COUNTY-WIDE GIS WEB-BASED CRASH DATA ANALYSIS SYSTEM
Traffic Engineering Division of Public Works & Miami-Dade County MPO.

Executive Summary

The purpose of this project is to provide a GIS-based county-wide crash data system that allows traffic engineers and planners to analyze crashes in all the county roads to determine priority locations and predominant crash types in order to identify appropriate engineering and education solutions. The system helps users identify and map all types of crashes including pedestrian and bicycle crashes. Using the system, users can determine high crash locations such as intersection and streets segments using the number of crashes, the traffic volume and the injury severity. In addition, the system provides crash intersection diagrams, tables, charts, summarized reports and links to original crash reports. The system is hosted at the Public Works department. The web-based system architecture allows other County staff to access the system using a web browser such as Internet Explorer. The system can be made available through the web to other interested agencies e.g. the law enforcements that can use the system to support enforcement measures.

The crash data is obtained from the Florida Department of Highway Safety and Motor Vehicles (DHSMV). At present the system contains three-years of data from 2005 to 2007 of long form crashes. The 2008 data is currently being processed and it should be available in the next 4-6 weeks. Starting this summer it is expected that HSMV will be releasing the crash data on a more complete and timely fashion which will ensure that the county-wide cash information is up to date.

Public Works and the MPO plan to continue their collaboration to support the maintenance of the system in the future to support the County needs for improvement of traffic safety in the county roadways by reducing crashes and saving lives.
COUNTY-WIDE CRASH DATA ANALYSIS SYSTEM

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Geoplan Center – University of Florida

Purpose

- To support the County needs for improvement of traffic safety in the county roadways
Requirements

- Provide access to crash records
- Analyze all crashes in the County roads
- Identify predominant crash types and high crash locations

- Widely accessible
- Easy to use
- Updated frequently

System Features

- Crash Data Import
- Crash Mapping
- Crash Analysis
- Statistical Reports
- System Administration
Crash Data Import

- Data Source: Freely available from Florida HSMV
- 50,000 – 60,000 long form crashes per year
- Data includes digital records and scanned images of police crash reports

Crash Mapping

- Uses Geographic Information Systems (GIS) to map crashes
- Parking lot or private property locations are excluded
- 93 - 95% match rate
- Uses Miami-Dade GIS road network
Crash Analysis

- Used to determine problematic areas
- Summarizes crashes by intersections and streets
- Query specific crash types e.g. bicycle or pedestrian crashes
- Intersection analysis by crash type such as rear-end, left turn, side swipe etc.
Crash Analysis Options

- Data Range
- Geography (City, Street, Intersection)
- Injury Severity
- Damages
- Harmful events
- Contributing Causes
- Lighting Condition
- Traffic Control
### Crash Analysis Query: County Top 10 2007

9,094 crash events matched the analysis criteria. 4,507 of 8,936 crash events successfully geolocated.

**Analysis Criteria**

- Crash Date: Between 01/01/2007 and 12/31/2007
- Geographic Bound: Entire county

### Top 10 ranked intersections, totaling 736 crash events

<table>
<thead>
<tr>
<th>Rank</th>
<th>Intersection</th>
<th>Crash Count</th>
<th>Crash Rate</th>
<th>Crash Severity</th>
<th>Fatalities</th>
<th>Injuries</th>
<th>Damages</th>
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<tr>
<td>1</td>
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<td>1</td>
<td>0</td>
<td>$352,489</td>
</tr>
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<td>503 AVE N &amp; IL NW 200 STREET &amp; MLK JR BLVD</td>
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<td>$352,489</td>
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</table>

### Top 10 ranked street segments, totaling 507 crash events

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<th>Rank</th>
<th>Segment</th>
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<th>Crash Count</th>
<th>Crash Rate</th>
<th>Crash Severity</th>
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<th>Injuries</th>
<th>Damages</th>
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### Crash Types
- Bicycle
- Pedestrian
- Head on
- Left turn - entering
- Left turn - leaving
- Left turn - rear end
- Other
- Off road
- Rear end
- Right angle
- Right front
- Right turn
- Rollover
- Sideswipe
- U-turn

### Crash Type Summary

| Crash Type | N. Off Road | W. Off Road | S. Off Road | E. Off Road | On Street | Intercepting Street | On Street | Aviation Area | Water Body | Rad Way | On Trail | Off Trail | Milky Way | On Hillside | Off Hillside | Total |
|------------|------------|------------|------------|------------|-----------|---------------------|-----------|---------------|------------|---------|----------|----------|-----------|-----------|-------------|----------|-------|
| N. Off Road |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| W. Off Road |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| S. Off Road |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| E. Off Road |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| On Street   |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| Intercepting Street |   |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| Aviation Area |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| Water Body  |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| Rad Way     |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| On Trail    |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| Off Trail   |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| Milky Way   |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| On Hillside |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| Off Hillside|            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
| Total       |            |            |            |            |           |                     |           |               |            |         |          |          |           |            |             |       |
Number of Crashes = Radius of Pie
Severity of Crash = Color of Slice
Statistical Reporting

- General Statistics
  - Time of the day
  - Day of the week
  - Alcohol use
  - Contributing cause
  - Harmful event
  - Lighting condition
  - Vehicle type
  - and more...

Statistical Reporting

- Intersections Reports
  - Crash County
  - Crash Rate
  - Crash Severity

- Annual Comparative Reports
  - Crashes by Year
  - Fatalities by Year

- Fatal Locations Report
  - Signalized Intersections
  - Non-signalized Intersections
System Hosting and Access

- Will be hosted at Public Works
- Access through the intranet
  - Internet Explorer or other browsers
- Available to any agency that need access to this information
- Law enforcement should be encouraged to use it
Current Status

- Data in the system now: 2005-2007
- Currently processing 2008 – available in 4-6 weeks
- Finalizing GIS features
- System 95% complete
- Coming training

Next

- 2009 long form crash data are available on monthly basis
- Short forms may be available second half of 2009
- Support is needed to continuously upload and map the future crash data
Comments/Questions

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