FoRRRwD

Focus on Reducing Rural Roadway Departures

Proven Countermeasures · Systemic Approach · Safety Action Plans · All Public Roads

Source: NDDOT

ALL PUBLIC ROADS

Roadway departures (aka lane departures) on the rural road network account for one-third of all traffic fatalities. The Focus on Reducing Rural Roadway Departures (FoRRRwD) initiative encourages a systemic application of countermeasures that help keep vehicles in their travel lanes, reduce the potential for crashes, and decrease the severity of crashes that do occur.

FoRRRwD is supported by four pillars that work together to reduce rural roadway departures:

▸ Proven Countermeasures

▸ Systemic Approach

▸ Safety Action Plans

▸ **All Public Roads**

30 people will die today from rural roadway departure crashes. Let's save the people behind the numbers.

https://safety.fhwa.dot.gov/FoRRRwD/

The national challenges of deaths on rural roads requires going beyond the State network of roads. While 50 to 60 percent of fatalities happen on roads typically maintained by State DOTs, more than 40 percent of rural roadway departure fatalities are scattered across the other 79 percent of the rural road mileage. These roads are under the jurisdiction of the more than 3,000 counties, 16,000 towns and townships, Tribes, or other jurisdictions. Any strategy to reduce rural roadway departure deaths that does not address these non-State roads is only working on a part of the problem. Many agencies have adopted a goal to eliminate fatal and serious injury crashes. Reaching this goal will require partnerships to address the problem on all public roads.

State, local, and Tribal agencies have been successful in partnering to reduce the number and severity of rural roadway departures on all public roads. Some examples of partnerships include:

▸ Providing State funds or sharing federal safety funds.

▸ Summarizing data or providing crash analysis assistance.

▸ Developing local and Tribal road safety plans.

▸ Simplifying project application.

▸ Providing project development assistance.

▸ Bundling projects or other innovative procurement, contracting, or maintenance methods.

U.S. Department of Transportation
Federal Highway Administration

ZERO IS OUR GOAL
A SAFE SYSTEM IS HOW WE GET THERE

FHWA-SA-21-084

Noteworthy Practices

The following are examples of how State, local, and Tribal transportation agencies have successfully partnered to improve roadway safety in their areas. By combining funding opportunities with technical assistance, these agencies were able to target key locations and strategically deploy roadway departure countermeasures. The results have led to safer roads with fewer fatalities and serious injuries.

Washington State Provides Funding and Data for Local Agencies

Washington State Department of Transportation (WSDOT) splits its HSIP funding with local agencies in a data-driven manner. The HSIP funds are used to address the highest priority infrastructure areas in the State's Strategic Highway Safety Plan (SHSP), which includes lane departure crashes. The funds are divided based on the jurisdictional split of fatal and suspected serious injury crashes, so that the State receives 30 percent of HSIP funds, and the remaining 70 percent is allocated to local agencies. To apply for the HSIP funds, a local agency must develop an LRSP that identifies the proposed improvement. As of 2021, 37 of 39 counties and 52 cities in Washington have developed their own plan.

To support local agencies in diagnosing safety issues on their roadway network, WSDOT provides each county with a summary of their crash data, including a comparison to all roads and county roads. Counties are responsible for collecting roadway and volume data that is maintained in a statewide database. In addition, WSDOT has used the HSIP funding to assist the local agencies develop their plans. Since 2013, over $1.8 million has been invested to collect geometric, roadside, sign inventory, and other data for agencies that identified this in their plans.
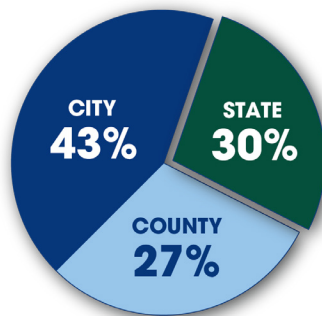
Figure 1. Breakdown of fatal and serious injury crashes by area, which is used to determine allocation of HSIP funding. Source: recreated from WSDOT presentation.

The State also uses the summary data to provide graphical information, including GIS maps that can be used in their plan. Agencies have used this information to identify facility types as well as risk factors as part of the systemic approach to safety. Since 2014, when LRSPs were required, serious crashes on county roads have remained stable while these crashes have increased on both the State and City systems.

Safer Louisiana Parishes

Beginning in 2006, the Louisiana Department of Transportation and Development (LADOTD) partnered with the Louisiana Local Technical Assistance Program (LTAP) to establish the Local Road Safety (LRS) Program, which assists parishes and municipalities in eliminating deaths and serious injuries on locally owned roadways. The LRS Program allocates approximately $3 million annually for local road safety improvements. The LRS Program uses Section 154/164 penalty funds at 100 percent federal funding for construction engineering and inspection costs on projects, which alleviates the financial burden on the local agency. Louisiana also has nine Regional Safety Coalitions that cover the entire State and Coalition Coordinators are tasked with addressing goals of the Strategic Highway Safety Plan and Destination Zero Deaths initiatives.
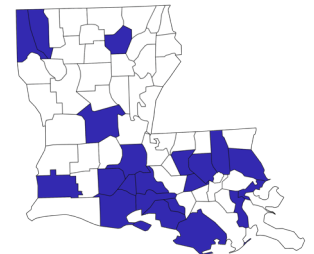
Figure 2. 20 parishes in Louisiana account for 91% of local road crashes. Source: recreated from Louisiana LTAP presentation.

The Louisiana LTAP found that 91 percent of all local road crashes occurred in 20 of the 64 parishes in the State. The State then funded development of local road safety plans (LRSPs) through the Regional Safety Coalitions for these 20 parishes. The LTAP conducted data analyses and provided crash profiles to the parishes, which led to a prioritized list of candidate sites for implementation. The State also allocated HSIP and research funds over several years to collect and process local road inventory data, which in turn allows better-informed decisions to support safety initiatives.

Since 2006, LADOTD has funded 101 LRS Program projects in 40 parishes, totaling almost $17 million, and approximately 20 projects are in the design phase (as of June 2021). LADOTD assists with project bundling as well, saving costs to install countermeasures over jurisdictional lines. For example, plans from St. Landry Parish and St. Martin Parish included a total of almost 37 miles of signs and pavement markings. The parishes applied for these projects separately; however, due to these parishes being in close proximity, LADOTD recognized an opportunity to bundle these projects resulting in lower overall costs as opposed to letting two separate contracts.

FoRRRwD Thinking in North Dakota

In North Dakota, half of the roadway fatalities occur on the locally-owned network. As a Vision Zero State, North Dakota Department of Transportation (NDDOT) looked at the data and realized that they could not achieve zero fatalities if they did not include and address the local and Tribal road systems. In response, they assisted the agencies to develop local road safety plans (LRSPs) for each of the counties, major cities, and Tribes. These plans were funded with federal Highway Safety Improvement Program (HSIP) funds. The State then made 50 percent of the HSIP funding available for implementation of the plans, which is proportional to the split of fatalities between State and local roads. Some counties completed LRSP projects using their own funds, making the plans even more impactful than just HSIP funding would have allowed.

NDDOT simplifies the application process for local agencies using an online one-page form, which includes information such as crash data, roadway characteristics, risk factors, and costs of proposed safety improvements. To further simplify the project application process, projects that were identified in an LRSP are pre-approved with the form already filled out as part of the LRSP. Agencies do still need to apply so that the funding will be available when the local agency is ready to perform or contract the work.

As a result of the program, counties have installed roadway departure countermeasures such as curve warning signs and rumble strips. Many of these improvements were bundled in county-wide and multi-county projects. In some cases, work on county routes were included in nearby State projects.

Crash records for local rural roads indicated that serious injury crashes involving curves and lane departures were reduced by 21 percent and 14 percent, respectively, after implementing the program.

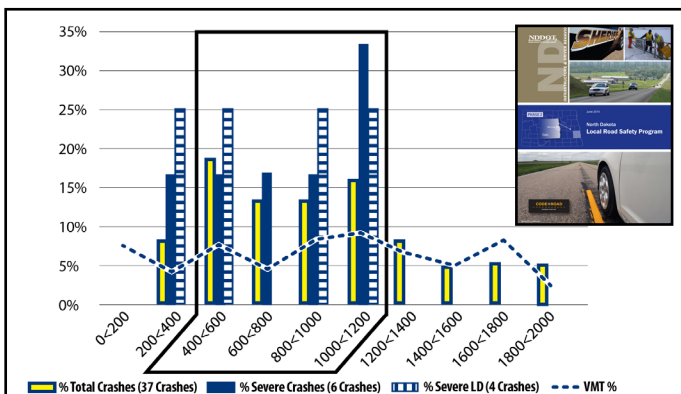To learn more about North Dakota's Safety plan, visit: https://visionzero.nd.gov/safety-plans/.

Figure 3. An example from the Cass County LRSP shows crash overrepresentation based on curve radius. Source: NDDOT.

Iowa HSIP-Secondary Program

The Iowa Department of Transportation (Iowa DOT) allocates funding to local agencies through its Highway Safety Improvement Program Secondary (HSIP-S) program, which swaps $2 million of Federal-aid funds with State funds to alleviate burdens on counties. HSIP-S promotes the installation of low-cost, systemic improvements that are proven to reduce fatal and serious injuries for lane departure and intersection crashes.

The Iowa LTAP collaborates with Iowa DOT to provide access to data (such as crash, roadway inventory, traffic volumes), and training for data analysis. The State provides crash data to internal and external customers through an online, map-based tool named the Iowa Crash Analysis Tool (ICAT). ICAT includes all crashes and related variables captured on crash reports, with the ability to filter desired attributes. The LTAP created tutorial videos on how to use the tool and trains county personnel on an ad hoc basis. Many county personnel have become proficient with ICAT and are able to screen their own network, diagnose safety issues, and select projects to apply for HSIP funding.

To simplify the HSIP-S application process, the Iowa DOT created a one-page online form with pre-populated proven safety countermeasures but allows any suitable countermeasures. Iowa DOT also funded local road safety plans (LRSPs) for 59 counties (out of 99 total) that expressed interest. LRSPs are not required to receive HSIP funds but can simplify the application process by prioritizing locations and projects for implementation.
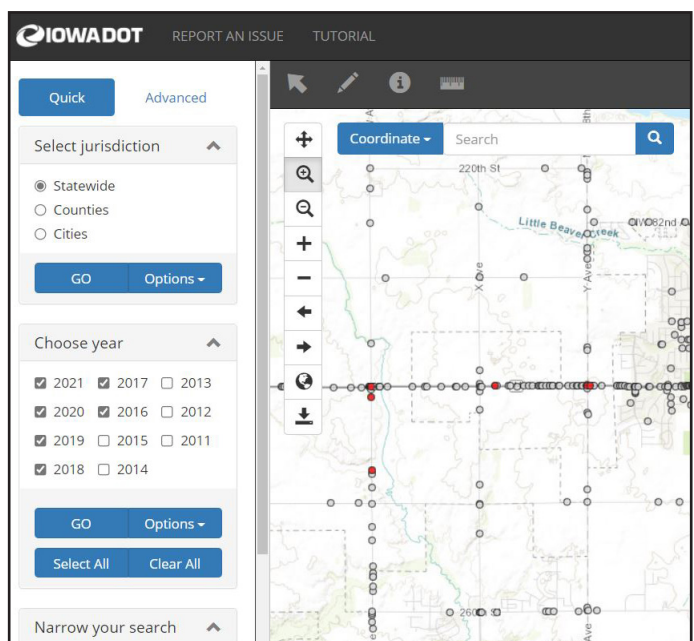

Figure 4. Screenshot of ICAT displaying fatal and injury crashes from 2016-2021. Source: Iowa DOT.

Figure 5. Mohave Road Study Area between the towns of Parker and Ehrenberg. Source: FHWA.

Figure 6. Before and after curve safety improvements that include centerline marking, guardrail, and cutting back vegetation to improve sight distance. Source: Indiana LTAP.

Transferring Funds to Improve Safety on Tribal Roads

The Arizona Department of Transportation (ADOT) makes federal HSIP funding available to all agencies that own and maintain roadways. Access to these federal funds is made simpler for Tribal agencies through the transfer of HSIP funds from the State to the Tribal Transportation Program (TTP), which is the normal mechanism for Tribal agencies to receive transportation funding. With this transfer, ADOT gives responsibility for administering funds to the Bureau of Indian Affairs (BIA) and the Federal Highway Administration (FHWA).

The Colorado River Indian Tribe applied for and received HSIP funding (which was then transferred to TTP funds) to address roadway departure crashes on Ehrenberg-Parker-Mohave Road, a 39-mile two-lane rural road with average annual daily traffic less than 2,000 vehicles per day. From 2011-2015, there were five fatal and two serious injury roadway departure crashes. To address this issue, the Tribe will incorporate center line and shoulder rumble strips with restriping, as well as transverse rumble strips and pavement markings at two intersections, and signage at another intersection to help reduce speeds.

ADOT also provides ongoing technical assistance to Tribal agencies to improve roadway safety. ADOT conducts network screenings, delivers workshops/trainings on data analysis, and supports HSIP applications. Tribal agencies often apply for funds to conduct road safety audits (RSAs), which are set up by ADOT.

Indiana HELPERS Support Local Road Safety

Over half of Indiana's roadway departure fatalities occur on local roads. The Indiana Department of Transportation (INDOT) provides 33 percent of the HSIP funds to improve safety on local roads. In addition, to support local agencies, especially rural counties, staff from INDOT and the LTAP provide assistance through the Hazard Elimination Program for Existing Roads and Streets (HELPERS) program. LTAP's services through HELPERS include crash data analysis, completing HSIP project applications, conducting road safety audits, providing on-site training, and developing LRSPs.

Although any government agency that maintains roadways has access to the statewide crash database, many counties do not have resources to conduct safety data analyses to screen the network, diagnose issues, and select countermeasures. The LTAP supports these agencies by creating crash data profiles, developing crash trees for systemic safety analysis, and building heat maps indicating areas with the most potential to improve safety.

The LTAP promotes systemic improvements through risk factor identification (i.e., roadway characteristics overrepresented in crashes, like traffic volume or speed limits) and provides assistance with completing INDOT HSIP applications. The HSIP online application form for systemic safety projects is straightforward, easy to complete, and includes a list of 25 eligible systemic countermeasures (e.g., guardrail, pavement markings, rumble strips, signing) that are proven to reduce fatalities and serious injuries. If an agency's project is deemed eligible for HSIP funds, they will retain eligibility indefinitely until funding is available.

Resources
Roadway Departure Safety https://safety.fhwa.dot.gov/roadway_dept/
All Public Roads https://safety.fhwa.dot.gov/FoRRRwD/allpublicroads.cfm
LTAP Center https://nltapa.org/regions/