

2017 Kansas Strategic Highway Safety Plan



2017

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Chapter 1

Introduction

A strategic highway safety plan is a coordinated and informed approach to reducing highway fatalities and disabling injuries on all public roads.

By *coordinated*, we mean that many agencies staffed by people with a variety of skills take part—including engineers, planners, educators, advocates, law enforcers and medical care providers.

Informed refers to a need for crash data. It also means using research results in the deployment of proven safety countermeasures to make travel safer.

All public roads include the 10,000 miles of road within the Kansas state highway system and the 130,000 miles of road owned by cities, counties and townships.

On average, 2,000 people die, or suffer disabling injuries in crashes, on those roads each year.

Some people call those events “accidents.” **We don’t.**

The word “accidents,” implies such events are unavoidable. **They’re not.**

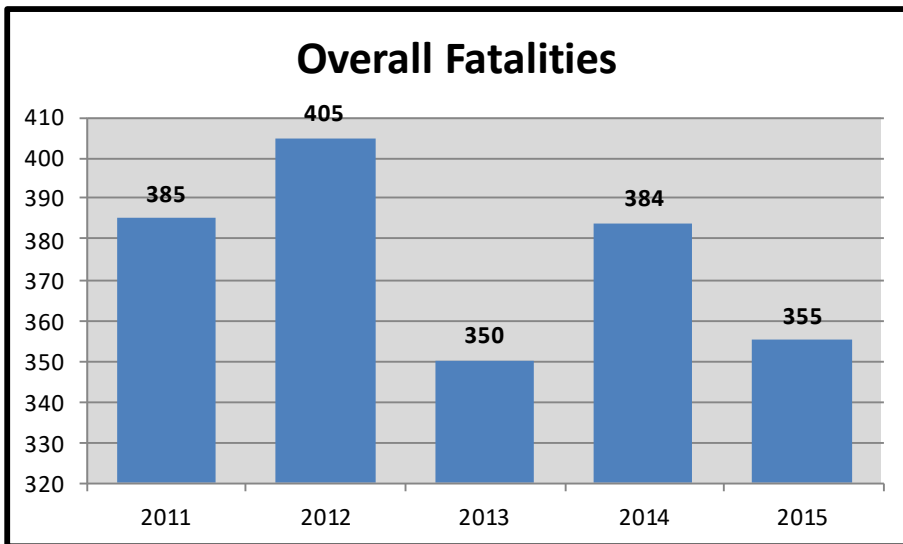
Their number can be—must be—reduced.



Traffic Crashes: Down but Not Out

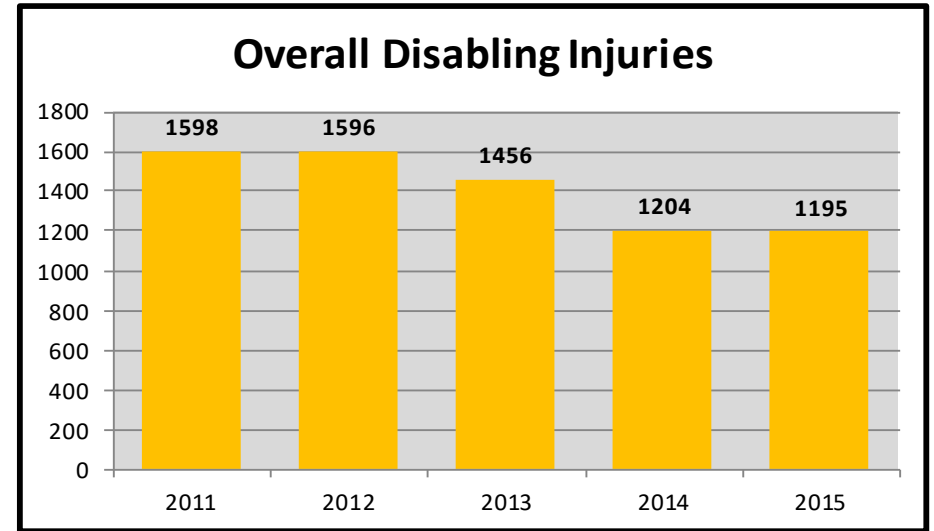
The number of fatal crashes has fallen in recent years, both in Kansas and the nation. The fatality *rate*, the number of fatalities per mile driven, has also dropped. Part of the credit for the decline belongs to highway departments. They've worked for decades to make roadways safer, installing rumble strips to keep drivers in their lanes and engineering shoulders and adjacent spaces for those who leave them. Part of the credit goes to vehicle manufacturers and their introduction of such advances as air bags, safety belts and anti-lock brakes. Finally, drivers themselves have taken more personal responsibility. More are buckling up and fewer are driving drunk.

Yet this stark fact remains: Between 2011 and 2015 in Kansas, 1,879 people took the last drive of their lives.



On average, from 2011–2015, in Kansas, 376 people a year died and an additional 1410 people were seriously injured in crashes.

The effects of the 2,000 people a year who were disabled or killed in crashes are radiant. These losses touched many other lives.



In addition, every Kansan is economically impacted by these events. The first Kansas Strategic Highway Safety Plan (SHSP), published in October 2006, estimated the economic loss resulting from traffic crashes in Kansas to be about \$1.9 billion annually—or about \$680 per Kansan.

Driving Force: 2006

In February 2006, Governor Kathleen Sebelius announced the creation of the Driving Force Task Force. The task force was charged with developing recommendations to reduce the number of fatalities and injuries on Kansas roadways. More than 20 leaders from around the state were involved.

The task force was convened after a campaign led in 2005 by then Secretary of Transportation Deb Miller, Colonel William Seck of the Kansas Highway Patrol and Secretary of Health and Environment Roderick Bremby. Six community forums were organized as the first step in that effort, called the Safer Driving, Safer Roads campaign, to raise awareness about the number of fatalities and injuries on Kansas roads. The task force continued these conversations, identified 11 crash causes and formulated a three-year plan to implement recommendations related to those causes.

One result of this effort has been the enactment of laws in Kansas aimed at some of the significant causes of crash injuries and fatalities such as:

- 2006 - A booster seat bill became law.
 - Children who outgrow a harness child safety seat must ride in a belt positioning booster seat until they are 8, unless the child weighs more than 80 pounds or is taller than 4'9"; at that point children must use adult seat belts. Studies show that booster seats, properly used, are 59 percent more effective in preventing injuries to children during crashes than seat belts alone.
- 2009 - Passage of a graduated driver's license law.
 - The purpose of this law is to help reduce the risks for teenagers learning to drive.
- 2010 - Passage of a primary seat belt law allowed law enforcement officials to stop cars in which occupants were not buckled up, without needing another cause to pull these vehicles over.
 - Fortunately, the number of Kansans buckling up had already risen from 61 percent in 2001 to 82 percent in 2015.
- 2010 - A texting law made it illegal to send or read electronic text while driving, except in a narrow range of circumstances.

Many other activities (see Appendix A) have resulted from the work of the task force, from the first SHSP and from other initiatives.



SHSP 1: 2006

As the Driving Force Task Force effort was unfolding, Kansas began work on a state highway safety plan. At a safety summit convened February 2 and 3, 2006, representatives of 17 agencies with an interest in transportation safety drafted the first SHSP.

The stated mission of that plan was to "reduce deaths, injuries, and economic costs resulting from motor vehicle crashes in Kansas." Its goal was fatalities would not exceed 400 in 2008 or 365 in 2010 and disabling injuries would not exceed 1,600 by 2008 or 1,400 by 2010.

The plan focused on six causes for crashes or means to prevent them. Among the causes were driver and passenger behaviors, driver demographics and crash locations, including:

- impaired driving because of alcohol or drugs
- occupant protection (use of seatbelts and child safety seats)
- lane departure (crossing the center line or going off the shoulder)
- intersections
- inexperienced/novice/teen drivers
- driver behavior and awareness (as it is affected, for example, by use of electronic devices)

Each of these causes was designated an "emphasis area," and strategies to address them were formulated during planning sessions at the safety summit.

But Kansas did not meet its goals related to injuries and fatalities. Three years later, a new planning process began.

SHSP 2: 2009 to Present

The Executive Safety Council (ESC) first met on May 14, 2009. It is comprised of administrators, engineers, planners, medical care providers, trainers/educators and law enforcement personnel. The council has championed transportation safety on all public roads in Kansas by developing an SHSP that will drive the formulation and implementation of safety-related programs. Mike Floberg, of the Kansas Department of Transportation (KDOT), and Jim Hanni, of the Automobile Association of America (AAA)KDOT, were the first co-chairs. A complete list of ESC agencies and representatives can be found in the Partners, Roles and Processes Chapter.

The ESC's challenge is to take charge of the new plan's results and encourage participation in implementation. The ESC identifies statewide goals and emphasis areas based on data and statistics; recruits stakeholders to direct and serve on emphasis area teams; and supports the appropriate agencies as they implement strategies developed by the teams.

Mission

The mission of the Kansas SHSP is to drive strategic investments that reduce traveler casualties and the emotional and economic burdens of crashes, utilizing the 4E's (education, enforcement, engineering and emergency medical services) in a collaborative process.

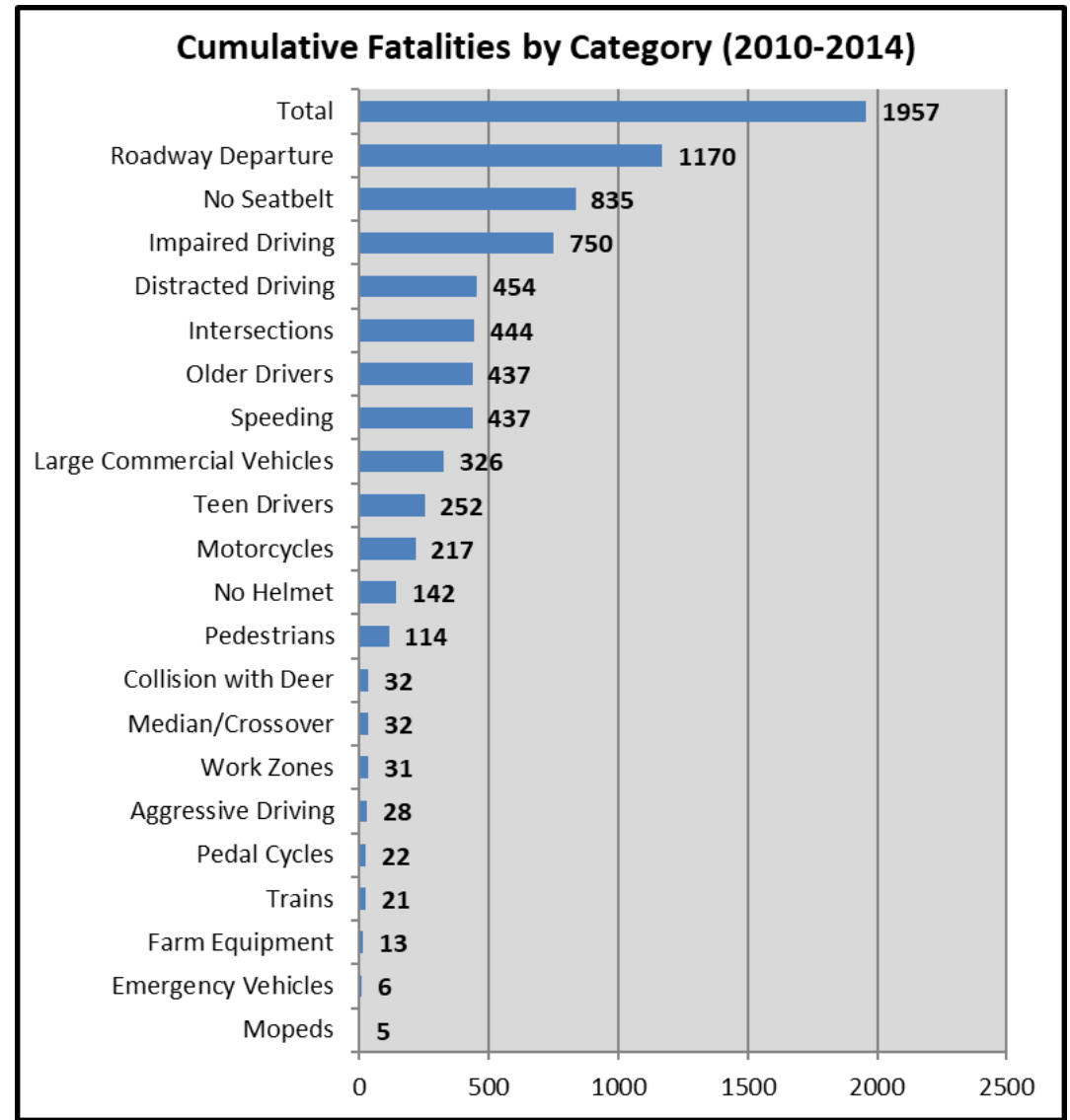
The key ideas here are those of strategic investment and statewide collaboration.

Strategic Investment

Kansas could make a wide range of investments to lessen fatalities and disabling injuries in crashes. The ESC focuses on these investments. It attends first to the variables most frequently involved in crashes that kill or disable drivers and passengers in Kansas.

A fatal injury often involves more than one contributing circumstance. The total number of fatalities is less than the sum of the factors because crashes sometimes result from a combination of factors. For example, a fatal crash at an intersection involving an unbuckled teen driver would appear in three places on the chart. The chart below is a visual representation of contributing circumstances for each fatal crash. The top three contributing circumstances reflect the following percentages of all fatal injuries between 2010 - 2014:

- Roadway Departure - 60%
- Unbelted - 43%
- Impaired Driving - 38%



Statewide Collaboration

A 2010 Federal Highway Administration document, "Noteworthy Practices: Addressing Safety on Locally-Owned and Maintained Roads - A Domestic Scan," states that "collaboration between different organizations, including engineers, planners, educators,

community leaders, activists, law enforcement and emergency medical services can bring diverse safety expertise to existing programs and produce ideas for innovative approaches.”

Aware of this dynamic, the ESC staffed the emphasis area teams with persons possessed of the requisite skills in the 4E’s. It also formed support teams that would support the work of the emphasis area teams.

Current emphasis area teams:

- Impaired Driving
- Intersections
- Local Roads
- Occupant Protection
- Older Drivers
- Roadway Departure
- Teen Drivers

Current support teams:

- Data
- Education

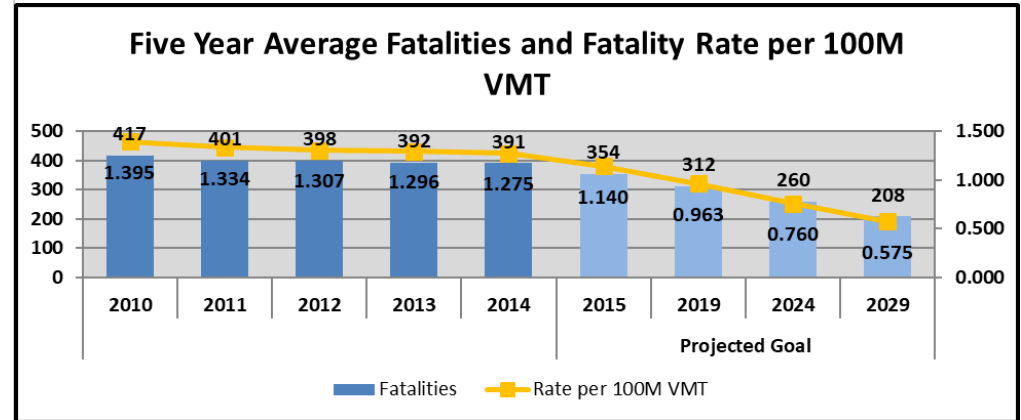
Creating a safe transportation system can’t be purely a top-down or bottom-up proposition. In addition to the ESC, regional/local safety coalitions will serve as a platform to keep traffic safety conversation flowing in both directions. Besides the safety coalitions, Kansas has several organizations dedicated to research and training that can support SHSP implementation. A partial list of these organizations and description of their work appears in Appendix B.

Dialogue and partnering are mandatory, not elective. And given the unforeseeable shifts in future modes of transportation and energy sources, as well as other unknowns, it’s important to note that in the phrase “planning process,” the emphasis is on the second word as much as the first. This document will be available at ksdot.org/bureaus/burTrafficSaf/reports/kshs.asp and will be updated intermittently with a major revision every five years.

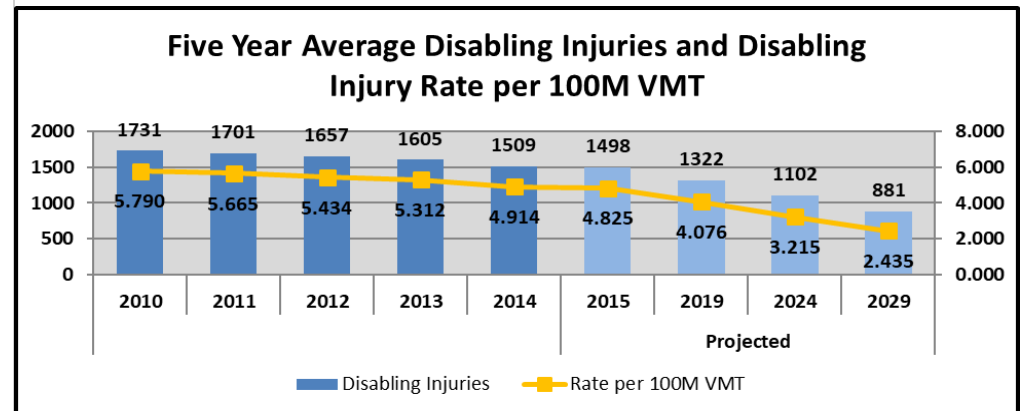
Goal: Cut Injuries and Deaths by Half

In October 2009, the ESC established the goal to reduce fatalities and disabling injuries by half in 20 years (base period 2005–2009). Cutting in half the five-year average of fatalities and injuries between 2009 and 2029 won't be easy as traffic volumes are

projected to rise. For an example to meet the goal, if volumes rise 1 percent per year the crash rate will have to be reduced by 59 percent, not just 50 percent, during the 20-year period.



Cutting in half the five-year average by 2025-2029 requires reducing the five-year average of fatalities by 52 and disabling injuries by 221 every five years. To meet this goal, fatalities in 2014 should have been no more than 364; the actual number was 385. Disabling injuries should have been no more than 1,542; the actual number was 1,199.



Vision: 0 Deaths

The executive committee’s vision is that a day will come when no life will be lost, no person disabled, in a traffic crash. In its words: *Vision Zero — Every One Matters*

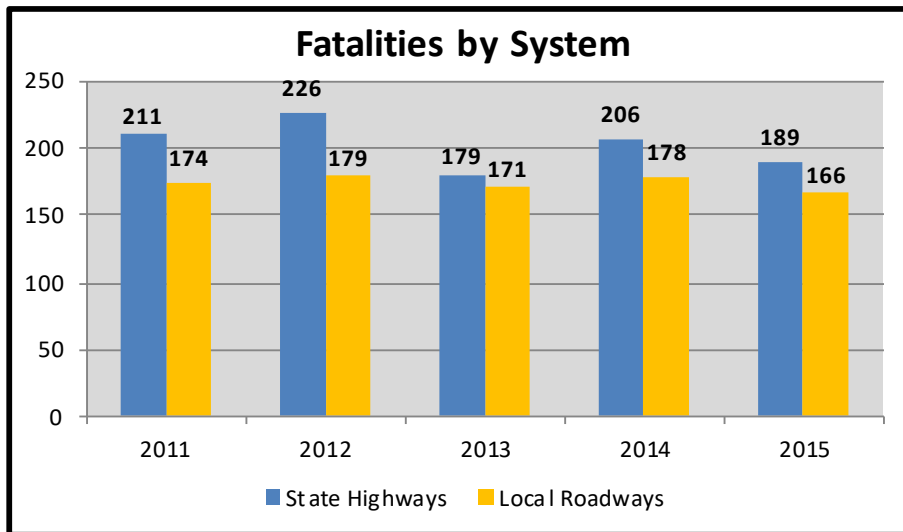
The Challenge of System Complexity

Some of the complexity of the roadway system in Kansas derives from sheer bulk—about 140,000 miles crisscross Kansas.

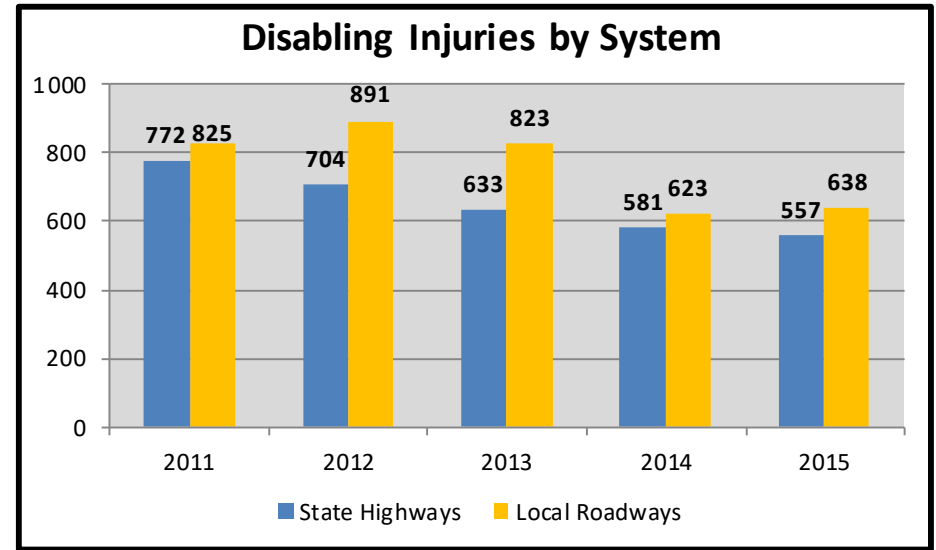
Moreover, streets, roads and highways are classified and managed according to their function and location in areas of greater or lesser population density.

Another complication derives from the large impact of the relatively few miles of state highway. Constituting a mere 8 percent of the 140,000 total, they nevertheless carried 43 percent of all the state’s traffic from 2005 to 2009. More crucially, they accounted for 49 percent of all the disabling injuries and 57 percent of the fatalities.

Yet if we were to focus attention largely on the state highway system, what would happen to crash totals on the 130,000 miles of non-state roads? A lack of focus on those roads would be shortsighted as they accounted for 46 percent of all fatalities and 54 percent of all disabling injuries between 2011 and 2015.



These tables show the relative contributions of state highways and local roadways to disabling injuries and fatalities between 2011 and 2015.



The Management Challenge

Managing state highway safety may be easier than managing off-system safety. That’s because the 10,000 miles of state highway have only two owners: KDOT and the Kansas Turnpike Authority. Statute enacted during the 2013 Kansas legislative session joins KDOT and KTA together in a partnership. The purpose of this partnership is to identify efficiencies that will ultimately lead to a safe, reliable and cost-effective transportation network. Moreover, the state highway system has extensive roadway and crash data that are easier to access than data on local roadways and the crash patterns on state highways are more predictable than those on local roads. Finally, the highway system’s design sometimes requires expensive improvements, such as converting an intersection to an interchange or converting two-foot turf shoulders into full-width paved shoulders; at other times it lends itself to inexpensive improvements such as centerline rumble strips.

Managing safety off-system is more difficult given that there are more owners managing many more miles of road. The ability to map crashes is more problematic, and roadway data, such as lane and shoulder width and traffic volume, are limited. Crash data are good but crash patterns are less predictable. Here, less expensive systemic improvements, like signing, pavement markings and rumble strips, may have an impact.

Finally, randomness makes management difficult on every kind of road and highway. Few serious crashes occur at the same location from one year to the next.

Complexities aside, we have no choice but to work both together and as individuals to reduce the number of crashes on our roads. We must also work at safety as individual drivers and passengers.

The Chapters Ahead

There is no shortage of ideas on how to address crashes. The challenge for each emphasis area team has been to identify realistic strategies for reducing crashes; prioritize those strategies; and implement those most likely to help us meet the goal of halving the number of fatal and disabling crashes within a 20-year timeframe.

Discussion of the seven emphasis areas—impaired driving, local roads, intersections, older drivers, occupant protection, roadway departure and teen drivers—is presented separately in the chapters ahead.

Each chapter begins with an introduction to the emphasis area, relevant data and performance measures. Next comes a statement of the desired goals in the emphasis area. Each goal is supported by a strategy or strategies. “Current” strategies are entirely new or revisions of existing strategies for which there is an action plan. These strategies are expected to be implemented within five years. “Future” strategies are ideas that merit further consideration yet no action plan or implementation timeline has been established.

Within the discussions of strategies, readers will find reference to some or all of the following:

- Background
- Method (implementation concerns such as program, project, policy/practice, research, training or other)
- Costs
- Lead agency and contact
- Challenges
- Target date

The SHSP also includes two support chapters—data and education—along with a partner, roles and processes chapter and various appendices. Performance measures and strategy implementation information will be updated as necessary. A major update, which will include new strategy identification, performance measure relevancy discussions, etc., will be completed every five years.

The reasoned approach that informs this plan is important to its success. But success also depends on paying attention to the results that flow from it and on making adjustments as circumstances change. As the road opens before us, what we discover *in fact* will shape our journey.



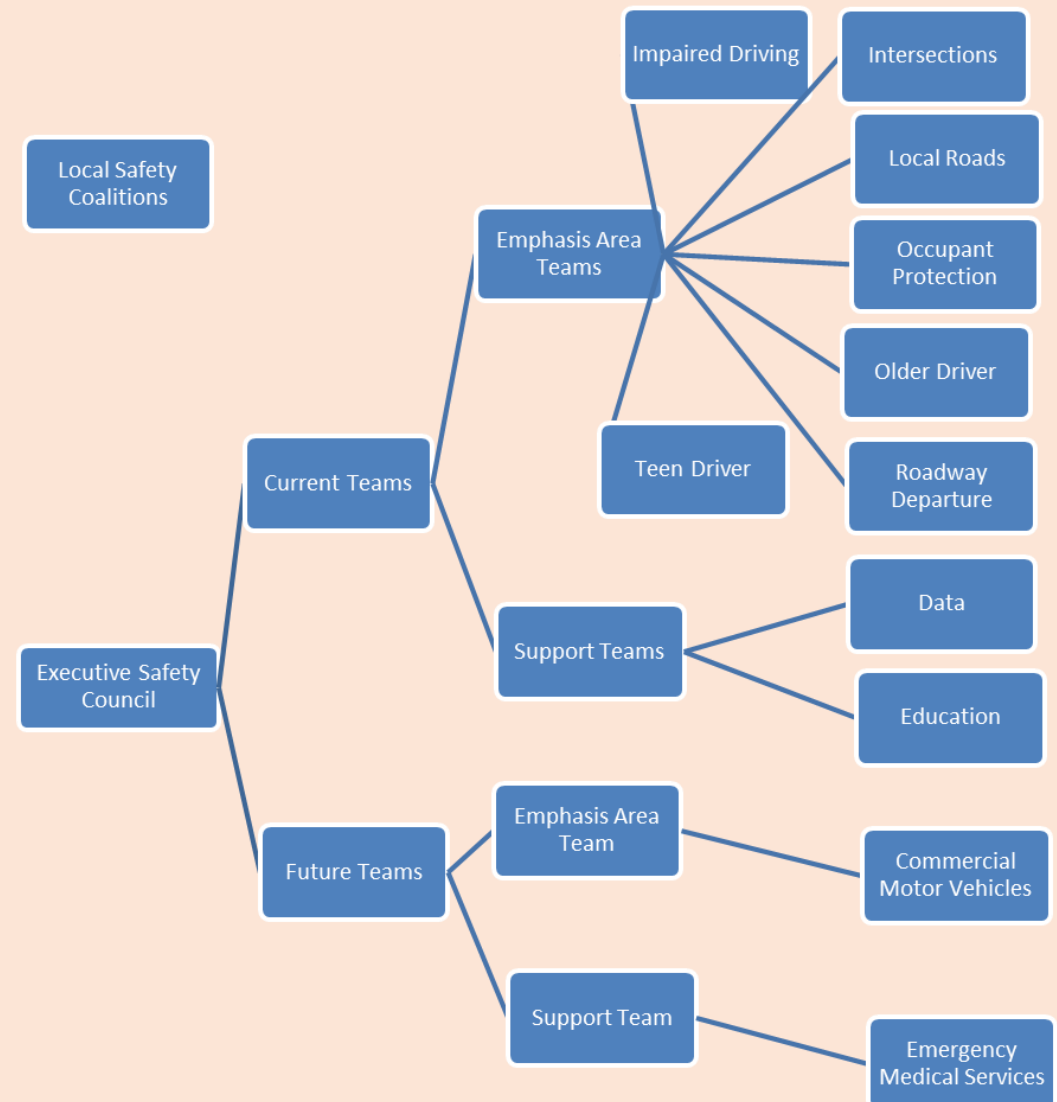
Chapter 2

Partners, Roles and Processes



As we developed this plan, we realized we were creating a process, too—one that will outlive the plan.

Success depends on ongoing cooperation and communication among a variety of teams—local, regional and statewide—as they react to the changing world of surface transportation and anticipate its safety needs in a timely way. This chapter focuses on the role of the groups that appear in the flow chart below.



Executive Safety Council

The Executive Safety Council (ESC) will tap the skills of many agencies to champion transportation safety on all public roads in Kansas by developing and maintaining the Strategic Highway Safety Plan (SHSP).

The ESC will:

- analyze data to identify statewide goals and emphasis areas
- recruit stakeholders for emphasis area teams
- direct the teams
- support strategy implementation by the appropriate agencies

The ESC currently includes representatives from the following organizations:

Kansas Department of Transportation (KDOT)
 Kansas Turnpike Authority (KTA)
 Federal Highway Administration (FHWA)
 National Highway Traffic Safety Administration (NHTSA)
 Kansas Association of Counties (KAC)
 AAA Allied Group
 LTAP Center at the University of Kansas
 Stormont-Vail Trauma Services
 Mid-America Regional Council (MARC)
 Kansas Association of Chiefs of Police (KACP)
 Kansas Department of Revenue (KDOR)
 Kansas Department of Health and Environment (KDHE)
 American Traffic Safety Services Association (ATSSA)
 Federal Motor Carrier Safety Administration (FMCSA)
 Kansas Motor Carriers Association (KMCA)
 Kansas Emergency Nurses Association
 Kansas Highway Patrol (KHP)
 Kansas Board of EMS
 Kansas Traffic Safety Resource Office (KTSRO)

The ESC meets four times a year, usually on the third Thursday in February, May, August and November. Agencies other than those listed may be invited to participate in meetings.

Emphasis Area Teams

Reporting to the ESC, the emphasis area teams will develop action plans, including safety-related programs and projects, to implement

the SHSP. The teams will:

- select and prioritize strategies
- develop performance measures
- identify resources, including funding, legislation, staffing and lead agencies, to support programs and projects

These groups meet twice a year, usually in April and October.

Emphasis Areas

Every crash touches many lives. Yet the ESC realized it couldn't focus equal attention on every potential source of crashes. Instead, it focused on those circumstances and conditions that kill or disable the largest numbers of drivers and riders. The group queried a KDOT crash database to do so. The following table lists the areas considered for emphasis and groups them by category.

Potential Emphasis Areas	
Category	Area
Driver Behavior	Impaired Driving
	Distracted Driving
	Aggressive Driving
	Speeding
Preventive Measures	Seat Belts
	Helmets
Demographic	Teen Drivers
	Older Drivers
Crash Types	Intersections
	Roadway Departure
	Median/Crossover
	Collision with Deer
	Pedestrians
	Work Zones
Vehicle Type	Large Commercial Vehicles
	Motorcycles
	Trains
	Farm Equipment
	Emergency Vehicles
	Mopeds
	Pedal Cycles

In the end, the ESC decided that emphasis area teams should focus on seven crash variables linked to large numbers of fatalities and disabling injuries: impaired driving, intersections, local roads, older drivers, occupant protection, roadway departure and teen drivers. In addition, the ESC identified one other area for attention as this document is updated: large commercial vehicles.

Support Teams

In addition to the emphasis area teams, two support teams report to the ESC. These teams consist of a data support team and an education team. They meet twice a year, usually in April and October.

The support teams function in the same way as the emphasis area teams, selecting strategies, developing performance measures and identifying resources to support programs and projects. The difference is that the emphasis area teams will focus on specific crash variables, while the support teams supply them with data, educational resources and other tools. In addition, the ESC identified one other area for attention as this document is updated: emergency medical services.

Local Traffic Safety Coalitions

Traffic safety is everyone's responsibility. Not only law enforcement and government entities, but anyone who drives a motorized vehicle or rides in one. Or rides a motorcycle or bicycle. Or walks along the road or crosses the street. Everyone is responsible for traffic safety.



Because everyone is accountable, KDOT is promoting the establishment of traffic safety coalitions at the local level, either city-wide or county-wide. Traffic safety issues can be resolved in an efficient and timely manner when addressed at the community level as most members of the group will be familiar with the roads and neighborhoods. In addition, these members are more likely to take action because it's their own families and friends who will be safer when issues are resolved.

The coalitions will be organized based on local needs and interests and will promote communication among local transportation safety partners. The ultimate goal is for these local safety partners to drastically decrease the number of crashes in their communities. They will proactively identify traffic safety and driver behavior issues *before* a crash happens, find solutions and, most importantly, implement those solutions. Traffic safety and driver behavior issues can include, but are not limited to, older and teen drivers, seat belt usage, alcohol/drug impaired driving, pedestrians and bicyclists, intersections, traffic control and construction zones.

A successful coalition is built around the 4E's of Traffic Safety: education, enforcement, engineering and emergency medical services. Coalition members can be law enforcement officers, healthcare providers, emergency medical responders, high school administrators, representatives from local governments, traffic engineers, public works officials, transportation safety advocates, local businesses and others with an interest in roadway safety. To help them decrease the number of crashes, the coalitions will:

- analyze crash data to identify goals and emphasis areas
- facilitate communication between local law enforcement officials and public works personnel
- recommend safety-related projects and programs to KDOT and others
- recommend systemic safety improvements that are eligible for High Risk Rural Roads Program funding or moneys from other sources
- promote timely and relevant safety training for 4E personnel at the local level

Prior to 2014, two regional safety coalitions and one local safety coalition have been established in Kansas. The regional coalitions are Destination Safe in the Mid-America Regional Council (MARC) area and another in the Wichita Area Metropolitan Planning Organization

(WAMPO) area. The local coalition, Drive Wisely Wyandotte, covers Wyandotte County, Kansas (see Appendix C, Safety in Numbers).

Destination Safe

Destination Safe is an excellent example of a local traffic safety coalition. It's administered by Mid-America Regional Council (MARC) and serves the Greater Kansas City region.

The coalition was founded in 2005 by Mid-America Regional Council, Kansas Department of Transportation (KDOT) and Missouri Department of Transportation (MODOT). Its mission is to reduce transportation-related fatalities and serious injuries. This effort unites federal, state, regional and local agencies to improve transportation system safety for 13 counties on both sides of the Kansas/Missouri border. These agencies represent a variety of professional sectors, including engineers, planners, nurses, trauma room coordinators, police officers, road safety advocates and scientists. The leadership team currently has 22 members.

The coalition's agenda is set by the Kansas City Regional Transportation Safety Blueprint. The Blueprint focuses on multiple transportation safety priorities and serves Greater Kansas City in the same way the Strategic Highway Safety Plan serves Kansas.

In Missouri, Destination Safe projects are funded by MODOT'S District 4. In Kansas, Destination Safe reviews and forwards recommendations to the KDOT Bureau of Transportation Safety and Technology for possible funding through the federal Section 402 program.

In 2007, Destination Safe won a FHWA National Roadway Safety Award.

Revisions

The reality of change demands flexibility. Therefore, the SHSP will be updated periodically, with a major revision every five years,

under ESC guidance. Resources may be reallocated in response to change, for example, in state or federal transportation laws and funding.

The periodic update should consider the following factors:

- a review of fatal and disabling injury crash data in the KDOT database from the previous five calendar years
- a report from each emphasis area team on the measurable results of the implementation of strategies
- a report from each support team on the progress toward implementation of specific strategies and related performance measures
- a report on traffic safety coalitions on the impact of safety spending (if applicable) on local performance

The five-year revision will include updates from the points above as well as:

- a look at progress made and lessons learned from the previous five years
- a renewal of performance measures, emphasis areas, goals and strategies for the next five years



Chapter 3

Impaired Driving



With driving unbuckled coming in at number one, the second most deadly decision resulting in a fatality crash is the decision to drive impaired—or to ride in a vehicle with an impaired driver.

The difference is that those who fail to fasten their seat belts generally only threaten their own lives. Impaired drivers—and especially drunk drivers—are highly toxic not just to themselves and their passengers but to everyone with whom they share the road.

Between 2011 and 2015, just one of 20 crashes was caused by an impaired driver. But almost one in five disabling injuries and one in three fatalities involved an impaired driver. Think of the bigger picture: two in five Kansans are involved in an alcohol-related crash at some point in their lives.



Data can help identify trends in impaired driving crashes. Between 2011 and 2015, data indicates the overwhelming majority of impaired driving fatalities involve males between the ages of 18-35. These crashes occur more frequently on blacktop rural roads and the deadliest hour of the day is between 2 and 3 a.m.

Alcohol alone is by far the likeliest cause of impaired-driving crashes, disabling injuries and fatalities. Crashes, injuries and fatalities that can be attributed to drugs alone—both legal and illegal—fall in the 5 to 7 percent range.

Solving the impaired driving problem takes more than simply recognizing the effects of alcohol and drugs on driver behavior. Many issues were considered by members of the Impaired Driving Emphasis Area Team, particularly in regard to how to support those charged with addressing the problem at the street level. Here are some of the questions that were raised.

- What can law enforcement do when someone refuses to take a blood alcohol test after a crash or when they're pulled over?
- How can officers cope with those who offend repeatedly—and, as a consequence, learn strategies to avoid arrest?
- What strategies do law enforcement officers have to deal with fit young people who are able to pass sobriety tests despite testing over the legal blood alcohol limit?
- How can test results be accelerated to cut down the lag time between drug and alcohol test administration and results? *As recently as June 2016, the Kansas Bureau of Investigation had only two toxicologists to do screening; those two had a backlog of 2,000 cases.*
- Given the fact that deceased drivers are not automatically tested for alcohol and drugs in their blood, how do we fully determine the scope of impaired driving in order to help solve this problem?
- How do we determine the contribution of drugs, both prescribed and illegal, to these crashes, when drivers who are found over the legal blood alcohol limit aren't screened for other drugs by oral fluid roadside testing?
- How do we address the demoralization of officers who make arrests only to discover that charges are later dropped by prosecutors?

The Impaired Driving Team developed strategies from these questions. The strategies include passing new laws and revising existing ones; public outreach through educational institutions and media; in-service training of those who must deal with impaired driving and drivers; increased interagency and interdisciplinary cooperation with the goal of sharpening the ability of law enforcement to gather evidence needed for successful prosecutions; awareness and deployment of up-to-date technology; and treatment opportunities for those charged with drunk driving. The Impaired Driving EAT first met February 9, 2012, and currently includes representatives from the following organizations:

Kansas Department of Transportation (KDOT)
KDOT Highway Safety Section

KDOT Law Enforcement Liaisons
Kansas Traffic Safety Resource Prosecutor (KTSRP)
Kansas Highway Patrol (KHP)
Sedgwick County Sheriff's Office
Riley County Police Department
KHP - Breath Alcohol Unit (BAU)
AAA of Kansas
Kansas Bureau of Investigation (KBI)
Kansas Department of Revenue (KDOR) – Division of Vehicles
Mothers Against Drunk Driving (MADD)
National Highway Traffic Safety Administration (NHTSA)

Addressing these questions and implementing the strategies must be a team effort. Effort from the EAT members as well as multiple law enforcement officers, legislators, toxicologists and other experts.



Data Points

When is a driver “impaired”?

The method of determining if a fatally injured driver was impaired varies across the country. In Kansas, drivers are considered impaired when blood alcohol content (BAC) exceeds .08 or .15, with different legal consequences attached to each level of inebriation. For commercial motor vehicle drivers, BAC must be below .04. BAC is not routinely tested on all motor vehicle fatalities.

The system used by NHTSA, however, yields different statistics on impaired drivers than those who simply tested over the legal BAC limit. That’s because the federal reporting system permits educated guesses about alcohol’s likely contribution to a death (for example, that of a 22-year-old male whose car, apparently without cause, slams into a tree at midnight). Kansas does not make those assumptions.

Another problem is determining whether drugs—prescription or otherwise—contributed to the impairment. At present, the main focus of law enforcement in Kansas is on alcohol.

Differing Definitions of “Impaired Crashes”	
KDOT “alcohol related” definition	KDOT “drug related” definition
“Alcohol related” is defined as motor vehicle crashes where the reporting officer indicates “alcohol contributed” to the cause of the crash and/or BAC is recorded (>.00) and relates to driver only.	“Drug related” is defined as motor vehicle crashes where the reporting officer indicates “illegal drugs contributed” to the cause of the crash and/or a positive drug screen result is recorded and relates to driver only.

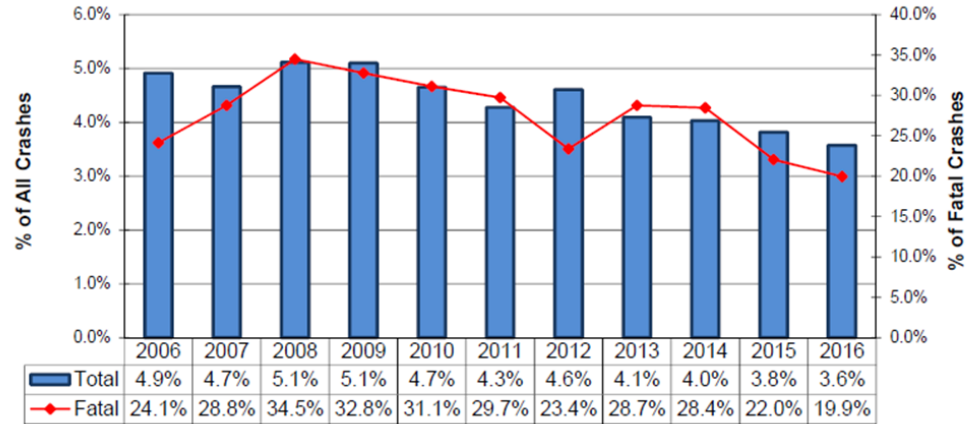
1. Impaired driving contributes disproportionately to injuries and fatalities.

Impaired driving was implicated in only one of 20 crashes between 2011 and 2015. Yet it accounted for a far larger proportion of those severely injured or killed in crashes during that time.

Impaired drivers cause:

- 5 percent of all crashes
- 19 percent of all disabling injuries
- 32 percent of all fatalities

Alcohol-Related Crash History
2006-2016



2. Impaired drivers are most often men younger than age 35.

Even without alcohol or drugs, the teenage years are dangerous for drivers. According to the Johns Hopkins School of Public Health, a 16-year-old male with three or more of his friends in the car is seven times more likely to be involved in a fatal crash than a middle-aged driver. Kansas data show that nearly one in four impaired-



driver crashes occurred when a driver younger than 21 was at the wheel--despite the fact those drivers represent less than 10 percent of all drivers. Only one in three Kansas drivers is younger than 35, but this group accounts for more than 80 percent of all impaired-driving crashes.

Alcohol-Related Crashes By Driver Age

Alcohol-Impaired Driver Ages	Crashes				People	
	Total	Fatal	Injury	PDO	Deaths	Injured
Unknown	9	0	2	7	0	3
1-14	0	0	0	0	0	0
15-20	226	5	91	130	6	150
1-20	226	5	91	130	6	150
21-24	387	5	137	245	5	170
25-29	374	11	149	214	15	187
30-34	285	16	100	169	18	149
35-39	253	9	104	140	11	153
40-44	162	7	72	83	7	86
45-49	156	6	67	83	7	92
50-54	153	9	58	86	9	79
55-59	103	7	40	56	9	62
60-64	54	3	16	35	3	24
65-69	35	2	16	17	2	23
70-74	23	3	5	15	3	6
75+	17	3	6	8	4	12

Alcohol-Related Crashes Involving Alcohol-Impaired Male Drivers

Year	Crashes				People	
	Total	Fatal	Injury	PDO	Deaths	Injuries
2006	2,630	92	1,201	1,337	100	1,757
2007	2,674	102	1,139	1,433	112	1,644
2008	2,738	109	1,151	1,478	119	1,698
2009	2,556	105	1,115	1,336	116	1,623
2010	2,258	104	939	1,215	125	1,396
2011	2,096	88	916	1,092	98	1,293
2012	2,200	85	995	1,120	97	1,434
2013	1,974	91	855	1,028	93	1,179
2014	1,926	90	808	1,028	102	1,188
2015	1,950	87	811	1,052	96	1,207
2016	1,742	73	691	978	84	976
Total	24,744	1,026	10,621	13,097	1,142	15,395

Involving Alcohol-Impaired Female Drivers

Year	Crashes				People	
	Total	Fatal	Injury	PDO	Deaths	Injuries
2006	900	30	435	435	38	718
2007	919	22	418	479	23	674
2008	934	34	424	476	43	703
2009	887	30	404	453	33	669
2010	893	33	373	487	41	602
2011	747	29	285	433	32	463
2012	806	21	359	426	27	586
2013	721	22	271	428	23	434
2014	779	22	331	426	27	532
2015	726	42	302	382	48	516
2016	676	23	249	404	28	393
Total	8,988	308	3,851	4,829	363	6,290

3. Some of them are university students.

The three Kansas counties with the highest numbers of impaired-driver crashes are home to the University of Kansas (Douglas), Kansas State University (Riley) and Pittsburg State University (Crawford).

4. Alcohol is deadliest—but that could change.

Some university and college students abuse sedatives like oxycodone and hydrocodone or drugs used to treat attention deficit disorder—Adderall, dextroamphetamine and amphetamine salts. Those trends, along with a trend toward the legalization of marijuana for medical purposes, or outright, are expected to shift the relative contribution of drugs and alcohol to impaired driving.

5. The average BAC for an impaired driving arrest in Kansas is .15.

Although driving or riding in a car with someone who's tipsy (with a blood alcohol content of less than .08) is dangerous, riding in a car with a driver who's smashed (.15 and above) is more often fatal. Those with a BAC greater than .15 are responsible for half of all the fatalities that result from impaired driver crashes.

6. Dusk to dawn are the most perilous hours.

Just one quarter of all impaired driving crashes, disabling injuries and fatalities occur in the daylight hours.

Light Conditions	% Crashes	% Disabling Injuries	% Fatalities
Daylight	23%	26%	24%
Dawn	1%	1%	1%
Dusk	2%	3%	3%
Dark: no street lights	48%	33%	24%
Dark: street lights on	25%	37%	47%
Unknown	0%	0%	1%

Impaired driving crashes, disabling injuries and fatalities peak in the early morning hours—between 1 and 3 a.m. The second most hazardous period is 8 to 11 p.m.

7. Most impaired driving crashes occur on blacktop (mainly rural) roads.

More than six of 10 crashes, disabling injuries and fatalities result from impaired driving on blacktop roads.

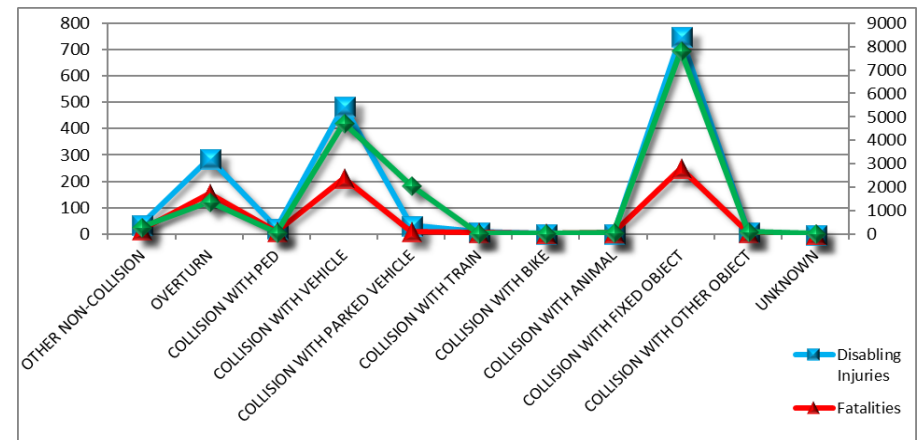
Surface Type	% Crashes	% Disabling Injuries	% Fatalities
Concrete	26%	24%	18%
Blacktop	62%	60%	62%
Gravel	8%	12%	14%
Dirt	3%	3%	5%
Brick	1%	0%	0%
Other	0%	1%	1%
Unknown	0%	0%	0%

The number of impaired-driving fatal and disabling injuries in rural areas is higher than in more-traveled urban areas. Several factors contribute to this, including: rural miles outnumber urban miles in Kansas; rural roads often have higher speed limits; and the time

delay of treatment for a rural crash victim versus an urban crash victim due to the distance between the crash scene and the treating medical facility.

8. A toxic mix: resistible force meets immovable objects.

A third of all impaired driver fatalities involve a collision between motor vehicles.



Nearly half of all fatalities, disabling injuries and crashes happen when a vehicle strikes a fixed object such as a ditch, curb or tree.

Goals and Strategies

The problem of impaired driving must be addressed through new legislation or revised laws already on the books, public outreach through education, training of those who must deal with impaired driving and drivers, technology, interagency cooperation, and treatment opportunities for those charged with drunk driving.

Many safety issues related to impaired driving could be addressed with goals and strategies in this chapter. Of these issues, the Impaired Driving EAT selected eight that have the best potential to significantly reduce the number of fatal and serious injury crashes in Kansas. Goals have been developed for each.

1. Influence policymakers to pass new and/or enhance existing laws that will decrease the incidents of impaired driving in Kansas.

2. Build a stronger relationship with educational/media outlets so as to enhance the delivery of information related to impaired driving.
3. Improve training for law enforcement agencies, not only the technical aspects of detection, but also focusing on the societal importance.
4. Expand upon the collaboration of state and local law enforcement agencies to promote a strong impaired driving deterrence through consistent, statewide enforcement of Kansas' Driving Under the Influence (DUI) law.
5. Create a partnership with the medical community that promotes awareness and training in the collection of evidence used in the prosecution and adjudication of suspected impaired drivers.
6. Encourage collaboration among state agencies to provide reliable resources that enable the state to gather evidence needed in the prosecution of impaired drivers.
7. Improve training for prosecutors and judges so as to create a fair, consistent and confident judicial process to respond to those who have been arrested and charged with impaired driving.
8. Implement the "24/7" program in Kansas.



Goal 1: Influence policymakers to pass new and/or enhance existing laws that will decrease the incidents of impaired driving in Kansas.

Current strategies:

- Enhance DUI law with provisions to enable prosecutors to charge offenders with aggravated battery while driving under the influence in DUI cases involving serious or great bodily harm to others.

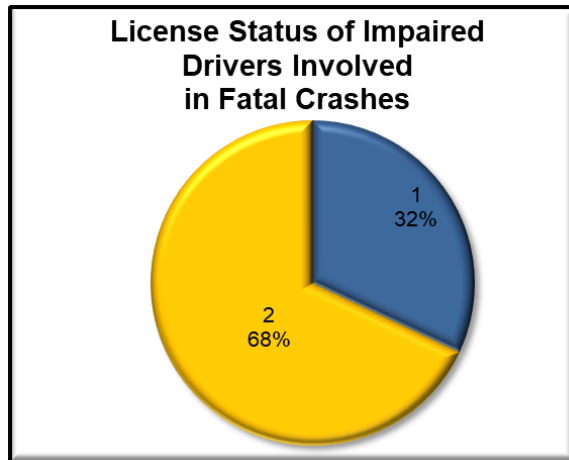
Background: Aggravated battery in Kansas is described as recklessly causing great bodily harm to another person or disfigurement of another person; or recklessly causing bodily harm to another person with a deadly weapon, or in any manner whereby great bodily harm, disfigurement or death can be inflicted.

The Kansas Supreme Court has determined an impaired person driving, in and of itself, is not reckless behavior. A crash caused by an impaired driver, which results in great bodily harm to another person should be considered aggravated battery by definition. Therefore, the law should be modified to include the charge of aggravated battery DUI so as to bring upon the convicted driver a more serious consequence for causing said harm to another person.

- Method: legislation
 - Cost: additional bed space in detention facilities
 - Lead agencies and contacts: Kansas County District Attorney Association (KCDAA); Kansas Attorney General (KTSRP)
 - Challenge: generating legislative support for expanding law
 - Target date: FY 2018
- Examine DUI fee structure and distribution.
Background: DUI enforcement, prosecution and adjudication costs are enormous. Treatment programs designed to address the underlying issues of alcohol and drug abuse are equally expensive. At the present time, fines and costs are distributed according to statutory schedule. This schedule has not been evaluated for a number of years. Kansas must constantly evaluate the fine structure and distribution of fines associated with DUI adjudication so as to ensure

efficient distribution of strategic investments designed to reduce incidences of impaired driving.

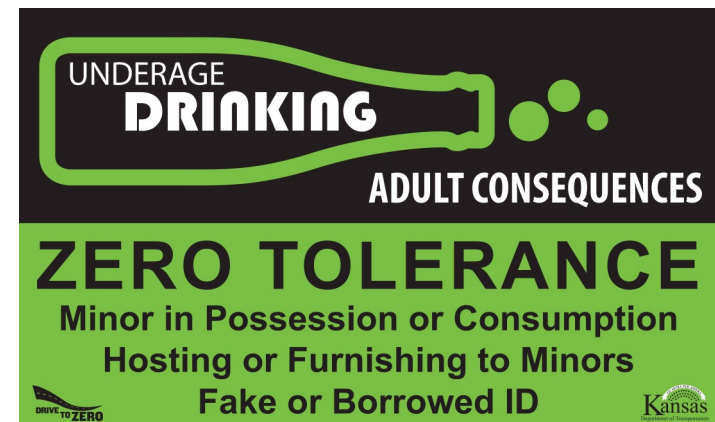
- Method: legislation
 - Costs: TBD (minimal)
 - Lead agency and contact: Kansas Attorney General (KTSRP)
 - Challenge: generating legislative support for expanding law
 - Target date: FY 2018
- About 30 percent of all impaired drivers involve an impaired driver who is not complying with license restrictions or does not have a valid license (32 percent of fatalities). Enhance existing Kansas Ignition Interlock program to enable the state to monitor the specific violations logged by the device.



Background: The current ignition interlock program in Kansas does not include the monitoring of the individual units throughout the duration of use by offenders. By monitoring the units and tracking any attempt to drive after consuming alcohol, the state can be in a position to apply sanctions designed to discourage offenders from repeating dangerous behavior while consuming alcohol.

- Method: legislation
- Costs: TBD
- Lead agencies and contacts: KDOR, Division of Vehicles; Kansas Department of Health and Environment (KDHE)

- Challenge: generating legislative support for expanding law
 - Target date: FY 2018
- Change existing law to clarify jurisdiction of consumption of alcohol for minors.
Background: For the charge of minor in possession/ consumption of alcohol under the current law (KSA 41-727), a person younger than age 21 shall not possess, consume, obtain, purchase or attempt to obtain or purchase alcoholic liquor or cereal malt beverages. In many jurisdictions, when a minor has admitted or been found to have consumed alcohol, BAC of 0.02 or greater, the minor would claim the alcohol was consumed in another jurisdiction. In most instances, law enforcement would not be able to prove otherwise. The Court, in these instances, determines they lack jurisdiction to hear the matter and dismisses the charge. In other words, they find the "crime" did not occur in their jurisdiction. The law needs to be changed to reflect that "the offense of consumption occurred in the jurisdiction of consumption or the jurisdiction where the offender is arrested."
 - Method: legislation
 - Costs: minimal
 - Lead agency and contact: Kansas Attorney General (KTSRP)
 - Challenge: generating legislative support for expanding law
 - Target date: FY 2018



Future strategies:

- No future strategies identified at this time.

Goal 2: Build a stronger relationship with educational/media outlets so as to enhance the delivery of information related to impaired driving.

Current strategies:

- Work with media outlets to emphasize the dangers of impaired driving.

Background: Mass/local media has a tremendous ability to increase the perception of risk for those who choose to drive impaired. By advertising upcoming enforcement events and reporting on productivity of completed events, the public is informed of the seriousness of the problem and the efforts to remove impaired drivers from Kansas roadways.



- Method: partnership
- Costs: minimal
- Lead agencies and contacts: KDOT, Traffic Safety Section; AAA of Kansas
- Challenge: changing the culture of the local media outlets to make impaired driving a larger priority
- Target date: FY 2018

- Seek the involvement of the insurance industry to get more proactive in the education process through the development of impaired driving public service announcements (PSAs).

Background: The insurance industry pays out hundreds of millions of dollars each year for claims related to impaired driving crashes. As part of a broad educational program, the insurance industry can take a more proactive approach to reducing the incidence of impaired driving in Kansas, utilizing a variety of educational tools such as PSAs.

- Method: partnership

- Costs: TBD, depends on scope of PSAs
- Lead agencies and contacts: KDOT, Traffic Safety Section; AAA of Kansas
- Challenge: funding allocations from insurance companies
- Target date: FY 2019

- Expand the Fake ID 101 program.

Background: The Kansas Traffic Safety Resource Office (KTSRO) has promoted a university community-based program in Lawrence, Kansas, that is designed to educate the community on high-risk drinking activity and associated harms. The only university to currently participate in the Fake ID program within the State of Kansas is the University of Kansas. Three of the top five impaired driver counties are college towns. The top five counties by impaired crash rate:

- Douglas (University of Kansas)
- Norton
- Cowley
- Crawford (Pittsburg State University)
- Riley (Kansas State University)

- Method: program
- Cost: approximately \$180,000 - \$200,000 for a statewide program
- Lead agency and contact: Kansas Traffic Safety Resource Office (KTSRO)
- Challenges: funding and managing the expansion of existing program
- Target date: FY 2018

- Expand driver education to bring more emphasis to the issues related to prescription and over-the-counter medications.

Background: While alcohol related car crashes are the most prosecuted of all impaired driving cases, prescription/over-the-counter drug use and related crashes are on the rise. Educational campaigns for the consumer should be developed to draw more attention to the impairment issues related to prescription/over-the-counter drug use.

- Method: program
- Costs: TBD
- Lead agency and contact: KDOT, Traffic Safety Section

- Challenges: costs associated with production and distribution of educational material
- Target date: FY 2018

Future strategies:

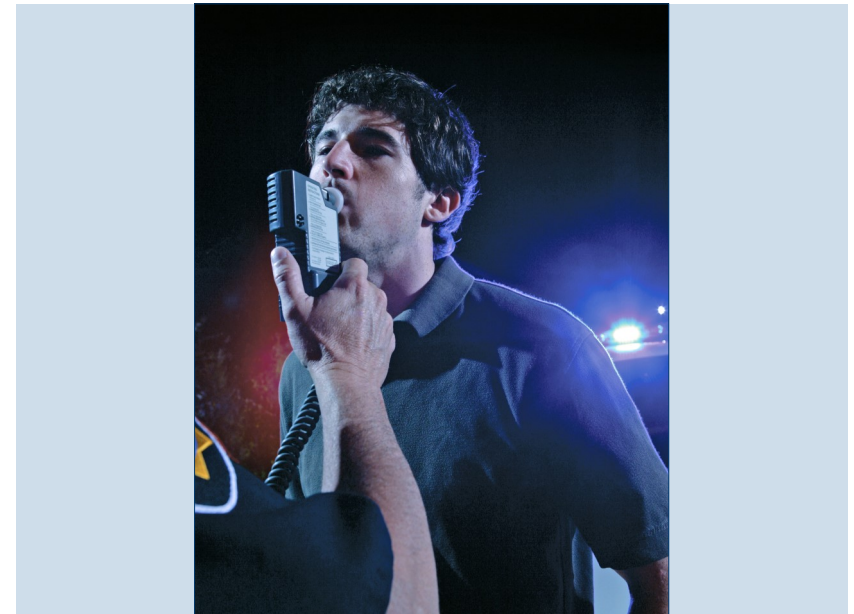
- No future strategies identified at this time.

Goal 3: Improve training for law enforcement agencies, not only the technical aspects of detection, but also focusing on the societal importance.

Current strategies:

- Work with law enforcement agencies across the state to emphasize the importance of continuation of traffic enforcement.
Background: Upon graduating and receiving a Law Enforcement Certificate, officers are usually heavily involved in traffic enforcement. When these officers become supervisors, their emphasis areas change. These supervisors must be constant advocates of traffic enforcement within their agencies. Supervisors must hold high expectations of their subordinates and support aggressive enforcement techniques for detection of impaired drivers.
 - Method: partnership
 - Costs: minimal
 - Lead agencies and contacts: Kansas Law Enforcement Training Center (KLETC); KHP – BAU; law enforcement associations
 - Challenge: buy-in from law enforcement leadership
 - Target date: FY 2018
- Expand the Drug Recognition Expert (DRE) program to encourage more law enforcement to participate in the detection of the drug impaired driver.
Background: A DRE is a law enforcement officer who has received specialized training and has been certified by the International Association of Chiefs of Police (IACP) to evaluate individuals who are suspected of being impaired by a drug other than alcohol. As of 2012, there were 87 DRE officers certified in the State of Kansas.
 - Method: program
 - Costs: picked up by participating law enforcement (LE) agencies

- Lead agency and contact: KHP – BAU
- Challenges: finding qualified and motivated LE officers to train; also requires support from LE administration
- Target date: FY 2018



- Encourage all law enforcement academies to implement “wet workshops” when training officers in the skills of Standardized Field Sobriety Testing (SFST).
Background: Although SFST training can be conducted utilizing videos of impaired persons to demonstrate physiological clues to impairment, a “wet lab” approach allows each student the opportunity to apply SFST to a live subject who is impaired, while in the presence of instructors in a controlled setting.
 - Method: program
 - Costs: TBD
 - Lead agency and contact: KHP - BAU
 - Challenges: resistance to the logistics of a wet workshop, such as recruitment of volunteer drinkers
 - Target date: FY 2018

Future strategies:

- No future strategies identified at this time.

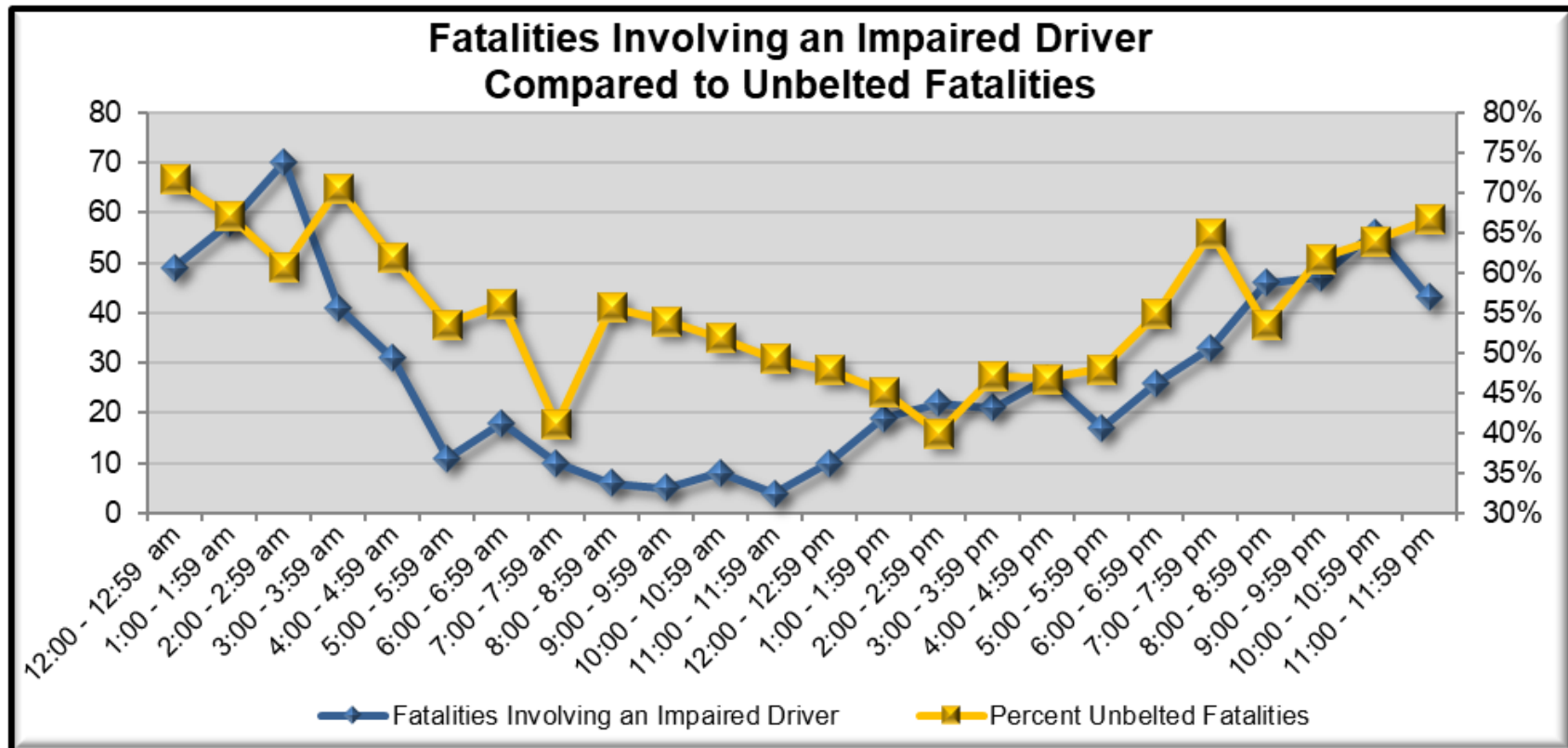
Goal 4: Expand upon the collaboration of state and local law enforcement agencies to promote a strong impaired driving deterrence through consistent, statewide enforcement of Kansas' Driving Under the Influence (DUI) law.

Current strategies:

- Expand the Nighttime Seatbelt Enforcement Program (NSEP) to increase contact with the traveling public during peak impaired driving hours of the day.

Background: Statistically 69 percent of fatalities involving an impaired driver were unbelted. In 2012, KDOT's Traffic Safety Section conducted a nighttime seatbelt enforcement pilot program to demonstrate the effects of dedicated nighttime seatbelt enforcement. The four participating agencies (Arkansas City PD, Pittsburg PD, Topeka PD, Wichita PD) were very successful, each conducting nine enforcement events resulting in 1,266 public contacts. The expansion of this program, operated during peak alcohol consumption hours, will ultimately result in additional contacts with impaired drivers and their removal from Kansas roadways.

- Method: program
- Cost: \$136,000.00 in FY 2018
- Lead agency and contact: KDOT, Traffic Safety Section
- Challenge: solicitation of participation from targeted agencies
- Target date: FY 2018 and beyond



- Increase the use of search warrants to obtain evidence from a suspected alcohol or drug impaired driver.

Background: In 2008, Rice County, Kansas, was the first county to employ this method of obtaining evidence in cases where the suspected impaired driver refused a breath test. Since that time, several other counties have implemented the “no refusal” model for designated enforcement periods.

 - Method: program
 - Costs: TBD
 - Lead agency and contact: Kansas Attorney General (KTSRP)
 - Challenge: bringing judges, prosecutors and law enforcement together to implement the strategy
 - Target date: FY 2018
- Implement Alcohol Safety Action Program (ASAP) in strategically located areas that lack sufficient manpower to conduct high-staffing enforcement activities.

Background: ASAP is designed to allow low law enforcement manpower staffing areas to give the perception that impaired driving enforcement is taking place. One officer from each of the departments (KHP, Sheriff’s Office and Police Dept) is assigned to DUI enforcement on routine duty. Combine this with a strong media message and the public is given the perception of high-visibility enforcement within a community that has a small police force.

 - Method: program
 - Costs: minimal
 - Lead agency and contact: KDOT, Traffic Safety Section
 - Challenge: getting law enforcement command to commit resources to the program
 - Target date: FY 2018
- Encourage citizen academies to enhance their curriculum to include the importance of impaired driving deterrence through citizen detection and reporting.

Background: Many larger communities have active citizen academies that enhance community policing by increasing the number of people familiar with the problems and challenges of law enforcement and how law enforcement meets those challenges. The curriculum of these academies should include the importance of enforcing the impaired

driving laws and how to aid law enforcement in the removal of impaired drivers from Kansas roadways.

- Method: program
- Costs: minimal
- Lead agencies and contacts: KHP – BAU; active citizen academies
- Challenge: development of material for distribution to local agencies
- Target date: FY 2018

Future strategies:

- No future strategies identified at this time.



Goal 5: Create a partnership with the medical community that promotes awareness and training in the collection of evidence used in the prosecution and adjudication of suspected impaired drivers.

Current strategies:

- Develop an educational program for the medical community which details the importance of gathering evidence that can be used by law enforcement to prosecute and adjudicate DUI offenders in Kansas

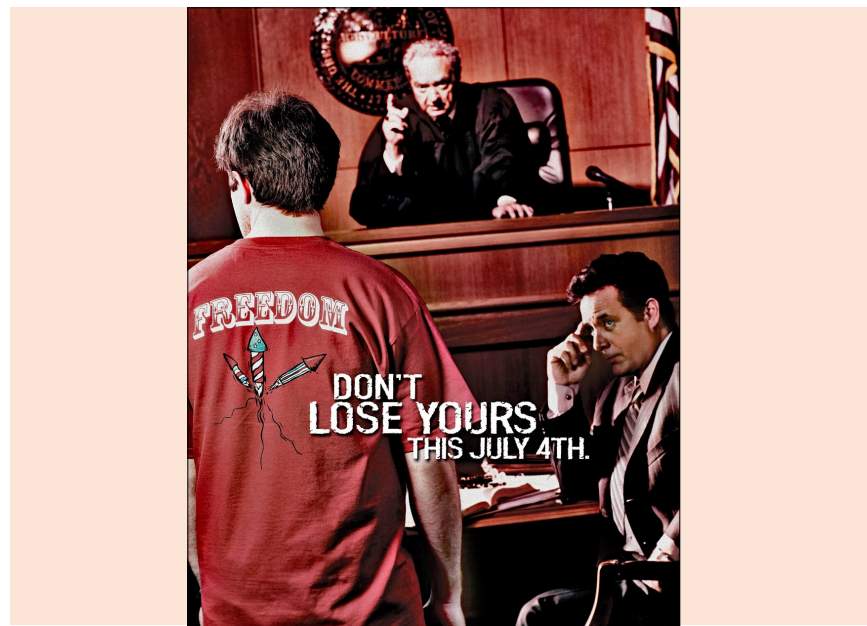
Background: In some instances, medical personnel have declined to draw blood for evidential purposes in DUI cases, often because they do not fully understand their role in the collection of this evidence. A suspected DUI case can be dismissed if prosecutors are unable to gain access to vital

evidence.

- Method: program
 - Costs: minimal
 - Lead agencies and contacts: Kansas Hospital Association; Kansas Attorney General
 - Challenge: establishing cooperative effort
 - Target date: FY 2018
- Develop a statewide program that partners emergency medical services (EMS) with local law enforcement agencies to obtain blood samples in a timely manner.
Background: In specific cases of suspected DUI, where blood is the preferred specimen for determining blood alcohol or drug content, a partnership with EMS can facilitate obtaining blood samples in certain cases in a timely manner, eliminating the risk of losing valuable evidence to the passage of time following a crash.
 - Method: program
 - Costs: TBD
 - Lead agency and contact: KHP - BAU
 - Challenge: establishing cooperative effort
 - Target date: FY 2019
 - The KHP – BAU has started development of a program that trains law enforcement officers to be phlebotomists. Phlebotomists are authorized by law to draw blood from impaired drivers. This would enable law enforcement officers to obtain the evidentiary blood sample.
Background: As Kansas moves towards a “no refusal” policy for DUI testing, the availability of police phlebotomists will prove invaluable to law enforcement agencies. When the cost of blood draws at medical facilities are taken into consideration, as well as the availability of medical personnel and the handling of prisoners, police phlebotomists offer an effective alternative.
 - Method: program
 - Costs: TBD
 - Lead agency and contact: KHP - BAU
 - Challenge: establishing Kansas standards for law enforcement phlebotomy program
 - Target date: FY 2018 for pilot program with KHP-BAU troopers

Future strategies:

- No future strategies identified at this time.



Goal 6: Encourage collaboration among state agencies to provide reliable resources that enable the state to gather evidence needed in the prosecution of impaired drivers.

Current strategies:

- Keep up-to-date on new technologies in breath alcohol instrumentation.
Background: KDHE’s breath alcohol section has been researching trends in breath instrument technology. KDHE is exploring the possibility of implementing new instrumentation. New technologies would allow KDHE to interact with instrumentation across the state on a routine, real-time basis to achieve timely reporting to law enforcement and the court system. Updating these instruments will eventually reduce costs in travel and testimony of KDHE personnel.
 - Method: program
 - Costs: TBD (more than \$1 million)
 - Lead agency and contact: KDHE
 - Challenge: funding
 - Target date: FY 2018

- Expand staffing for the KBI toxicology section to address workloads.

Background: The KBI toxicology section has identified the need for retention and expansion of staffing. The staff has recently been hit with the departure of qualified toxicologists lured to other places of employment by improved pay. These positions need to be filled at a competitive rate. An administrative assistant position is also needed to relieve current staff toxicologists from duties involving general office procedures.

- Method: program
- Costs: TBD
- Lead agency and contact: Kansas Bureau of Investigation
- Challenge: funding
- Target date: FY 2018

Future strategies:

- No future strategies identified at this time.

You Drink. You Drive. **You Lose.**



DUIs can carry a heavy price tag—sometimes, around \$10,000. This #LaborDay, save yourself the cash.

Goal 7: Improve training for prosecutors and judges so as to create a fair, consistent and confident judicial process to respond to those who have been arrested and charged with impaired driving.

Current strategy:

- The KTSRP is developing a DUI “Bench” book, designed to provide judges with current DUI law at their fingertips.

Background: Currently judges do not receive formal training

to reference the complicated laws related to impaired driving. Impaired driving laws continue to change every year, therefore judges need a reference to apply the laws correctly. The KTSRP has already developed a similar reference for prosecutors, which is in its eighth edition. This book provides prosecutors with the most recent changes in the law and case law as it applies to impaired driving.

- Method: program
- Costs: minimal
- Lead agency and contact: Kansas Attorney General (KTSRP)
- Challenges: none
- Target date: FY 2018

Future strategies:

- No future strategies identified at this time.

Goal 8: Implement the “24/7” program in Kansas.

Current strategy:

- The Kansas Attorney General is spearheading this project and is partnering with KDOT and select sheriff offices and courts for implementation in Kansas.

Background: Developed in South Dakota, the 24/7 Sobriety Program is designed to work with chronic DUI offenders to change behavior and prevent additional DUI arrests. Participants must abstain from using alcohol and illegal drugs. Vigorous daily monitoring, using state-of-the-art technology, ensures that the cycle of use is broken, thus leading to a reduction of DUI recidivism.

- Method: program
- Costs: TBD
- Lead agency and contact: Kansas Attorney General
- Challenge: large scope of program
- Target date: FY 2018

Future strategies:

- No future strategies identified at this time.

Chapter 4

Intersections

The mission of the Intersections Emphasis Area Team (EAT) is to develop data-driven action plans that reduce the potential for and the severity of intersection crashes.

The plans establish performance measures and goals and propose implementation strategies. These strategies are based on the 4E's of traffic safety: education, enforcement, engineering and emergency medical services. The Intersections EAT will help implement the Strategic Highway Safety Plan (SHSP) by recommending safety-related programs and projects. These programs and projects may include low-cost safety improvements deployed systemically, high-cost safety improvements deployed via safety programs or projects, policy changes, and research initiatives.

The Intersections EAT first met October 14, 2009, and currently includes representatives from the following organizations:

- Mid-America Regional Council (MARC)
- City of Overland Park Planning and Development
- Shawnee County Public Works
- City of Manhattan Public Works
- Federal Highway Administration (FHWA)
- Kansas Department of Transportation (KDOT)

The FHWA defines an intersection as "a planned point of conflict in the roadway system." In this plan, we define an intersection as two or more public roads crossing at grade (or at the same level, versus an interchange where one road passes over the other).



Intersections are classified into five types—two with traffic signals, three without.

- Signalized
 - pre-timed traffic signals
 - traffic-actuated signals
- Unsignalized
 - uncontrolled (no stop or yield signs and no assignment of right-of-way)
 - controlled (stop or yield signs assign right-of-way and may include flashing beacons)
 - roundabouts

Given the FHWA definition of an intersection above, it is important to point out what is not counted as an intersection crash. The meeting of a private driveway with a public road will not be treated as an intersection although we recognize the value of well-designed access, especially near intersections. Kansas averages about seven fatal crashes per year at driveways and parking lot accesses. Another type of crash that will not be treated as an intersection crash is one which occurs at grade-separated interchanges (where roads cross at different levels), such as merge areas and ramps. Therefore, the only crashes reported here will be those that occur where two or more public roads cross at the same level or are directly related to those crashes. No shortage of strategies is available to the highway safety practitioner. Our original SHSP, completed in 2006, included a list of potential strategies but did not prioritize them or plan implementation. In drafting the current plan, we focused on implementation questions that will lead to more tangible outcomes.

- How can this plan shape existing safety programs, including funding levels and project selection?
- What tools can KDOT provide local jurisdictions when the jurisdiction wants to submit potential safety projects?
- How can this plan influence large-scale reconstruction projects?
- How can this plan shape policy decisions?
- How can this plan shape legislative agendas?

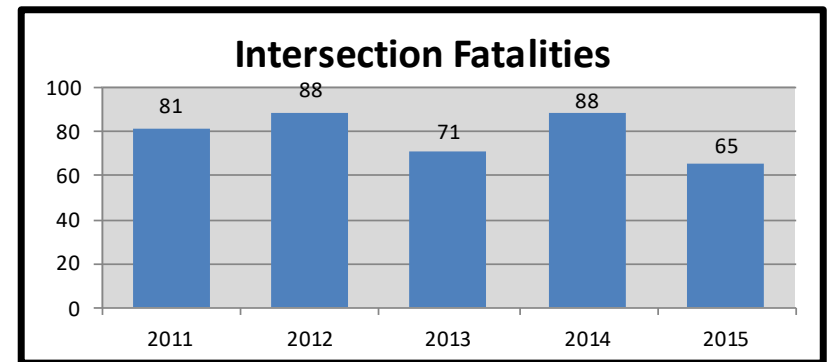
Finding answers to these questions will be an important step toward diminished numbers of fatal and serious-injury crashes. For instance, if we as a state reduce intersection-related fatalities by half from 2010 - 2029, more than 500 lives will be saved.

Analyzing intersection-crash data is essential to answering these questions. With input from the Data Support Team, the Intersections EAT will be able to select and prioritize strategies and make recommendations based on the data.

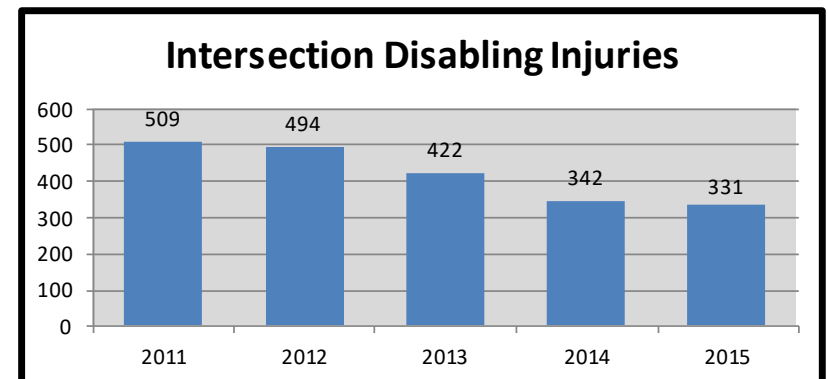
Data Points

1. Almost one in four Kansas crash fatalities happens at an intersection.

Intersection-related fatalities represent roughly 21 percent of all crash fatalities in Kansas. Between 2011 and 2015, 393 fatalities and 2,098 disabling injuries occurred at intersections. In that span, intersection crashes accounted for 30 percent of serious injury crashes statewide and 31 percent of all crashes.



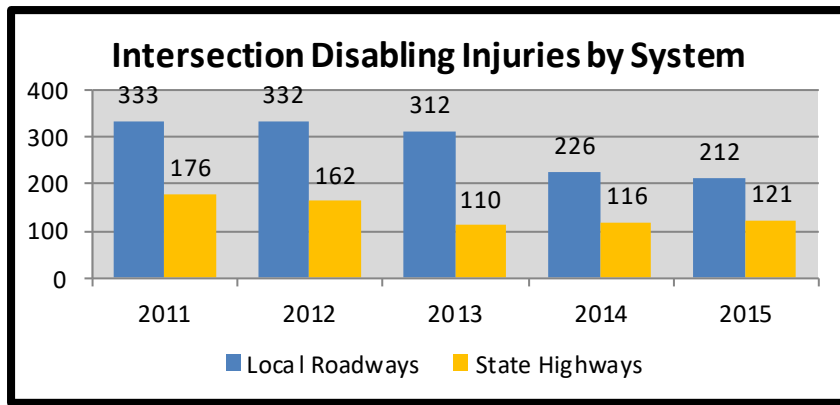
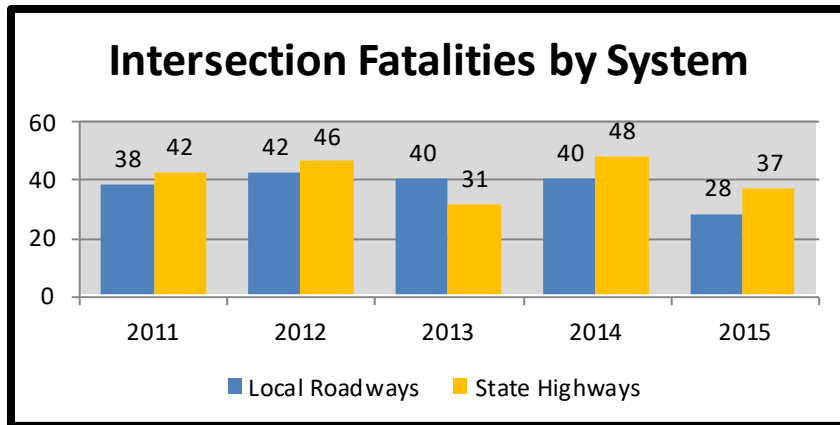
Increases and decreases in intersection fatalities tend to parallel the pattern of fatalities overall.



Intersection disabling injuries continue to experience declines since 2013.

2. Controlled access reduces the potential for crashes.

Between 2011 and 2015, 21 percent of all fatalities (both state and local systems) were at intersections. During the same time period, 52 percent of all intersection fatalities occurred on the state highway system, compared to 48 percent on local roads. Sixty-seven percent of all intersection-related disabling injuries, compared to 33 percent of all disabling injuries, occurred on local roadways. It's likely that controlled-access policy along state highways saves lives and prevents more serious injuries from happening. Interstates are made safer by having no intersections. Compared to state highways, locally-owned roads, particularly in urban areas, have more intersections with more conflict points and consequently a higher share of intersection crashes.



Unlike fatalities, disabling injuries on local roadways far outnumber those on state highways.



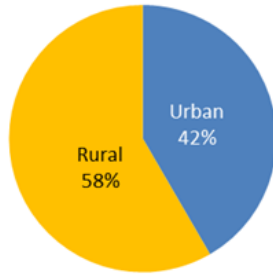
3. Crashes at rural intersections are more likely to be severe.

Of the 140,614 miles of public roads in the state, 91 percent are located in rural Kansas. By that measure, it's not surprising that more deaths are caused by crashes on rural roads than on urban roads. Crashes at rural intersections account for 58 percent of all intersection fatalities.

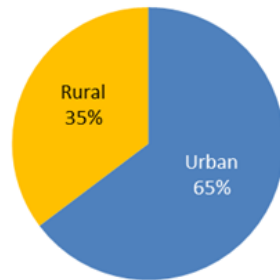
By another measure, though, the high fatality percentage in rural Kansas is a surprise. Less than half of all vehicle miles traveled in Kansas—49 percent—are on rural roads. With vehicle miles traveled on rural and urban roads nearly equal, why do intersection crashes on rural roads result more often in fatalities? Three factors play a role.

- **Higher speeds:** Less traffic, intersections and driveways mean that drivers are more comfortable traveling at higher speeds.
- **EMS:** It takes longer for emergency vehicles in general and ambulances in particular to reach crash scenes and deliver the injured to hospitals or trauma centers.
- **Health care facilities:** Patient needs may exceed the care capacity of rural health care facilities.

Intersection Fatalities by Urban/Rural Location (2011-2015)



Intersection Disabling Injuries by Urban/Rural Location (2011-2015)



Serious injuries in a rural area are more likely to result in death compared to those sustaining the same type of injury in an urban area. Rural areas of the state experience fewer intersection disabling injuries compared to the urban areas. However, 58 percent of intersection fatalities occur in the rural areas. The challenges of health care in rural areas may help explain this difference. There are often longer discovery times after a crash, greater EMS response times, longer travel distances to a hospital and fewer hospital resources (e.g., trauma surgeons, emergency physicians, sophisticated diagnostic radiology, and blood bank reserves).

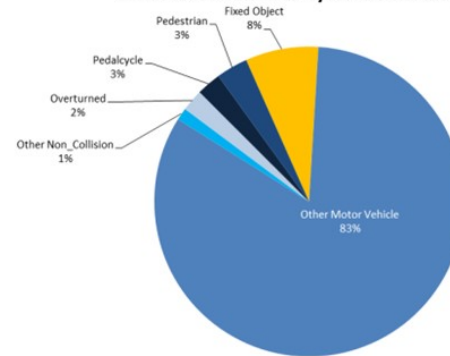
4. The most likely crash: collisions between vehicles.

More than 80 percent of intersection crashes are collisions between motor vehicles. Rear-end and angle crashes are the most common types. The data indicate that our focus should be on reducing the

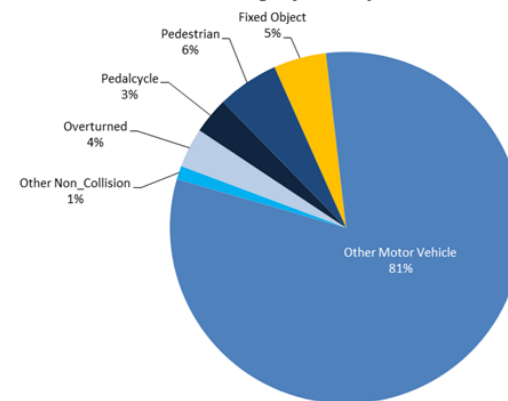
potential for these conflicts. Reducing angle crashes begins with good engineering, but also depends on drivers’ knowledge of who has the right of way—and enforcement of laws governing that. Reducing rear-end crashes requires managing traffic congestion by such means as timed signals and turn-lanes.

FHE stands for first harmful event . For instance, if a vehicle first struck another vehicle and then overturned it would only appear under “other motor vehicle” in the graph.

Intersection Fatalities by Accident Class (FHE)



Intersection Disabling Injuries by Accident Class (FHE)



Between 2011 and 2015, collisions between motor vehicles accounted for 83 percent of the fatalities and 81 percent of the disabling injuries at intersections. Of these, 60 percent were angle collisions (left-turn and right-angle), 14 percent rear-end.

New Directions for Crash Data

In 2009 a new crash reporting form allowed the collection of more detailed data about intersection types. Roundabouts, four ways, five ways, Ts and Ys were assigned different numbers for coding purposes. Before 2009, the only information collected about intersections where crashes had occurred concerned traffic control measures such as signals, stop signs and yield signs. The causes and relief of intersection collisions can now be analyzed in greater detail.

TRAFFIC CONTROLS			
	(On / At Road) O/A		
	Type Present	OK/NF	
00 None	1	1	1
01 Officer, flagger	2	2	2
02 Traffic signal	3	3	3
03 Stop sign	4	4	4
04 Flasher	5	5	5
05 Yield sign			
06 RR gates / signal			
07 RR crossing signs			
08 No passing zone			
09 Center/Edge lines			
10 Warning signs			
11 School zone signs			
12 Parking lines			
88 Other: _____			
99 Unknown			

ACC. LOCATION (of 1st Harmful Event)
ON ROADWAY: (within travel lanes)
11 Non-intersection
12 Intersection +
13 Intersection-related +
14 Access to Parking lot/Drwy
15 Interchange Area +
16 On Crossover
17 Toll Plaza
OFF ROADWAY:
20 Shoulder
21 Roadside (not shoulder)
22 Median
23 Parking lot or Rest area
88 Other: _____
99 Unknown
+INTERSECTION TYPE
01 Four-way intersection
02 Five-way or more
03 T - intersection
04 Y - intersection
05 L - intersection
06 Roundabout (See Manual for Definitions)
07 Traffic Circle
08 Part of an interchange
99 Unknown

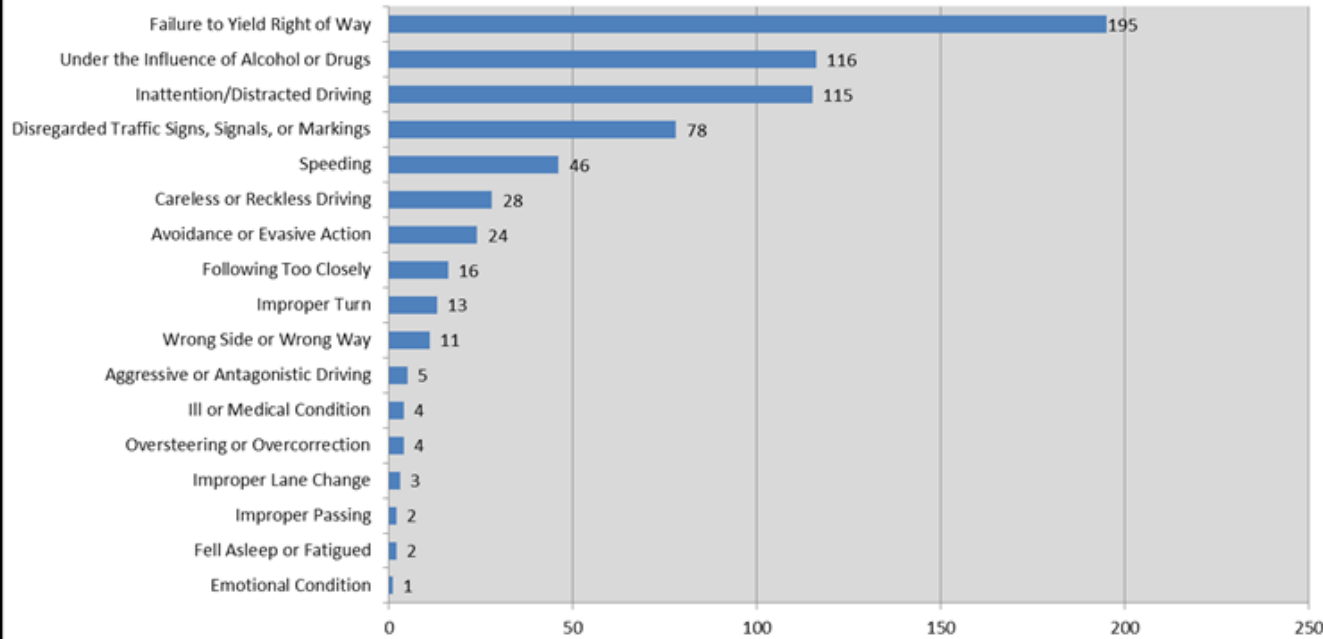


5. The contribution of driver behavior to intersection collisions.

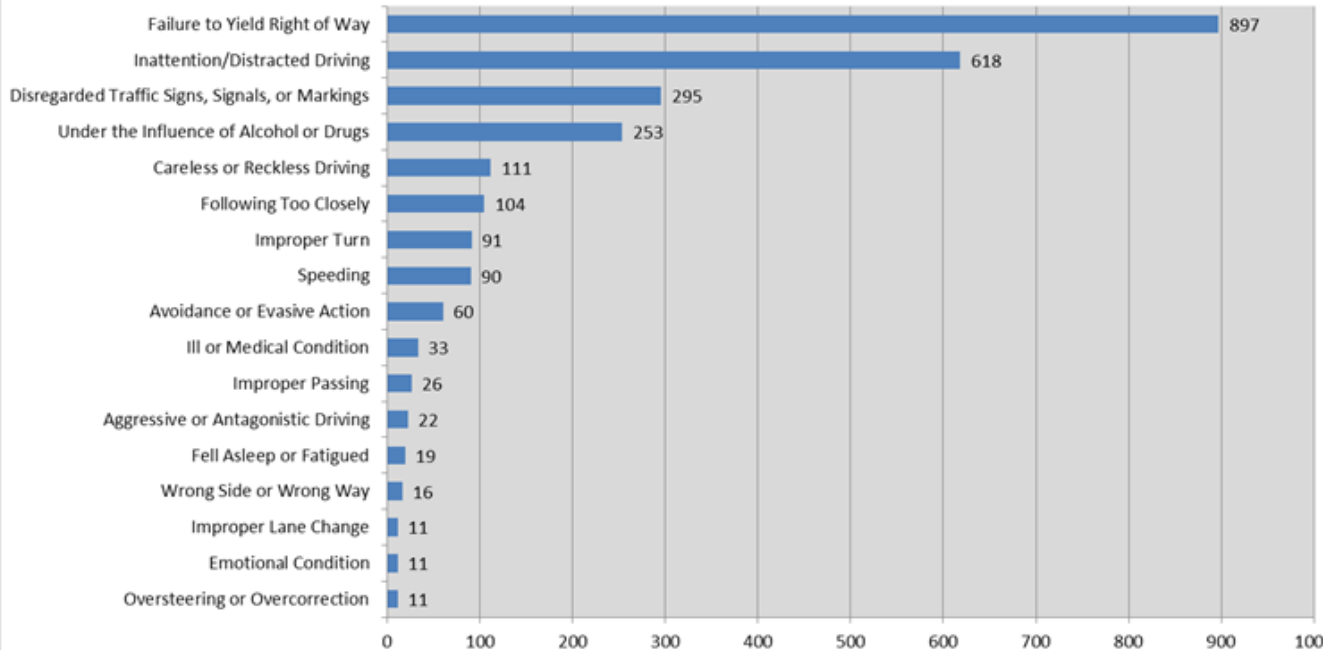
Most intersection fatalities are the result of a collision between two vehicles and most of those collisions occur between vehicles moving at 90-degree angles to each other. Given this information, it's not surprising that "failure to yield right-of-way" and "disregarded traffic signs, signals or markings" represent two of the top three factors involved in collisions. Use of hand-held communication devices inside and outside of vehicles has skyrocketed within the last decade. Given this trend, it is not surprising that "inattention/distracted driving" is noted as the fourth largest contributor to intersection crashes. The remaining factor in the top four, driving while impaired by alcohol or drugs, is all too familiar. Additional information regarding this category of fatalities/serious injuries can be found in the impaired driver chapter of this plan.



Intersection Fatalities by Driver Contributing Circumstance



Intersection Disabling Injuries by Driver Contributing Circumstance



In most intersection fatalities, at least one of the drivers involved makes a poor decision. Intersections, as defined above, are a planned point of conflict in the roadway system. Each intersection has a number of potential conflict points. A standard 4-legged intersection, for example, has 32 conflict points—32 opportunities for a driver to make a mistake. Roundabouts, by comparison, have only eight. Engineering, as well as enforcement, education and EMS can only go so far. In the end the success of this plan depends largely on the motorists it serves.

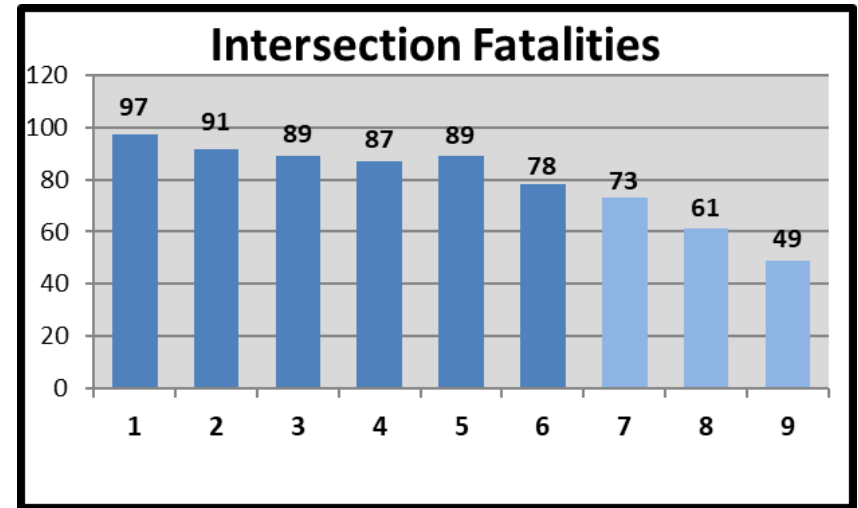


Performance Measures

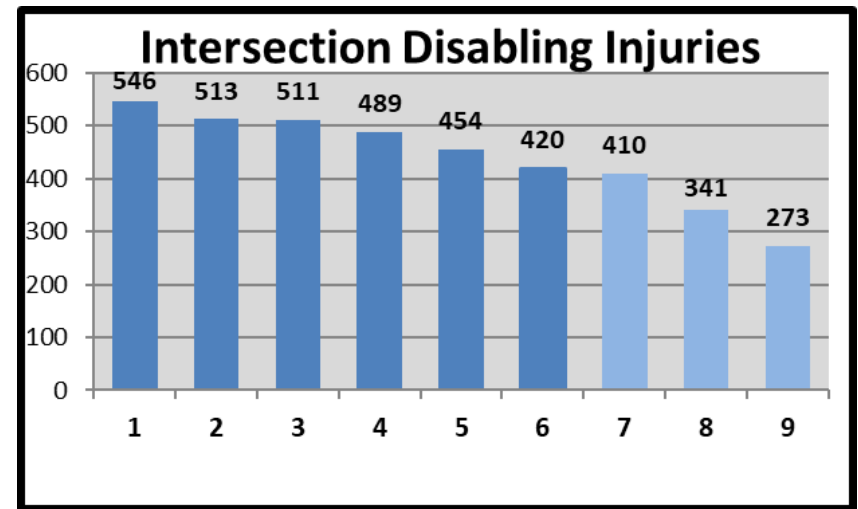
Consistent with the overall SHSP goal, the Intersections EAT aims to reduce by half all intersection fatalities and serious injuries within 20 years. Focusing on serious injuries as well as fatalities makes sense because serious injury crashes are often an indicator of potential fatal crashes. For the five-year period 2011 through 2015, Kansas averaged 79 intersection and intersection-related fatalities and 420 disabling injuries per year. During the five-year period 2005 through 2009, the Kansas average for intersection-related fatalities was 97, and 546 disabling injuries were reported. Compared to the current five-year average, Kansas has experienced a reduction of 18 fatalities and 126 disabling injuries. This puts the five-year average ahead of our projected goal by 4 fatalities and 44 disabling injuries for 2015 (see graph below).

The SHSP is a key tool in accelerating the trend toward decreased intersection collisions seen in recent years. Interim goals will help us measure our progress. The Intersections EAT chose to use a straight-line projection to set interim goals—that is, to consistently reduce intersection fatalities by two or three a year. A straight-line projection was made because most of the “simple” fixes have already been applied statewide. These include strategies such as all-red time intervals between green signals, 12” signal lenses, backplates on

signal housing, mast-arms that put signals over the lanes, and dilemma-zone protection for signalized intersections and pavement markings such as turn-arrows and stop lines. The next figure shows our interim five-year goals, in terms of fatalities.



Intersection fatalities are falling at a rate that will allow us to meet our 2029 goal. The preference, naturally, is to exceed our goal. The ideal, of course, is zero.



Disabling injuries are also trending in the right direction.

Goals and Strategies

To reduce serious injury and fatal crashes at intersections on all public roads statewide, the Intersections EAT developed six intermediate goals.

1. Create and manage data-driven safety programs that make the best use of safety dollars.
2. Make use of available traffic records, crash data and roadway data to identify projects designed to make intersections safer.
3. Experiment with innovative engineering countermeasures.
4. Promote proven engineering countermeasures.
5. Use law enforcement to encourage good driver behavior.
6. Promote education campaigns that focus on the factors most often linked to intersection crashes.

Some techniques for reducing intersection collisions cost little or nothing. Examples of little or no cost countermeasures include timing traffic light changes so that all signals show red for a brief interval, allowing an intersection to clear before right-of-way is reassigned. Other measures, such as the construction of roundabouts to reduce conflict points and lower vehicle speeds, are more expensive. The challenge for the Intersections EAT is to identify, prioritize and implement realistic strategies.



Goal 1: Create and manage data-driven safety programs that make the best use of safety dollars.

Current strategy:

- Recommend new distribution of Highway Safety Improvement Program (HSIP) funding based on Kansas crash statistics. See *Roadway Departure chapter for action plan.*

Future strategy:

- Retool the HSIP Intersections Program to strengthen partnerships with all urban communities in Kansas, including outreach, problem identification and project development.

Goal 2: Make use of available traffic records, crash data and roadway data to identify projects designed to make intersections safer.

Current strategies:

- Develop a method to project the expected number of crashes based on intersection types and traffic volumes in order to identify intersections with the potential for improvement.

Background: KDOT plans to utilize safety performance functions (SPF) and crash modification factors (CMF) as the basis for determining low-cost, systemic improvements and high-cost projects at specific sites. Both SPF and CMF are key elements of the Highway Safety Manual published in 2010 by the American Association of State Highway and Transportation Officials (AASHTO). Software such as AASHTOware Safety Analyst will support a more sophisticated analysis of the Kansas highway system. Step one, however, is an intersection inventory. KDOT will also develop an application that helps local jurisdictions predict crash frequencies at different types of intersections.

- Method: research
 - Cost: \$150,000 per year (estimated)
 - Lead agency and contact: KDOT, Traffic Safety Section
 - Challenge: reliability of the data
 - Target date: FY 2019
- Create an intersection inventory to aid crash analysis. See *Data Support chapter for action plan.*

Future strategies:

- Identify and analyze recurring variables related to intersection crashes.
- Facilitate access by local jurisdictions to KDOT crash data.
- Improve the quality and consistency of crash reporting by law enforcement.
- Establish a grading system to rank intersections based on safety.

Goal 3: Experiment with innovative engineering countermeasures.

Current strategy:

- Continue research into experimental low-cost countermeasures.
Background: Specific countermeasures are often described as experimental, tried or proven. The effort here will be to promote research on experimental strategies that leads to proof of their viability. This will be accomplished by working through state programs like KTRAN and federal programs like the National Highway Cooperative Research Program. This strategy will also require working with organizations like the Local Transportation Assistance Program (LTAP) at the University of Kansas (KU) and the American Public Works Association to stimulate local participation. Recent studies include research on red light confirmation signals which are used to assist enforcement activities related to red light running.
 - Method: research
 - Cost: \$100,000 per year (estimated)
 - Lead agency and contact: KDOT, Traffic Safety Section
 - Challenge: finding locations for build-to-evaluate countermeasures
 - Target date: FY 2016 and beyond

Future strategy:

- Consider experimenting with rural intersection collision avoidance systems.

Goal 4: Promote proven engineering countermeasures.

Current strategy:

- Consider application of relevant countermeasures from the FHWA Office of Safety's Proven Safety Countermeasures.

Background: In September 2017 the FHWA advanced a group of 20 countermeasures that according to the latest safety research have shown great effectiveness in improving safety. Those relevant to intersections and new to Kansas will be evaluated for application and consideration given for implementation. These include traffic signal backplates with retroreflective borders. Those not new to Kansas will be evaluated for acceptance and consideration given for expanded use. These include roundabouts, access management, medians and pedestrian crossing islands, and road diets.

- Method: practice
- Costs: TBD
- Lead agency and contact: KDOT, Traffic Safety Section
- Target date: FY 2016 and beyond



Future strategies:

- Promote advance street name signs at intersections.
- Simplify the configuration of low traffic-volume, two-way, stop-controlled intersections.
- Encourage signal preemption that gives right-of-way to emergency vehicles.
- Coordinate signals and improve traffic flow along urban corridors via real time adaptive traffic signal technology.

Goal 5: Use law enforcement to encourage good driver behavior.

Current strategy:

- Develop a program to fund targeted enforcement programs at high-crash intersections.

Background: Speeding contributed to at least 67 fatalities between 2009 and 2013. Disregard of signs, signals or markings contributed to at least 118 fatalities during this time period. It's widely recognized that the presence of law enforcement improves driver behavior. The motorist is more likely to drive at a reasonable speed, drive defensively, and obey signs, signals and markings when a law enforcement officer is within sight. Less well-known is that enforcement of traffic laws appears to reduce crime rates overall. The retention of strong traffic enforcement units within law enforcement agencies, therefore, may be a benefit at many levels. We recommend the creation of a program (and the promotion of existing programs) that fund overtime law enforcement at specific intersections and the development of lines of communication between law enforcement and public works employees about "hot spots."



- Method: program
- Costs: TBD
- Lead agency and contact: KDOT, Traffic Safety Section
- Challenges: identifying high-crash intersections and prioritizing those that receive increased attention if demand exceeds funding
- Target date: FY 2018

Future strategies:

- Use the media to promote awareness of the link between vigorous traffic law enforcement and reduced crime.
- Encourage law enforcement agencies to concentrate more resources on traffic law enforcement.

Topeka's "Ten for Ten" Program

The "Ten for Ten" program is designed to put enforcement resources at the top ten crash locations in a jurisdiction. The locations are identified by crash reports for a specific time period. Urban/densely populated areas are usually one week and Rural/sparsely populated areas one month. Law enforcement officers are assigned to spend ten minutes daily at one of those locations during their tour of duty. The ten locations usually include the top five intersections and top five mid-block locations (anything not containing an intersection of roads). Officers are provided a list of the top ten locations and the contributing violations to those crashes, then asked to concentrate on those violations.

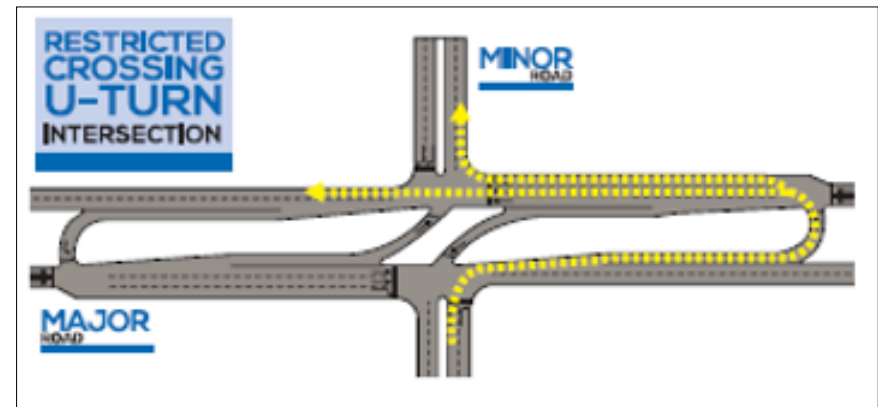
Goal 6: Promote education campaigns that focus on the factors most often linked to intersection crashes.

Current strategies:

- No new strategies identified at this time.

Future strategy:

- Develop guidelines and procedures for consultants, state engineers and local engineers to complete traffic studies and intersection crash analyses.



Chapter 5

Occupant Protection

Buckling up—or being buckled in—is the most effective protection during a car crash. The U.S. Department of Transportation’s National Highway Traffic Safety Administration (NHTSA) estimates that lap/shoulder seat belts, when used correctly, reduce the risk of fatal injuries to front-seat passenger car occupants by 45 percent and moderate-to-critical injuries by 50 percent.

For light-truck occupants, the protection is even better: seat belts reduce the risk of fatal injury by 60 percent and moderate-to-critical injury by 65 percent.

The greatest benefit, though, is for infants younger than age 1. When used correctly, child safety seats reduce their risk of fatal injuries by 71 percent. For toddlers ages 1 to 4 in passenger cars, the reduction is 54 percent. For infants and toddlers in light trucks, the reductions are 58 percent and 59 percent, respectively. However, according to NHTSA, approximately three out of four car seats are not used properly, which is a tremendous risk to children.



Kansas has two seat belt laws which cover occupants in all passenger vehicles (cars, vans, pickup trucks and SUVs), plus federal regulations which require seat belt use in commercial vehicles. The Safety Belt Use Act (KSA 8-2501) requires all occupants ages 14 and older to “have a



safety belt properly fastened” when a car is in motion. The Child Passenger Safety Act (KSA 8-1343) requires drivers to provide for the protection of children younger than age 14 by properly using child passenger safety restraints or seat belts.

Kansas currently has more than 640 Child Passenger Safety (CPS) Technicians and 30 instructors across the state to assist caregivers in the proper installation of CPS seats. They follow the latest American Association of Pediatrics recommendations:

- Children younger than age 2 should be in a rear-facing seat that is installed in the back seat. A rear-facing car seat is the best seat for a young child to use.
- Children should remain in a rear-facing seat until they reach the top height or weight limits stated by the manufacturer. Only then should a child move into a forward-facing seat with a harness that is installed in the back seat.



- Children should remain in a forward-facing seat with a harness until they reach the top height or weight limits stated by the manufacturer. Only then should a child move into a booster seat placed in the back seat.
- Keep children in a booster seat for as long as possible until the adult seat belt fits properly. Children are generally ready to use a seat belt when 1) they are tall enough to sit in the seat without slouching; 2) they can keep their back against the vehicle seat; 3) they can keep their knees naturally bent over the edge of the vehicle seat; and 4) they can keep their feet flat on the vehicle floor. To fit a seat belt properly, the lap belt must

lie snugly across the upper thighs, not the stomach. The shoulder belt should lie snugly across the shoulder and chest, not across the neck or face. Keep children in the back seat at least through age 12.

Kansas relies on two annual observational surveys to determine seat belt use in vehicles. The observational survey which is required by NHTSA is conducted each summer and focuses on the drivers and front-seat outboard-position passengers. Data released by KDOT in 2015 showed 82 percent of front seat occupants were using seat belts, a sizable increase from 77 percent in 2009. The child survey, which is not required by NHTSA, is conducted in early spring and includes the same 20 counties that were originally observed in the annual “summer” survey. Four age groups are observed: 0-4, 5-9, 10-14, and 15-17. For purposes of data stability, the data from the two most recent years are combined to produce the state-wide estimate. The site pool is comprised of neighborhoods where children of these age groups are likely to be travelling and can be easily observed, such as grocery and other stores, daycare/preschool areas, and elementary, middle/junior high and high school neighborhoods. The good news in child passenger safety is that a majority of parents buckle their children in car seats, booster seats or seat belts.

The purpose of the Occupant Protection Emphasis Area Team is to develop data-driven action plans that encourage drivers and passengers to wear seat belts at all times. Data in this chapter apply only to vehicles covered under Kansas seat belt laws: cars, pickup trucks, SUVs, vans (10 passengers or fewer) and commercial vehicles. Data related to pedestrians, bicycles, motorcycles, ATVs and other vehicles not included in Kansas law will not be included.

The Occupant Protection team develops performance measures, sets objectives, selects strategies and identifies needed resources, including funding, legislation, staff and lead agencies. Implementing the strategies will require various combinations of the 4E’s of traffic safety: education, enforcement, engineering and emergency medical services.

The outcome sought by the Occupant Protection team is the implementation of the SHSP through safety-related programs and projects. Implementation may depend on policy changes, media attention, education and awareness campaigns, enforcement

mobilization and programs aimed at low seat-belt-use groups. Some efforts will be statewide; others will target geographic areas with low rates of seat belt use.

Members of the emphasis area team first met in 2009 and currently include representatives from the following organizations:

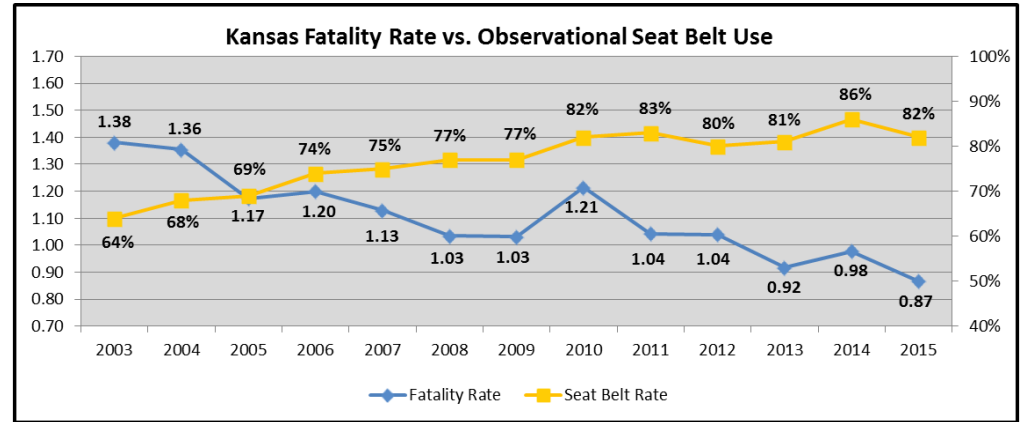
- Kansas Department of Transportation (KDOT)
 - Bureau of Transportation Safety and Technology
 - Law Enforcement Liaisons
- National Highway Traffic Safety Administration (NHTSA)
- Kansas Highway Patrol (KHP)
- Children's Mercy Hospital
- DCCCA
- Office of Kansas Attorney General
 - State Child Death Review Board
- Kansas Department of Health and Environment (KDHE)
 - State Trauma Program
 - Safe Kids Kansas
 - EMS for Children
- AAA Allied Group (AAA)
- Mid-America Regional Council (MARC)
- Kansas Traffic Safety Resource Office (KTSRO)
- WSP/Parsons Brinckerhoff



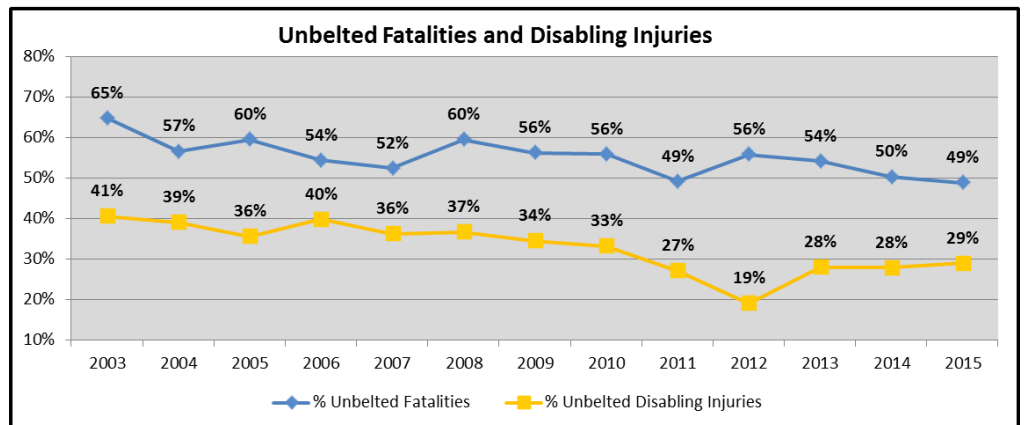
Data Points

1. Buckling up saves lives.

It's easy to see: fatalities and serious injuries go down when drivers and passengers buckle up.



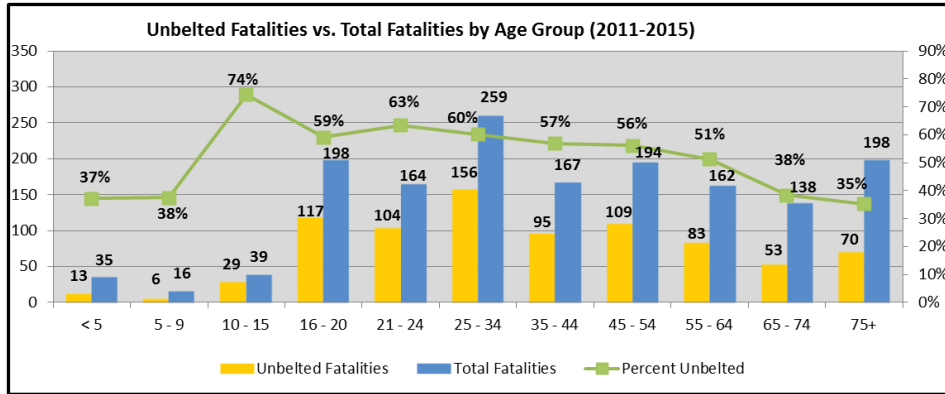
The most recent reporting year lists 0.87 fatalities for every 100 million vehicle miles traveled in vehicles where seat belts can be used. Generally, as the rate of seat belt use increases, the fatality rate decreases. Note: new survey method went into effect in 2012.



The number of fatalities in vehicles dropped from 401 in 2003 to 272 in 2015, while the number of disabling injuries decreased from 1,704 to 910.

2. The highest risk-takers: teens and young adults.

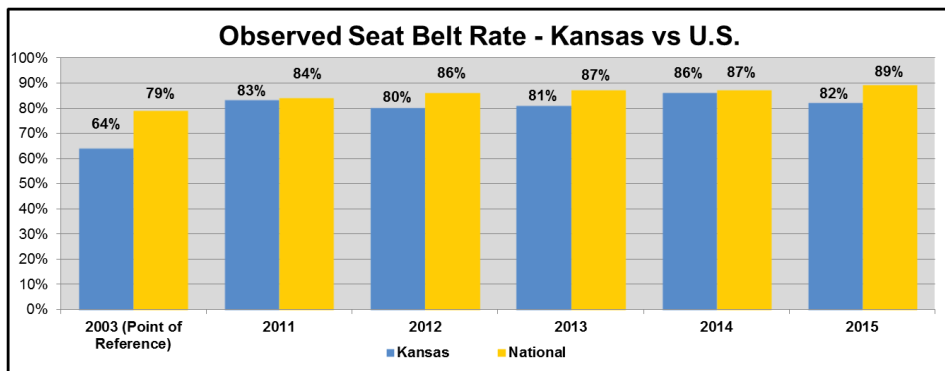
Not wearing seat belts is most prevalent among drivers and passengers ages 10-35.



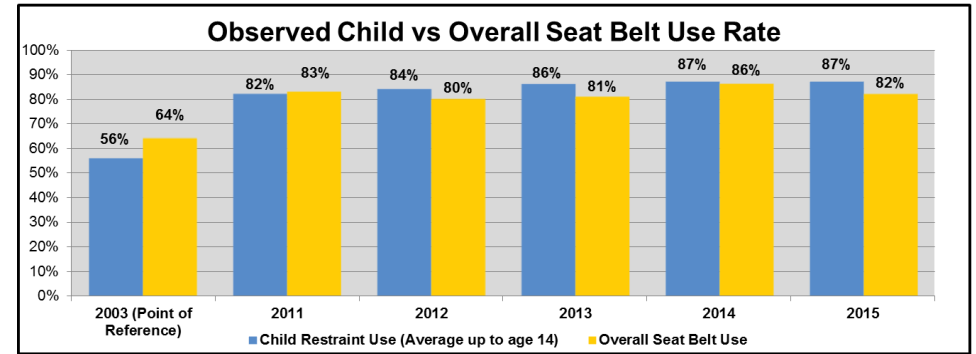
After age 35, both the number of fatalities and the percent of unbelted fatalities decreased.

3. More Kansans are keeping themselves and their kids safe.

Kansas still falls below the national average in terms of seat belt use, but the state gained ground between 2003 and 2015. Kansans are increasingly buckling their children into safety seats or getting them to buckle up.

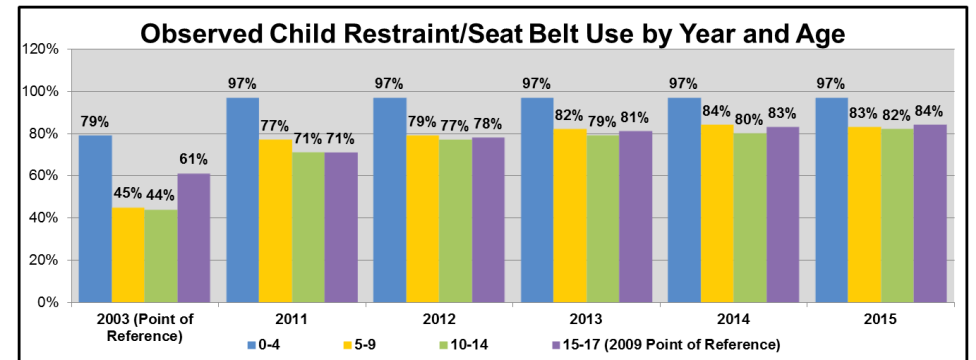


In 2015, Kansas ranked 38th in the nation in terms of observed seat belt use.

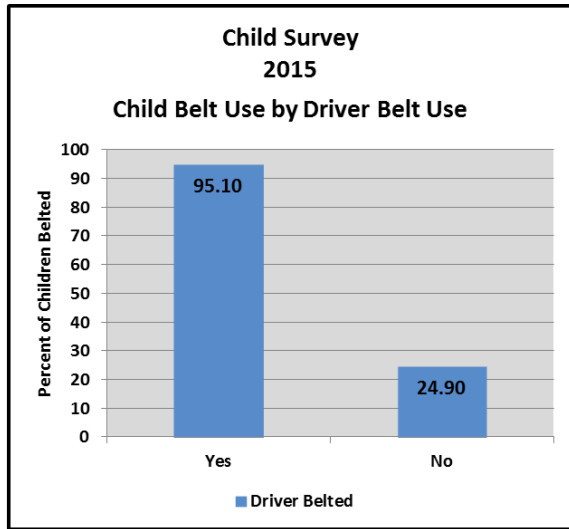


In 2003, there was a 9-percentage point gap observed between the child and overall seat belt usage rates. Now the children have closed that gap and are exceeding the overall rates.

4. Historically, children ages 0-4 are restrained at a higher rate than any other age group.

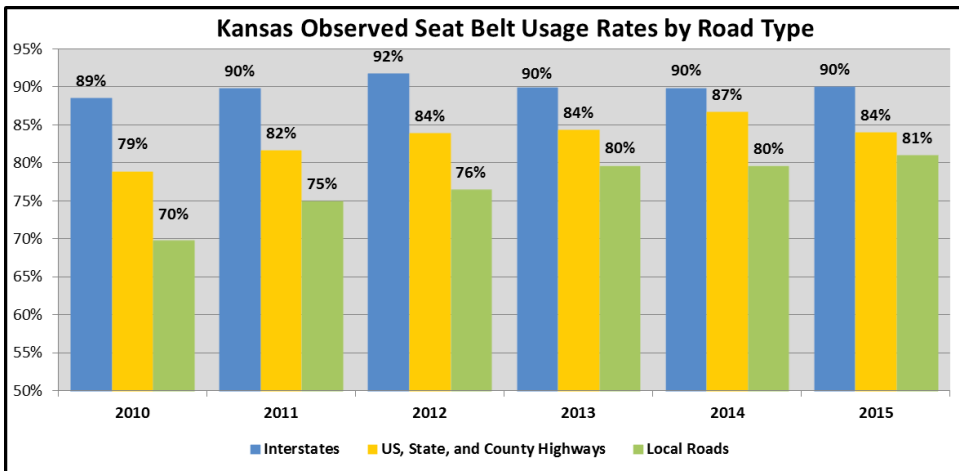


From 2003 to 2009, the percentage gains in seat belt use among children were greatest among children younger than 10, possibly due to passage of a booster seat law in 2006. Use of restraints falls off sharply between the toddler and pre-teenage years—from 97 percent to 82 percent in 2015. It should be noted that the child observational survey only measures whether the children are restrained. It does not show whether the restraints are correctly installed, or whether the type of restraint is appropriate for the age and size of the child.



Children are much more likely to be buckled up if the driver is also belted. If the driver is belted, about 95 percent of the children are also belted. If the driver is not belted, only about 25 percent of the observed children were also belted.

5. Still, on every type of road, more people are using seat belts.



Seat belt surveys are conducted by trained observers. They occur in a representative sample of Kansas counties, based on fatalities. Among the findings: people are most likely to buckle up on

interstates, least likely on local roads. Yet between 2010 and 2015, seat belt use increased on each of the three road types in Kansas. For more details and the latest observational survey results, visit ktsro.org.

Performance Measures

The purpose of the Occupant Protection Emphasis Area Team is to help halve total motor vehicle fatalities and serious injuries from 2009 to 2029 by increasing the use of safety restraints. Interim assessments will help us measure our progress along the way. By doing so, we can adjust our strategies as needed to achieve the desired effect.

An annual survey in Kansas is conducted by trained observers to monitor vehicles and record seat belt use. Between 2005 and 2009, the average annual observed seat belt use was 75 percent. Our interim target was to increase the five-year average to 80 percent by 2012. This target was met. The next target is to achieve a belt use rate of 86 percent by 2017 and to reach 90 percent in 2020. Statistics support that an increase of proper belt use should result in a decrease in the number of fatalities.

Goals and Strategies

The occupant protection team has chosen six goals as the focus of its efforts.

1. Influence policymakers to pass laws that increase seat belt use in Kansas.
2. Create data-driven safety programs that promote, through media, education and law enforcement, the proper use of restraints by everyone.
3. Collaborate with state and local partners to promote a consistent message regarding restraint use.
4. Develop tactics to get all law enforcement officers and other local and state government employees to use seat belts.
5. Provide funding and other forms of support for law enforcement efforts to uphold occupant protection laws.
6. Use data to target areas in Kansas where restraint use is low.

The challenge is to identify the strategies, or combination of strategies, with the greatest impact on the behavior of drivers and passengers.

Goal 1: Influence policymakers to pass laws that increase seat belt use in Kansas.

Current strategies:

- Focus policy efforts on amending KSA 8-2503 to allow for primary enforcement in all seating positions, regardless of age. Background: Data from other states and NHTSA show that requiring seat belt use by everyone has a stronger effect on changing seat belt-related behavior than requiring restraints only for minors and front-seat occupants. Kansas currently has a secondary law for adults age 18 or older not in the front seat. Also strive to amend KSA 8-2504 subsection (2) (b) for a seat belt violation to be reportable to the Department of Revenue as a moving traffic infraction instead of a misdemeanor.
 - Method: legislation
 - Costs: minimal
 - Lead agency and contact: Buckle Up Education Coalition
 - Challenge: generating legislative support for expanding required seat belt use
 - Target date: by end of 2018 legislative session
- Focus policy efforts on amending KSA 8-1345 (a) to allow for multiple violations (and fines) if more than one child is unrestrained. Additionally, amend KSA 1345 (b) to waive the fine if the driver provides proof that they have purchased or acquired and installed the appropriate child passenger safety restraint.
 - Method: legislation
 - Costs: minimal
 - Lead agency and contact: Buckle Up Education Coalition
 - Challenge: legislative support
 - Target date: by end of 2019 legislative session
- Conduct study to determine comparative post-crash costs of hospitalization for belted and unbelted occupants. Background: Studies in other states show much higher medical costs for individuals in crashes who are not wearing seat belts compared with those who are properly restrained. The findings of a Kansas study could be presented to the Legislature and the general public in order to help gain additional legislative support.

- Method: research
- Cost: \$250,000 (estimated)
- Lead agency and contact: KDHE, Kansas Trauma Program
- Challenges: data access, funding
- Target date: pilot study - December 2018

Future strategies:

- No future strategies identified at this time.



Goal 2: Create data-driven safety programs that promote, through media, education and law enforcement, the proper use of restraints by everyone.

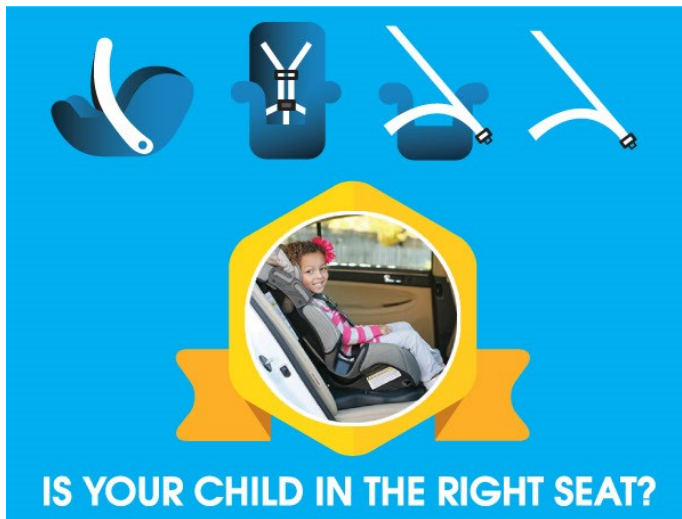
Current strategies:

- Continue Click It or Ticket (CIOT) media and law enforcement campaign.
- Research methods for retaining and recertifying law enforcement personnel trained in child passenger safety.
- Support continuing education opportunities for Child Passenger Safety (CPS) Technicians and their instructors.
- Promote employer buckle-up programs.

- Promote occupant protection message at event venues, such as universities, Sporting KC, Country Stampede, and Johnson County Parks & Recreation.
- Expand Seatbelts Are For Everyone (SAFE) program statewide.
- Expand use of non-traditional media (social networking sites, internet, games) to promote CIOT message.
- Expand distribution and promotion of model transportation policies to groups like child care agencies, faith-based organizations and schools that regularly transport children.
- Promote the Boosters to Belts program statewide.
- Use focus groups to better target seat belt use messaging.
- Utilize SAFE teams to help organize new safety coalitions.

Future strategies:

- No future strategies identified at this time.



Goal 3: Collaborate with state and local partners to promote a consistent message regarding restraint use.

Current strategies:

- Coordinate traffic safety messages for social media with other agencies.
- Assist law enforcement agencies by providing templates for news releases and social media.

- Explore opportunities to partner with existing public health coalitions to promote consistent messages regarding proper seat belt use.
- Explore opportunities to partner with employers to promote consistent messages regarding proper seat belt use.

Future strategies:

No future strategies identified at this time.

Goal 4: Develop tactics to get all law enforcement officers and other local and state government employees to use seat belts.

Current strategies:

- Develop a template for a letter that could be sent to government officials when non-seat belt compliance is observed.
 - Background: When LELs are traveling, they often observe non-compliance of the seat belt law by employees who are in state- or local-government vehicles. A letter which mentions their observation and explains how not following the law could be a liability issue to the agency could be sent to the appropriate officials.
 - Method: program
 - Costs: printing and postage
 - Lead agency and contact: Buckle Up Education Coalition
 - Challenges: none
 - Target date: 2017
- Ask key officials to provide editorial for use in various publications.
- Support law enforcement impact groups.

Future strategies:

- No future strategies identified at this time.

Goal 5: Provide funding and other forms of support for law enforcement efforts to uphold occupant protection laws.

Current strategies:

- Support advanced occupant protection training at events such as Law Enforcement Luncheons and the Transportation Safety Conference.
- Solicit non-STEP agencies for voluntary (non-overtime) participation in Click it or Ticket enforcement campaign.

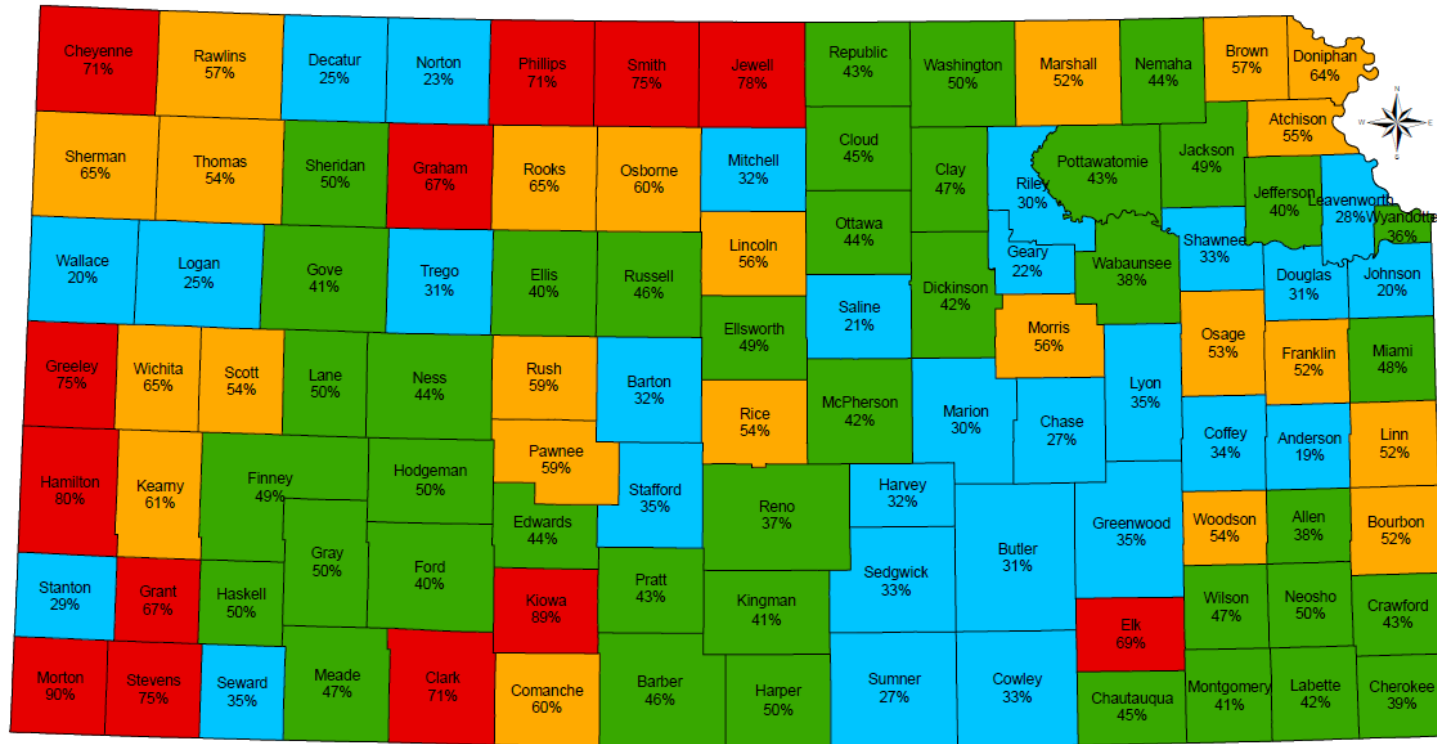
- Solicit law enforcement agencies to participate in middle school education and enforcement efforts.
- Promote the AAA Community Traffic Safety Award or other traffic safety award programs.

Future strategies:

- Support initiative for law enforcement agencies to have a Child Passenger Safety Technician on staff, with a minimum of two technicians per county.
- Encourage law enforcement to conduct observational surveys.

Goal 6: Use data to target areas in Kansas where restraint use is low.

Percent of Fatalities and Serious Injuries Unbelted (2011-2015)



0 20 40 80 Miles

■ 35% or Less Unbelted
 ■ Between 36% and 50% Unbelted
 ■ Between 51% and 65% Unbelted
 ■ Over 65% Unbelted

PREPARED BY THE
 KANSAS DEPARTMENT OF TRANSPORTATION
 BUREAU OF TRANSPORTATION PLANNING
 MAP CREATED WEDNESDAY, JANUARY 25, 2017
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Future strategies:

- Evaluate effectiveness of primary seat belt law.
- Engage law enforcement and community coalitions to promote high visibility enforcements based on crash and observation data.

Chapter 6

Older Drivers

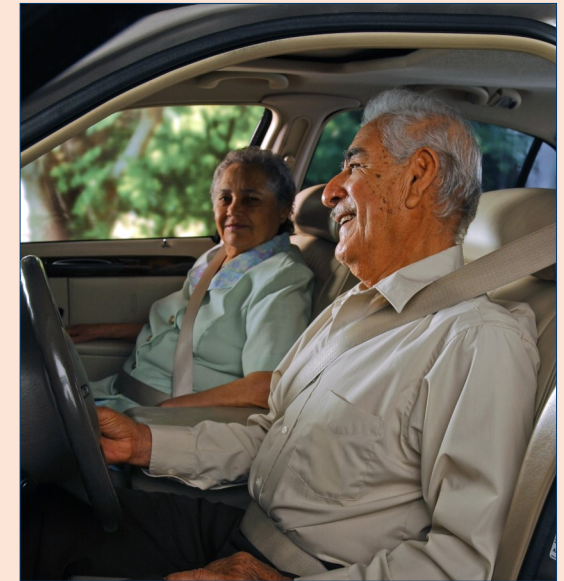


The National Highway Traffic Safety Administration (NHTSA) defines the older driver as age 65 and older. With the aging of the Baby Boom generation, the number of older drivers is increasing rapidly.

This generation is expected to live longer and remain active longer than previous generations. In addition, NHTSA states they are the most mobile generation to date and expect to remain mobile in the community for many years after retirement.

Of course, other generations factor into the country's aging population. According to the United States Census Bureau, the 65+ age segment accounted for 49.2 million people in 2016—up from 35 million in 2000. By 2030, one in five Americans is projected to be 65 or older.

In Kansas, the 65+ age group accounted for 436,093 people in 2016, and the National Center for Health Statistics indicates that today's Kansans have an average life expectancy of 78.7 years. The 2030 projections indicate approximately 670,000 Kansans will be age 65 or older, with a projected life expectancy of 86.6 years. Twenty counties will see a 50-98 percent increase in this demographic, with Johnson County at a 131 percent increase. That significant shift in demographics will make Kansas a different community than it is today.



The Older Driver Emphasis Area Team (EAT) realizes the need to make safety plans as the Baby Boom tsunami flows into the older driver segment. Those safety plans impact the behavioral and engineering sides of traffic safety, as well as the services provided by our stakeholders and team partners.

The team first met April 23, 2013, and currently includes representatives from the following organizations:

- AAA-Kansas (AAA)
- AARP
- Americans for Older Driver Safety

Avenues Driving Rehabilitation Program
 East Topeka Senior Center
 Federal Highway Administration (FHWA)
 Flint Hills Regional Transit Administration
 Kansas Department for Aging & Disability Services (KDADS)
 Kansas Department of Health & Environment (KDHE)
 Kansas Department of Revenue (KDOR)
 Kansas Department of Transportation (KDOT)
 Kansas Highway Patrol (KHP)
 Kansas Insurance Department
 Kansas State University Department of Civil Engineering
 Kansas Transportation Safety Resource Office (KTSRO)
 Kansas University Transportation Center (KUTC)
 LULAC Senior Center
 Mid-America Regional Council (MARC)
 Silver Haired Legislature

The 65+ segment has fewer crashes than other age groups, but since a higher percentage is fatal, we must address older driver needs and survivability. According to NHTSA, motor vehicle injuries persist as the leading cause of injury-related deaths among 65- to 74-year-olds and are the second leading cause (after falls) among 75- to 84-year-olds. The high fatality rate is attributed to an increased susceptibility to injury and medical complications which hampers their likelihood to recover from a crash. This is amplified in the nine counties that do not have hospitals and whose residents are 25-45 miles from the nearest emergency services. In addition, 25 percent of the state's population lives more than an hour from a Level I or Level II trauma center.

In rural areas, the biggest environmental barrier for aging residents may be the lack of transportation. To compound the problem, U.S. Department of Agriculture data indicate 19 percent of Kansas seniors live in counties where the population is less than 20 people per mile. And the Institute for Policy & Social Research at the University of Kansas notes that in 40 percent of Kansas counties more than one third of adult residents are age 65 or older. When little or no public transportation is coupled with few younger family members and neighbors to provide assistance, it can be difficult to get to doctor appointments, the grocery store, or visits with a spouse in a nursing home.

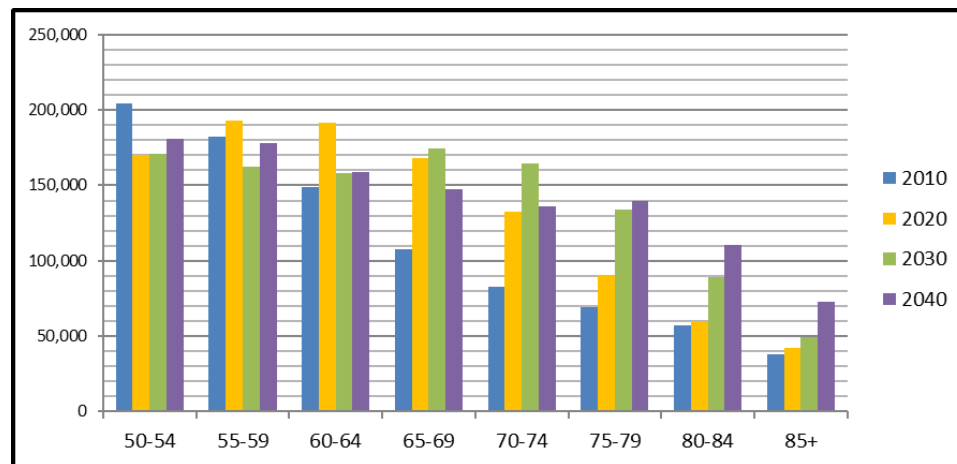
We must also address when seniors can no longer drive. Research indicates adults can expect to outlive their ability to drive safely by

seven to 10 years. Losing the privilege of driving can have adverse public health consequences for seniors, such as depression, low quality of life and loss of self-identity. Older drivers need assurance that policy changes will only restrict at-risk drivers and programs will be implemented to help them adapt their driving skills to their changing abilities. When it is time to retire from driving, they need reassurance that community support will be available.

Data Points

1. More Kansans reach age 65—and they're living longer.

Projections by Wichita State University indicate the 65-69 age group will increase by approximately 65,000 in the span of a decade, between 2010 and 2020. The impact of living longer is more dramatic with the 70-74 age group. That population doubles from 80,000 in 2010 to more than 160,000 by 2030.

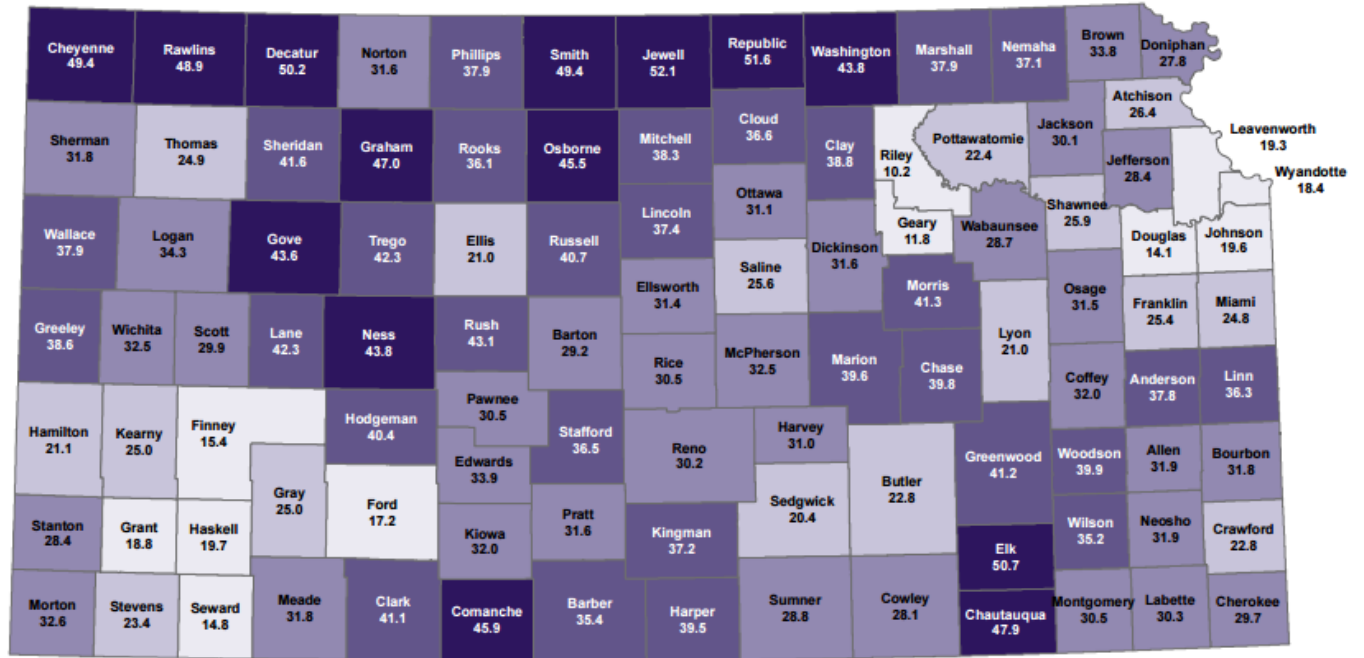


Source: 2010 Census data; population projections by Wichita State University

2. It's not just about growth.

The growth of the age 65 and older population is more dramatic when one considers the dependency ratio. A dependency ratio compares the population volume for the 65+ age group to the number of Kansas adults age 64 and younger. The 2013 data indicated that in 14 counties, for every 100 adults, at least 43 adults were older than age 65. In four counties, for every 100 adults ages 18-64, more than 50 percent of residents were age 65 or older.

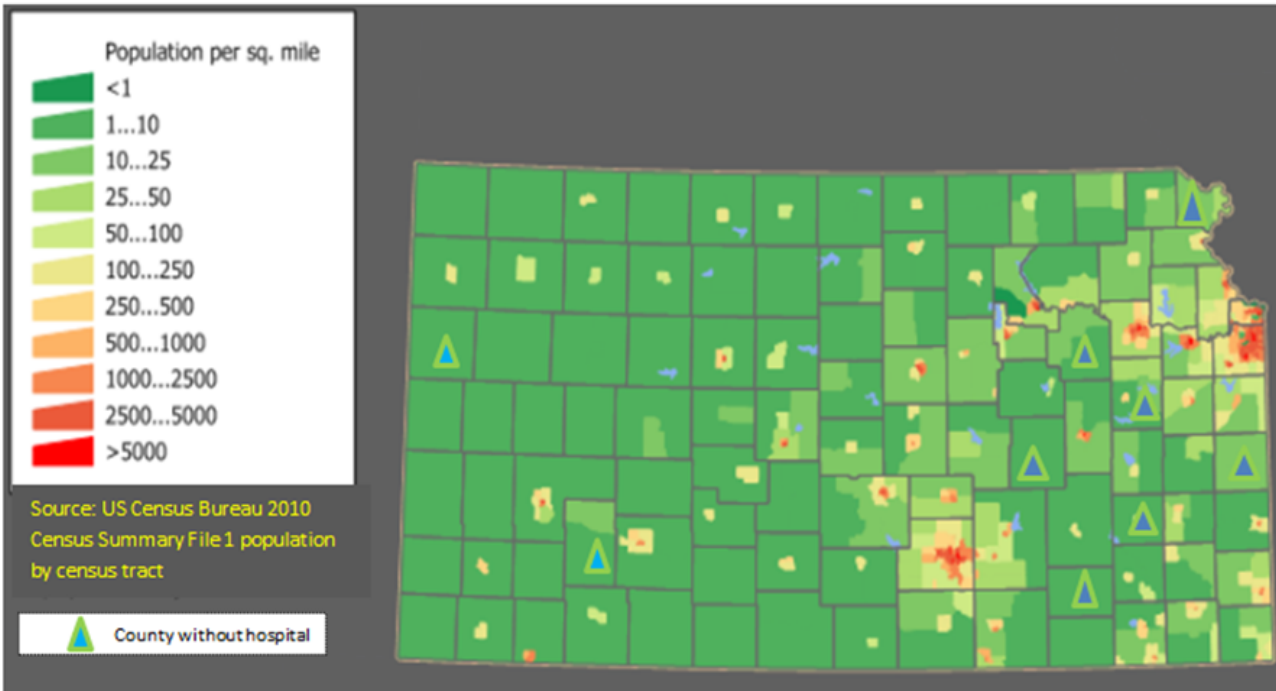
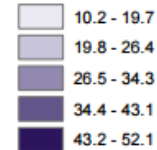
Older Population Dependency Ratio in Kansas, by County, 2013



Source: Institute for Policy & Social Research, The University of Kansas; data from U.S. Census Bureau.

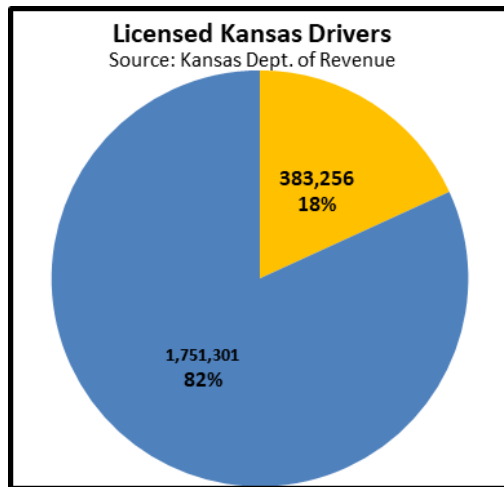
**Population 65 and Older
per 100 People 18 through 64**

**Kansas: 23.0
United States: 22.6**



3. Licensed drivers 65+ on the rise since 2000.

Eighteen percent of all registered Kansas drivers are 65 or older per 2016 data yet make up only 13 percent of the total population. This percent has remained steady for 20 years.



Age Group	Registered Drivers in Kansas
65-69	139,915
70-74	94,999
75-79	65,231
80-84	44,779
85-89	26,718
90+	11,614

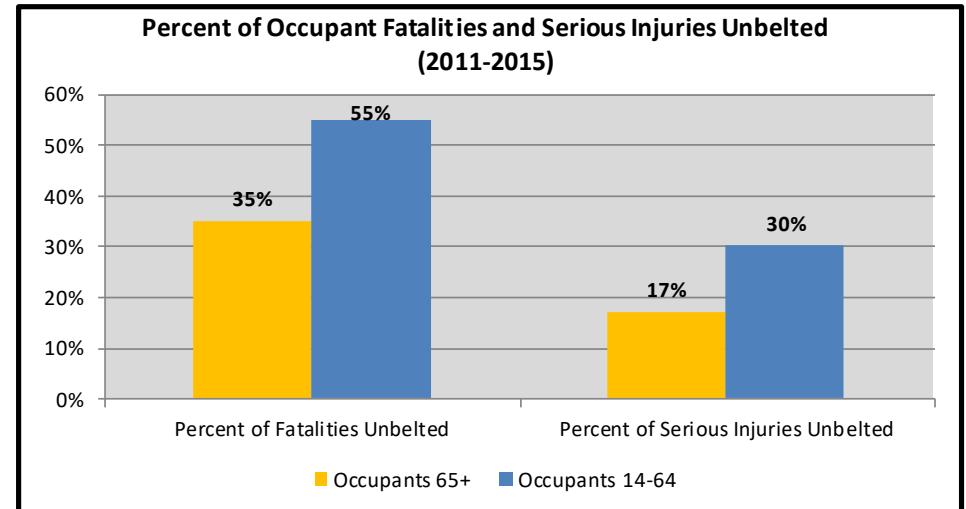
Breakdown of the 383,256 registered drivers age 65+.

Dating back to 2003, the number of registered older drivers has steadily increased by 25%.

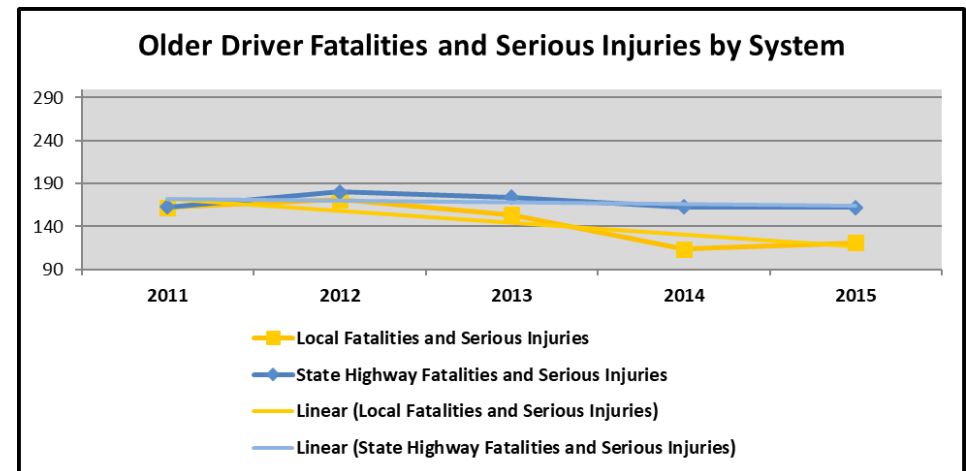
4. Older drivers practice safe behavior.

The traditional focus areas for improving driver safety are not major issues for older drivers and passengers. NHTSA reports about 91 percent of older adults use seatbelts, compared to 87 percent of other adult occupants. They are highly unlikely to drink and drive. Only 8 percent of older drivers in fatal crashes have a blood alcohol

content (BAC) of 0.08 or higher, compared to 20 percent of all drivers, regardless of age. Older drivers tend to drive fewer miles and limit their driving during bad weather and at night.



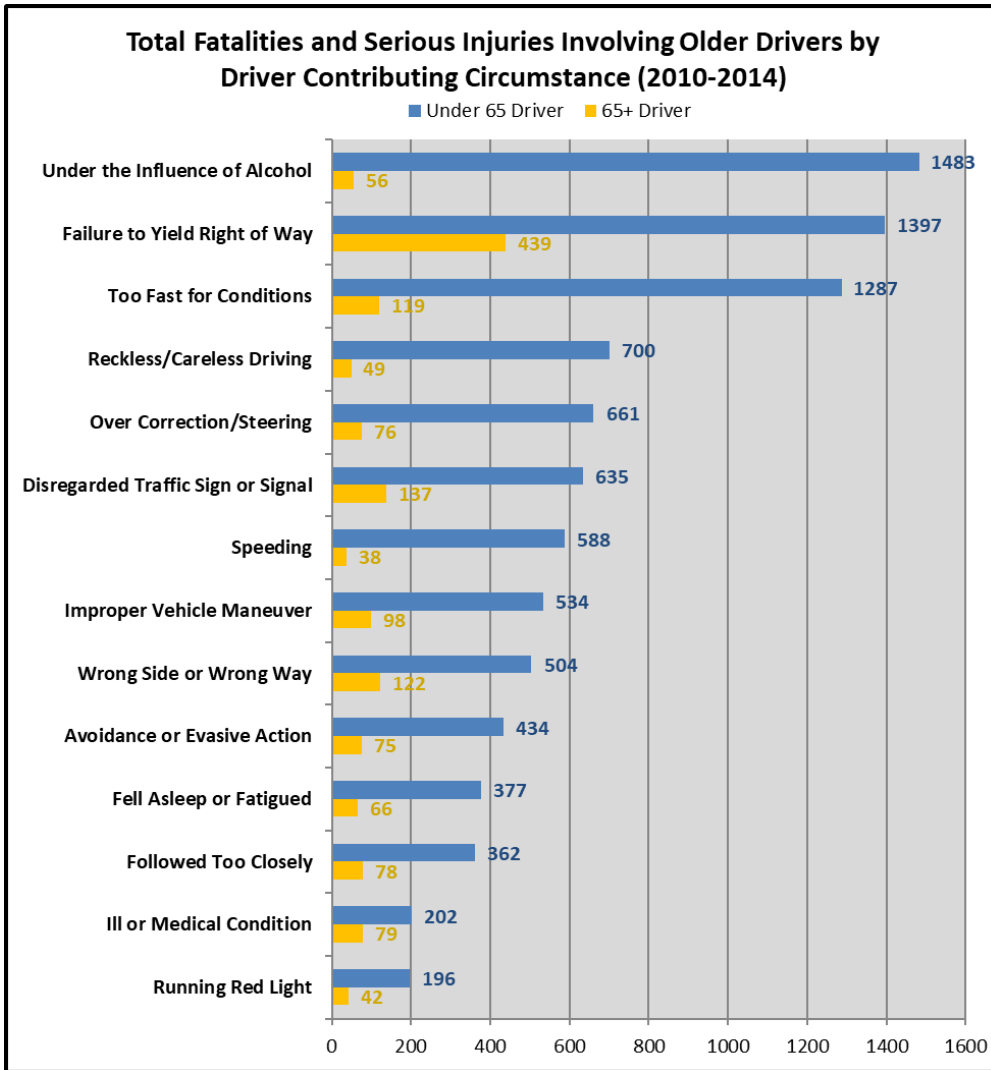
Thirty-five percent of older occupants killed in traffic crashes were not wearing a seat belt, compared to 55 percent ages 14 to 64.



Through 2015, older driver fatalities and serious injuries combined are trending (see Linear) in the right direction.

5. Contributing circumstances catch older drivers.

Of the 14 most common causes in Kansas for fatal and serious injury crashes involving older drivers, one stands above the rest: the failure to yield right of way. It is more than three times likely to occur than the second ranking cause—disregard of a traffic sign or signal.



In general, with older drivers representing about a quarter of traffic fatalities, older drivers are over-represented only in the "Ill or Medical Condition" and "Failure to Yield Right of Way" data.

Performance Measures

The overall goal of the Strategic Highway Safety Plan is to reduce serious injuries and fatalities 50 percent by 2029. As the baby boom generation ages, reducing the number of older driver crashes will be a challenge—20 percent of all drivers will be age 65 or older in 2030.



The projected goals indicate where we need to be to reach the 2029 performance measure. With the number of older drivers expected to increase (see Data Point 3) it may be more realistic to establish a rate-based target.

Goals and Strategies

To reduce serious injury and fatal crashes involving older drivers on all public roads statewide, the Older Driver EAT developed the following overall goals.

1. Improve communication and coordination among partners at the state, regional and local levels to enhance safe senior mobility.
2. Promote design and operation of Kansas roadways with features that accommodate older roadway users and pedestrians.
3. Facilitate training opportunities that reach seniors and those actively interested in their safe driving.

Goal 1: Improve communication and coordination among partners at the state, regional and local levels to enhance safe senior mobility.

Current strategies:

- Conduct research on senior access and mobility issues to help bridge the gap between driving retirement and mobility dependence.

Background: A research project has been awarded beginning in State Fiscal Year 2015 to Kansas State University. The proposed project scope is to identify issues, concerns, and barriers related to travel by elderly Kansans and suggest improvement strategies based on Kansas conditions. The study should take 18-24 months to complete.

- Method: research
- Cost: \$69,000
- Lead agency and contact: KDOT, Bureau of Transportation Safety and Technology
- Challenge: implementation of recommendations
- Target date: Fall 2017

- Promote alternative transportation plan to assist older drivers when they can no longer drive themselves.

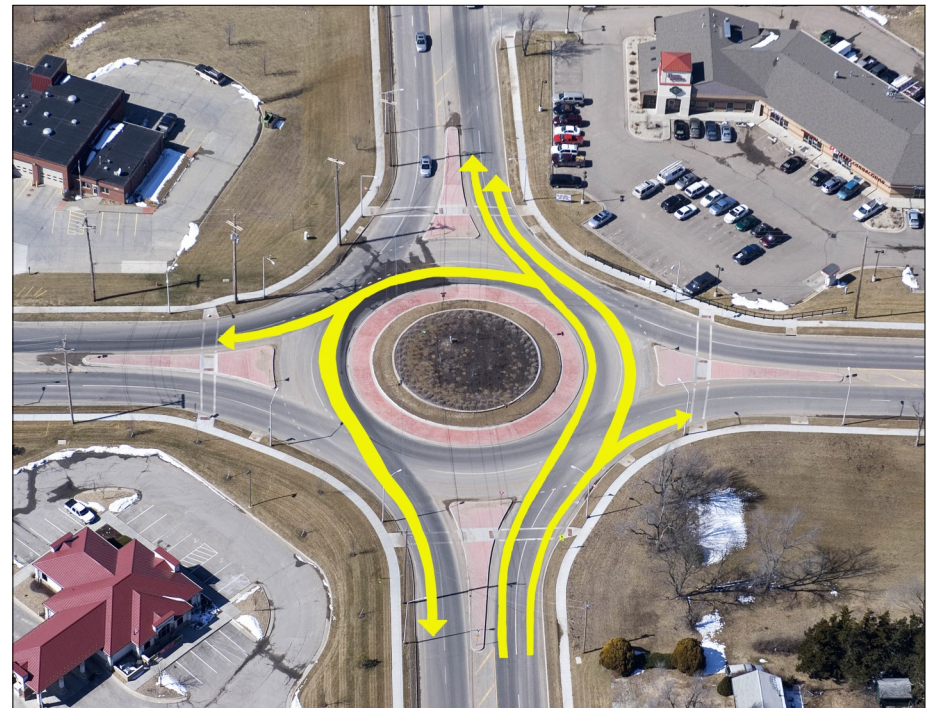
Background: The Kansas Transit Provider Directory has already been created by the Kansas Rural Transit Assistance Program (RTAP), a service of the Kansas University Transportation Center. The directory is an online interactive map of Kansas counties that provides links to alternative transit provider agencies located throughout the state. To access the directory, visit www2.ku.edu/~kutc/cgi-bin/RTAP_transit.php.

- Method: outreach
- Cost: minimal
- Lead agency and contact: KDOT, Bureau of Transportation Safety and Technology
- Challenge: crossing county lines
- Target date: FY 2018

Future strategies:

- Inform public of the importance and need to support policy and program initiatives to promote and sustain aging roadway user safety, access and mobility.

- Plan for aging mobility and transportation-dependent population and encourage options to maximize the effectiveness of programs and resources.
- Provide recommendations related to senior mobility and safety legislation.
- Establish by law mandatory reporting, whereby medical professionals would be required to report any cognitive or medical issues that could impair driving ability in their older patients.
- Create a county transportation fund that could be collected when issuing a driver's license or to the county treasurer at tax time.



Goal 2: Promote design and operation of Kansas roadways with features that accommodate older roadway users and pedestrians.

Current strategy:

- Provide education on new and potentially confusing traffic conditions such as roundabouts, diverging diamonds and work zone zipper merges.

Background: KDOT Support Services will combine and edit the

existing KDOT videos for roundabouts, diverging diamonds and work zone zipper merges. They will create a DVD loop to play on televisions at Division of Motor Vehicle (DMV) offices. The same information will also be made available in a brochure.

- Method: video and print materials
- Cost: minimal
- Lead agency and contact: KDOT, Bureau of Transportation Safety and Technology
- Challenge: editing videos for length while retaining enough pertinent content
- Target date: FY 2018

Future strategies:

- No future strategies identified at this time.



Goal 3: Facilitate training opportunities that reach seniors and those actively interested in their safe driving.

Current strategy:

- No new strategies identified at this time.

Future strategies:

- Increase availability of defensive driving courses and promote to older drivers.

Comprehensive Driving Evaluations

Comprehensive driving evaluations are available for older drivers who want help recognizing and improving issues that may develop with their driving skills. An assessment can result in a specialized training plan that will help with driver fitness and assist in keeping them on the road for as long as possible.

According to AAA, driving assessments fall into two categories: driving **skills evaluations** and **clinical driving assessments**.

- A driving skills evaluation includes an in-car evaluation with a trained, licensed and certified evaluator who observes the driver's ability to operate the vehicle, follow traffic laws, assess the driving environment and take effective actions to reduce risk. Training is not provided at this assessment but can be scheduled for a later date.
- Clinical driving assessments can help discover the true level and cause of a decline in driving health. The assessment is conducted by an occupational therapist specialized in driving rehabilitation who reviews personal medical history and conducts clinical assessments. The therapist utilizes standardized assessments to evaluate vision, visual perception, cognition and physical abilities.

For more information about professional driving assessments, visit AAA at seniordriving.aaa.com/evaluate-your-driving-ability/professional-assessment/.

For a list of professional driving evaluators in Kansas, call the Medical and Vision Unit through the Kansas Department of Revenue Division of Vehicles at 785-368-8971.



DRIVER ORIENTATION SCREEN FOR COGNITIVE IMPAIRMENT

- Intoxication from alcohol, prescription medication, illicit drugs, or other impairing substances
- Urgent medical conditions

ASK ALL 9 QUESTIONS - EACH INCORRECT RESPONSE IS WORTH ONE POINT

1. What is your date of birth? _____ 1 PT
¿Cuál es su fecha de nacimiento?
Month, day, and year required; must match document
2. What is your full home address? _____ 1 PT
¿Cuál es su dirección (número, calle, ciudad, estado)?
Address provided must match document; if not, prompt for address listed on document.
3. What state are we in now? _____ 1 PT
¿En qué estado estamos en este momento?
4. What city/town are we in now? _____ 1 PT
¿En qué ciudad estamos en este momento?
5. Without looking at your watch, can you estimate what time it is now? _____ 1 PT
¿Sin mirar su reloj, puede decirme aproximadamente qué hora es?
Answer provided must be plus or minus one hour of correct time
6. What day of the week is it? _____ 1 PT
¿Qué día de la semana es hoy?
- 7-9. What is today's date? _____ 1 PT
¿Cuál es la fecha de hoy?
Prompt for month, day and year if needed
 - Month (Mes) _____ 1 PT
 - Day (Día) _____ 1 PT
 - Year (Año) _____ 1 PT

SCORING CRITERIA

- 5 OR MORE INCORRECT → **REQUEST RE-EXAM**
Unsafe to drive; refer to department procedures for alternative transportation and vehicle removal
- 3-4 INCORRECT → **REQUEST RE-EXAM**
Potentially unsafe to drive; consider totality of circumstances
- 0-2 INCORRECT → **NO REFERRAL or RE-EXAM**
Based on totality of circumstances

ADDITIONAL QUESTIONS TO ASSIST IN EVALUATION

1. Where are you coming from and where are you going?
¿De dónde viene y a dónde va?
2. Will you please spell your name?
Por favor deletree su nombre
3. Do you have an emergency contact? What is their name and phone number?
¿Tiene un contacto de emergencia? ¿Cuál es su nombre y número de teléfono?

Medical/Vision Unit, Monday -Friday, 8:00am - 4:00pm 785-368-8971

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08/2015

Driver Orientation Screen for Cognitive Impairment (DOSCI)

The Driver Orientation Screen for Cognitive Impairment (DOSCI) tool was developed to assist law enforcement officers in the identification of cognitive impairment in drivers of any age. The DOSCI is a verbal exam officers can utilize at traffic stops or any time a driver appears to be disoriented or confused, possibly parked at the side of the road or in a parking lot.

Older drivers with cognitive impairments often exhibit erratic driving behaviors resembling a DUI. When a senior appears impaired, the DOSCI guides the officer to first screen for intoxication then to rule out any medical issues. Once these are ruled out, the officer conducts a nine-question exam to determine the driver's orientation of person, place, and time. Questions include the driver's date of birth, full home address, state and town currently in, time estimate (within an hour), day of week, and the current date. The DOSCI tool includes suggested actions based on the score. The purpose of the tool is to guide and aid the officers, but officers are also expected to use their own judgment.

DOSCI was developed by the Training, Research and Education for Driving Safety (TREDS) group at the University of California (UC), San Diego, in collaboration with the California Highway Patrol and the California Department of Motor Vehicles (DMV).

CarFit

CarFit is an educational program that provides a quick, yet comprehensive review of how well older drivers and their vehicles work together. The program, which was developed by AAA, AARP and the American Occupational Therapy Association, also provides information and materials on community-specific resources that could enhance driving safety and increase mobility.

Driving today is more difficult than ever because of increased traffic congestion, longer commute distances, new technology and faster speeds. Research suggests that

older drivers are among the safest drivers because they are more likely to wear seat belts and less likely to speed or drink and drive. However, as people age, they are more likely to suffer serious injuries or risk death in crashes due to increased susceptibility to injury and medical complications. Personal mobility is critical for healthy aging, but ill-fitting vehicles can make it uncomfortable and unsafe to drive. Today's vehicles have many safety features that offer enhanced restraint and protection, yet many drivers are unaware of those features or how to best use them. CarFit helps older drivers explore vehicle

adjustment and develop strategies to achieve the safest fit to improve comfort, control and confidence behind the wheel.

At CarFit checks, trained CarFit Technicians ask the drivers several simple questions and complete a 12-point checklist. The entire process takes about 20 minutes, and the driver leaves with recommended car adjustments and adaptations, a list of local resources and greater peace of mind.

The CarFit program could make a lifesaving difference. For more information, visit ktsro.org/carfit.



Chapter 7

Roadway Departure



According to the Federal Highway Administration (FHWA), a *roadway departure crash* is a “non-intersection event that occurs after a vehicle crosses an edge line or center line, or otherwise leaves the traveled way.”

These departures can be voluntary (during passing maneuvers, for example) or involuntary (due to inattention). Multiple-vehicle crashes may be either head-on or sideswipes involving vehicles moving in the same or opposite directions. Single vehicles may collide with a fixed object or roll over. Such crashes typically occur away from intersections, on shoulders, roadsides or medians.

One approach to reducing these crashes is prevention—keeping vehicles on the road and in their lanes. The other approach is to devise a forgiving roadway—an engineering solution to reduce the severity of those incidents that do occur. We propose using both approaches.



The Roadway Departure Emphasis Area Team (EAT) has developed data-driven action plans to reduce the number and severity of roadway departure crashes in Kansas. Relevant data include both crash statistics and quantifiable results from safety measures designed to reduce crashes.

This EAT will continue to develop performance measures, set goals, select strategies and identify resources, including funding, legislation, staffing and agency leadership. These resources are required to create safety-related programs and projects that lessen the number of roadway departure crashes.

Strategies will address the 4E's of traffic safety: education, enforcement, engineering, and emergency medical services. These could include low-cost safety improvements deployed systemically, high-cost safety improvements deployed via safety programs or construction projects, policy changes and research initiatives.

The Roadway Departure EAT first met October 15, 2009 with representatives of five different agencies. These same five agencies continue to participate:

- American Traffic Safety Services Association (ATSSA)
- TranSystems
- Federal Highway Administration (FHWA)
- Kansas Highway Patrol (KHP)
- Kansas Department of Transportation (KDOT)

Identifying strategies and means of implementation are only part of the challenge. Deciding where, and to what extent, to apply a strategy is also critical. For example, when considering an engineering solution, should we apply a low-cost strategy at 20 locations with a potential for crashes or apply a high-cost strategy at one location similar to the 20 that has a documented record of crashes?

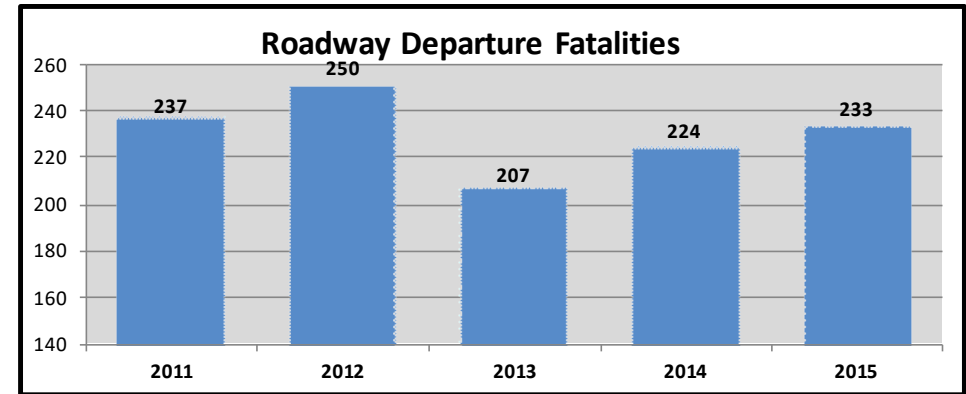
A thorough understanding of the data related to roadway departure crashes is essential to answer these questions—and to the wise expenditure of our safety dollars. With input from the Data Support Team, the Roadway Departure EAT will have the tools to select strategies based on the actual causes of crashes.

Data Points

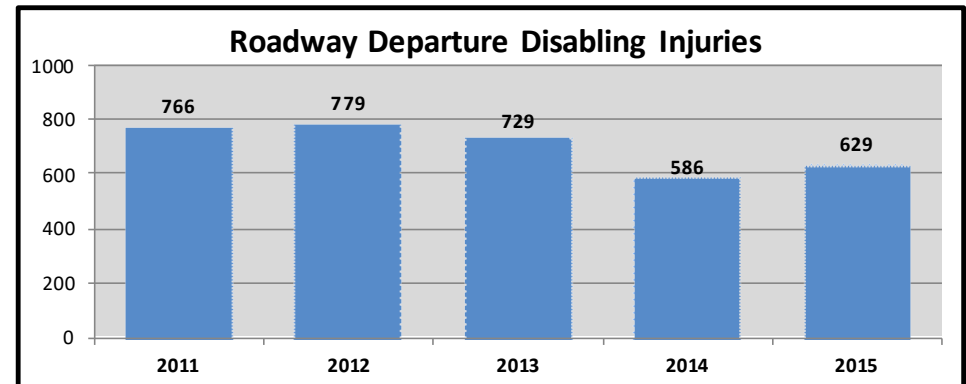
1. Roadway departure is the cause of less than a quarter of Kansas crashes but half the serious injuries and deaths.

Between 2011 and 2015, roadway departure was the cause of 1,151 fatalities and 3,489 disabling injuries, making it the number one source of danger to drivers and passengers in Kansas. During these years, such crashes accounted for about one in four of all those

reported in Kansas and one in two of those involving serious injuries or deaths. Compared with other crash causes, the impact of roadway departures on drivers and passengers is likely to be more severe.



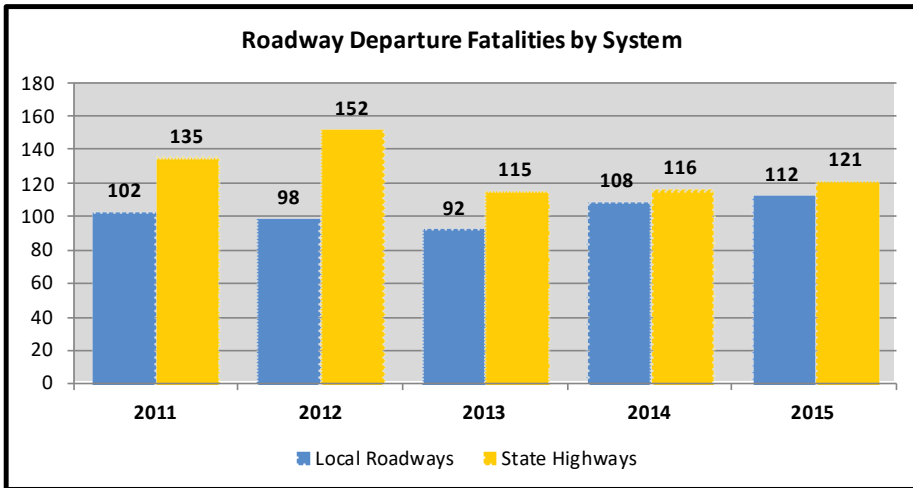
Roadway departures can be deadly. They represent only 24 percent of all crashes but more than 60 percent of fatal crashes.



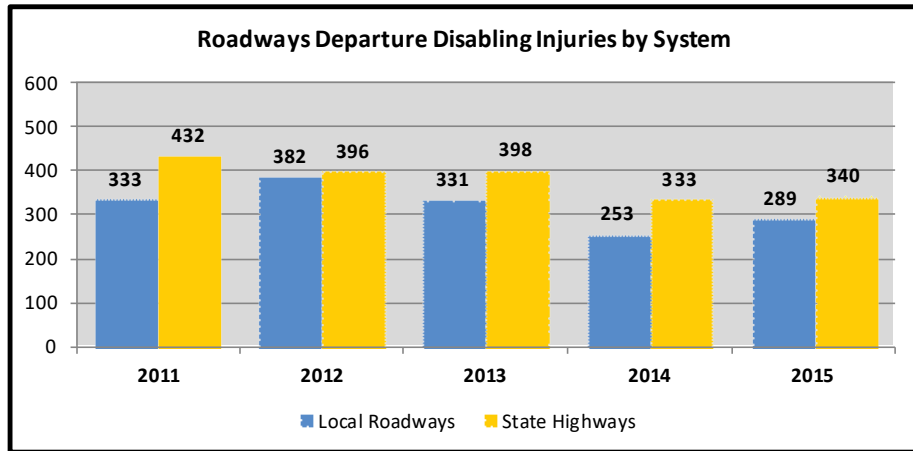
Roadway departure is the source of about half of all disabling injury crashes.

2. Roadway departures on state highways and local roads result in fatality and serious injury crashes.

Between 2011 and 2015, 56 percent of roadway departure fatalities occurred on state highways. During the same period, 54 percent of roadway departure disabling injuries occurred on state highways. There are far more miles of local roads (92.5 percent,) but state highways carry more traffic (57 percent.)



About 44 percent of roadway departure fatalities occur on local roads.



About 46 percent of roadway departure disabling injuries occur on local roads.

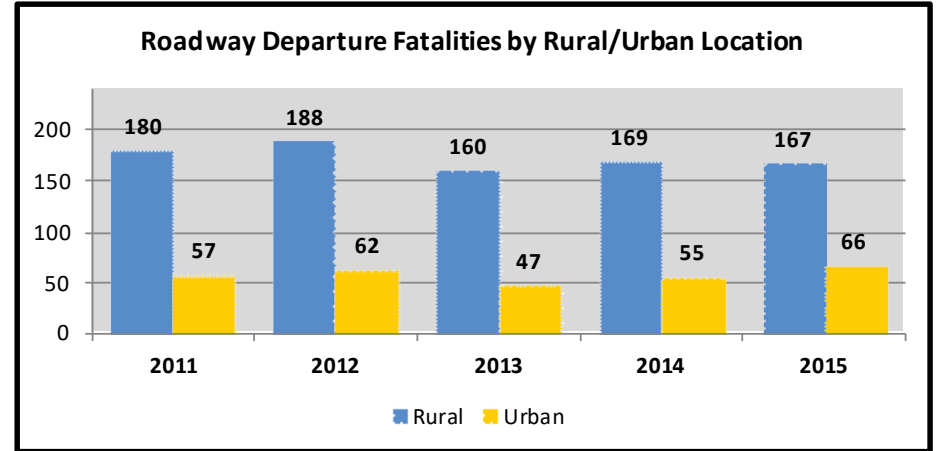
3. More than two-thirds of all roadway departure serious injuries and fatalities occur on rural roads and highways.

Data shows roadway departure crashes on rural roads, compared with those on urban roads, result in more fatalities and serious injuries. Between 2011 and 2015, 75 percent of roadway departure fatalities occurred on roads and highways in rural areas. During the same period, 66 percent of roadway departure disabling injuries occurred in rural areas.

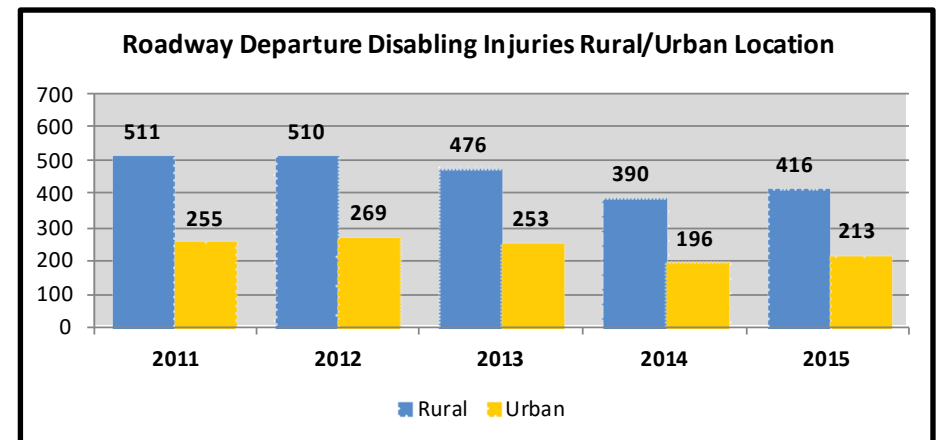
One contributing factor is obvious: Speed limits are higher on rural roads than most urban streets. Speeds are also higher on urban

expressways and interstates, which account for about two in five roadway departure fatalities in urban areas.

These numbers explain why the Roadway Departure EAT will concentrate on strategies that address rural roads, urban expressways and interstates.



Seventy-five percent of roadway departure fatalities occur on rural roads. That figure is striking given the level of use of Kansas roads. In 2012, the average daily vehicle-miles traveled on urban roads was about 42.3 million; on rural roads, about 41.2 million.



The gap between rural and urban locations as contributors to roadway departure disabling injuries has been closing slightly in recent years. But the fact that two-thirds of the injuries occur in rural areas is significant given that urban areas are more heavily traveled.



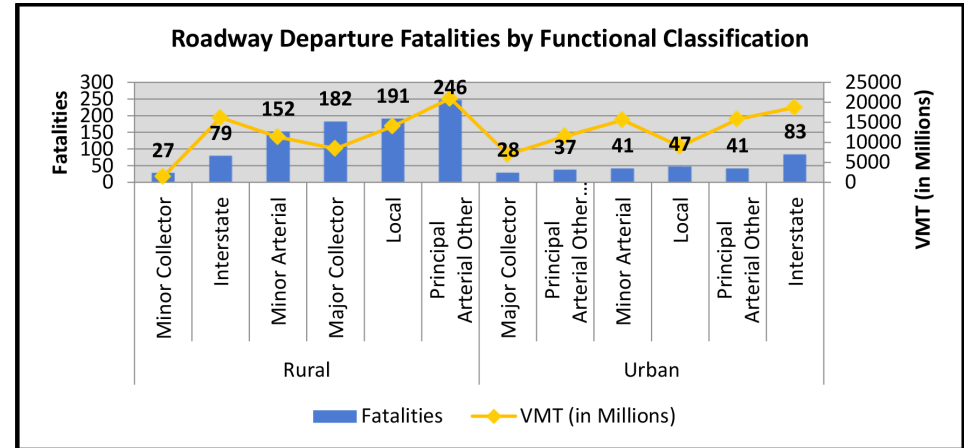
4. Rural roadway risks: high speeds and delays in emergency services.

Urban boundaries are developed collaboratively by KDOT and local governments every 10 years, coinciding with the taking of the census, and often include unincorporated areas on the edge of town. As the charts below reveal, more crashes resulting in more deaths and injuries occur on rural roads than on urban roads. Rural crashes account for 70 percent of all fatal crashes but just 37 percent of the crashes in which property alone is damaged.

Of 140,614 miles of public roads in Kansas, 91 percent—127,573 miles—are rural. On the other hand, only 49 percent of all vehicle miles traveled in Kansas are on rural roads. If the number of vehicle miles traveled on rural and urban roads is nearly equal, why do rural roadways experience more fatal and serious injury crashes as a result of roadway departure than urban roadways? Several factors contribute:

- Higher speeds: Less traffic and fewer intersections and driveways mean drivers are more comfortable traveling at a higher rate of speed. The posted speed limit reflects that reality.
- Discovery time: The length of time from when a crash occurs to when it is discovered and emergency services arrive has an impact on patient survival. This is especially true for single-vehicle crashes.
- EMS: It takes longer for emergency vehicles in general and ambulances in particular to reach the crash scene and longer to deliver the injured to the nearest hospital or trauma center.

- Health care resources: Depending upon the severity of the injury, a patient’s needs may exceed the treatment capabilities of a rural health care facility.
- Engineering standards: Many of our rural local roads were designed and built long before the development of modern safety standards. (See chapter on local roads for more information.)

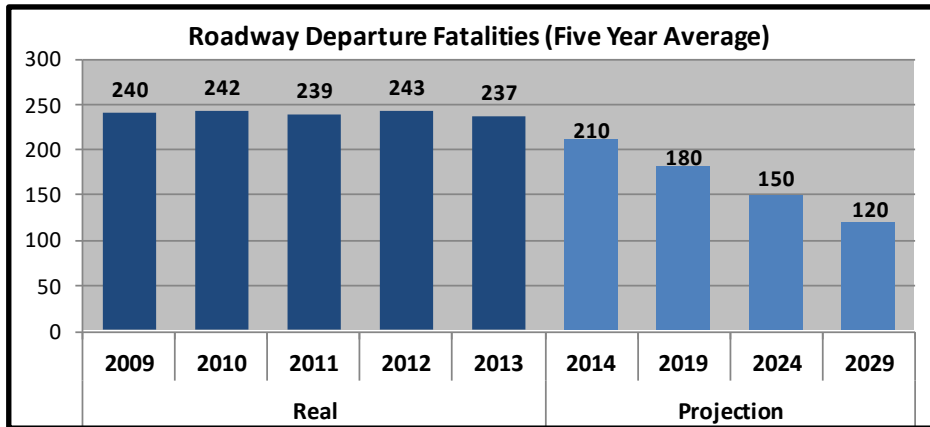


The greater the separation between VMT and fatalities, the lower the fatality rate.

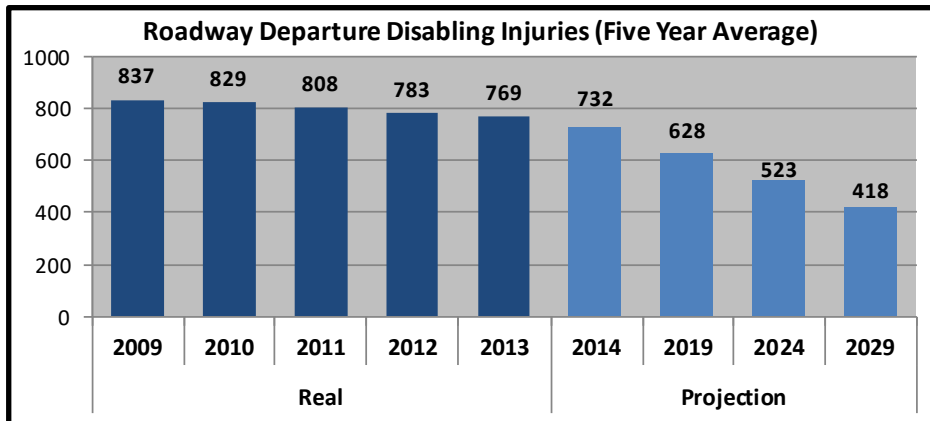
Performance Measures

Consistent with this plan’s overall goal, the Roadway Departure EAT seeks to halve roadway departure fatalities and serious injuries within 20 years. In the five years between 2005 and 2009, we averaged 240 roadway-departure-related fatalities and 837 roadway-departure-related disabling injuries per year. Meeting our goal will require reducing the average fatalities per year to no more than 120 and the disabling injuries to, at most, 418 by the years 2025 to 2029.

Interim goals will let us track our progress. The charts below show our projected five-year goals. Our original aim was to achieve 50 percent of our goal within five years, 75 percent within 10 years and 100 percent within 20. We were optimistic that in the early years, the new primary seat belt law would reduce fatalities. As can be seen, however, the goal of halving these numbers by 2029 will not be met under current data trends.



A straight-line goal for fatalities requires a five-year average of 216 by 2013, 21 less than the actual number of 237.



We are doing slightly better when applying a straight-line goal to disabling injuries. We needed to be at 753 in 2013, or 16 less than actual.

Goals and Strategies

Articulating our objective—a radical reduction in the number of roadway departure crashes that kill or disable—is only a start. What goals and strategies will help us accomplish that objective? The roadway departure EAT has chosen the following.

1. Dedicate safety dollars to data-driven programs with the greatest potential to reduce the number of fatal and serious injury crashes on Kansas public roads.

2. Use available traffic records, crash data and roadway data to assist in safety program and project management.
3. Promote proven engineering strategies that focus on keeping drivers on the road and in their lane.
4. Promote mitigation strategies that lessen the consequences of a crash.
5. Introduce experimental engineering strategies.
6. Promote enforcement campaigns that target locations and corridors with a higher-than-expected number of roadway departure crashes.
7. Promote education campaigns that target over-represented factors in roadway departure crashes.

There is no shortage of ideas about achieving these goals using a 4E approach, including: *engineer* centerline rumble strips and keep the roadside clear of fixed objects; *enforce* impaired driving and distracted driver laws; *educate* drivers and passengers about seat belt use; and improve *emergency medical service* coordination to reduce the human cost of crashes. The challenge for the roadway departure team is to identify realistic strategies, prioritize them and promote implementation.

Goal 1: Dedicate safety dollars to data-driven programs with the greatest potential to reduce the number of fatal and serious injury crashes on Kansas public roads.

Current strategy:

- Recommend new distribution of Highway Safety Improvement Program (HSIP) funding based on Kansas crash statistics. (This is a strategy jointly recommended by the Roadway Departure and Intersections EATs.)

Background: HSIP is a federal-aid safety program established in 2006 under the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU) "to achieve a significant reduction in traffic fatalities and serious injuries on all public roads." The program continues under Fixing America's Surface Transportation Act (FAST). Kansas distributes HSIP funding to seven unique subprograms. Distribution varies year to year, depending on the needs of each subprogram. Between FY 2015 and FY 2017, Kansas plans to distribute about \$54 million. The purpose of this strategy is to reallocate the money based on the goals articulated in the Kansas SHSP.

- Method: policy
- Costs: minimal
- Lead agency and contact: KDOT, Bureau of Transportation Safety & Technology
- Challenge: changing existing programs and practices
- Target date: FY 2017 and beyond

Safety at the Surface

Although difficult to quantify, surface condition is an important piece of the highway safety puzzle. Wet roads and icy roads are captured in crash data, but potholes, broken pavement, and washboards (on gravel roads) are not. KDOT has prided itself on its 1R resurfacing program. Annually (through state fiscal year 2015) the agency has spent about \$160 million preservation dollars to resurface around 1,200 centerline miles of state highways. The Bureau of Construction & Materials manages this program. The Pavement Management Unit sends a report to each of the six districts with recommended roads based on the surface condition rating. The districts select the final projects but must include 75 percent of the roads in the report. In the spring, projects are scoped based on field review, and additional safety measures are considered at the request of the district. These safety measures are typically funded outside the 1R program. The projects are let to contract in the fall and built the next construction season. Should additional safety funding become available—either federal HSIP or state dollars—it could be used to identify and implement additional safety measures as part of the 1R program.



Future strategies:

- No future strategies identified at this time.

Goal 2: Use available traffic records, crash data and roadway data to assist in safety program and project management.

Current strategy:

- Develop a formal process to account for recommendations from traffic studies to generate projects.

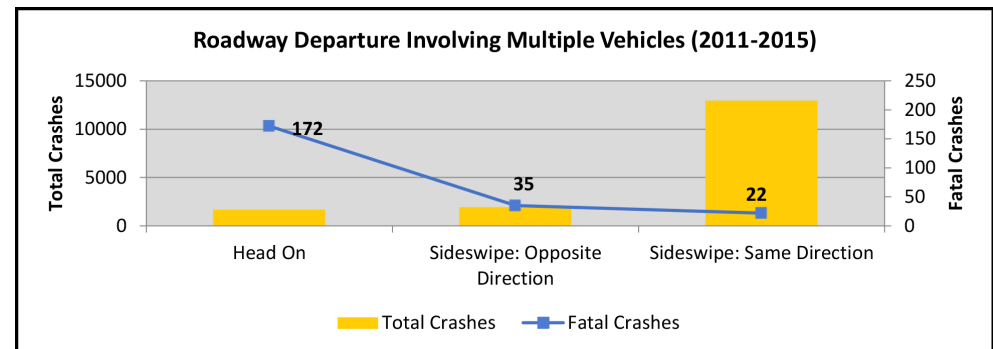
Background: Traffic studies such as road safety audits and Traffic Engineering Assistance Program reports could generate projects within existing safety programs and contribute to new and future projects in other state and federal programs. For example, on a recent state-funded resurfacing project federal safety funds were added to the project to construct rock-wedge shoulders to reduce the potential for run-off-road crashes.

- Method: practice
- Costs: minimal
- Lead agency and contact: KDOT, Bureau of Transportation Safety & Technology
- Challenges: staff time and resources to conduct additional analysis and funding to pay for recommendations.
- Target date: FY 2018

Future strategies:

- No future strategies identified at this time.

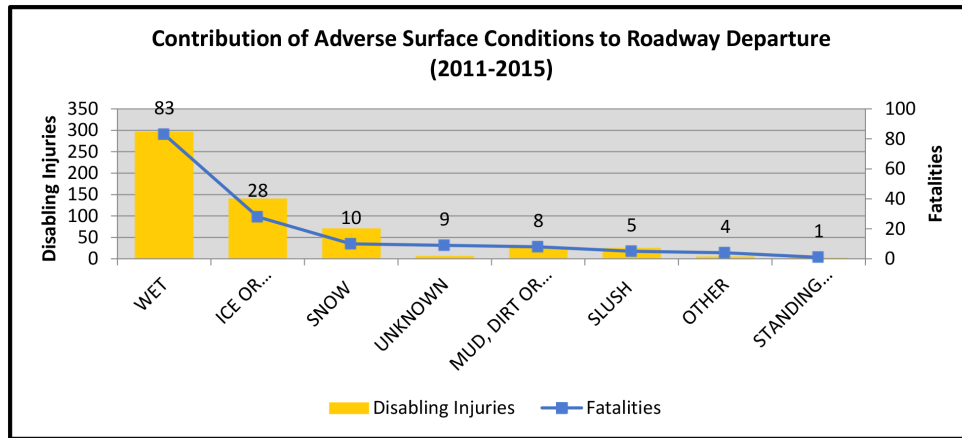
Goal 3: Promote proven engineering strategies that focus on keeping drivers on the road and in their lane.



Roadway departure events involving two or more vehicles are most commonly the result of same-direction sideswipes, but head-on collisions result in the highest number of fatalities.

Current Strategies:

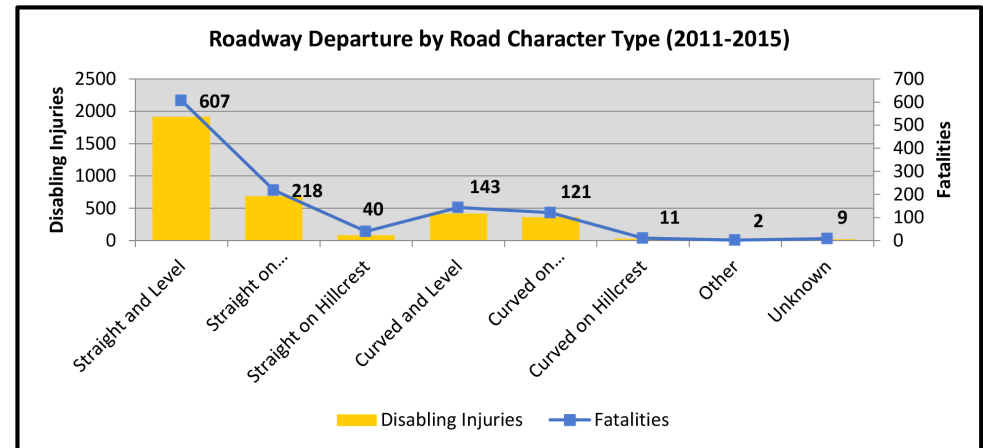
- Expand the use of high-friction surface treatments.
Background: Specific countermeasures are often described as experimental, tried or proven. High-friction surface treatment is typically used at horizontal curves that exhibit a pattern of wet-weather run-off-road crashes. Kansas participated in a FHWA demonstration project in 2009 and began additional application in 2014. This proven low-cost safety measure was promoted as part of the FHWA's Every Day Counts 2 initiative.



Adverse surface conditions were noted as a factor in about 13 percent of all fatalities between 2011 and 2015.

- Method: program
 - Costs: \$25 to \$40 a square yard
 - Lead agency and contact: KDOT, Traffic Safety Section
 - Challenge: competing with other safety projects and programs
 - Target date: ongoing
- Create a program that funds the deployment of low-cost safety improvements at horizontal curves.
Background: The Kansas state highway system has an estimated 1,000 miles of curves—one tenth of the total roadway mileage. But about one in six fatal crashes in Kansas happens on horizontal curves. This program will consider proven and experimental countermeasures to

prevent crashes on rural horizontal curves and on urban high-speed curves. Countermeasures include adding high-friction materials to road surfaces and improving delineation, which refers to methods used to define roadway operating areas for drivers.



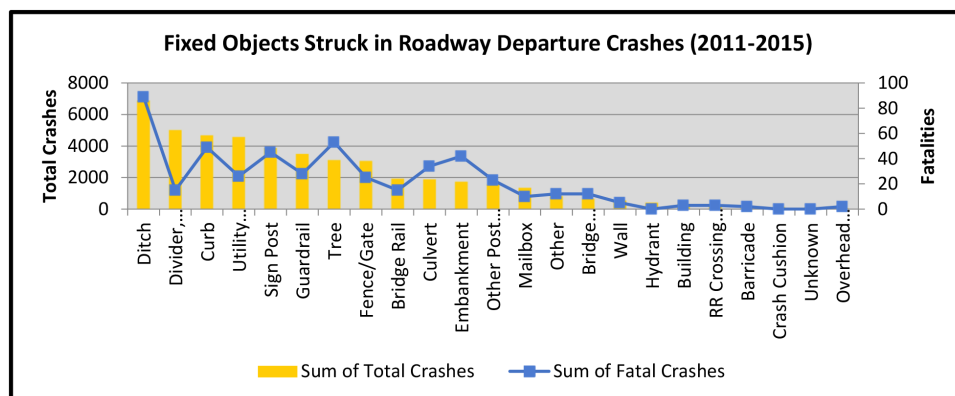
The contribution of curves and hills to injury and fatality statistics exceeds the proportion of the entire Kansas road system they represent.

- Method: program
- Cost: \$250,000 annually (estimated)
- Performance measures: number of curves treated and consequent reduction in crashes
- Lead agency and contact: KDOT, Traffic Safety Section
- Challenges: funding a new program and identifying curves where treatment would be likely to produce the best results
- Target date: FY 2019 or when funding becomes available

Future strategies:

- Promote wider edge-line pavement markings on county highways.
- Experiment with edge-line rumble stripes.

Goal 4: Promote mitigation strategies that lessen the consequences of a crash.



Besides ditches, tree strikes are the leading cause of fixed object fatalities. Tree removal projects remain an option for counties in our High Risk Rural Roads Program.

Current strategies:

- No current strategies identified at this time. (Note: For this and all goals, see Appendix A for current and completed efforts.)

Future strategies:

- No future strategies identified at this time.

Goal 5: Introduce experimental engineering strategies.

Current strategy:

- Promote the use of elongated pavement marking signs.
 - Background: KDOT recently participated in research that demonstrated a measurable effect in operating speed reduction with installation of elongated pavement marking regulatory and warning signs that complemented the adjacent post-mounted signs.
 - Method: practice
 - Cost: \$2,500 each
 - Lead agency and contact: KDOT, Traffic Safety Section
 - Challenges: durability
 - Target date: ongoing



Stull Road, Douglas County

Future strategies:

- No future strategies identified at this time.

Goal 6: Promote enforcement campaigns that target locations and corridors with a higher than expected number of roadway departure crashes.

Current strategy:

- Develop and implement a Safety Corridor Program.
 - Background: Several states have developed successful safety corridor programs. This approach begins by identifying highway corridors with safety issues, including but not limited to high crash frequencies or rates, then using a 4E approach to identify treatments and strategies to improve corridor safety.
 - Method: legislation
 - Costs: none (supported through increased fines)
 - Lead agency and contact: KDOT
 - Challenge: securing legislative approval
 - Target date: TBD (This was last attempted during the 2015 legislative session and failed)

Future strategies:

- No future strategies identified at this time.

Countermeasures that work

High-visibility enforcement campaigns have been used to deter aggressive driving and speeding. In the high-visibility enforcement model, law enforcement targets selected high-crash or high-violation geographical areas using either expanded regular patrols or designated aggressive driving patrols. This model is based on the same principles as high-visibility seat belt and alcohol-impaired-driving enforcement—to convince the public that speeding and aggressive driving actions are likely to be detected and that offenders will be arrested and punished.

In the high-visibility enforcement model, officers focus on drivers who commit common aggressive driving actions such as speeding and following too closely. Enforcement is publicized widely. The strategy is very similar to saturation patrols directed at alcohol-impaired drivers. Because speeding and aggressive driving are moving violations, officers cannot use checkpoints. Rather, they must observe driving behavior on the road.

Several studies have credited high-visibility enforcement campaigns with reducing crashes, speeding and other violations.



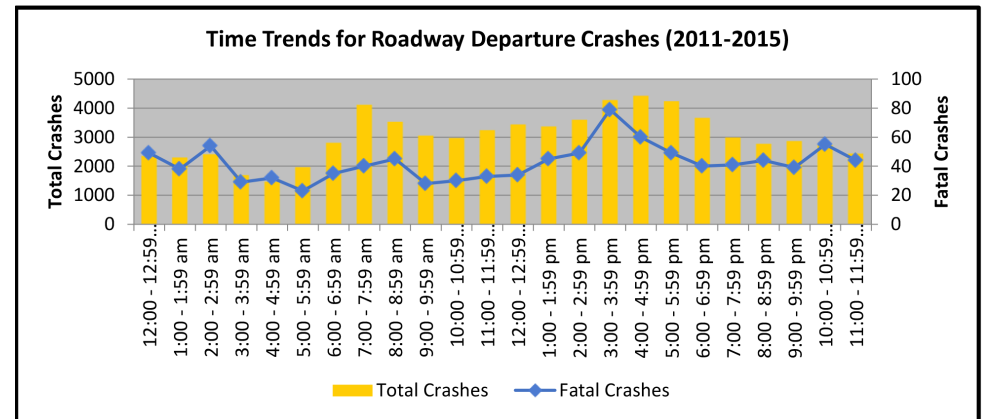
Goal 7: Promote education campaigns that target over-represented factors in roadway departure crashes.

Current strategies:

- No current strategies identified at this time.

Future strategies:

- Educate motorists on pedestrian safety when standing outside of a disabled vehicle on or beside the roadway
- Raise public awareness of more and less safe times to drive



Total number of roadway departure crashes generally trends with traffic patterns throughout the day, and severity follows, especially between 4 a.m. and 9 p.m. At night, however, particularly between 9 p.m. and 4 a.m., the total crash rate increases significantly (less traffic, similar number of crashes) with a greater share of these fatal.

Chapter 8

Local Roads



The Kansas State Highway System is highly visible to those traveling long distances across the state but represents only a fraction of all the miles of public roads in the state. Of 140,614 miles of public roadways in 2015, only 7.3 percent are part of the state highway system. The Kansas Turnpike Authority oversees another 0.2 percent. The remaining 92.5 percent of public roads—130,068 centerline miles—are owned or maintained by cities, counties and townships.

Traffic on these roads accounts for about 43 percent of the total vehicle miles traveled in Kansas. Between 2010 and 2014, 46 percent of fatalities and 54 percent of disabling injuries occurred on roads owned by local public authorities. When compared to the base years (2005-2009), that's the same number of fatalities and a two-percentage point rise for disabling injuries. If we are to achieve our overall goal of halving fatalities and serious injuries by 2029, locally owned roads must be included as a significant part of the plan.



The Local Roads Support Team was initiated in 2012 to identify and coordinate strategies aimed at saving lives on local roads and became the Local Roads Emphasis Area Team (LREAT) in April 2015. The LREAT's responsibilities in contributing to the development of the Strategic

Highway Safety Plan (SHSP) are to identify overall goals, select specific strategies and create action plans to implement those strategies.

Why have a dedicated local roads chapter in the SHSP? Because addressing safety on local roads involves different considerations than on state highways. Many roads owned by local governments were not built to modern operational and safety standards. Local governments generally have less access to professional engineers and dedicated funding to address safety problems. Safety has different stakeholders—including local elected officials, public works and law enforcement agencies—and varying levels of awareness about local problems and how to best address them. To reduce crashes at the local level, we need strategies to address local realities and needs.

By utilizing the 4E's of roadway safety—education, enforcement, engineering and emergency medical services—the LREAT has committed itself to:

- Promoting the SHSP to local governments
- Communicating with other emphasis area teams to make sure they address local roads
- Identifying goals and strategies that may not be specific to an emphasis area but are important to reducing crashes on local roads
- Keeping abreast of new developments in local road safety
- Assisting fund managers to distribute their local safety funds on the basis of local safety priorities

Many programs aimed at saving lives on local roads are already in place. Some of the more significant programs are:

- Training and technical assistance
 - Traffic Assistance Service for Kansas (TASK), a safety training partnership of Kansas State University and the University of Kansas
 - Kansas Local Technical Assistance Program (LTAP) at the University of Kansas
 - Traffic Engineering Assistance Program (TEAP) through KDOT's Bureau of Local Projects
 - Practical Road Safety Assessments by KDOT and Road Safety Assessments by Kansas LTAP
 - Technical assistance provided by the Kansas County Road

Engineer at the Kansas Association of Counties

- Drug recognition expert training and certification through the International Association of Chiefs of Police
- Funding for engineering improvements
 - Kansas High Risk Rural Roads Program, managed by KDOT's Bureau of Local Projects
 - Intersection Safety Program, managed by KDOT's Bureau of Transportation Safety & Technology
 - Railway-Highway Grade Crossing Program, managed by KDOT's Bureau of Road Design
 - Safe Routes to School, managed by KDOT's Bureau of Transportation Planning
 - Federal Fund Exchange Program, managed by KDOT's Bureau of Local Projects
 - This program allows local agencies to exchange federal funds for state funds on projects including, but not limited to, safety improvements.
- Partnering and education
 - Destination Safe, a regional safety coalition administered by Mid-America Regional Council in Kansas City
 - Seatbelts Are For Everyone (S.A.F.E.) – managed by Kansas Traffic Safety Resource Office
 - National Highway Traffic Safety Administration (NHTSA) – federally funded highway safety program
 - CarFit - AAA training for older drivers



Helping Mature Drivers Find Their Safest Fit

While many programs are already in place, the rates of serious and fatal crashes on local roads indicate more needs to be done. In its preliminary discussions to identify local roads safety strategies, the team focused primarily on two of the 4E's: engineering and enforcement. The other two E's, EMS and education, were woven

into each discussion. The discussions resulted in strategies to dramatically reduce fatal and serious injury crashes on local roads. For each “E,” team members identified who is responsible for decision-making affecting that E on local roads, what safety resources and programs already exist for that E, what gaps exist, and what the data suggest as strategies for reducing crashes.

As the team worked through these discussions some dominant themes emerged:

- Spending federal dollars is more cumbersome and less efficient than spending state dollars.
 - Project delivery, productivity and flexibility improve when the locals handle the projects themselves.
- When spending safety dollars, the primary emphasis should shift to low-cost systemic safety improvements, with a secondary emphasis on higher-cost infrastructure projects at high-crash—or black spot—locations.
- Access to data is important to locals, but so is training to use data to effectively reduce crashes.
- Single-vehicle crashes are more common on local roads than on state highways.
 - In the event of a serious crash on a low-volume road, discovery, reporting and EMS response could be compromised.
- Interest in enforcing traffic laws has declined among law enforcement personnel.

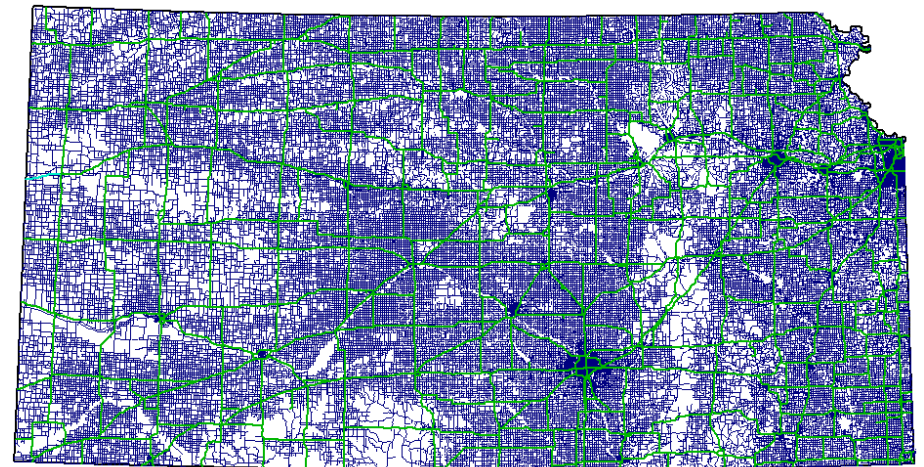
The Local Roads Emphasis Area Team currently includes representatives from the following organizations:

KDOT Bureau of Local Projects
KDOT Bureau of Transportation Safety & Technology
KDOT Law Enforcement Liaisons
Lawrence-Douglas County Metropolitan Planning Organization
American Public Works Association (APWA)
Kansas State Department of Education (KSDE)
Kansas Local Technical Assistance Program (LTAP)
Kansas Association of Counties (KAC)
Federal Highway Administration (FHWA) Kansas Division
Lyon County Sheriff’s Department
Barton County Engineering
Sedgwick County Traffic Engineering
Kansas Board of Emergency Medical Services

A thorough understanding of the data and research related to local road crashes is essential to the wise expenditure of our safety dollars. With input from the Data Support Team, the LREAT will have the tools to assist local agencies when managing safety investments. The team considered the following data when developing strategies.

Data Points

For the purpose of this chapter, a local road is defined as any public road not maintained by the state and not part of the State Highway System (such as K-10, US-54, and I-70.) Local roads represent 92.5 percent of all roads in Kansas and carry about 43 percent of all traffic. To put these numbers in perspective, the state image below shows local roads in blue and the State Highway System in green.

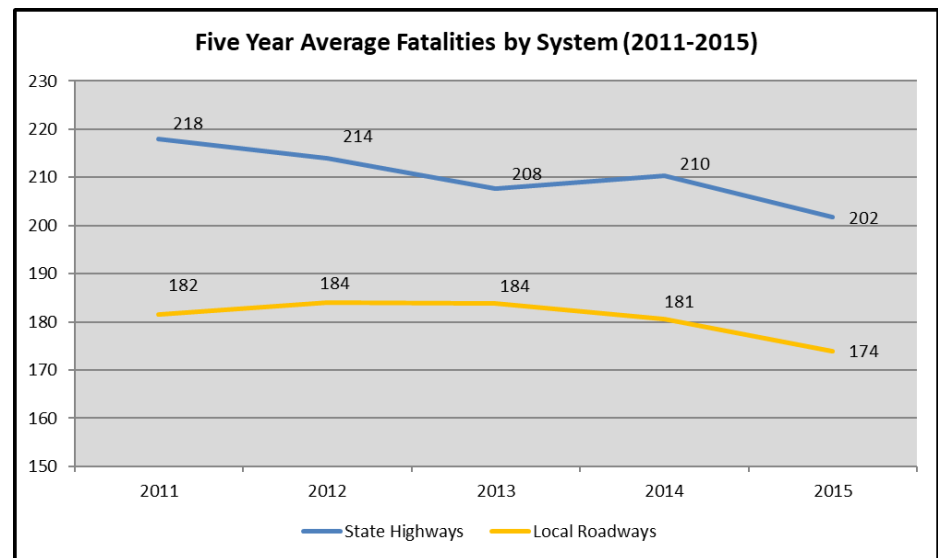


Note: The data presented in the charts that follow represent the roads shown above in blue—it does not include the State Highway System. The data indicate that what is happening on local roads is often different than what occurs on state highways. Some of the data point to strategies addressed in other chapters of this plan, such as seat belts and teen drivers; other data point to goals and strategies detailed below. Additional data specific to local roadways are presented in other chapters of the plan.

1. Local roads fatalities are declining at a lower rate than on the state system.

Until recently, fatalities in Kansas had been trending downward for the past decade. However, much of the reduction is found on state

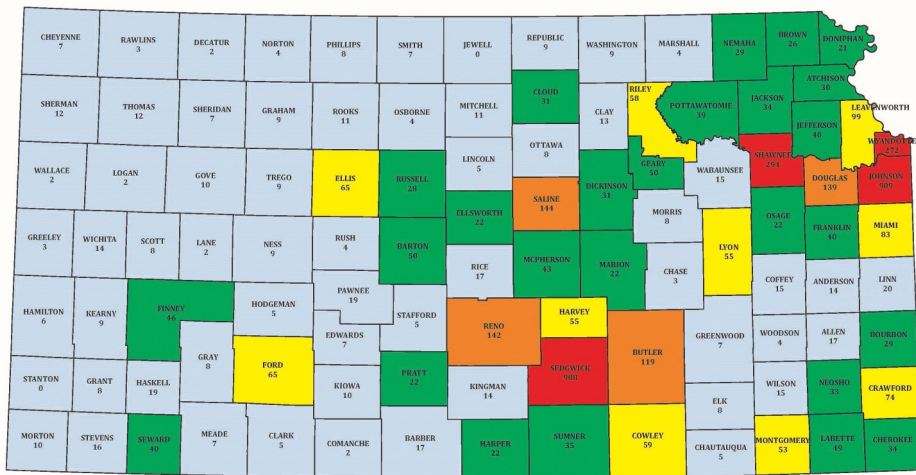
highways and not local roads. Based on five-year averages, in 2011 local roads represented 45.5 percent of all fatalities; by 2015 that share increased slightly to 46.3 percent. Over this four-year period, the five-year average for state highway fatalities decreased 7.3 percent; for local roads it decreased only 4.4 percent.



This map shows the number of fatalities and serious injuries on local roadways by county, for the five-year period 2010 thru 2014. Not surprisingly, it generally follows population densities.

When the numbers are normalized based on population, more meaningful data can be presented as crash rates. The information in the following map can be used to identify priority counties for initiatives such as local road safety plans and local safety coalitions. Medical response times in rural areas may account for the higher rates in rural counties.

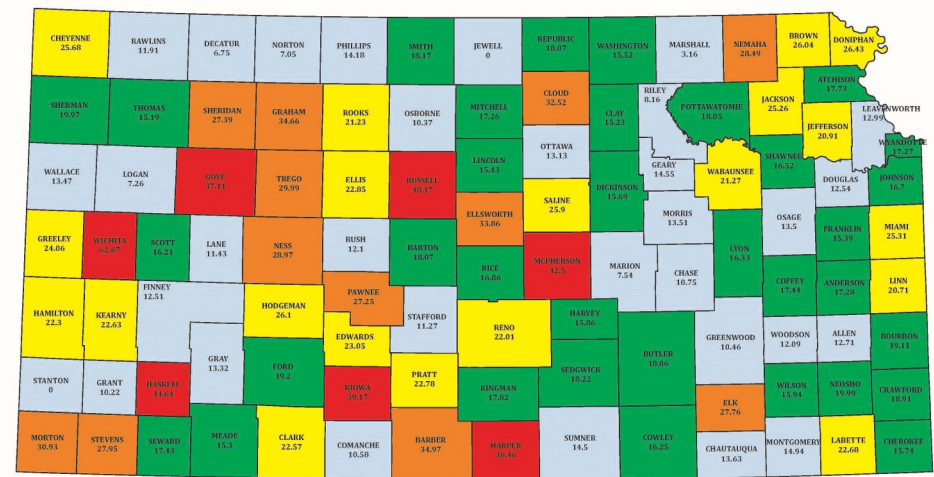
Fatalities and Serious Injuries on Local Roadways (2010-2014)



- Fatalities and Serious Injuries
- 0 - 20
 - 21 - 50
 - 51 - 100
 - 101 - 200
 - 201 - 909

PREPARED BY THE
KANSAS DEPARTMENT OF TRANSPORTATION
BUREAU OF TRANSPORTATION SAFETY AND TECHNOLOGY
MAP CREATED WEDNESDAY, OCTOBER 21, 2015

Fatalities and Serious Injuries per 10,000 Population on Local Roadways (2010-2014)

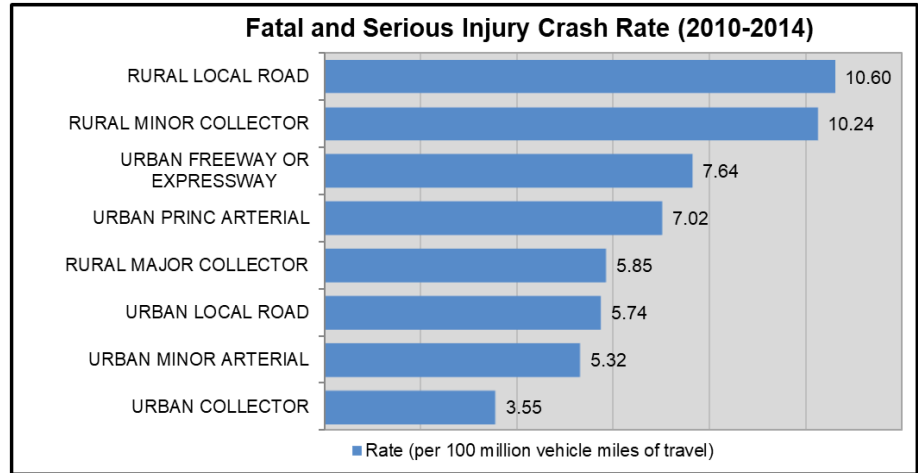


- Rate per 10,000 Population
- 0.00 - 15.00
 - 15.01 - 20.00
 - 20.01 - 27.00
 - 27.01 - 35.00
 - 35.01 - 62.67

PREPARED BY THE
KANSAS DEPARTMENT OF TRANSPORTATION
BUREAU OF TRANSPORTATION SAFETY AND TECHNOLOGY
MAP CREATED WEDNESDAY, OCTOBER 21, 2015

2. Roads classified as rural local and rural major/minor collectors have high rates of fatal and severe injury crashes despite low traffic volumes.

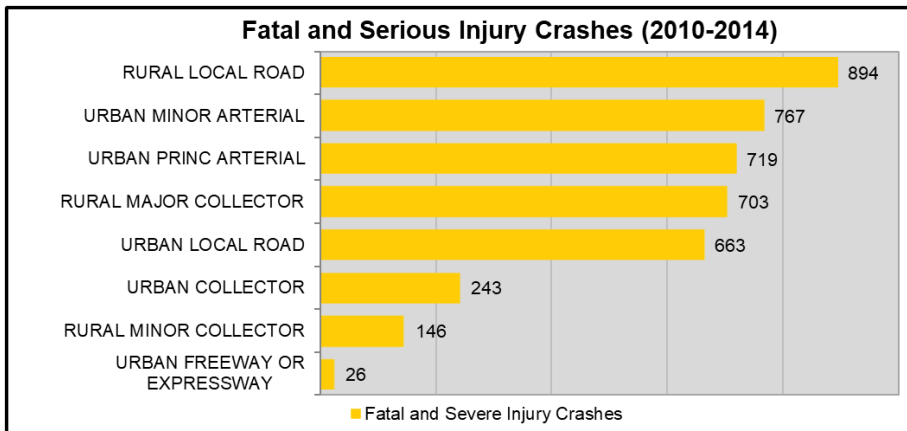
About 2 percent of all crashes on locally-owned roads involve a fatal or serious injury. Injury severity has three levels: possible, non-incapacitating and disabling/incapacitating. Only the latter is considered serious injury. Most fatal and serious injury crashes occur on roads classified as rural local roads and urban minor arterials. However, when traffic volumes are factored in, both rural local roads and rural minor collectors have significantly higher crash rates than other roadway types. (Note: Information on the functional classifications used in the tables below can be found in the introduction chapter of this plan; cities with a population of less than 5,000 are classified as rural, while some rural areas on the edge of large cities may be classified as urban).



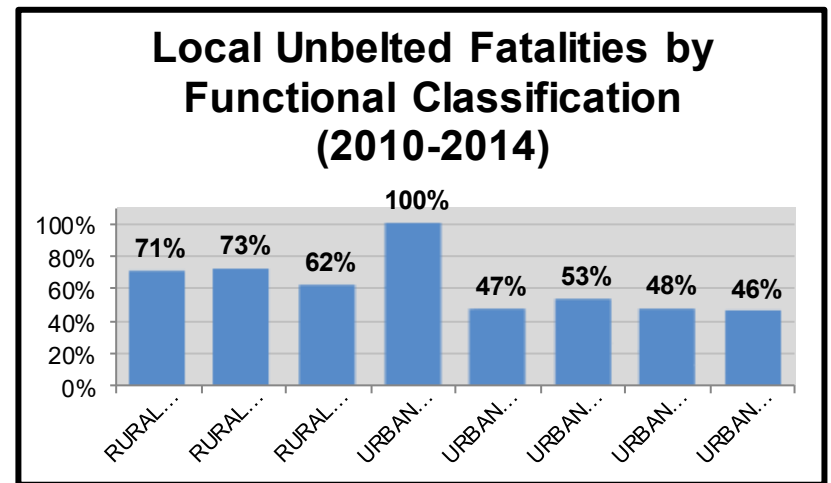
Two-thirds of all miles driven on local roads are in urban areas.

3. Low seatbelt use on rural roads.

People in fatal and serious injury crashes on local roads are less likely to be wearing a seatbelt than those on the State Highway System. For all roads, 62 percent of fatality victims were *not* wearing a seat belt; for local roads, both rural minor collectors and rural local roads were even higher. (Only one fatality occurred on an urban freeway/expressway and it was unbelted). See the chapter Occupant Protection Emphasis Area for strategies to increase seatbelt compliance.



Urban crashes account for about three of every four local road crashes, 63 percent of serious injury crashes and only 39 percent of fatal crashes.

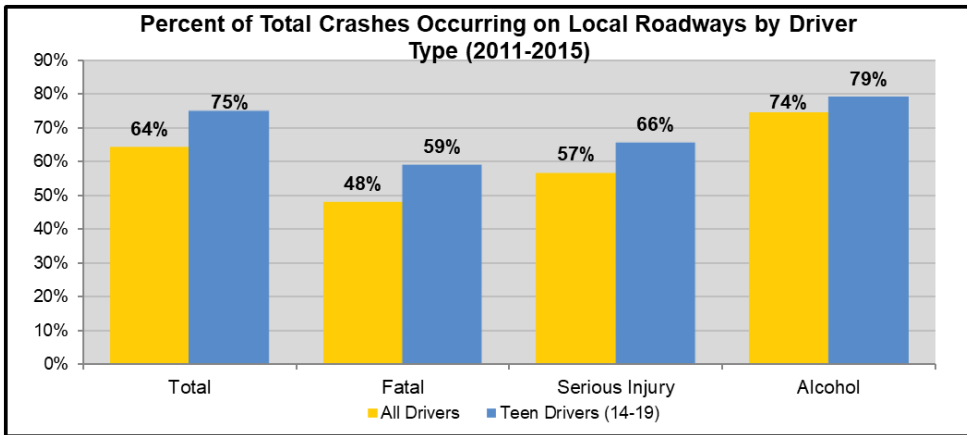


Local traffic and rural traffic are both indicators of low seatbelt use. For example, 71 percent of fatalities where a seatbelt was available

(i.e. non-motorcycle, non-bicycle and/or non-pedestrian) on rural local roads were NOT wearing a seatbelt.

4. Inexperienced drivers are over-represented in local road crashes.

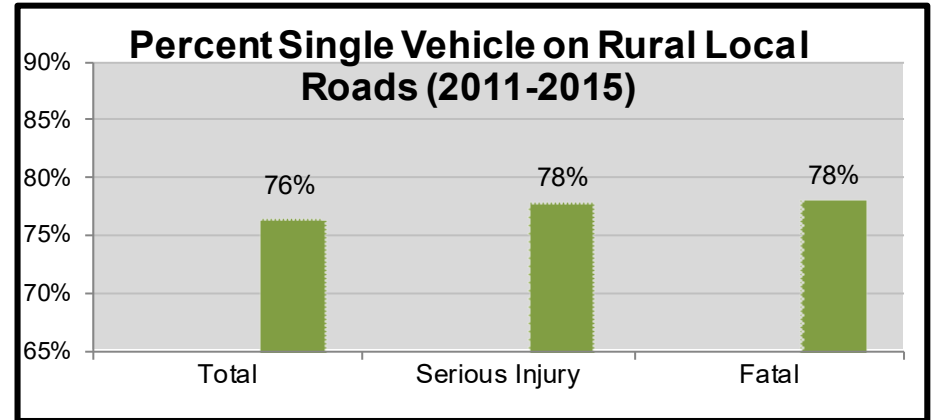
Seventy-five percent of all teen crashes (i.e. crashes that involve at least one driver from age 14 to 19) occur on local roads, including 59 percent of fatal crashes, 66 percent of serious injury crashes and 79 percent of impaired teen driver crashes. The graph below compares teen drivers to the population. (See the Teen Driver Emphasis Area chapter to review strategies which address inexperienced drivers.)



Of the 105 teens killed in local traffic crashes between 2010 and 2014, 67 percent were NOT wearing a seatbelt. This is much higher than the statewide average for all drivers. This coupled with the alcohol number above indicates teens are more likely to take risks on local roads.

5. Single-vehicle crashes.

More than three in four crashes on rural locally-owned roads—regardless of severity—do not involve multiple vehicles; that is, they are single-vehicle crashes, such as run-off-road. A lone driver or occupant may not be able to call for help, extending response time. In addition, since rural areas carry much less traffic and have much lighter law enforcement patrolling, a crash is less likely to be reported by another driver or law enforcement.



According to a 2004 study by NHTSA, approximately 30 percent of the rural fatal crashes exceeded the "golden hour", while only about 8 percent of the urban fatal crashes exceeded it. The Board of EMS often has difficulty getting volunteers to serve, which is critical to providing service in rural areas.

The Golden Hour

The time to deliver patients to definitive care consists of six time intervals:

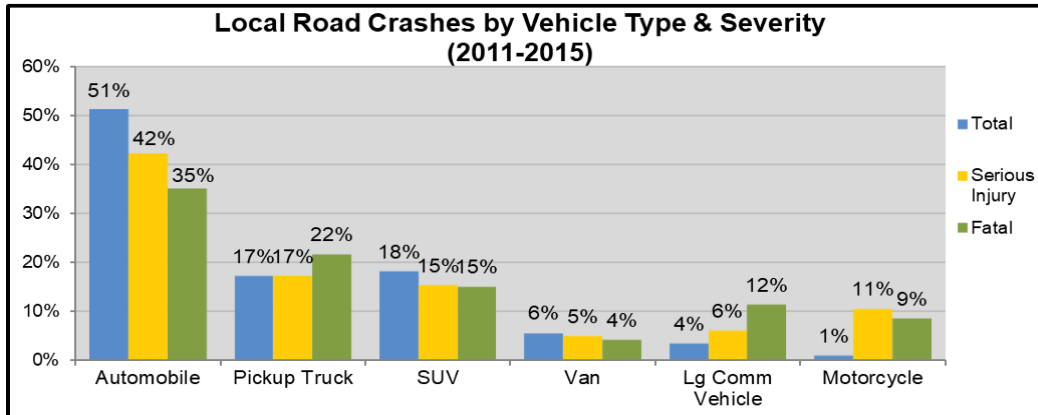
1. Time between crash occurrence and EMS notification
2. Response time for EMS personnel to be notified and depart station (i.e., chute time)
3. Travel time to crash scene by EMS
4. On-scene EMS rescue time
5. Transport time to hospital or trauma center
6. Emergency department resuscitation time

The best chance for survival following a traumatic injury occurs when the injured person is seen and treated within an hour of the event, known as the "Golden Hour." However, the average elapsed time for several of these time intervals typically is longer in rural areas than in urban areas.

National average: approximately 30 percent of the rural fatal crashes exceeded the golden hour, while only about 8 percent of the urban fatal crashes exceeded it. (NHTSA study 2004)

6. High percentage of serious injuries and fatalities in pickup truck and motorcycle crashes.

Finding the right message to reach the typical driver of pickups and motorcycles is a serious challenge for those in behavioral safety. Pickup trucks represent 17 percent of all crashes but 22 percent of all fatalities and 17 percent of serious injuries. Motorcycles represent only 1 percent of total crashes but 9 percent of fatal and 11 percent of serious injuries.

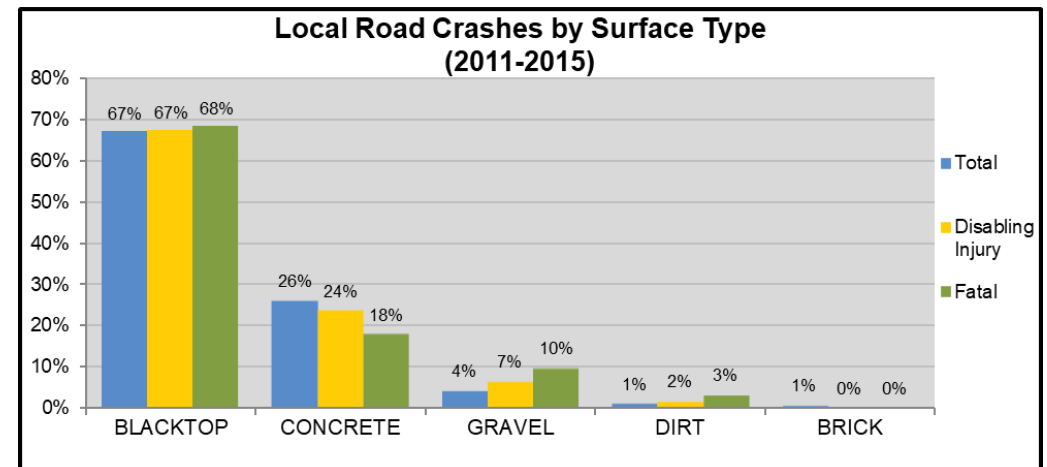


Due to their structure, pickup trucks are inherently unstable which contributes to a greater likelihood of rollover crashes. This, combined with a greater percentage of unbelted pickup drivers, accounts for much of the higher-than-expected percentage of fatal pickup truck crashes.



7. Unpaved roads are over-represented in local road fatalities.

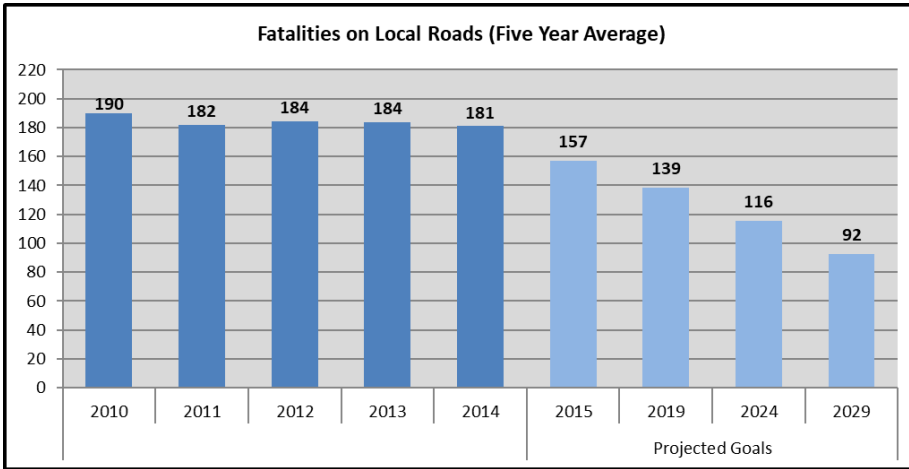
Gravel and dirt road surfaces make up 5 percent of all crashes, 9 percent of all serious injuries and 13 percent of all fatalities.



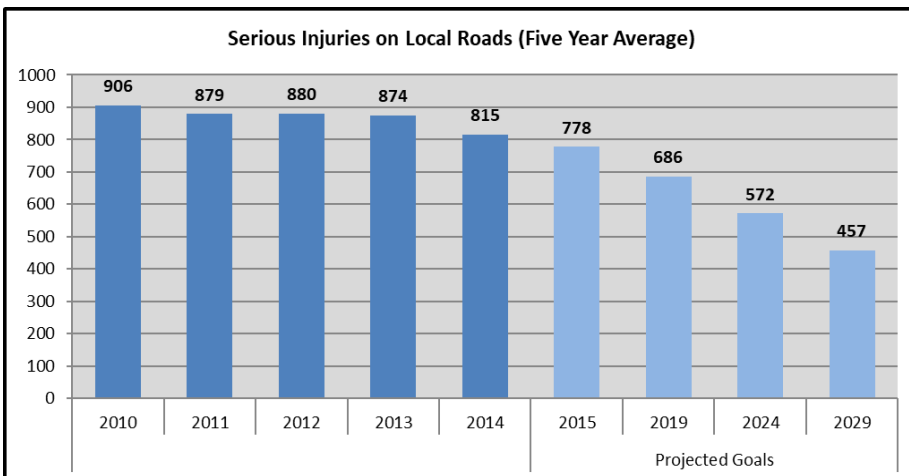
As severity increases, the percent share of paved roads (blacktop and concrete) decreases; this trend reverses for unpaved roads (gravel and dirt.) This could be due to a variety of factors, most notably that unpaved roads typically have less "forgiving" roadsides than paved roads.

Performance Measures

Consistent with our plan’s overall goal, the Local Roads Emphasis Area Team seeks to halve fatalities and serious injuries on local roads within 20 years. In the five years between 2005 and 2009, Kansas averaged 185 fatalities and 915 disabling injuries on local roads annually. Therefore, our long-term target performance measure for the effectiveness of our goals and strategies to reduce crashes is to average *fewer than* 93 fatalities and 458 disabling injuries during the years 2025 to 2029.



Numbers through 2014 indicate actual fatalities; numbers for 2015 and beyond indicate our goals. These goals are independent of vehicle miles traveled (VMT), although the challenge of meeting these goals will be proportional to the rise and fall of VMT.



Goals and Strategies

While many safety issues on local roads could be addressed with goals and strategies, the LREAT chose those that had the best potential to significantly reduce the number of fatal and serious injury crashes. The LREAT has chosen six goals as the focus of its efforts.

1. Make access to federal and state safety dollars for roads and streets less cumbersome for local agencies by identifying and acting on opportunities to improve efficiencies.
2. Maximize benefit from available funds by tying funding to the greatest needs as indicated by crash data and crash research.
3. Improve local public authority (LPA) access to crash data.
4. Promote multi-disciplinary collaboration and cooperation on safety at local and regional levels to reduce crashes on the local system.
3. Train and otherwise assist LPAs in developing safety programs and identifying low-cost strategies.
4. Emphasize to the law enforcement community its important role in improving safety on local roads.

These goals and strategies are in addition to those provided in other areas of the SHSP. See Appendix A for more information on ongoing and completed strategies specific to Local Roads.

Goal 1: Make access to federal and state safety dollars for roads and streets less cumbersome for local agencies by identifying and acting on opportunities to improve efficiencies.

Current strategy:

- Simplify the application process for the High Risk Rural Roads (HRRR) program.

Background: To be most effective, the HRRR program needs a sufficient number of quality applications from which to select. Some LPAs may not choose to take the time and effort to put together the necessary information for the application process. By simplifying the process, it will become more attractive as well as easier for program administrators to select projects. As part of the Local Road Safety Plans, a simple application for projects will be included for ease of use by both the applicants and the reviewers.

- Method: planning
- Costs: included in LRSP costs
- Lead agency and contact: KDOT, Bureau of Local Projects
- Challenge: making the process simple enough without compromising the information needed
- Target date: FY 2018

High Risk Rural Roads in Kansas

MAP-21 defined a high-risk rural road as “any roadway functionally classified as a rural major or minor collector or rural local road with significant safety risks.” States are required to define what is meant by “significant safety risks” and record such risks in an updated Strategic Highway Safety Plan. In Kansas a high-risk rural road is any rural major collector, rural minor collector or rural local road with significant safety risks. Roadways with significant safety risks may include:

- Roadways with a fatality and/or serious injury rate that is higher than similar roadways within the state.
- Roadways with characteristics that correlate with specific severe crash types based on cross-section elements, horizontal and vertical alignment and roadside safety considerations. Examples include, but are not limited to:
 - narrow lanes
 - lack of shoulders
 - sight distance restrictions
 - low-speed curves
 - non-traversable roadside features
- Roadways that have been identified as a high-risk location through a review by a Safety Circuit Rider (SCR), a Practical Road Safety Assessment (PRSA), a formal Road Safety Assessment or Audit (RSA), a Traffic Engineering Assistance Program (TEAP) study, a Local Road Safety Plan (LRSP) and/or local knowledge and experience.

Future strategies:

- No future strategies identified at this time.



Goal 2: Maximize benefit from available funds by tying funding to the greatest needs as indicated by crash data and crash research

Current strategy:

- Increase Highway Safety Improvement Program (HSIP) funding for locally-owned roads proportional to the distribution of fatal and serious injury crashes.

Background: Business as usual is easy. Change is hard. But if HSIP funding is intended to reduce the incidence of fatalities and serious injuries, it only makes sense for HSIP spending to follow the pattern of fatal and serious injury crashes. Some programs will need to be reduced or eliminated to increase funding for locally-owned roads. The nature of program management requires this be done incrementally over the next few years.

 - Method: policy
 - Costs: reduction in spending or elimination of other programs
 - Lead agency and contact: KDOT, Bureau of Transportation Safety and Technology
 - Challenges: competing interests
 - Target date: proportional to data by FY 2021

Future strategy:

- Use Local Road Safety Plans to prioritize projects for funding.

Systemic versus Systematic

According to the introduction to the Systemic Safety Project Selection Tool, "The systemic approach to safety involves widely implemented improvements based on high-risk roadway features correlated with specific severe crash types." A systematic approach would be implemented in an orderly fashion throughout the roadway network without regard to risk. Kansas's goal is to use a systemic approach on local roads.

Goal 3: Improve local public authority (LPA) access to crash data.

Current strategy:

- Improve local access to geo-coded crash maps through an automated process.

Background: A current strategy in the Data Support plan is to geo-code all crashes on locally-owned roads. The next obvious step is making these maps available to local agencies. One option is to use the existing platform developed by the Kansas Data Access and Support Center.

- Method: project
- Costs: TBD
- Lead agency and contact: KDOT, Bureau of Transportation Planning
- Challenge: promoting tool to local partners
- Target date: FY 2019

Future strategy:

- Create an interactive website that LPAs can access.

Goal 4: Promote multi-disciplinary collaboration and cooperation on safety at local and regional levels to reduce crashes on the local system.

Current strategies:

- Create a network of local safety coalitions statewide.
Background: The Kansas SHSP addresses safety at the

statewide level based on statewide crash data. However, statewide data do not capture all aspects of local safety knowledge or priorities. The SHSP process encourages a multidisciplinary approach to reducing fatal and serious injury crashes. Such partnering fosters communication and, preferably, action-based outcomes. Packaged crash data, analysis and best practices could be provided to spur discussion. Local safety coalitions will identify issues that could be unique to their area and identify strategies to reduce fatal and serious injury crashes. Members should represent law enforcement, public works, education, EMS and trauma centers, safety advocates and others.

- Method: program
- Cost: seed money to plant interest
- Lead agency and contact: KDOT, Bureau of Transportation Safety and Technology
- Challenge: encouraging voluntary participation from individuals and groups
- Target date: FY 2018



- Develop local road safety plans for all counties in Kansas.
Background: Many states have developed local road safety plans to advance safety on locally-owned major and minor collectors. In fall 2013, a delegation from Kansas attended a peer exchange to learn from the experiences of Minnesota

and others. Local road safety plans assist LPAs to select and prioritize projects that will have the biggest impact on safety based on the crash types and high-risk roadway characteristics in their jurisdiction. Because of the random nature of crashes on lower-volume local roads these plans place emphasis on low-cost systemic improvements; that is, the approach is proactive rather than reactive. Four Kansas counties have already participated in a pilot project to develop local road safety plans (LRSP).

- Method: program
- Cost: \$40,000 per county
- Lead agency and contact: KDOT, Bureau of Local Projects
- Challenges: staff to administer new program, funds to implement plans, roadway and crash data and low number of county engineers
- Performance measure: number of county plans
- Target date: 20 per year with completion in FY 2023

Future strategies:

- No future strategies identified at this time.

Goal 5: Train and otherwise assist LPAs in developing safety programs and identifying low-cost strategies.

Current strategies:

- Promote a course piloted in 2014 on the acquisition and use of *crash data and information to reduce crashes on local roads*.
Background: The cliché “jack of all trades and master of none” applies to most local public works staffs. Few cities and even fewer counties have the benefit of a full-time traffic engineer. Nevertheless, the agency that owns a road and is responsible for its maintenance is principally responsible as well for its safety. Training is key. It should be basic, relevant and brief. Kansas LTAP acquired special T2 funds from the FHWA Kansas Division to develop this course.
 - Method: project
 - Cost: \$6,000 to develop course
 - Lead agency and contact: Kansas LTAP
 - Challenges: competing priorities for training and availability of geocoded data
 - Target date: FY 2019

- Start a Safety Circuit Rider program.
Background: Other states have developed similar programs that use crash data and crash research to locate actual and potential high crash sites along roadways and assist LPAs in finding low cost roadway solutions. The Safety Circuit Rider will visit counties and develop on-going relationships focused on safety improvements. As issues are identified, road safety assessments may be initiated. If further investigation is needed, a TEAP study may be conducted which may eventually lead to a HRRR project. Safety Circuit Riders can take the lead to help counties identify both these needs and everyday solutions to safety concerns.
 - Method: program
 - Costs: State Planning & Research (SP&R) funding
 - Lead agency and contact: Kansas LTAP
 - Challenges: finding the ideal candidates for the position and getting buy-in from local agencies
 - Target date: FY 2019

Future strategy:

Develop tools to train elected officials on the importance of local road safety plans and funding safety improvements.



Law Enforcement

Kansas cities, counties and townships oversee more than 130,000 miles of public road. That means that halving fatalities and serious injuries in the next 20 years will take lots of help from local partners—law enforcement in particular.

A short survey of police officials from Butler, Lyon, Johnson, Crawford and Stafford counties turned up several barriers to success in reducing crash numbers, including having too few officers and insufficient crash data. Lyon County Undersheriff John Koelsch, who conducted the survey, noted that “law enforcement almost always has fewer personnel than needed to concentrate on traffic-related matters.” Three of the other four officers agreed, citing the problem, in their words, as a lack of “manpower,” “people” or “extra officers to patrol.” The fourth said that a lack of personnel is less important than “motivation and permission to do traffic enforcement.”

To reduce crashes on local roads also requires, according to Koelsch, “crash data easily accessed in a timely matter.” Data could include the day of the week and time of day, along with such contributing factors as road and weather conditions, ages of drivers, impairment by alcohol or drugs, speed of vehicles, and presence of hazards at crash “hot spots.” Those areas could then be worked more than others “when deputies have time,” said former Crawford County Sheriff Sandy Horton, “but to be honest with you, to work traffic for this office is a luxury, as we are so busy responding to other calls.” KDOT is working to set up an accessible database that will contain such information linked to the location of crashes established by use of GPS technology.

Other needs mentioned included updated equipment (to replace aging radar, for example), as well as training related to impaired driving, both within the law enforcement academies and on the job.

Some grant money is available to help law enforcement reduce crashes on local roads—the KDOT Special Traffic Enforcement Program (STEP) is one source—but budget constraints at all levels of government restrict access to funds.

One of those surveyed, Dave Corp, now retired from service with the Kansas Highway Patrol, mentioned the importance to officers of feeling supported by judges and prosecutors when they do make arrests. “Officers do not want to write tickets if some judge or prosecutor dismisses them,” he said. “That sends a message to the officer.”



Goal 6: Emphasize to the law enforcement community its important role in improving safety on local roads.

Current strategies:

- Promote the importance of traffic enforcement to the law enforcement community.
Background: Law enforcement personnel may be experiencing a decline in interest in enforcing traffic laws. Traffic enforcement allows direct contact with and a great chance to educate drivers. On local roads especially, there is sometimes reluctance to arrest or ticket a "local," who may also be a neighbor. Regardless, traffic laws are written for a reason and law enforcement needs to enforce them. Delivering analyzed crash data is one way to initiate this conversation.
 - Method: practice
 - Costs: none
 - Lead agency and contact: KDOT, Bureau of Transportation Safety & Technology, Law Enforcement Liaisons
 - Challenge: competing with other law enforcement priorities
 - Target date: ongoing

- Create incentives for law enforcement agencies to participate in traffic safety campaigns by tying safety grants to enforcement activities.

Background: Provide equipment to local law enforcement agencies that participate in the National Enforcement Campaigns.

- Method: program—Law Enforcement Equipment Incentive Program
- Cost: \$300,000 per year
- Lead agency and contact: KDOT, Bureau of Transportation Safety & Technology, Law Enforcement Liaisons
- Target date: annually

Future strategies:

- Provide training to law enforcement on such topics as traffic laws, distracted driving and the importance of writing tickets for infractions that result in crashes.
- Identify local road corridors that, based on crash data, would benefit from enhanced enforcement activities.



Chapter 9

Data Support

Reliable crash data are the backbone of road safety management. According to the American Association of State Highway and Transportation Officials (AASHTO) strategic highway safety plans should improve data collection and, as a result, decision making.

The data support team will provide the emphasis area teams and the ESC with the data required to craft an information-based Strategic Highway Safety Plan. The data team will:

- Gather and present data to the Executive Safety Council (ESC)
- Collect and organize data at the request of the other emphasis area teams
- Assist the ESC in identifying data gaps, collection and reporting weaknesses
- Assist in deciding whether a need exists for additional emphasis area teams
- Collect data from different agencies represented on the ESC

The data team was created not only to assist in the mining and presentation of data on behalf of other emphasis area teams but also to develop performance measures, outcomes and strategies specific to data collection, storage, analysis and reporting.



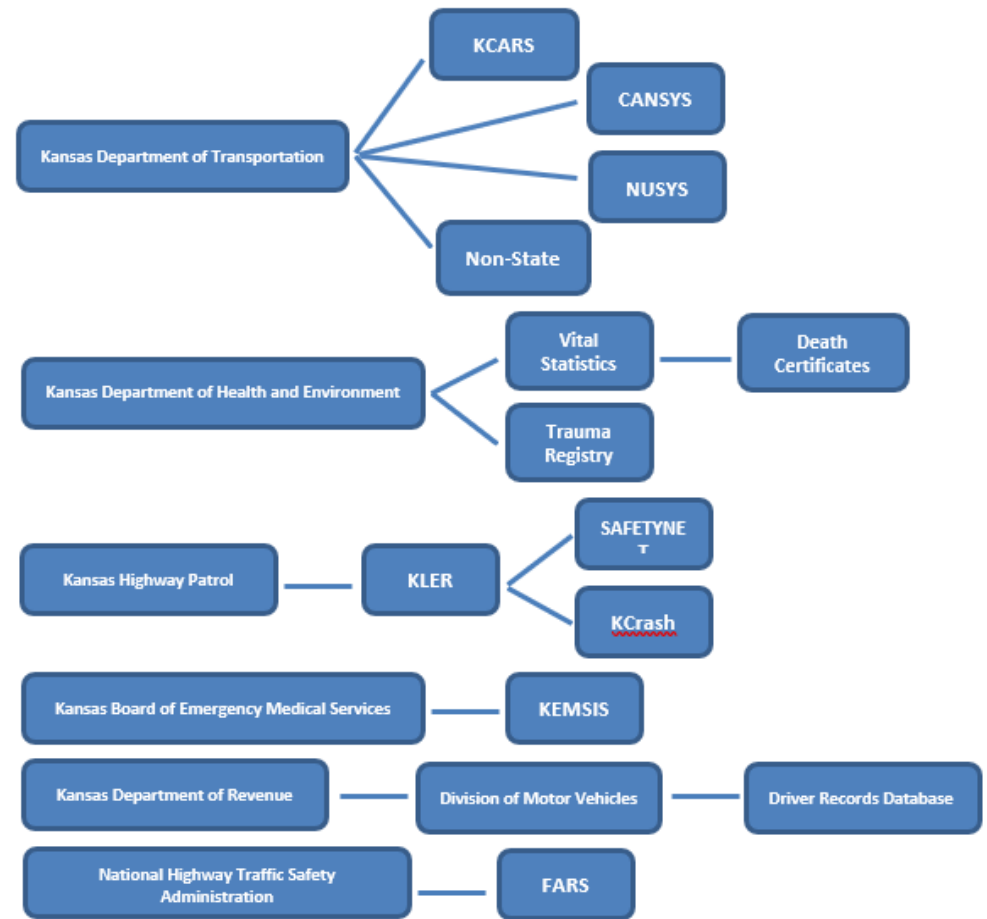
The team first met in May 2009 and currently includes representatives from the following organizations:

- AAA Allied Group (AAA)
- DCCCA
- Mid-America Regional Council (MARC)
- Federal Highway Administration (FHWA)
- National Highway Traffic Safety Administration (NHTSA)
- Kansas Department of Health and Environment (KDHE)
- Kansas Department of Revenue (KDOR)
- Kansas Traffic Safety Resource Office (KTSRO)
- Kansas Department of Transportation (KDOT)
- Kansas Board of Emergency Medical Services (KBEMS)



Data Collection and Storage

To address highway safety problems requires data of all sorts. Roads of many kinds cross the state, with twists and turns, rises and falls. An array of vehicles is used by drivers young and old, impaired and sober, some with cell phones, some texting, some speeding and some fully attentive. Those who design, construct and maintain the infrastructure work to make it safe. Law enforcement works at managing those who use the infrastructure and emergency services – and are called on when crashes occur. So “crash data” include roadway geometrics, vehicles, drivers, injuries and fatalities, emergency management and more. Because of its complexity and need for security, the data is housed in databases maintained by various agencies.



Below are outlines of these data sources.

CANSYS - State Highway Network Data

This KDOT database contains information about the geometrics, condition and extent of the 10,000-plus miles of road in the state highway system, as well as a small percentage of off-state system local roadways. It contains data on bridges, access permits and at-grade rail crossings and supports the work of various bureaus at KDOT, as well as of the FHWA and Kansas Legislature. CANSYS is maintained by the KDOT Geographic Information Systems Unit (GIS).

NUSYS - Non-State Urban Classified Network Data

This KDOT database contains information about roads classified as collector and above within the 40 areas in Kansas designated as urban by the U.S. Census Bureau. NUSYS is a central repository of geometric inventory information on off-state system local roadways

and is used to produce required federal reports. The database provides answers to questions posed by the FHWA, Kansas Legislature, KDOT personnel and other state agencies. NUSYS is also maintained by the Crash Data Unit (CDU).

Non-State System – Non-State Network Data

This database contains all other roads that make up the remainder of the 140,000 total public road miles, including rural classified and all other unclassified (local) routes. The Non-State System roads are maintained by the GIS and Traffic and Field Operations units in Transportation Planning.

KCARS - Kansas Crash & Analysis Reporting System

KCARS contains data from the records of all reportable crashes in Kansas from 1990 to the present. The data in KCARS are provided to KDOT by law enforcement agencies. The data include any field that is listed on the Kansas Motor Vehicle Accident Report and recorded by law enforcement. KCARS is updated and maintained by the CDU, GIS, and Kansas Office of Information Technology Services (OITS). The Bureau of Transportation Safety and Technology (BTST) provides answers to questions posed by the FHWA, Kansas Legislature, KDOT personnel and other state agencies using KCARS data.

Vital Statistics - Death Certificates

The Office of Vital Statistics within the KDHE supplies KDOT, at KDOT's request, with records that permit the coding of fatal crashes. The information helps researchers understand the cause and nature of injuries suffered in crashes and the time that elapses between injury and death. To query vital statistic data visit kic.kdheks.gov/death_new.php#top.

Driver Records

The Driver Records database is hosted by the Kansas Department of Revenue Division of Motor Vehicles (DMV). It contains the records of all licensed drivers in Kansas. The database depends on many sources. For example, KDOT provides crash records to the database and the court system supplies adjudication information. Currently, the DMV was replacing their database. When the database is finished, it will provide those interested in traffic safety with a more complete picture of specific drivers. It is anticipated that this information will improve public safety and maximize the impact of traffic-safety resources.

Traffic Records Coordinating Committee (TRCC)

Traditionally, traffic record data have been housed in isolated repositories. However, in June 2005, an interagency committee, the Traffic Records Coordinating Committee (TRCC), began developing a statewide traffic records system. This system will allow state and local agencies to access data by bringing together information that is now housed in KDOT, KDHE, KDOR, KBEMS and the Kansas Bureau of Investigation (KBI). The result will be a more complete picture of traffic safety in Kansas.

The data team would like to work with the TRCC to promote and expand use of:

- Kansas Law Enforcement Reporting System (KLER)
- Electronic Traffic Citation Program (eCitations)
- Report and Police Impaired Drivers System (RAPID)
- A new crash data portal that will be designed to increase the number of law enforcement agencies submitting crash reports electronically to KDOT. The system would decrease the processing time for crash reports and make the reports available to the KDOT crash repository in a timely manner.

Each of these systems are discussed in more detail throughout the plan.

eCitations - Statewide Electronic Traffic Citations Program

The Kansas Criminal Justice Information System (KCJIS) and the Kansas Traffic Records Coordinating Committee (TRCC) have identified the need for a design and plan for implementing a statewide electronic traffic citations program, commonly referred to as "eCitations".

Electronic Traffic Citations (eCitations) are the way of the future for the issuance of traffic citations, the storage of related information and the dissemination to numerous authorized users. It contemplates a near-paperless, seamless process from the time of the traffic stop through court disposition of the traffic citation. Briefly, the law enforcement officer making the stop records information on the driver and the driver's vehicle, either through a scanner or manually,

into a laptop or handheld computer. Driver and vehicle information is uploaded into a citation form on the officer's computer, either from information scanned from the barcodes and/or magnetic stripes on the driver's license and vehicle registration or an external source such as the KDOT, DMV, KBI or National Crime Information Center (NCIC). Time and location information can be input through drop down menus, search words or automatically populated from GPS or other location software. Officer and court information can be populated into the citation automatically from defaults pre-set by the officer at the start of the officer's shift. This leaves only a few pieces of information to be entered by the officer, such as the violation(s), code number(s) and fine amount(s).

An eCitation system provides a multitude of benefits to the agencies identified above and to the public, including decreasing the time of traffic stops and issuance of traffic tickets; increasing the accuracy of the data collected; eliminating the need for the law enforcement agencies, the courts and the prosecutors' offices to each enter the same citation data into their record management systems; and the automatic collection and analysis of data used to improve public safety and the roadways.



RAPID - Record and Police Impaired Drivers

In 2009, the Kansas DUI Commission, a multi-disciplinary state commission tasked with studying driving under the influence (DUI), recommended the creation of a tracking system to consolidate access to an offender's DUI history as well as modifications to existing systems to facilitate this tracking.

The goal of the system is to enhance available data sharing mechanisms and make improvements enabling a better and more efficient process for prosecutors, courts and law enforcement to prosecute and track DUI offenders from arrest through prosecution, sentencing, probation and monitoring. This system must leverage existing criminal history repositories at KBI, resources available in the KCJIS and other existing state repositories to deploy a secure web-based system for improving DUI prosecution in the state of Kansas.

KLER - Kansas Law Enforcement Reporting System

The Kansas Highway Patrol (KHP) developed KLER, a field-based reporting system, which incorporates data from more than 15 reports, including KDOT crash forms, KBI incident forms and KDOR insurance forms. Law-enforcement officials use it to complete and view critical records on mobile laptop computers in their cars during traffic and crash stops. Eventually, KLER will include in its records a new statewide uniform traffic e-citation system. To learn more about the KLER System and its benefits, visit portal.kstrs.org/Shared%20Pages/KLER.aspx.

The SHSP data support team would like to work with the TRCC in promoting and expanding use of KLER. The expansion would require additional training and education for law enforcement officers and administrators would need to emphasize the importance of electronic crash reporting.

SAFETYNET and KCrash

The KHP maintains SAFETYNET and KCrash for federal reporting purposes and state use. KHP supplies data on inspections and collisions to SAFETYNET, which was developed, and is supported, by the Federal Motor Carrier Safety Administration (FMCSA). The KHP is the lead agency for state participation in the Motor Carrier Safety Assistance Program, which focuses on roadside inspections. The KHP is also required to document federally reportable collisions that include three criteria: a fatality involving a commercial motor vehicle (CMV),

an injury collision involving a CMV that requires immediate medical attention away from the scene or a collision with a CMV resulting in disabling property damage to at least one unit.

The KCrash program has accelerated the filing of collision reports with FMCSA. It facilitates the electronic filing of SAFETYNET reports in place of paper forms. The KHP receives electronic copies of all collision reports involving a CMV to determine whether they meet federal reporting requirements. Paper copies of collision reports involving a CMV are converted to an electronic format by KDOT. KCrash screens all state highway system crash reports in order to populate the required SAFETYNET fields before they are forwarded to FMCSA.

KHP and KDOT are currently working together to modify the States' crash collection forms to incorporate more information on impaired drivers. They are developing more options for pre-arrest tests for alcohol impaired drivers and Drug Recognition Expert (DRE) test and the seven drug categories. After laboratory tests are confirmed, results will be categorized and KDOR and KDOT will incorporate the new CDL codes into the crash collection forms. These changes will allow Kansas to track alcohol and drug related crashes throughout the state. The result will be a comprehensive baseline of drug and alcohol involved crashes with specific drug impairment information, allowing future plans to specifically target these high-risk crash factors.

Observational Seat Belt Survey and Observational Distracted Driving Survey

Every year, KDOT Traffic Safety section and its partners collect data across the state on seatbelt usage rates and driver distraction rates.

Methodology of adult survey: The summer Safety Belt Direct Observation Survey complies with the federal rule as published in Federal Register Vol. 76 No. 63, April 1, 2011, Rules and Regulations, pp. 18042 – 18059. The selection of a new sample every five years is required by the regulations. So, beginning in 2017, the new, NHTSA-approved sample contains 552 randomly selected sites among three different road types in 26 randomly selected counties, selected from the pool of counties which contains 85 percent of the fatalities in Kansas. The survey is conducted in June and July.

Methodology of child survey: The Occupant Protection Observational Survey is similar to the summer survey. It contains approximately

395 randomly selected sites, distributed throughout 20 counties randomly selected from the pool of counties that contains 85 percent of the population of Kansas. The observation sites were selected from locations where the observed birth-17 age groups are likely to be transported (i.e. day cares, grocery stores, Wal-Mart type stores, and in elementary, middle, junior high and high school neighborhoods). The survey is conducted February through April.

For more information visit ktsro.org/seatbelts-and-driving-behaviors.

Trauma Registry

The trauma registry system is organized to facilitate a multi-disciplinary response to those who suffer trauma related injuries during car crashes or other events. The trauma registry houses data on trauma patients from all acute care facilities in Kansas. Registry data are used by emergency medical service personnel, hospital staff and the KDHE staff to identify injury trends, prioritize needs and implement and evaluate prevention strategies. For more information visit kstrauma.org/.

KEMSIS - Kansas EMS Information System

KEMSIS is a data system that captures the condition of patients and the treatments they receive before arriving at a hospital. KEMSIS is a voluntary reporting system whose elements mirror those in the National Emergency Medical Service Information System dataset. Services utilize this information for quality improvements, equipment decisions, staffing adjustments, unit locations and treatment modalities. The system also provides an electronic patient care report for hospitals. As of 2012, 74 emergency medical services and 67 hospitals were filing reports with KEMSIS. For more information, visit ksbems.org/ems/?page_id=1603.

FARS - Fatality Analysis Reporting System

FARS is a database funded by the NHTSA and open to the public on its website. It contains records of all fatal crashes in Kansas. To be included in FARS, a crash must involve a motor vehicle traveling on a roadway customarily open to the public and result in the death of a vehicle occupant, or of a non-motorist, within 30 days of the crash. The FARS file contains descriptions of each fatal crash reported. Each case has more than 150 coded data elements that characterize the crash, the vehicles and the people involved. Fatality data can be viewed at www-fars.nhtsa.dot.gov/Main/index.aspx.

Safety Analyst

Safety Analyst was developed as a cooperative effort by FHWA, and participating state and local agencies of which KDOT is one of the state agencies supporting the pooled fund. Safety Analyst software is used in the decision-making process to identify and manage a system-wide program of site-specific improvements to enhance highway safety by cost-effective means.

Benefits of using Safety Analyst are the Network Screening, Diagnosis & Countermeasure Selection, Economic Appraisal & Priority Ranking and Countermeasure Evaluation tools. KDOT has implemented the software using the Network Screening tool to identify sites with higher than expected crash frequencies on a system-wide approach. Recently KDOT has used the Network Screening and the Economic Appraisal & Priority Ranking tools to select Highway Safety Improvement Plan (HSIP) funded intersection projects. KDOT is currently developing an intersection inventory in a format that will streamline the software's challenging data input requirements.

The Network Screening tool uses observed crash data as well as the relationship between crash frequency and traffic volume to identify sites that could benefit most from a safety improvement.

- Sites with higher-than-expected crash frequencies which may indicate the presence of a safety concern that is potentially correctable in a cost-effective manner.
- Sites whose crash frequencies are not higher than expected, given the traffic volumes and other characteristics present at the site, but which nevertheless experience sufficient numbers of crashes that may potentially be improved in a cost-effective manner.

In addition, the Network Screening tool can identify sites with high crash severities and with high proportions of specific crash or collision types. The network screening algorithms focus on identifying spot locations and short roadway segments with potential for safety improvement, but also include the capability to identify extended route segments. Network screening and all other Safety Analyst algorithms can consider specific crash severity levels (fatalities and serious injuries, fatalities and all injuries, property damage-only) and all severity levels combined.

Goals and Strategies

The data support team has chosen five goals as the focus of its efforts.

1. Coordinate the data needs of the Kansas Strategic Highway Safety Plan.
2. Improve data analysis capability to better inform decision makers.
3. Train those who create, input and utilize crash data.
4. Map all crashes statewide using GIS tools.
5. Improve systematic reporting of crash data.

The challenge is to identify the strategies that will have the greatest impact on improving the availability, accuracy and efficiency of data and data analysis.

Goal 1: Coordinate the data needs of the Kansas Strategic Highway Safety Plan.

Current strategies:

- Map crashes based on variables related to the responsibilities of the EATs.
 - Background: The KDOT Traffic Safety Section manages a variety of teams created to focus resources and attention toward the state's most pressing traffic safety concerns. Mapping capabilities would provide another tool to better focus the teams' efforts on areas in most need of traffic safety improvements.
 - Method: research
 - Costs: none
 - Lead agency and contact: KDOT, Traffic Safety Section
 - Challenge: securing accurate and timely data
 - Target date: FY 2018
- Develop a tool that helps local jurisdictions and regional safety coalitions to access and analyze crash data and maps.
 - Background: KDOT is a central location for crash data and analysis that many groups utilize to fulfill their data needs. However, with so many requests coming to one central location, the requests may not be fulfilled in a timely manner and the KDOT personnel fulfilling those requests may have limited time to focus on data accuracy and data analysis. A web-based tool accessible to our partners would reduce the demand on personnel to fulfill general requests and reduce the time required to receive basic crash data and maps.

- Method: project
- Cost: \$60K
- Lead agency and contact: KDOT, Crash Data Unit
- Challenge: time
- Target date: FY 2018

Future strategies:

- Link crash data to the trauma registry (to improve serious injury numbers).
- Develop a methodology to identify high-frequency crash corridors on local roadways.



Goal 2: Improve data analysis capability to better inform decision makers.

Current strategies:

- Create an intersection inventory to support crash analysis.

Background: The FHWA defines an intersection as “a planned point of conflict in the roadway system.” A quarter of all

crash fatalities in Kansas occur at intersections, but too little data is available existing intersection. One problem: individual intersections do not have an identification system. Creating unique identifiers for intersections would allow better crash reporting and data collection. The goal is to identify and characterize all intersections on the state highway system in terms of more than 25 data elements, including the type of traffic control present at the intersection, the number of legs, intersection geometry (turn lanes, tapers, etc.), directions of travel and pavement type.

- Method: project
- Cost: estimated at \$163,400 over two years
- Lead agency and contact: KDOT, Traffic Engineering Section
- Challenge: finding reliable method of systematically coding crashes to specific locations
- Target date: FY 2019

- Create a horizontal curve inventory to support crash analysis.
Background: According to the FHWA, horizontal curves are those that change the alignment or direction of the road (as opposed to vertical curves, which change the slope). However, available data on existing curves is not thorough. As with intersections, individual curves do not have an identification system. Creating unique identifiers for curves would allow better crash reporting. Once curves are identified in this way, data can be collected.

All the curves to be identified are part of the state highway system. Data collected will include curve location, length, advisory speed (if present) and radius. An HSIP project has been programmed to complete this work.

- Method: project
- Cost: \$40,000
- Lead agency and contact: KDOT, GIS Section
- Challenges: defining a curve and determining specific calculations for curve recognition
- Target date: FY 2019

- Use Safety Analyst to couple data analysis with engineering solutions.

Background: In addition to its ability to scan the highway system for crash “hot spots” through the Network Screening Tool, Safety Analyst can use statistical techniques to perform detailed crash analysis and recommend possible engineering countermeasures for specific locations.

KDOT can use Safety Analyst to:

- View detailed site analysis summarizing crash patterns and overrepresented crash variables
- View diagnoses that recommend engineering countermeasures
- Suggest cost/benefit appraisals of proposed countermeasures
- Suggest project prioritization

- Method: software
- Cost: \$35,000 annual licensing fees
- Lead agency and contact: KDOT, Traffic Safety Section
- Challenge: importing, processing and calibrating Kansas

crash, roadway and traffic volume data for Safety Analyst use

- Target date: FY 2018

Future strategy:

- Revise official Kansas Motor Vehicle Crash Report form based on the Model Minimum Uniform Crash Criteria (MMUCC).

Goal 3: Train those who create, input and utilize crash data.

Current strategy:

- Develop online training for law enforcement agency crash reporting via KDOT web and social media outlets.
Background: The Crash Data Unit at KDOT received requests from several law enforcement agencies to develop educational training on the coding of motor vehicle crash reports and the use of KLER. KDOT has responded with an onsite training session at KDOT headquarters, which can be recorded and made available on the law enforcement webpage. The training addresses complicated coding issues and reminders. The web-based training is conducted from basic to advanced levels to reduce setbacks for both KDOT and the law enforcement agencies who have reports returned to officers for corrections.
 - Method: project
 - Costs: none
 - Lead agency and contact: KDOT, Crash Data Unit
 - Challenge: time
 - Target date: FY 2018

Future strategies:

- No future strategies identified at this time.

Goal 4: Map all crashes statewide using GIS tools.

Current strategy:

- Complete and automate geocoding (assignment of latitude and longitude) of crashes on local roads
Background: The Crash Data Unit at KDOT is working to geocode and geolocate all crashes in Kansas. While CANSYS is able to support the geolocation of crashes on the state highway system, another method is being developed to automatically geocode crashes located on non-state highways

and locally administered roads. The geocoding of crashes relies on information provided by crash reports. Unfortunately, longitude and latitude are not captured in crash reports and must be inferred or found indirectly. Geocoding of all existing crashes on local roads has been completed. With the development of a locating tool, approximately 90 percent of all local crashes could potentially be automatically geolocated.

- Method: project
- Cost: \$20,000
- Lead agency and contact: KDOT, GIS Section
- Challenge: 140,000 centerline miles of crashes
- Target date: FY 2018

Future strategies:

- No future strategies identified at this time.

Goal 5: Improve systematic reporting of crash data.

Current strategy:

- Create a standard online form available on KDOT's external website for all crash data requests.
Background: The Crash Data Unit manually builds and distributes numerous standardized quarterly, annual, and ad-hoc reports for a variety of internal and external users. A one-stop shop for requesting data will streamline management and tracking of outgoing data, and also indicate which requests are routine and could be automated.
 - Method: project
 - Costs: none
 - Lead agency and contact: KDOT, Crash Data Unit
 - Challenge: change
 - Target date: FY 2018

Future strategy:

- Automate reporting and distribution of routine crash data reports.

Chapter 10

Education Support

Roadway engineering and driver behavior both affect crash statistics—so both are addressed in the Strategic Highway Safety Plan (SHSP).

The SHSP will drive the highway and traffic safety activities of the Kansas Department of Transportation, and through it, we hope to influence our member agencies and the public at large. Our goal is to reduce fatalities by at least half over 20 years. If the goal is met, the five-year average of 417 fatalities a year between 2005 and 2009 would fall to 208 or fewer between 2025 and 2029.

The SHSP works within the frame of the 4E's of Traffic Safety (that is, all roadways): education, enforcement, engineering and emergency medical services. Within this broad frame, each of the Emphasis Area Teams (EATs) will focus on a particular problem, risk or threat associated with roadway safety: local roads, roadway departure, occupant protection, intersections, impaired driving, teen drivers and older drivers. The EATs will ponder, for example, how to communicate to those opposed to centerline rumble strips that those grooves in the pavement actually save lives; how to convince a 28-year-old rural Kansan to wear a seat belt in his pick-up truck; and how to teach parents the proper use of a booster seat. Education will be crucial to success. The education support team was therefore convened to coordinate and support the educational efforts required to help the SHSP succeed.



The education team will identify the tools, networks and platforms that will help other teams distribute their messages, conduct their training and share their resources. Potential roles include developing a system by



which to distribute messages and facilitating public outreach, education and marketing campaigns.

The team, which first met January 23, 2012, currently includes representatives from the following organizations:

- Kansas Traffic Safety Resource Office (KTSRO)
- Kansas Highway Patrol (KHP)
- Kansas University Transportation Center (KUTC)
- Kansas Department of Aging & Disability Services (KDADS)
- Kansas Department of Health and Environment (KDHE)
- Safe Kids Kansas
- Kansas Emergency Nurses Association (KENA)
- Kansas Department of Transportation (KDOT)
- Kansas State Nurses Association (KSNA)
- Kansas Trauma Program

Some of the new strategies discussed below – specifically, a tiered communications network and a user-friendly website “hub” for traffic safety information – will serve several purposes: disseminating research on behavioral and engineering approaches to reducing traffic fatalities; publicizing engineering successes; educating drivers about new traffic laws; providing resources to locals; and promoting public involvement of Kansans with an interest in safety.

Kansas Traffic Safety Resource Office

The KTSRO is the educational arm of the Kansas Department of Transportation Traffic Safety Section.

The mission of KTSRO is to provide public information and education to protect Kansans from avoidable injury or death on Kansas roadways. Together with many partners, KTSRO focuses on measures dealing with novice drivers, increasing seat belt use, preventing impaired driving and underage drinking and raising motorcycle safety awareness. KTSRO is an extension of KDOT providing their resources, materials and traffic safety information through a physical office located at 2930 SW Wanamaker Drive, Topeka, KS, (800-416-2522) and on the web at ktsro.org.



Educating Drivers: A Lifetime Course

To define the word “educate,” dictionaries often mention schooling, training and instruction. But to make good driving decisions, new drivers need education from many sources, including parents, law enforcement officials and more experienced peers and siblings. Driving decisions may be based on law (specifying, say, who needs to wear a seatbelt or the steps to get a driver’s license) or technique (such as how to drive through a roundabout).

Driving decisions also may be affected by more informal sources—such as the repeated retelling, within a community, of a story or stories. Or it may be shaped by more novel approaches, such as that taken by Crawford County (see “A Seatbelt-Use Program Goes Viral”). Yet for the most part, in the realm of driving, the word “education” refers to systemic efforts to positively influence people’s behavior through educational campaigns and programs. In general, the most effective public education strategies are those tied to a specific activity.

Educators who seek to have an impact need to keep the following questions in mind as they design programs.

- Who is your primary target audience?
- How do you reach this audience through all the background “noise”?
- If you have several audiences, what’s the best medium for

- reaching each one?
- How do you measure your impact?
- What is your message?
- Who are the best messengers to communicate your message?
- How are changes in communication media affecting education?

How we answer these questions will determine the communication strategies we select and the messages we dispatch.

For Every Safety Restraint, There Is a Season

A newborn's arrival into a family is a great teaching moment about the use of safety restraints.

KDOT conducts observational safety belt usage surveys across the state. In 2016, children—from newborns to age 4—were observed to be properly restrained 97 percent of the time. In part, that's because hospitals educate new parents about the use of car seats before sending a newborn home.

Unfortunately, this figure drops to 84 percent for kids between ages 5 and 9. Parents are harder to reach when the child is transitioning from a car seat to a booster seat or later from booster seat to seat belt.

At that point, parents need to learn booster seats work by raising a child up so the lap and shoulder belt are positioned safely. Their use reduces the risk of injury by 59 percent.

Knowing this, the Occupant Protection EAT has strategies to promote curricula such as Boosters to Belts and Safety Breaks. The education team will advise the Occupant Protection EAT on ways to implement these strategies.



A Seatbelt-Use Program Goes Viral

Getting teenagers to use seatbelts is tough. One Kansas county got more kids to buckle up by getting them involved in creating a program and by using sugar rather than vinegar to change their behavior.

In 2008, when law enforcement officers visited every school in Crawford County and gave safety talks there, county teens had one of the state's lowest compliance rates for seatbelt use. But by the end of the 2008-2009 school year, the average increase in seatbelt use there was 16.3 percent.

Today, in more than half of all Kansas counties, at least one school uses the program.

Representatives from the Crawford County Sheriff's office, Kansas Highway Patrol and Kansas Department of Transportation based their pilot program on two assumptions. The first: If students are involved in creating the program, they'll be more invested in its success. The second: Both the threat of consequences and the offer of rewards work best when you're trying to change behavior.

Students became creators when they were asked to nominate different names and slogans for the program. In the end, Seat Belts Are for Everyone (SAFE) won the most votes. Students also designed a pledge card, which recognized each of the six Crawford County schools participating in the program.

Law enforcement officials would visit schools, address students, then follow up with enforcement of seat belt laws, typically for a week following their visit.

Meanwhile, various agencies or offices were approached for contributions to fund rewards to teenagers who signed pledge cards promising to use seat belts. Students could sign the cards each month to be eligible for a monthly drawing.

Of the 1,875 students in the county, an additional 306—or 16.3 percent—were using seatbelts by the end of the school year. Today, SAFE programs are operating in more than 60 Kansas counties. For more details, visit ktsro.org/safe.



Goals and Strategies

The Education Support Team has three goals.

1. Reach drivers and those who influence them (police and lawmakers, for example) by developing a communications infrastructure.
2. Maintain a statewide traffic safety hub of information, training and resources.
3. Support partners in traffic safety.



Goal 1: Reach drivers and those who influence them (police and lawmakers, for example) by developing a communications infrastructure.

Current strategy:

- Develop a tiered network of organizations and individuals to

deliver messages to targeted audiences.

Background: Messages delivered to the wrong audiences fall on deaf ears. KDOT public affairs managers and KHP public resource officers work hard to develop and maintain regional networks. But the audience for news of an engineering approach to prevent vehicles from leaving the roadway may be much different from an audience that needs to hear car seats are safer than laps for children. The role of social media is becoming increasingly important in our ability to influence a targeted audience. We want to make certain that our message, whatever its form—news release, web link, public service spot or social media—reaches its specific audience. The network route a message takes will depend on the EAT that develops it; the media best suited to its distribution; and the target audience, such as, for example, the trauma community. We will specify audiences, identify partner agencies and create networks as needed to implement education strategies that emerge from the EATs.

- Method: project
- Costs: none
- Lead agency and contact: KDOT, Traffic Safety Section
- Challenge: accepting the limits of our reach
- Target date: FY 2018



KDOT's Voice in Kansas

- Send only meaningful information.
- Don't waste words.
- KDOT observes those rules to deliver its messages effectively to—and through—media.
- Statewide messages typically come from KDOT headquarters in Topeka.
- Regional messages originate from six district offices, each with its own public affairs manager (PAM).
- Questions? Visit kdotapp.ksdot.org/welcomecontact/contact.aspx for contact information.

Future strategies:

- Meet with media representatives to brainstorm about media and messages that will give us access to our target audiences.
- Research analytics to measure and improve networking.

Goal 2: Maintain a statewide traffic safety hub of information, training and resources.

Current strategy:

- Develop and purchase four domain names: ksdrivetozero.com and .org and drivetozeroks.com and .org.

Background: Websites facilitate public outreach. These sites will be user-friendly and updated frequently. They will be the portal for all Kansas traffic and roadway safety information, beginning with this SHSP.

- Links to engineering and EMS information will be provided.
- The “Driver Education Toolkit” is an example of the kind of information that could be made available. Designed by KDOT to assist partners in making safe driving presentations, the kit contains brochures, pamphlets and videos.

These sites will redirect the audience to ksdot.org, which will be redesigned and retitled. Updates to the sites will be dictated by web analytics.

- Method: project
- Costs: TBD
- Performance measure: site visits
- Lead agency and contact: KDOT, Traffic Safety Section
- Challenge: securing funding to maintain a site and steering traffic to it
- Target date: FY 2018

Future strategies:

- No future strategies identified at this time.

Goal 3: Support partners in traffic safety.

Current strategy:

- Develop a checklist tool for the EATs to use when implementing their education strategies.

Background: Sometimes the hardest part about launching an initiative is knowing where to begin. A checklist tool developed by the education team will give practitioners guidance about how to design an education strategy.

- Method: project
- Costs: TBD
- Lead agency and contact: Kansas Traffic Safety Resource Office
- Challenge: anticipating the different needs of each EAT
- Target date: FY 2018

Future strategies:

No future strategies identified at this time.



Appendix A

Policies, Programs, Personnel, Achievements

Road safety requires the skills of engineers, public relations specialists, trainers, law enforcement officers and emergency medical personnel, among others. Many strategies for making travel safer were identified in the first as well as the current Strategic Highway Safety Plan, by the Driving Force Task Force and in other initiatives. Please note, although many of the strategies are complete, some are part of on-going efforts as well. These strategies/results are described below.

Impaired Driving

- Operation Impact was launched in the Kansas City area in 1990 and in Wichita in 2010.
- Kansas Highway Patrol (KHP) executes Roving Aggressive Violation Enforcement (RAVE) saturation patrols on high priority corridors statewide.
- A Kansas Impaired Driving Assessment conference was held in 2006 with several results:
 - Drivers with blood alcohol levels of 0.15 or greater now face heavier penalties.
 - A DUI advisory board, which meets quarterly, was created.
 - A traffic safety resource prosecutor was hired to conduct training statewide and to provide prosecutors with information to assist them in cases involving driving under the influence of alcohol.
- The Kansas DUI Commission, a multi-disciplinary state commission, was sanctioned by the Kansas legislature to conduct a two-year study (2009-10) of driving under the influence in Kansas.
- The KHP – Breath Alcohol Unit (BAU) and Kansas Traffic Safety Resource Prosecutor (KTSRP) offers numerous training opportunities related to DUI detection and enforcement.
- The Kansas Law Enforcement Training Center includes DUI detection and enforcement as part of their standard curriculum.
- KDOT funds impaired driving deterrence initiatives that include Special Traffic Enforcement Program (STEP), Impaired Driving Deterrence Program (IDDP), RAVE and the 1-866-Must B 21 program.
- KDOT has provided federal grant money to Kansas Department of Health and Environment (KDHE) and the Kansas Bureau of Investigation (KBI) for the purchase of instruments used to establish impairment in suspected impaired drivers.
- Advocacy groups such as Mothers Against Drunk Driving (MADD) and the DUI Victim's center deliver educational messages against impaired driving.



- Law enforcement relies on trained hospitals and EMS personnel to assist in the gathering of blood evidence used in the prosecution of many DUI cases.
- Media campaigns are promoted highlighting the danger of impaired or distracted driving.
- DUI law includes provisions to enable prosecutors to charge offenders with Aggravated Battery DUI in DUI cases involving serious or great bodily harm to others.
- The KTSRP and KHP – BAU offer various trainings across the state designed for prosecutors.

Intersections

- Kansas remains a national leader in the promotion and use of roundabouts.
- KDOT continues to manage a longstanding program related to the intersection of highways and railroad lines.
- KDOT maintains sign retro-reflectivity (visibility when lighted by headlights) on state highways by replacing sign sheeting at scheduled intervals.
- KDOT promotes good access management near intersections through a corridor management policy.
- KDOT performs improvements of crash-prone intersections under support of the federal Highway Safety Improvement Program (HSIP).
- The Traffic Engineering Assistance Program (TEAP) is available to assist with traffic studies on locally owned roads.
- KDOT experimented with innovative intelligent transportation systems (ITS) applications at intersections.
- KDOT completed road safety assessments on all 10,000 miles of the State Highway System.
- KDOT provides street lighting at higher-volume intersections and interchanges under support of the federal HSIP.
- Some intersection approaches have been realigned to reduce or eliminate intersection skew.
- Traffic signals continue to be modernized with:
 - dilemma-zone protection
 - clearance interval (yellow and all-red) optimization
 - traffic signal coordination along urban corridors
- Flashing solar-powered beacons are used on intersection warning and stop signs where recommended.
- Transverse rumble strips are installed across the stop approach

lanes in rural areas where recommended.

- Public works and law enforcement officials are provided with training and educational materials through Kansas *Local Technical Assistance Program (LTAP)* at University of Kansas and the Traffic Assistance Services for Kansas program at Kansas State University.
- Since 1998 the 10,000 miles of road in the state highway system have been reviewed or studied, county by county, either by a traffic engineer or by an engineering associate supervised by an engineer from the Kansas Department of Transportation Traffic Engineering Section.

Older Driver

- The first Kansas Senior Driving Summit was held in March 2014 to educate and communicate with strategic partners.
- Kansas Traffic Safety Resource Office (KTSRO) conducts training to increase the number of CarFit coordinators and technicians, and promotes events statewide.

Visual Aids

Many standards practices in the application of traffic control devices account for the visual needs of the older driver, including the use of high reflectivity sign and pavement markings on the State Highway System. At traffic signals, the use of the all-red clearance interval, protected left-turn phase, signal head backplates and 12-inch signal lenses are designed to aid older drivers.

Occupant Protection

- KDOT has sponsored Bucks for Buckles since 2005.
- KDOT continues a three-year renewable grant to fund the Buckle Up program, providing child safety seats, training and other support to enhance child passenger safety.
- KDOT sponsored an Occupant Protection Safety Assessment in December 2003.
- A primary seat belt law passed in 2010.
- Utilizes KDOT staff and its safety partners to gain grassroots

support, testify before the Kansas Legislature and provide information to the media on the benefits of strong safety restraint laws.

- KDOT continues the annual Click It or Ticket (CIOT) media/enforcement campaign.
- Researched methods for retaining and recertifying law enforcement personnel trained in child passenger safety.
- Supports continuing education opportunities for CPS Technicians and their instructors.
- Continue to promote employer “buckle-up” programs.
- Expanding use of non-traditional media (social networking sites, internet, games) to promote CIOT message.
- Continue to promote occupant protection message at event venues, such as universities, Sporting KC, Country Stampede and Johnson County Parks & Recreation.
- Continue to expand the Seatbelts Are For Everyone (SAFE) program statewide.
- Provides funding support for a Kansas representative on the National CPS Board.
- Promotes curricula such as Boosters to Belts, Safety Breaks and CPS for daycare providers.
- Surveyed attitudes about and knowledge of seat belt laws annually and used the results in public education efforts.
- Reaches out to school resource officers and school nurses to provide seat belt education and information to students.
- Develops partnerships with the medical and faith communities to promote occupant protection strategies to senior citizens and minority group members.
- Continues to support Safe Kids Kansas by providing funding for supplies at check-up events, education regarding children in and around cars, and by partnering through traditional and social media efforts.
- Continues presentations on occupant protection at the KDOT Traffic Safety Conference, Special Traffic Enforcement Program luncheons, and trainings for new recruits at Kansas Law Enforcement Training Center (KLETC).
- Provides signage for law enforcement agencies to promote buckling up while on the job.
- Require all agencies that receive KDOT grants to have an enforceable seat belt usage policy.
- Provides grants to pay for equipment and overtime related to

conducting seat belt enforcement activities.

- Promotes AAA Community Traffic Safety Awards for the exceptional enforcement of occupant protection laws.
- Trains prosecutors and judges on occupant protection laws.
- Continues program to enforce nighttime seat belt use.
- Continues support for local child passenger safety inspection stations and provision of safety seats for low-income families.
- Continues observational surveys conforming to NHTSA standards.
- Increases enforcement efforts in counties with low rates of seat belt use.
- Provides occupant protection education within minority groups where seat belt use is low.
- Uses billboards/gas pump toppers or other outdoor/non-traditional advertising to communicate messages in parts of Kansas with low rates of seat belt use.
- Amended KSA 8-2503 to allow for primary enforcement in all seating positions, regardless of age.

Roadway Departure

- KDOT increased the standard width of the white edge-line on all state highways from four inches to six inches in 2005.
- KDOT implemented a new centerline rumble strip policy in 2007.
- KDOT developed a policy on the use of cable median barriers in 2009.
- KDOT maintains sign retro-reflectivity (visibility when lighted by headlights) on state highways by replacing sign sheeting at scheduled intervals based on anticipated service life.
- KDOT upgrades pavement markings based on the routine collections of retro-reflectivity data under support of the federal Highway Safety Improvement Program (HSIP).
- Researched the potential impact of expanded use of centerline rumble strips.
- KDOT has and continues to improve highway shoulders under highway programs such as Comprehensive Highway Program, Comprehensive Transportation Program, and now T-Works.
- Installs rock-wedge shoulders.
- Utilizes a tapered pavement edge where appropriate and promotes its use to county agencies.
- Installs shoulder rumble strips based on policy.
- Created a program that funds the removal of fixed objects on locally-owned roads.

- Continues application of the most current Roadside Design Guide in highway design.
- Continues media campaigns highlighting the danger of impaired or distracted driving.
- Promotes educational campaigns to let people know the likelihood of unbelted drivers and passengers being thrown from a vehicle in a rollover—and their survival rate.
- Supports defensive driving training.
- Conducts road safety audits on locally-owned roads.

Teen Drivers

- In 2009, the Crawford County sheriff and KDOT initiated Seatbelts Are For Everyone (SAFE), a program to promote seatbelt use among high school students. Other partners include the six Kansas trauma councils, AAA of Kansas/Missouri and State Farm Insurance, as well as numerous local organizations and businesses.
- The Kansas Highway Patrol (KHP) and the Kansas Motor Carriers Association (KMCA) promote Teens in Trucks, a program aimed at teaching new drivers about the dangers of driving near large commercial motor vehicles and how to minimize crash risks.
- Stormont-Vail Health Care Trauma Services continues to conduct presentations to high schools on roadway safety.
- The KHP uses its “Convincer” and “Rollover” in programs reaching teen drivers.
- Think First targets teens using speakers who have suffered consequences from poor decisions.
- The Kansas Traffic Safety Resource Office (KTSRO) developed a Teen Driver Tool Kit.
- The American Automobile Association (AAA) has a Dare to Prepare pre-permit program for young teens and parents.
- Safe Kids has a Countdown 2 Drive program that helps families build passenger agreements.
- KDOT contributed funding to research that used in-car cameras to understand the behaviors of young drivers.
- Schools install signs at their parking lot exits carrying such safety messages as *Buckle Up*.
- KDOT established reduced speed zones near rural high schools at peak traffic hours.
- Law enforcement often focuses on routes to and from high schools.
- The Kansas Graduated Driver’s License law passed in 2009.

Commercial Motor Vehicles (Future EAT)

- KHP, with the support of KMCA and funding from Federal Motor Carrier Safety Administration (FMCSA), implemented the Trucks on Patrol for Safety program which aims to reduce commercial vehicle crashes caused by others who are driving unsafely in proximity to those vehicles.
- KHP and FMCSA implemented Compliance, Safety, and Accountability 2010, a data driven system to identify motor carriers for a safety review.
- KHP conducted 52,458 commercial vehicle and bus safety inspections in federal fiscal year 2010, which are designed to remove unsafe vehicles from highways and collect data on carrier safety.

Emergency Medical Services (Future Support Team)

- Kansas was one of three states chosen by the National Highway Traffic Safety Administration to participate in a trauma and emergency medical services data evaluation project in 2010.
- Regional trauma councils promote motor vehicle safety in each of the trauma regions.
- The Kansas Emergency Nurses Association provides various injury prevention activities in each of its emergency departments.
- Law enforcement relies on trained hospitals and EMS personnel to assist in the gathering of blood evidence used in the prosecution of many DUI cases.

Data

- More than 140 law enforcement agencies are now utilizing the Kansas Law Enforcement Reporting Tool developed by the KHP to complete and electronically submit crash reports to KDOT.
- KDOT continues to train law enforcement on the use and importance of the crash reporting form.
- Continues to provide training for officials in local government so they can understand and use crash data in their safety-related decision making.
- The Traffic Records Coordinating Committee continues to promote electronic reporting of crash reports at city and county level.
- KDOT creates and posts a Quarterly Dashboard Report based on the SHSP. An Annual Dashboard Report contains annual preliminary fatality data from January 1 through December 31.

Education

- KDOT Traffic Safety Section utilizes federal funds to promote safety programs in Kansas and to raise public awareness about safety issues on Kansas roadways, including seat belt and child safety seat use, impaired and distracted driving, motorcycle, pedestrian and bicycle safety.
- The Traffic Assistance Services for Kansas program trains public employees charged with traffic safety responsibilities.
- The Kansas Rural Transit Assistance Program (RTAP) provides defensive driving/emergency procedures training to about 600 transit agency employees annually.
- KHP visits motor carriers new to the interstate motor carrier industry and safety requirements.
- Groups such as MADD and the DUI Victim's Center deliver an educational message against impaired driving.
- KTSRO and KTSRP offer educational programs for both law enforcement and the public at large.
- Utilizes social media like Facebook and Twitter to draw people to the KTSRO website.
- Created an electronic safety calendar that helps safety partners keep track of such scheduled safety activities as campaigns and trainings.
- Publicly recognizes champions of safety to raise the profile of traffic safety:
 - Transportation Safety Recognition Awards (People Saving People Awards and Hero Awards) are presented at the annual Transportation Safety Conference.
 - The AAA Foundation annually recognizes outstanding law enforcement agencies with their Community Traffic Safety Awards.

Local Roads

- KDOT provides practical road safety assessments on county highway corridors.
- LTAP provides traditional road safety audits at trouble spots.
- KDOT assists Local Public Authorities (LPA) when applying for funding and takes advantage of flexibilities to maximize federal participation.
- Packages solutions with data through programs such as TEAP.
- LTAP provides safety education through publications, technical assistance and face-to-face training.

- The Kansas Association of Counties (KAC) provides technical assistance.
- Kansas LTAP and KAC provide training for front-line workers, supervisors and executives through the Kansas Roads Scholar program.
- K-State and KU promote engineering-related safety topics through the Traffic Assistance Services for Kansas (TASK) program.
- KDOT provides funding for local law enforcement to attend training in the latest techniques of traffic enforcement.
- Supports KDOT's Law Enforcement Liaison (LEL) program.
- KDOT awards grants to participating Kansas law enforcement agencies to increase education and enforcement efforts directed at compliance with Kansas seat belt, child passenger safety and impaired driving laws through the Special Traffic Enforcement Program (STEP).
- KDOT purchases and distributes equipment to STEP agencies that promote and participate in traffic safety enforcement efforts.
- Supports Operation Impact in Wichita and Kansas City regions.
- KDOT promotes systemic low-cost safety improvements in KDOT's High Risk Rural Roads Program, including: roadway departure; signing, pavement marking, and rumble strips; and horizontal curves.
- KDOT continues the Federal Fund Exchange Program that allows local agencies to exchange federal funds for state funds on projects including, but not limited to, safety improvements.

Personnel and Restructuring

- In 2005 KDOT created a new position, state highway safety engineer, to administer development of the first Strategic Highway Safety Plan.
- In 2008 KDOT provided funding for a traffic safety resource prosecutor to assist prosecuting attorneys in litigating DUI-related violations.
- In 2008 KDOT combined the bureaus of Traffic Safety and of Traffic Engineering and its Intelligent Transportation System program to form a new Bureau of Transportation Safety and Technology.
- In 2008 KDOT created a new position of state highway safety analyst to assist the state highway safety engineer and others in making strategic, data-based investment decisions.

- In 2015 KDOT moved the Crash Data Unit to the Bureau of Transportation Safety and Technology to fully incorporate this unit into the Traffic Safety program.
- In 2015 KDOT provided funding for a second traffic safety resource prosecutor.



Appendix B



Safety Support Groups: Recordkeeping, Education, Research

The Traffic Records Coordinating Committee (TRCC) provides an avenue to promote sharing of relevant traffic safety data. The TRCC has representatives from many state and local entities all striving to break down the silos of information currently in existence. eCitation, a TRCC project, secures a non-public web data entry portal within the KBI network in which authorized users can manually enter citation information to be housed in the eCitation Data Repository. It also allows local law enforcement and courts to electronically submit citation information. GIS Mapping Integration, another TRCC project, is an efficient method to display crash location to an internet audience within the context of a map. The Report and Police Impaired Drivers System was developed under the guidance of TRCC to address deficiencies related to Driving Under the Influence charges and prosecutions.

The Kansas Local Technical Assistance Program (LTAP) at the University of Kansas is part of a national program that provides services to improve the safety and operating efficiency of local roads and bridges. In the area of safety, both roadway and worker safety are emphasized. Road field personnel, public works officials and local elected officials are LTAP's primary audiences. Kansas LTAP provides training for about 500 persons a year; houses a library of training videos and publications; publishes an electronic newsletter; and maintains a website. LTAP safety-related courses focus on roadway safety assessment, traffic-impact studies, low-cost safety improvements and safety effects of geometric design features on two-lane rural roads. LTAP partners with the Kansas County Highway Association and the Kansas Chapter of the American Public Works Association on safety training activities through the Kansas Road Scholar certificate program and other safety-related efforts. Kansas LTAP has a safety associate on staff to help local agencies with safety issues and to coordinate LTAP's equipment loan program for traffic safety equipment.

For 70 years, the **AAA Foundation for Traffic Safety** has been true to its mission to prevent traffic deaths and injuries by conducting research into their causes and by educating the public about strategies to prevent crashes and reduce injuries when they do occur. Initially emphasizing projects related to safety patrols and driver education, today the Foundation has expanded its scope of work and has long been recognized as a leader in traffic safety, with a focus on four research priorities: driver behavior and performance; emerging technologies; roadway systems and drivers; and vulnerable road users.