

LOCAL ROAD SAFETY AUDITS: A NEW APPROACH TO AN OLD PROBLEM

SOUTH JERSEY TRANSPORTATION PLANNING ORGANIZATION (SJTPO)

Objective

The goal of the SJTPO's Local Road Safety Audit Program is to improve roadway safety by implementing low-cost, quick turnaround safety improvements that deliver immediate benefits and can be implemented by local governments. SJTPO is the Metropolitan Planning Organization (MPO) serving Atlantic, Cape May, Cumberland, and Salem counties in South Jersey.

Approach

Background

Local agencies, especially those with tight budgets and limited staff, are hard pressed to conduct comprehensive safety programs or redirect resources away from other core functions. However, programming safety improvements toward attainable funding sources can enable even small jurisdictions to realize substantial safety benefits. Identification and implementation of low-cost, quick-turnaround safety improvements may be especially appealing to small agencies with limited resources. SJTPO accesses special New Jersey Department of Transportation (DOT)



Local team conducts a road safety audit along a roadway in the SJTPO area.

capital improvement funds to implement some of the identified safety improvements. Others are implemented by reprioritizing existing maintenance budgets. Planning funds are used to conduct local road safety audits.

Because SJTPO did not have the resources to develop and operate a regionwide, comprehensive safety management system, they adopted the approach of conducting road safety audits for locations of concern. A road safety audit is a formal safety performance examination of an existing or future road or intersection by an independent audit team.

The selection of roads to be audited is done in a rigorous fashion that combines crash data analysis with local experience. Since the recommended improvements emerge from a systematic process that selects the roads to be audited, the Federal Highway Administration (FHWA) accepts the recommendations as eligible for Federal funding.

¹ Federal Highway Administration, Road Safety Audit Guidelines, FHWA-SA-06-06, 2006.

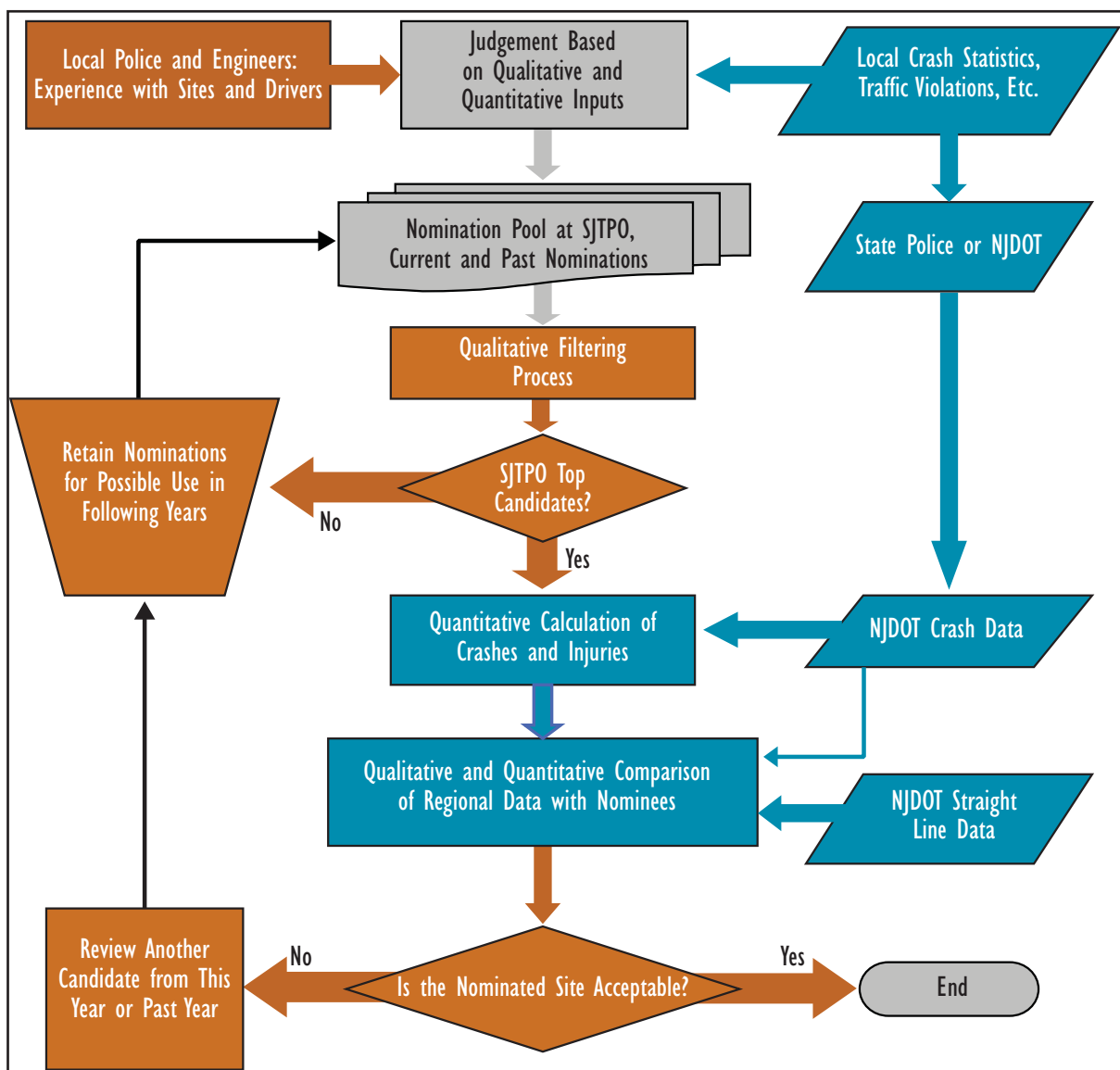
Road Safety Audit Selection Process

Both qualitative and quantitative criteria are used in selecting the sites for road safety audits. SJTPO requests local experts, including engineers, planners, and enforcement officers, to nominate roadway segments that could be improved with quick and inexpensive measures. The nominated road segments are initially selected based on the following qualitative factors:

- Geographic compactness of corridor (road segments should be compact – two or three continuous miles);
- Degree of local control (there should be local control over the site with few state highway intersections within the selected segment);
- Degree of agency cooperation (cooperation among agencies and governments is important to the success of the project); and
- Potential for safety improvement.

Road segments that best meet the qualitative criteria are then screened quantitatively using crash, fatality, and injury data from the New Jersey DOT for the years 2001, 2002, 2003, and the first half of 2004. Database tools are used to identify the crashes for each candidate road segment, including cross streets. The number of crashes is converted to a rate per miles of travel to allow a data-driven ranking of candidate segments. The highest ranked segments are then compared to the averages for each of the four counties to identify road safety audit candidates with high promise for safety improvement. The Road Safety Audit Segment Selection Process is outlined in Figure 1.

Figure 1. Road Safety Audit Segment Selection Process



Conducting the Audits

SJTPO retains consultants to audit the selected roadways. Audits consist of three phases: data collection and evaluation, field review, and preparation of the report and findings. The audit process is thorough and each phase must address predefined requirements. The final report summarizes the findings of the inspection and describes recommended improvements.

Implementation



Local team conducts a road safety audit along a roadway in the SJTPO area.

Generally, a safety audit is conducted each year for a roadway segment within each of SJTPO's four counties. Project development work also is commissioned for high priority improvements identified from previous audits. Depending on the types and costs of recommended improvements, projects can be either programmed for Federal authorization in the following fiscal year or handled by the sponsoring agency with their own funds. Many improvements, such as sign replacement, striping, clear zone maintenance, etc. can be prioritized within existing maintenance budgets, whereas large-scale, complex improvements, such as intersection reconstruction or the addition of turn lanes, must be assigned to a regional project pool for prioritization and eventual implementation.

Resources

In 2004, FHWA's New Jersey Division and the New Jersey DOT agreed to reserve \$1 million annually for each of New Jersey's three MPOs for transportation system capital improvements.

SJTPO reserves up to \$100,000 of planning funds each year to conduct audits of local roadway segments or intersections following the selection process outlined above. They also program up to \$50,000 per year for consultant assistance in developing construction plans and permitting information, obtaining survey data, and developing other materials necessary to obtain Federal authorization. This assistance enables county and municipal project sponsors to accelerate project delivery which is in keeping with the goal of quickly implementing low-cost safety improvements. Also, as a Transportation Management Area, SJTPO has access to a suballocation of Surface Transportation Program funds.

Outcomes

FHWA and the Roadway Safety Foundation recently selected SJTPO for a National Roadway Safety Award, and to date, over \$1.5 million in safety projects are complete or under construction on local roadways in the SJTPO area as a result of the Road Safety Audit Program.

Low-cost, quick-turnaround improvements can deliver substantial safety benefits. A recent report by the National Association of County Engineers (NACE) compiled results from numerous studies that measured the reduction in crashes following implementation of various types of low-cost safety improvements. The values shown in Table 1 are samples derived from these studies.

Table 1: Potential Effects of Low-Cost Safety Measures

Improvement Types	MVC Reduction	Benefit/Cost Ratio
Post-Mounted Delineators	15% (Fatal, Run-off-Road) ^a	
Chevrons	35% (Nighttime, Run-off-Road) ^b	
Two-Lane Road Edge Lines	19% Total, 37% Fatal ^c	17:1
Raised Pavement Markers	9% Total, 15% Injury ^e	
Shoulder/Edge Line Rumble Strips	20% ^f	2 to 221:1 Depending on ADT
Centerline Rumble Strips	20% ^f	1.0 to 24.9:1 Depending on ADT

Note: Motor Vehicle Crash (MVC) Reduction values refer to the type of crash listed.

Source: Low Cost Local Road Safety Solutions, National Association of County Engineers, March, 2006.

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- Neuman, T.R., R. Pfefer, K.L. Slack, K.K. Hardy, F. Council, H. McGee, L. Prothe, and K. Eccles. *Guidance for Implementation of the AASHTO Strategic Highway Safety Plan Volume 6: A Guide for Addressing Run-Off-Road Collisions*. NCHRP Report 500. Transportation Research Board, Washington, D.C., 2003.
- Carlson, P.J. and J. D. Miles. *Traffic Operational Impacts of Transverse, Centerline, and Edgeline Rumble Strips*. Report 0-4472-2. Texas Transportation Institute, College Station, Texas, September 2003.

Performance Measures

Before and after studies will be conducted to measure the effectiveness of the implemented improvements when data are available.

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Best practices are being identified and documented by the
 Transportation Safety Planning Working Group
 (TSPWG). For more information go to tsp.trb.org or
www.fbwa.dot.gov/planning/SCP.

