

# BACKGROUND

## Fatalities

---

- Fatal crashes - 38,252
- Fatalities - 42,643
- Fatality rate - 1.48  $\frac{\text{Fatalities}}{100 \text{ MVM}}$

*(2003 FARS)*

## Injuries

---

- Injured 2,889,000
- Elderly injured 145,000  
~5% of total

*(2003 FARS)*

## Pedestrians

---

- Pedestrian fatalities 4,900
- Injured pedestrians 70,000

*(2003 FARS)*

## Economic Cost of Crashes

---

- Cost of all crashes
  - \$230-billion (2001)
- Cost of speeding-related crashes
  - \$40.4-billion (2003)

*(2003 FARS)*

## Safety Legislation and Programs

---

- Highway Safety Act of 1966
  - Landmark legislation
- FHWA Highway Safety Improvement Program (HSIP) of 1979
  - Helped plan, implement and evaluate safety improvements

## Fatality Rates

---

- Fatality rate per 100,000 population
  - 14.65
- Fatality rate per 100,000 registered vehicles
  - 18.48

*(2003 FARS)*

## Traffic Crashes

---

- Police reported crashes – 6,328,000
  - Killed – 42,643
  - Injured – 2,889,000
  - PDO – 4,365,000

*(2003 FARS)*

## Fatalities on 55 mph roads

---

- More than half of fatal crashes occur on roads with speed limits of 55 mph or more
- Only 25% of PDO crashes occurred on these roads

## First Harmful Event

---

- “Collision with another motor vehicle”
  - first harmful event for
    - Fatal crashes
    - Injury crashes
    - PDO crashes
- “Collision with fixed objects” and “non-collisions” accounted for 44% of fatal crashes

*(2003 FARS)*

## Crashes Involving Only One Vehicle

---

- 57% - fatal crashes
- 30% - injury crashes
- 31% - PDO crashes

*(2003 FARS)*

## National Fatal Crashes by Speed Limit and Crash Type, 2003

Speed Limit	Crash Type		Total, %
	Single Vehicle, %	Multiple Vehicle, %	
30 mph or less	12.48	6.22	9.77
35 or 40 mph	17.58	15.38	16.63
45 or 50 mph	15.87	20.24	17.77
55 mph	29.15	34.78	31.59
60 mph or higher	20.08	20.61	20.31
No statutory limit	0.53	0.10	0.34
Unknown	4.30	2.67	3.59
<b>TOTAL</b>	100	100	100

## National Fatal Crashes by Speed Limit and Land Use, 2003

Speed Limit	Land Use, %			Total, %
	Rural	Urban	Unknown	
30 mph or less	23.80	75.32	0.88	100
35 or 40 mph	29.46	69.56	0.97	100
45 or 50 mph	51.37	47.70	0.93	100
55 mph	82.80	16.52	0.68	100
60 mph or higher	72.03	27.64	0.33	100
No statutory limit	83.21	14.50	2.29	100
Unknown	30.06	67.54	2.40	100
<b>TOTAL</b>	58.50	40.71	0.79	100

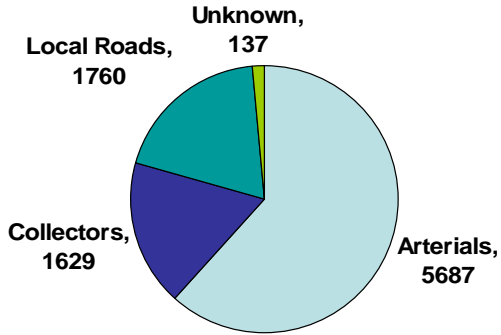
## Intersection Safety

---

- Intersection crashes – 2.7 million per year  
– 45% of reported crashes
- Intersection-related fatalities – 9,213 per year

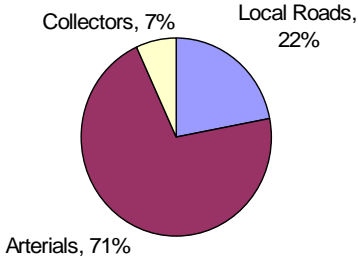
## Intersection Fatalities by Functional Class

---



## Urban Fatalities by Roadway Functional Class

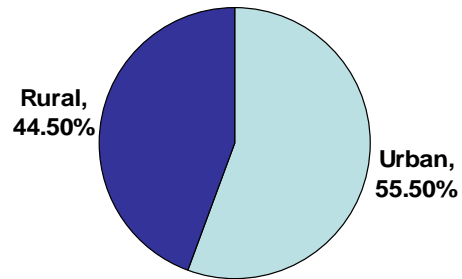
---





## Rural vs. Urban Intersection Fatalities

---



## Bike Fatalities and Injuries

---

- Decreased to 622 (2003)
  - ~7% reduction from 2002
  - Bike injuries – 46,000
  - Most bicyclists killed or injured were male, 88% and 78%, respectively
  - Most were between 5-44

## Seat Belts

---

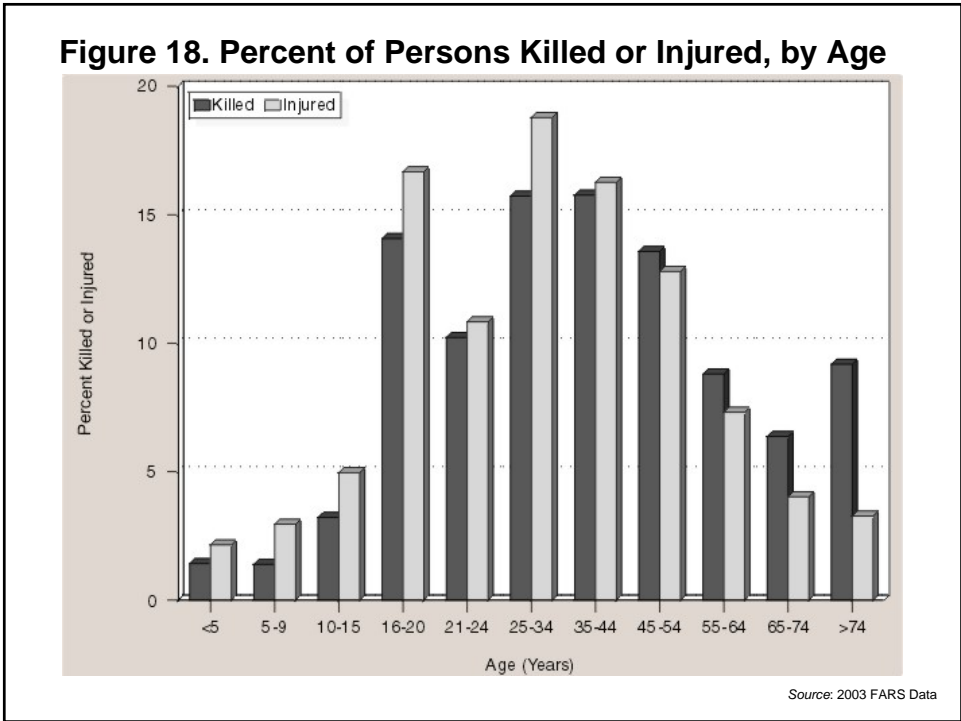
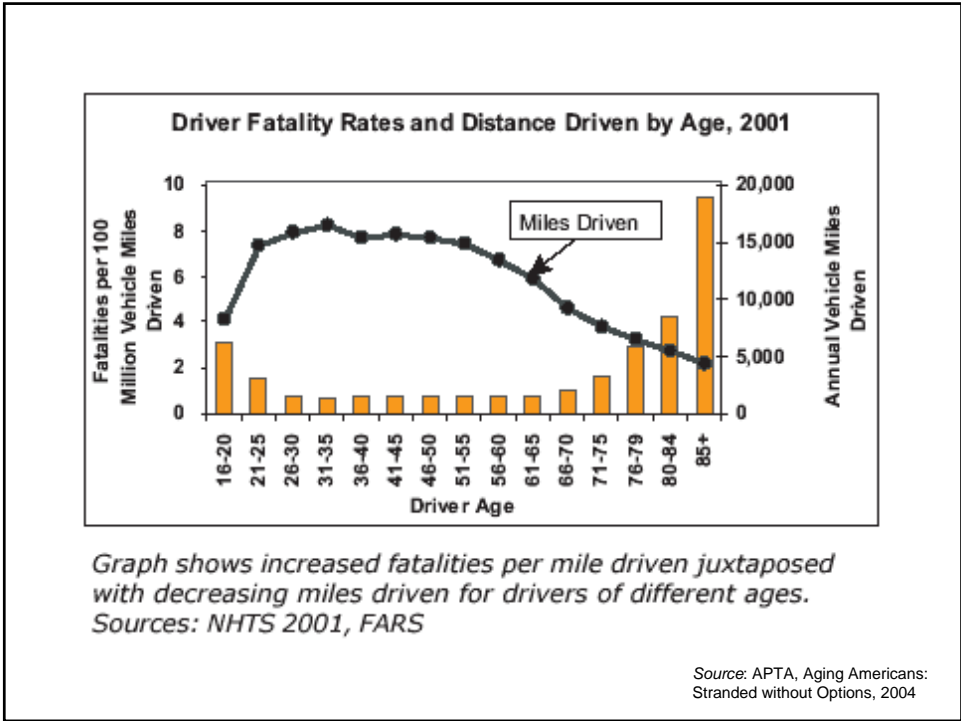
- More than one-half of passenger vehicle occupants killed in traffic crashes in 2003 were unrestrained
- Ejection from the vehicle accounted for 27% of all passenger vehicle fatalities

## Older Driver Fatalities

---

	1991	2001	Increase
All Drivers	41,462	42,116	up 2%
Senior Drivers (70 & older)	2,494	3,164	up 27%

Source: NHTSA



## Older Driver Fatalities between 1991-2001

---

- Older driver fatalities, 70+ years, increased 27% from 1991-2001
- Overall fatalities increased about 2%

Source: Designing Roadways to Safely Accommodate the Increasingly Mobile Older Driver, TRIP

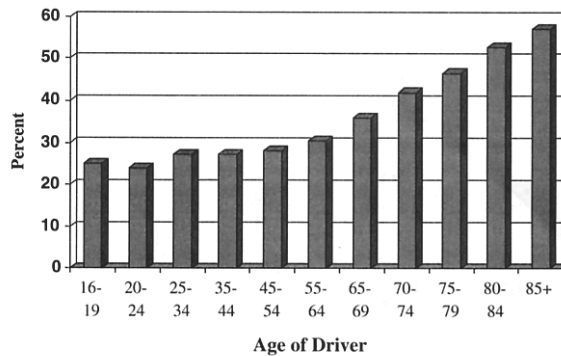
## Intersection Fatalities

---

- In 2001
  - 50% of older driver fatalities occurred at intersections (– 70 yrs)
  - 23% younger driver fatalities ( . 69 yrs) occurred at intersections

## Fatalities in Angle Collisions

**EXHIBIT III-6**  
Of People who Died in Collisions, Percentage who Died in Angle Collisions  
(Source: NHTSA, 1997)

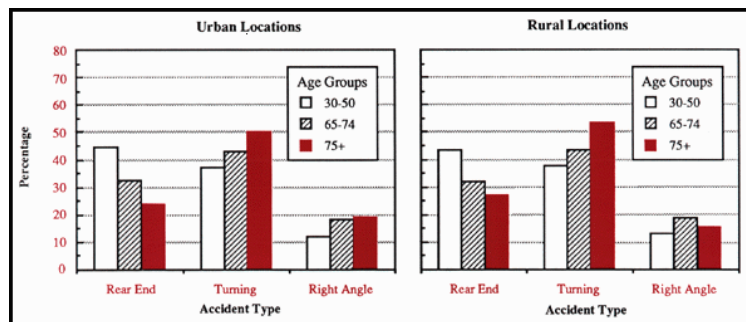


About 55 percent of people age 85 and older who died in collisions died in angle collisions. This percentage is significantly lower for younger people. Only about 25 percent of people age 16–19 who died in collisions died in angle collisions.

Source: NCHRP Report 500

## Signalized Intersection

- Elderly drivers are more likely to be involved in turning accidents, in both urban and rural location



Source: Figure 1 – Illinois Data, Accident Analysis of Older Drivers, HSIS

## Culpability Comparison

---

ELDERLY		NON-ELDERLY	
Failure to Yield	39%	Failure to Yield	22%
Making Left Turn	33%	Making Left Turn	11%
Drifted out of Lane	17%	Drifted out of lane	33%
Miscellaneous	11%	Lost Control	33%

Source: CIREN Network

## Nature of Accidents

---

- Older drivers less involved in single-vehicle accidents than others.
- Older drivers more involved in multi-vehicle accidents.
- Most common errors of elderly drivers are:
  - Driver inattention
  - Observation error

## Costs for Transportation Improvements

---

- Current reauthorization of the highway bill is about \$3-billion per year for six years for a variety of safety measures
- All will assist older drivers

Source: American Traffic Safety Services Assoc. (ATSSA)

## Possible Safety Countermeasures: Return on Investment

---

- Benefit/Cost Ratios for possible countermeasures:
  - Pavement markings, \$60/\$1
  - Lighting, \$26.8/\$1
  - Median barrier upgrade, \$22.6/\$1
  - Traffic signs, \$22.4/\$1

Source: ATSSA

### Vehicles Involved in Fatal Crashes by Vehicle Type and Rollover Occurrence

	Total Fatal Crashes	Rollover	
		Number	%
Passenger Cars	26,169	4,134	15.8
Light Trucks	22,068	5,981	27.1
Large Trucks	4,669	608	13.0
Buses	289	13	4.5
Other/Unknown	1,566	215	13.7
Total	54,761	10,951	20.0

### Vehicles Involved in Fatal Crashes by Vehicle Type and Fire Occurrence

	Total Fatal Crashes	Fire Occurrence	
		Number	%
Passenger Cars	26,169	694	2.7
Light Trucks	22,068	609	2.8
Large Trucks	4,669	240	5.1
Motorcycles	3,751	60	1.6
Buses	289	1	0.4
Other/Unknown	1,566	18	1.2
Total	58,512	1,622	2.8



## Alcohol-Related Fatalities

---

- Fatalities declined from;
  - 60% in 1982
  - 40% in 2003

## Rural Non-Interstate Roads Safety

---

- Traffic fatality rate on;
  - Rural non-interstate – 2.72  $\frac{\text{Fatalities}}{100 \text{ MVM}}$
  - All other roads - 0.99  $\frac{\text{Fatalities}}{100 \text{ MVM}}$

## Higher Fatality Rate on Rural Non-Interstate Roads

---

Possible reasons:

- Inadequate roadway design for safety
- Longer emergency vehicle response time
- Higher speeds on rural roads

## Fatality Statistics (2004)

---

Year	Fatalities	Fatalities Rate per 100 mvm
1991	41,508	1.91
1993	40,150	1.75
1995	41,817	1.73
1997	42,013	1.64
1999	41,717	1.55
2001	42,116	1.52
2002	43,005	1.50
2003	42,643	1.48
2004	42,800	1.46

## Crashes by First Harmful Event, Collision Type and Severity

*Traffic Safety Facts 2002*

First Harmful Event	Fatal, %	Injury, %	Property Damage Only, %	Total, %
Collision w/ Vehicle	39.8	69.2	69.0	68.9
Collision w/ Fixed Object				
Pole/Post	5.2	3.2	3.0	3.1
Culvert/Curb/Ditch	6.2	3.8	3.0	3.3
Shrubbery/Tree	8.5	3.1	1.8	2.2
Guard Rail	2.9	1.8	1.6	1.7
Embankment	3.4	1.6	0.7	1.0
Bridge	1.0	0.4	0.3	0.3
Other/Unknown	4.4	3.5	3.8	3.7
<b>Subtotal</b>	<b>31.6</b>	<b>17.4</b>	<b>14.2</b>	<b>15.3</b>

\* Less than 500 or less than 0.05 percent

## Crashes by First Harmful Event, Collision Type and Severity

*Traffic Safety Facts 2002*

First Harmful Event	Fatal, %	Injury, %	Property Damage Only, %	Total, %
Collision w/ Object Not Fixed				
Parked motor vehicle	1.2	1.5	7.1	5.3
Animal	0.4	1.0	6.4	4.7
Pedestrian	11.7	3.3	*	1.1
Pedalcyclist	1.7	2.4	0.1	0.8
Train	0.6	0.1	*	*
Other/Unknown	0.6	0.5	0.9	0.8
<b>Subtotal</b>	<b>16.2</b>	<b>8.8</b>	<b>14.5</b>	<b>12.8</b>
Noncollision				
Rollover	11.2	4.1	1.1	2.1
Other/Unknown	1.1	0.5	1.3	1.0
<b>Subtotal</b>	<b>12.4</b>	<b>4.6</b>	<b>2.3</b>	<b>3.1</b>

\* Less than 500 or less than 0.05 percent