

Iowa's Highway Safety Plan Emphasis Areas – Data Driven Process Review

Iowa SHSP Safety Strategies Workshop

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Agenda

- Background
- Initial Statewide Crash Data Disaggregation
- Screening Iowa Topic Areas
- Example Infrastructure Crash Facts and Crash Trees
- Example Behavioral Crash Facts and Crash Trees
- Summary of Iowa SHSP Topic Areas



BACKGROUND

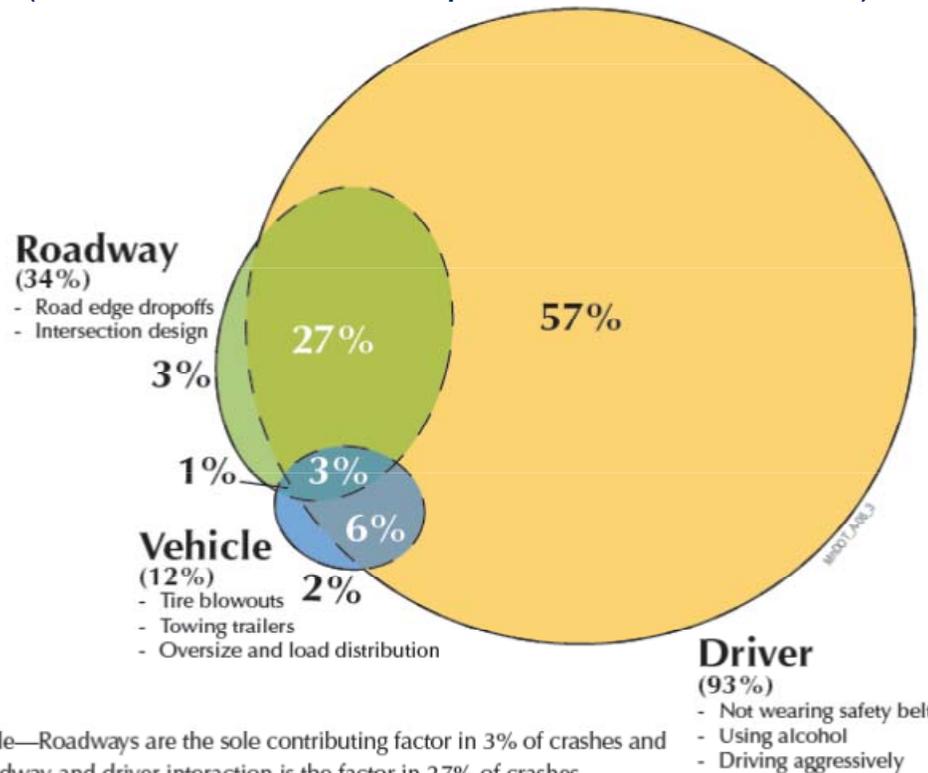
- Current Federal Highway Legislation
 - Moving Ahead for Progress in the 21st Century (MAP-21)
 - Requires States update their Strategic Highway Safety Plans
- MAP-21 Requirements for Strategic Highway Safety Plans:
 - Data Driven
 - Include **ALL** Roads – State & Local Systems
 - Focus on **SEVERE** crashes – Fatal & Serious Injury
 - Address **BOTH** Driver Behavior and Infrastructure related crashes
 - Focus of resources on areas of greatest need
 - Maximize opportunities to advance safety
 - **PRIORITIZE**



BACKGROUND cont.

- Why address Driver Behavior **AND** Infrastructure related crashes?

(93% of deaths due in part to driver behavior)



Source: *Human Factors & Highway Safety*, Elizabeth Alicandri



BACKGROUND cont.

- Statewide strategic safety planning is a 3-dimensional prioritization exercise:

- Step 1 – What types of crashes represent the greatest opportunity for reduction?

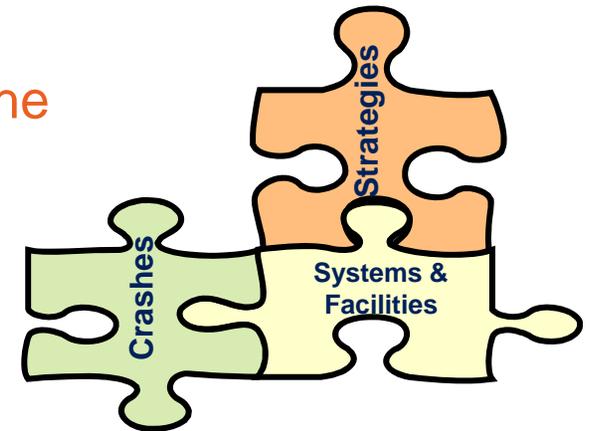
- Some types of crashes will be a higher priority based on the larger number of occurrences.

- Step 2 – What are the most effective safety strategies associated with the high priority crash types?

- Some strategies will be a higher priority based on proven effectiveness and lower cost to implement.

- Step 3 – What road systems (state or local) and facility types (rural or urban, 2-lane or multilane, conventional or freeway, etc.) are candidates for safety investment?

- Some systems and facility types are a higher priority based on the number of particular crash types and the feasibility of applying particular safety strategies.

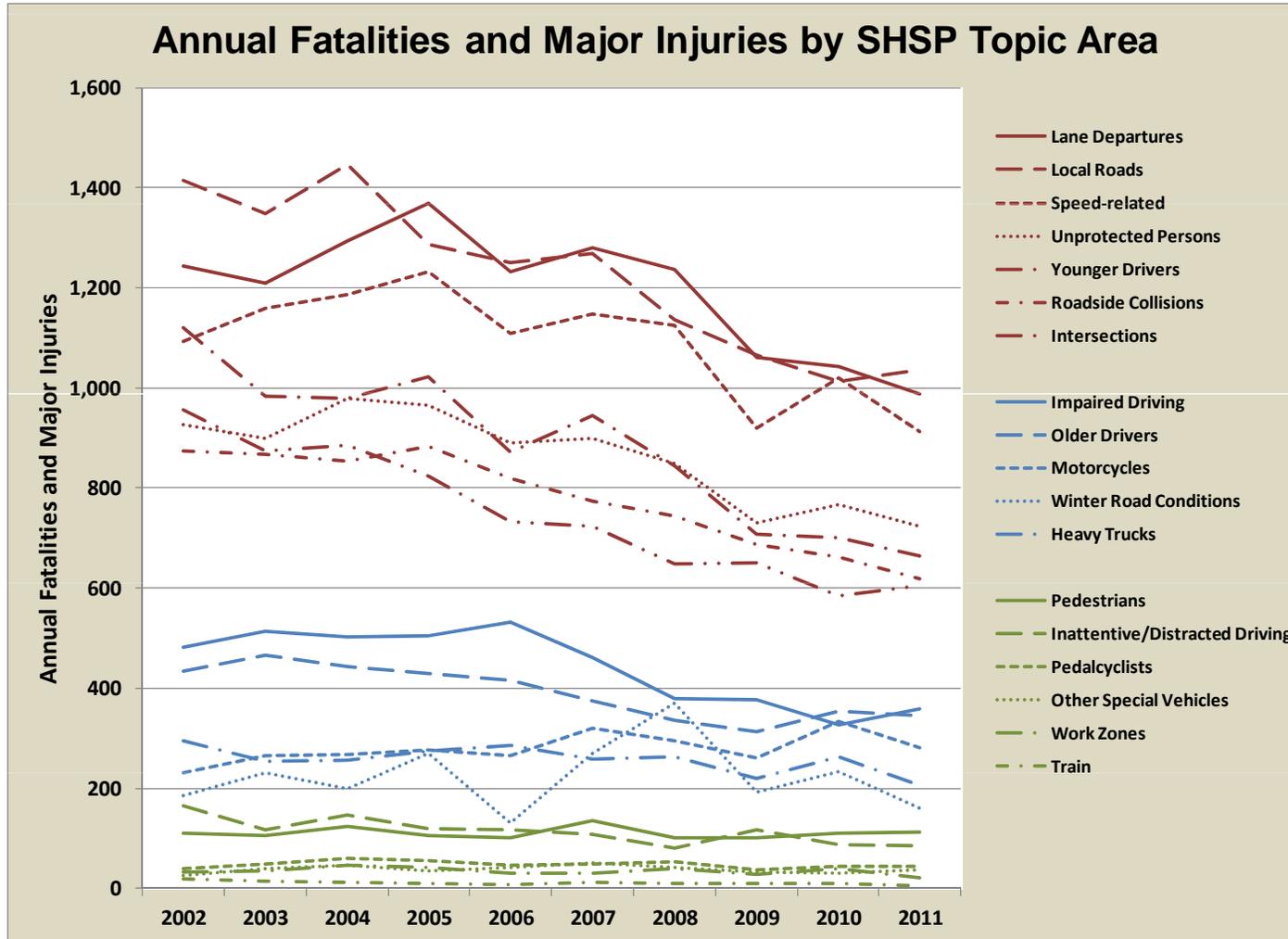


INITIAL STATEWIDE CRASH DISAGGREGATION

Safety Emphasis Topic Area		2007 – 2011 Iowa Crash Records						2006 CHSP
		Fatal Crashes	Major Injury Crashes	Severe Crashes	Fatalities	Major Injuries	Severe Injuries	
	Total	1,774	6,969	8,743	1,977	8,598	10,575	
Driver	Young Drivers	522	2,531	3,053	607	3,255	3,862	✓
	Older Drivers	388	1,033	1,421	431	1,292	1,723	✓
	Speed-related	890	3,337	4,227	991	4,135	5,126	
	Impaired Driving	435	1,086	1,521	492	1,410	1,902	
	Inattentive/Distracted Driving	54	315	369	66	411	477	✓
	Unprotected Persons	930	2,192	3,122	1,044	2,927	3,971	✓
Highway	Train	12	31	43	13	34	47	
	Lane Departures	1,184	3,307	4,491	1,332	4,277	5,609	✓
	Intersections	390	2,261	2,651	425	2,785	3,210	✓
	Work Zones	29	101	130	35	124	159	
	Local Roads	864	3,887	4,751	931	4,590	5,521	✓
	Winter Road Conditions	191	794	985	213	1,011	1,224	
Special User	Pedestrians	105	420	525	112	449	561	
	Pedalcyclists	27	195	222	27	200	227	
Vehicle	Motorcycles	244	1,095	1,339	257	1,234	1,491	✓
	Heavy Trucks	321	669	990	371	838	1,209	
	Other Special Vehicles	45	117	162	47	146	193	

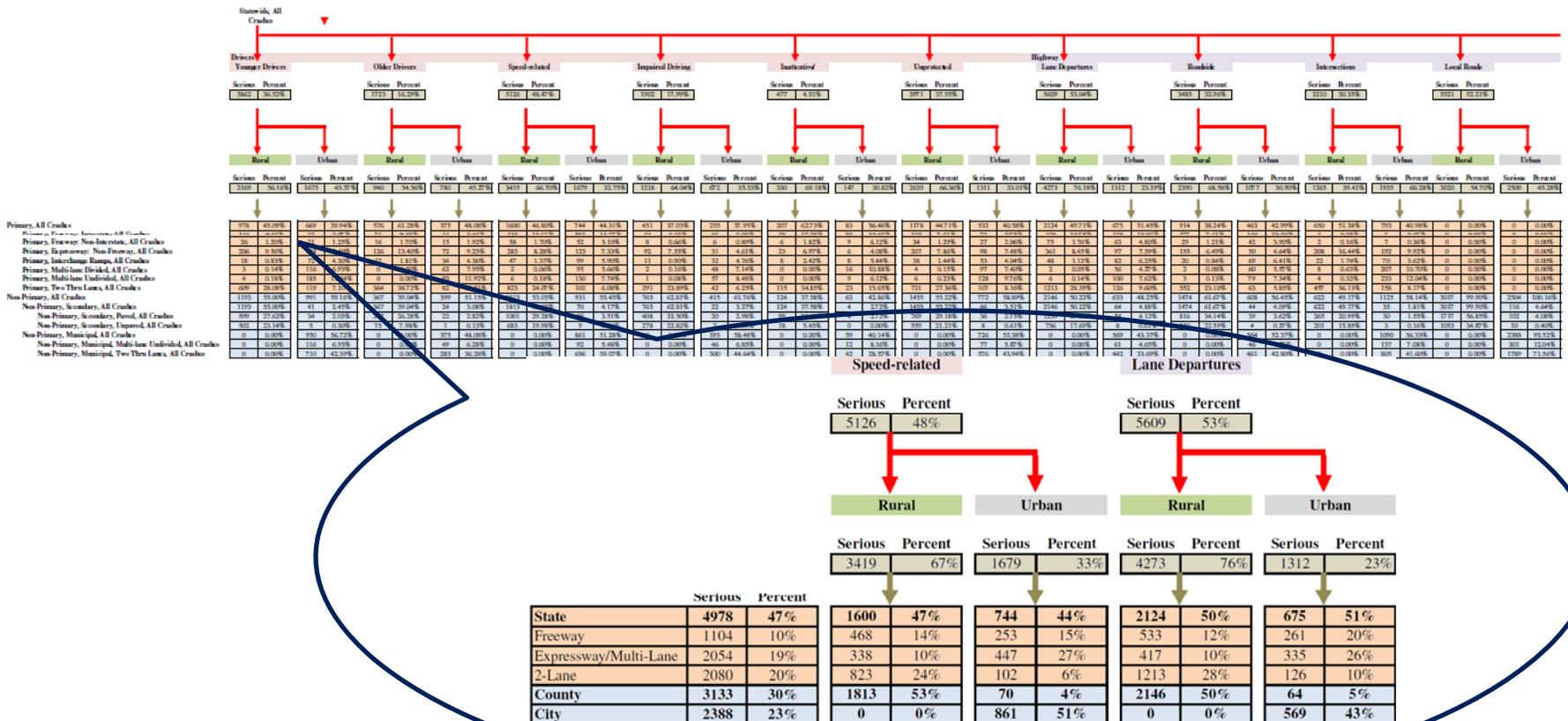


INITIAL STATEWIDE CRASH DISAGGREGATION



INITIAL STATEWIDE CRASH DISAGGREGATION

Crash Forest – All Statewide Severe Crashes

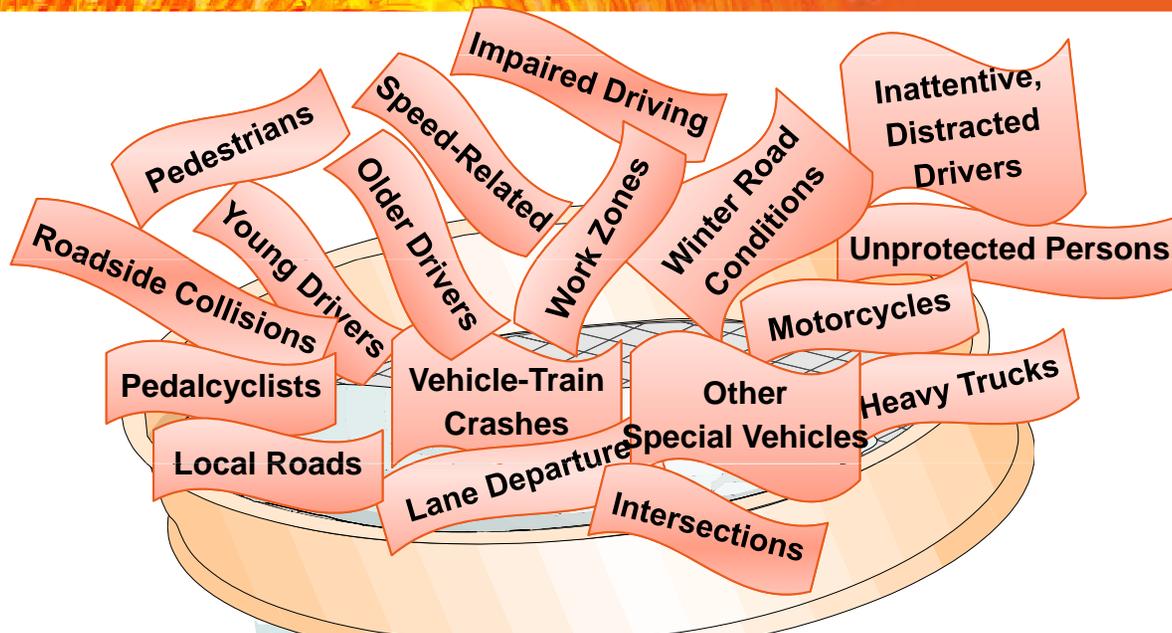


INITIAL STATEWIDE CRASH DISAGGREGATION

- **Crash Forest Take Aways**
 1. More than 50% of all severe crashes occur on the Local System
 2. On the State System – more severe crashes occur on 2-lane highways than other facility types
 3. On the Local System – more severe crashes occur on the County roadways than City street.



Screening Iowa's Topic Areas



Iowa's Safety Emphasis Area's



The selected topic areas represent the greatest potential to reduce the number of traffic fatalities & major injuries in Iowa.



LANE DEPARTURE/ROADSIDE COLLISION FACTS

How Significant is the Issue?

Lane Departure resulted in 5,585 (53%) of the severe injuries in Iowa (2007-2011).

Other Factors Involved

- Speed (66%)
- Local Roads (50%)
- Unprotected Persons (43%)
- Young Drivers (37%)
- 2-lane rural roads are most at risk considering these factors.



Demographic

- 70% are caused by male drivers.
- 36% are caused by young drivers
- 50% severe injuries caused by drivers 25-64 years of age

Location

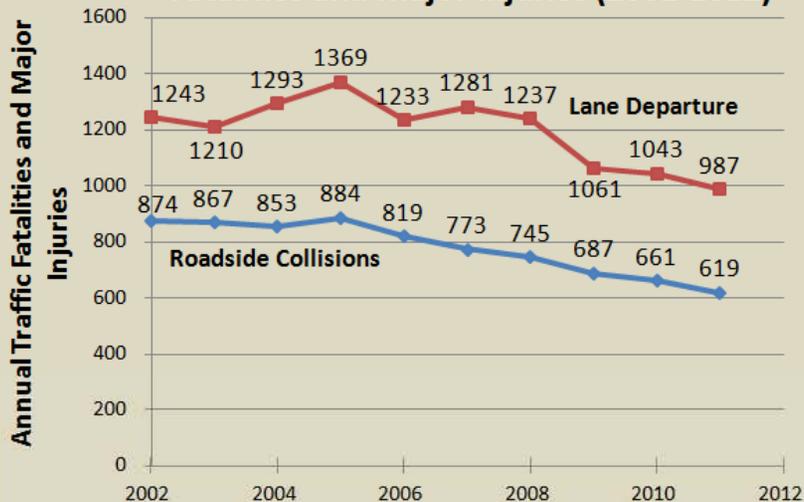
- 77% on rural roads (State and Local Roads)
- Equal split between State and Local Roads
 - 50% State
 - 49% Local (County and City)
- 55% of severe injuries on the rural State system are on 2-lane roads with ADT of 2000-5000 vpd
- 58% of severe injuries on the rural County system are on paved roads

Crash and Collision Type

- 63% of severe injuries occur in single vehicle run off the road crashes
- 22% of severe injuries occur in cross centerline/median crashes
- 62% of severe injuries involve roadside collisions (25% collisions are with ditch/embankment)



Annual Lane Departure and Roadside Collisions Fatalities and Major Injuries (2002-2012)



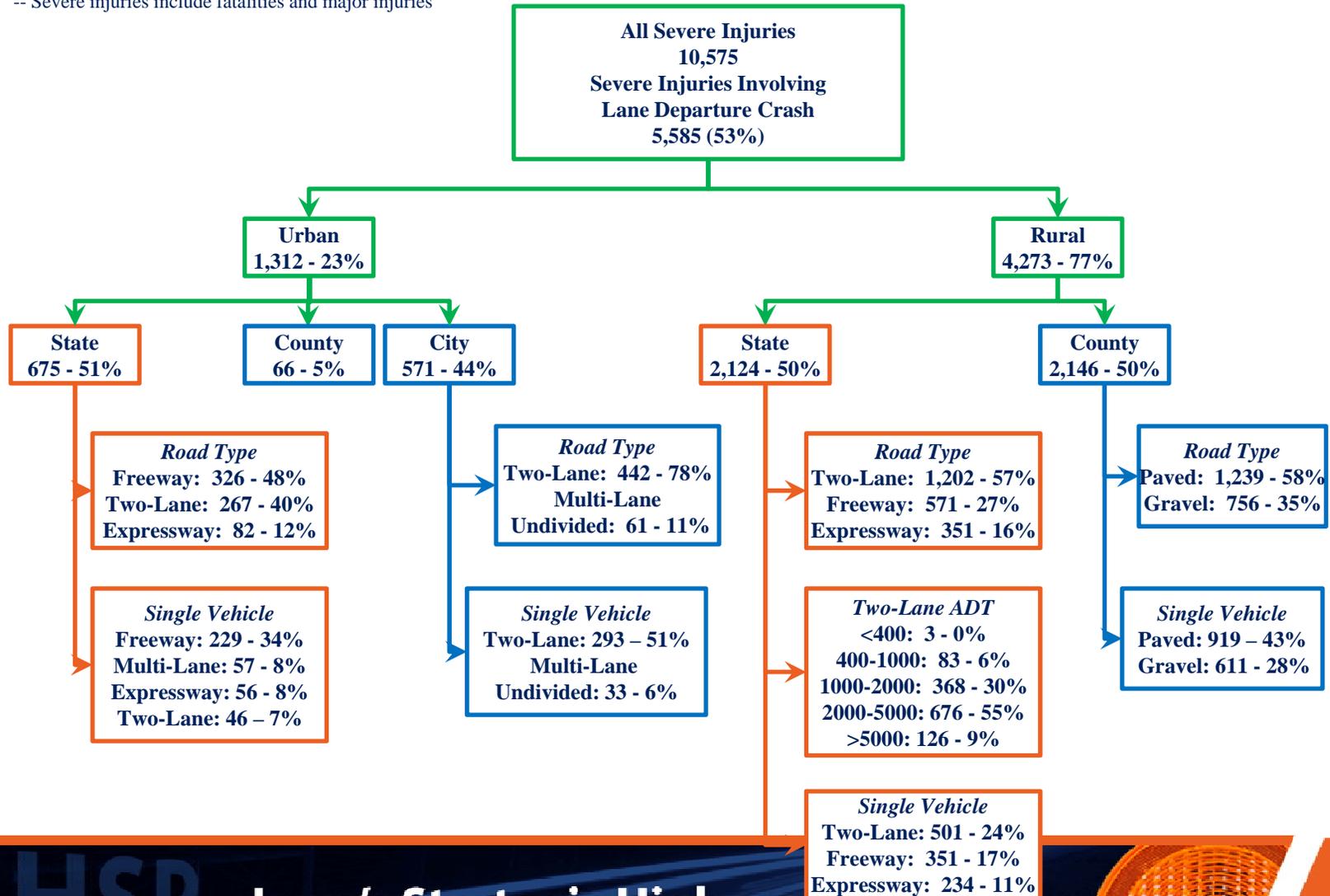
Other Facts

- 38% occur under dark conditions.
- 59% during daylight
- 68% occur on dry roads



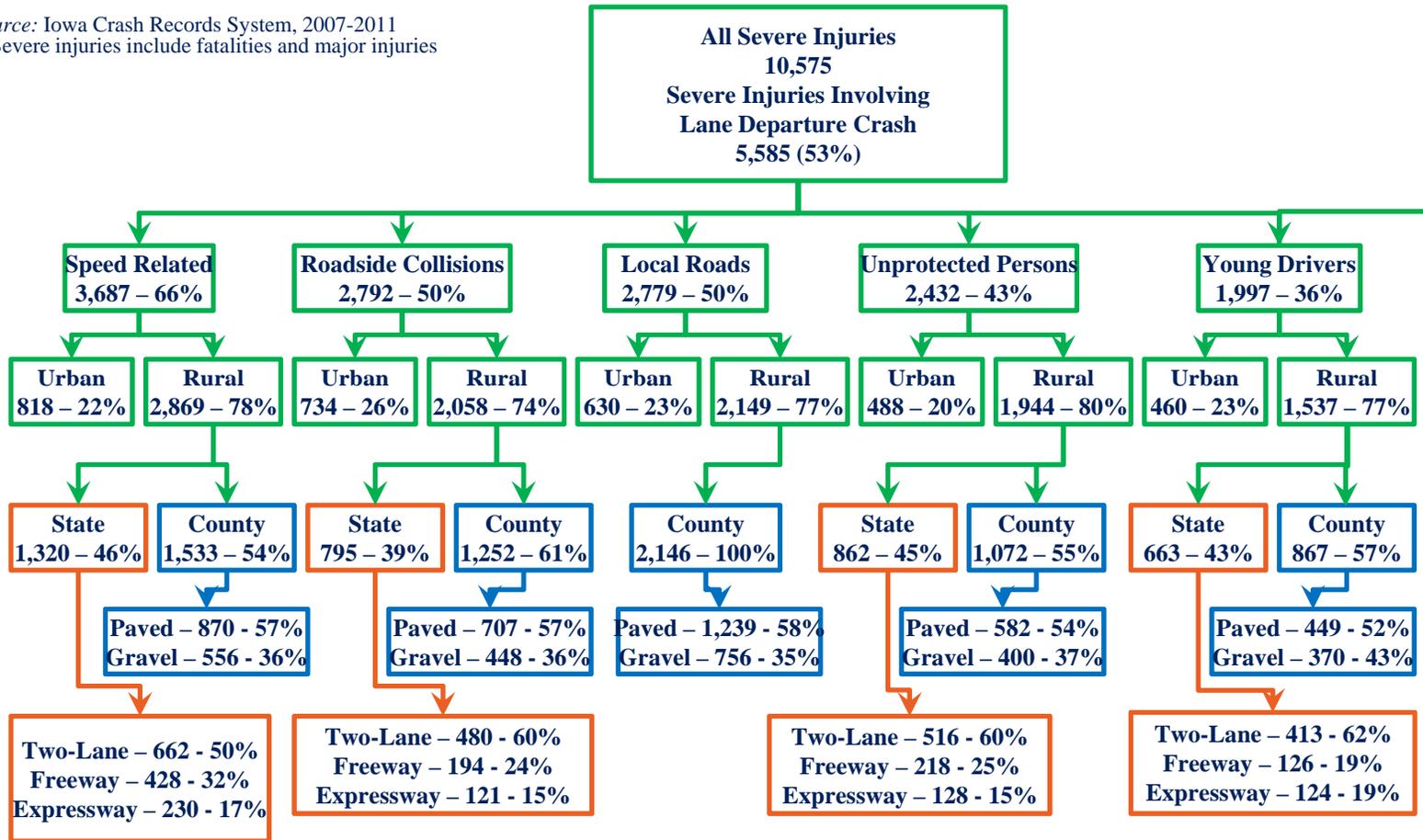
LANE DEPARTURE/ROADSIDE COLLISION CRASH TREE BY FACILITY

Source: Iowa Crash Records System, 2007-2011
 -- Severe injuries include fatalities and major injuries



LANE DEPARTURE/ROADSIDE COLLISION CRASH TREE BY TOPIC AREA

Source: Iowa Crash Records System, 2007-2011
 -- Severe injuries include fatalities and major injuries

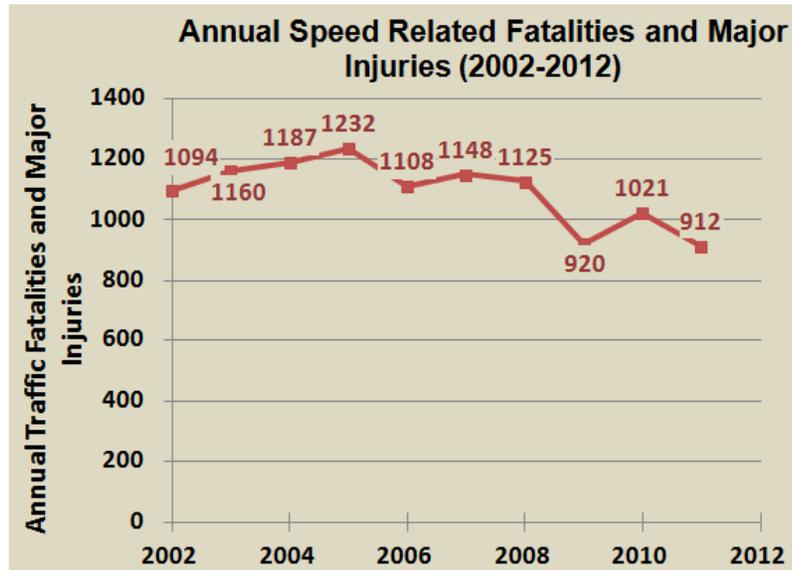


- Other Topic Areas**
- Impaired Drivers - 1,390 - 25%
 - Winter Roads - 885 - 16%
 - Intersections - 848 - 15%
 - Older Drivers - 742 - 13%
 - Heavy Trucks - 655 - 12%
 - Motocycles - 615 - 11%
 - Inattentive Drivers - 364 - 7%
 - Other Special Vehicle - 72 - 1%
 - Pedestrian - 53 - 1%
 - Pedalcyclist - 6 - 0%
 - Work Zones - 76 - 1%
 - Train - 4 - 0%

SPEED RELATED FACTS

How Significant is the Issue?

5,088 (48%) of the severe injuries in Iowa were Speed Related (2007-2011).



Other Factors Involved

- Lane Departure (72%)
- Local Roads (54%)
- Roadside Collisions (48%)
- Unprotected Persons (45%)
- Young Drivers (38%)
- 2-lane rural roads are most at risk considering these factors.



Demographics

- 19% of speed related severe injuries caused by drivers 15-20 years of age.



Other Facts

- Single Vehicle (69%) is the most common collision type with speed related severe crashes.
- More speed related crashes occurred noon – 8 PM (44%) and on weekends (Fri – Sun 51%).

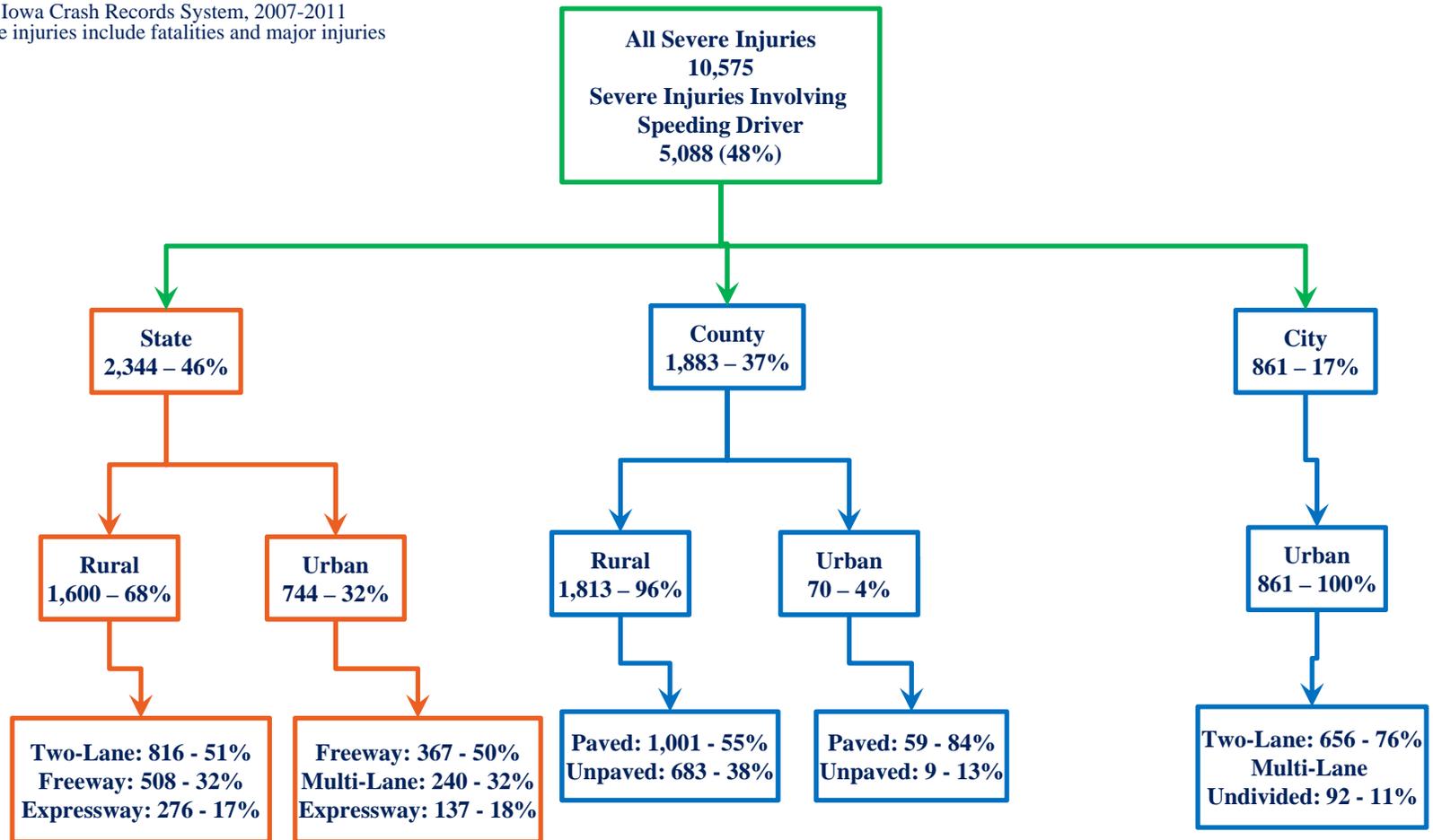
Location

- 67% on rural roads (State and Local Roads)
- Severe speed related injuries are nearly split between systems
 - 46% State
 - 54% Local Roads (County and City)
- Roads most at risk by system (% of severe injuries on that road system):
 - State – 2-lane roads (38%)
 - County – Paved roads (56%)
 - City – 2-lane roads (76%)



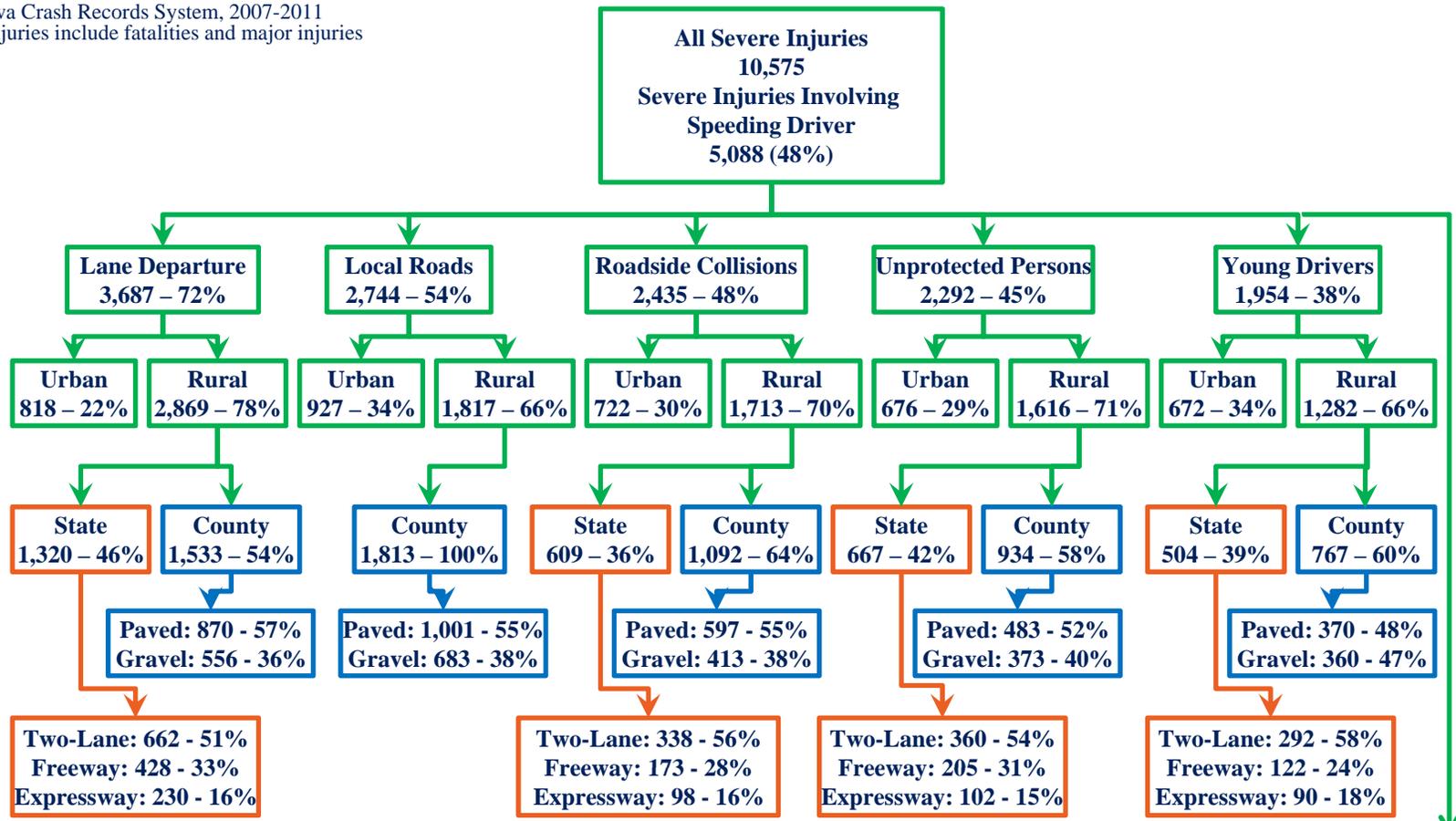
SPEED RELATED CRASH TREE BY SYSTEM

Source: Iowa Crash Records System, 2007-2011
 -- Severe injuries include fatalities and major injuries



SPEED RELATED CRASH TREE BY TOPIC AREA

Source: Iowa Crash Records System, 2007-2011
 -- Severe injuries include fatalities and major injuries



- Other Topic Areas**
- Impaired Drivers: 1,372 - 27%
 - Winter Roads: 929 - 18%
 - Motorcycles: 756 - 15%
 - Intersections: 746 - 15%
 - Older Drivers: 540 - 11%
 - Heavy Trucks: 456 - 9%
 - Inattentive Drivers: 192 - 4%
 - Pedestrian: 89 - 2%
 - Work Zones: 83 - 2%
 - Other Special Vehicle: 58 - 1%
 - Pedalcyclist: 17 - <1%
 - Train: 3 - <1%

SUMMARY

- The initial analysis of severe crashes supports the selection of 10 safety topic areas as the focus for Iowa's Strategic Highway Safety Plan:

INFRASTRUCTURE

- Lane Departure/Roadside Collisions
- Local Roads
- Intersections

BEHAVIORAL

- Younger Drivers
- Speed
- Inattentive/Distracted Drivers
- Older Drivers
- Impaired Drivers
- Unprotected Persons

- This selection of safety topic areas represents the first level of prioritization and provides a starting point for the second prioritization – what strategies should be the focus of ongoing safety investment?
- The initial analysis also indicates the importance of developing a Plan that addresses **ALL** roadways – more than 50% of severe crashes in Iowa occur on the local system.

