

Transportation Safety Resource Center (TSRC)

FINAL REPORT
August 2007

Submitted by

Dr. Ali Maher
Professor and Director

Dr. Mohsen Jafari
Professor

Sarah Weissman
Program Manager, Transportation Engineer

Center for Advanced Infrastructure and Transportation (CAIT)
Rutgers, the State University of New Jersey
Piscataway, NJ 08854-8014



NJDOT Project Manager
Patricia Ott, PE

In cooperation with
State of New Jersey
Department of Transportation
And
U.S. Department of Transportation
Federal Highway Administration

Disclaimer Statement

"The contents of this report reflect the views of the author(s) who is (are) responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the New Jersey Department of Transportation or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation."

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the information presented herein. This document is disseminated under the sponsorship of the Department of Transportation, University Transportation Centers Program, in the interest of information exchange. The U.S. Government assumes no liability for the contents or use thereof.

1. Report No. 150-RU9142	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Transportation Safety Resource Center (TSRC)		5. Report Date August 2007	
		6. Performing Organization Code CAIT/Rutgers	
7. Author(s) Dr. Ali Maher, Dr. Mohsen Jafari, and Sarah Weissman		8. Performing Organization Report No. 150-RU9142	
9. Performing Organization Name and Address Center for Advanced Infrastructure and Transportation (CAIT) Rutgers, The State University of New Jersey 100 Brett Rd. Piscataway, NJ 08854		10. Work Unit No.	
		11. Contract or Grant No. 4-29142	
12. Sponsoring Agency Name and Address New Jersey Department of Transportation Federal Highway Administration 1035 Parkway Avenue U.S. Department of Transportation P.O. Box 600 Washington, D.C.		13. Type of Report and Period Covered Final Report 4/1/2004 - 8/31/2007	
		14. Sponsoring Agency Code	
15. Supplementary Notes U.S. Department of Transportation/Research and Innovative Technology Administration 1200 New Jersey Avenue, SE Washington, DC 20590-0001			
16. Abstract <p>The Transportation Safety Resource Center is a partnership between federal and state transportation agencies, local stakeholders, academic institutions, and the private sector to provide technical and educational services to address transportation safety in New Jersey.</p> <p>The center will strive to assist NJDOT in their efforts to improve highway safety by creating a new core program that consolidates existing efforts championed by both the Federal Highway Administration (FHWA) and the National Highway Traffic Safety Administration (NHTSA). The TSRC will provide services to the NJDOT Division of Traffic Engineering and Safety Programs, along with technical support on merging specialized data sources with the New Jersey Crash Records System.</p> <p>More specifically the TSRC will partner with the NJDOT to develop and deliver training programs and technical assistance programs to supply the locals with the preliminary analysis of crash data using advanced decision support systems. The TSRC will also provide support to the New Jersey Safety Conscious Planning (SCP) Network that has been established between NJDOT and the Metropolitan Planning Organizations (MPO). Research and technical support will also be provided to NJDOT with the efforts to establish a comprehensive safety management system (SMS) which will integrate existing and yet to be identified databases involving both traditional and non-traditional stakeholders.</p> <p>The Center will be focused on assisting locals with developing safety solutions that meet the "tier one" or quick fix/low cost projects. By using the resources of the center, the local users will package and present their problems to NJDOT along with potential solutions. This will then allow for a much more efficient and objective response from the NJDOT.</p>			
17. Key Words Safety, Crash, Records, Technical Assistance, Traffic, Engineering, CSHSP		18. Distribution Statement	
19. Security Classification (of this report) Unclassified	20. Security Classification (of this page) Unclassified	21. No. of Pages 10	22. Price

Acknowledgements

This project was funded by the New Jersey Department of Transportation and the Federal Highway Administration. Patricia Ott, Bill Beans, and Larry Cullari Jr. have been instrumental in the development of TSRC as a resource center.

Table of Contents

Abstract.....	1
Introduction	2
Technical Assistance	3
Data Angles	3
Analysis	3
STRCC Support.....	4
Collaboration with MPOs	4
PTAP Services.....	4
Outreach	4
Online Tools.....	5
State Safety Plan Coordination and Support	5
Conclusions	5

Abstract

The Transportation Safety Resource Center is a partnership between federal and state transportation agencies, local stakeholders, academic institutions, and the private sector to provide technical and educational services to address transportation safety in New Jersey.

The center will strive to assist NJDOT in their efforts to improve highway safety by creating a new core program that consolidates existing efforts championed by both the Federal Highway Administration (FHWA) and the National Highway Traffic Safety Administration (NHTSA). The TSRC will provide services to the NJDOT Division of Traffic Engineering and Safety Programs, along with technical support on merging specialized data sources with the New Jersey Crash Records System.

More specifically the TSRC will partner with the NJDOT to develop and deliver training programs and technical assistance programs to supply the locals with the preliminary analysis of crash data using advanced decision support systems. The TSRC will also provide support to the New Jersey Safety Conscious Planning (SCP) Network that has been established between NJDOT and the Metropolitan Planning Organizations (MPO). Research and technical support will also be provided to NJDOT with the efforts to establish a comprehensive safety management system (SMS) which will integrate existing and yet to be identified databases involving both traditional and non-traditional stakeholders.

The Center will be focused on assisting locals with developing safety solutions that meet the “tier one” or quick fix/low cost projects. By using the resources of the center, the local users will package and present their problems to NJDOT along with potential solutions. This will then allow for a much more efficient and objective response from the NJDOT.

Introduction

The Transportation Safety Resource Center (TSRC) was established by CAIT in 2003 in response to an acute need for implementation of federally mandated traffic safety measures on local roads, which comprise 67% of all roads in the state. Established to function as an extension of the NJDOT Division of Traffic Engineering and Safety, TSRC supports the Division efforts in service provision of technical assistance and outreach to local agencies.

The TSRC has become a vital link in a collaborative partnership between CAIT, NJDOT, FHWA, DHTS, NHTSA, MPOs, and local governments and organizations in providing resources and solutions that address traffic and roadway safety. In line with the *National Strategy for Surface Transportation Research*, TSRC advances state-of-the-art knowledge and capabilities in use of crash data to make decisions to enable data-driven policy making and implementation of projects. Improving roadway safety enhances quality of life for all road users from the standpoint of both safety and mobility.

Through efforts aimed at reducing traffic related fatalities, injuries, and crashes, the Center provides support for the *Safety Tactical Asset Management Plan of New Jersey* by providing strategies to address network deficiencies. TSRC provides technical, administrative, and general support to the Safety Management Task Force (SMTF) and all Comprehensive Strategic Highway Safety Plan (The Plan) state emphasis area team leaders. TSRC provides planning and support services for the state Safety Forum and regional conferences. And together, both NJDOT and TSRC are providing the leadership and outreach necessary to establish a statewide network of safety systems.

Vision

TSRC will be recognized as a safety resource center national model for comprehensive programs that bridge political and geographical boundaries across the state by extending safety resources to local agencies through education, technical assistance, and support.

Technical Assistance

The Transportation Safety Resource Center (TSRC) is focused on assisting the NJDOT and statewide safety professionals with highly accepted solutions for quick-fix and low-cost projects. Through training, technology, and support, TSRC strives to be an all-encompassing resource for mitigating safety issues throughout New Jersey.

In adherence to the long-term goals of TSRC, the team collaborated with the NJDOT Division of Traffic Engineering & Safety to mine data for ambitious software that will ultimately allow users to search for crash incidents, analyze crash sites, and see crashes plotted on a GIS map.

This software, aptly named *Plan4Safety*, encompasses a partnered effort with NJDOT who collects crash records, inputs them into a central database, thereby providing TSRC access to the db to calculate statistical analysis from the data. The Windows OS-compatible software outputs graphs, frequency charts, and crash hot spot locations by milepost and roadway using Microsoft Access functionalities.

Working with the NJDOT, straight-line and census data serves to provide spatial and geographical data for the interactive Geographic Information System map in *Plan4Safety*. Cross-referencing crash data to exact plot points on the map will help users to easily identify problem areas.

Data Angles

The NJTR-1 crash report serves as the most credible “eyewitness” to all crash events in New Jersey. *Plan4Safety*’s functionality depends on these crash reports to fulfill its database. From these crash reports, a total 144 data elements exist and are painstakingly organized into a five-category catalog: driver (all data pertaining to the driver, including gender and age), vehicle (vehicle type, year, make and model), occupant (all data pertaining to the vehicle passengers), pedestrian (data pertaining to any pedestrian[s] involved), and crash (type, intoxication level, location, date, and time).

Analysis

Currently, the system allows users to analyze frequency of these data types using functionalities within the Microsoft Access program code. The user searches the entire database for criteria specific to his needs, and the analysis tools count the frequency of user-indicated data points. The output is available for viewing in an Excel chart or a colorful and visual graph.

GIS Mapping

Using official geographic data, crash record location data is cross-referenced and interactively plotted on a World Street Map of New Jersey. Crash locations can be plotted, at the user’s discretion, on the map using the latitudinal crash address. The map provides a visual tool—with the click of a mouse—that helps identify crash “hot spots” or areas where pedestrian crashes or frequent fatalities need to be addressed.

STRCC Support

TSRC has continued to support the Statewide Traffic Records Coordinating Committee by providing administrative and technical support to the committee chair and its members. Through this committee, TSRC was able to support the efforts of the state to update and improve its crash report form, the NJTR-1.

The new form incorporates many additional data elements that were determined to be necessary by the sub-committee, eliminates several elements no longer necessary, and reformats the sheet into a single page format with 2 overlays, making the new form more compact. This effort has greatly improved the state's capability to collect relevant crash data imperative to future data mining efforts, such as Plan4Safety, research and safety initiatives.

Collaboration with MPOs

Partnering with North Jersey Transportation Planning Authority (NJTPA), South Jersey Transportation Planning Office (SJTPO), and Delaware Valley Regional Planning Commission (DVRPC), TSRC alerts safety professionals of upcoming training sessions on planning and engineering and offers safety support and opinion to public enhancement projects.

Transversely, partnership with these three organizations supplies TSRC with a direct connection to the regions and local communities in New Jersey. Working with the MPOs, TSRC has been able to reach professionals at the county and local level to interact with them, provide technical outreach, continuing education, and support for safety initiatives.

PTAP Services

Utilizing educational facility services provided by the technical assistance program, TSRC is able to host a number of continued education training sessions for engineers and traffic officers. PTAP guarantees equipment availability, qualified instructors, adequate facilities, and—if requested—food and drink for all participants to ensure a pleasant learning experience.

The quality and comfort of the learning experience is vital to the future success of TSRC. Providing intensive training in a clean and friendly environment allows TSRC personnel to form relationships with attendees to flourish future partnerships and cooperative agreements.

Outreach

As a resource center that works with federal, state, regional, county and local partners, TSRC is able to do significant outreach for safety initiatives. The Center brings federal and state resources down to the local level, enabling local officials and professionals to use these resources at their level, tailoring programs to their specific needs.

Online Tools

A program site of the Rutgers' Center for Advanced Infrastructure and Transportation (CAIT), TSRC provides relevant contact and project information on its website on the main Rutgers server. Email addresses, telephone numbers, and safety program information are available for users and constituents with questions, comments, concerns, and suggestions.

In the future, the team plans on development a beta version of Plan4Safety that is housed on a private server online. A nodal tool, the entire crash database will be available entirely online and displayed as reference by user filters. The transition of the database and the user interface to one cyber location will enhance functionality, speed, and efficiency.

State Safety Plan Coordination and Support

With the passing of SAFETEA-LU, states were required to produce state safety plans that would outline issues specific to that state, actions items, key players, and an overall idea of where the state currently was and where it planned to go. These plans were a requirement of each state in order to continue receiving federal safety dollars.

TSRC was a key stakeholder and support arm for the first safety plan created, the Comprehensive Strategic Highway Safety Plan (CSHSP), nicknamed 'The Plan'. TSRC helped NJDOT to manage and produce this document that was later signed by the Governor. The Plan was a document that was created by the Safety Management Task Force (SMTF), which is made up of more than one hundred safety professionals from more than 50 different agencies.

TSRC will continue to support The Plan and SMTF through data updates, support for emphasis area team leaders and the SMTF chair, and overall administration and support of continued efforts stemming from The Plan.

Conclusions

TSRC is a growing program that plans to expand its reach and resources to better serve the state of New Jersey and its safety professionals. TSRC will continue to reach out, to vigorously support various state and local agencies with their traffic safety initiatives.

Upholding a diligent commitment to traffic safety, the goal of TSRC will always be to exist as the premiere one-stop resource center with a major focus on the traffic safety concerns of local agencies. With the enhancement of Plan4Safety and the acquisition of state and federal grant research projects, TSRC will branch out with conclusive research evidence, provide white paper research reports on approved countermeasures and media programs, create and disseminate promotional supplementary safety materials, attend and coordinates trade show and conference presentations; and continually enhance *Plan4Safety* to provide intensive mitigation support to all traffic safety professionals.