



# KANSAS STRATEGIC HIGHWAY SAFETY PLAN

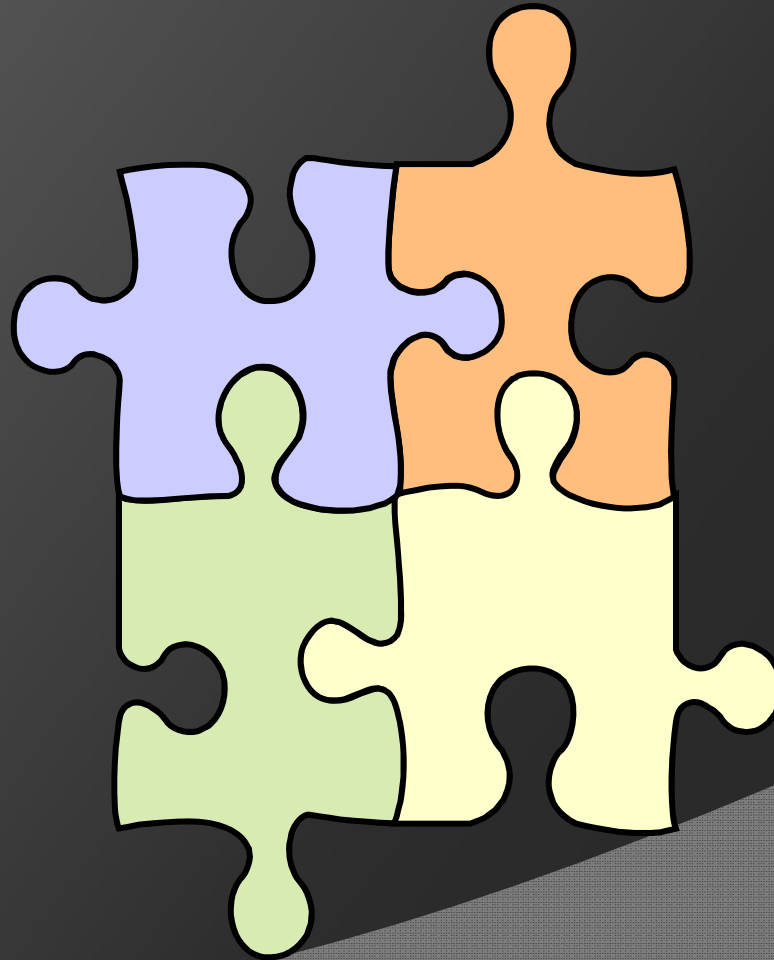
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STATE HIGHWAY SAFETY ENGINEER  
MARCH 22, 2013

# Introduction



# A Strategic Highway Safety Plan is...

**... a coordinated  
and informed  
approach to  
reducing highway  
fatalities and  
serious injuries  
on all public  
roads.**





# A Strategic Highway Safety Plan is...

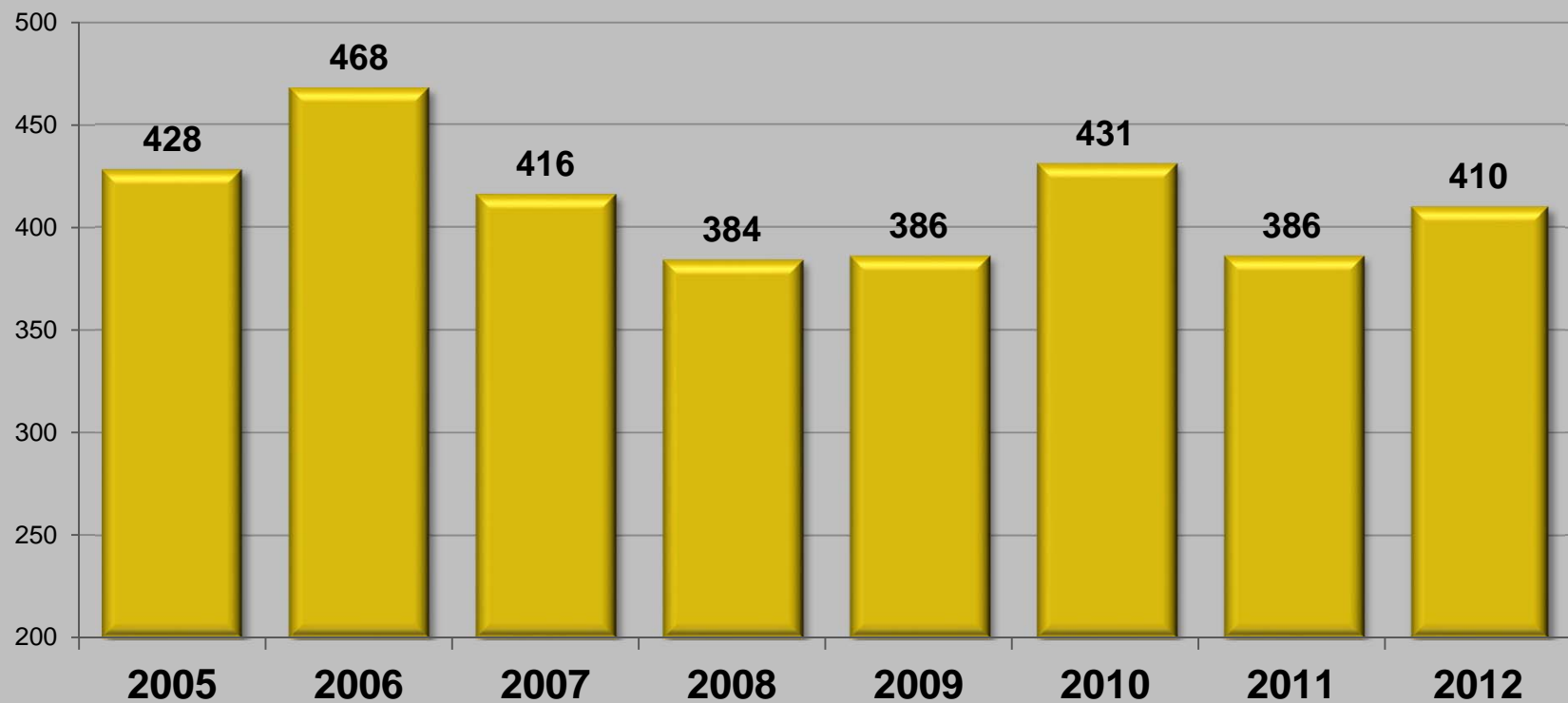
- ⦿ ...Based on the 4E's:
  - Engineering
  - Education
  - Enforcement
  - Emergency Medical Services
- ⦿ ...Data driven
- ⦿ ...Required by SAFETEA-LU and MAP-21



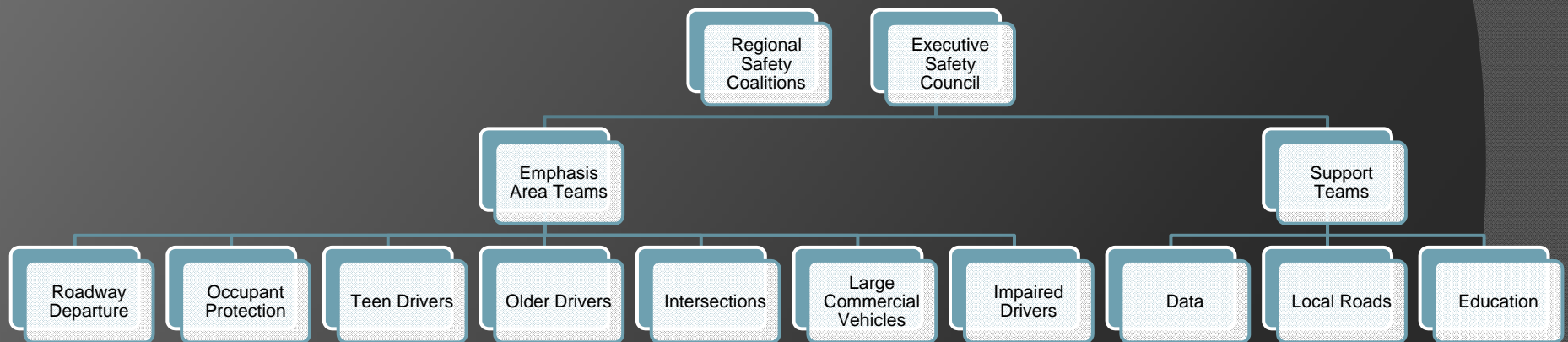


# 2005 – 2012 Fatalities

**Annual Fatalities**



# Structure



# Executive Safety Council

- Purpose: Champion transportation safety on all public roads in Kansas thru a Strategic Highway Safety Plan.
- Roles:
  - Identify statewide goals and emphasis areas based on a data-driven process.
  - Recruit stakeholders for Emphasis Area Teams.
  - Direct Emphasis Area Teams.
  - Support implementation of appropriate strategies within respective agencies.
- Outcome: Develop and maintain a SHSP that drives safety-related programs.



# Member agencies

Kansas Department of Transportation

Federal Highway Administration

Kansas Association of Counties

National Highway Traffic Safety Administration

AAA Allied Group

LTAP Center at the University of Kansas

Mid America Regional Council (Kansas City MPO)

Kansas Association of Chiefs of Police

Kansas Department of Revenue

The League of Kansas Municipalities

Kansas Department of Health and Environment

Kansas Legislature

American Traffic Safety Services Association

Federal Motor Carrier Safety Administration

Kansas Motor Carriers Association

Kansas Emergency Nurses Association

Stormont-Vail Health Center

Kansas Highway Patrol

Kansas Board of Emergency Medical Services

# 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 4Es (education, enforcement, engineering, and EMS) in a collaborative process.

Vision

Vision-Zero:

Every

One

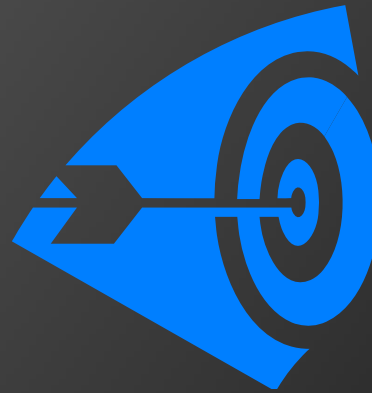
Matters



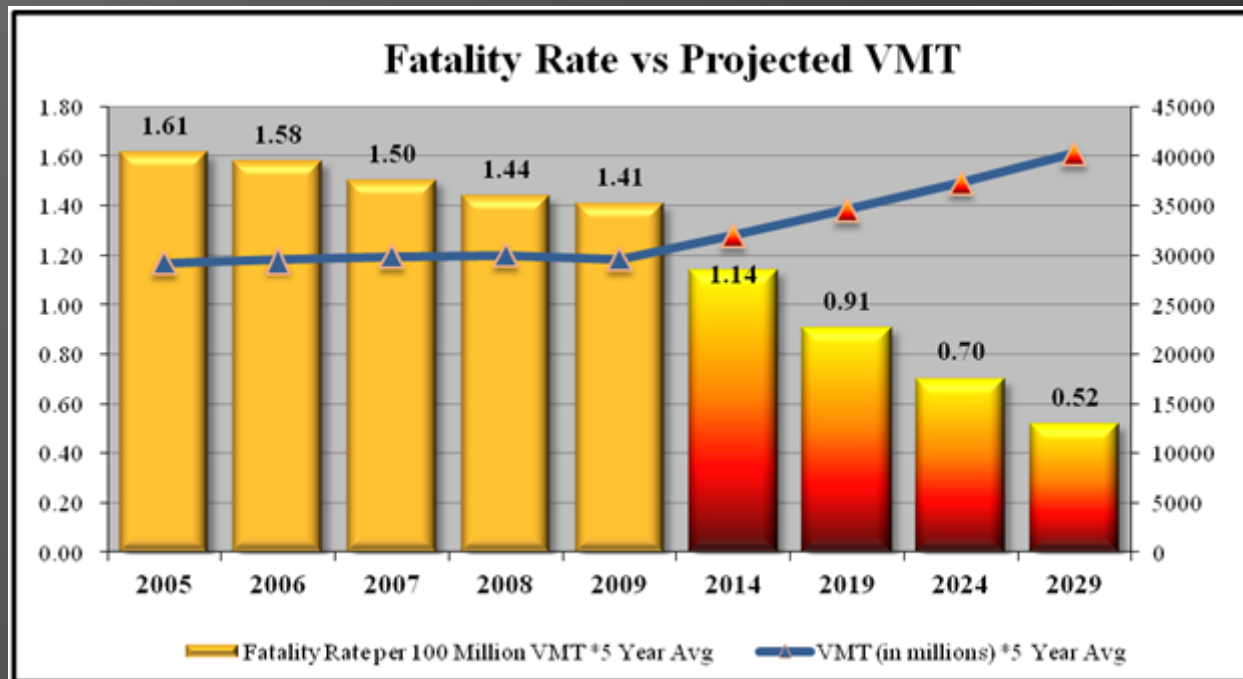


# Goals

To reduce by half  
fatalities and  
serious injuries  
in 20 years.  
(Base period  
2005 – 2009)



# Goals measured by rate

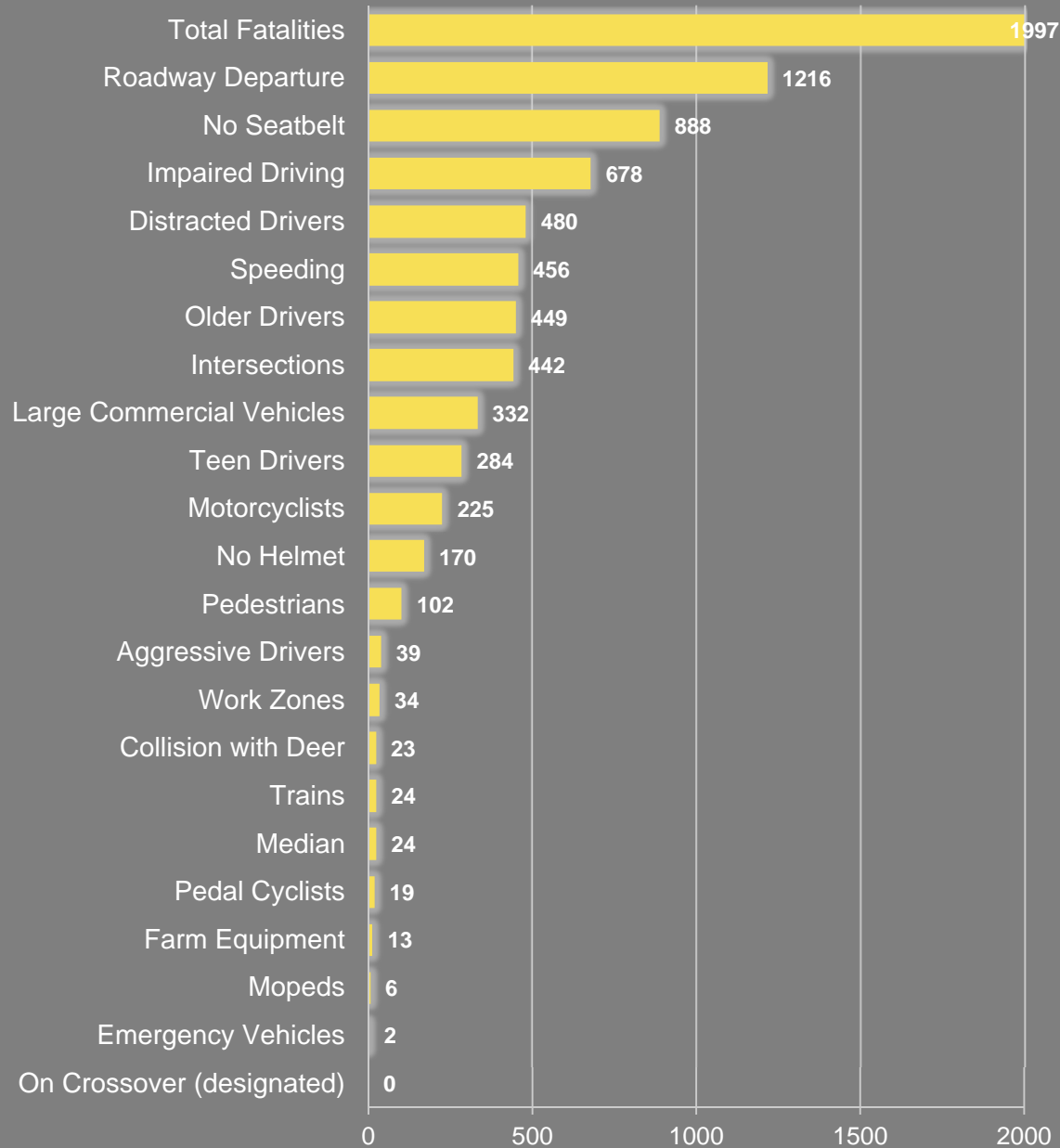


# Emphasis Area Teams

- Purpose: Develop action plans for implementation of SHSP.
- Roles:
  - Select strategies
  - Develop performance measures
  - Identify resources including funding, legislation, staffing, and lead agency
- Outcome: Implement SHSP thru safety-related programs and projects.



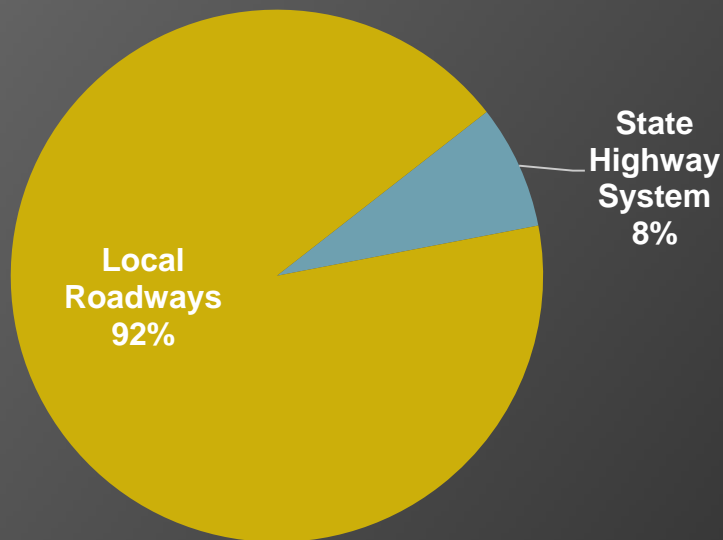
## Kansas Cumulative Fatalities by Area



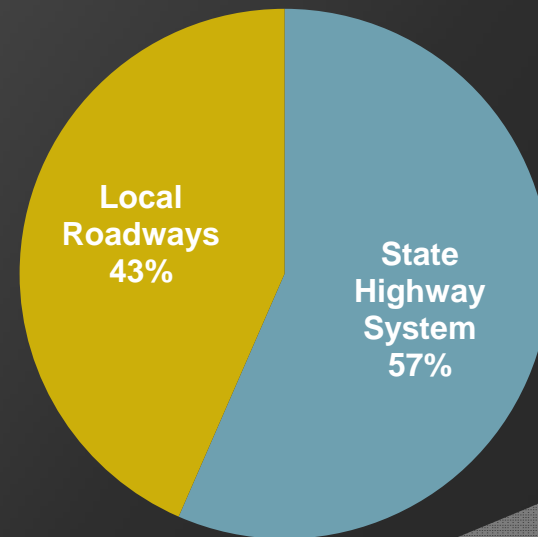
Emphasis  
Areas

# Do more crash fatalities and serious injuries occur on state highways or local roadways?

## Total Miles in Kansas

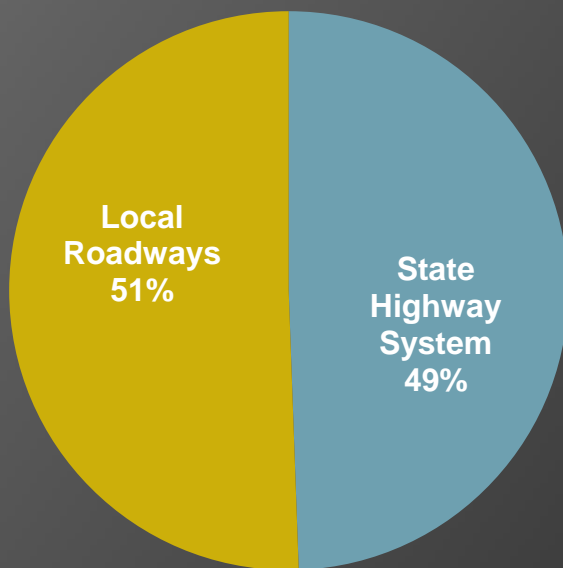


## Vehicle Miles of Travel

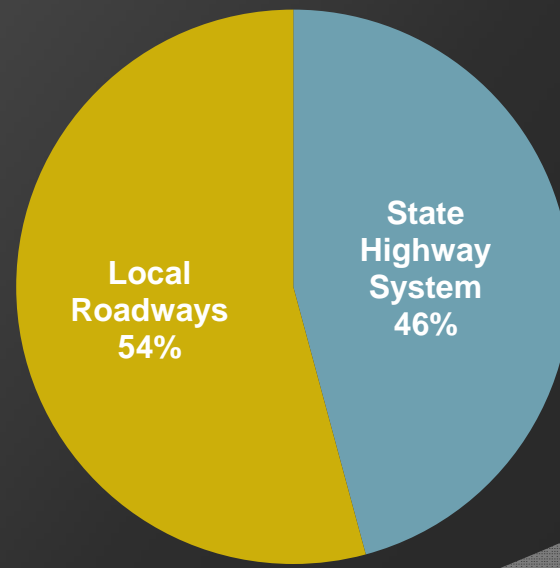


# Do more crash fatalities and serious injuries occur on state highways or local roadways?

**Fatalities  
(2008-2012)**

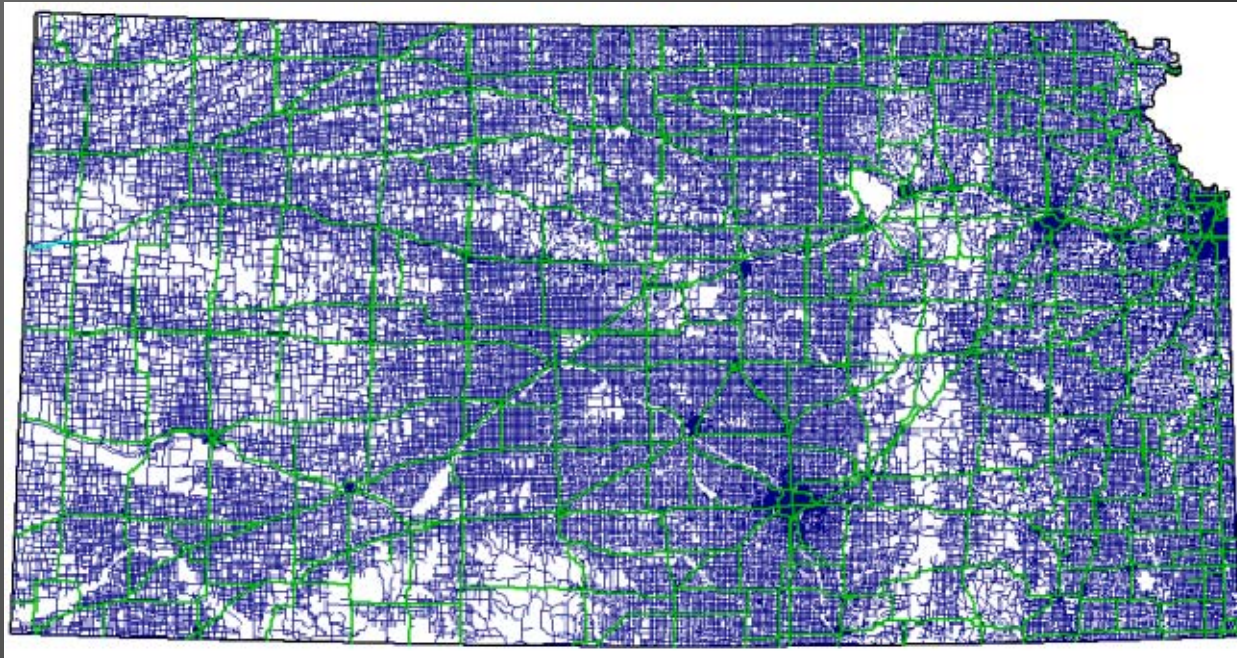


**Disabling Injuries  
(2008-2012)**





# The challenge



# Data Support Team





# Purpose:

- ◉ Establishing and coordinating data needs of the ESC
- ◉ Gathering and presenting needed data to the ESC
- ◉ Coordinating data needs of other Emphasis Area Teams and assisting in the identification of future Emphasis Area Teams
- ◉ Coordinating data sources across different agencies represented in the ESC

# Team:

- ◉ AAA Allied Group (AAA)
- ◉ 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 Transportation (KDOT)
- ◉ Wichita Area MPO (WAMPO)



# Key strategies

- Geo-locate all non-state highway system crashes
- **Create horizontal curve inventory**
- Create an intersection inventory
- Promote electronic reporting of crash reports
- Implement Safety Analyst
- Integrate the Highway Safety Manual into planning and design processes

# Intersections Emphasis Area Team



# Definition

- ⦿ Two or more public roads crossing at-grade.
- ⦿ Unsignalized:
  - Uncontrolled
  - Controlled
  - Roundabout
- ⦿ Signalized
- ⦿ Excludes driveways and interchanges
- ⦿ Crash types include any crash coded as intersection or intersection-related



# Purpose

- ④ Develop data-driven action plans specific to reducing the potential for and severity of intersection crashes
  - Low-cost strategies deployed systemically
  - High-cost strategies deployed via safety programs
  - Policy changes
  - Research initiatives



# Team

- Mid-America Regional Council (MARC)
- City of Overland Park, P&D
- Shawnee County Public Works
- City of Manhattan Public Works
- City of Topeka Police Department
- Federal Highway Administration (FHWA)
- Kansas Department of Transportation (KDOT)

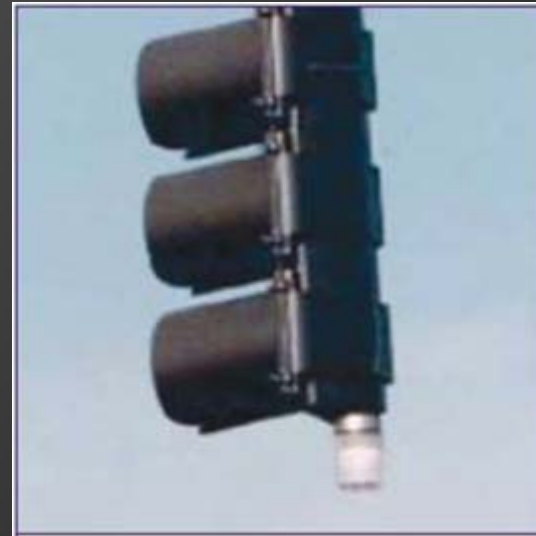
# Key strategies

- ⦿ Develop a method (system) to define an “expected” or “acceptable” number of crashes in order to identify intersections with the potential to be improved
- ⦿ Promote and construct roundabouts
- ⦿ Develop a program to fund targeted enforcement programs for high-crash intersections
- ⦿ **Experiment with low-cost safety improvements**

# Low-cost strategies



**Retro-reflective back-plates**



**Confirmation lights**

# Occupant Protection Emphasis Area Team





# Definition

- Occupant protection refers to individuals in a motor vehicle being properly restrained by a seat belt, booster seat, or child safety seat.

# Purpose

- To develop data-driven action plans designed to encourage the public to wear seat belts at all times while in a motor vehicle
- Roles for the team include developing performance measures, identifying objectives, selecting strategies, and identifying resources including funding, legislation, staffing, and lead agency.

# Team

- ◉ Kansas Department of Transportation (KDOT)
- ◉ National Highway Traffic Safety Administration (NHTSA)
- ◉ Kansas Highway Patrol (KHP)
- ◉ Kansas Department of Health and Environment (KDHE)
- ◉ AAA of Kansas
- ◉ Mid-America Regional Council (MARC)
- ◉ Safe Kids Kansas
- ◉ Kansas Traffic Safety Resource Office (KTSRO)
- ◉ Parsons Brinkerhoff

# The New Primary Seat Belt Law Billboard

Introducing a law you can live with.

**KansasPrimarySeatBeltLaw.COM**

KANSAS DEPARTMENT OF TRANSPORTATION

Click it.  Or ticket.  
It's Kansas Law.



# Key strategies

- Focus policy efforts on passing a primary seat belt law that requires the use of restraints in ALL seating positions
- Expand Seatbelts Are For Everyone (SAFE) program
- Develop partnerships with the medical and faith communities to promote occupant protection strategies to senior citizens and minority group members



## **Seatbelts Are For Everyone**

**SAFE is a cooperative effort to increase teen restraint compliance through positive rewards and enforcement. It is designed to bring awareness to the importance of wearing a seatbelt, therefore reducing the number of motor vehicle-related injuries and fatalities among Kansas high school students.**



# Roadway Departure Emphasis Area Team



# Definition

- ⦿ Non-intersection crash which occurs after a vehicle crosses an edge line or center line, or otherwise leaves the traveled-way
  - Includes voluntary and involuntary maneuvers
- ⦿ Crash types include head-on, side-swipe, overturned, and fixed object
- ⦿ Crash locations included non-intersection, shoulder, roadside, and median



# Purpose

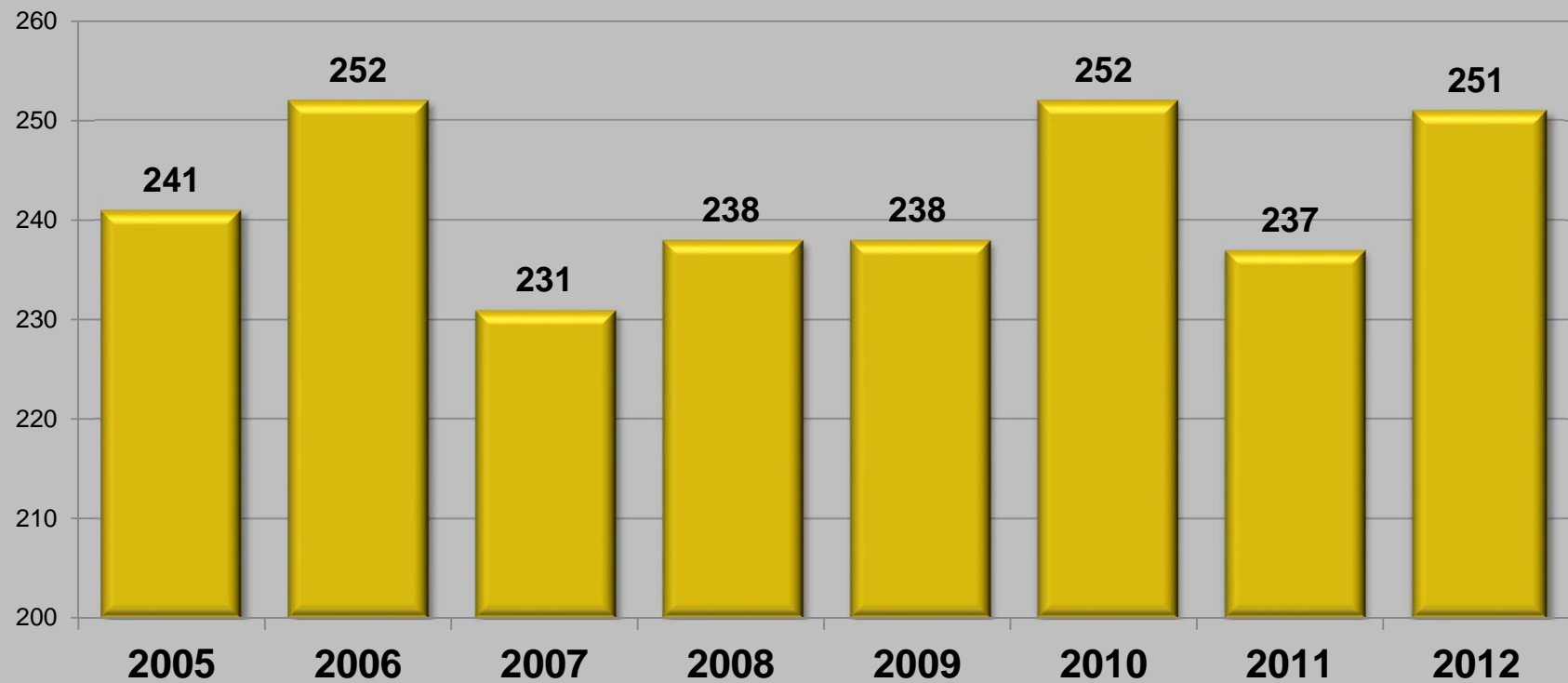
- Develop data-driven action plans specific to reducing the potential for and severity of roadway departure crashes
- Approach includes **prevention** and **forgiveness**

# Team

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

# Data

## Roadway Departure Fatalities



# Goals

- ◉ Dedicate safety dollars to data-driven programs with the greatest potential to reduce the number of fatal and severe injury crashes on Kansas public roads.
- ◉ Use available traffic records, crash data and roadway data to assist in safety program and project management.
- ◉ Promote proven engineering strategies that focus on keeping drivers on the road and in their lanes.
- ◉ Promote mitigation strategies that lessen the consequences of a crash.
- ◉ Introduce experimental engineering strategies.
- ◉ Promote enforcement campaigns that target locations and corridors with a higher-than-expected number of roadway departure crashes.
- ◉ Promote education campaigns that target over-represented factors in roadway departure crashes.



# Current strategies

- Maintain sign and marking retro-reflectivity.
- Use 6" edge lines.
- Improve shoulders where reasonable.
- **Install shoulder rumble strips.**
- Apply the Roadside Design Guide.
- Conduct media campaigns to highlight the dangers of distracted driving.
- Conduct educational campaigns using the roll-over dummy.
- Conduct road safety assessments.

# New strategies

- ④ Install centerline rumble strips.
- ④ Create a program the removes fixed objects.
- ④ Promote the Safety Edge.
- ④ Create a program that concentrates on horizontal curves.
- ④ Develop a Safety Corridor Program.

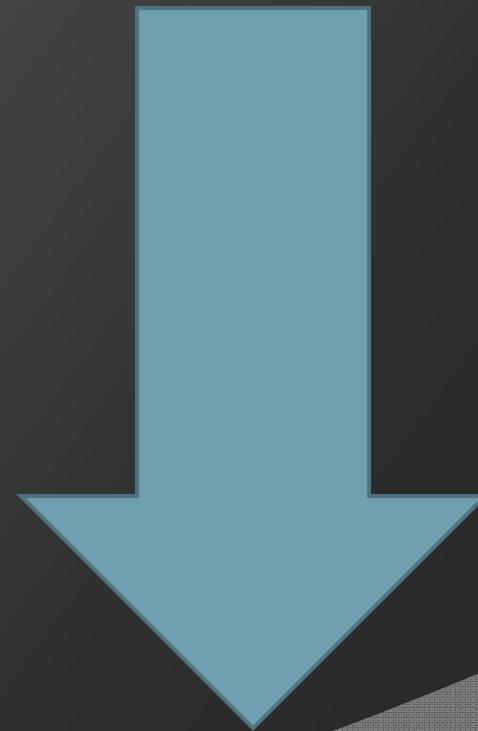
# Centerline Rumble Strips



# Before and After

Crashes reduced by:

- ⦿ Total correctable: **29%**
- ⦿ Correctable involving fatalities and injuries: **34%**
- ⦿ Cross-over: **67%**
- ⦿ Run-off-road: **19%**
- ⦿ Naïve and EB gave similar results
- ⦿ No difference between football and rectangular





# Noise

A distance of **200 feet**, measured from the center of the roadway was determined as the potential exterior noise influence area.



# Lateral Position

On roadways with narrow shoulders, for both CLRS only and neither rumble strip conditions, drivers operated closer to the centerline.



# Remove fixed objects



- ◎ Barrier removal:
  - Headwall
  - Guard rail
- ◎ Tree removal
- ◎ Culvert extension



# Safety Edge





# Horizontal Curves



- ⦿ Bigger brighter Chevrons
- ⦿ Radar speed displays
- ⦿ High friction surface
- ⦿ In-lane pavement markings
- ⦿ Super-elevation

# Safety Corridors

Session of 2012

## SENATE BILL No. 342

By Committee on Transportation

1-26

- 1 AN ACT concerning traffic regulation; designating certain highway  
2 segments as safety corridors; establishing the traffic safety corridor  
3 fund; amending K.S.A. 2011 Supp. 8-2118 and 74-7336 and repealing  
4 the existing sections.  
5  
6 *Be it enacted by the Legislature of the State of Kansas:*  
7 New Section 1. Sections 1 through 4, and amendments thereto, shall  
8 be known and may be cited as the safety corridor act.  
9 New Sec. 2. As used in the safety corridor act:  
10 (a) "Department" means the department of transportation.

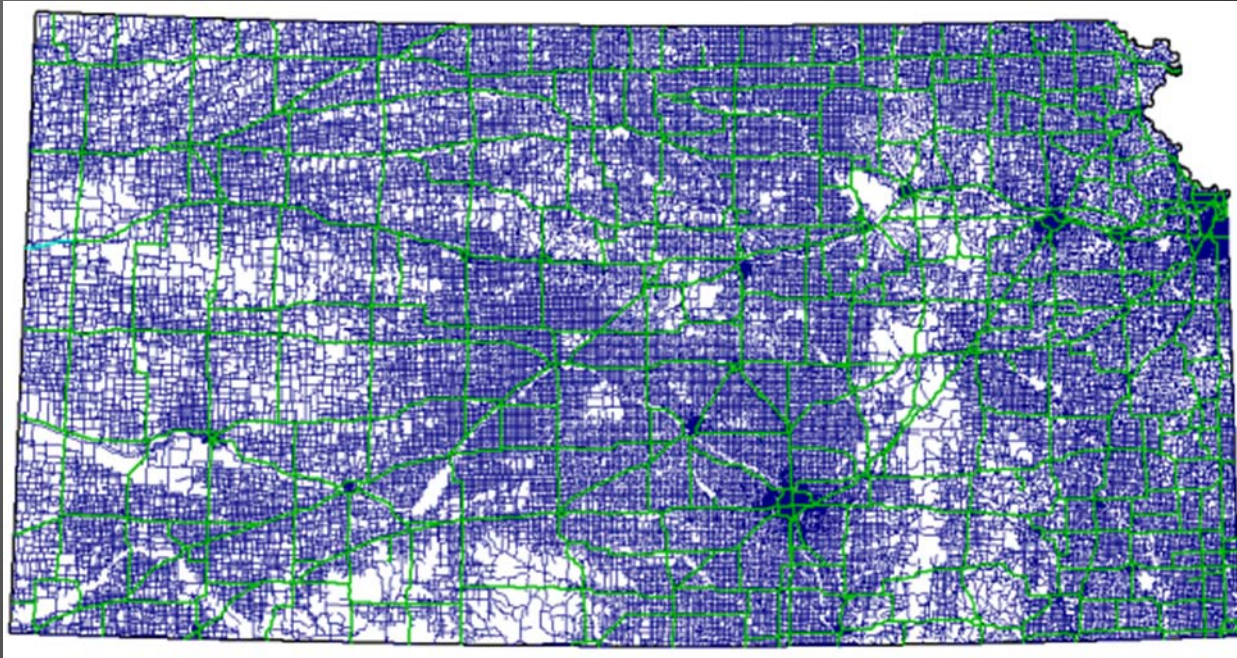
**BEGIN  
SAFETY CORRIDOR  
FINES  
INCREASED**

### Bill History

AR: Amendment Report JPN: Journal Page Number

Date	Chamber	Status	AR	JPN
Fri 01 Jun 2012	House	Died in House Committee		
Thu 01 Mar 2012	House	Referred to <a href="#">Committee on Transportation</a>		1978
Wed 29 Feb 2012	House	Received and Introduced		1974
Thu 23 Feb 2012	Senate	Final Action - Passed as amended; Yea: 22 Nay: 18		1582

# Local Roads Support Team





# Purpose

- Significantly reduce fatal and serious injury crashes on locally owned roads by:
  - promoting the SHSP to local governments,
  - communicating with emphasis area teams to make sure they address local roads,
  - identifying goals and strategies that may not be specific to an emphasis area but to local roads in general,
  - keeping abreast of new developments in local road safety and
  - assisting fund managers to distribute their local safety funds on the basis of local priorities.



# Team

- ◉ Kansas Department of Transportation (KDOT)
- ◉ Lawrence-Douglas County Metropolitan Planning Organization
- ◉ American Public Works Association (APWA)
- ◉ Kansas State Department of Education (KSDE)
- ◉ City of Topeka
- ◉ Kansas LTAP
- ◉ Kansas Association of Counties (KAC)
- ◉ Federal Highway Administration (FHWA)
- ◉ Lyon County Sheriff's Department
- ◉ Barton County
- ◉ Sedgwick County
- ◉ Kansas Board of Emergency Medical Services
- ◉ Kansas Department of Health and Environment (KDHE)

# Key strategies

- Take advantage of all flexibilities to maximize federal participation on spot improvement projects
- Improve local access to crash data and maps
- Develop a program to fund targeted enforcement programs for high-crash intersections
- Expand the systemic LCSIP as part of the HRRRP

# Strategic Highway Safety Plan

Highway Safety Improvement  
Program

Highway Safety Plan

Signing

Pavement  
Marking

Lighting

Intersections

Rail

High Risk Rural  
Roads

General Safety  
Improvements

Alcohol

Motorcycles

Occupant  
Protection

Pedestrian and  
Bicycle

Traffic Records

# General Safety Improvements

- Combines quantitative safety analysis and prediction (HSM) with District input.
- The goal of this program is to distribute these funds throughout the state and address spot locations, like individual curves, intersections, or short tangent sections that have a documented crash history and are eligible for HSIP funds.
- Address locations that demonstrate a potential safety issue but have not necessarily been addressed through traditional KDOT funding programs.



# GSI: Steps

1. The Districts are provided with a list of locations with the potential to be improved based on network screening tools.
2. Districts assess their needs and produce a list of up to 15 locations for consideration. Districts are encouraged to seek and utilize public input in this process.
3. HQ staff then combine the District lists with internal lists and pull the appropriate crash histories and geometric data for all locations.
4. In consultation with each District, potential countermeasures are considered and locations prioritized based on potential for safety improvement, available funds, and geographic distribution.
5. A list of projects is internally distributed.
6. Project programming and development is facilitated by HQ staff with District input throughout the process.

# GSI: Examples

- Improve vertical profiles at intersections
- Install rock edge wedge
- Traffic signal coordination
- Shoulder widening
- Two-lane to three-lane conversion
- Portable rumble strips
- High-friction surface contract
- Data

# Others: Examples

- ④ Portable rumble strips
- ④ High-friction surface contract
- ④ Curve and intersection inventories
- ④ Regional safety coalition

# Thank You!

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