with crash data experts, the majority of crash data users rely on dashboards and/or interactive maps to obtain information about traffic safety. DOTs that implemented dashboards for public use reported considerable staff time savings from answering individualized and localized requests for simple data analysis. In one state that did not have a dashboard available, full-time staff were available to answer such requests. One DOT staff member from a state with publicly available crash data stated that, with the implementation of the dashboard, their requests have been reduced and they are now answering more complex requests that they had not thought about previously.

7 Alaska and Hawaii had neither a dashboard/map nor public raw data downloadable statewide. Crash data availability changes frequently. An up-to-date version of this map is available at https://arcg.is/WKebi.

Most U.S. states have a dashboard and/or an interactive map available. Such platforms are typically hosted on state government (i.e., DOT) or university websites. Cities, advocacy groups and MPOs also sometimes host their own dashboard for their region. Some dashboards are custom designed while others use existing software such as ArcGIS, Tableau, or Numetric. Often times, dashboards include directions or tutorials on usage. Some states had one dashboard with comprehensive querying options while others have multiple dashboards broken down by topic.

We were unable to find public-facing dashboards and/or interactive maps for eight states: Alaska, Hawaii, Minnesota, Mississippi, New York, Rhode Island, West Virginia, and Wyoming. We did find that some of these states had dashboards available for professional use only with login access (i.e., Minnesota and New York). For the remaining 42 states and D.C., we classified the dashboards based on the best practices defined in Table 3. We devised these best practices based on our conversations with DOT personnel, state troopers, university researchers, and advocates, and from the literature on crash databases (World Health Organization, 2010).

The quality of dashboards varied widely depending on their inclusion of the best practices outlined in Table 3. The availability of a map with individual, clickable crashes was more valuable than presenting aggregated information. Having the ability to easily export individual crashes and aggregated reports was another important aspect of a dashboard. Interviewees emphasized that most of the users of their dashboards and data were interested in localized areas, including specific neighborhoods or intersections, which was made easier by including a map for locating crashes.

A few states stood out for having comprehensive mapping platforms, querying options, data export options, and timely and complete crash information: Connecticut (Figure 2, p. 13), Georgia, Massachusetts, and Utah. Several more states had easy-to-use and comprehensive dashboards, but still missed some critical elements. California did not display any PDO crashes. PDO crashes are important for decision making particularly in small towns or rural areas where crashes are uncommon. Maryland's dashboard contains data for only 2024, as they have recently changed platforms, and thus, the longitudinal component is brief. Pennsylvania has released a dashboard only focusing on motorcycle-involved crashes. Michigan allows for limited public downloads (250 records), which can be exported in a PDF format, making analysis for researchers difficult. Moreover, integrated data, such as school/school zone characteristics, transit locations, and roadway information, were included in a small fraction of the dashboards (e.g., California, Oregon, and Virginia).

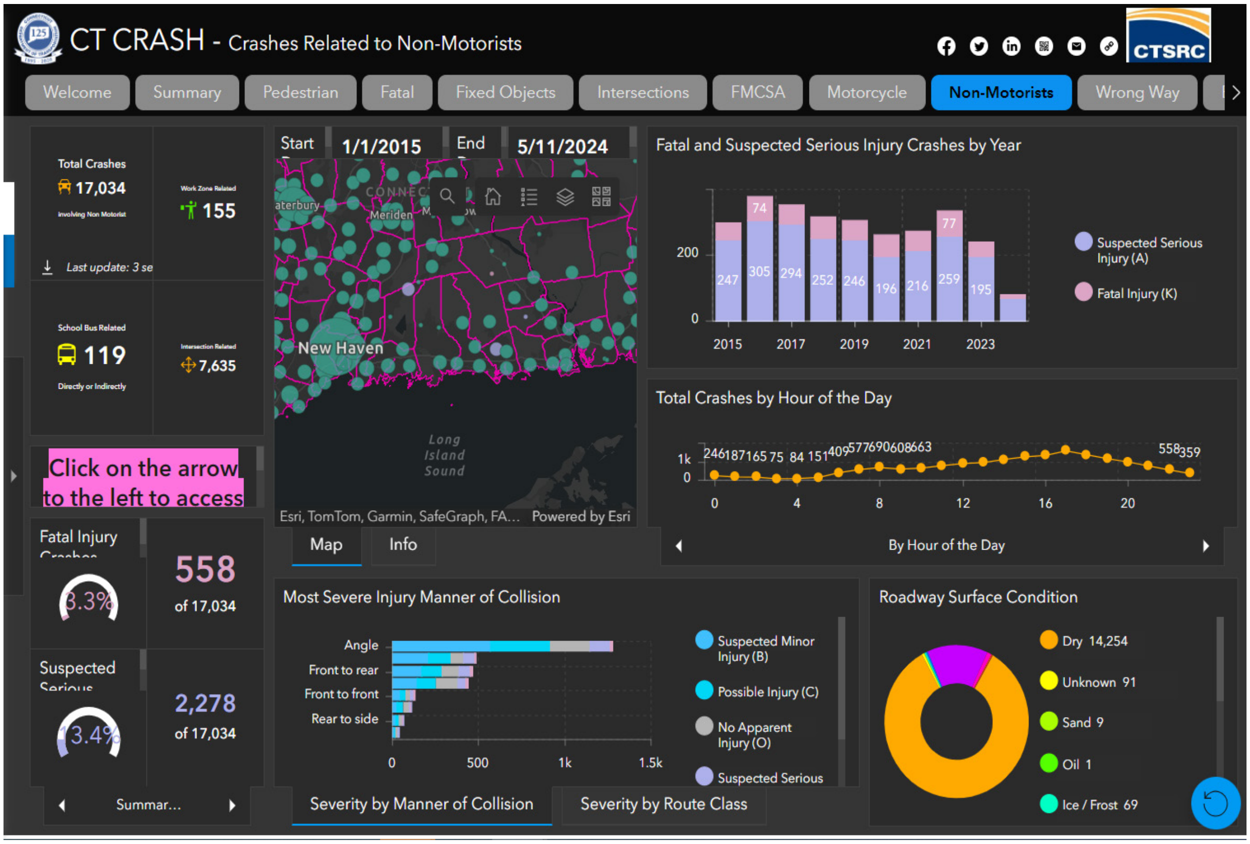
**Table 3: Best Practices for Public Crash Data Dashboards**

| Crash Information | Mapping Ability | Data Export | Querying and Reports | Complete Information |
|---|---|---|---|---|
| • Individual crash information<br>• Aggregated crash information | • GIS Linkage<br>• Individual crashes displayed<br>• Additional geographic layers (e.g., schools, bus stops, etc.) | • Individual crashes export to third party applications<br>• Aggregated exports | • Drop down menu<br>• Filterable fields<br>• Pre-defined queries<br>• User defined queries<br>• Reports exportable | • Fatal, injury, and property damage crashes<br>• Timely data<br>• Several years available (>5 years) |

We interviewed representatives from some transportation advocacy groups—who are often the main users of the data—in both open data states and those that do not provide data. The collaboration between DOTs and advocacy groups was mixed. In some states, the advocacy groups had special login access to data, while in others, they had the same access as the general public. Most interviewees highlighted that a dashboard was crucial for decision-making. In one case, an interviewee living in a state that had open-source raw data but no dashboard to analyze the data asserted that the data was essentially unusable for their purposes. They need the raw data to be displayed in a dashboard, as many users may not have high-level analytical skills, a theme that we found throughout our interviews. Some of the advocates that we interviewed, nonetheless, did work with raw data and valued having both options. Another advocate in a separate state mentioned that a dashboard "*opens people's eyes to the extent of the problem*," and that "*[data and technology] are going mainstream in a way that has never happened before*."

> ***"Putting the data out versus making it useful [are] two different things."***
> – Advocate, Public Data State

**Figure 2: Dashboard of Connecticut Crash Data**



## Raw Crash Data

Raw crash data that is typically available on DOT—or other relevant agencies—websites consists of records of individual crashes with relevant details. Most of the time, this consists of a single file, but at times, other linked data files are available, such as driver, occupant, vehicle and/or person files. These datasets are typically based on police reports that are digitized or electronically transmitted into a database. The databases can consist of hundreds of fields for each crash. Government agencies can then opt to make this crash data available for the public to download, provided that it is stripped of personally identifiable information (Scopatz et al., 2017).

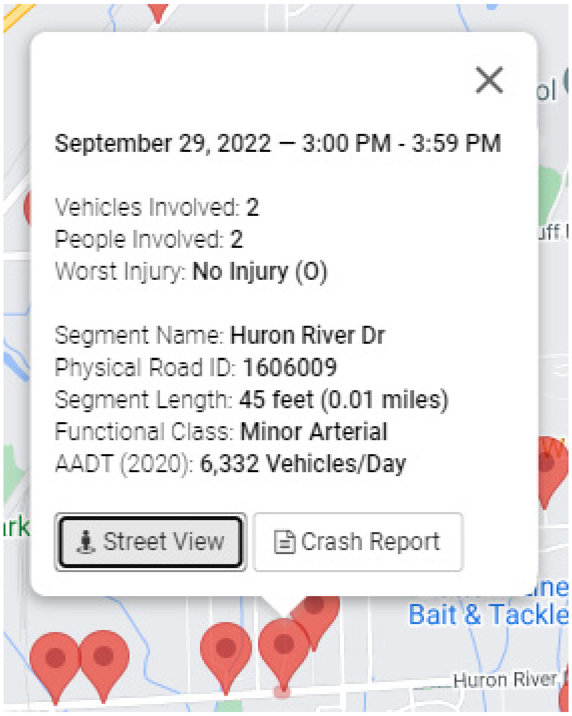
These data are usually downloaded as a single Excel or comma separated file, but can also consist of a set of tables, or a geographic shapefile. Included fields for public view generally include temporal characteristics of the crash, geolocated information, the number of people involved, the types of vehicles involved (motor vehicle users, cyclists, pedestrians, etc.), and injury severity. Demographic characteristics, alcohol/drug involvement, and other characteristics are sometimes included as well.

There are no established guidelines or best practices for what attributes should be shared with the public. Based on our conversations with stakeholders, at the very least, public crash data should include: (1) temporal characteristics (e.g., time, date, day of week), (2) geocoded information (e.g., latitude and longitude coordinates, street(s) information, mile post), (3) crash characteristics (e.g., parties involved, severity, number of people involved, collision type), (4) roadway characteristics (e.g., posted speed, functional classification, lighting conditions, number of lanes and lane width, pedestrian and cycling infrastructure) and (5) substance use (Table 4). In the most open data states, sanitized crash reports which include anonymized narratives, crash diagrams, and demographic information may also be available (Figure 3).

**Table 4: Best Practices for Sharing Crash Data with the Public**

| Minimum Considerations | Additional Considerations |
|---|---|
| • Temporal Attributes, including Date and Time<br>• Geocoded information, including Latitude and Longitude<br>• Crash Characteristics<br>• Roadway Characteristics<br>• Driver and Other Contributing Circumstances, including Substance Use | • Demographic Data for those involved (age, gender, race/ethnicity)<br>• Anonymized Narratives<br>• Redacted Crash Report and Diagram<br>• Sanitized Traffic Footage |

**Figure 3: Example of a State (Michigan) that Provides Anonymized Crash Reports for the Public**




> *"[As an advocacy group,] having the raw data was instrumental in designing our own bicycle/pedestrian crash dashboard."*
> – Advocate, Public Data State

When we asked staff from open-data states why the decision was made to make their data available, we were generally told that there was universal support within their agency. One DOT interviewee stated that "*the data belongs to the taxpayers*" and that they did not see a reason not to make it available for public use. A university researcher stated, "*it allows advocacy groups to really have a voice*" and to have data-driven advocacy. An advocate from an open-source crash data state found that the raw data was critical for creating their own dashboard. Their state had a dashboard, but it was perceived as too complicated and did not focus on the group's mission, which was bicycle and pedestrian safety: "*having the raw data was instrumental in designing our own bicycle/pedestrian crash dashboard.*" Their dashboard is now used widely by local governments (and by the general public) and has been vital in enabling local decisions regarding non-motorist safety.

In states where raw crash data is not publicly available, it can typically be requested by filling out an online form, emailing, or writing to the relevant holders of the data (typically DOTs or Department of Motor Vehicles). The rate at which crash data requests are granted varies widely by states. Two of the advocacy groups that we interviewed had to either purchase crash records with grant funding or were denied access to crash records by their state DOT. DOT interviewees from some states expressed concerns about potential misuse of the data and preferred to monitor who had access to the data and for what purposes. Others wished to make the data more available but faced legislative or financial constraints.

### Summary Reports

The NHTSA's Office of Regional Operations and Program Delivery (ROPD) administers over $500 million in grant programs annually to all 50 states, the District of Columbia, Puerto Rico, U.S. Territories, and the Bureau of Indian Affairs. Recipients publish a Highway Safety Annual Report that is made publicly available on the NHTSA website (NHTSA, 2025). States may voluntarily publish other types of reports, and other programs exist (e.g., Highway Safety Improvement Program (FHWA, 2024)) where reports are written and made available to the public, with the Highway Safety Plan (HSP) and the Highway Safety Improvement Program (HSIP) being the most widespread. Summary reports are published snapshots and analyses of crash data for a state. The information is aggregated, and no data is available for interactive use.

Highway Safety Annual Reports review yearly progress on implementing states' HSP and document the use of grant funding administered by NHTSA, which includes crash data analysis. These reports provide high level, aggregated statistics on safety outcomes, and methodology is often not clearly elaborated upon. While these reports may serve some purpose, most crash data users require at minimum dashboard and interactive access to the data, with filtering options by time, location, and crash characteristics. While summary reports are most widespread, their usefulness to researchers, advocates, and other stakeholders is limited. Hence, it is not a best practice to provide these documents as the only publicly available resource.

## Best Practices

### Uniformity in Data Collection

Crash data are collected by thousands of people daily; in most states, law enforcement are responsible for all crash data collection, although a few states allow for citizen submitted reports. Crash records are then transmitted by law enforcement to a state-maintained database. This often falls under the ownership of the state DOT, but can also be owned by other entities, such as the Department of Justice, the Department of Motor Vehicles, or the State Highway Patrol, to name a few. Uniformity in data collection within a state is a challenging feat, considering the amount of people responsible for data collection. Generally, interviewees cited electronically submitted records (rather than paper forms), a single platform for submission, and on-site collection as best practices for data collection.

Interviewees consistently cited electronic records as a solution for quality assurance and timeliness of crash data. At least nine of the 25 interviewed states had 100% of their records submitted electronically (i.e., no paper forms). In addition to submitting records electronically, interviewees reported that having a uniform platform for submitting crashes ensures quality control. Interviewees acknowledged that records are best collected at the crash site, but that law enforcement need to balance clearing the scene and taking care of any injured persons while collecting and entering crash data electronically. This seems to be a common perspective of law enforcement as documented Marshall's (2024) review of historical literature on traffic safety practices (Marshall, 2024).

States that have 100% electronic records often have near-real time data, where the crash database is updated nightly—although more severe crashes can take a month or longer to be uploaded. States that lagged in implementing electronic recording systems were one to two years behind in maintaining their database.

## Integrating and Linking Datasets

When discussing the necessities of crash data, a common theme recurred: crash data alone is not good enough. There is a need for integrating datasets together in order to make informed decisions related to policy, planning, and funding of projects. According to the NHTSA, data integration refers to establishing connections between six core components of the traffic records system: crash, vehicle, driver, roadway, citations/adjudications, and injury surveillance/medical data (Osbourn et al., 2024). Interviewees added that non-motor vehicle crashes—i.e., crashes involving a bicycle, pedestrian, All-Terrain Vehicles (ATV), buggy, train, etc. without the presence of a car, truck, bus, or other licensed motor vehicle—were important considerations that are currently unreported in most of the U.S.

Roadway data is typically integrated with crash data by most states. This is most likely done to allow analysis and/or estimation of crash modification factors as specified in the Highway Safety Manual (National Research Council, 2010). Driver and citation data are sometimes integrated. Other types of data, particularly injury surveillance data, are rarely integrated. NHTSA supported states through the Crash Outcome Data Evaluation System (CODES) from 1992 to 2013, at which point states were anticipated to continue integration efforts through their own funding. Several state DOTs discussed their experience with CODES during our structured interviews, but very few were able to continue integration efforts past 2013.

Integration of police-reported crash data with injury surveillance/medical data[8] can help improve the understanding of crash outcomes. For instance, several states found a mismatch between police reported severity levels and those diagnosed by medical professionals. In all of our conversations, respondents indicated that when medical reports are included there is a greater incidence of alcohol impairment among victims compared to police reported data. Medical reports

8 Medical data refers to any injury surveillance data including hospital, emergency medical services (EMS), emergency room (ER), urgent care, primary care, trauma center, and other related data from post-crash care services.

are more thorough, yet data is rarely linked with police reported crash records. Furthermore, funding decisions are made from police reported crash data, which undercounts both alcohol use and severity of crashes.

> "***Severity of crashes are underreported. Law enforcement is not trained to report severity the same way that medical professionals are. Financial decisions are made from [law enforcement reported severity], rather than on medical professional evaluations.***"
> — (DPH, Public Data State)

In terms of determining the severity of an injury, police/law enforcement officers are not trained in the same way as medical professionals. One of our interviewees, a state department of health employee with direct access to linked health/crash data and who closely works with the data, stated that "*Severity of crashes is (sic) underreported. Law enforcement is not trained to report severity in the same way that medical professionals are. Financial decisions are made from law enforcement reported severity rather than on medical professional evaluations.*" At this point, crash records are not widely updated because there is no systemic mechanism in place to do so. In terms of alcohol impairment, undercounting comes in part from the lack of alcohol tests at the scene of the crash, especially in cases where urgent care is needed.

When discussing data linkages, states highlighted the importance of doing so, but the majority of those interviewed were in states that did not link hospital data. Post-crash care information, which is one of the five elements of FHWA's Safe System Approach (FHWA), is therefore not fully explored in the majority of states, although capability appears to be present, and hurdles are related to budgetary constraints. Additionally, recent technological advances show that traffic and dashboard camera footage can be useful in analyzing crashes (Shah et al., 2018), but budgetary, staff, privacy, storage, and other constrains showed that such data is not currently widely incorporated in practice.

While crash data is not typically linked to hospital data, most states link their data to roadway data. Linked roadway data provides the number of lanes, functional classification, and other roadway characteristics. It does not have information on non-motorized infrastructure, including bike lanes and sidewalks. In some states, crash data is also linked to citation data, traffic records, and/or toxicology reports. Roadway data is used in analysis based on the Highway Safety Manual (Transportation Research Board, 2022; National Research Council, 2010), which some states require to determine if safety interventions are warranted. Even when data is linked, there may be missing data, for example traffic counts that can lead to biased analysis (Adediji and Noland, 2020). Analysis techniques in the Highway Safety Manual do not include socio-economic factors that may be important to understand the causes of crashes.

One DOT interviewee in a public data state highlighted the importance of exposure data and cautioned against common misinterpretations of data. They used the example of work zones. "*The biggest obstacle with having open data is making sure that people who use it, understand it. The reason that crash data was slower to go online [compared to other data] was because of misuse. For instance, people have* *drawn conclusions about work zone crashes over time without considering how many work zones were in place.*" This did not entice the state's DOT to take the data offline, rather, it is a caveat that they accept. We asked other DOTs with open data if they could recall any experience with misuse/misinterpretation, and found that it was either a minor or non-issue for most.

Respondents also highlighted the inherent limitation with crash data: Police reported crash data must involve a motor vehicle. FARS data is also limited in that it does not include crashes that occurred on private roads, driveways, and parking lots. Vulnerable road users are not always injured by a motor vehicle. For instance, a child crossing the street who is struck by a bicyclist, or even an e-bicyclist (which can attain speeds of 30 mph) will not have a crash report because no motor vehicle was involved. Pedestrian collisions with unlicensed ATVs or buggies are also not reported in crash databases. If their injury warrants emergency care, there would be a hospital record, but it would not be linked to crash data. At this point, the only publicly accessible dataset that we are aware of which contains some of these injuries is the National Electronic Injury Surveillance System (NEISS) administered by the US Consumer Product Safety Commission. Because bicycles, e-scooters, and other micromobility modes are considered "consumer products" their injuries are reported in the NEISS for a sample of about 100 hospitals throughout the U.S. and weighted to be representative of the nation. Analysis of such data has shown that around 70% of micromobility injuries do not involve a motor vehicle (Younes et al., 2024).

> "***Crashes must involve a motor vehicle. We're trying to get away from that. Vulnerable users don't always involve a motor vehicle. We realize we have an underreporting issue for vulnerable users. We work with the department of health and have several initiatives with them to identify non-motor vehicle involved pedestrian injuries.***"
> — (DOT, Public Data State)

## Collaboration

Collaboration between stakeholders is one key to having quality, useful, crash data. Each state has a Traffic Records Coordinating Committee (TRCC) that meets several times a year. The goal of TRCCs is to improve collection, management, and analysis of traffic safety data (NHTSA, 2019). The quality of the TRCCs varied by states, with some interviewees reporting more active involvement than others. Relevant stakeholders include engineering professionals, law enforcement, advocates, planners, health professionals, governmental entities, and academics. An interviewee from a state's department of public health with public data expressed in dismay that "*there's us in public health and it feels like we're left out of everything. When people talk about 'seats at a table,'* it doesn't even feel like there is a table." There has to be a champion that prioritizes crash data and ensures that everyone is at the table. Additionally, crash data is useless if policymakers are not motivated to act on that information.

There were several instances where interviewees from DOTs expressed their desire to make data more transparent but stated that they faced legislative or financial hurdles to do so. One advocacy group explained that "*[State] has open data, but they don't act upon their data.*" When we spoke to government personnel, we noticed a myriad of hurdles. One state DOT interviewee stated that they did not have the staff time needed to make their data open source; there was no mechanism in place to redact and anonymize records. Moreover, that state's DOT, like a few others, did not have ownership of the data.

Collaboration did not always work. During our interviews, several stated that there was a disconnect between agencies and stakeholders. Advocacy groups in particular rarely had access to crash data (unless it was open source). Advocacy groups rely on their connections with state DOTs to access crash data. They consistently face challenges when collaborating with different stakeholders, with understanding data quality issues, and with barriers to data availability. One interviewee stated, "*the fact that we have to make formal requests is a barrier that makes it difficult to analyze [priority areas].*" Another advocacy interviewee from a private data state had their crash data request denied by their state DOT, although they later successfully obtained crash data from their city's police department.

Advocacy groups, which sometimes span regions that cross state lines, revealed the lack of uniformity in crash data between different states. Four of the eight advocacy groups, and one MPO we interviewed spanned more than one state. One interviewee from an advocacy group stated that one state underreported crashes, as evidenced by the stark decline in injury crashes across the state border, along the same roadway. Another advocacy group faced a different set of issues: one state has open data but lacks financial capabilities to act on their data while the other has a comprehensive vision zero action plan but monetizes their crash data (i.e., the group had to purchase the crash records in order to analyze the data). When the NHTSA refers to uniformity as a data quality attribute, it refers to uniformity within a state. Based on our conversations, adjoining states rarely make an effort to coordinate traffic records.

## Challenges

All of our interviewees faced various challenges regarding crash data. There were three issues that were most often mentioned: (1) geocoded information, (2) timeliness, and (3) underreported/unreported crashes.

When discussing data quality with interviewees, responses often included discussion of compliance with NHTSA Model Minimum Uniform Crash Criteria (MMUCC). MMUCC is a voluntary guideline that represents a minimum standardized set of data variables to describe motor vehicle traffic crashes. The guideline is updated every five years, with the 6th edition released in 2024. Most of the state DOTs were 90% or more compliant with the 4th or 5th editions of MMUCC. The guidelines provide uniformity and quality control although, while important, are only a part of ensuring crash data quality. Because not all states comply with MMUCC, there is a lack of standardization of non-fatal crash data across the country (Montella et al., 2012). Geocoding mismatches, underreporting, and timeliness were some of the largest data quality issues the interviewees mentioned.

Interviewees voiced concerns about data quality throughout the data collection process. Data are primarily collected by law-enforcement officers. Law-enforcement officers receive training continuously throughout their career on data collection, although whether this was mandatory was not clear. Interviewees mention that data quality varies substantially depending on who collects the data, and because so many people are collecting data, inconsistencies and biases abound. There are also concerns that crash data is not a priority for officers. One university professor interviewee opined, "*the number one function of the officer is not to collect crash data; it's to clear the scene and get traffic moving again*," and others similarly felt that some officers do not see the value in crash data collection, other than for insurance purposes. Our own evaluation of pedestrian crash reports in New Jersey revealed substantial variation in the detail of written reports between jurisdictions (Noland et al., 2017).

> "***You have officers who are straight out of the academy versus 40-year veterans who can look at a crash and tell you what the speed is. You have this incredible variation of people putting data into the system.***"
> — University Professor, Public Data State

Trainings and education are an important aspect of improving data quality. Electronic records, which prevent the submission of reports with conflicting fields, are an additional vital aspect in improving the quality of the data. While electronic records are praised, there were two main criticisms throughout our interviews: the data may not be geocoded properly when crashes are not collected on site, and electronic records do not replace human quality control. One interviewee mentioned that several quality control personnel were let go when the state shifted to electronic records, and that quality control suffered because these people were experts in crash data. To reduce the time and effort that manually sorting through crash records requires, DOTs typically focus human-led quality control on severe and fatal crashes and conduct random audits on other crash records. Every state does have someone determine which fatal crashes match the needs of the FARS database, which must be reported to NHTSA. There is no requirement for non-fatal crashes. States sometimes contract out to university researchers who may have a role in quality control as well, whether it be geocoding unlocated crashes or full database management.

## Geocoding Crashes

Most of the states that we interviewed reported that all of their reported crashes were geocoded, regardless of whether the data is open source. Geocoding crashes is paramount in making informed decisions about prioritizing funding for transportation infrastructure (Younes et al., 2023). Without such information, it will not be clear where the crash occurred and what infrastructure conditions may have contributed to the crash. It is also needed for analytical models to estimate crash reduction factors (National Research Council, 2010).

Yet some states still do not seem to have fully geocoded data. One interviewee said that up to 50% of their crashes were not properly geocoded. While their data is open source, it is difficult to prioritize funding without precise information. Another state funded a state university to geocode their crash data. Around a dozen coders, mostly students, ensure that around 100,000 crashes are properly geocoded each year. At times, this may include contacting police officers directly to get the information. These efforts have proven successful, with nearly 100% of records being geocoded in their state.

In a separate state, ESRI custom tools have been used to geocode crashes and cross-reference the locations from reporting officers based on fields within the crash report and crash diagram (ESRI, 2024).

## Timeliness of Report

Timely reporting of data and inputting into databases remains an issue. For states without widespread electronic record submissions, there was generally a two-year delay to access crash data. One advocate voiced that they worked very little with crash data because of timeliness issues. They stated, "*as an advocacy group, we want real-time data. None of the DOTs from the three states we cover share the data right away.*" They instead relied on news articles and their members for up-to-date information on bicycle fatalities in their region. A collaborative effort between law-enforcement and DOTs is needed to make data real-time.

When we asked interviewees what it took to get data near-real time, they universally cited electronic records and a uniform submission platform as the solutions. One interviewee, however, noted that law-enforcement officers do not have to submit their crashes on time in their state, and thus, education and training for law enforcement is necessary to convey the importance of providing timely crash data.

## Underreported and Unreported Crashes

Another common theme affecting data quality issues was underreported and unreported crashes. There are three main dimensions to underreported/unreported crashes: (1) motor vehicle-involved crashes not reported by law enforcement, (2) limited information on reported crashes, and (3) crashes not involving motor vehicles.

By law, officers are required to report motor vehicle crashes involving fatalities, injuries, and property damage above a state-defined threshold. However, several state DOT interviewees expressed that some of their localities did not properly report crashes to their department. In one New Jersey city, we have noticed from open-source data that crashes were not submitted in 2013 and 2014, a noticeable gap in the data for a city that typically reports around 500 crashes per year.

Some of the reasons for underreported/unreported crashes by localities were staff limitations or changes in leadership, misunderstanding of the importance of the data, or technological issues with transmitting data in a timely manner (or at all). And evidently, some crashes never involve the police. One DOT interviewee mentioned that, "*In our state, we know a lot of crashes go unreported—if it's harmful to their driving records—like someone who drove drunk into wildlife.*" From our interviews with public health personnel and from previous research out of the Children's Hospital of Philadelphia (CHOP), a considerable portion of crash-related injuries do not have any police report associated with them. Lombardi et al. (2022) found that New Jersey Crash Data missed 37% of all crash injuries and 60% of bicyclist-related injuries. Hospital discharge data captured a larger share of those 65+, those of Black or Hispanic descent, those who had severe injuries, and those who were bicyclists or motorcyclists (Lombardi et al., 2022). Based on our conversations with both DOT and DPH personnel, we found that these discrepancies existed in other states as well.

Reported crashes do not always comprise complete and reliable information. Most notably, our respondents noted that severity and alcohol/substance use are misreported. In the case of alcohol/substance use, toxicology reports are not always done on site. Moreover, several interviewees stated that micromobility-involved motor vehicle crashes suffer limited information. That is, the vehicle type, whether it is a bicycle, e-scooter, or e-bike, is usually defaulted to bicycle. Information on helmet use and bike lane infrastructure is rarely reported. Law enforcement also lack training on differences in electric bicycle types. Narratives provide valuable supplemental information, but their content varies significantly from report to report and are rarely available to stakeholders beyond database owners.

As for crashes that are non-reportable because they do not involve motor vehicles, several state DOTs work with other departments to document these cases. In a few states, DOTs collaborate with DPHs and hospitals to obtain Emergency Department (ED) data for bicycle and pedestrian crashes. One state has created a data warehouse that links Department of Natural Resources owned ATV-involved crash data. States with robust integrated databases were few and far between, although most expressed interest in developing them in the future.

# Policy Recommendations and Conclusions

## Policy Recommendations

Complete, quality, transparent, and accessible data helps to inform policy and empowers communities. We sought to assess existing best practices and challenges in crash data collection, availability, and associated problems within existing systems. Findings and policy implications from our interviews include:

1. **Data integration is a necessary component for improving roadway safety.** This includes linking crash data to drivers' licenses, citations, non-motor vehicle crashes, and medical records, to name a few. Integrating medical records with crash data in particular provides opportunities to improve post-crash care and to understand human-related crash circumstances that are not available in police reported data. Medical records also include traffic injuries that do not include motor vehicles, which can aid stakeholders in making transportation safety improvements.
2. **Publicly available non-fatal crash data empowers communities.** The public has access to fatal crash data through the USDOT-maintained FARS. Fatal crashes make up less than 1% of all crashes. For local planners and advocates, this data may amount to a handful of fatal crashes per year. The fatality of crashes is often random, making it difficult to draw firm conclusions on the overall safety environment. Allowing local planners and advocates to access all safety data enables local communities to make data-driven decisions.
3. **Data must be usable.** Providing raw crash data is not enough; most people are not trained or do not have the tools to analyze thousands of crash records. While it is important to make raw data accessible for analysts, dashboards should be designed to include maps, individual and aggregated information, querying options, and tools for analysis.
4. **Collaboration is key.** Stakeholders must engage together to prioritize roadway safety and develop policies to achieve Vision Zero goals. Every state has a TRCC, but our conversations showed that these potentially exclude important stakeholders such as local planners and advocates. They should involve groups that are not often at the table, including medical professionals and advocates. There must be a willingness to improve roadway safety by decisionmakers and the financial resources to do so.
5. **Data quality still suffers, even in the most open-data states.** There is variation in the information contained from one crash record to the next. Unreported crashes remain an issue. Uniform platforms for data collection and electronic submission are key to improving data quality. Timely data is important, yet many states lag in releasing their data in near-real time.

6. **There is a lack of data uniformity across states, despite MMUCC guidelines.** This lack of uniformity hinders the work of advocacy groups and MPOs covering multiple states, and researchers seeking to analyze multiple states.

## Implications for the State of New Jersey

What can New Jersey do to improve its data transparency? The dashboards already available through DVRPC (Camden, Burlington, Mercer, and Gloucester counties) and Hudson County Complete Streets are good examples of what a statewide dashboard could look like. The New Jersey State Police provide publicly available near-real time information on fatal crashes, but non-fatal crashes are not included. New Jersey's publicly downloadable crash data needs to incorporate geocoded and timely information. New Jersey is moving towards electronic data collection which is a proven method to improve data and timeliness of collection, but additional integration with other sources and making information easily accessible to the public are still necessary action items.

## Conclusions

Quality safety data are essential to effective strategic planning (NHTSA, 2019; Osbourn et al., 2024). States need timely, accurate, complete, and uniform data to identify and prioritize safety issues, develop countermeasures, and evaluate their effectiveness (Osbourn et al., 2024). Beyond that, the data should be transparent and available for the public to use. The Safe System Approach is the guiding paradigm to address roadway safety in the U.S. Reaching zero deaths requires the implementation of a Safe System Approach (FHWA). Making a commitment to zero traffic deaths means addressing all aspects of safety (safe road users, safe vehicles, safe speeds, safe roads, and post-crash care) which is not possible without good quality and transparent data.

For states to achieve Vision Zero goals, more funding is needed if safety is a priority, both to improve data systems and implement solutions. At the moment, it appears that national goals are not being reflected in the policies of many states or in the funding provided by the federal government.

# References


Adediji Y, Noland RB. 2020. How data imputation affects crash modeling results. Findings. doi: 10.32866/001c.17386

[CDC] Center for Disease Control and Prevention, National Center for Injury Prevention and Control. 2021. Web-based injury statistics query and reporting system (WISQARS). [accessed 2024 May 20]. https://wisqars.cdc.gov/

[ESRI] Environmental Systems Research Institute. 2024. The Connecticut Transportation Safety Center improves road incident analysis with GIS. https://www.esri.com/en-us/lg/industry/transportation/stories/connecticut-dot-uses-gis-improve-road-incident-analysis

[FHWA] Federal Highway Administration. Zero deaths and safe system. [accessed 2024 June 18]. https://highways.dot.gov/safety/zero-deaths

[FHWA] Federal Highway Administration. 2010. Data Collection and Analysis, In: Addressing safety on locally-owned and maintained roads - a domestic scan. Washington, D.C.: U.S. Department of Transportation. p. 7-14.

[FHWA] Federal Highway Administration. 2024. HSIP reporting. [accessed 2024 Dec 12]. https://highways.dot.gov/safety/hsip/reporting

Imprialou M, Quddus M. 2019. Crash data quality for road safety research: current state and future directions. Accid Anal Prev. 130, 84-90. doi: 10.1016/j.aap.2017.02.022

International Transport Forum. 2024. IRTAD road safety database. [accessed 2024 June 27]. https://www.itf-oecd.org/IRTAD

Lombardi LR, Pfeiffer MR, Metzger KB, Myers RK, Curry AE. 2022. Improving identification of crash injuries: statewide integration of hospital discharge and crash report data. Traffic Inj. Prev. 23(sup1), S130-S136. doi: 10.1080/15389588.2022.2083612

National Research Council. Transportation Research Board. Task Force on Development of the Highway Safety Manual Transportation Officials. Joint Task Force on the Highway Safety Manual. 2010. Highway safety manual (Vol. 1). AASHTO.

Mannering FL, Bhat CR. 2014. Analytic methods in accident research: methodological frontier and future directions. Anal Meth Accid Res. 1, 1-22. doi: 10.1016/j.amar.2013.09.001

Marshall W. 2024. Killed by a traffic engineer: shattering the delusion that science underlies our transportation system. Washington, DC.: Island Press.

Montella A, Andreassen D, Tarko AP, Turner S, Mauriello F, Imbriani LL, Romero MA, Singh R. 2012. Critical review of the international crash databases and proposals for improvement of the Italian National Database. Paper presented at: the Siiv-5th International Congress - Sustainability of Road Infrastructures 2012, 53, 49-61. doi: 10.1016/j.sbspro.2012.09.859

[NHTSA] National Highway Traffic Safety Administration. 2024. Overview of motor vehicle traffic crashes in 2022. Washington, DC.: U.S. Department of Transportation. Report No.: DOT HS 813 560. [accessed 2024 Nov 19]. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813560

[NHTSA] National Highway Traffic Safety Administration. 2025. Highway safety grants programs. [accessed 2024 June 13]. https://www.nhtsa.gov/highway-safety-grants-program

[NHTSA] National Highway Traffic Safety Administration. 1974. Highway safety program manual volume 18: accident investigation and reporting. Washington, DC.: National Highway Traffic Safety Administration https://files.eric.ed.gov/fulltext/ED107807.pdf

[NHTSA] National Highway Traffic Safety Administration. 2019. State traffic records coordinating committee strategic planning guide. [accessed 2024 May 27]. https://www.transportation.gov/government/traffic-records/state-trcc-strategic-planning-guide-0

[NHTSA]. National Highway Traffic Safety Administration. 2001. National automotive sampling system (NASS) general estimates system (GES): analytical user's manual 1988-2000. Washington, DC.: United States Department of Transportation. [accessed 2024 June 27]. https://rosap.ntl.bts.gov/view/dot/4787/dot_4787_DS1.pdf

Noland RB, Sinclair JA, Klein NJ, Brown C. 2017. How good is pedestrian fatality data? J Transp Health. 7, 3-9. doi: 10.1016/j.jth.2017.04.006

Osbourn C, Ruiz C, Haney K, Scopatz B, Palmateer C, Bianco M. 2024. Traffic records data quality management guide: update to the model performance measures for state traffic records systems. https://trid.trb.org/View/2373776

Pierce M, Skrabanek P. 2024. Car accident reporting by state (comprehensive guide). [accessed 2024 July 3]. https://www.pstriallaw.com/legal-news/car-accident-reporting-by-state

Ralph K, White EO. 2024. Do engineering instructors teach induced travel? If not, why not? Transp Res Rec. 0(0). doi: 10.1177/03611981241249930

Scopatz B, Brown R, Zhou Y, Benac J, Peach K, Bryson M, Lefler N. 2017. Crash data improvement program guide. https://highways.dot.gov/safety/data-analysis-tools/rsdp/rsdp-tools/crash-data-improvement-program-guidebook

Shah AP, Lamare JB, Nguyen-Anh T, Hauptmann A. 2018. CADP: a novel dataset for CCTV traffic camera based accident analysis. Paper presented at: the 2018 15th IEEE International Conference on Advanced Video and Signal Based Surveillance; Auckland, NZ.

Shelton T, National Highway Traffic Safety Administration. 1993. Imputation in the NASS general estimates system. Washington, DC.: United States Department of Transportation. Report No.: DOT HS 807 985. [accessed 2024 June 27]. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/807985

Transportation Research Board & National Academies of Sciences, Engineering, and Medicine. 2022. Highway capacity manual 7th edition: a guide for multimodal mobility analysis. Washington, DC.: The National Academies Press. doi: 10.17226/26432

[USDOT] United States Department of Transportation. 2022. Strategic plan FY2022-2026. Washington, DC.: US Department of Transportation. [accessed 2024 July 7]. https://www.transportation.gov/sites/dot.gov/files/2025-01/U.S.%20Department%20of%20Transportation%20Strategic%20Plan%20FY%202022-2026.pdf

[WHO] World Health Organization. 2010. A road safety manual for decisionmakers and practitioners. Geneva: World Health Organization. [accessed 2024 Apr 18]. https://highways.dot.gov/safety/data-analysis-tools/rsdp/rsdp-tools/data-systems-road-safety-manual-decision-makers-and

Younes H, Noland R, Von Hagen LA. 2024. Are e-scooter users more seriously injured than e-bike users and bicyclists? New Jersey State Policy Lab. https://bloustein.rutgers.edu/njspl-are-e-scooter-users-more-seriously-injured-than-e-bike-users-and-bicyclists/

Younes H, Noland RB, Von Hagen LA, Meehan S. 2023. Pedestrian- and bicyclist-involved crashes: associations with spatial factors, pedestrian infrastructure, and equity impacts. J Saf Res. 86, 137-147. doi: 10.1016/j.jsr.2023.05.005

# Appendix

## Interview Protocol

### Introduction

Researchers at the Bloustein School of Planning and Public Policy at Rutgers, The State University of New Jersey are seeking subject matter experts to give us insights on crash data collection and availability in your state.

Interview topics:

- Challenges in crash data collection
- Accessibility & ease of use of mapping tools
- Challenges in understanding data
- Restrictions on users
- Use by county & municipal staff & advocates

**Interview Questions for agency staff and stakeholders involved with collecting and managing transportation crash data.**

We are working to determine what best practices are currently used to collect and manage data on motor vehicle involved crashes, and in particular pedestrian crashes. We are talking to a variety of stakeholders at Depts of Transportation, and other agencies responsible for managing crash data. We would like to ask about how your agency does this.

1. How is crash data collected in your state?
   - ☐ Who owns the data?
   - ☐ How detailed are these reports?
   - ☐ Do you collect additional information on pedestrian crashes?
   - ☐ Are micromobility modes collected separately?
2. How is crash data processed and checked?
   - ☐ Are police reports digitized?
   - ☐ What agency inputs or transmits this data to a state database?
   - ☐ Are adequate resources available to ensure good quality data is collected and maintained?
3. Is your crash data available to the public?
   - ☐ If yes, how is it made available?
     - Is it online? Via request?

        - Do you maintain a visual mapping platform?
        - When did the data become publicly available? What is the latest year available?

4. Do you know why or how a decision was made to put your data online in an easily accessible platform or dashboard?
    - Was there any political pushback against doing so?
    - On the other hand, did transportation advocates push to have it made available to the public?
    - Do you monitor who downloads the data and how it is used?
    - How do you maintain the online platform, that is, how is it kept up to date?
        - What resources are made available to maintain and update the platform?
5. To eliminate fatalities and serious injuries in your state/city, what do you believe is needed in terms of data transparency?
    - Does an open data resource help you achieve your goals?
6. Do any municipalities in your state not send their records for processing and/or not do so in a timely manner?
7. Does your state DOT have a relationship with universities? Do they have a role in crash data management and availability?
8. What sort of training is made available for law enforcement?
9. Does your state currently integrate datasets (citation/violations, medical, roadway, etc.)?

# Examples of Open Crash Data in the United States

Sanitized Crash Reports are open source in Michigan.

SANITIZED SANITIZED SAN

PASSENGER

| Hospital | Ambulance |
|---|---|

| Passenger Information | Date of Birth (Age) | Sex | Race | Position | Restraint |
|---|---|---|---|---|---|
| | Injury | Ejected | Trapped | Airbag Deployed | |

| Hospital | Ambulance |
|---|---|

TRUCK/BUS

| Carrier Information | USDOT | MC | MPSC |
|---|---|---|---|
| | Driver's CDL Type | Endorsements O H O P O T O N O S O X | CDL Exempt O Farm O Other |

| GVWR/GCWR | Vehicle Configuration | Cargo Body Type | Medical Card | Hazardous Material | ID # | Class # |
|---|---|---|---|---|---|---|
| O 10,000 lbs. or Less O 10,001 - 26,000 lbs. O Greater than 26,000 lbs. | | | | O Placard O Cargo Spill | | |

OWNERS

| Owner Information | Owner Information |
|---|---|

WITNESS

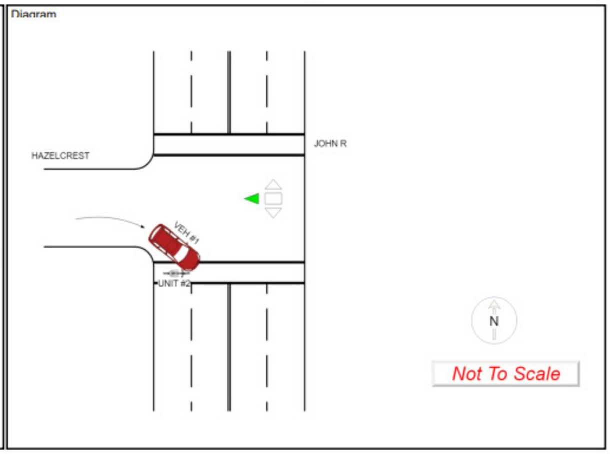
| Witness Information | Witness Information |
|---|---|

| Investigated at Scene | Reported Date (Time) | 1st Investigator Name (Badge) | 2nd Investigator Name (Badge) | Photos |
|---|---|---|---|---|
| Yes | 09/19/2022 (14:40) | BRIAN CONZ (214) | | No |

Narrative

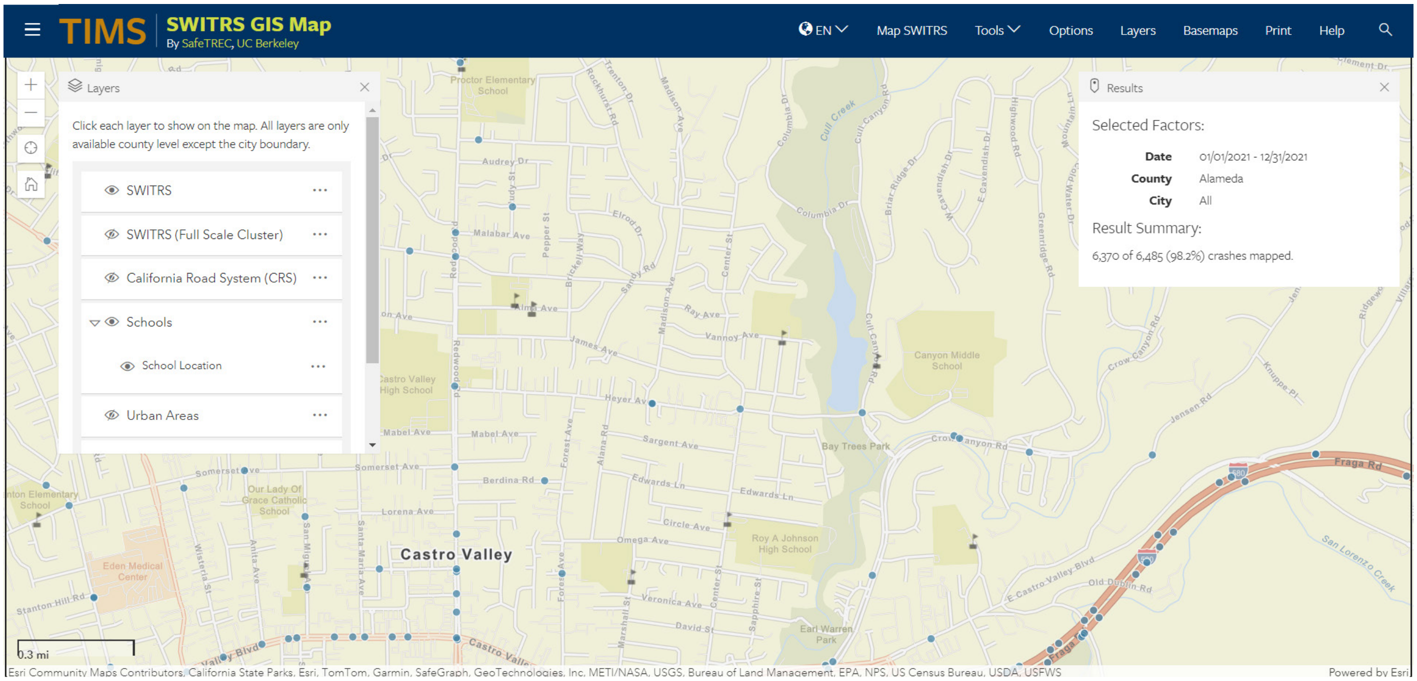
UNIT #2 RIDING BICYCLE STRUCK WHILE CROSSING JOHN R WITHIN CROSSWALK.\N\NVEH #1 TURNING RIGHT FROM HAZELCREST AND STRUCK BICYCLIST IN CROSSWALK.\N\NBICYCLIST SUFFERED HEAD INJURY AND LACERATION. BICYCLIST TRANSPORTED TO ROYAL OAK BEAUMONT VIA HPFD. FURTHER MEDICAL EXAM REVEALED POSSIBLE SPINAL BLEED AND SUSPECTED LEG INJURY. \N\NDRIVER OF VEH #1 INITIALLY DENIED INVOLVEMENT AND WAS NOT CONFIRMED TO BE INVOLVED UNTIL SURVEILLANCE VIDEO WAS REVIEWED SHOWING HER TO STRIKE THE BICYCLIST.\N\NDRIVER OF VEH #1 ISSUED CITATION FOR DWLS, H&R PIA, AND FAIL TO YIELD PIA.

Diagram

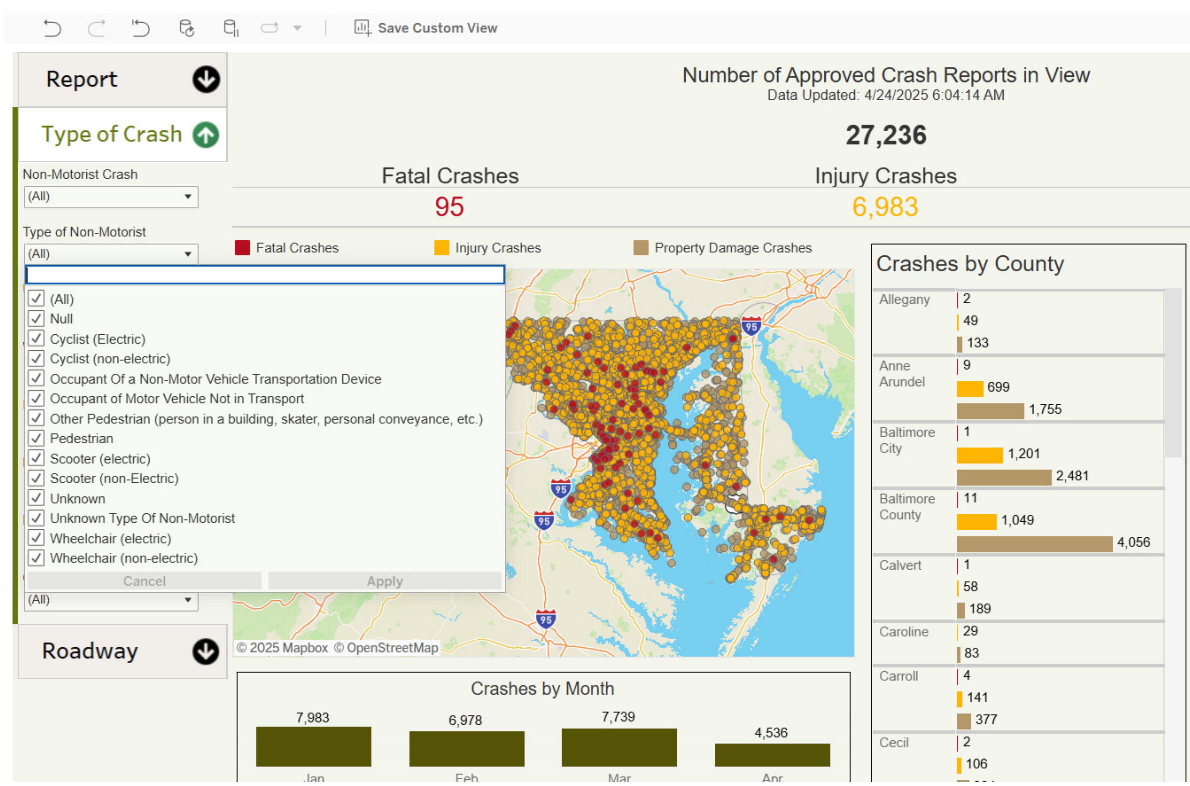



Saved to this PC

California has additional layers to choose from, including schools.




Maryland allows filter by micromobility mode, including e-scooter, e-bike, and non-electric bicycles and scooters.



# Publications and Presentations Stemming from this Research

The research is published in Traffic Injury Prevention. The suggested citation for the peer-reviewed paper is:

Younes, H., & Noland, R. B. (2025). Crash data availability and best practices across the United States. Traffic Injury Prevention, 1–10. https://doi.org/10.1080/15389588.2025.2466201

Presented at the following conferences:

- The Association of Transportation Safety Information Professionals (ATSIP) 49th Annual Traffic Records Forum in San Diego, CA, in August 2024.
- The Association of Collegiate Schools of Planning, Inc. (ACSP) 2024 Annual Conference in Seattle, WA, in November 2024.
- The 104th Transportation Research Board Annual Meeting in Washington, D.C., in January 2025.
- The 14th Annual New Jersey Bike & Walk Summit in Princeton, NJ, in March 2025.
- The 49th Annual TransAction Conference in Atlantic City, NJ, in April 2025.

**New Jersey State Policy Lab Blog Posts:**

Younes, H., R.B. Noland, R. Levitsky. Crash Data Availability and Best Practices across the United States. March 2025.

Younes, H., L.A. Von Hagen, S. Meehan, R.B. Noland. Measuring What Matters: Rethinking School Zone Safety Metrics. December 2024.

Noland, R.B., H. Younes. Best Practices for Improving Traffic Crash Data in New Jersey. September 2024.

Noland, R.B. Introducing the New Jersey Induced Travel Calculator. July 2024.

Younes, H., R.B. Noland, L.A. Von Hagen. Are E-Scooter Users More Seriously Injured than E-Bike Users and Bicyclists?. January 2024.

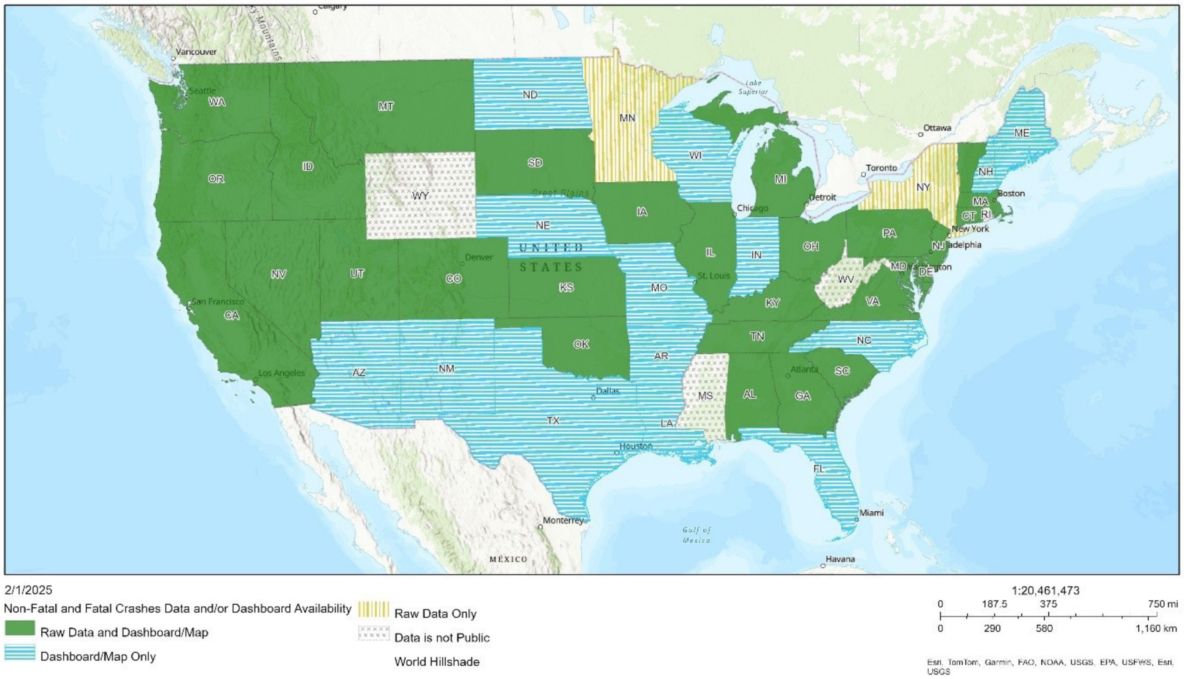
Younes, H., R.B. Noland, L.A. Von Hagen, J. Dennis, C. Roche, S. Rosenthal. Rethinking Complete Streets. November 2023.

Younes, H., L.A. Von Hagen, R.B. Noland, S. Meehan. What Will It Take to Pedestrian and Bicycle Fatalities in NJ?. August 2023.

**Online tool to download crash data and access dashboards:**

Younes H. (2025) United States Crash Data Database. ArcGIS Online. https://arcg.is/0OCaPa0.

United States Crash Data Database



The New Jersey State Policy Lab assists the State of New Jersey and its many communities in the design, implementation, and evaluation of state policies and programs by conducting rigorous evidence-based research that considers equity, efficiency, and efficacy of public policies and programs in holistic and innovative ways.

The lab leverages input from a robust network of multidisciplinary scholars, members of the community, and outside policy experts in New Jersey to craft innovative and equitable policy solutions that are sensitive to the needs of our state's diverse population.

By utilizing the combination of strong ties to New Jersey's diverse communities and significant expertise in collecting, cleaning, and analyzing data, the New Jersey State Policy Lab engages and collaborates with stakeholders such as community groups, the state government, and municipal governments to create high quality datasets and evidence that reflects our state's diversity and empowers state policy makers to address the needs of New Jersey communities more effectively, innovatively, and equitably.

RUTGERS UNIVERSITY
New Jersey State Policy Lab

*A partnership of*
*Edward J. Bloustein School of Planning and Public Policy, Rutgers-New Brunswick and*
*School of Public Affairs and Administration, Rutgers-Newark*

New Jersey State Policy Lab
Rutgers, The State University of New Jersey
33 Livingston Avenue
New Brunswick, N.J. 08901

policylab@ejb.rutgers.edu policylab.rutgers.edu

© 2025, Rutgers, The State University of New Jersey