

# **THE IMPACT OF REAL-TIME AND PREDICTIVE TRAFFIC INFORMATION ON TRAVELERS' BEHAVIOR IN THE I-4 CORRIDOR**

## **PROBLEM STATEMENT**

One of the critical components contributing to the success of Advanced Traffic Management Systems (ATMS) is the dissemination of real-time and predictive information of traffic conditions. With the remarkable advancement in data collection and dissemination technologies, the traveling public now has the ability to receive real-time traffic information. Travelers can make appropriate decisions to bypass congested segments of the network and change departure times and/or destinations, whenever appropriate.

Freeway travelers often seek information on traffic conditions in the form of travel times and delays along their trips. Since travel decisions are often made in advance, prior to the onset of the trip, travelers often seek predictive information on traffic conditions along their selected routes and within the expected duration of the trip. There is a need to make real-time and predicted travel time information easily accessible to the public via the internet. Consequently, it is important to design and implement user-friendly traffic information websites that serve this purpose.

## **OBJECTIVES**

The objectives of this study include the following:

1. Enhance the short-term traffic prediction model previously developed and tested by the University of Central Florida - Transportation Systems Institute (UCF-TSI). The model was originally developed using a non-linear time series approach in a previous project sponsored and approved by the FDOT Traffic Operations Office.
2. Implement online the UCF traffic prediction model to cover the 40-mile corridor of the I-4 in Orlando.
3. Develop and maintain an interactive web interface to relay information to the traveling public.
4. Test traveler's response to real-time and predictive traffic information for the Interstate-4 corridor.

## **FINDINGS AND CONCLUSIONS**

The implementation phase of this project was directed towards making the real-time and predicted information accessible to the traveling public via a user-friendly interactive interface on the Internet, and reregistered under the following URL, <http://www.trafficinfo.org>. I-4 travelers now have easy access to travel time information between on- and off-ramps along the corridor in both directions

and in both real-time and predictive modes. At the pre-trip planning stage, travelers can now query the system before departure to determine the predicted travel times and delays along the segment of the corridor they are about to travel. The interactive web-based system also provides travelers with predicted travel time information for different prediction horizons, ranging from 10 to 30 minutes.

A pilot Computer-Aided Telephone Interview (CATI) survey was conducted to measure the level of familiarity with the present I-4 website and also the 511 telephone service. The research team at UCF designed the survey, which was conducted by Western Watts marketing research company. The desired sample size was 400. The survey revealed that about 25% of the sample use I-4 for commuting and about 20% use it for work-related trips. The remainder use I-4 for other trip purposes. About 28% of the sample use I-4 five or more times per week. About 26% of the sample use I-4 both in the morning and afternoon peak periods, 14% use it only during the morning peak, and 16% use it only during the afternoon peak. Approximately 30% of the respondents use I-4 on the weekends. Forty-eight respondents (12% of the sample) indicated that they are familiar with the present I-4 website, which is reasonable since no previous marketing efforts advertised the present website. Also, 120 respondents (30% of the sample) indicated that they are familiar with the 511 phone traveler information service. In general, respondents indicated that the information they need the most is related to the locations of incidents and the expected delay.

A web-based pilot survey was conducted to measure the level of familiarity with the I-4 website and the 511 telephone service. The research team at UCF designed and implemented the web-based survey using SAS/IntraNet software. Although the design sample size is 400, the web-based survey was so popular that it reached a sample size of 439 in the first few days of the survey period. Since the design of this web-based survey included automatic validating capability, the data quality for the web-based survey is much higher than the traditional phone-based survey system and at a relatively low cost. The screening questions were that the respondents have to be I-4 users and live and/or work in Central Florida. The internet survey was restricted to UCF students, staff, and faculty, which constitutes a pool size of about 43,000 individuals.

The survey revealed that about 35% of the sample use I-4 for commuting and about 12% use it for work-related trips. The remainder use I-4 for other trip purposes. About 33% of the sample use I-4 five or more times per week. About 29% of the sample use I-4 both during the morning and afternoon peak periods, 9% use it only during the morning peak, and 15% use it only during the afternoon peak. As was found through the phone survey, this survey revealed that about 29% of the respondents use I-4 on weekends. As for traffic information, 34 respondents (9%) indicated that they use the website, which indicates that a web-based survey can reach web surfers much more effectively than it can reach regular residents. In general, the respondents indicated that the information they needed the most is related to the locations of incidents and the expected delay.

## **BENEFITS**

The current nationwide instrumentation of freeway systems continues to provide traffic management centers and other transportation agencies with a wealth of real-time information on traffic conditions at critical locations. This information is very valuable to both transportation system users and providers. This study presents the full-scale implementation of a short-term traffic prediction model that was developed in a previous study to assist I-4 travelers with trip-making decisions along the 40

mile I-4 corridor in Orlando. I-4 travelers now have easy access to travel time information between on- and off-ramps along the corridor in both directions and in both real-time and predictive modes. At the pre-trip planning stage, travelers can now query the system before departure to determine the predicted travel times and delays along the segment of the corridor they are about to travel. The interactive web-based system also provides travelers with predicted travel-time information at different prediction horizons, ranging from 5 to 30 minutes.

In addition to increasing the services available to the traveling public, the implementation of this system has the potential to positively impact congestion problems by facilitating more effective traffic routing, which translates into time and money savings for the users.

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