

# Building a Data Linkage Program for Nonfatal Crash Surveillance

## About 3 million people are injured in motor vehicle crashes every year in the United States.

Understanding the risk and protective factors in a crash can help prevent injuries and deaths and reduce related costs. Linking existing data sources such as police, hospital, and emergency medical service (EMS) records is one way to better understand motor vehicle crashes.<sup>1,2</sup> These data sets are generally collected and stored separately. Linking these data creates a more complete picture of what happens before, during, and after a crash. This can help states and communities target prevention efforts.

### WHY SHOULD MY STATE LINK DATA?

#### 1. Define the problem.

Linked data can be used to help define and understand the problem by providing data from before, during, and after the crash.

#### 2. Identify risk and protective factors for motor vehicle crashes and their economic and health-related outcomes.

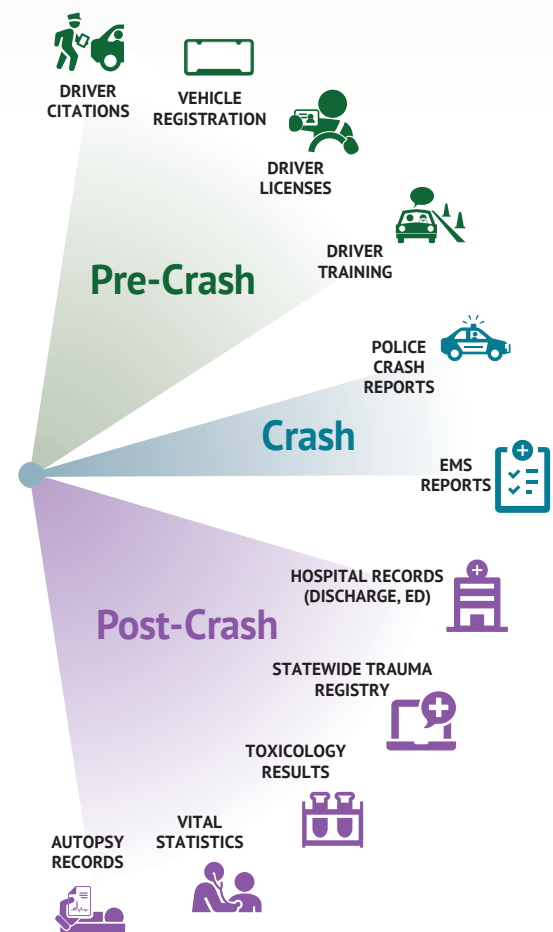
Data can do more than just help identify risk factors (e.g., speeding, alcohol and/or drug use) and protective factors (e.g., use of seat belts). Linked data can be used to measure the association of these factors with economic costs (e.g., medical costs) and health-related outcomes (e.g., traumatic brain injury).

#### 3. Develop and test prevention strategies.

With the insights gained from using linked data to define the problem and identify risk and protective factors, strategies can be identified and tested to prevent motor vehicle crash injuries and deaths among those most at risk.

#### 4. Measure the impact of prevention strategies.

The comprehensive picture provided by linked data allows for evaluating the impact of prevention strategies. For example, data can be used to determine if protective behaviors have increased (pre-crash) and measure the impact on health outcomes and associated costs (post-crash).



Data linkage is essential to inform injury prevention programs, policies, and decision making.



Centers for Disease Control and Prevention  
National Center for Injury Prevention and Control

# HOW CAN STATES START OR EXPAND A DATA LINKAGE PROGRAM?

## 1. Build partnerships to:

- expand the scope of injury prevention opportunities,
- build credibility,
- share resources,
- share findings and recommendations, and
- help sustain the data linkage program.

## 2. Develop a business model and policies.

Essential steps include establishing funding, identifying resources, exploring business models, and defining privacy and security policies.

## 3. Establish the data linkage process.

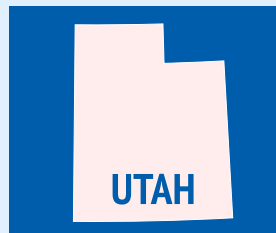
Establishing the data linkage process is the final component of a successful and sustainable program. Activities include establishing data use agreements, preparing and linking data, and conducting analyses.



## SUCCESS STORY

### Linking Data Led to 25% Decrease in Children Injured in Crashes

Age- and size-appropriate restraint use decreases injuries and deaths among child passengers. While child passenger restraint laws vary by state, most do not meet current safety recommendations.<sup>3</sup> Prior to 2008, Utah's law only required children ages 4 and under to be buckled in child restraints.



Utah's police-reported data showed that older children involved in crashes were less likely to be restrained than younger children. Researchers were able to provide a more complete picture with the addition of linked police and hospital data. In 2006–2007, unrestrained children ages 1 to 8 in Utah were almost five times more likely to be hospitalized and two times more likely to be treated in emergency departments, compared to those who were restrained. In addition, children ages 5 to 8 were less likely to use car seats or booster seats and more likely to be hospitalized than children ages 1 to 4.

These findings along with other efforts were key to expanding Utah's child passenger restraint law to cover children up to age 8. The number of children injured in crashes went down by 18% one year later and by 25% five years later. This change has provided better protection for child passengers in Utah.

Linking state-level data provides valuable insight into state-specific trends and patterns.

Decision makers can use the most effective strategies to reduce motor vehicle crashes, injuries, and deaths, and their related costs.

#### REFERENCES

1. Milani, J., Kindelberger, J., Bergen, G., Novicki, E. J., Burch, C., Ho, S. M., & West, B. A. (2015, August). Assessment of characteristics of state data linkage systems. (Report No. DOT HS 812 180). Washington, DC: National Highway Traffic Safety Administration, and Atlanta: Centers for Disease Control and Prevention.
2. Centers for Disease Control and Prevention. (2019, September). Linking Information for Nonfatal Crash Surveillance (LINCIS): A guide for integrating motor vehicle crash data to help keep Americans safe on the road. Centers for Disease Control and Prevention (CDC) National Center for Injury Prevention and Control (NCIPC). Retrieved from [https://www.cdc.gov/motorvehiclesafety/pdf/linkage/CDC\\_LINCIS\\_Guide\\_508c.pdf](https://www.cdc.gov/motorvehiclesafety/pdf/linkage/CDC_LINCIS_Guide_508c.pdf).
3. Durbin DR, Hoffman BD, and AAP Council on Injury, Violence, and Poison Prevention. 2018. Technical Report—Child Passenger Safety. *Pediatrics*. 142(5):e20182461. Retrieved from <https://pediatrics.aappublications.org/content/142/5/e20182461>.

Learn more about how to create or expand your data linkage program at [www.cdc.gov/transportationsafety/datalinkage.html](http://www.cdc.gov/transportationsafety/datalinkage.html).