

CUSTOMER AND MEDIA REACTIONS TO REAL-TIME BUS ARRIVAL INFORMATION SYSTEMS

CUSTOMER REACTIONS

Three U.S. and five international agencies have measured the public's reaction to real-time arrival information. In a few cases, survey results were obtained directly from responding agencies or were available in papers examined during the literature search and review.

The landmark survey that measured people's reactions to real-time bus arrival information was summarized in a paper written in 1994 for the First World Congress on ITS (18). In 1993, London Transport (now called Transport for London) conducted a trial of Passenger Information at Bus Stops on Route 18, which ran between central and west London. Of the 124 bus stops on Route 18, 50 were equipped with LED DMSs showing real-time bus arrival information. These stops covered 7.5 million annual boardings along the route. The following was the timeline:

Signs for PIBS [Passenger Information at Bus Stops], marketed as "Countdown," were installed in Autumn 1992. System testing and development continued until March 1993, at which time all "testing" signs were removed and the system was considered to be fully operational (18, p. 3049).

The surveys and system monitoring covered system reliability and availability, accuracy of the information, reliability of Route 18 service, ergonomics, passenger behavior at stops, passenger perceptions of Countdown, attitudes toward and valuation of Countdown, and ridership and revenue generation. The key findings can be summarized as follows:

- Availability of the system was more than 99%.
- "Accuracy of the information on the signs was within plus or minus one minute 50% of the time; within plus or minus two minutes 75% of the time and within plus or minus five minutes for 96% of the time" (18, p. 3051).
- Ninety percent of the riders look at the Countdown signs at least once during their waiting time at the stop.
- Passengers experienced less stress while waiting for the bus when Countdown was present.
- Of passengers interviewed, 65% felt that they waited for a shorter period of time when Countdown was present, with the perceived waiting time dropping from 11.9 to 8.6 min.
- Of passengers interviewed, 64% thought that service reliability had improved since Countdown was intro-

duced, although service reliability had actually decreased since the signs were deployed.

- Passengers valued Countdown at an average of more than 31 cents.

Surveys about the Countdown system continue to be conducted in London. A representative sample of these surveys include these responses derived from London Buses Strategy and Policy Real-Time Information Research Summaries.

- Identify the optimum usage for the bottom line of information on the Countdown display (19).
- Assess the potential for providing real-time information about bus services away from the bus stop (20).
- Derive principles to determine the best type of information to display at bus stops for which real-time information is not available for all or some routes (21).
- Assess whether specific characteristics of different bus stop locations affected customers' perception of Countdown's usefulness (22).
- Test the effect of Countdown on perceived and actual wait times at bus stops (23).
- Establish customers' satisfaction with on-bus information displays and determine passenger and revenue benefits (24).

In 1999, one of the real-time bus information systems, deployed as part of the Federal Metropolitan Model Deployment Initiative (MMDI) in Seattle, called Transit Watch (TW) at the time, was evaluated in terms of customer satisfaction. TW included the installation of video monitors that provide real-time bus information at two key transit centers, Northgate and Bellevue, in the Seattle metropolitan area. (Currently, the video monitors at the Bellevue Transit Center are not operational while that center undergoes renovations. It is expected that three to four monitors will be located there after renovations are completed.) These transit centers were equipped with the monitors several months before a survey of regular and occasional TW users was conducted. The overall results of the survey are as follows (25, p. 1):

- TW is both widely used and useful. Real-time bus departure times are the TW feature found most useful by the users;

- Real-time information at locations where key travel decisions are made (e.g., office buildings) would be used and considered useful by a majority of transit passengers. TW users particularly endorsed this suggestion;
- The content, location, accuracy, and presentation of the current TW monitors are satisfactory for most transit riders who use them, although many also offered suggestions for improvements; and
- Although TW and the improved information is perceived as a real benefit by its users, the users did not seem to think that it increased their overall satisfaction with the transit experience. Our analysis indicates that TW in and of itself is unlikely to significantly change aggregate transit trends and perceptions.

In May and June 2002, Portland Tri-Met conducted an intercept survey of passengers to determine customers' perceptions of the Transit Tracker system, which provides real-time arrival information. At the time of this survey, DMSs had been installed at 10 bus shelter locations and 11 MAX (Portland's light-rail system) stations. The purpose of this survey was to assist management in deciding if changes should be made to Transit Tracker to make it more understandable, and if more Transit Tracker DMSs should be installed throughout the service area (26, p. 1). A total of 214 passengers were surveyed at four bus shelter locations that had Transit Tracker LED DMSs. Key survey results include the following (26, pp. i and ii):

- Of the 214 survey respondents, 65% recognized that the information on the display was real-time.
- Use at one particular bus shelter was the highest, with 100% of the respondents stating that they use Transit Tracker (82% always and 18% sometimes).
- Use at the shelter where Transit Tracker has been installed the longest had the lowest incidence (54%) of those who always use Transit Tracker.
- Twenty-one percent of the respondents suggested adding the label "ETA (Estimated Time of Arrival)" to the countdown column of the display.
- What respondents liked most about the display was that they "know how many minutes until the bus comes" (42%) and think "it is accurate/exact time/real-time" (19%).
- Sixty percent of the respondents could not think of any improvements to make to the Transit Tracker display, and 12% said that they thought more displays should be added.
- The value placed on having Transit Tracker at the bus stop was very high—4.5 on a 5-point scale, with 5 having the highest value and 1 the lowest.

MEDIA REACTIONS

Of the 18 responding agencies, 14 reported that there has been media reaction to the real-time bus arrival informa-

tion system. In addition to their survey responses, a few agencies provided such media responses in the form of newspaper and magazine articles, video clips, and transcripts of radio and television stories. The video clips provided by Tri-Met were from all of the major television stations and a few of the radio stations in the Portland, Oregon, market. They primarily covered the Tri-Met general manager's introduction of the Transit Tracker real-time bus arrival signs at a specific bus stop in Portland. In a few television reports, bus riders and bus drivers were interviewed on camera for their reactions to the Transit Tracker system.

In addition to television and radio coverage, there were several newspaper articles in the *The Portland Observer*, *The Oregonian*, and *The Portland Tribune*. Additional articles about the system appeared in APTA's *Passenger Transport* and *The Business Journal of Portland*. Overall, media reaction to the Transit Tracker system in Portland has been very positive.

In Denver, news releases about the Talk-n-Ride system were issued by the Regional Transportation District (RTD) and the vendors that provide the voice and mobile applications within the Talk-n-Ride systems (27, 28). Many newspapers carried the introduction of Talk-n-Ride, including *The Denver Daily News*, *Boulder Daily Camera*, *Highlands Ranch Herald*, *Brighton Standard-Blade*, *Littleton Independent*, *Englewood Herald*, and *Broomfield Enterprise*. The local Fox television station in Denver, KDVR (Channel 31), ran an interview with a commuter and an RTD control center employee regarding the system. Finally, an article on Talk-n-Ride ran in the January/February 2002 issue of the trade magazine, *ITS International* (29).

For the most part, media reactions to these systems have been positive. Furthermore, rider and media reactions have influenced the demand for and the use of real-time bus arrival information systems in the following ways:

- The positive reactions have convinced other transit agencies to install similar systems.
- The use of real-time bus predictions via website, PDAs, and the telephone have significantly increased.
- Positive rider reaction did influence one agency's decision to purchase an AVL system.
- Favorable reactions thus far have encouraged Tri-Met to continue deployment, even though the agency is experiencing financial difficulties. Internet users have made numerous requests for particular bus stops to be included in the Internet application.
- The customer perception is that bus services have improved and that people traveling late at night now have the confidence that a bus is not far away.