Data Driven Approaches to Crime and Traffic Safety (DDACTS)

Geographic Information Systems (GIS) in Transportation Safety

National Transportation Safety Board
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What is DDACTS?

DDACTS is an operational model that uses the integration of location-based crime and traffic data to establish effective and efficient methods for deploying law enforcement and other resources.
Why DDACTS?

- Crime and Crashes Often Occur in Close Proximity
2007-2008 Crash-Crime Initiative

- In 2006 department analysts discovered an overlap between crime hotspots and crash hotspots.
- The initial focus was along several primary thoroughfares originating in Baltimore City and expanding outward in a spoke-like fashion.
- The idea was to direct resources into these overlap areas to have a “two birds with one stone” effect on both crashes and crime.
2006-2007 Crash-Crime Initiative
Why DDACTS?

- Crime and Crashes Often Occur in Close Proximity
- Increasing Demands and Limited Resources
- Conflicting / Competing Demands for Service
- Crimes Often Involve a Motor Vehicle
- Renewed Emphasis on Traffic Safety

"INTEGRITY...FAIRNESS...SERVICE"
DDACTS Guiding Principles

Partners / Stakeholder Participation
Data Collection
Data Analysis
Strategic Operations
Information Sharing and Outreach
Monitor, Evaluate and Adjust
Outcomes

"INTEGRITY...FAIRNESS...SERVICE"
Data Collection

- Crash Data
- Crime Data
- Calls for Service
- Community Complaints

"INTEGRITY...FAIRNESS...SERVICE"
Data Collection Flow

911 Call
CAD Entry

Officer Response

Report

Supervisor Review

Analysis product for field use

Timeline is 3 days

Timeline is 18 mos.

SF Code CAD Data

Crime Analysis

Crime

Records

Crash

MSP

Data to CAU for geocoding

Analysis product for field use

"INTEGRITY...FAIRNESS...SERVICE"
Difficulty Geocoding Crash Locations

- Road name misspelled
- Road name missing
- Multiple designations of interstate highways
- Hit rate about 83% for MAARS (Maryland Accident Analysis Reporting System) data
Crime Hot Spot Areas
Composite Hot Spot Areas

COMPOSITE HOT SPOTS OF SELECTED CRIMES AND PERSONAL INJURY CRASHES
MARCH - NOVEMBER 2007 AND MARCH - NOVEMBER 2008

Legend
- COMPOSITE HOT SPOT AREA
- PERSONAL INJURY MARCH - NOVEMBER 2007 & 2008

Baltimore County Police Department
Crime Analysis Section
Traffic Analysis Team
January 08, 2009
Composite Hot Spot Areas
Developing Target Areas
Evaluation Considerations

- Establish criteria ahead of time
- Identifying pre- and post-periods
- Averages instead of individual data points
- Methods of measuring change
- Control areas
- Statistical tests and significance
- Displacement and diffusion
## The Long-Term Effects

3 Target Areas have remained the same since DDACTS was started in 2009

<table>
<thead>
<tr>
<th>Category</th>
<th>Countywide (incl. DDACTS Areas)</th>
<th>DDACTS Areas 1A, 4A &amp; 12A combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Stops</td>
<td>55.0%</td>
<td>-19.3%</td>
</tr>
<tr>
<td>Burglary</td>
<td>-5.3%</td>
<td>-19.1%</td>
</tr>
<tr>
<td>Robbery</td>
<td>-32.8%</td>
<td>-44.4%</td>
</tr>
<tr>
<td>MV Theft</td>
<td>-11.4%</td>
<td>-42.7%</td>
</tr>
<tr>
<td>Theft from Auto</td>
<td>-51.2%</td>
<td>-13.6%</td>
</tr>
<tr>
<td>Injury Crashes</td>
<td>2.7%</td>
<td>-7.7%</td>
</tr>
<tr>
<td>Total Crashes</td>
<td></td>
<td>-6.1%</td>
</tr>
</tbody>
</table>

Change between April to November 2006-2008 yearly average (pre-DDACTS) and 2011