

THE MARYLAND STATE POLICE CRASH TEAM**A COMMUNITY ORIENTED APPROACH TO CONGESTION MANAGEMENT, COLLISION
RECONSTRUCTION, AND CAUSATION ANALYSIS****SUMMARY:**

The Maryland State Police has a national reputation for vision in areas of technology and adaptation to needs of citizens. As such, the Department incorporated the concept of Community Oriented Policing into a model program of traffic management, collision reconstruction, and causation analysis. Thus was the birth of the Maryland State Police Crash Team. This Unit is comprised of Maryland State Troopers who are trained in all levels of collision investigation and reconstruction. Team members utilize the most technologically advanced computers, photogrammetry and laser measuring equipment to determine speed estimates, create forensic maps of crime scenes, and orchestrate three dimensional (3-D) animations to reproduce sequence of events. These investigators are able to capture up to 75% more data in 50% less time allowing for less traffic congestion and associated incidents in the back-up Que. Additionally, concepts such as causation analysis allow for pro-active programs to be developed to increase safety on all Maryland roadways.

SCANNING:

The problem was identified by reports of traffic congestion, citizen complaints, Maryland State Highway Administration (SHA), and elected officials.

The nature of the problem is mitigation of traffic congestion as a result of complex motor vehicle collisions that result in death, serious injuries and road closures during on-scene investigations. These scenes are non-recurring incidents that have created the second worst traffic congestion in the nation, only to that of the Los Angeles area.

Each year the National Highway Traffic Safety Administration (NHTSA) and AAA conduct surveys of the nation's leading cities. Traffic congestion in the Washington Metropolitan Region continues to lead as the second worst congested area in the Nation.

This problem was selected due to growth of traffic volume by local and interstate commuters.

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The problem was compounded by physical limitations to expand roadways, increase in registered vehicles and licensed drivers. Additionally, Interstate 95 (I-95) was originally designed to traverse through Washington, D.C. This concept never materialized and I-95 ended with traffic routed onto the Capital Beltway (formerly I-495). This created an unusual and undesirable mix of commuter traffic, interstate traffic, local traffic and a major trucking route. As time passed, I-95 exceeded its capacity to handle today's traffic volume of nearly 1.75 million vehicles per week. Pollution continues to rise as do tempers. Traditional morning and evening rush hours exceed three hours. Aggressive driving, as a result of frustration due to congestion, likewise increased. AAA Potomac has completed a recent survey where aggressive driving has been listed as the number one safety concern of the motoring public in the Washington, D.C. Metropolitan area. As a result of these quality of life concerns, the Maryland State Police initiated a full-time collision reconstruction unit. The Crash Team was designed to address the aforementioned problems. Additionally, the Unit utilizes Causation Analysis principles to develop pro-active programs to reduce these incidents and prevent further congestion from police presence and lengthy on-scene investigations.

The Maryland State Police has fully embraced the Community Oriented Policing philosophy. Accordingly, the Department recognized highways as communities. A group of people, from different walks of life, brought together for a common purpose; to go from one place to another with a reasonable degree of efficiency and a high level of safety, in a comfortable atmosphere. For this to be accomplished, congestion management and collision mitigation must adapt to the Department's new philosophy. The motoring public perceives, and rightly so, congestion as a quality of life issue. This congestion breeds aggressive driving, a true safety issue. In addition to education and enforcement, this program helps resolve non-recurring incidents and prevent future occurrences.

ANALYSIS:

Maryland SHA is an active partner and maintains statistical data concerning traffic volume, specific to location, time of day and day of week. Law Enforcement provides data relative to type, severity, duration, frequency, and causes of the incident. Information from NHTSA and AAA is used to supplement local data.

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This recurring problem continues to negatively impact the Washington/Baltimore communities. All motorists are likely targets/victims of this problem.

Some are driven by frustration of continuous traffic congestion, some by overt actions of others, and some by non-associated incidents such as medical/psychological problems, stress, diverted attention, etc.

Many persons interviewed in the AAA Potomac study readily admit to being an aggressive driver and almost everyone responded to being a victim of an aggressive driver. The majority of these cases clearly revert to roadway congestion.

Serious personal injuries, death, property loss/damage, and financial loss have resulted from this problem. Quality of life issues continue to plague those service providers, including pollution, economic losses from sitting in traffic (both from fuel consumed and time away from doing business), as well as products/goods not being delivered by idle commercial vehicles. The longer the back-up Que, the greater the probability of subsequent collisions, enhanced aggressive driving, and the longer to mitigate the congestion.

More reactive programs (speed enforcement, DWI/DUI enforcement, selective enforcement, and sobriety check points) were initiated which contributed to decreased number of alcohol related incidents, however congestion incidents and related aggressive behaviors continued to increase. The use of patrol vehicles during peak periods only intensified the congestion. There was no specific program or policy in place for congestion management and collision reconstruction with causation analysis.

There were no specific causes identified specific to fatal and serious personal injury collisions. While most crashes have similar causes, clearly, the most common element is congestion. Stakeholders identified this element as the most likely target for improving traffic safety.

The Maryland State Police identified diverse stakeholders to address this problem. Multi-dimensional resources from Federal, State, Local and private organizations were utilized. There were public forums where the community could meet with service providers to address problems. It became evident that there was not one location, day of week, or even time of day that could isolate the problem. Morning and evening weekday rush hours were the primary culprits of this problem.

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The providers worked with users to develop education programs, public service announcements (PSA's), Traveler Advisory Radio (TAR's), and on-highway signing, which were designed as traffic calming measures. Clearly, the Maryland State Police still had the sole responsibility to quickly respond to an incident, provide rapid and accurate on-scene investigation, and restore the free flow of traffic as quickly and safely as possible.

RESPONSE:

First, it was proposed to create an alternate route for interstate travel, which would relieve some metropolitan routes of their congestion. Secondly, adding Chesapeake Highways Advisory Routing Traffic (CHART) as a tool for traffic maintenance and detour routing provided alternatives. Many motorists feared this measure as they were unfamiliar with alternate roadways provided. Third, the development of a team of investigators trained to analyze physical evidence (highway, environmental, and drivers). This team of highly trained investigators would have an expeditious responses, and would utilize advanced technological instruments to gather crash data relative to the incident in a prompt and efficient manner, thus decreasing the time of road and lane closure while maintaining the highest quality investigations in the country. Each investigator would be equipped with digital imaging equipment along with an Electronic Total Station to create a forensic map of the crash site. This allows for 75% more data to be collected in 50% of the time.

Funding from NHTSA and SHA for equipment, personnel needs, traffic detouring and assisting in traffic direction were part of the initial project. While implementing the plan, a criteria was established for types of response and administrative, supervisory and investigative responsibilities. This allowed for the elimination of duplication of services. Each participant had a pre-described responsibility either at or after the incident, which provided for a more effective and efficient system response and mitigation.

ASSESSMENT:

Roadway and lane closure times were reduced by one half of the original time with three times more data gathered in that same period of time. The restored traffic flow reduced the number of residual collisions which increased police personnel for other patrol functions, and decreased the propensity for further personal injury and property damage collisions.

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It had an environmental effect by restoring traffic flow which improved air quality, and a cost effect to the community by reducing fuel consumption, medical cost for personal injuries collision, insurance rates for payment of claims, and the need for additional police personnel.

Statistical data was gathered by the Crash Team to evaluate the effectiveness and efficiency. This information corroborated a continual need for this Unit. The Unit is constantly evaluated for areas of improvement and what technology could be utilized to further enhance the overall effectiveness. Its success has been recognized locally and nationally by federal, state and local law enforcement and other agencies. Not only for the Unit's ability to reduce response and investigative times, but also for it's ability to analyze the data for future preventive initiatives. The SHA and Maryland State Police were involved in this evaluation which was supported by NHTSA.

There were no problems in implementing the response plan, however there were constraints in manpower and equipment due to economic issues. NHTSA and SHA provided grant funding and pilot program funding to alleviate these constraints.

The following response goals were accomplished:

- Investigators responded to the scene in a more timely fashion
- Investigators gathered required data more efficiently and effectively
- The unit was responsible for enhanced restoration of traffic flow
- The unit has provided high quality investigations for prosecution.

The results were measured by gathering all statistical data from Unit members and SHA. Supported data is retained by Maryland State Police in the form of written and electronic means.

The response plan could be more effective by increasing manpower at the scenes to analyze and gather all evidence quickly. The response plan requires constant monitoring to maintain the desired results.

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In closing, The Maryland State Police CRASH TEAM has been designated as the most technologically advanced reconstruction unit in the country. It is through the application of these devices by highly trained investigators that congestion management has been brought to the forefront of collision reconstruction. The Team concept provides the basic response to the needs of the community by reducing those factors deemed harmful by the system users and providers. A copy of the operation and implementation plans are included for your review. I believe that this is the most unique plan, blending traffic congestion management, collision reconstruction, community policing philosophy, and technology application in law enforcement together into a viable program clearly designed to improve the quality of life to those we serve.

AGENCY and OFFICER INFORMATION:

The information regarding this program flowed both ways, from the bottom up and from the top down. Troopers on routine patrol and at community meetings had input regarding congestion, aggressive driving and crashes. Commanders at field installations received similar information. The Superintendent of the Maryland State Police was contacted by elected officials expressing their concerns and those of their constituents. The program was developed at the Bureau level utilizing personnel from road patrol, traffic services, SHA, and collision reconstructionist, along with budget planning, and operations personnel. The program was implemented as a grant funded pilot program, reviewed at all levels, and fully implemented by order of the Superintendent. The program has received support from community groups, field Troopers, allied agencies, SHA, NHTSA, and those directly involved. The program continues to improve technologically, increasing its effectiveness and with added manpower increasing its efficiency. Funding sources continue to vary, with the main providers being the Maryland State Police and SHA.

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