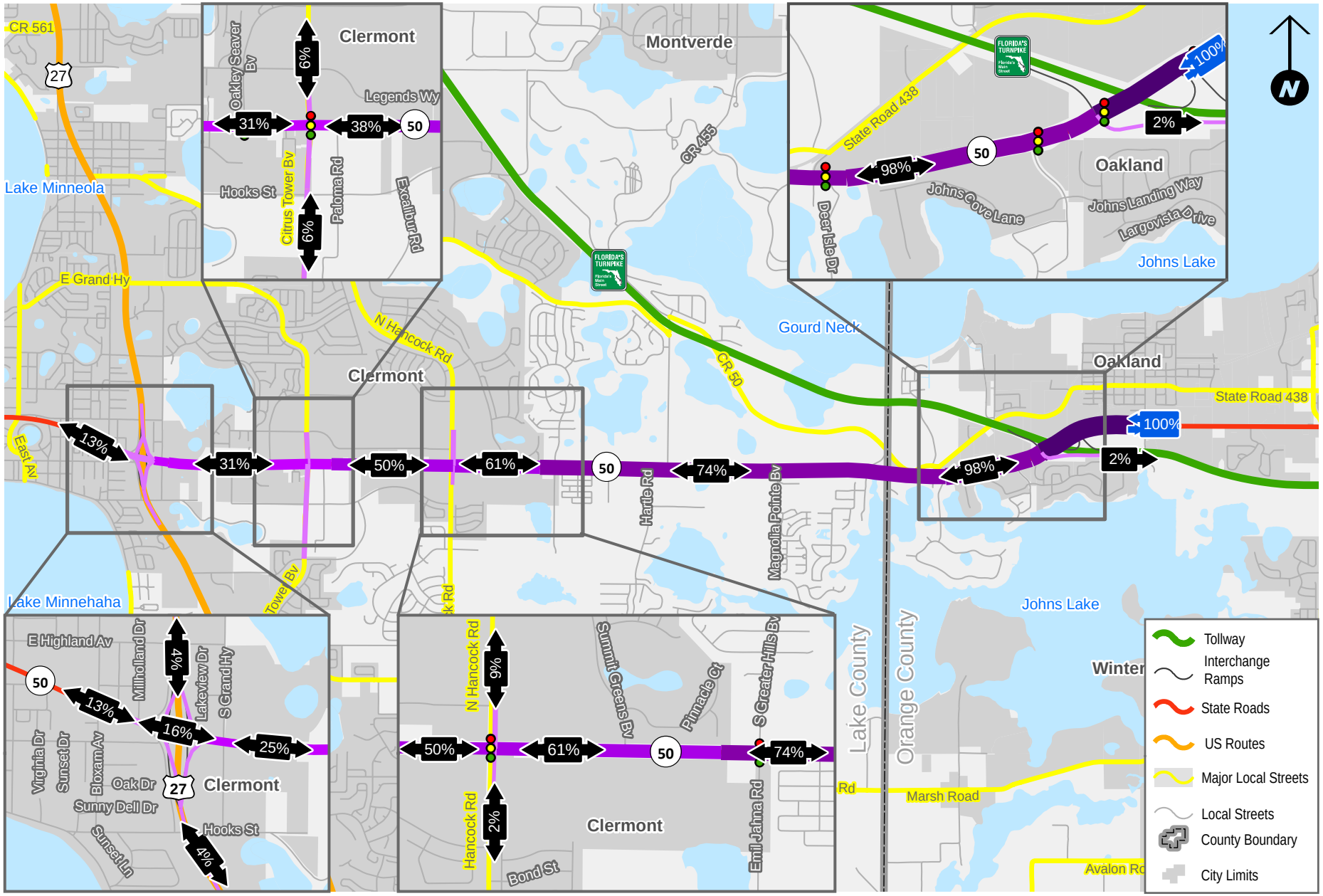
Data Collection Capabilities
– MAC Address Readers for Origin-Destination and Travel Time Studies

Bluetooth™ MAC technology is an innovative form of data collection which allows for the anonymous tracking of vehicles between an origin and destination throughout a study area. This process reads the MAC address broadcasted by Bluetooth™ devices in vehicles passing a particular point and records the time at which the vehicle passed. The pairing of vehicle time and location information allows for the vehicle origin and destinations to be observed.

An example of the application of this technology is provided in Figure 7, taken from a study conducted for the Florida Department of Transportation, District 5. Figure 7 illustrates, of the vehicles which pasted the eastern most data collection site, what percentage entered by or remained on the corridor at each subsequent station. This is shown in a bi-directional format to provide comparison with the local regional model. The data collected as part of this study will be used in a supply/demand analysis for the purpose of identifying improvement strategies that address future capacity constraints on the study corridor.

Another application for this data is establishing unbiased travel times along a corridor. Travel time is calculated by matching observed MAC addresses from one MAC address read deployment to another. Once a match has been found the first and subsequent time stamp can be compared and a travel time computed. Travel time runs observed through this technology compare favorably with the traditional method of using GPS enabled collection vehicles both in terms of cost and the sample size. This method is also capable of providing information for often neglected off-peak periods.

In southwest Portland, Oregon, this technology was used to study travel times and speed information before and after a signal retiming project on 2.5 mile stretch of Tualatin-Sherwood Road. The result was hundreds of travel time runs along the corridor at all times of day revealing the differences made by the signal retiming. Travel time and variable in travel time were both shown to be reduced by the signal retiming. The attached plot shows the initial condition observed travel times in orange and the improved travel times in blue. The orange highlighted section shows a particularly dramatic change in travel times between the before and after occurring in on Thursday in the pm peak period.



100% Selected Link

55% Percent of Total Selected Link Trips

Trip Dissipation Intensity

Signalized Intersection

SELECT LINK RESULTS FOR SR 50 SECTION EAST OF FLORIDA'S TURNPIKE INTERCHANGE

FIGURE 7

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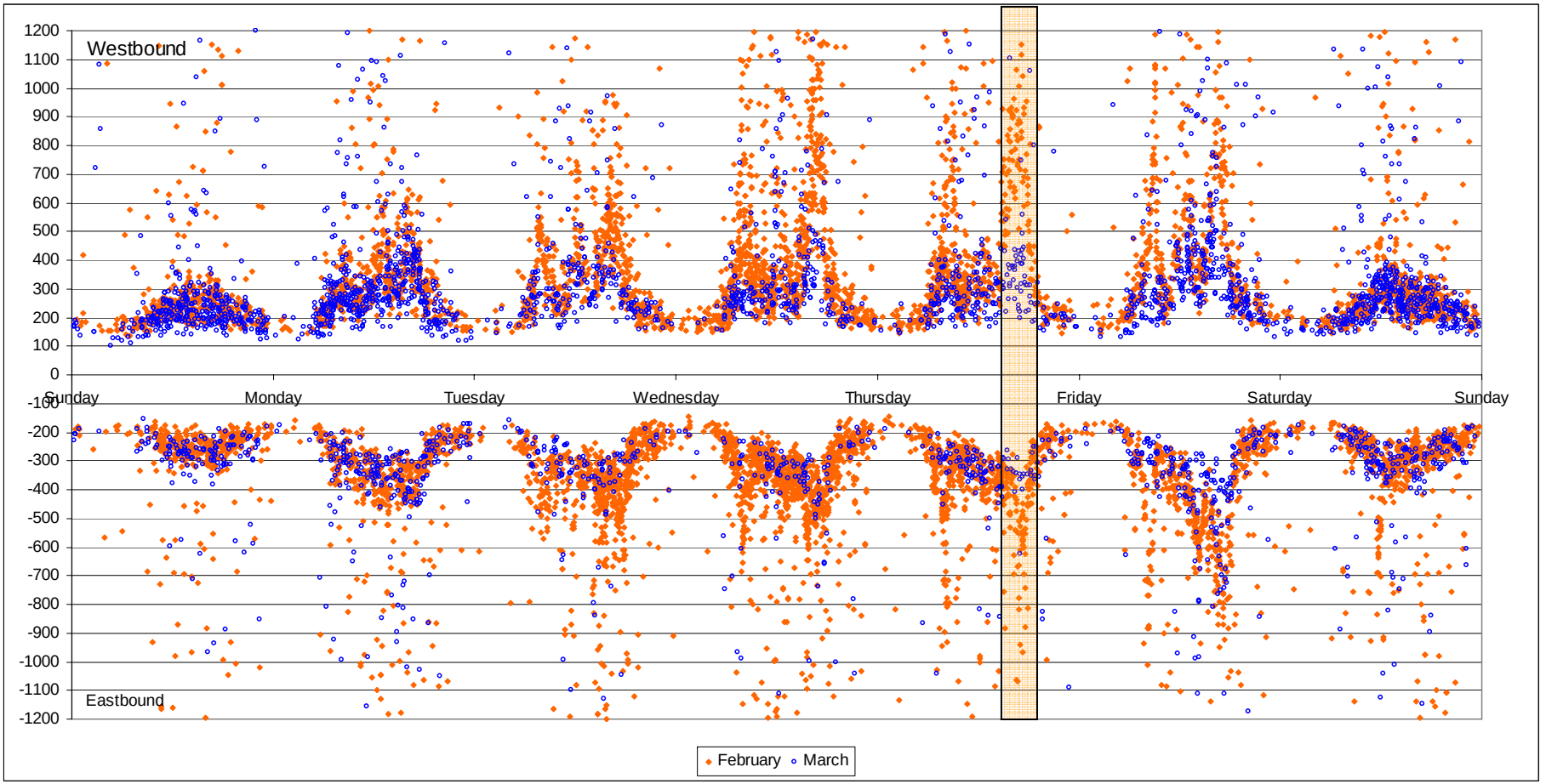
Travel Time Plots – Avery to Fred Meyer



- **Significant reduction in travel time and variability**