

Chapter 12: Safety Plan

Introduction

Roadway safety is a serious, national public health issue. Annually, there are over 40,000 fatalities and almost 3 million injuries on our nation's roads. The Lawrence/Douglas County MPO recognizes the importance of traffic safety and has established safety as a primary goal in the development of *T2030*.

Improving safety for the traveling public depends on the "4-Es": engineering, enforcement, emergency services, and education.

- Engineering involves the built roadway and transportation infrastructure and encapsulates design standards, warrants, materials and construction practices, and signage, striping and signalization policies.
- Enforcement is aimed at modifying (enforcing) human behavior. Enforcement affects drivers in the following way: a law will be enforced, an offender will be detected, the adjudicatory process will be swift and certain, and punishment will follow conviction.
- Emergency services include the assemblage of ambulance companies, fire rescue services, and third party emergency response units and emergency rooms/trauma centers. Obtaining accurate post-crash diagnosis and high quality post-crash care is a critical factor in transportation safety.
- Finally, education encompasses driver licensing programs, driver remediation programs (e.g. traffic school), advanced driving courses, educational campaigns such as "Click It or Ticket" and "Booze It & Lose It," and school education programs aimed at K-12 and college level students.

Combined, the 4-Es capture the range of transportation safety related investments that are needed to improve safety within any jurisdiction.

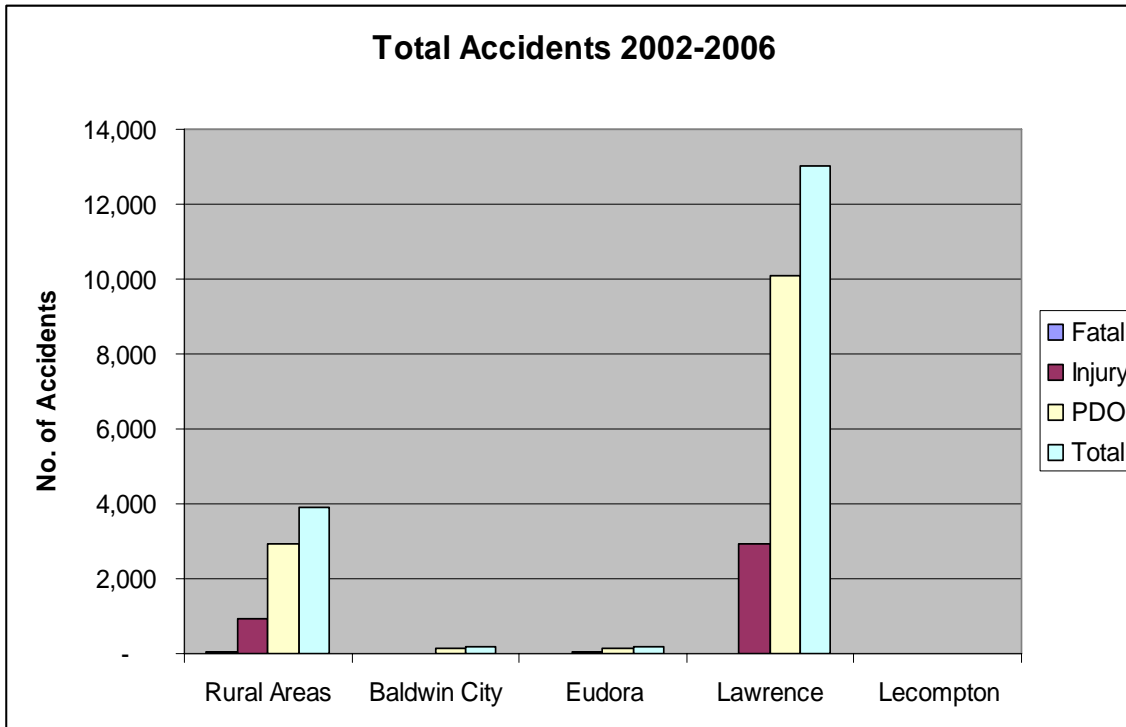


Safety Analysis

The starting point for improving the safety of the traveling public is good data. Kansas Department of Transportation (KDOT) is responsible for compiling the data for traffic accidents that occur on public roadways involving property damage of at least \$1000 or an injury or fatality. This data is most useful if it can be tied to a location reference system that can pinpoint accident locations on the road network. Such a system is available for accidents that occur on the state highway system but is not currently available for other roads.

The data is then analyzed by identifying accident locations, types, and appropriate countermeasures. Countermeasures should consider engineering, education, and enforcement efforts that can reduce the identified types of accidents.

Figure 12.1
Traffic Accident Locations
 Source: Kansas Department of Transportation



The final step is the development of a safety improvement program that addresses the types of accidents occurring within the planning area.

Motor Vehicle Accident Data

Each year approximately 3,500 motor vehicle accidents occur in the Lawrence/Douglas County MPO Planning Area.

Figure 12.1 shows the total accidents that occurred during a five-year period in rural Douglas County and the cities of Baldwin City, Eudora, Lawrence, and Lecompton.

Accident data for the MPO area has been summarized in this section by:

- Numbers and severity;
- General locations where they occurred;
- Collision type; and,
- Top 20 contributing circumstances.

Accident Numbers and Severity

Table 12.1 shows that during the five-year period from 2002-2006, 48 fatal accidents, 3,924 injury accidents, and 13,311 property damage only (PDO) accidents occurred within the planning area. As expected, the majority of the accidents occur in the city of Lawrence where the highest percentage of travel occurs. While there is some variation, accidents numbers remain fairly consistent over the five-year period within the region’s cities. Rural areas in Douglas County have seen a drop in the number of crashes during this period.

Table 12.1
Traffic Accident Numbers and Severity
2002-2006

Source: Kansas Department of Transportation

City	Total Accidents in the Year:					2002-2006 Accidents			
	2002	2003	2004	2005	2006	Total	Fatal	Injury	PDO
Rural Areas	863	855	813	703	654	3,888	32	944	2,912
Baldwin City	35	30	34	37	28	164	1	22	141
Eudora	47	35	42	36	37	197	1	37	159
Lawrence	2,677	2,713	2,619	2,427	2,586	13,022	14	2,920	10,088
Lecompton	4	4	2	-	2	12	-	1	11
Total	3,626	3,637	3,510	3,203	3,307	17,283	48	3,924	13,311

PDO = Property Damage Only

Table 12.2
General Locations of Motor Vehicle Accidents 2002-2006
 Source: Kansas Department of Transportation

City	Location	Accidents				People	
		Total	Fatal	Injury	PDO	Deaths	Injuries
RURAL AREAS	Non-Intersection	2,294	16	404	1,874	18	582
	Intersection	343	6	129	208	8	226
	Intersection-Related	228	2	71	155	2	115
	Parking Lot or Driveway Access	77	-	26	51	-	41
	Interchange Area	149	-	29	120	-	42
	On Crossover	5	-	1	4	-	1
	Roadside (including shoulder)	691	7	248	436	7	311
	Median	93	-	32	61	-	42
	Parking Lot or Rest Area Trafficway	1	-	-	1	-	-
	Other	3	-	3	-	-	3
Unknown	4	1	1	2	1	1	
BALDWIN CITY	Non-Intersection	57	-	5	52	-	9
	Intersection	48	-	8	40	-	13
	Intersection-Related	25	1	6	18	1	7
	Parking Lot or Driveway Access	27	-	2	25	-	3
	Roadside (including shoulder)	6	-	1	5	-	1
	Unknown	1	-	-	1	-	-
EUDORA	Non-Intersection	92	-	19	73	-	25
	Intersection	43	-	9	34	-	10
	Intersection-Related	20	-	4	16	-	4
	Parking Lot or Driveway Access	28	-	2	26	-	2
	Interchange Area	11	-	3	8	-	3
	Roadside (including shoulder)	3	1	-	2	1	-
LAWRENCE	Non-Intersection	4,667	6	849	3,812	7	1,103
	Intersection	3,733	4	1,025	2,704	4	1,434
	Intersection-Related	2,877	2	697	2,178	2	943
	Parking Lot or Driveway Access	1,320	2	252	1,066	2	334
	Interchange Area	126	-	34	92	-	37
	On Crossover	1	-	-	1	-	-
	Roadside (including shoulder)	227	-	52	175	-	60
	Median	37	-	8	29	-	10
	Parking Lot or Rest Area Trafficway	16	-	1	15	-	1
	Other	4	-	2	2	-	4
Unknown	14	-	-	14	-	-	
LECOMPTON	Non-Intersection	7	-	1	6	-	1
	Intersection	1	-	-	1	-	-
	Intersection-Related	2	-	-	2	-	-
	Parking Lot or Driveway Access	1	-	-	1	-	-
	Roadside (including shoulder)	1	-	-	1	-	-
Total		17,283	48	3,924	13,311	53	5,368

General Locations of Motor Vehicle Accidents

Table 12.2 shows the general locations on or along the road network where accidents occur. Crash locations vary significantly for rural and urban areas.

- In rural Douglas County, the majority of accidents take place at non-intersection and roadside locations.
- In the City of Lawrence, the majority of accidents occur at intersections or are intersection or driveway-related.
- The three smaller cities show a mix of intersection and non-intersection accidents.

Therefore countermeasures for accident reduction will differ based upon the rural or urban nature of the area.

Collision Types

As shown in Table 12.3, collision types also vary by rural or urban area. In rural Douglas County the leading type of accident is a collision with a fixed object or animal, on or alongside the roadway. Within the cities, the leading accident types are angle and rear end collisions with another vehicle, primarily at intersections or driveways. Collisions with fixed objects or parked vehicles are also significant accident types in cities.

Table 12.3
Motor Vehicle Accidents – Collision Types
2002-2006

Source: Kansas Department of Transportation

Collision Type	Rural Douglas County Motor Vehicle Accidents						Lawrence Motor Vehicle Accidents					
	Accidents				People		Accidents				People	
	Total	Fatal	Injury	PDO	Deaths	Injuries	Total	Fatal	Injury	PDO	Deaths	Injuries
Other Non-Collision	99	-	11	88	-	11	53	-	23	30	-	25
Overtaken	310	4	173	133	4	227	56	-	35	21	-	38
Pedestrian	8	1	7	-	1	8	141	3	137	1	3	143
Other Motor Vehicle - Head On	39	10	20	9	11	48	245	2	91	152	3	154
Other Motor Vehicle - Rear End	389	1	126	262	1	212	4,387	1	1,091	3,295	1	1,509
Other Motor Vehicle - Angle, Side Impact	337	8	142	187	11	257	4,328	5	1,053	3,270	5	1,488
Other Motor Vehicle - Sideswipe Opposing	50	1	14	35	1	27	144	-	23	121	-	29
Other Motor Vehicle - Sideswipe Overtaking	117	1	24	92	1	31	673	-	55	618	-	61
Other Motor Vehicle - Backed Into	10	-	1	9	-	1	308	-	7	301	-	8
Other Motor Vehicle - Other	31	-	2	29	-	2	10	-	1	9	-	1
Other Motor Vehicle - Unknown	3	-	1	2	-	2	16	-	5	11	-	6
Parked Motor Vehicle	25	-	7	18	-	9	1,446	-	66	1,380	-	83
Railway Train	5	-	2	3	-	2	3	-	1	2	-	1
Pedalcycle	3	-	2	1	-	2	126	-	116	10	-	119
Animal	1,048	-	27	1,021	-	32	83	-	5	78	-	5
Fixed Object	1,348	6	380	962	6	486	937	3	204	730	3	249
Other Object	62	-	4	58	-	6	50	-	6	44	-	6
Other	1	-	-	1	-	-						
Unknown	3	-	1	2	-	1	16	-	1	15	-	1

Table 12.3 (continued)
 Motor Vehicle Accidents – Collision Types
 2002-2006

City	Collision Type	Accidents				People	
		Total	Fatal	Injury	PDO	Deaths	Injuries
BALDWIN CITY	Other Non-Collision	4	-	-	4	-	-
	Other Motor Vehicle	4	-	-	4	-	-
	Other Motor Vehicle	16	-	3	13	-	3
	Other Motor Vehicle	45	1	8	36	1	14
	Other Motor Vehicle	6	-	-	6	-	-
	Other Motor Vehicle	1	-	-	1	-	-
	Other Motor Vehicle	15	-	-	15	-	-
	Other Motor Vehicle	1	-	-	1	-	-
	Parked Motor Vehicle	41	-	1	40	-	1
	Pedalcycle	3	-	3	-	-	3
	Animal	2	-	-	2	-	-
	Fixed Object	25	-	7	18	-	12
	Other Object	1	-	-	1	-	-
	EUDORA	Other Non-Collision	4	-	2	2	-
Overtaken		10	-	6	4	-	7
Pedestrian		1	-	1	-	-	1
Other Motor Vehicle		2	-	1	1	-	3
Other Motor Vehicle		32	-	5	27	-	5
Other Motor Vehicle		42	-	8	34	-	9
Other Motor Vehicle		3	-	1	2	-	4
Other Motor Vehicle		4	-	-	4	-	-
Other Motor Vehicle		5	-	-	5	-	-
Parked Motor Vehicle		56	-	1	55	-	1
Pedalcycle		4	-	4	-	-	4
Animal		10	-	1	9	-	1
Fixed Object		22	1	7	14	1	7
Other Object		2	-	-	2	-	-
LECOMPTON	Other Non-Collision	1	-	-	1	-	-
	Pedestrian	1	-	1	-	-	1
	Other Motor Vehicle	1	-	-	1	-	-
	Other Motor Vehicle	2	-	-	2	-	-
	Other Motor Vehicle	1	-	-	1	-	-
	Animal	1	-	-	1	-	-
Fixed Object	5	-	-	5	-	-	

Table 12.4
Motor Vehicle Accidents – Contributing Circumstances
2002-2006

Source: Kansas Department of Transportation

Contributing Circumstances

Table 12.4 shows the top 20 contributing circumstances for traffic accidents in the planning area are primarily driver-related.

The top five contributing circumstances account for 74 percent of the region’s accidents, they are: inattention (37% of accidents), failed to yield right of way (16%), following too closely (10%), too fast for conditions (6%), and disregard traffic signs, signals, and markings (5%).

This indicates that in addition to addressing the safety needs of individual corridors or intersections, a safety improvement plan for the regional should be developed that includes a strong educational component to address the behaviors that increase the risk of being involved in a crash.

Category	Contributing Circumstance (top 20)	Freq.	Percent
DRIVER	Inattention	6,227	37.21%
DRIVER	Failed to yield right of way	2,646	15.81%
DRIVER	Followed too closely	1,652	9.87%
DRIVER	Too fast for conditions	1,050	6.27%
DRIVER	Disregard traffic signs, signals,	904	5.40%
DRIVER	Made improper turn	816	4.88%
DRIVER	Under the influence of alcohol	648	3.87%
DRIVER	Improper backing	643	3.84%
DRIVER	Improper lane change	510	3.05%
ROAD	Wet	223	1.33%
ENVIRONMENT	Rain, mist, or drizzle	204	1.22%
DRIVER	Reckless/Careless driving	180	1.08%
DRIVER	Other Distraction in or on vehicle	165	0.99%
ROAD	Icy or slushy	164	0.98%
DRIVER	Wrong side or wrong way	140	0.84%
DRIVER	Avoidance or evasive action	126	0.75%
DRIVER	Unknown	103	0.62%
DRIVER	Exceeded posted speed limit	101	0.60%
DRIVER	Did not comply - license restrictions	79	0.47%
DRIVER	Improper passing	77	0.46%
ENVIRONMENT	Animal	76	0.45%

Methodology for Developing a Plan to Address Accident Patterns

There are two common methods of addressing accidents that occur on the region's roadways.

1. The first identifies high accident locations where the number of accidents at a spot location (such as an intersection) is higher than would normally be expected.
2. The second is a system-wide approach that focuses on the predominant types of accidents along a longer section of roadway or road network.

High accident locations can be identified through the use of a database, a pin map, a geographic information system (GIS), or in some cases by information received from the public. Locations can be prioritized based upon accident numbers, accident rates, and/or severity. This type of analysis serves as an effective screening tool to identify and prioritize corridor and intersections needing more in-depth analysis and attention. A system-wide approach on the other hand, is a very effective way of identifying issues that are best addressed through education or programmatic efforts.

Kansas Statewide Strategic Highway Safety Plan

On October 18, 2006 the Federal Highway Administration (FHWA) accepted KDOT's Statewide Strategic Highway Safety Plan (SHSP). The SHSP mission is to reduce deaths, injuries, and economic costs resulting from motor vehicle crashes on all Kansas public roads. The Plan's vision is "Safest Drivers, Safest Roads for Kansas" and the goal is to reduce the number of accident related deaths to 365 deaths by 2010. There are six key emphasis areas which have been identified as providing the biggest potential for reducing crashes.

- Impaired Driving
- Occupant Protection
- Lane Departure

- Intersections
- Inexperienced/Novice/Teen Drivers
- Driver Behavior and Awareness

As a stakeholder in the SHSP, the Lawrence/Douglas County MPO is committed to implementing the appropriate strategies and funding for projects that will reduce crashes in the MPO Area. One particular area of focus should be intersections. There are a number of strategies identified in the SHSP to help reduce intersection crashes. A few of these that have been implemented or will be considered are:

- Identify intersections with a disproportionately large number of fatal and serious injury crashes
- Upgrade traffic signals for timing optimization
- Provide better corridor management and access management. Educate local officials about land development and safety
- Upgrade traffic signal equipment and locations
- Verify the continued need for traffic signals at specific locations
- Review signing on major streets and remove unnecessary signs
- Upgrade the size of street name signs
- Provide better bicycle accommodations

The safety of the traveling public is a top priority for the Lawrence/Douglas County MPO, the Lawrence Transit System, KDOT, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), Douglas County, and the cities in the planning area. Incorporating these strategies and other appropriate elements of the SHSP throughout the stages of the Lawrence/Douglas County MPO transportation planning and programming processes will give safety issues higher visibility and greater understanding among stakeholders, elected officials and the public.

Recommended Actions

The following actions outline the efforts needed to improve safety in the Lawrence/Douglas County area.

Safety Plan Action 1: *Improve Accident Data Collection and Analysis*

Efforts should be made to tie the non-state highway system accident locations to a referencing or GIS system to help accident related analyses. Being able to adequately analyze all accidents by location will help to ensure that efforts at improve safety are properly focused across the entire transportation system.

Safety Plan Action 2: *Develop a Regional Highway Safety Plan*

The Lawrence/Douglas County MPO should conduct a regional traffic accident study and develop a regional highway safety plan that should:

- Address high accident locations, predominant accident types, and include a strong driver education component, addressing the application of cost-effective countermeasures and processes for Engineering, Education, Enforcement, and Emergency Medical Service activities.
- Support the goals and objectives of the Kansas Strategic Highway Safety Plan with local analysis and implementation.

Safety Plan Action 3: *Continue to Participate in State & Federally Funded Safety Programs*

The cities and county should continue to participate in programs that provide federal and state funds for safety improvements.