

Transportation Synthesis Report Program

Washington State Department of Transportation
Office of Research and Library Services

What are transportation synthesis reports?

The WSDOT transportation synthesis reports (TSR's) grew out of interest of WSDOT Executives in "just-in-time" summaries of state of the practice information and literature on topics of prime interest. WSDOT's Synthesis Program is based on a similar effort available through the Wisconsin Department of Transportation Research and Library Services Office (<http://www.dot.wisconsin.gov/library/research/reports/tsr.htm>).

Transportation Synthesis Reports (TSR's) are brief summaries of currently available information on topics of interest to WSDOT staff. Online and print sources may include newspaper and periodical articles, NCHRP and other TRB programs, AASHTO, the research and practices of other state DOT's and related academic and industry research. State of the practice information may include quick surveys of all other DOTs or phone interviews with select states. Internet hyperlinks in the TSR's are active at the time of publication, but host server changes can make them obsolete.

What types of projects qualify as a transportation synthesis report?

A qualifying transportation synthesis report is a summary similar to an annotated bibliography of the most current published and current periodical media on a specific topic. The TSR's are not intended to be an extension of existing staff duties or functions. The report is not an in-depth analysis of the topic subject, but a compilation of information materials with some explanation. The synthesis should be able to be completed in the 2-3 month timeframe but shorter deadlines can frequently be accommodated with the understanding that information covered may be constrained. Examples of potential research topics suitable as a synthesis include but are not limited to:

- Specific topics concerning transportation issues
- Research on methods and procedures that other organizations use on a particular transportation topic
- Qualitative surveys of other state DOT's processes or procedures
- A compilation of approaches to transportation problems or issues and solutions and suggested approaches.

How are projects selected?

Projects are requested by WSDOT Senior Management through Leni Oman, Director, Office of Research and Library Services, or through Kathy Lindquist, Research Manager and Synthesis Program lead. Leni Oman approves projects considering workload at the time and fit to the program.

How do I get a research synthesis report started?

If you have a research need that you think could be accomplished successfully by through a synthesis please contact Kathy. Aaron Poor, a writer at Washington State University (WSU) Washington State Transportation Center (TRAC) is available to prepare synthesis requests.

To conduct a TSR, the following information is required:

1. Describe the research topic in specific terms and give as much background as possible.
2. The time frame the final product must be completed.
3. Any related terms or sources of information that may be useful.

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Completed WSDOT Research Synthesis Reports

Summary of Three Highway and Improvement Cost Reports

John Conrad, Assistant Secretary for Engineering & Regional Operations, requested a summary of three research reports on highway improvement costs. The first study, *Highway Economic Requirements System Improvement Cost and Pavement Life*, was completed for FHWA by the Battelle Corporation in November 2003. The purpose of this study was to review the costs per lane mile of highway construction projects used in the Highway Economic Requirements System (HERS). The next two studies, *Improvement Cost Data Methodology*, April 2005; and *High Cost Transportation Capacity Investments – the Megaproject*, completed by Battelle in June 2006, built on the information developed in the first study and responded to questions raised. These two studies found that costs for highway construction projects were higher in areas with populations greater than one million, in areas with mountainous terrain, and for megaprojects. These higher, revised costs were incorporated into the updated HERS software. All estimated costs per lane mile of highway construction projects were calculated in 2002 dollars and are an average used for a national level analysis of needs on the Nation's highway system.

Inflation Estimation Models

Aaron Butters, Systems Analysis and Program Development Manager, requested information on inflation estimation. A synthesis of practices used to estimate inflation rates within cost estimating for capital projects is needed. WSDOT currently uses a private service to supply this information. The service provides inflation estimates for 10 years and the last year's inflation rate is used to project to 50 years. Practices, products or services that are currently used in industries that apply a similar time scale or similar type of work or have a more accurate process were reviewed. According to the sources reviewed, the costs of highway projects tend to rise over time as a result of inflation just as other costs encountered in the general economy. This is because highway projects must compete for many of the same resources (such as labor, steel, or oil) that other sectors of the economy require.

Many States produce their own highway cost indices that reflect local conditions or use a combination of indexes from national sources and local data. A list of methods used by other state DOT's was obtained from an e-mail survey and the trend among the states responding is to use a combination of national indices plus in house developed inflation rates that include local data.

State Laws Allowing Container Fees

Barbara Ivanov, Director, WSDOT Office of Freight Strategy & Policy requested a synthesis to find out the states that allow ports to collect container fees. Container fees provide a mechanism to apply a direct user charge to international freight that does not involve a general tax increase. In Washington State, the dollars could be used to fund intermodal improvements that aid freight flows in the region, such as the FAST Corridor, extension of SR 167 to the Port of Tacoma, and key improvements to rail bottlenecks. From review of the sources, California appears to be the only state to attempt to allow container fees.

The legislation was vetoed by Governor Arnold Schwarzenegger in August of 2006. Acknowledging that the policy objectives of Senate Bill 927 were laudable, the Governor called the measure "flawed in its construction, application, lack of accountability and failure to coordinate with other public and private financing sources, ignoring opportunities to leverage

additional funding.” He said that the bill provides no mechanism to use collected fees to leverage “billions of dollars in available funding to develop public-private partnerships.” Governor Schwarzenegger also mentioned that the measure was drafted to include only two ports and applied only to goods shipped in containers, ignoring all other forms of shipping and other ports of entry.

Sobriety Checkpoints

Steve Reinmuth, WSDOT Director of Government Relations, in collaboration with the Washington State Patrol and the Washington Traffic Safety Commission requested information on the constitutional issues related to sobriety checkpoints and state privacy laws. Newspaper features, studies, reviews, commentaries were searched on sobriety checkpoints in use in states with strong privacy laws. The Constitution prohibits unreasonable searches and seizures and people being stopped without a search warrant or at least without probable cause that they have committed a crime. The U.S. Supreme Court has, however, found sobriety checkpoints to be constitutionally permissible. Searches have been allowed in certain cases under “special needs.” The “special needs” exception applies to situations in which law enforcement directly conducts searches and seizures without individualized suspicion for the purpose of minimizing a risk of harm.

Although there are allowances for sobriety checkpoints and many states allow them, eleven states have found that sobriety roadblocks violate their own state constitutions and have outlawed them. Washington and ten other states including Alaska, Idaho, Iowa, Michigan, Minnesota, Oregon, Rhode Island, Texas, Wisconsin, and Wyoming, do not permit sobriety checkpoints.

Sobriety checkpoints, alone, do not appear to solve the impaired driver problem. Research shows approximately half of all legally impaired drivers stopped at checkpoints, including the hardcore, go through undetected and when implemented alone, sobriety checkpoints may not be the most effective enforcement tactic. According to the literature, sobriety checkpoints are most effective when used as a part of a comprehensive enforcement program.

Contractor QA/QC

This request from Don Senn, WSDOT North Central Regional Administrator, was to identify if there are workforce efficiencies where contractors do QA/QC on construction projects. In construction contracts, the owners have the contractor furnish their own tester and the owners then are able to do the assurance testing. This approach takes less of a workforce as those staff persons freed from doing testing could be doing other critical delivery item work such as design and/or other major inspection or project management tasks. Oregon uses this type of contractor QC/QA. The success of this approach is uncertain, but it is being done in Oregon, California, Minnesota, and other states and the Federal Highway Administration accepts it. Information obtained from interviews and published sources did not confirm that workforce efficiencies could necessarily be obtained by having contractors do QA/QC. States must have staff in place to monitor testing, conduct additional testing and do oversight of contractors, requires additional staff oversight and thus may not result in workforce savings.

Estimating Toll Facility Demand and Revenue

Jeff Doyle, JD., Director, WSDOT Public Private Partnerships Office, requested a synthesis of highway toll facility demand and revenue. New highway toll facilities are often paid for strictly from the revenues generated from the imposition of tolls. Government (or the private sector)

typically borrows money through a bond issuance, or through private financing (banks, equity investors, etc.). The terms for repayment of the loaned money are established when the loan is made. The trick is to structure the repayment schedule to match the anticipated toll revenue collections, projected over a 25 - 99 year repayment period. The problem is, forecasting traffic (and therefore revenue) on a new toll facility is a very, very difficult to do with any accuracy. When the traffic and revenue (T/R) forecasts are low (which happens often), the government may not have sufficient funds to repay the loaned money in due course. Some very high-profile toll facilities have struggled with this issue, and have been forced to sell the entire toll facility and operation to the private sector in order to repay the debt.

A review of newspaper features, studies, and commentaries was done on the issue of reliability of toll road traffic and revenue forecasts. A few formal studies or analyses can be found, but most available evidence is anecdotal and asserts the unreliability of T/R forecasting – The Denver Post series specifically. This is an emerging issue and formal research, including the NCHRP Project 20-5, Synthesis of Highway Practice 36-11, Estimating Toll Facility Demand and Revenue, currently underway appears to be specifically focused on the traffic and revenue forecasting issues.

Projects in Progress

Characteristics of AASHTO Research Advisory Committee Programs

Leni Oman, Director, Office of Research and Library Services, requested a set of *Characteristics of AASHTO Research Advisory Committee Member Programs* for the National RAC Meeting to be held in Seattle, August 6-9, 2007. Susan Lewis at WSU is working on this request. The project is a survey and a summary of the information from the national RAC members including information on state, name and title of current manager, financial resources and how they are distributed, other funding sources, staffing, organizational alignment, arrangements with universities, scope of research office functions, and demographics of the state. This project is to be completed by June 1, 2007.

Synthesis of Resources Showing Benefits of Public Transportation in Washington State

Cathy Silins, Acting Director of the Public Transportation Division, and Peter Thein, Executive Director of the Washington State Transit Association (WSTA) requested a synthesis of current research that highlights and identifies the benefits of public transportation in Washington State. The research consists of a review of and compilation of relevant research regarding the use of public transportation with a focus on statistics and research highlighting Washington State. The sources will be used as background for an educational and outreach program and website that articulates the benefits of public transportation. This project is to be completed by June 1, 2007