The I-85 HOT Lane's Impact on Atlanta's Commuter Bus and Vanpool Occupancy

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Overview

Atlanta opened its first High Occupancy Toll (HOT) lanes on October 2011, which were converted from High Occupancy Vehicle (HOV) lanes. In partnership, Georgia Tech established a research team to assess changes in vehicle throughput, vehicle occupancy, and passenger throughput associated with the I-85 HOV-to-HOT conversion. In order to assess these measures, commuter bus ridership, which carried a significant portion of ridership, could not be collected via the applied field data collection efforts. Moreover, the ridership and vehicle throughput effect on vanpools, which also ride on the managed lanes, is unknown. *The purpose of this research is to estimate the change in vehicle and person throughput of alternative modes before and after the HOV-to-HOT conversion.*

Xpress Bus Data Collection

Data is collected from two sources:
(a) Driver surveys of ridership (weekly)
(b) Revenue-based ridership (monthly)

Revenue-based data serve as the control total for express bus passenger throughput, and the driver-collected data provide allocation ratios by route and time of day to disaggregate the total monthly bus ridership data to the scheduled vehicles for hourly and daily throughput estimation.

Accuracy of driver-surveys is checked through field deployments (see below).

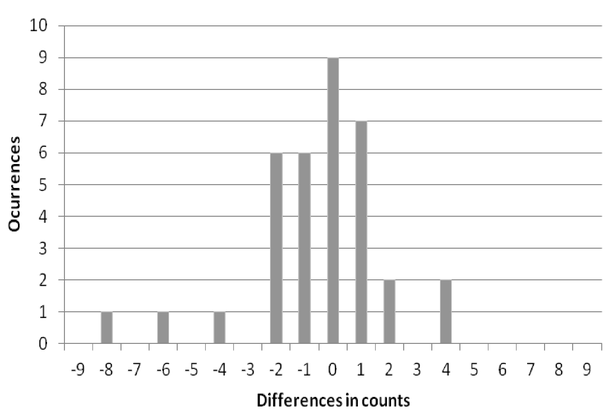
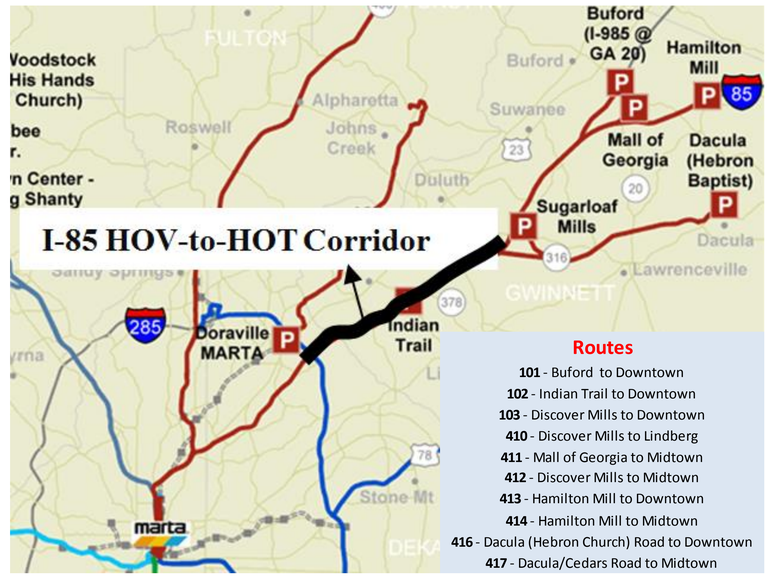


Figure 1 – Driver survey count accuracy

Deployment Area



Xpress Bus Results

Weekly Change from 2011 to 2012 (February - April)

	AM peak		PM peak	
Bus Throughput	50	*20.8%*	40	*13.6%*
Person Throughput	6	*0.1%*	42	*0.5%*
Occupancy Throughput	-6.0	*-17.0%*	-3.3	*-11.5%*

Xpress Bus Ridership Factors

- Express buses represent only about 0.1% of corridor vehicle throughput during the morning peak period, but carry more than 4% of person throughput during the morning peak.
- Express bus ridership in winter/spring 2012 was practically unchanged, given the number of buses added to service.
- The lack of maturity of the newly added bus lines (implemented in September 2011 and evaluated in February-April) may have played a significant role.
- Another major factor specific to winter/spring 2012, however, was a significant fare increase in 5 out of the 8 lines.

Vanpools

Vanpool ownership by company:
- VPSI - ~50 vehicles
- Enterprise - 12 vehicles

Post-conversion data:
- Vehicle occupancy is collected from surveys sent to the companies
- Vehicle throughput is collected from Peach Pass RFID tags

Pre-conversion data:
- Vehicle occupancy from post-conversion is used due to lack of reliable data
- Vehicle throughput is factored using video collected data from Georgia Tech's deployment

Results:

Weekly Change from 2011 to 2012 (February - April)

	AM peak	
Vanpool Vehicle Throughput	15	13.3%

Summary

Commuter Bus (weekly):
- Vehicle occupancy decreased by -6.0 (-17%) and -3.3 (-11.5%) as vehicle throughput increased and person throughput remained mostly unchanged.

Vanpool (weekly):
- Vehicle throughput increased by 15 units (13.3%).
- Total vanpool volume is insignificant compared to total corridor volume.

Discussion:
- The data from this study cannot be used to draw specific conclusions regarding the HOT lane's direct or indirect impact on the occupancy of buses and vanpools. Increased express bus service and reliability was concurrent with a fare increase. Behavioral data collection and analysis would be required to assess how HOT lane performance/price affected traveler decision making.

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