**Transit Management: Information Dissemination**

ITS Benefits, Costs, and Lessons Learned: 2014 Update Report

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**Highlights**

- Real-time transit traveler information can increase choice ridership by 40 to 70 percent.
- Providing transit travel times and departure information on highways can lead to a 1.6 to 7.9 percent mode shift from automobile to transit.

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**Introduction**

This factsheet is based on past evaluation data contained in the ITS Knowledge Resources database at: [www.itskrs.its.dot.gov](http://www.itskrs.its.dot.gov). The database is maintained by the U.S. DOT’s ITS JPO Evaluation Program to support informed decision making regarding ITS investments by tracking the effectiveness of deployed ITS. The factsheet presents benefits, costs and lessons learned from past evaluations of ITS projects.

In 2011, the public transportation industry in the United States provided 4.8 billion revenue miles of service, including 3.7 billion traveled on roadways. The roadway services carried 5.6 billion passenger trips and collected $6.1 billion in fares. Rail systems carried 4.6 billion passenger trips and collected $7.3 billion in fares [1].

The proliferation of mobile devices and real-time information have led to a shift over the past several years in the way transit agencies disseminate traveler information to their existing (and potential) passengers. Increased adoption of the General Transit Feed Specification (GTFS) by transit agencies has led to the development of transit traveler information mobile applications by third party developers in many cities, not just by the transit agencies themselves. Transit agencies continue to develop their own trip planning tools that are hosted on their agency webpages, but these trip planners only typically cover walking and transit modes, but are still largely single-modal in nature.

Initiatives such as the U.S. DOT’s Integrated Corridor Management (ICM) program seek to remove the modal silos and provide multimodal traveler information en-route in addition to pre-trip information as travel conditions change.

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**Benefits**

Increasing the pool of potential customers can be seen as a major benefit of improved information dissemination by the transit industry. The use of mobile trip information allows both visitors and infrequent system users to feel more confident in their ability to navigate that city’s transit systems, as well as expose individuals to transit options they may not have previously been aware of.
In the Chicago metro area, a Multimodal Trip Planning System (MMTPS) was developed by the Regional Transit Authority (RTA) and made available to the public. Surveys found that the MMTPS increased user knowledge of the transit system. Nearly 40 percent of all respondents and 50 percent of suburban respondents reported using at least one transit service that they did not normally use (2012-00794).

As can be seen in Figure 1, the use of traveler information tools such as trip planners and station parking information encourages individuals who have never tried transit options to take them at least once and encourages existing riders to use the transit system more frequently.

Providing passengers with real-time arrival information has also improved customer satisfaction with system performance. A survey of users of London’s Countdown system (wayside real-time arrival information for buses) demonstrated that despite a decrease in on-time arrivals, 64 percent of customers perceived that on-time performance had improved after the installation of the system. Perceived waiting times also decreased from nearly 12 minutes to less than 9 minutes. This customer satisfaction is largely attributed to high system availability, as well as more than 75 percent of posted arrival times being accurate within two minutes of actual arrivals (2011-00737).

![Figure 1: Benefits of Providing Transit Traveler Information (Source: ITS Knowledge Resources).](image-url)

*The online versions of the factsheets feature interactive graphs that contain all the data points included in the ranges. Here, each metric has a number after the text, representing the number of data points used to create the range; no number means only there was only one data point.*

As can be seen in Figure 1, providing real-time traveler information about transit arrival times allowed agencies to attract new “choice” riders or have existing choice riders opt to take transit more frequently, resulting in 40-70 percent increases in trips taken by choice riders. Washoe County Transportation attributed a 45 percent decrease in paratransit “No Shows” in part, to having real-time vehicle information obtainable by passengers over the phone. A pilot test showed that providing en-route transit information on highways in the San Francisco Bay area provided a 1.6 to 7.9 percent mode shift to transit, depending on the displayed minutes of travel time that could be saved by switching modes.

**Costs**

The costs for transit information dissemination vary widely based on the amount and type of existing equipment that can be utilized for the system. Real-time arrival systems are dependent on the vehicle fleet being AVL equipped and the methods of disseminating that information (DMS, mobile applications, websites, etc.) varies by agency. As mentioned earlier, with the development of the GTFS, there is minimal work needed by the agency to have transit information
available through an application programming interface (API) for mobile and web application developers. This provides benefits to the agency through easier dissemination of traveler information without the development costs.

Transit traveler information dissemination systems that include websites range between $700,000 and $1.5 million in capital costs. Annual operations and maintenance costs range from $93,000 to $225,000 per year (2009-00194, 2008-00152, 2008-00151). Individual signs at stations can be approximately $6,000, while on-board message signs can be $4,000 per vehicle (2008-00148). A parking management guidance system in Chicago cost approximately $1 million to implement (2009-00183).

Lessons Learned

The transit industry tends to deploy customized solutions to meet each specific agency’s needs. However, there are many lessons learned from other projects that can be generally applicable to the development and deployment of transit information dissemination systems. Below is a sample of lessons learned:

- **Prepare agency staff for implementation of new ITS technologies and involve maintenance and information technology (IT) staff in the installation process.** By preparing staff and making them aware that the system is likely to have some issues at startup, it will help to encourage staff acceptance. Building in-house capability with maintenance staff during the installation process, by having them alongside the contractor, allows staff to be more familiar with the technology when they need to remove, diagnose and replace equipment (2011-00612).

- **Develop requirements using widely accepted standards, preferably the open source compatible ones if available, and review those requirements immediately before requesting proposals from contractors.** Successful and rapid adoption of open standards can sometimes render proprietary systems obsolete. Proprietary systems can make it difficult to procure technical support or replacement hardware (2011-00608).

- **Expect agency’s information technology (IT) operations and maintenance budget to increase in order to train qualified IT staff to maintain a new suite of hardware and software.** Because managing the transit ITS technologies requires additional or advanced skills, such as database and network management, implementation of transit ITS requires staff with advanced expertise. This causes agencies to make a stronger effort to retain experienced staff resulting in salary increases for IT staff (2012-00627).

- **Commit to testing the new systems thoroughly, develop an acceptance matrix to document status of testing, and perform verification and validation before introducing them to support agency’s transportation operations.** Having a mechanism for testing is not sufficient without a commitment to conducting thorough testing. An agency should be willing to change plans if it becomes clear during the testing phase that the planned system is not going to provide the expected benefits (2010-00559).

References


All other data referenced is available through the ITS Knowledge Resources Database, which can be found at http://www.itsknowledgeresources.its.dot.gov.