CONTRIBUTING FACTORS TO NATIONAL AND REGIONAL CRASH PATTERNS

ILLINOIS TRAFFIC ENGINEERING AND SAFETY CONFERENCE

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AGENDA

- National Fatality Trends
- Illinois Fatality Trends
- Contributing Factors to Increasing Traffic Deaths
- NATIONAL SAFETY TRENDS
Fatalities and Fatality Rates, 1975-2015

Source: FARS, FHWA
PAST: WHAT DID THE GREAT RECESSION TELL US ABOUT TRAFFIC SAFETY?

Estimate 7% increase for 2016.

21% decline 2007 to 2011
TRAFFIC FATALITIES = RISK × EXPOSURE

- Miles travelled decreased.
- But not enough to explain decrease in traffic deaths.
- Fatal crash risk declined.
- But why?
BROAD RANGE OF VEHICLE, DRIVER, ENVIRONMENT, & ECONOMIC FACTORS CONSIDERED

- Safety belt laws & use rates
- ESC, crashworthy vehicles in the fleet
- Motorcycle helmet laws & use rates
- Child restraint laws.
- Cell phone & texting laws; observed usage rates.
- DUI laws (BAC, fines, suspension, etc.)
- State expenditures on
  - Capital improvements
  - Maintenance
  - Admin/Research/Planning
  - Law enforcement & safety ed.
  - HSIP projects
- Fuel price & fuel tax
- Alcohol consumption per capita, for beer, wine, spirits.
- Economic measures
  - GDP per capita
  - Median income
  - Labor force
  - Employment size & rate, by age & sex
  - Unemployment size & rate, by age & sex
- Exposure measures:
  - VMT, by road type & by vehicle type
  - Vehicle registrations by type
  - Population by age group
  - Road miles, by type
ECONOMIC FACTORS WERE PRIMARY IN DRIVING THE 2007-2011 DECLINE
- ILLINOIS SAFETY TRENDS
ILLINOIS TREND NUMBER OF FATALITIES

- Almost 34% decrease from 2005 to 2011
- Almost 18% percent increase between 2011 and 2016
- 21 fatalities higher than this time last year
# Illinois Trend Number of Fatalities

## Motor Vehicle Fatalities: Illinois versus Nationwide

<table>
<thead>
<tr>
<th>Year</th>
<th>Illinois Fatalities</th>
<th>Nationwide Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>1,355</td>
<td>42,836</td>
</tr>
<tr>
<td>2005</td>
<td>1,363</td>
<td>43,510</td>
</tr>
<tr>
<td>2006</td>
<td>1,254</td>
<td>42,708</td>
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<tr>
<td>2007</td>
<td>1,248</td>
<td>41,259</td>
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<tr>
<td>2008</td>
<td>37,423</td>
<td>1,043</td>
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<tr>
<td>2009</td>
<td>33,883</td>
<td>911</td>
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<td>2010</td>
<td>32,999</td>
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<tr>
<td>2011</td>
<td>32,479</td>
<td>918</td>
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<td>2012</td>
<td>33,782</td>
<td>956</td>
</tr>
<tr>
<td>2013</td>
<td>32,894</td>
<td>991</td>
</tr>
<tr>
<td>2014</td>
<td>32,675</td>
<td>924</td>
</tr>
<tr>
<td>2015</td>
<td>35,485</td>
<td>997</td>
</tr>
<tr>
<td>2016</td>
<td>37,461</td>
<td>1,082</td>
</tr>
</tbody>
</table>

*Source: FARS  
^Source: Illinois Crash Extracts  
Note: 2015 and 2016 Illinois values are provisional
ILLINOIS TREND NUMBER OF FATALITIES: STATE VS LOCAL

[Graph showing the trend of fatalities from 2003 to 2015 for total fatalities, state routes, and local routes.]
ILLINOIS TREND NUMBER OF FATALITIES: URBAN VS RURAL

TOTAL FATALITIES
URBAN ROUTES
RURAL ROUTES
• Vehicle miles of travel
• Population (by age group)
• Weather
• Economy (unemployment rate)
• Gas price
• Crude Oil Price (national scale)
• Funding for 4 E
• Implementation approach
Note: The 100 million AVMT values were calculated with the daily vehicle miles traveled (DVMT) values from Illinois Travel Statistics.

AVMT = \sum DVMT \times \text{Number of Days}

The AVMT trend increases 0.16% annually from 2001 to 2015 and increases 0.32% annually from 2014 to 2015.

The AVMT trend decreases 0.30% annually from 2004 to 2015.

The AVMT moving average trend decreases 0.16% annually from 2005 to 2015.
ILLINOIS POPULATION AND NUMBER OF FATALITIES - OLDER AND YOUNGER

Indexed population for different age groups

Note: 2000 to 2015 fatalities from FARs and 2015 is provisional from the Illinois Department of Transportation. Population data were collected from the United States Census Bureau, https://www.census.gov/topics/population.html
ILLINOIS LICENSED DRIVERS AND NUMBER OF FATALITIES - OLDER AND YOUNGER

Note: The numbers of fatalities for 1994-2015 are from the Fatality Analysis Reporting System (FARS) Encyclopedia; the 2016 number of fatalities is based on the IDOT provisional data. Data for licensed drivers by age group were provided by Illinois Secretary of State.
Note: The numbers of fatalities for 1994-2015 are from the Fatality Analysis Reporting System (FARS) Encyclopedia; the 2016 number of fatalities is based on the IDOT provisional data. Weather data were obtained from the National Oceanic and Atmospheric Administration – NOAA, http://www.noaa.gov/weather.
ILLINOIS WEATHER AND NUMBER OF FATALITIES
-TEMPERATURE

Note: The numbers of fatalities for 1994-2015 are from the Fatality Analysis Reporting System (FARS) Encyclopedia; the 2016 number of fatalities is based on the IDOT provisional data. Weather data were obtained from the National Oceanic and Atmospheric Administration – NOAA, http://www.noaa.gov/weather,

![Graph showing annual average temperature and number of fatalities in Illinois](image_url)

**Annual average temperature and number of fatalities in Illinois**

- Number of fatalities increasing with annual average temperature increasing

**Diagram**

- **Fatalties**
- **Annual Average Temperature (F)**
ILLINOIS ECONOMY AND NUMBER OF FATALITIES
-UNEMPLOYMENT RATE

Number of fatalities and unemployment rate in Illinois

CRUDE OIL PRICES AND NATIONAL TRAFFIC VOLUMES

U.S. traffic volume growth tends to stagnate during crude oil price spikes.

Sources:
Local law enforcement efforts related to NHTSA grant funding shows total citations declining by 55% from 2009 to 2014 and a 65% reduction in impaired driving citations from 2009 to 2014.
ILLINOIS IMPLEMENTATION FOR 4E
-EDUCATION, EMERGENCY SERVICES AND ENGINEERING

- Education
  - Influenced by Illinois state budget and NHTSA resources
  - Should be fairly consistent funding and implementation over the target setting period

- Emergency services
  - Advances in technology may have a positive impact
  - Should be fairly consistent funding and implementation over the target setting period

- Engineering
  - Fixing America’s Surface Transportation Act (FAST) signed in December 2015
  - Should be fairly consistent funding over the target setting period
  - Changes on HSIP or other transportation infrastructure investments will not likely be reflected over the target setting period (2015) but may have an impact on 2018 fatalities
MOST IMPROVEMENTS IN TRAFFIC SAFETY ARE INCREMENTAL AND ARE EXPRESSED GRADUALLY OVER TIME

- Long-term downward pressure on traffic fatalities:
  - Vehicle: e.g., penetration of crashworthy designs, crash avoidance technologies such as electronic stability control.
  - Driver: e.g., graduated driver license, increased use of safety belts, enforcement, safety campaigns to change behavior.
  - Environment: e.g., improved roadway design, barriers, signs, guardrails, rumble strips.

- Economic changes can effect substantial changes in driver behavior over the short term.
  - Less travel by risky drivers
  - Less travel in risky environments
• Executive Partnerships
• Resources development and sharing
• Collaboration on initiatives and programs
Priority Level One Emphasis Areas (EAs) represent fatalities of 25% or greater (based on 2010 to 2014 data).

Note: Emphasis Area categories are not mutually exclusive, meaning a single crash may overlap multiple Emphasis Area statistics. Hence, the sum of Fatalities and A-injuries for all Emphasis Area categories may be greater than the total frequency for Illinois.
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