Demonstration and Evaluation of Rational Speed Limits

Presented to: Transportation Engineering Conference
November 19, 2003

funding provided by the Federal Highway Administration, #DTRT501-03-R-0010

Leadfoot Clip

Bigfoot Clip

Speed-Related Fatal Crash in Tippecanoe County

Indiana Speed-Related Fatalities

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fatalities</td>
<td>982</td>
<td>1,020</td>
<td>886</td>
<td>909</td>
<td>792</td>
<td>-19.3%</td>
</tr>
<tr>
<td>Speed-Related Fatalities</td>
<td>154</td>
<td>186</td>
<td>195</td>
<td>191</td>
<td>185</td>
<td>20.1%</td>
</tr>
<tr>
<td>% Fatalities Speed-Related</td>
<td>15.7%</td>
<td>18.2%</td>
<td>22.0%</td>
<td>21.0%</td>
<td>23.4%</td>
<td></td>
</tr>
</tbody>
</table>

Program Objective

“...to determine the extent to which rationally established, well-publicized, and rigorously enforced speed limits lead to higher compliance and improved safety.”
## Budget Summary

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering, Enforcement, and Administration</td>
<td>$ 200,375</td>
</tr>
<tr>
<td>Evaluation</td>
<td>$ 49,210</td>
</tr>
<tr>
<td>Public Information and Education</td>
<td>$ 42,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 291,585</strong></td>
</tr>
</tbody>
</table>

## Timeline

- **Baseline Data Collection**
  November 2003–June 2004
- **Public Information & Education**
  June 2004–October 2005
- **Enforcement**
  September 2004–October 2005
- **Collect Speed, Enforcement, PI&E Data**
  November 2004–October 2005
- **Final Report**
  February 2006

## Comparison Community

**Tippecanoe County**
- Median Age – 27.2
- Population – 152,001
- Population/Sq. Mile – 304.1
- Per capita income – $25,537

**Monroe County**
- Median Age – 27.6
- Population – 121,229
- Population/Sq. Mile – 307.5
- Per capita income – $25,302

## Tippecanoe County – Monroe County

- University – Purdue
- Mileage – 870 miles
- Licensed Drivers – 86,175
- Vehicle Miles Traveled – 1,507,394,345

- University – Indiana
- Mileage – 680 miles
- Licensed Drivers – 69,044
- Vehicle Miles Traveled – 956,874,959
Demonstration Road Segments

- County Roads
- Road Segment Lengths
  - 0.5 miles to 7 miles

- Road Speeds
  - 30 to 55 MPH

- ADT Range
  - Low: 781 – 1,294 Vehicles/Day
  - High: 6,749 – 10,040 Vehicles/Day

- Functional Classifications
  - Urban Major Collector
  - Rural Major Collector
  - Minor Arterial

- Land Use
  - Residential
  - Rural
  - Commercial

Tippecanoe County Highway Engineering Department

Cindy Coddington, Traffic Supervisor

Rational Speed Limits

- 85th percentile speed – starting point
- Other considerations
  - Crash history
  - Roadside development
  - Road geometries
  - The pace speed
  - Parking & pedestrians
Procedure for Establishing Speed Limit by Ordinance

- First Hearing – proposed Ordinance read and voted on
- Second Hearing – proposed Ordinance read and voted on 2 weeks later
- First Publishing – week of the second hearing
- Second Publishing and Sign Posting – one week following the first publishing

Engineering Studies

- Data Collection
  - Nu-metrics Hi-Star Traffic Counters
  - Highway Data Management Software

PI&E Campaign

Managed by
Indiana Design Consortium
Lafayette, Indiana

PI&E Media Plan

- 2 Goals
  - Educate public about rational speed limits and inform them speed limits may be changing based on engineering studies
  - Inform public that speed limits will be strictly enforced, promoting awareness, compliance, and safety

PI&E Media Plan

- High-impact, creative theme with copy repeated throughout campaign to ensure saturation and visibility
- Target Population - Drivers in Tippecanoe County

Media Elements

- Press Conferences
- Press Releases
- Media Events
- Radio
- Newspaper
- Street Signs
- Johnny Ads®
  - indoor billboards in restrooms of malls, movie theaters, restaurants
Current PI&E Activities

- Letters informing county officials, prosecutors, judges, and state police about program
- Interviews with local media
- Conceptual Development of Campaign

Standard Operating Procedure and Policy

- 20 hours per week of additional enforcement of speed violations on target road segments

Tippecanoe County Speed-Related Citations, Jan 2000-Oct 2003

<table>
<thead>
<tr>
<th>Driver Age</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>684</td>
<td>113</td>
<td>16</td>
</tr>
<tr>
<td>17</td>
<td>1,025</td>
<td>179</td>
<td>16</td>
</tr>
<tr>
<td>18</td>
<td>1,585</td>
<td>264</td>
<td>23</td>
</tr>
<tr>
<td>19</td>
<td>1,935</td>
<td>342</td>
<td>23</td>
</tr>
<tr>
<td>20</td>
<td>1,545</td>
<td>331</td>
<td>21</td>
</tr>
<tr>
<td>21-24</td>
<td>2,303</td>
<td>3,130</td>
<td>12</td>
</tr>
<tr>
<td>25-34</td>
<td>18,977</td>
<td>903</td>
<td>9</td>
</tr>
<tr>
<td>35-44</td>
<td>17,351</td>
<td>418</td>
<td>3</td>
</tr>
<tr>
<td>45-54</td>
<td>16,924</td>
<td>236</td>
<td>2</td>
</tr>
<tr>
<td>55-64</td>
<td>8,325</td>
<td>73</td>
<td>1</td>
</tr>
<tr>
<td>65+</td>
<td>5,936</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>84,455</td>
<td>3,334</td>
<td>5</td>
</tr>
</tbody>
</table>
Purdue University – CATS

- History
  - Click It or Ticket 2002 & 2003
  - Rumble Strips & Shoulders Study
  - Red Light Running
  - Commercial Vehicle Crash Analysis
  - Crash Outcome Data Evaluation System
  - Annual Crash Facts and Seat Belt Surveys

- Process
  - Baseline Data Collection
  - Public Information & Education Campaign
    - Earned and Paid Media
  - Enforcement Campaign
  - Post-Intervention Measurements

Data Collection

- Tippecanoe Court Records & BMV Records
- Citation Data
- Crash Data (Injury Severity, Economic Losses)
- Public Opinion Evaluations

Reporting Goals

- Engineering
  - Report on traffic volume per road segment by driver speeds
  - Report on crashes by road segment
  - Report on economic losses sustained due to crashes, pre and post

- Education
  - Report on awareness/opinion by driver age, gender, vehicle type, etc.
  - Report on awareness/opinion by paid vs. earned media
  - Report on enforcement effort/public perception

- Enforcement
  - Report on number of citations issued by cited speed, traffic volume, time of day, driver age, etc.
  - Report on compliance/conviction rates, pre and post intervention
INDIANA SPEED-RELATED FATALITIES

<table>
<thead>
<tr>
<th>Year</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>% Change 1998-2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fatalities</td>
<td>982</td>
<td>1,020</td>
<td>986</td>
<td>900</td>
<td>792</td>
<td>-19.3%</td>
</tr>
<tr>
<td>Speed-Related Fatalities</td>
<td>154</td>
<td>186</td>
<td>195</td>
<td>191</td>
<td>185</td>
<td>20.1%</td>
</tr>
<tr>
<td>% Fatalities Speed-Related</td>
<td>15.7%</td>
<td>18.2%</td>
<td>22.0%</td>
<td>21.0%</td>
<td>23.4%</td>
<td></td>
</tr>
</tbody>
</table>

In Summary.....

Engineering
Education
Enforcement

Higher Compliance, Improved Safety and Fewer Fatalities

Questions???

Research Team

Cindy Coddington (Project Manager)
Traffic Supervisor
Tippecanoe County Highway Department
Phone: 765.423.9210
E-mail: CCoddington@co.tippecanoe.in.us

Maria L. Drake (Principal Investigator)
Associate Director
Center for the Advancement of Transportation Safety
Purdue University
Phone: 765.494.7011
E-mail: mdrake@purdue.edu

Michael Gillaspy (Manager of Data Analysis)
Transportation Safety Associate
Center for the Advancement of Transportation Safety
Purdue University
Phone: 765.494.0910
E-mail: mgillaspy@purdue.edu

Research Team

Cari Kniola (PI&E Manager)
Media Buyer
Indiana Design Consortium
Phone: 765.423.5469
E-mail: cari@IDCmarketing.com

Captain Rick Walker
(Director of Police Operations)
Tippecanoe County Sheriff's Department
Phone: 765.423.9388
E-mail: rwalker@tippecanoeclaw.com