

**Alaskan Way Viaduct and Seawall Replacement Project
Moving Forward Projects Construction Traffic Mitigation**

**Enhanced Transit, Transit Travel Time and Demand Management
Performance Report**

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WSDOT

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Metro Service Development Section

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Projects Overview

SUMMARY

To keep people and goods moving during construction of the Moving Forward Projects (primarily the Holgate to King project) of the Alaskan Way Viaduct and Seawall Replacement Project, the Washington State Department of Transportation (WSDOT) provided \$31.9 million to King County to enhance transit and water taxi service, improve bus monitoring equipment, and to provide transportation demand management services. This investment in transit and demand management services is one part of the state's construction traffic mitigation investments, which total more than \$125 million. Other projects include South Spokane Street Widening, State Route 519 improvements, electronic travel time signs and intelligent transportation systems.

These efforts are governed by three contracts - GCA 5820 Enhanced Transit Services, GCA 5864 Expanded Bus Monitoring Project and GCA 5865 South End Transportation Demand Management and Downtown Transportation Demand Management. Performance reports are a requirement of each of these contracts. Therefore, in an effort to consolidate and streamline the reporting process, this single performance report has been developed to address the contractual requirement for all three agreements.

The enhanced transit and trip reduction services were strategically designed to address the most significant Moving Forward construction traffic impacts and to build upon ongoing local, state and federal investments in transit and trip reduction services. Metro will maintain added bus trips to help increase transit capacity and maintain reliable schedules and will implement additional demand management programs to reduce drive-alone trips on the most congested routes.

This report is broken down into three sections:

- **Enhanced Transit Services:** This section compares the Fall 2011 service change data to the baseline 2009 data. This section will track the performance of WSDOT supported transit services that were operated during that period to mitigate construction impacts.
- **Transit Travel Time:** This section describes the changes in transit travel times in key corridors that feed into the Seattle Central Business District (CBD) and changes in travel time that occur within the CBD during the Fall 2011 service change.
- **Transportation Demand Management Report.** This section provides the status and impacts of education and outreach programs and marketing of travel options.

These transit and demand management performance reports will be published three times per year during the life of the construction project. The reports will be available approximately two months after each transit service change, which traditionally occur in February, June and September.

In the following chapters you will find baseline data, performance measurement methods and measured performance for state-sponsored transit and demand management services:

- Transit capacity and ridership
- Transit travel times
- Transportation demand management trip reduction
- Budget and expenditures

SERVICES AND ACTIVITIES: OCTOBER 2011 TO FEBRUARY 2012

Enhanced Transit Service summary

- Metro continued 14 peak period trips funded by WSDOT on routes 21X, 56X, and 121 and added 16 new trips on Routes 18X, 120 and 358. This helped increase the combined peak period transit capacity of these routes by 17 percent, (see Table 5 on page 15).
- 27 ETS trips on Route 54 previously funded by WSDOT were replaced by 57 Metro-funded pre-RapidRide trips.
- Peak-oriented service was provided on the West Seattle Water Taxi and Water Taxi shuttle service. The Water Taxi attracted over 400 rides and provided nearly 4,000 additional seats each day between West Seattle and Downtown Seattle (see Table 12 on page 20).
- Metro used 1,573 flexible transit service hours to meet the day to day variations in construction related traffic disruptions. These service hours allow Metro to respond immediately to conditions on the street. The service provided approximately 182 bus trips serving approximately 4,640 transit riders (see Table 11 on page 20).

Ridership summary

- Peak period ridership increased in three of the four ETS pathways (B, I and J) relative to the baseline (see tables 1 and 2).
- Routes that received WSDOT funding carried on average 1,400 more people daily during the peak period than in the baseline. The largest absolute change was in response to upgrading the peak and shoulder frequencies from every 15 minutes to every 7-10 minutes on route 358 between Aurora Village and Downtown Seattle. This resulted in an estimated 570 additional weekday boardings during the peak period, and 390 additional boardings during the shoulder periods. (see table 3 on page 13).

Travel Time Summary

- Travel times on pathways using SR-99 have been impacted by shifting to the Wosca Detour beginning in late October 2011, in particular inbound trips during the AM period, where trip times have increased by up to five minutes compared to Summer 2011, or up to nine minutes compared to Fall 2009 baseline.
- Some pathways north of the Downtown Seattle CBD have shown travel time increases of varying amounts, particularly during the PM peak in the inbound direction. This may be attributed to increase of traffic volumes on surface streets in downtown Seattle as SR 99 lanes reduced from three lanes to two lanes in each direction.
- In preparing for the WOSCA detour configuration, SR 99 was closed for 7 days. This closure of the AWW resulted in average delays up to 20 minutes during the PM peak for buses that normally use the AWW and were diverted to south of Downtown Seattle (SODO). Delays of up to 15 minutes were measured for routes that normally use SODO surface streets, due to traffic diversion.
- Combination of bus lane and transit signal queue jump improvements on Columbia Street between Second and First Avenues and moving the southbound SR-99 merge from three to two lanes upstream of the Columbia Ramp have resulted in significant improvements to buses using the Columbia Ramp, and have resulted in only minor travel time increases on SR-99 in the outbound (southbound) direction.
- With the Fall 2011 service change, transit routes using 1st Avenue S used Lander Street rather than Edgar Martinez Drive to go between 4th Avenue S and 1st Avenue S. This change was to avoid blockages from truck traffic on Edgar Martinez Dr. As Holgate to King Street construction activities increase, truck traffic hauling construction materials on Edgar Martinez increase as well. The difference in travel time before and after the shift to Lander St was estimated about one minute during the afternoon peak period.
- Wall and Battery Street bus lanes were implemented in July 2011. Transit travel time to/from Aurora Avenue N has improved by 1 – 2 minutes during peak periods.

Transportation Demand Management Summary

- Metro launched a comprehensive promotions and outreach program in Fall 2011 to make travelers in the AWW travel shed aware of transit and other alternatives to driving alone during the 9-day SR-99 closure.
- While still continuing, two AWW TDM projects have exceeded their trip reduction targets: Carpool and Promotions for Transit and Ridesharing.
- Overall, the AWW TDM program has exceeded its trip reduction target of 4,130 trips.

EXPENDITURES: SEPTEMBER 2009 – 4TH QUARTER 2011

As of the end of December 2011, Metro has invoiced WSDOT \$11,108,588.09 (\$544,456.00 under GCA 5864, \$9,902,908.02 under GCA 5820 and \$661,224.07 under GCA 5865) of the state's \$31.9 million investment in enhanced transit and demand management services.

PERFORMANCE REPORT SCHEDULE

Performance Reports will be produced three times a year, approximately two months after the service change. This reporting schedule is provided in more detail in the chart below.

Performance Report Release Dates												
								CURRENT REPORT				
Performance Measure Updates Submittal Date	Draft 12-14-09	Volume 1 4-05-10	Volume 2 8-09-10	Volume 3 12-13-10	Volume 4 4-04-11	Volume 5 8-22-11	Volume 6 12-12-11	Volume 7 4-16-12	Volume 8 08-20-12	Volume 9 12-10-12	Volume 10 TBD	Volume 11 TBD
Reporting Period of Volume Data												
Ridership/ Capacity/ Utilization Baseline		Feb 09 Jun 09 Sep 09										
Travel Time Baseline		Sep 2009*										
Service Plan		As of April 2010	As of Aug 2010	As of Dec 2010	As of April 2011	As of Aug 2011	As of Dec 2011	As of April 2012	As of Aug 2012	As of Dec 2012		
Travel Time Monitoring, Ridership/ Capacity/ Utilization Data, TDM Measures			Feb 10- Jun 10	Jun 10- Sept 10	Sep 10 – Feb 11	Feb 11 – Jun 11	Jun 11 – Sep 11	Oct 11 – Feb 12	Feb 12 – Jun 12	Jun 12 – Sep 12	Sep 12 – Feb 13	Feb 13 – Jun 13

*The September 2009 travel time data will serve as the travel time baseline, against which, all travel time monitoring activities will be compared

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Enhanced Transit Service Report

INTRODUCTION

The Nisqually earthquake highlighted the structural vulnerability of the State's Alaskan Way Viaduct portion of SR 99 and the region began immediately planning for its reinforcement or replacement. SR 99 serves as a major transportation facility carrying approximately 110,000 vehicles a day to and through downtown Seattle. As the region planned for its replacement it became apparent that a facility of this size could not be planned for and replaced without considering the impacts that the construction phase and final design would have on virtually all major north/south arterials and I-5. Inevitable construction impacts and potential for reduced capacity in the final SR 99 design increased interest in utilization of transit as a more compact travel alternative. In March of 2007, as planning continued on the central waterfront portion of SR 99 and the Viaduct (King St. to Battery Street), Governor Gregoire identified several projects for the Early Safety and Mobility projects, i.e. "Moving Forward Projects". Enhanced transit services were one of the major components of the Moving Forward Projects.

One of the major objectives of the enhanced transit services agreement is to "reduce vehicle travel demand in order to help mitigate construction related mobility impacts on the general public." Metro identified 33 candidate routes that, with additional service could help reduce vehicle travel demand. Greater transit utilization can help maintain public mobility while roadway capacity is constrained. The purpose of this report is to understand and document the usefulness of WSDOT's resources that will be used to maintain and enhance transit service in the SR 99 corridor during the Moving Forward construction projects.

In the Fall of 2009, the baseline against which service in this report will be compared, Metro transit service on these pathways provided an estimated 78,500 unlinked passenger trips daily. A conservative estimate would value these trips to equal approximately 38,000 vehicle trips a day in the SR 99 corridor. This transit service provided mobility to thousands of people per day and removed nearly 38,000 vehicle trips a day reducing delay for all other vehicular traffic in the corridor.

ENHANCED TRANSIT SERVICE REPORT PURPOSE

The Enhanced Transit Service Report provides various data that are useful in understanding the impact of the 30 additional trips funded by WSDOT. These trips are scheduled on routes 21 express, 56 express, and 120 (part of Pathway J); 121 (part of Pathway I); 358 (part of Pathway B); and 18 express (Pathway A). This report compares Fall 2009 baseline performance measures with Fall of 2011 performance measures. As with previous volumes, these transit performance measures are presented in daily totals and by peak, shoulder and midday periods. Ridership data for the past three years, 2009, 2010 and 2011 are also included to show short term trends.

Time of Day and Pathway Group designations are described below:

- **Time of Day Designations:** Time of day designations measure changes in transit supply and use by peak period (6-9am, 3-6pm), shoulder periods (9-10am, 2-3pm, 6-7pm) and midday periods (10am-2pm).
- **Pathway Groups:** The four pathway groups defined below are the transit corridors of emphasis for this contract. A more complete description is available in Travel Time Table 1, page 24. System-wide ridership numbers are also shown to give perspective on the relative performance of the four pathway groups when compared to the system as a whole.

Pathway A - Ballard/Magnolia: 15th Avenue and Elliot Avenue W between NW 85th Street and 1st Avenue and Denny Way, Including routes 15, 15X, 17X 18, 18X, 19, 24 and 33.

Pathway B – Aurora/Fremont: Aurora Avenue, Nickerson Street, Dexter Avenue and Westlake Avenue between NW 85th Street, Ballard Bridge, Fremont and 3rd Avenue/Denny Way, including routes 5, 5X, 16, 17, 26, 26X, 28, 28X and 358.

Pathway I: - SODO: 1st Avenue S, East Marginal Way, and 4th Avenue S between S Michigan and S Jackson Streets, including routes 23, 113, 121, 123, 124, 131, 132, 134.

Pathway J: - West Seattle: Admiral Way, Fauntleroy Way, 35th Avenue SW, Delridge Way and SR 99 between California Avenue, SW Morgan Street, Andover Street and Columbia/Seneca Streets, including routes 21, 21X, 37, 54, 54X, 55, 56, 56X, 57, 116, 120, 125.

RIDERSHIP TRENDS

Transit ridership is influenced by many factors, including amount of service provided, seasonal travel patterns, the cost of driving (fuel/vehicle expenses and time), employment, route design, and construction impacts. The purpose of looking at ridership trend data is to measure and understand these influences. This section includes a brief overview of ridership trends over the last three years.

Three-Year Ridership Trends – Coming off record ridership in 2008, the year 2009 was the first year to show a ridership decline since 2002. Many of the factors influencing ridership growth in 2008 reversed course in 2009, fuel prices fell, unemployment rose and sales tax receipts declined. In 2010 ridership stabilized and the economy began a slow recovery. In Fall 2011, the unemployment rate, at 7.6 percent, reached its lowest level since Fall 2008. At the same time, fuel prices, increased 30 percent, from a weekly average of \$2.81/gal in Fall 2009 to \$3.65/gal in 2011.

The Enhanced Transit Service Table 1 below shows that three of the four Enhanced Transit Service (ETS) pathways experienced ridership growth rates considerably in excess of the system growth rate. Ridership in the Ballard/Magnolia pathway (Pathway A) declined, whereas system-wide ridership increased. Metro has proposed changes to service in the Ballard-Magnolia pathway for Fall 2012. The proposed changes seek to improve efficiency while increasing ridership by restructuring routes in conjunction with the implementation of Metro’s new D Line RapidRide.

Enhanced Transit Service Table 1

3 YEAR TRANSIT CORRIDOR WEEKDAY RIDERSHIP TREND FOR FALL SERVICE CHANGE				
Ridership Group	2009	2010	2011	% Change 2009-2011
System-wide Ridership	364,000	365,000	375,820	3%
Total of Pathways	78,500	78,590	91,850	17%
Pathway A – Ballard/Magnolia	19,120	18,394	17,540	-8%
Pathway B – Aurora Fremont	27,117	28,529	34,380	27%
Pathway I – SODO/Georgetown	10,401	10,289	12,960	25%
Pathway J – West Seattle	21,858	21,374	26,970	23%

RIDERSHIP CHANGE IN FALL 2011 COMPARED TO 2009 BASELINE

The Enhanced Transit Service Table 2 below compares the Fall 2011 system-wide and Enhanced Transit Service pathway ridership with the Fall 2009 baseline for average weekday ridership by time of day

Ridership Changes Vary by Time of Day – Evaluating aggregate ridership numbers alone can sometimes hide shifts in ridership that have important planning implications. Ridership analysis by time of day allows one to see which time period has the greatest demand for resources. Employment-driven transit service tends to be oriented toward the peak period (6-9 a.m.) and (3-6 p.m.) while general purpose mobility occurs during all periods of the day. As shown in table 2, at a system-wide level peak period ridership accounts for roughly 50% of daily ridership; among the individual pathways, peak period ridership accounted for between 47 and 54 percent of total daily ridership.

Peak period ridership increased significantly in Pathways B (Aurora/Fremont), I (SODO/Georgetown), and J (West Seattle) compared to Fall 2009 baseline figures. Significant increases also occurred in these pathways for the shoulder and midday periods. The highest growth rate - 33% over the baseline - occurred during shoulder periods in pathway J (West Seattle). This positive result correlates with WSDOT and Metro investments in the corridor to increase capacity and improve frequency on Routes 21 express, 54, 56 express and 120.

Enhanced Transit Service Table 2

COMPARISON OF FALL 2009 BASELINE WEEKDAY RIDERSHIP BY TIME OF DAY AND PATHWAY WITH FALL 2011 SERVICE CHANGE RIDERSHIP

Ridership Group	Avg. Weekday		Peak Period*		Shoulder Periods		Midday Period	
	2009	2011 (% Change)	2009	2011 (% Change)	2009	2011 (% Change)	2009	2011 (% Change)
System-wide Ridership	364,000	375,820 (3%)	179,000	184,000 (3%)	66,000	68,000 (3%)	77,000	79,000 (3%)
Total of Pathways	78,500	91,850 (17%)	38,810	45,560 (17%)	13,650	16,410 (20%)	15,720	18,160 (16%)
Pathway A – Ballard/Magnolia	19,120	17,540 (-8%)	9,820	9,420 (-4%)	3,340	2,960 (-11%)	3,610	3,140 (-13%)
Pathway B – Aurora/Fremont	27,120	34,380 (27%)	12,640	16,160 (28%)	4,790	6,310 (32%)	5,780	7,190 (24%)
Pathway I – SODO/Georgetown	10,400	12,960 (25%)	5,240	6,430 (23%)	1,750	2,140 (22%)	1,910	2,380 (25%)
Pathway J – West Seattle	21,860	26,970 (23%)	11,110	13,550 (22%)	3,770	5,000 (33%)	4,420	5,450 (23%)

*Peak Period is 6-9 a.m. and 3-6 p.m.; Shoulder Period is 9-10 a.m., 2-3 p.m. & 6-7 p.m.; Midday is 10 a.m. - 2 p.m.

PERFORMANCE OF ENHANCED TRANSIT SERVICE ADDITIONS

Ridership increased during the peak and shoulder periods on all six routes that received Enhanced Transit Service (ETS) funding during the Fall 2011 service change. The largest absolute change was in response to upgrading the peak and shoulder frequencies from every 15 minutes to every 7-10 minutes on route 358. This resulted in an estimated 570 additional weekday boardings during the peak period, and 390 additional boardings during the shoulder periods. The second largest increase occurred during the peak and shoulder periods on Route 120, where frequencies during these time periods were improved from every 7-15 minutes to every 7-10 minutes, with resulting growth of 280 boardings during peak periods and 190 boardings during shoulder periods. Also, peak ridership continued to grow on Routes 21X, 56X, and 121. Route 18X, on which two afternoon ETS trips were added in Fall 2011, experienced an 8% increase in boardings. In the peak periods, ridership performance of ETS routes outperformed system-wide trends by 10-11 percentage points. Ridership performance of the ETS routes also outperformed system-wide trends in the shoulder periods, and where service was added, also in the Midday period.

Enhanced Transit Service Table 3

COMPARISON OF RIDERSHIP PERFORMANCE OF SERVICES THAT RECEIVED WSDOT FUNDED ENHANCEMENTS WITH FALL 2009 BASELINE								
Route/Pathway	Avg. Weekday		Peak Period*		Shoulder Periods		Midday Period	
	2009	2011 (% Change)	2009	2011 (% Change)	2009	2011 (% Change)	2009	2011 (% Change)
21X / Pathway J	740	940 (27%)	700	870 (24%)	30	80 (167%)	No Service	No Service
56X / Pathway J	580	700 (21%)	500	600 (20%)	70	100 (43%)	No Service	No Service
120 / Pathway J	6,850	7,630 (11%)	2,960	3,240 (9%)	1,340	1,530 (14%)	1,660	1,810 (9%)
Total Pathway J	8,170	9,270 (13%)	4,160	4,710 (13%)	1,440	1,710 (19%)	1,660	1,810 (9%)
121 / Pathway I	1,030	1,100 (7%)	670	890 (33%)	220	160 (-27%)	100	No Service [†]
358 / Pathway B	9,140	10,600 (16%)	4,070	4,640 (14%)	1,600	1,990 (24%)	2,090	2,420 (16%)
18X/ Pathway A	760	820 (8%)	760	820 (8%)	No Service	No Service	No Service	No Service
Enhanced Transit Service Route Total	19,100	21,790 (14%)	9,660	11,060 (14%)	3,260	3,860 (18%)	3,850	4,230 (10%)

*Peak Period is 6-9 a.m. and 3-6 p.m.; Shoulder Period is 9-10 a.m., 2-3 p.m. & 6-7 p.m.; Midday is 10 a.m. - 2 p.m.
[†]Midday Ridership does not include 121 boardings because those trips were discontinued in Feb 2010.

TRANSIT CAPACITY

The primary way transit services will mitigate construction impacts is by providing an alternative travel option to driving alone. In order to attract people to transit service, that service must be reliable. In addition, sufficient transit capacity is a prerequisite to establishing transit as a desirable alternative travel option.

Fall 2011 Transit Capacity Compared to Fall 2009 Baseline – The baseline is the scheduled number of seats supplied each weekday within a pathway group for Fall 2009. Enhanced Transit Service Table 4 shows the number of seats by time of day for Fall 2011 for the four different pathways compared to the Baseline.

The largest increase in seating capacity occurred on the West Seattle Pathway, where Enhanced Transit Service was implemented in 2010 and 2011. The Fall 2011 service change continued the additional transit capacity added on routes 21X, 56X, (Pathway J routes) and route 121 (Pathway I route). New ETS service was implemented on Route 120 (Pathway J route), Route 358 (Pathway B route), and 18X (Pathway A route). In Fall 2011, Metro assumed financial responsibility for 27 ETS trips on Route 54 that were previously funded by WSDOT, and 30 additional trips were added.

Transit capacity within a given period can be increased by scheduling additional trips or by scheduling coaches with higher seating capacity. Table 4 shows transit capacity by pathway. Capacity changes to individual WSDOT-funded routes may not directly correlate to changes in the pathways containing those routes due to changes to other routes within the pathway. For example, peak period seating capacity in Pathway I decreased despite the addition of four new ETS trips on Route 121. In this instance, the decrease in seating capacity resulted from trip cuts and the assignment of coaches with fewer seats on two other routes operating in the same pathway: Routes 23 and 124.

Enhanced Transit Service Table 4

FALL 2011 SERVICE CHANGE COMPARISON OF WEEKDAY TRANSIT SEATING CAPACITY BY CORRIDOR AND TIME OF DAY WITH FALL 2009 BASELINE						
Pathway	Peak Period		Shoulder Periods		Midday Period	
	2009	2011 (% Change)	2009	2011 (% Change)	2009	2011 (% Change)
Pathway A – Ballard/Magnolia	10,700	10,491 (-2%)	3,750	3,403 (-9%)	4,710	4,410 (-6%)
Pathway B – Aurora Fremont	14,760	16,010 (8%)	5,490	6,133 (12%)	7,110	7,570 (6%)
Pathway I – SODO/Georgetown	8,790	8,495 (-3%)	3,100	2,817 (-9%)	3,180	2,810 (-12%)
Pathway J – West Seattle	16,360	18,496 (13%)	5,860	7,389 (26%)	7,680	8,744 (14%)
Total of all Pathways	50,610	53,492 (6%)	18,200	19,742 (8%)	22,680	23,534 (4%)

Enhanced Transit Service Table 5 compares the actual transit capacity delivered during the Fall 2011 service change to the Fall 2011 enhanced transit service proposal. Larger coaches assigned to service in these corridors has resulted in Metro providing slightly more capacity than originally proposed. During the Fall 2011 service change WSDOT funds provided 17 percent more transit capacity than the peak period capacity of routes 18X, 21X, 56X, 120, 121 and 358. As will be shown in the next section this additional capacity improved the transit capacity level of service on these routes and certainly helped attract some of the 1,400 peak period rides over the 2009 baseline. The percentage increase in capacity is lower than in June 2011 (55 percent), for two

reasons: 1) the number of WSDOT funded seats decreased from 2,420 in June 2011 1,800 in Fall 2011, and 2) two frequent, all-day routes (120 and 358) were added to the group of routes receiving WSDOT investment, which resulted in a significant increase in the number of Metro-funded trips.

Enhanced Transit Service Table 5

COMPARISON OF WSDOT FUNDED TRANSIT SEATING CAPACITY WITH METRO FUNDED PEAK PERIOD TRANSIT SEATING CAPACITY				
Fall 2011				
Route/Pathway	Metro Funded Peak Period*	Actual WSDOT Funded*	Fall 2011 ETS Proposal†	% Increase in Seating Capacity Compared to Metro Peak Period
18X	800	120	120	15%
21X	1,000	370	350	37%
56X	670	240	230	36%
120	2,910	460	460	16%
121	1,510	230	230	15%
358	3,970	380	350	10%
Total	10,860	1,800	1,740	17%

*Actual average seats/trip for Oct 2011 were as follows: 21X:62, 56X:60, 121:58, 18X:61, 120:58, 358:64
†ETS Proposal was based on 58 seats/trip

TRANSIT CAPACITY LEVEL OF SERVICE

Transit capacity level of service (LOS) measures how riders perceive crowding and comfort on transit services. The second edition of the Transit Cooperative Research Program’s Transit Capacity and Quality of Service Manual describes the importance of transit capacity LOS in the following statement:

From the passenger’s perspective, passenger loads reflect the comfort level of the on-board vehicle portion of a transit trip—both in terms of being able to find a seat and in overall crowding levels within the vehicle. From a transit operator’s perspective, a poor LOS may indicate the need to increase service frequency or vehicle size in order to reduce crowding and provide a more comfortable ride for passengers. A poor passenger load LOS indicates that dwell times will be longer for a given passenger boarding and alighting demand at a transit stop and, as a result, travel times and service reliability will be negatively affected.

The Transit Capacity and Quality of Service Manual provides suggested capacity LOS guidelines. This report uses the ratio of passengers to seats, or Load Factor to evaluate the transit capacity LOS on routes in the identified pathways. The level of service thresholds are described in the table below.

Enhanced Transit Service Table 6

TRANSIT CAPACITY AND QUALITY OF SERVICE MANUAL LOAD FACTOR GUIDELINES

LOS	Load Factor (passengers/seat)	Comments
A	0.00-0.50	No passenger need sit next to another
B	0.51-0.75	Passengers can choose where to sit
C	0.76-1.00	All passengers can sit
D	1.01-1.25*	Comfortable standee load for design
E	1.26-1.50*	Maximum schedule load
F	>1.50*	Crush load

*Approximate value for comparison, for vehicles designed to have most passengers seated.

Fall 2011 Transit Capacity Compared to Fall 2009 Baseline – Enhanced Transit Service tables 7, and 8 display the number and percent of riders experiencing a transit capacity LOS of C or worse when traveling in the peak direction during the peak period as compared to the Fall 2011 baseline.

Crowding happens when demand pushes the limits of capacity. Changes in crowding reflect a change in the capacity, the demand or both. Even with peak period ridership growing on all enhanced transit service routes the percent of riders experiencing transit capacity level of service C or worse has declined on all routes except routes 120 and 121 in the morning, and Route 358 in the afternoon. Overall, there are 100 fewer AM and 290 fewer PM peak period riders experiencing transit capacity level of service C or worse than there were in Fall 2009.

One of the purposes of these added trips was to make room for additional transit commuters during most disruptive construction period. Table 7 and 8 below shows that the average load factors on all but route 120 in the AM have decreased, meaning that WSDOT has made it possible for Metro to accommodate more transit commuters.

Enhanced Transit Service Table 7

COMPARISON OF OCT 2011 TRANSIT CAPACITY LOS WITH OCT 2009 BASELINE								
AM 6:00-9:00 Inbound								
Route/ Pathway	Average Load Factor		# of trips providing a transit capacity LOS of C or worse		% of riders at a transit capacity LOS of C or worse		Est. Number of daily riders at a transit capacity LOS of C or worse	
	2009	2011	2009	2011	2009	2011	2009	2011
18X	0.91	0.81	4	4	77%	75%	280	280
21X	0.74	0.58	4	4	65%	55%	250	240
56X	0.71	0.51	2	0	53%	0	140	0
120	0.74	0.77	6	8	47%	59%	390	520
121	0.50	0.48	0	1	0	17%	0	40
358X	0.70	0.64	7	5	47%	37%	540	420
Total							1,600	1,500

Enhanced Transit Service Table 8

COMPARISON OF OCT 2011 TRANSIT CAPACITY LOS WITH OCT 2009 BASELINE								
PM 3:00-6:00 Outbound								
Route/ Pathway	Average Load Factor		# of trips providing a transit capacity LOS of C or worse		% of riders at a transit capacity LOS of C or worse		Est. Number of daily riders at a transit capacity LOS of C or worse	
	2009	2011	2009	2011	2009	2011	2009	2011
18X	0.78	0.67	4	2	68%	28%	270	120
21X	0.73	0.57	2	0	47%	0	150	0
56X	0.68	0.55	1	2	28%	28%	70	100
120	0.79	0.66	9	5	57%	27%	610	320
121	0.56	0.52	0	0	0	0	0	0
358X	0.77	0.73	11	13	58%	63%	880	1,150
Total							1,980	1,690

Enhanced Transit Service tables 9, and 10 display similar information as tables 7 and 8 for all the ETS pathways. The percent of riders experiencing LOS C increased overall among all routes operating in the four pathways in the morning but decreased in the afternoon. .

These tables also provide the number and percent of riders that experience a transit capacity LOS of C or worse for those traveling in off peak periods. The off peak information is included to show that crowding occurs at times outside the peak period. The table also provides the total daily trips and estimated number of riders that experience LOS C or worse. These tables are provided for context to evaluate the effectiveness of WSDOT funded construction mitigation services.

Enhanced Transit Service Table 9

FALL 2011 SERVICE CHANGE COMPARISON OF INBOUND WEEKDAY PASSENGER LOADS BY CORRIDOR PEAK PERIOD SUMMARY WITH FALL 2009 BASELINE						
AM 6:00-9:00 Inbound						
Pathway	% of riders experiencing a transit capacity LOS of C or worse		# of trips in period providing a transit capacity LOS of C or worse		Est. Number of daily riders experiencing transit capacity LOS of C or worse	
	2009	2011	2009	2011	2009	2011
Pathway A – Ballard/Magnolia	34%	39%	13	16	860	1,120
Pathway B – Aurora Fremont	41%	51%	30	34	1,940	2,400
Pathway I – SODO/Georgetown	9%	15%	3	7	140	290
Pathway J – West Seattle	32%	33%	20	24	1,300	1,430
All Pathways	33%	38%	66	81	4,240	5,240
Inbound Trips All Other Times of Day						
	2009	2011	2009	2011	2009	2011
Pathway A – Ballard/Magnolia	27%	14%	23	14	1,430	750
Pathway B – Aurora Fremont	18%	21%	30	40	1,840	2700
Pathway I – SODO/Georgetown	9%	2%	5	2	230	70

Pathway J – West Seattle	6%	4%	7	6	480	400
All Pathways	15%	12%	65	62	3,980	3910
Total Inbound Trips			131	143	8,220	9,150

TRANSIT CAPACITY AND QUALITY OF SERVICE MANUAL LOAD FACTOR GUIDELINES

LOS	Load Factor (passengers/seat)	Comments
A	0.00-0.50	No passenger need sit next to another
B	0.51-0.75	Passengers can choose where to sit
C	0.76-1.00	All passengers can sit
D	1.01-1.25*	Comfortable standee load for design
E	1.26-1.50*	Maximum schedule load
F	>1.50*	Crush load

*Approximate value for comparison, for vehicles designed to have most passengers seated.

Enhanced Transit Service Table 10

FALL 2011 SERVICE CHANGE COMPARISON OF OUTBOUND WEEKDAY PASSENGER LOADS BY CORRIDOR PEAK PERIOD SUMMARY WITH FALL 2009 BASELINE						
PM 3:00 – 6:00 Outbound						
Corridor	% of riders experiencing a transit capacity LOS of C or worse		# of trips in period providing a transit capacity LOS of C or worse		Est. Number of daily riders experiencing transit capacity LOS of C or worse	
	2009	2011	2009	2011	2009	2011
Pathway A – Ballard/Magnolia	45%	21%	19	13	1,240	700
Pathway B – Aurora Fremont	37%	47%	28	39	1,820	2,660
Pathway I – SODO/Georgetown	20%	9%	6	3	250	170
Pathway J – West Seattle	42%	21%	28	17	1,830	980
All Pathways	39%	29%	81	72	5,140	4,510
Outbound Trips All Other Times of Day						
	2009	2011	2009	2011	2009	2011
Pathway A – Ballard/Magnolia	17%	18%	18	15	970	1,010
Pathway B – Aurora Fremont	13%	12%	24	20	1,390	1,360
Pathway I – SODO/Georgetown	6%	3%	3	3	140	1,20
Pathway J – West Seattle	8%	2%	10	2	660	1,50
All Pathways	12%	9%	55	40	3,160	2,640
Total Outbound Trips			136	112	8,300	7,150

TRANSIT CAPACITY AND QUALITY OF SERVICE MANUAL LOAD FACTOR GUIDELINES

LOS	Load Factor (passengers/seat)	Comments
A	0.00-0.50	No passenger need sit next to another
B	0.51-0.75	Passengers can choose where to sit
C	0.76-1.00	All passengers can sit
D	1.01-1.25*	Comfortable standee load for design
E	1.26-1.50*	Maximum schedule load
F	>1.50*	Crush load

*Approximate value for comparison, for vehicles designed to have most passengers seated.

FLEXIBLE TRANSIT SERVICE

The Enhanced Transit Service contract provides for the use of flexible hours to meet the day to day variations in construction related traffic disruptions. These hours allow Metro to assign standby buses that enable Metro to respond immediately to conditions on the street. In the October 2011 ETS proposal, Metro budgeted 2,500 hours of flexible services to meet these needs.

The Enhanced Transit Service Table 11 below reports on all flexible hours that were used during the October 2011 service change, primarily to mitigate impacts resulting from the closure of the Alaskan Way Viaduct between October 22 and October 29, 2011. The trips and boardings reported on this table come from self reported driver count sheets. Table 11 shows more than 4,600 transit trips were taken on service provided by flexible hours, showing how important they have been on days when traffic delays have caused transit services to fall behind. The real-time response of these services allows for greater reliability of service and has helped to maintain public confidence in riding transit.

Enhanced Transit Service Table 11

October 2011 Use of Flexible Hours							
Date Range	Number of Weekdays	Number of Saturdays	Number of Sundays	Max. number of Standby coaches	Total flexible hours	Number of trips provided	Number of Boardings
10/22	0	1	0	4	158	7	170
10/23	0	0	1	3	50	8	280
10/24 - 10/28	5	0	0	5	1,095	83	2,200
10/29	0	1	0	5	50	18	500
10/30	0	0	1	4	40	9	130
10/31-11/2	3	0	0	6	180	57	1,360
Actual Totals					1,573	182	4,640
October 2011 ETS Proposal					2,500		

WATER TAXI AND SHUTTLE SERVICE

The Fall 2011 service change was the first service change during which WSDOT provided financial support for the West Seattle Water Taxi and Water Taxi shuttle services as part of the Alaskan Way Viaduct and Seawall Replacement Project Moving Forward Projects Construction Traffic Mitigation. For the winter sailing season the Water Taxi and shuttle services operated on a peak oriented schedule from October 31, 2011 to April 8, 2012. WSDOT began funding the Water Taxi and shuttle services on January 1.. As shown in Table 12 below, the Water Taxi attracted over 400 rides and provided nearly 4,000 additional seats each day between West Seattle and Downtown Seattle. Many of the trips on the Water Taxi were made in combination with trips on the Water Taxi shuttle services.

Enhanced Transit Service Table 12

October 2011 Water Taxi and Shuttle Service				
Route	Peak Period		Shoulder Periods	
	Rides	Seats	Rides	Seats
Water Taxi	380	3,000	60	900
Water Taxi Shuttles	140	620	30	150

SCHEDULE ADJUSTMENTS

In February 2011 Metro changed the routing of all 1st Avenue services to use 3rd Avenue in order to avoid construction activities on 1st Avenue. Metro continued this re-route in October 2011. This re-route was estimated to add five to eight minutes of running time. Table 12 below compares the actual transit travel time of service before and after the change and shows that the travel time is higher than estimated at most times of the day, depending on direction of travel.

Enhanced Transit Service Table 13

Difference in Minutes Between 2009 Baseline and Oct 2011 Travel Time			
Pathway	AM Peak Inbound Max/Min	Midday Max/Min	PM Peak Outbound Max/Min
J1: Alaska Jct. to 3 rd Ave and Seneca St via 1 st Ave S, Edgar Martinez, 4 th Ave S onto 3 rd Ave	6/3	12/0	10/7
J2: 35th Ave SW & SW Morgan St to 3rd Ave & Seneca St via 1st Ave S, Edgar Martinez, 4 th Ave S onto 3 rd Ave	4/3	10/2	8/6

Transit Travel Time Report

TRAVEL TIME REPORT PURPOSE

As part of the AWW Moving Forward contract, Metro received funding to improve the equipment that monitors bus travel time through the construction corridors. The Transit Travel Time report uses data from this equipment provided by WSDOT and other sources throughout the network. This report summarizes data collected to monitor transit travel times along pathways that are expected to be most heavily impacted by the Moving Forward project of the AWW program.

This report compares the Fall 2011 service change condition to the previous travel time report (Summer 2011) and the baseline condition (Fall 2009). The list below show the dates of when travel time observations were collected for those conditions:

- Fall 2009 service change (baseline condition): September 21, 2009 through October 16, 2009
- Summer 2011 service change condition: September 6, 2011 through September 30, 2011
- Fall 2011 service change condition: October 31, 2011 through November 18, 2011

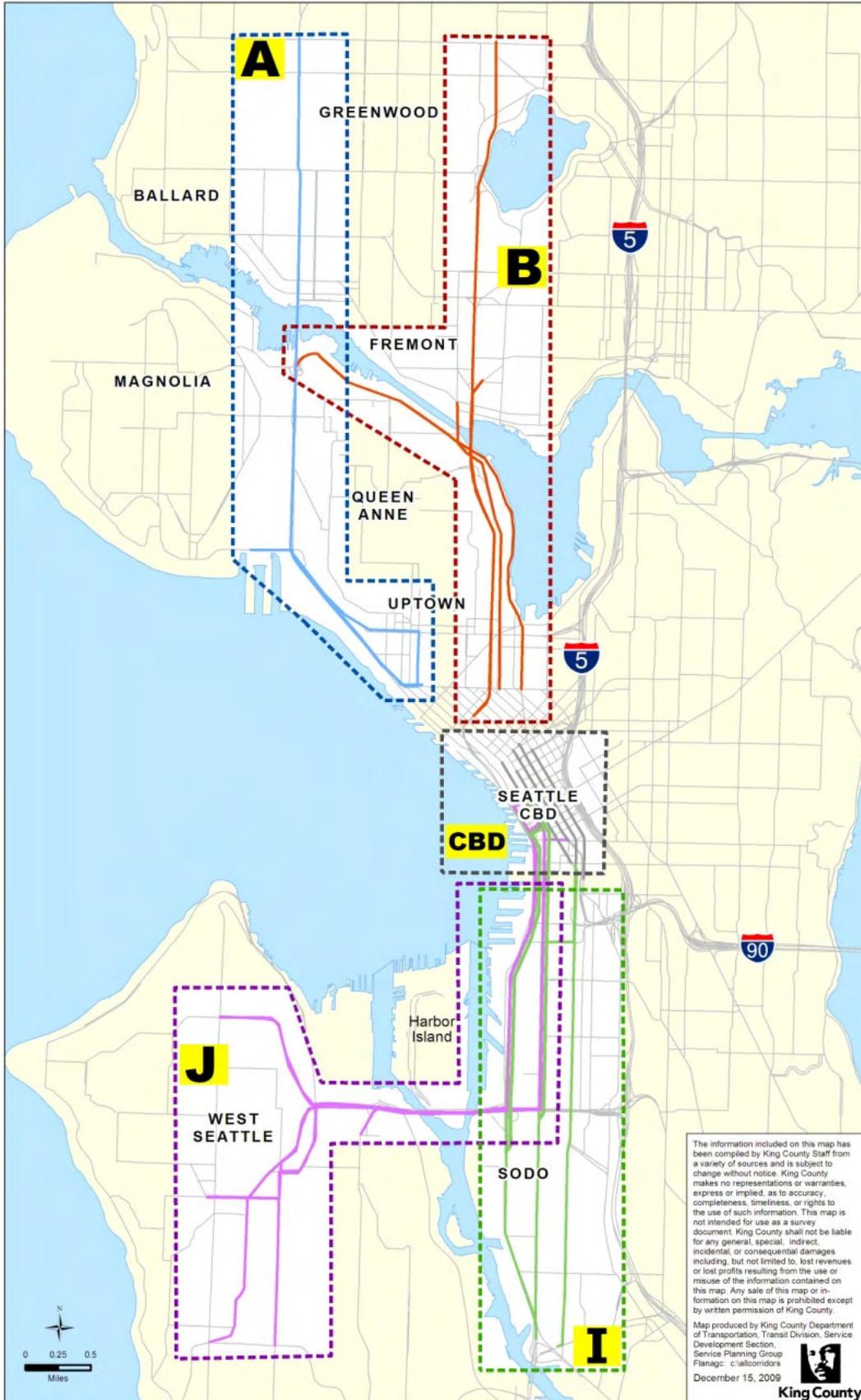
Travel time data was collected and processed as discussed below:

- Transit travel time was measured on key transit corridors feeding into and within the Seattle Central Business District (CBD). The data for this was collected through:
 - Automatic Vehicle Identification (AVI) readers installed at endpoints of key transit corridors
 - Data from Metro's signpost-based Automatic Vehicle Location (AVL) system
- Pathways were defined by the roadway segments on which one or more transit routes operate.
- Pathways were grouped by geographic market area, as shown in the "Pathways and Pathway Groups" map on the next page. Each group consists of several distinct pathways described in the "Description of Pathways and Associated Transit Routes" (Travel Time Table 1).
- Because pathway lengths vary, and travel times will not be comparable across pathways, travel *speeds* are used to assess pathway group performance and travel *times* are used to assess individual pathway performance.

For this report, several minor changes were made to the pathway definitions due to routing changes and AVI reader availability. With the Fall 2011 service change, transit routes using 1st Avenue S used Lander Street rather than Edgar Martinez Drive to go between 4th Avenue S and 1st Avenue S; the corresponding J pathways were modified accordingly. Pathway CBD2 was modified due to ongoing problems with the AVI reader at 2nd Avenue & Pine Street; the pathway was extended to the next available reader at 4th Avenue & Stewart Street and the historical and baseline data was updated to reflect the modified pathway. Data for this reporting period was taken from a period immediately following a 7-day closure of the Alaskan Way Viaduct between October 22 and October 29, and reflects a condition with traffic using the low-speed bypass roadway (Wosca Detour).

Pathways and Pathway Groups

Transit Routes Affected by AWW Project



Travel Time Table 1

Description of Pathways and Associated Transit Routes					
Pathway Group	Pathway	Market Coverage	From	To	Current Transit Routes*
A	A.1	Ballard, Uptown	15 th NW/NW 85 th	1 st Ave/Denny	15,[18]
	A.2	Ballard	15 th NW/NW 85 th	1 st Ave/Denny	15X,[17X,18X]
	A.3	Magnolia	Elliot Ave/Magnolia Br.	1 st Ave/Denny	19,24,33
B	B.1	North Seattle	Aurora Ave NW/NE 85 th	3 rd Ave/Battery	358
	B.2	North Seattle	Bridge Way/N 38 th	3 rd Ave/Battery	5, [5X,26X,28X]
	B.3	Fremont	Dexter/Westlake/Fremont	Dexter/Denny	26,28
	B.4	South Lake Union	Ballard Br./Denny	Denny/Westlake	17
I	I.1	South Seattle/Burien	1 st Ave S/E. Marginal (OB) S Alaska/E Marginal (IB)	1 st Ave/Columbia (OB) 1 st Ave/Seneca (IB)	121,122
	I.2	South Seattle/Burien	4 th Ave S/S Michigan	4 th /2 nd Ave/Jackson	23, 123X, 124
	I.3	South Seattle/Burien	1 st Ave S/E. Marginal	4 th /2 nd Ave/Jackson	132
J	J.1	West Seattle	Alaska Jct.	3 rd Ave/Seneca	22
	J.2	West Seattle	35 th Ave SW/SW Morgan	3 rd Ave/Seneca	21
	J.3	West Seattle	Alaska Jct.	1 st Ave/Columbia (OB) 1 st Ave/Seneca (IB)	54,55 [21X]
	J.4	West Seattle	California Ave/SW Fauntleroy Way	3 rd Ave/Yesler	116,118, 119, [54X]
	J.5	West Seattle/Burien	Delridge Way/Andover	1 st Ave/Columbia (OB) 1 st Ave/Seneca (IB)	120,125
	J.6	West Seattle	Admiral Way/California Ave	4 th Ave/Jackson	56, 57
	J.7	West Seattle	Admiral Way/California Ave	1 st Ave/Columbia (OB) 1 st Ave/Seneca (IB)	56X
CBD	CBD.2	2 nd Ave	4 th Ave/Stewart	2 nd /Jackson	Many
	CBD.3	3 rd Ave	3 rd Ave/Stewart	3 rd Ave/Yesler	Many
	CBD.4	4 th Ave	4 th Ave/Jackson	4 th Ave/Stewart	Many
	CBD.5	5 th Ave	5 th Ave/Pine	5 th Ave/Weller	Many

*Routes identified with an X are express routes. Routes in [brackets] are routes that parallel a significant portion of the pathway, but are not included in the data for that pathway. Because so many routes operate on the five CBD pathways they are not all listed here.

TRAVEL TIME DATA

A summary of performance results are reported on the "Performance by Pathway Group" and "Performance of Pathways with Service Additions" tables below, while detailed travel time charts of the individual pathways are included in Appendix A.

Travel Time Table 2 below shows daily median travel speeds and range of speeds experienced by each pathway group during the am and pm peaks, including a comparison with the baseline condition. The "Median Speed" is the speed where 50 percent of the observed transit speeds are faster and 50 percent of the observed transit speeds are slower than the median speed. The median speed includes all transit trips operating along all of the pathways in each group, in both directions, on weekdays between 5 am and 8 pm. Median speed is reported rather than average speed because the median is less sensitive to unusual events such as bus breakdowns or accidents that could skew the average. This measure gives an overall performance metric for the pathway group, and is a useful aggregate measure to assess whether the speeds of individual pathways in a given group are trending up or down. It is not, however, appropriate to use the pathway group median speed as an assessment of travel speed for any individual pathway. In Appendix A, observed travel times are aggregated by hour of day for both directions of each pathway.

The strongest influence in travel time variability is time of day and direction of travel. The "PM Peak Period Hourly Median Range" and "AM Peak Hourly Median Range" are aggregate performance measures for the times of day that traditionally have the most congestion. The PM Peak Range is the range between the median speed for the slowest hour of the slowest pathway and the fastest hour of the fastest pathway between 3 pm and 6 pm; the AM Peak Range is a similar comparison of speeds between 6 am and 9 am. These ranges can be used to understand pathway group performance and assess whether, as a group, speeds are trending up or down during periods when daily travel demand is the greatest.

Travel Time Table 2: Fall 2011, Summer 2011, and Baseline Travel Speeds

Performance by Pathway Group: Fall 2011, Summer 2011, & Baseline Comparison					
Pathway Group	Area	Service Change Period	Median Speed [MPH]	AM Peak Period* Hourly Median Range [MPH]	PM Peak Period* Hourly Median Range [MPH]
A	Ballard, Interbay	Fall '11	15.6	13.1 – 20.9	12.1 – 16.1
		Summer '11	15.5	13.1 – 23.1	11.9 – 17.3
		Baseline	14.9	12.1 – 23.6	11.4 – 19.0
B	Aurora, Fremont	Fall '11	18.0	11.0 – 22.1	10.9 – 22.1
		Summer '11	17.8	11.9 – 23.1	10.5 – 20.7
		Baseline	18.6	11.0 – 22.7	11.0 – 20.3
I	SODO, Georgetown	Fall '11	17.9	14.8 – 33.8	14.6 – 26.6
		Summer '11	17.7	14.1 – 41.9	12.2 – 23.6
		Baseline	17.7	16.4 – 48.4	12.7 – 21.7
J 1 st Ave	West Seattle via 1 st Ave S	Fall '11	12.8	10.6 – 18.9	10.5 – 15.8
		Summer '11	13.6	9.6 – 22.9	10.6 – 16.4
		Baseline	15.9	11.9 – 20.7	12.4 – 21.0
J AWV	West Seattle via AWV	Fall '11	23.8	13.3 – 31.9	17.8 – 30.6
		Summer '11	26.4	15.7 – 36.4	18.5 – 35.5
		Baseline	30.1	20.1 – 36.6	22.1 – 33.8
CBD	2 nd - 5 th Avenues	Fall '11	7.3	4.8 – 10.2	3.9 – 10.7
		Summer '11	7.4	6.7 – 11.1	6.3 – 9.9
		Baseline	7.2	5.9 – 9.9	5.4 – 9.6

* AM peak includes 6 – 9 am and inbound trips only, pm peak includes 3 – 6 pm and outbound trips only, except CBD group includes both directions for am and pm peak ranges.

Fall 2011 Highlights

During the Fall 2011 reporting period, another significant impact began with the diversion of SR-99 onto a low-speed bypass roadway (Wosca Detour), which began on October 30, 2011. This impact has affected all routes using the Alaskan Way Viaduct, especially in the inbound direction during the AM period, where travel time increases around 5-7 minutes have been measured. Prior to switching to the Wosca Detour, the AWW was closed to all traffic for a 7-day period. The specific effect of this short-term closure is documented at the end of this section.

J Pathway

Countering the Wosca Detour impact, several improvements have been installed this period that have demonstrated benefits to transit travel time and reliability.

- A new AM period bus lane was installed on Avalon Way approaching the West Seattle Bridge. The bus lane has reduced travel times by 2-3 minutes and significantly improved reliability during the AM peak hour, as is evident in the results of J pathways using 1st Avenue S.
- A new bus lane on Fourth Avenue S between Weller St and Jackson St.
- A new bus lane and transit queue jump signal has been installed approaching the 1st Avenue & Columbia Street intersection in downtown Seattle.
- In the southbound direction of the AWW, the merge point from three to two lanes was moved upstream of the Columbia Ramp, improving southbound flow on the ramp.

The combination of Columbia Street improvements and SR 99 southbound channelization approaching the Columbia ramp have reduced transit travel time using Columbia by 3-4 minutes and travel times using the AWW in the outbound direction have only increased slightly despite the Wosca Detour. However, "peak spreading" is evident during the PM peak where congestion is beginning earlier in the afternoon and taking longer to dissipate.

A and B pathways

"A" and "B" pathways continue to see elevated travel times due to diversion of SR-99 traffic to surface streets especially during the PM peak hour in the inbound (southbound direction). Impacts are highest on Western Avenue and Westlake Avenue and are most significant during the 5:00pm hour. "B" pathways using Aurora Avenue N continue to see elevated travel times during the PM peak in the inbound direction due to SR-99 queues extending through and beyond the Battery Street Tunnel. These effects are illustrated on the individual pathway summaries in Appendix A.

Additional highlights of changes in travel time and travel speeds observed in Fall 2011 compared to the Summer 2011 and baseline conditions are noted below. See Appendix A for details.

- The "A" and "B" Pathways overall show slight improvements in median travel speeds compared to Summer 2011 conditions. Bus lanes on Elliott Avenue, 15th Avenue and Wall and Battery Streets have enabled buses on these corridors to travel at consistent speeds despite increases in traffic congestion.
- "B" Pathways using Aurora Avenue show improvements in the outbound direction during the PM Peak hour, due to bus lanes on Battery and Wall Streets. Pathway B.4 has shown significant travel time increases in the inbound direction during the PM period. This is most likely due to impacts from the Mercer projects, including a closure of 9th Avenue.
- "I" pathways have shown relative improvement compared to both Summer 2011 and Baseline periods. Construction activities related to the Spokane Viaduct have largely shifted from the street level to the upper level, so construction-related blockages have eased for bus routes crossing Spokane Street. The exception is pathway I.1 which uses the AWW and has been impacted by the Wosca detour.

- “J” pathways using the AWV have significantly worsened overall, with median speeds decreasing throughout the day compared to Summer 2011. Compared to Baseline, the all-day median speed has decreased by almost 6 MPH, or 21%.
- “J” pathways using 1st Avenue S continue to show poor travel time and reliability performance in the outbound direction compared to baseline conditions, due to the reroute via the Hanford Street rail crossing and the Spokane Street Lower Level Bridge. Conditions have worsened overall since Summer 2011. Due to trucks going to/from the Port of Seattle clogging the westbound left turn at the 1st Avenue S & S Atlantic Street intersection, these routes were shifted to Lander Street beginning with the Fall 2011 service change. Although using Lander allows buses to bypass the Port traffic, it introduces delays due to another mainline railroad crossing.
- Pathway CBD2 shows significant increases in travel time around 2PM and 3PM; during these hours, parking is still allowed in the 2nd Avenue bus lane and it is not available for transit use. 2nd Avenue travel times are highly sensitive to traffic congestion on the AWV, and data from AWV pathways suggests that peak spreading is causing congestion to begin during these early PM hours. Note that this pathway has been changed due to equipment failure at 2nd & Pine Street. The new start point for this pathway is at 4th & Stewart, and historical data from Baseline and Summer 2011 periods have been re-queried to reflect the new start point and provide comparisons.
- Pathway CBD3 has shown consistent running times across all reporting periods, due to the bus priority treatments in place on that corridor. Slight increases in travel time are measured during some time periods; this is likely due to seasonal variation between Summer and Fall periods.
- Pathway Columbia has shown significant improvement since Summer 2011. Travel times during the PM peak have returned to baseline level. This is due to a combination of the new bus lane and queue jump signal at 1st & Columbia, as well as moving the merge point from three to two lanes on SR-99 to a point upstream of the Columbia Ramp.

SERVICE ADDITIONS TRAVEL TIME

The following is a summary of travel time performance of transit pathways that have received WSDOT funding during this period.

Route 21X [Pathway J.3] – Pathway J.3 shows increases of almost five minutes in median travel time during the AM peak flow compared to Summer 2011 conditions. Compared to baseline conditions, the increase is around seven to nine minutes per trip. In the PM Peak, Pathway J.3 has increased by one or two minutes, but there have been savings on the Columbia pathway. The shoulders of the peak period (around 3:00pm and 7:00pm) are now beginning to show congestion and travel time increases of around one to two minutes. Note that the route 21X does not follow the J.3 pathway exactly, but parallels a significant portion of it.

Route 56X [Pathway J.7] – Pathway J.7 is a peak-only pathway using the AWW that has shown worsening performance during the AM period; two to four minutes increase compared to Summer 2011 and six to 10 minutes increase compared to baseline. This pathway does not receive benefit from the Avalon Way bus lane, as other “J” pathways do. PM travel times, however, have performed better.

Route 121 [Pathway I.1] – Pathway I.1 is also a peak-only pathway, with limited reverse-peak trips, that also has also been impacted significantly by the Wosca detour during the AM peak flow. The PM peak flow, however, shows modest improvement, consistent with other “I” pathways.

Route 120 [Pathway J.5] – Pathway J.5 also shows increases of almost five minutes in median travel time during the AM peak flow compared to Summer 2011 conditions, and around seven to nine minutes increase per trip compared to baseline. PM travel times are slightly elevated by about one minute throughout the day, although reliability during the PM period has improved slightly.

Route 18X [Pathway A.2] – Pathway A.2 has shown mixed results. Travel times have increased during the early AM and PM peak hour.

Route 358 [Pathway B.1] – Pathway B.1 has shown improvement in the outbound direction during the 4:00PM hour, but has shown increased travel time in the opposite direction during the same period. The improvement is likely due to the new bus lane on Battery Street, and the increase is likely due to moving the merge from three to two lanes on SR-99 upstream of the Columbia Ramp.

EFFECTS OF THE 7-DAY AWW CLOSURE

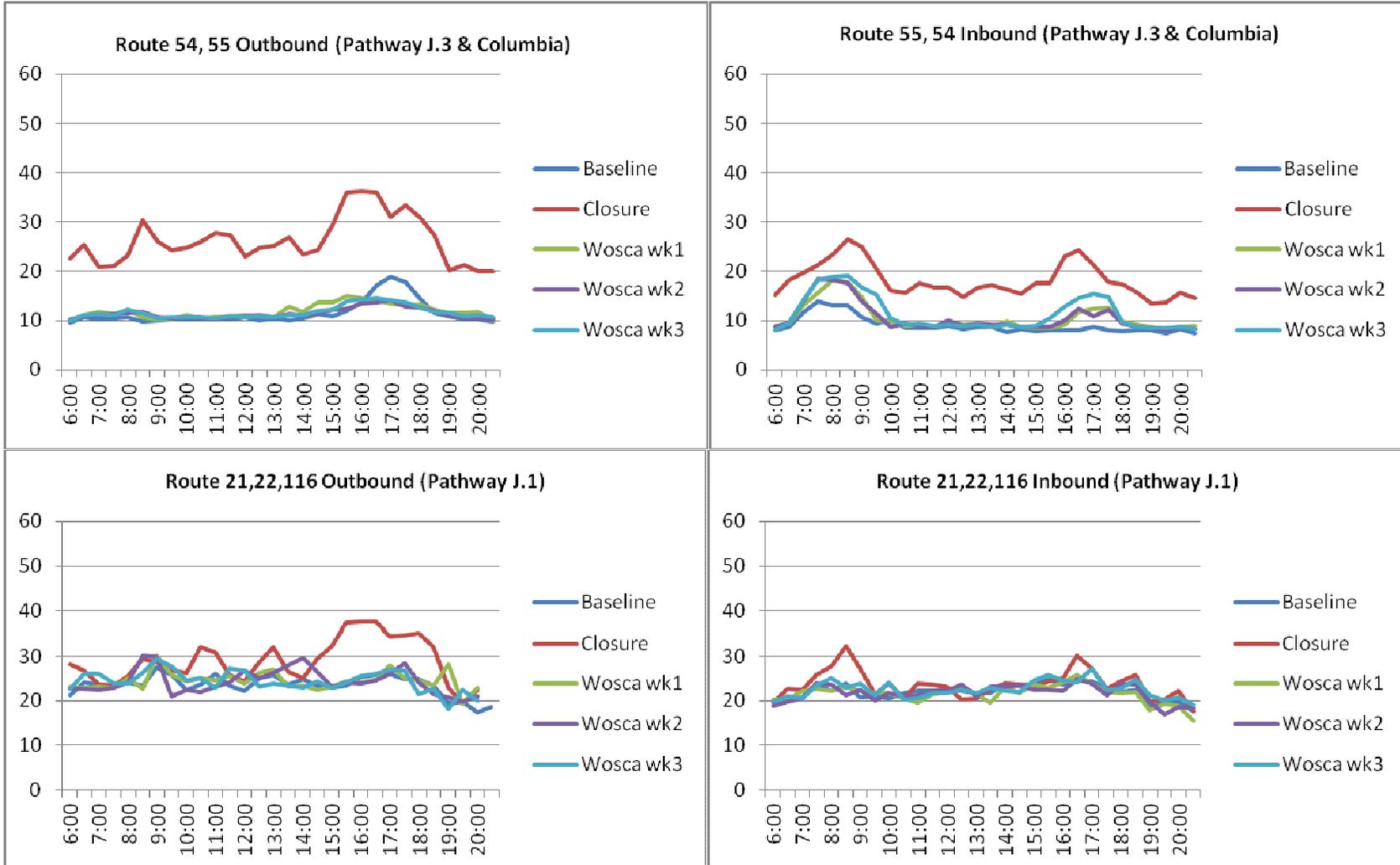
Between October 21 and October 29, the AWW was completely closed to traffic. Buses that normally travel on the AWW were rerouted to SODO surface streets. Other pathways were affected by diverted traffic. The Bus Monitoring System was used to measure the specific impacts of this closure on both AWW and surface routes. The following charts show weekly performance (30-minute interval average travel time) across the day for selected pathways using the AWW and pathways affected by traffic diversion. The charts also show travel time for three weeks following the 7-day closure, when the Wosca Detour began. Note that “Baseline” in these charts refers to a period just prior to the AWW closure.

The worst impact was to Routes 54 & 55 in the outbound direction during the PM peak, where travel times increased around 15 – 20 minutes. However, this issue was resolved and even improved once the closure was over and the improvements on Columbia Street were operational. In the AM inbound direction, travel times on Route 54 & 55 increased by about 10 – 15 minutes, but these travel times remained high even after re-opening.

North end routes were also impacted by traffic diversion, particularly on Elliott/Western Avenues (Pathway A.3) and Dexter Ave (Pathway B.3) during the PM peak in the inbound direction, where delays up to 10 minutes per average trip were recorded. Bus routes on these pathways are through-routed with south end routes. When north-end routes are significantly delayed, then standby coaches often need to be deployed to maintain headways on the south end routes.

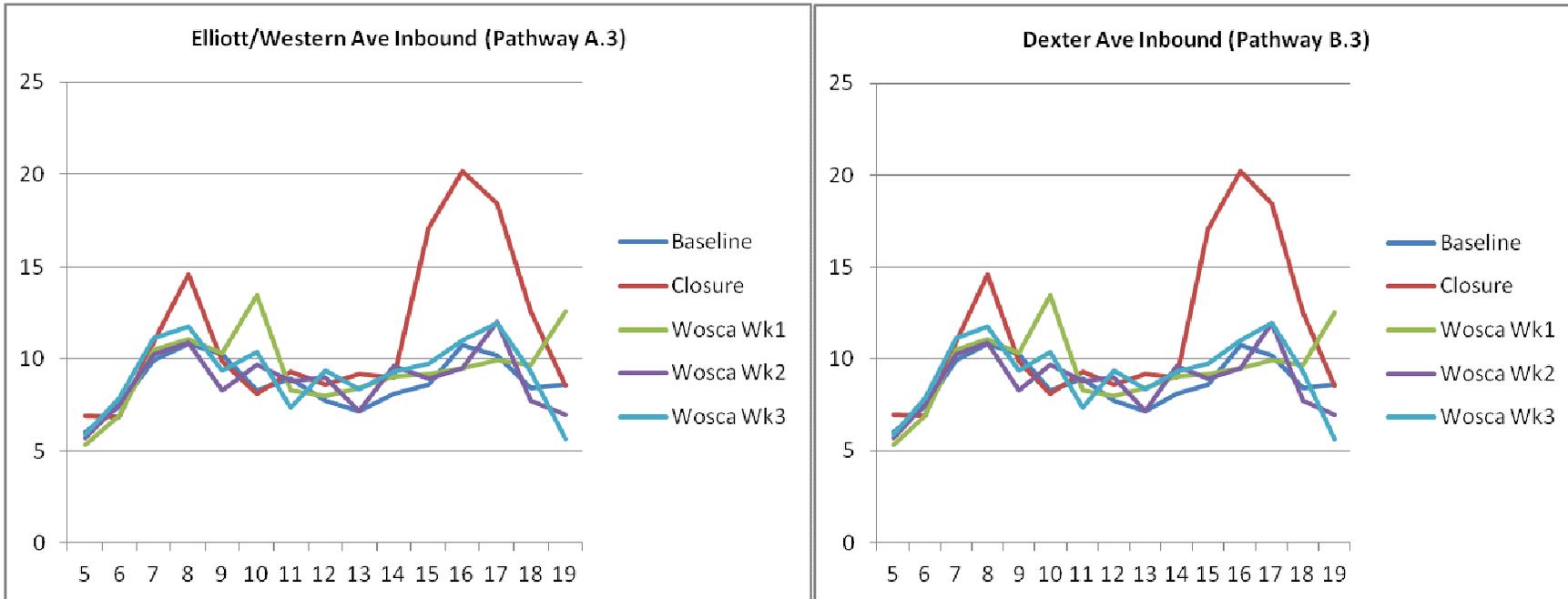
Travel Time Impacts of 7-Day AWW Closure on Selected Pathways; Seneca Street to Avalon Way

Baseline (week of 10/10), AWW Closure (week of 10/25) and First Three Weeks of Wosca Detour (10/31-11/18)
Travel Time in Minutes, 30-minute interval average



Travel Time Impacts of 7-Day AWW Closure on Selected Pathways; North End Pathways

Baseline (week of 10/10), AWW Closure (week of 10/25) and First Three Weeks of Wosca Detour (10/31-11/18)
Travel Time in Minutes, 30-minute interval average



Transportation Demand Management Report

TDM REPORT PURPOSE

Transportation Demand Management (TDM) projects are designed to improve system efficiency by reducing traffic congestion on SR 99 during the construction of the Moving Forward Projects primarily S Holgate Street to S King Street. WSDOT is investing \$1.7 million in strategic trip reduction projects to complement the Enhanced Transit Service project with incentives, transit subsidies, outreach events and consultations. These projects encourage people to ride the bus, helping to fill seats on the added bus service. The TDM projects also help show people their travel options which include carpooling, vanpooling, teleworking, or flexing their work schedules.

The goal of the overall TDM project is to reduce *4,130 peak round trips each weekday*. The agreement requires that the projects target two areas, downtown Seattle (and impacted surrounding areas) and the south end along the SR 99 corridor. In addition to the WSDOT funded programs, Metro will contribute funds and in-kind support totaling \$1,050,000.

A description of the various TDM projects follows TDM Table 1 below:

TDM Table 1

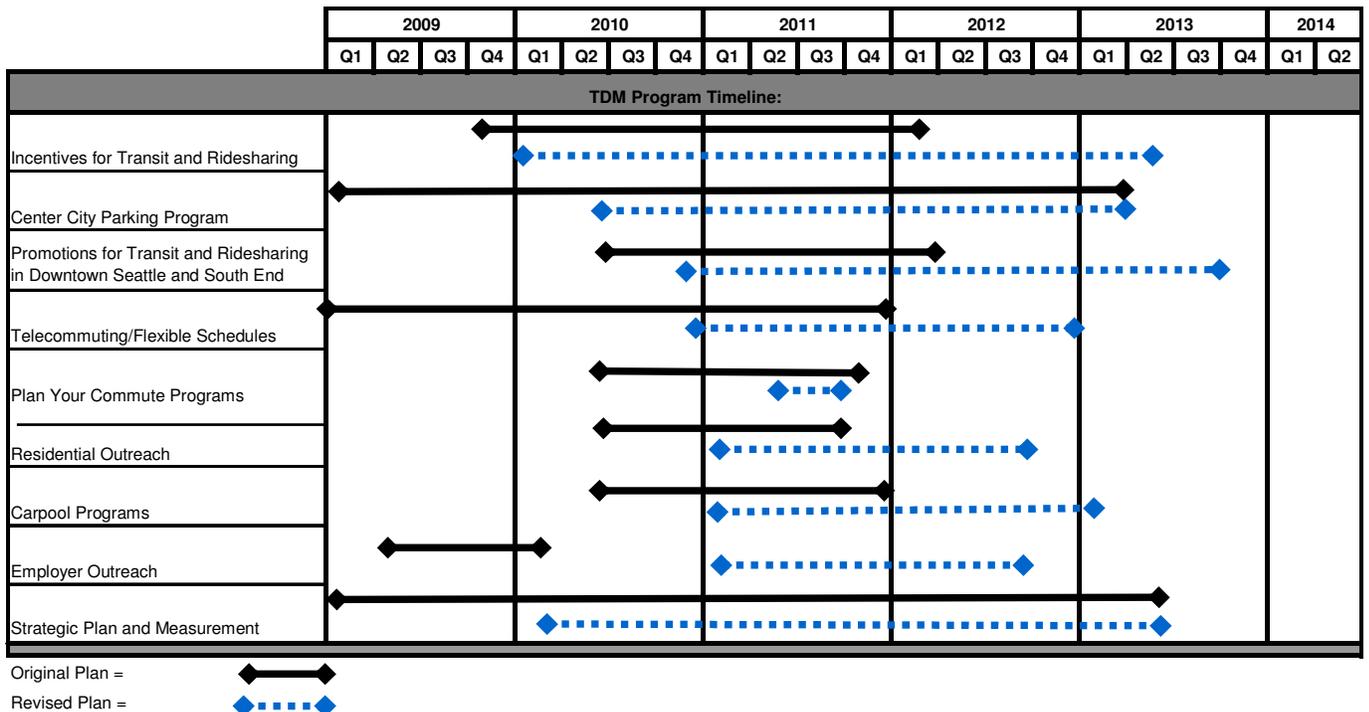
TDM Project Definitions for Downtown Seattle and the South End SR 99 Corridor	
Program	Description
Incentives for Transit and Ridesharing \$350,000 WSDOT \$150,000 Metro Match	Provide a minimum of 2,500 transit pass incentives to downtown Seattle employers.
Reduce Single Occupancy Vehicles (SOV) Commuter Parking \$225,000	Encourage property owners and drivers to use the City of Seattle’s electronic parking guidance system to convert 2,000 long term commuter parking stalls to short-term parking through marketing and incentives.
Promotions for Transit and Ridesharing \$150,000	Promote new transit services and all rideshare programs to a minimum of 75,000 households and/or employees.
Teleworking/Flexible Schedules \$140,000	Develop telework and flexible schedule plans with a minimum of 15 downtown Seattle companies with the help of a telework consultant. Consultant will also conduct a feasibility study for a telework center in west Seattle.
Plan Your Commute Programs \$75,000	Provide one-on-one consultations about commute options with Plan Your Commute Events. Information and free bus ride tickets are usually given to participants.

Residential Outreach \$300,000 WSDOT \$200,000 Metro match	Conduct residential outreach targeted to neighborhoods potentially affected by construction. Outreach will encourage residents to ride the bus, carpool, bicycle, walk or eliminate trips.
Carpool Programs \$150,000 \$95,000 Metro match	Offer 2,000 incentives to new carpoolers in the SODO/Duwamish and West Seattle areas.
Promotions for Transit and Ridesharing \$167,000	Promote new transit services and all rideshare programs to a minimum of 90,000 households.
Employer Outreach \$100,000	Offer transit passes or subsidies to smaller employers (not required to participate in commute trip reduction) in SODO/Duwamish and the downtown neighborhoods (Lower Queen Anne, South Lake Union, First Hill, etc.).
Strategic Plan and Measurement \$51,612	Analyze and report on overall results of transportation demand management efforts

TDM PROGRAM TIMELINE

All TDM programs were underway by spring 2011. The program schedule is below:

TDM Table 2



TDM Program Update

During the October 2011 to February 2012 time frame, all TDM tasks were coordinated to create an aggressive, extensive TDM program in support of the October 2011 service changes and the SR99 closing for 9 days in later October. Listed below in TDM Table 3 are the TDM program updates for October 2011 to February 2012. Reports are available for all TDM tasks.

As construction has progressed and other global factors have changed travel patterns there have been some necessary changes to the implementation of TDM projects. These changes as well as difficulties in gathering data, have led King County Metro and WSDOT staff to review the methodology of all performance measurement plans. Additionally with so many programs targeting travelers in a concentrated area it can be difficult to attribute a trip reduction to a single factor. Several of the reporting tools will be revised for the next report to better align with current implementation, data availability and to ensure transparency of reporting.

Revised performance spreadsheets (and data) are available in the appendix for the following TDM tasks: Incentives for Transit and Ridesharing; Promotions for Transit and Ridesharing; Carpooling; and SOV Parking.

TDM Table 3

TDM Program Update – (October 2011 – February 2012)	
Incentives for Transit and Ridesharing	<p>Performance: As of February, 265 trips were reduced through incentives for transit and ridesharing.</p> <p>Activities: Incentives continue to be offered in the Center City for first year Passport purchases. There were 765 incentives/passes distributed from October to February 2012. Five out of the required 5 parking incentives have been awarded.</p>
Reduce Single Occupancy Vehicles (SOV) Commuter Parking	<p>Performance: Of the 200 trips targeted for reduction by the Reduce Single Occupancy Vehicles Commuter Parking task the available data shows a trip reduction of 11 trips to date. The trip reduction was estimated using the change over time in parking garage occupancy associated with weekday commuters. The parking data system went live in the fall of 2010 in the midst of the Great Recession when unemployment was high and fewer people were using commuter parking in downtown. The initial data was a low point in parking use as a result of the recession. Using this as a baseline makes the subsequent data collected during the economic recovery seem like new growth rather than a return of commuters parking in downtown.</p> <p>This makes it difficult to determine the true benefit of this task. A pre-recession baseline of parking data would provide a more complete understanding of the parking trends in downtown Seattle and the effect of this task. Unfortunately garages are reluctant to share additional information that would enable more accurate trip reduction estimates because they consider the information to be proprietary to their business.</p> <p>Activities: SDOT conducted intercept surveys with over 550 e-Park garage customers to identify awareness of e-Park program and provide guidance to future marketing efforts. E-Park website visits at www.seattle.gov/ePark increased over 100% in response</p>

to the holiday marketing campaign.
SDOT also began to invite garages to participate in the Phase 2 expansion of the e-park program and negotiate garage agreements.

<p>Promotions for Transit and Ridesharing</p>	<p>Performance: The Promotions trip reduction target of 1,100 has been exceeded with 4,784 trips reduced. Activities: Conducted major promotional campaign to promote transit and other commute options during October SR 99 closure. Promotional activities included: radio and internet ads; residential mailers with Metro tickets; website refinement; and ads on selected Metro shelters.</p>
<p>Teleworking/Flexible Schedules</p>	<p>Performance: WSDOT and King County Metro staff are revising the performance measurement methodology based on changes to data availability and project approach. Updated information will be included in the next report. Activities: Metro’s consultant conducted outreach in conjunction with AWW closure in September 2011 by sending emails to 180 CTR employers. Followed up with 4 companies as a result of this outreach. Gave telework technology presentation at Commute Seattle event.</p>
<p>Plan Your Commute</p>	<p>Performance: WSDOT and King County Metro staff are revising the performance measurement methodology based on changes to data availability and project approach. Updated information will be included in the next report. Activities: Work on this task was completed in June 2011, 83 of the 36 required events were held and more than 15 thousand pledges in Rideshare Online, more than exceeding the 1,800 required. Benefits of this task are on going.</p>
<p>Residential Outreach</p>	<p>Performance: WSDOT and King County Metro staff are revising the performance measurement methodology based on changes to data availability and project approach. Updated information will be included in the next report. Activities: The West Seattle In Motion project launched to the public in July. The four In Motion projects, West Seattle, South Park, White Center, and Georgetown In Motion programs actively engaged participants on a continual basis to encourage them to reduce their driving. We performed incentive fulfillment and worked with local partners to hold informative events. In October leading up to the viaduct closure, special efforts were made to encourage reduced driving including increased ORCA distribution and messaging.</p>
<p>Carpool Program</p>	<p>Performance: The Carpool target of 370 trips reduced was exceeded with 375 trips reduced. Activities: The \$77 “Get you there” in ended in December 2011 and was replaced by a \$50 carpool/vanpool promotion in January 2012. Continued promotions to the public, employers, and worksites.</p>

Employer Outreach	<p>Performance: WSDOT and King County Metro staff are revising the performance measurement methodology based on changes to data availability and project approach. Updated information will be included in the next report.</p> <p>Activities: Sent 3000 mailers to businesses in the AWW travel shed informing them of commute options and the October 2011 SR 99 closure. Responded to employer inquiries following AWW postcard mailing and assisted employers in determining and implementing the most effective transportation program. Worked with existing Passport companies to promote participation at their worksite.</p>
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TDM PERFORMANCE

Each TDM task has a trip reduction target set by contract (GCA 5865). At the beginning of the contract, Metro worked with WSDOT and SDOT staff to develop the methodology to measure progress in meeting the trip reduction targets. The factors used to measure progress in the AWW TDM program used past performance and other factors to estimate performance.

As construction has progressed and other global factors have changed travel patterns there have been some necessary changes to the implementation of TDM projects. These changes as well as difficulties in gathering data, have led King County Metro and WSDOT staff to review the methodology of all performance measurement plans. Additionally with so many programs targeting travelers in a concentrated area it can be difficult to attribute a trip reduction to a single factor. Several of the reporting tools will be revised for the next report to better align with current implementation, data availability and to ensure transparency of reporting.

The mitigation is a collaboration of efforts to encourage people to meet their travel needs without driving alone. All the TDM elements are implemented in an environment where many different actions interact including but not limited to other promotions, changes in bus service, and construction activities. Broader factors like the price of gas, seasonal effects, unemployment, and other economic factors, can also influence a traveler's choice.

The majority of TDM activities began in spring 2011. By July 2011, all TDM activities had begun and the collection of the performance data had started. The AWW TDM teams worked together to implement an aggressive outreach effort for October 2011 to promote increases in service and the AWW 9 day closure options.

Two TDM Tasks have met their trip reduction targets:

- Carpool: with a trip reduction target of 370 trips, the Carpool task has reduced 375 trips so far; and
- Promotions: with a trip reduction target of 1,100 trips, the Promotions of Transit and Ridesharing has reduced 4,784 trips so far.

To date, of the 4,130 trips targeted for reduction, over 5,435 trips have been converted. This does not include trip reductions associated with: Plan Your Commute; Residential Outreach; Employer Outreach and Telework task whose performance methodology is being revised.

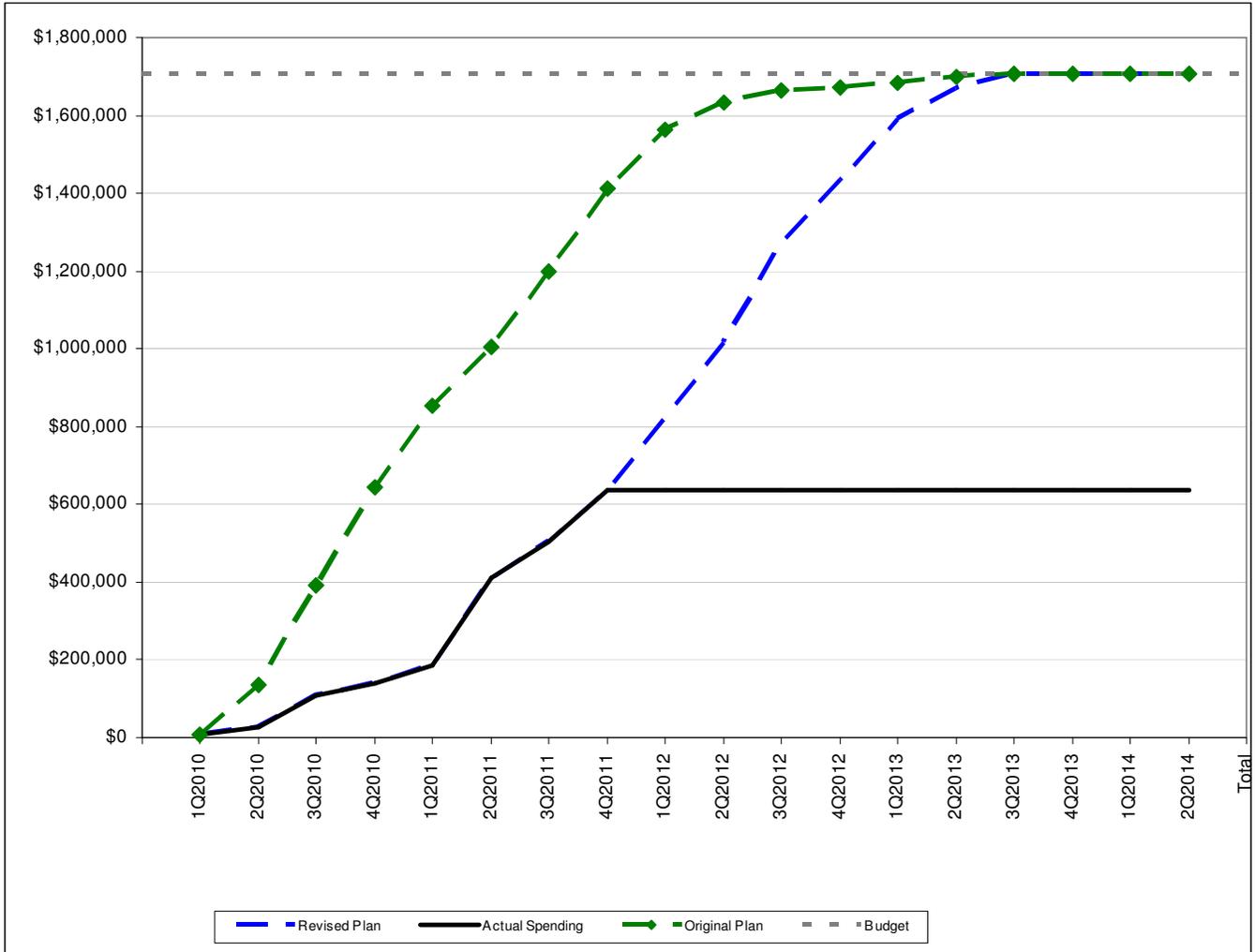
TDM Impacts: Table 4.

Activity	Trip Reduction (round trips reduced daily)		Individual Metrics		
	Target for entire program period	Current performance	Description	Target for entire program period	Current performance
Promotions for Transit and Ridesharing	1,100	4,784	Households / Employees	165,000	154,934
Incentives for Transit or Ridesharing	520	273	Transit Pass Incentives	2,500	3,876
			Incentives to Garages	5	5
Carpool Program	370	375	Carpool Incentives	2,000	3,457
Reduce Single Occupancy Vehicles (SOV) Commuter Parking	200	11	Net Reduction of Downtown Long- Term Parking Spaces	2,000	
Residential Outreach	390	<div style="border: 1px solid black; padding: 10px;"> WSDOT and King County Metro staff are revising the methodology for performance measurement of these activities based on changes to data availability and project approach. Updated information will be included in the next service period performance report. </div>			
Plan Your Commute	740				
Teleworking	710				
Employer Outreach	100				
TOTAL	4,130	5,435			

TDM BUDGET AND EXPENDITURE – FEBRUARY 2012

The estimated cash flow as of February 2012 by quarter is listed in the table below.

TDM Table 5



Task: Promotions for Transit and Ridesharing
Task Lead: Kathy Koss

Target*	
1,100	Trips Reduced*
165,000	Households / Employees

Weekday Ridership, SPR 2009 through FALL 2013																WSDOT Analysis												
Pathway / Route	Baseline			Targeted Promotions by Pathway or Route and Service Period												Annualized Trip Reductions									Total Round Trips Reduced			
	SPR 2009	SUM 2009	FALL 2009	SPR 2010	SUM 2010	FALL 2010	SPR 2011	SUM 2011	FALL 2011	SPR 2012	SUM 2012	FALL 2012	SPR 2013	SUM 2013	FALL 2013	SPR 2010	SUM 2010	FALL 2010	SPR 2011	SUM 2011	FALL 2011	SPR 2012	SUM 2012	FALL 2012	SPR 2013	SUM 2013	FALL 2013	SPR 2010 through FALL 2013
Pathway I - SODO / Georgetown	8,260	8,150	7,700	7,540	7,400	7,069	10,571	9,629	8,760							0	0	0	400	224	200							824
Pathway J - West Seattle	22,710	22,140	21,860	22,140	21,660	21,374	22,018	26,422	26,970							0	0	0	0	649	966							1,615
Pathway A - Ballard / Magnolia	19,250	19,470	19,120	18,890	18,610	18,394	19,027	17,732	17,540							0	0	0	0	0	0							0
Pathway B - Aurora / Fremont	29,640	29,570	27,120	28,280	29,460	28,529	29,147	34,410	34,380							0	0	239	0	734	1,372							2,345
																												0
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*The transit service promotion may be measured in the form of pathways rather than individual routes. These pathways include transit routes with added service and other transit routes in the area of promotion. The added transit service will be promoted but we can't distinguish between the effects of the promotion vs the addition of service so their performance is measured jointly. However not all performance of the added transit service is represented here since measurements are only shown for periods when promotions were implemented. There is no established trip reduction target for the addition of transit service. The target is a combination for all promotions so all promoted transit pathways or routes will be jointly measured against the target. We expect to exceed this target since the measurement of performance for added transit routes is included in the analysis but the target does not include expectations of the added transit services to measure against. The comparison of the performance against the target is not valid in this case. Target is also the total (1,100 trips) of the contract elements for downtown (520 trips) and south end (580 trips).

Total **4,784**

$$\text{Annualized Trips Reduced} = \frac{(\text{Average Daily Ridership in Service Period} - \text{Baseline Daily Ridership}) \times \text{Number of days in Service Period}}{2 \text{ trips per day} \times 254 \text{ Weekdays Per Year}}$$

	SPR 2011	SUM 2011	FALL 2011	XXX 20XX	XXX 20XX	XXX 20XX	Total
Households / Employees Reached	75,850	4,084	75,000				154,934

Target* Check	
Trip Reduction Target Reached*	YES
Households / Employees Target Reached	NO

Task: Carpool Program
Task Lead: Tom Devlin

Target	
370	Trips Reduced
2,000	Carpool Incentives

	Service Period	Reported Trips by Mode							Commute Days in Service Period	Carpool Incentives Distributed
		Carpool	Bus	Bike/Walk	Vanpool / Vanshare	Train	Telework			
Program Period (Service Change, Year)	SPR 2010									
	SUM 2010									
	FALL 2010 / 2011									
	SPR 2011	45,595			131,127			88	1,216	
	SUM 2011	65,174			92,793			77	733	
	FALL 2011 / 2012	82,423			97,016			96	1,508	
	SPR 2012									
	SUM 2012									
	FALL 2012 / 2013									
	SPR 2013									
	SUM 2013									
	% of Reported Trips Resulting in Trip Reductions by Mode		50%	97%	100%	88%	98%	100%	Total	261
Participants Newness to Alternate Mode by Type*		36%	36%	36%	57%	36%	36%			
Total Trip Reduction (see formula below)		67	0	0	308	0	0	375		

Target Check	
Trip Reduction Target Reached	YES
Carpool Incentives Target Reached	YES

Total Trip Reduction =

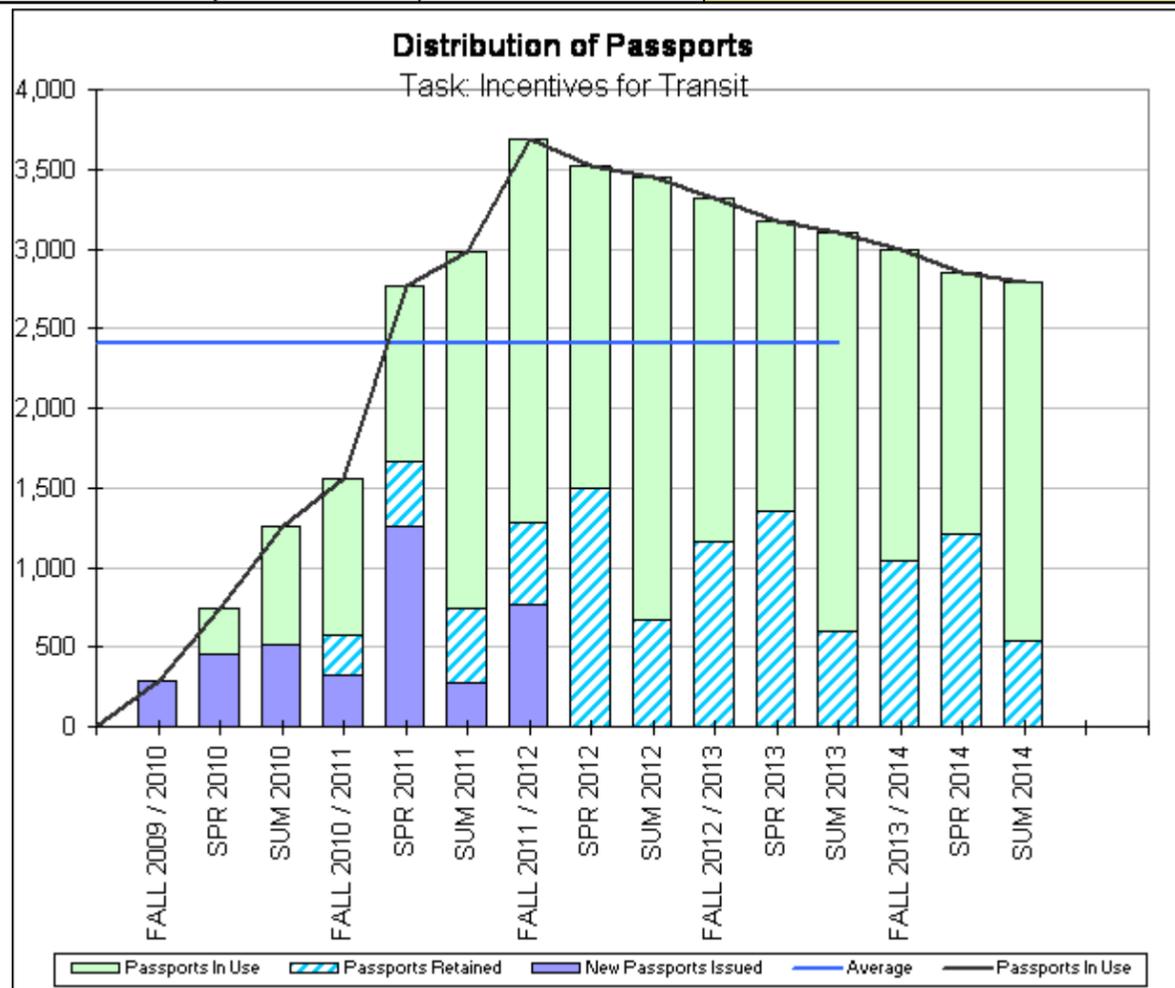
$$\left(\frac{\text{Total Reported One Way Trips by Mode Type}}{\text{Commute Days During Program Period}} \right) * \left(\frac{1 \text{ round trip}}{2 \text{ one way trips}} \right) * \left(\% \text{ of Reported Trips Resulting in Trip Reductions by Mode Type} \right) * \left(\% \text{ of Participants Newness to Alternate Mode by Type 0 - 6 months} \right)$$

* Participants newness to alternate mode by type was derived from data King County Metro collected. The vanpool percentage was based on King County Metro's vanpool entry survey (sent to all new vanpool participants).

Task: Incentives for Transit
Task Lead: Kathy Koss

Target	
520	Trips Reduced
2,500	Transit Pass Incentives
5	Garage Incentives

ORCA Passport	
Alternate Mode Share (transit and vanpool) for Passport Sites	44.0%
Alternate Mode Share for Non-Passport Sites	33.0%
Retention of Newly Distributed Passports	90.0%



Service Period	Garage Incentives	New Passports Issued	Passports Expiring	Passports Retained	Passports In Use	Average Passports In Use
FALL 2009 / 2010		288			288	2,407
SPR 2010		453			741	
SUM 2010		518			1,259	
FALL 2010 / 2011		321	288	259	1,551	
SPR 2011		1,257	453	408	2,763	
SUM 2011		274	518	466	2,985	
FALL 2011 / 2012	5	765	580	522	3,692	
SPR 2012			1,665	1,498	3,526	
SUM 2012			740	666	3,452	
FALL 2012 / 2013			1,287	1,158	3,323	
SPR 2013			1,498	1,348	3,173	
SUM 2013			666	600	3,106	
FALL 2013 / 2014			1,158	1,043	2,991	
SPR 2014			1,348	1,214	2,856	
SUM 2014			600	540	2,796	
Total	5	3,876				

Average Daily Round Trips Reduced Through Distribution of New Passports

$$= \left(\left(\begin{matrix} \text{Alt. Mode Share} \\ \text{for Passport Sites} \\ \text{During Program} \end{matrix} \right) - \left(\begin{matrix} \text{Alt. Mode Share} \\ \text{for non-Passport Sites} \\ \text{During Program} \end{matrix} \right) \right) * \left(\begin{matrix} \text{Average \# of Passports} \\ \text{In Use During Program} \end{matrix} \right)$$

$$= ((44.0\%) - (33.0\%)) * (2,407) = \mathbf{265}$$

Target Check	
Trip Reduction Target Reached	NO
Transit Pass Incentives Target Reached	YES

Interpreting the Hourly Pathway Summaries

Pathway
Each page is a report of one pathway, defined in the title.

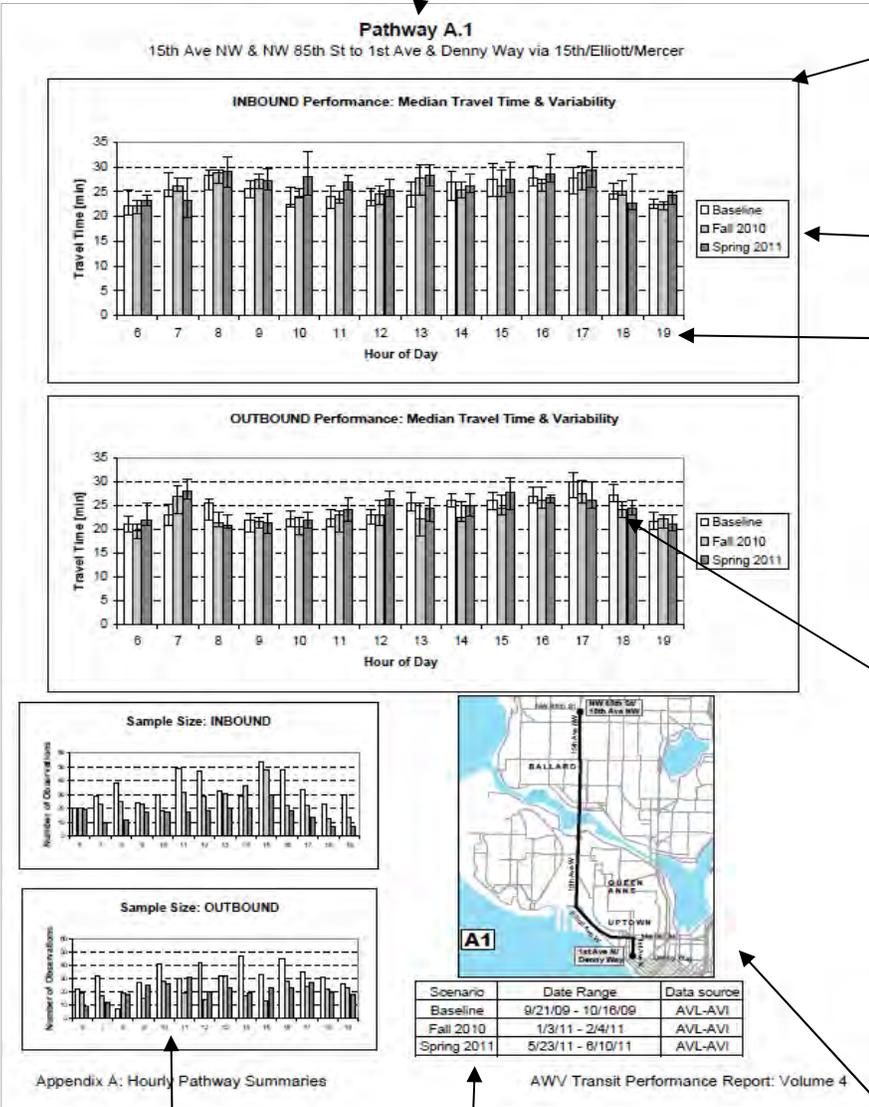
Direction
Most pathways have two directions, either inbound/outbound or northbound/southbound. Inbound trips generally head into the Seattle CBD, and outbound trips generally originate in the CBD. Separate charts are provided for the two directions.

Scenario
Long-term changes in transit performance are illustrated by selecting various scenarios for side-by-side comparison.

Time-of-Day
Travel time data is sliced into hour-interval segments for each pathway and direction, and the median travel time is calculated for each hour interval between 5:00 and 19:59 (5:00am - 7:59pm). The hour interval for each trip is determined by the hour of day when the trip passes the end point of the pathway.

Variability Factors
In addition to the median travel time shown in the bar charts, a variability indicator is shown with whiskers extending above and below each bar. The upper whisker shows the 75th percentile travel time measured for the hour interval, and the lower whisker shows the 25th percentile travel time. A larger spread between the 25th and 75th percentile indicates a larger variation in travel times. In other words, 50% of the observed trips fit within this range.

Pathway Map
The map shows the detailed route of the pathway being reported, as well as the start and end points. In some cases, the start or end points are different for inbound/outbound directions, for example for trips using the Seneca and Columbia AWW ramps.

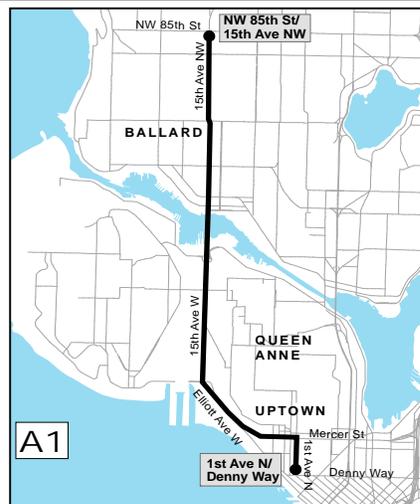
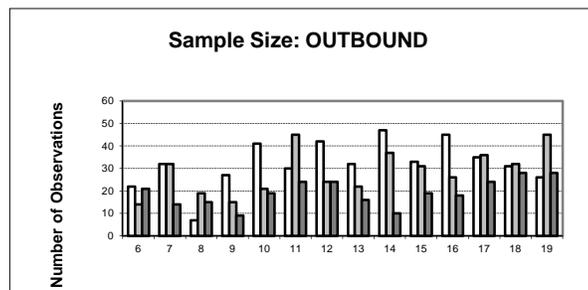
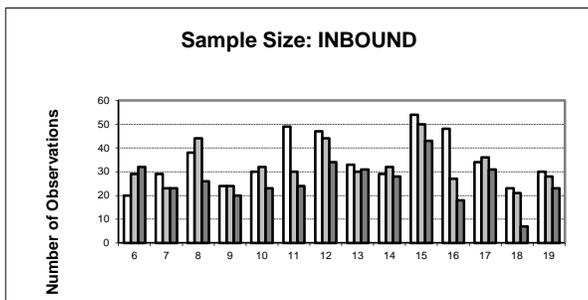
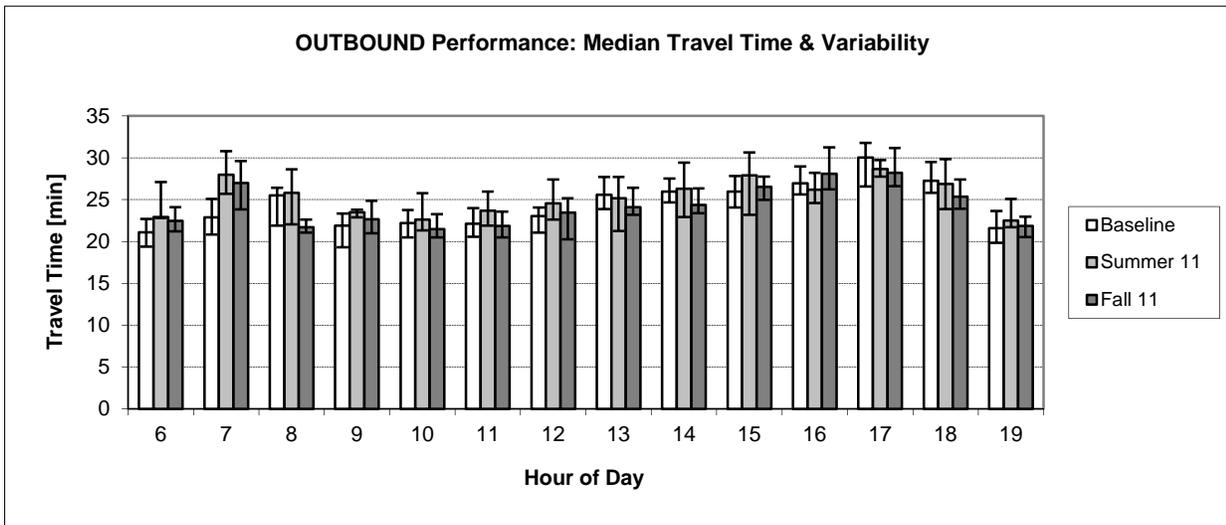
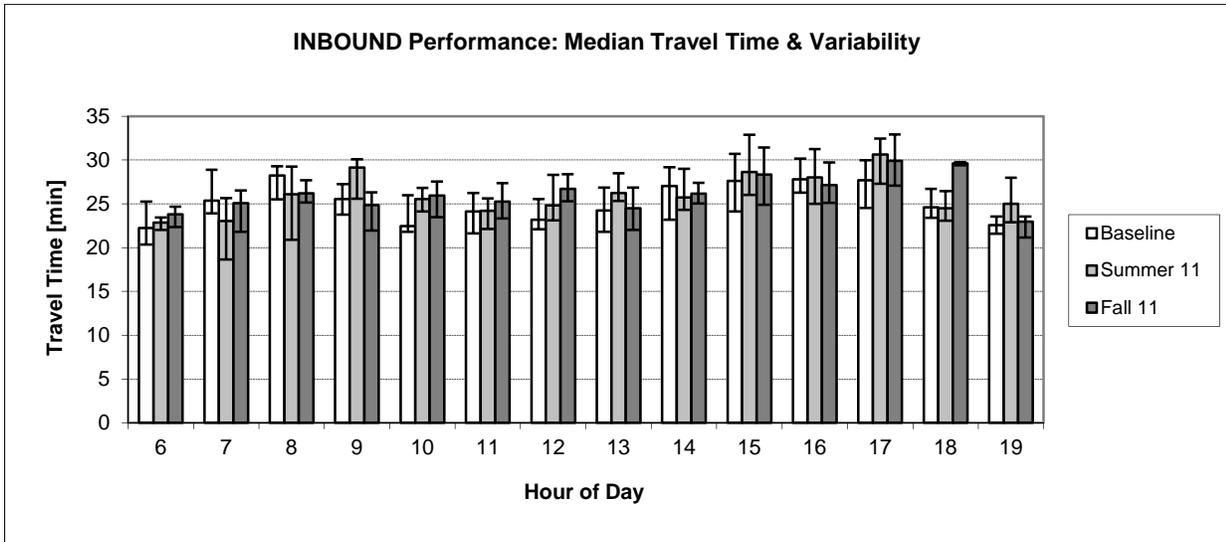


Sample Size Charts
These charts show the number of observations used within each slice of travel time data. These charts provide an indication of the quality and relevancy of the data that is presented in the larger charts.

Scenario Descriptions
Details about the scenarios being reported are shown in the table, including the date ranges and data source used (AVL or AVI).

Pathway A.1

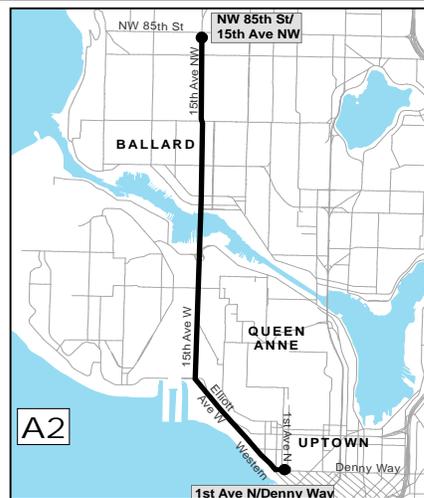
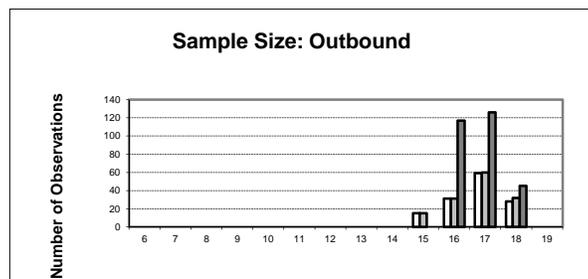
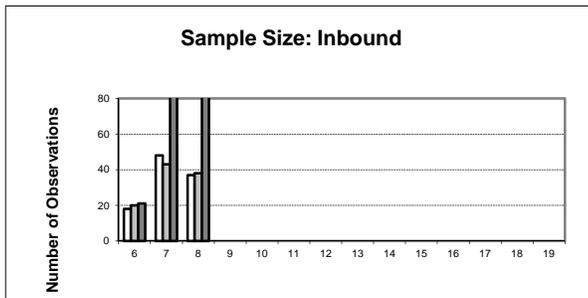
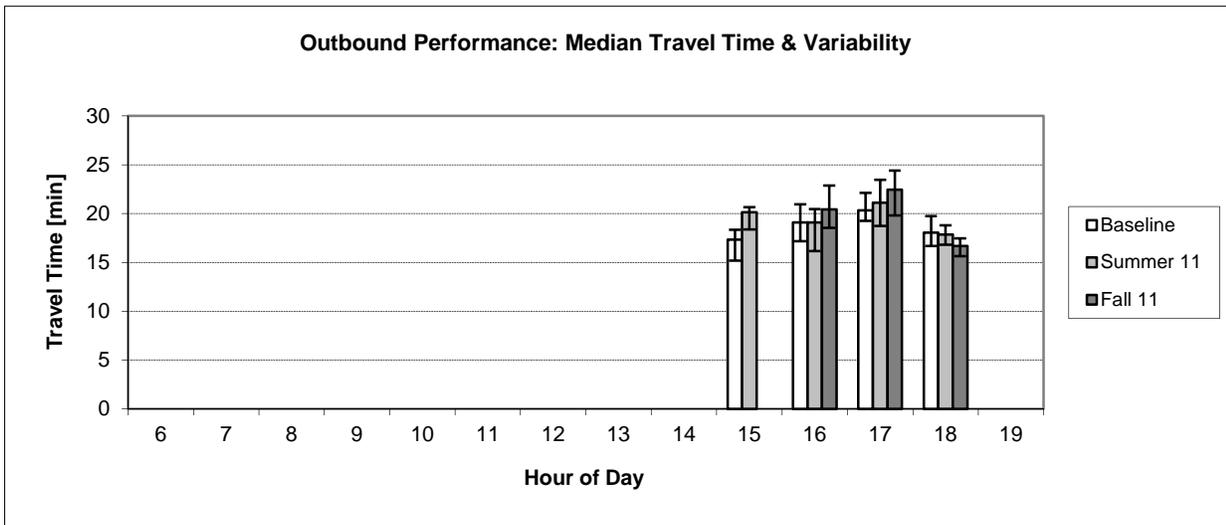
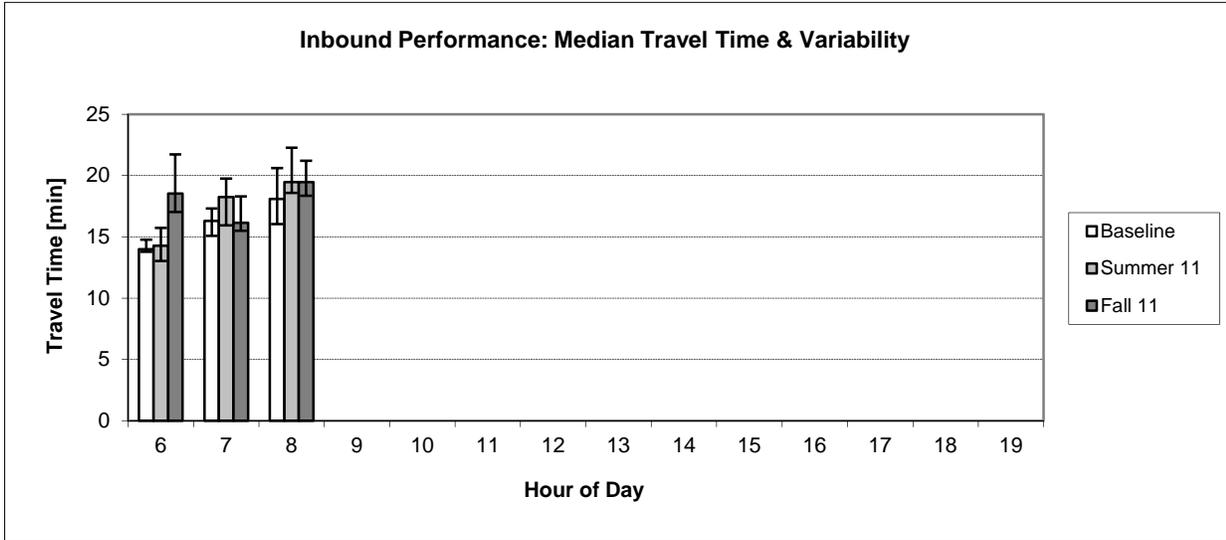
15th Ave NW & NW 85th St to 1st Ave & Denny Way via 15th/Elliott/Mercer



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Summer 11	9/6/11 - 9/30/11	AVL-AVI
Fall 11	10/31/11 - 11/18/11	AVL-AVI

Pathway A.2

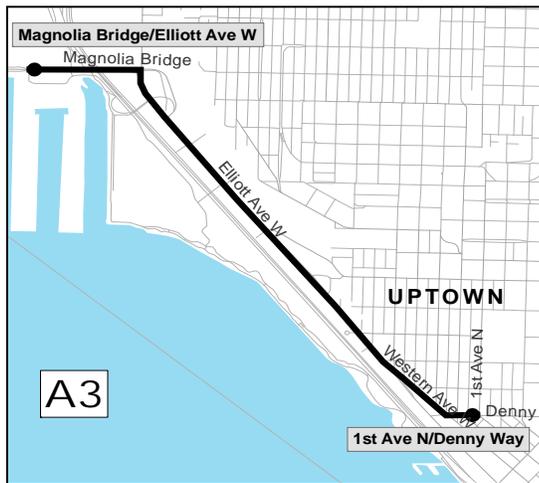
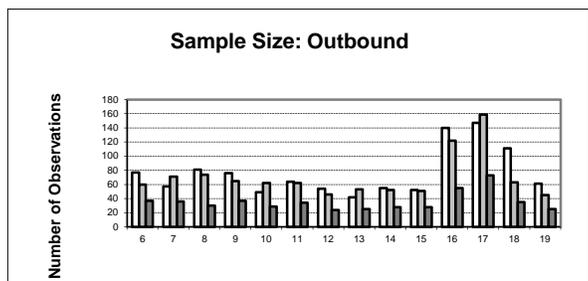
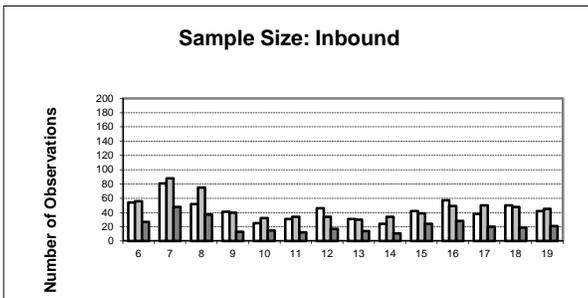
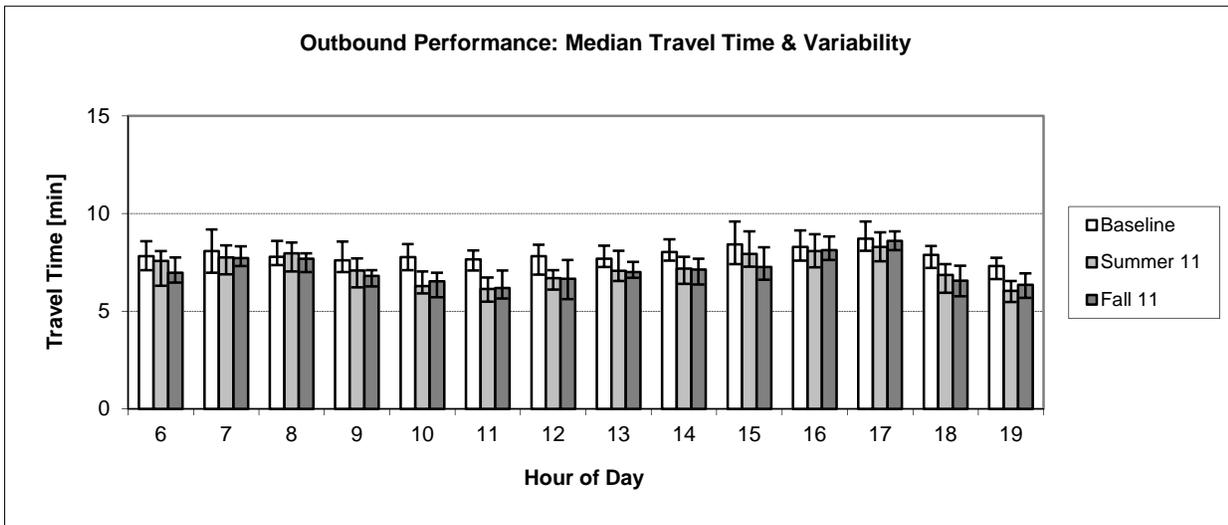
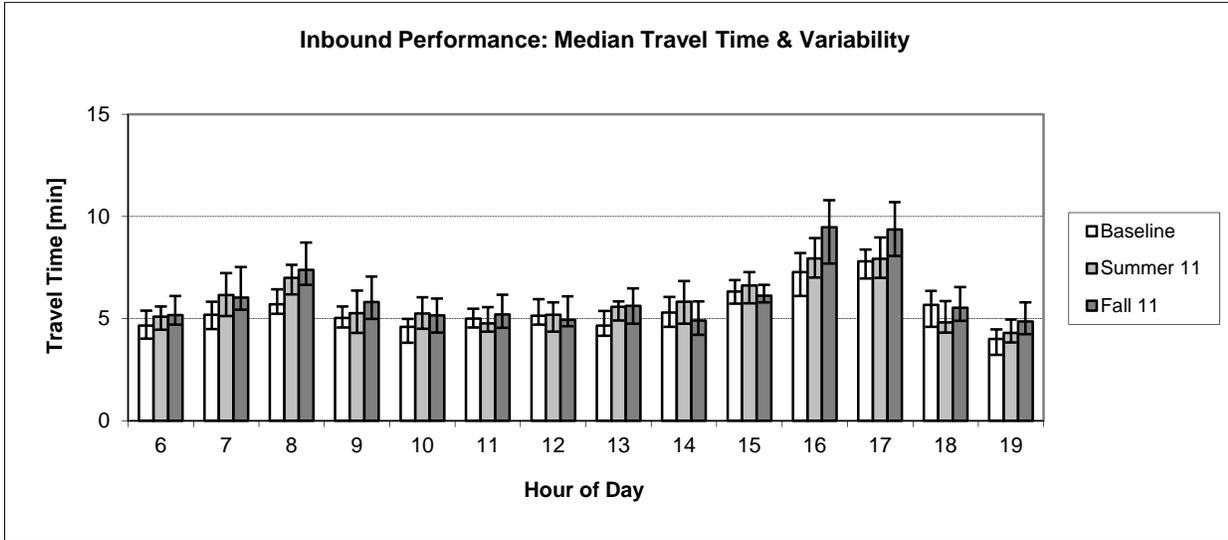
15th Ave NW & NW 85th St to 1st Ave & Denny Way via 15th/Elliott/Western (Peak Only)



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Summer 11	9/6/11 - 9/30/11	AVL-AVI
Fall 11	10/31/11 - 11/18/11	AVL-AVI

Pathway A.3

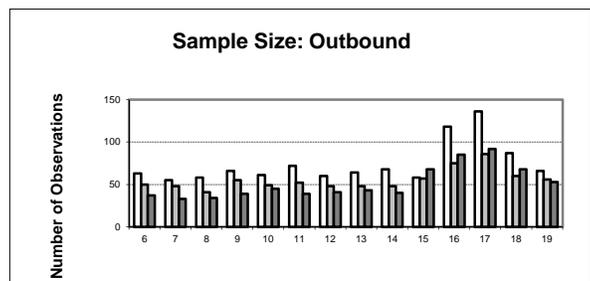
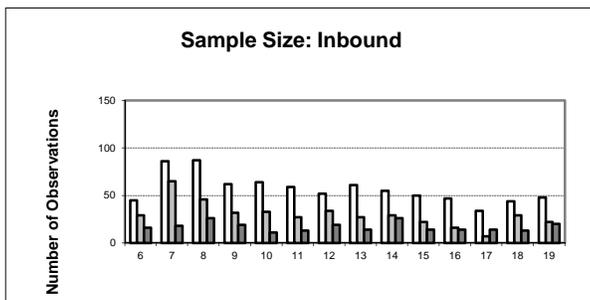
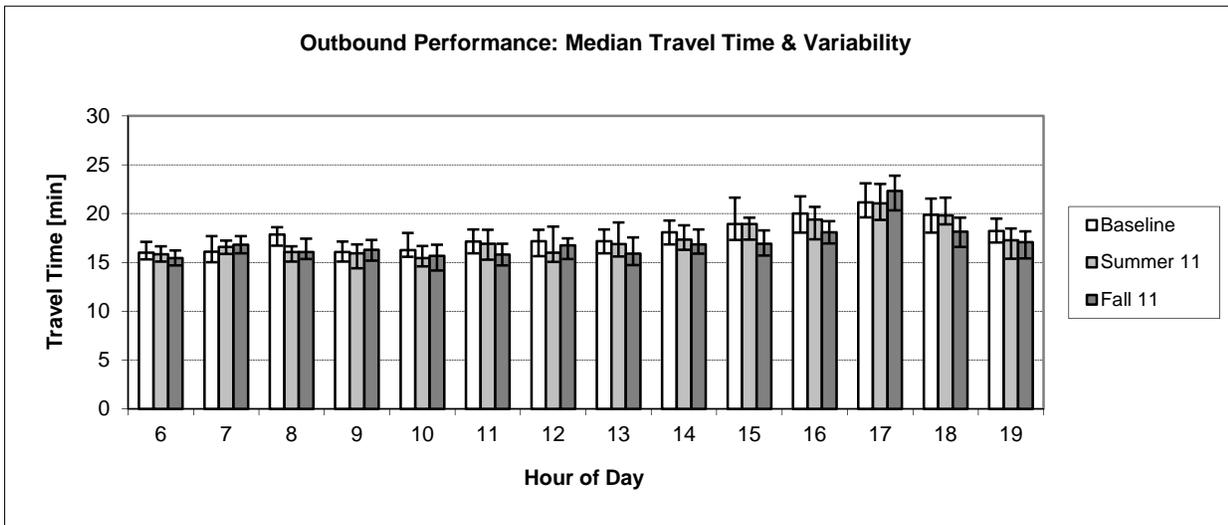
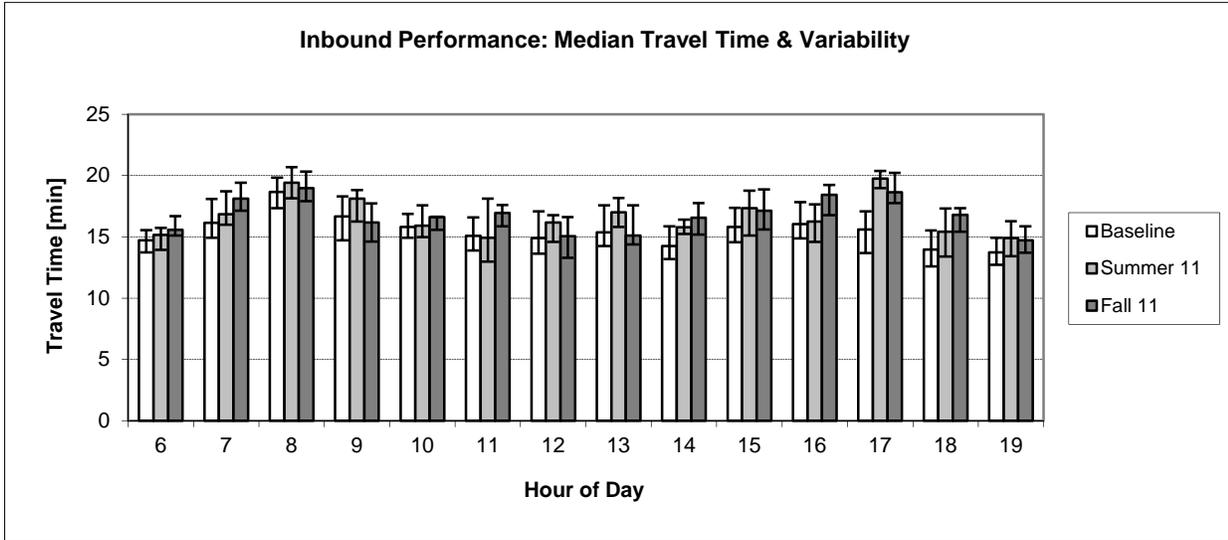
Magnolia Bridge to 1st Ave & Denny Way via Elliott/Western



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Summer 11	9/6/11 - 9/30/11	AVL-AVI
Fall 11	10/31/11 - 11/18/11	AVL-AVI

Pathway B.1

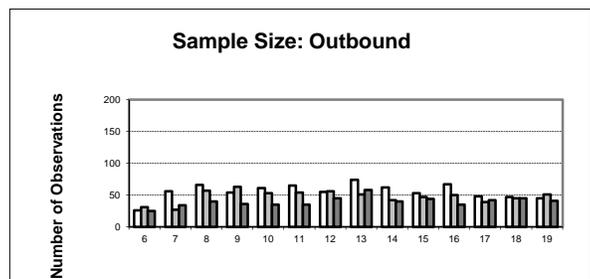
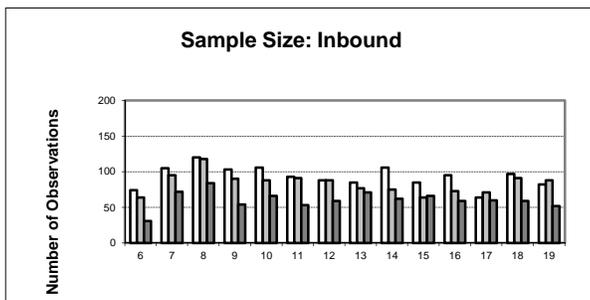
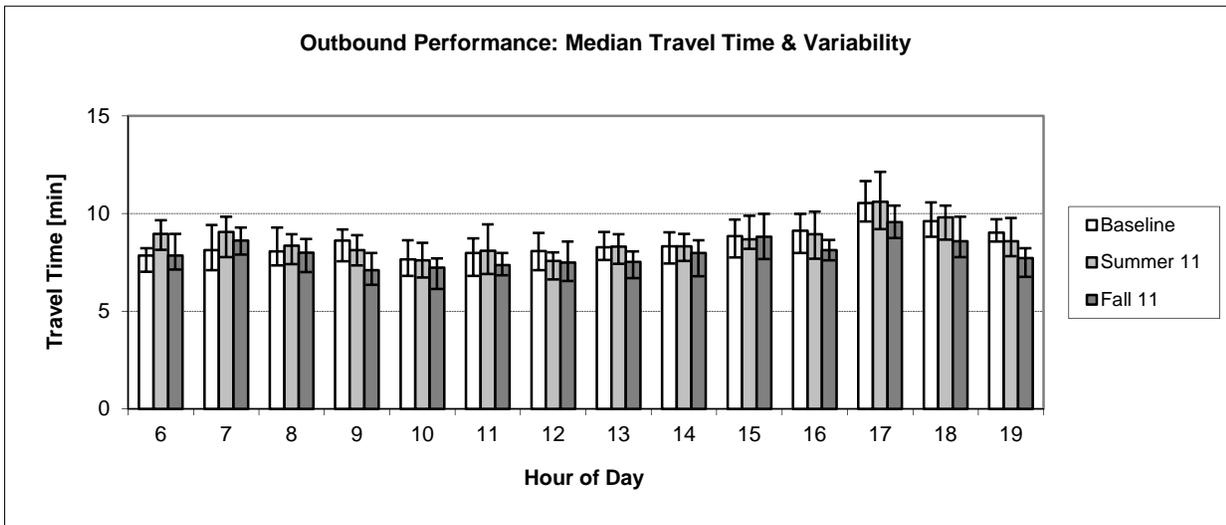
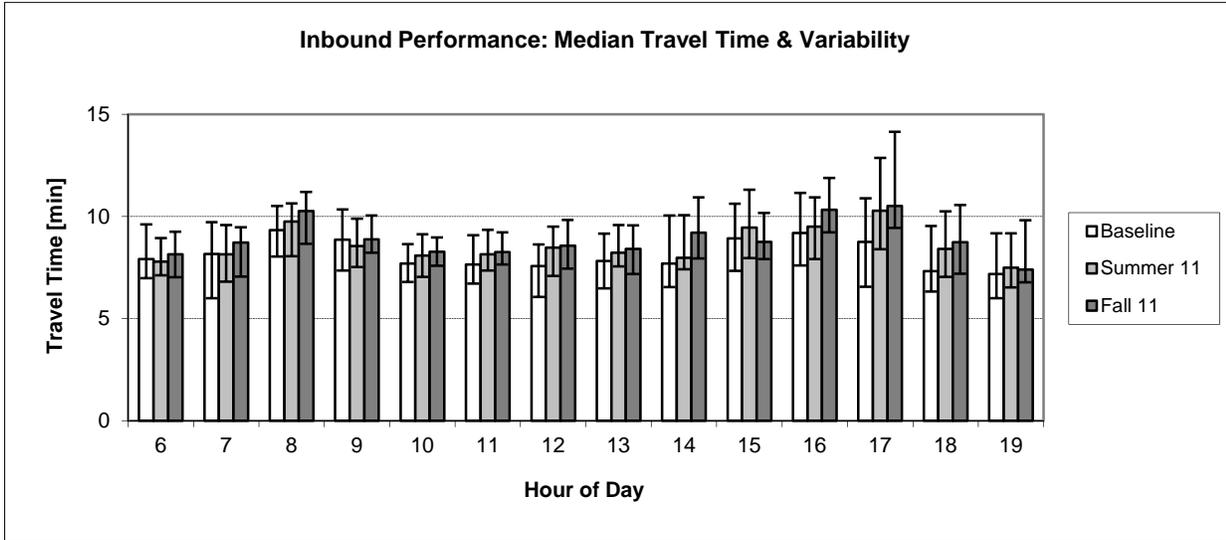
Aurora Ave N & N 85th St to 3rd Ave & Battery St via Aurora Ave



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Summer 11	9/6/11 - 9/30/11	AVL-AVI
Fall 11	10/31/11 - 11/18/11	AVL-AVI

Pathway B.2

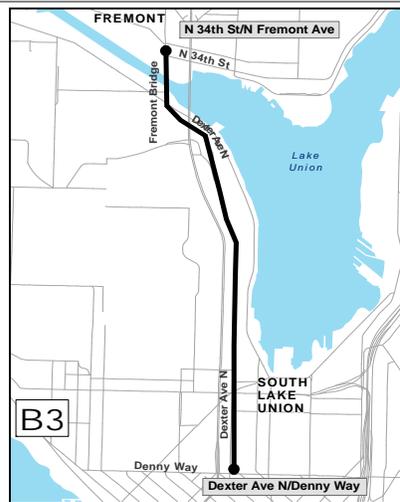
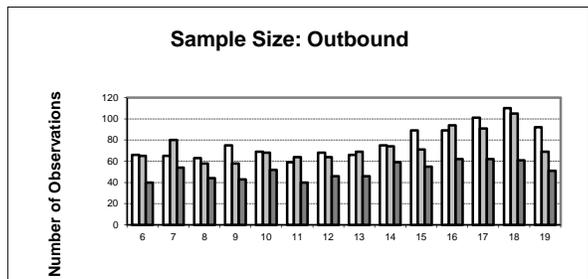
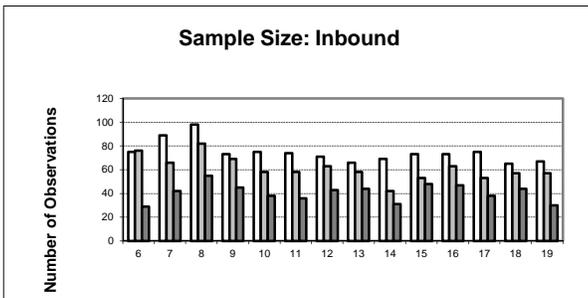
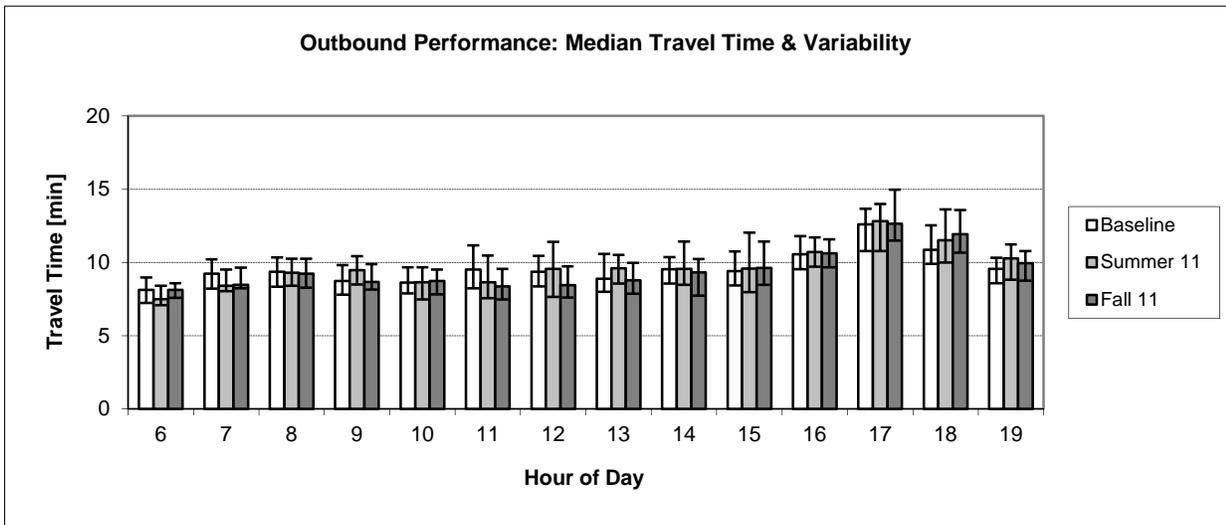
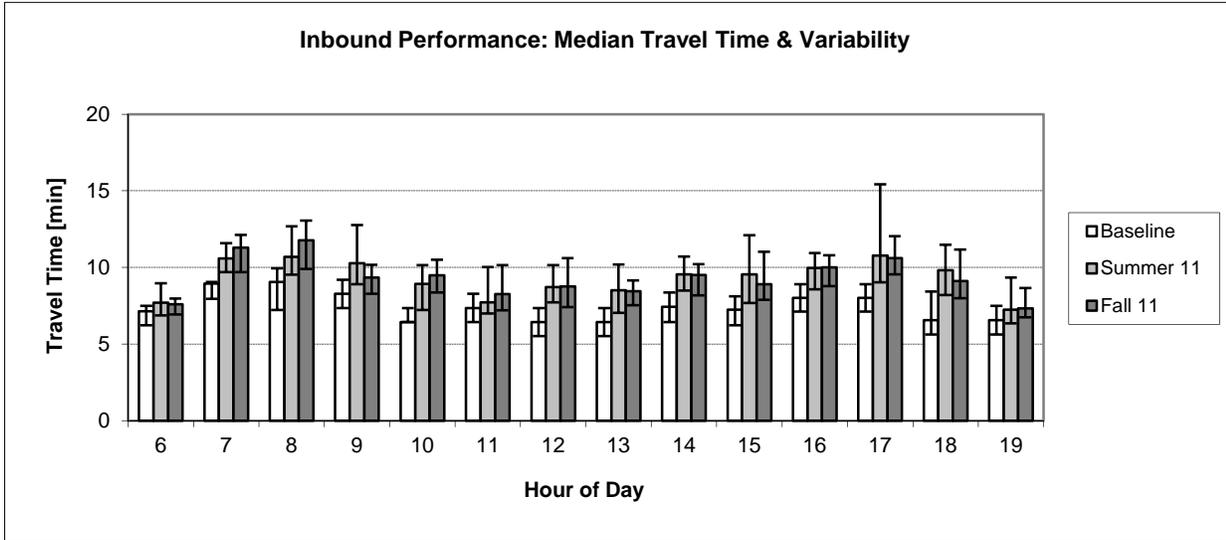
Bridge Way & N 38th St to 3rd Ave & Battery via Aurora Ave



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Summer 11	9/6/11 - 9/30/11	AVL-AVI
Fall 11	10/31/11 - 11/18/11	AVL-AVI

Pathway B.3

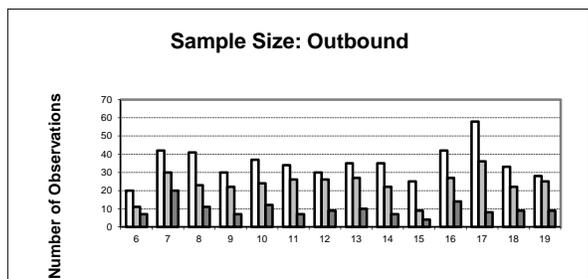
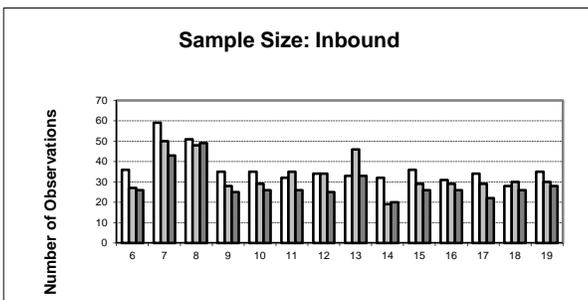
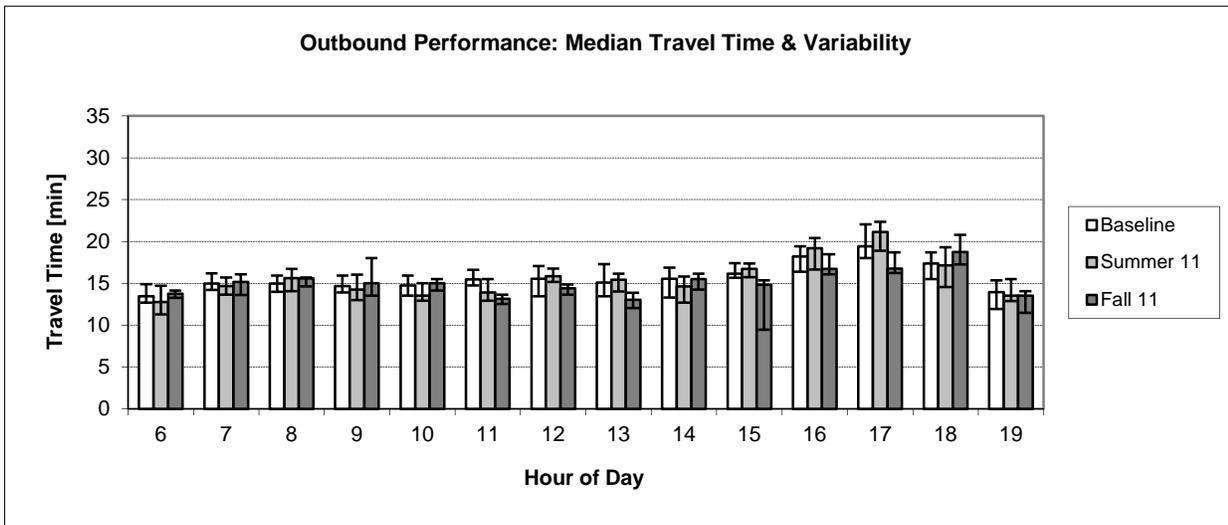
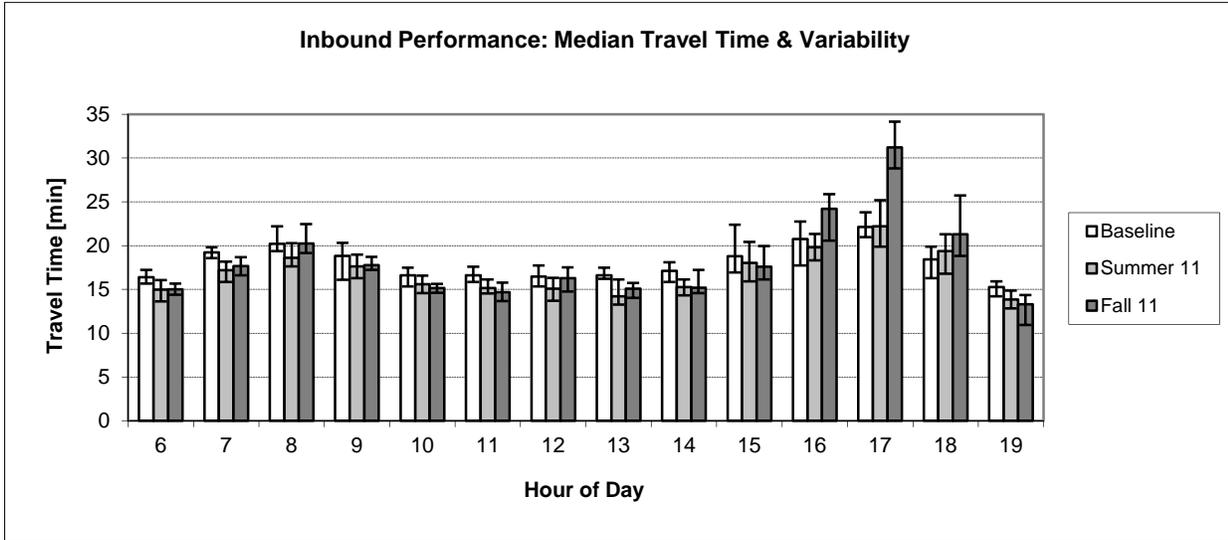
Fremont Ave N & N 34th St to Denny Way & Dexter Ave via Dexter



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL
Summer 11	9/6/11 - 9/30/11	AVL
Fall 11	10/31/11 - 11/18/11	AVL

Pathway B.4

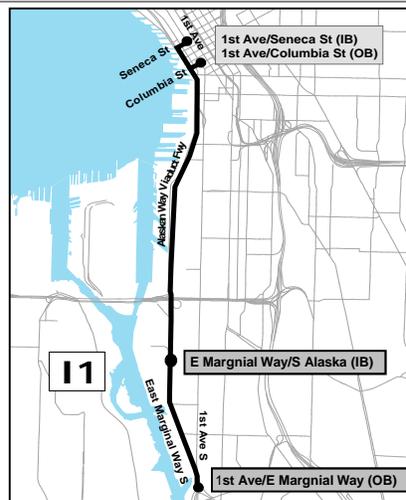
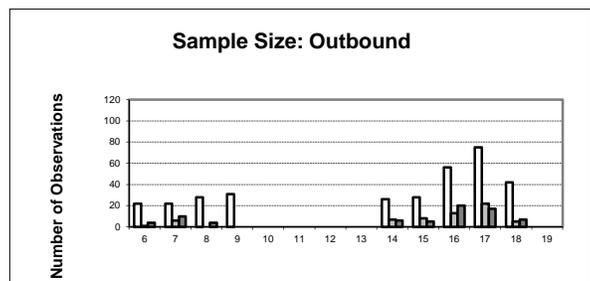
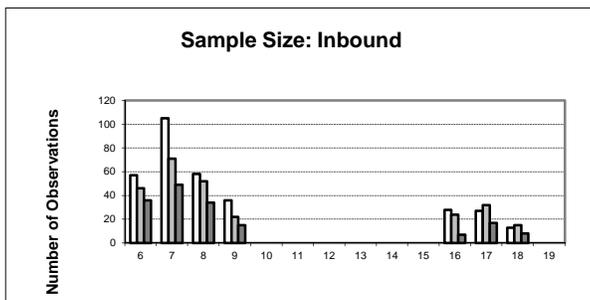
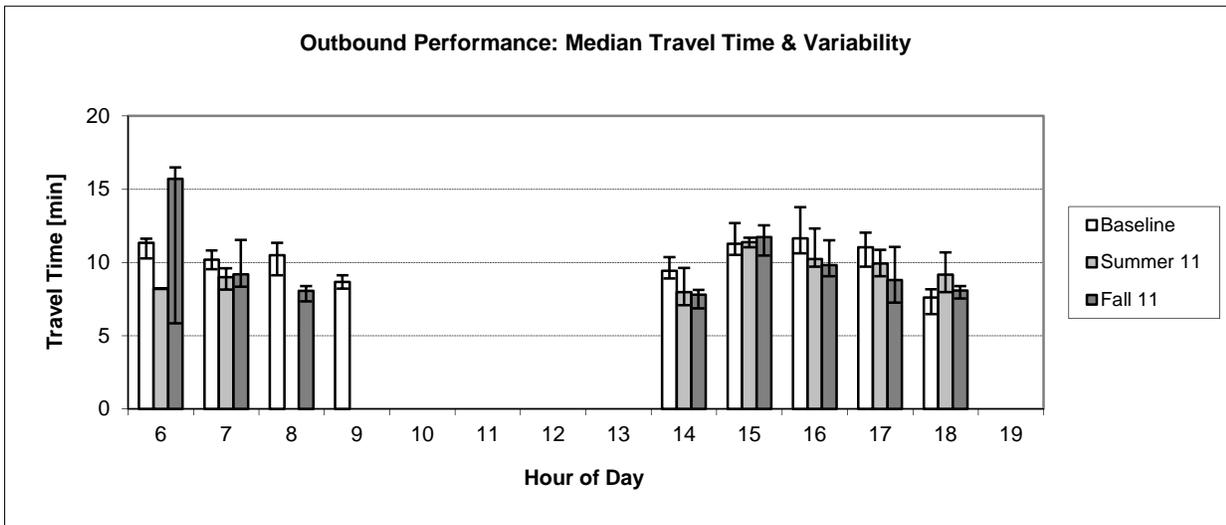
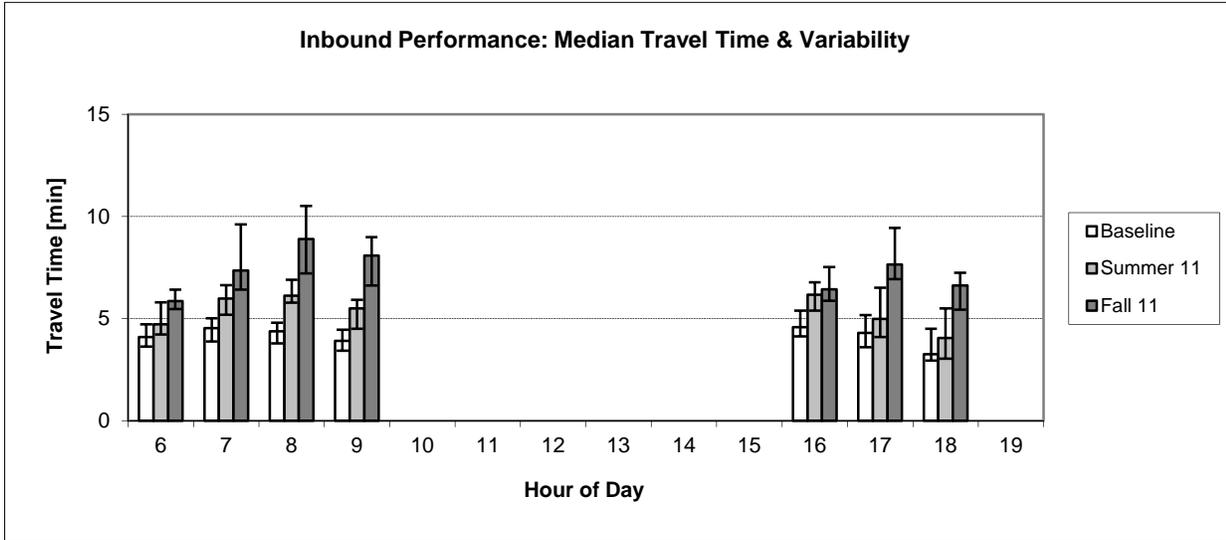
Ballard Bridge to Denny Way & Westlake Ave via Nickerson/Westlake



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL
Summer 11	9/6/11 - 9/30/11	AVL
Fall 11	10/31/11 - 11/18/11	AVL

Pathway I.1

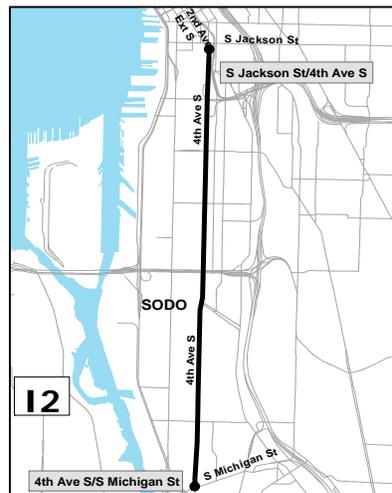
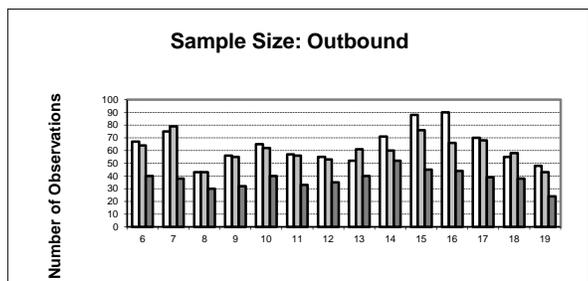
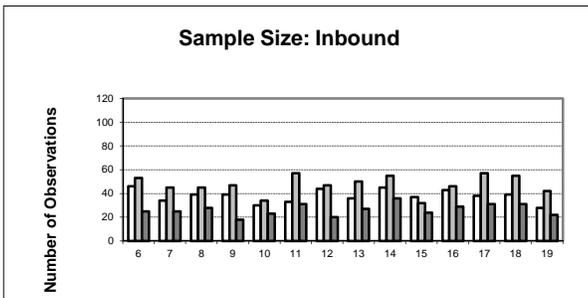
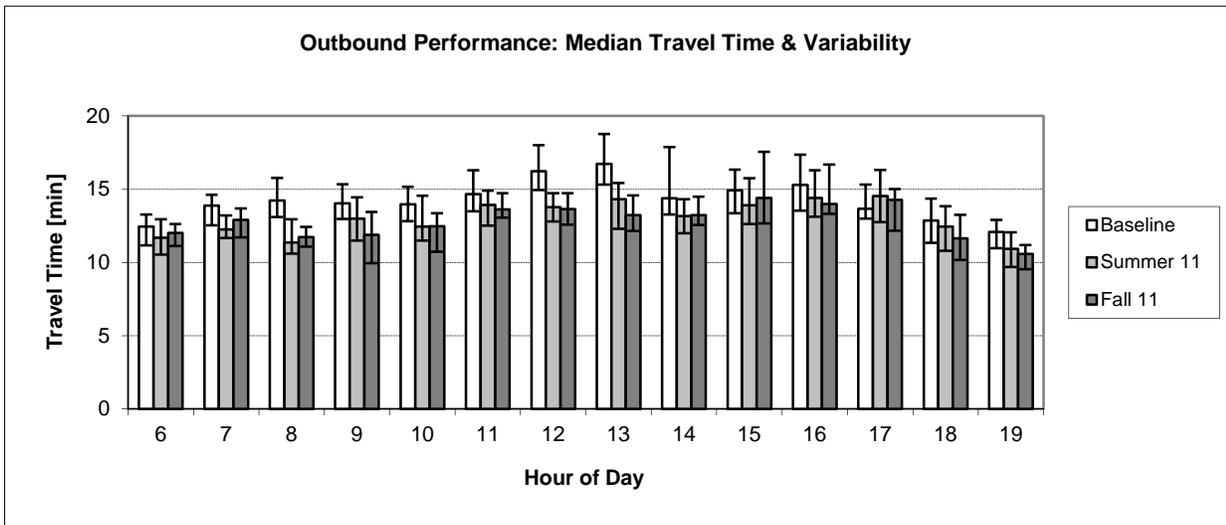
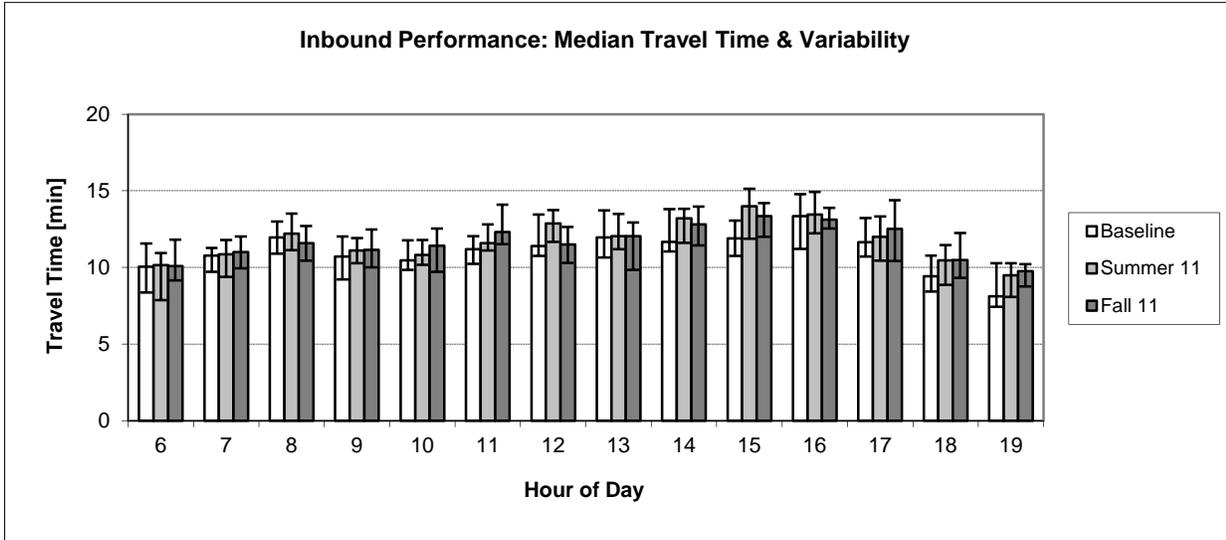
East Marginal Way & 1st Ave/Alaska St to 1st Ave & Seneca/Columbia St via Marginal/AWV



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Summer 11	9/6/11 - 9/30/11	AVL-AVI
Fall 11	10/31/11 - 11/18/11	AVL-AVI

Pathway I.2

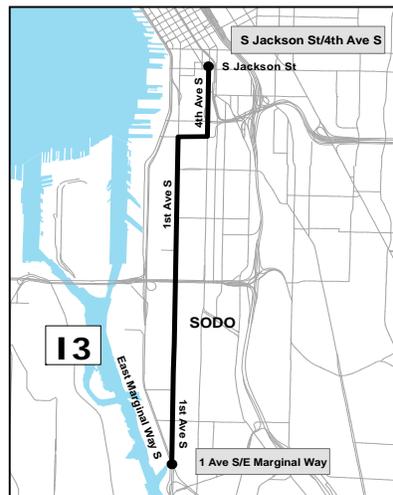
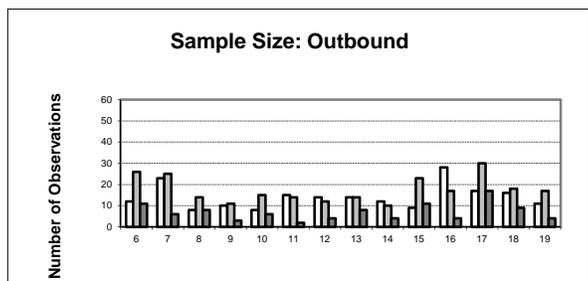
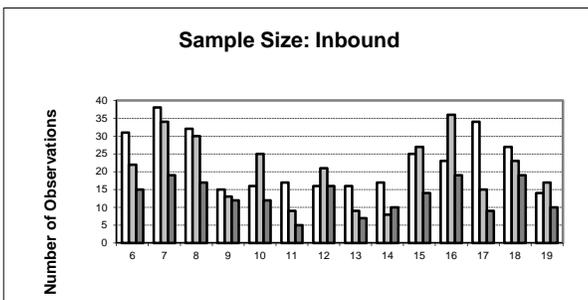
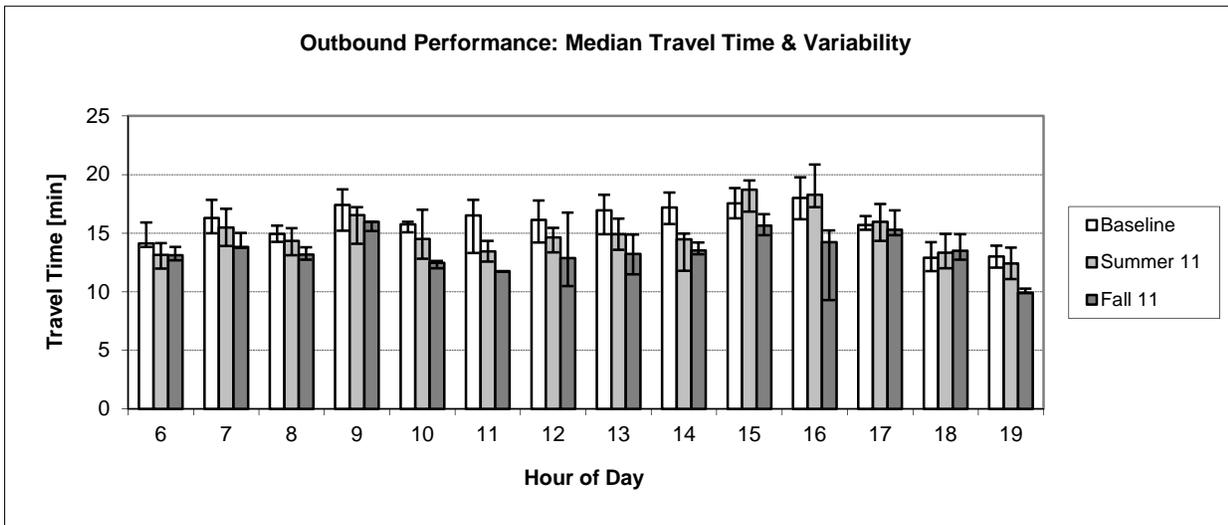
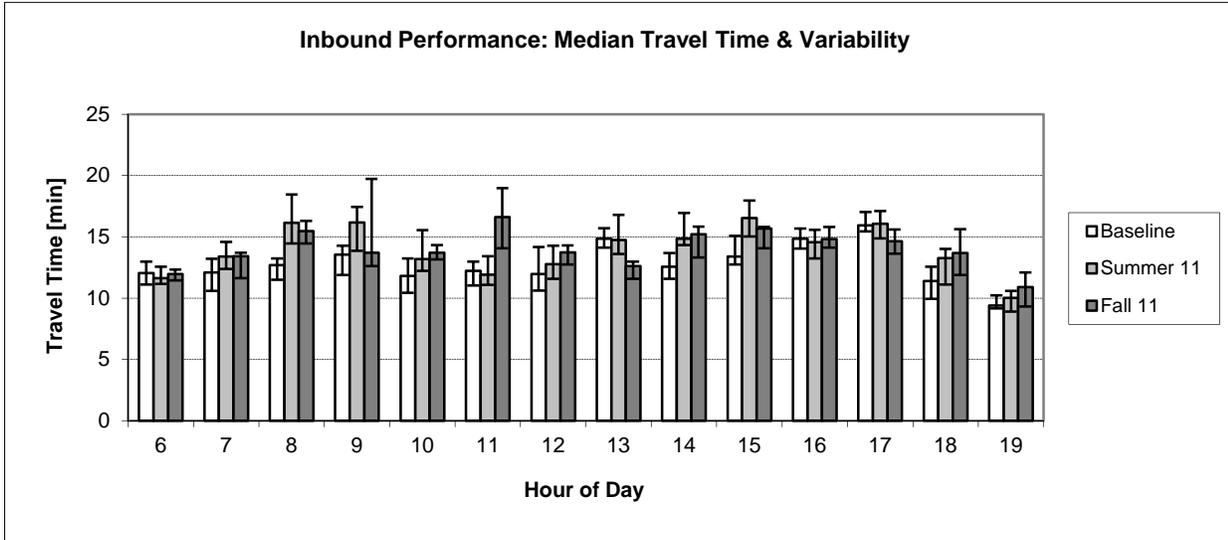
4th Ave S & S Michigan St to 4th/2nd Ave & Jackson St via 4th Ave S



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Summer 11	9/6/11 - 9/30/11	AVL-AVI
Fall 11	10/31/11 - 11/18/11	AVL-AVI

Pathway I.3

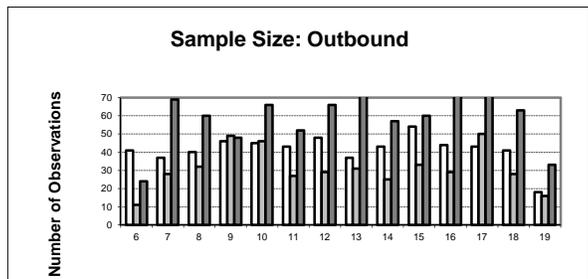
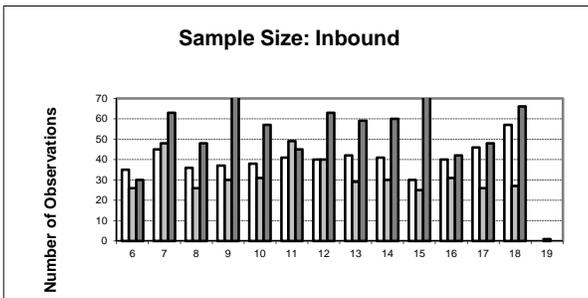
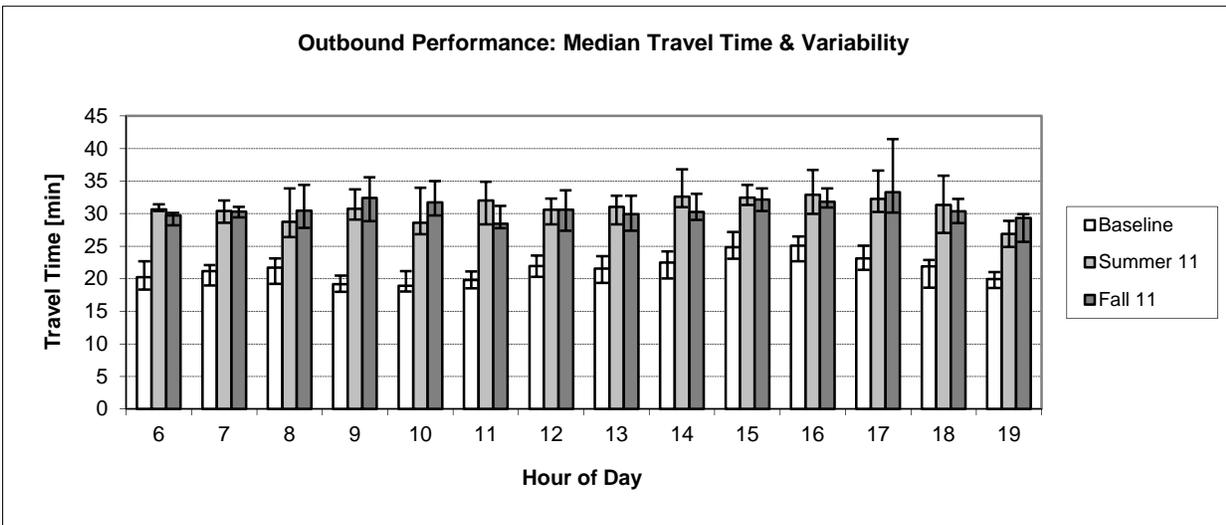
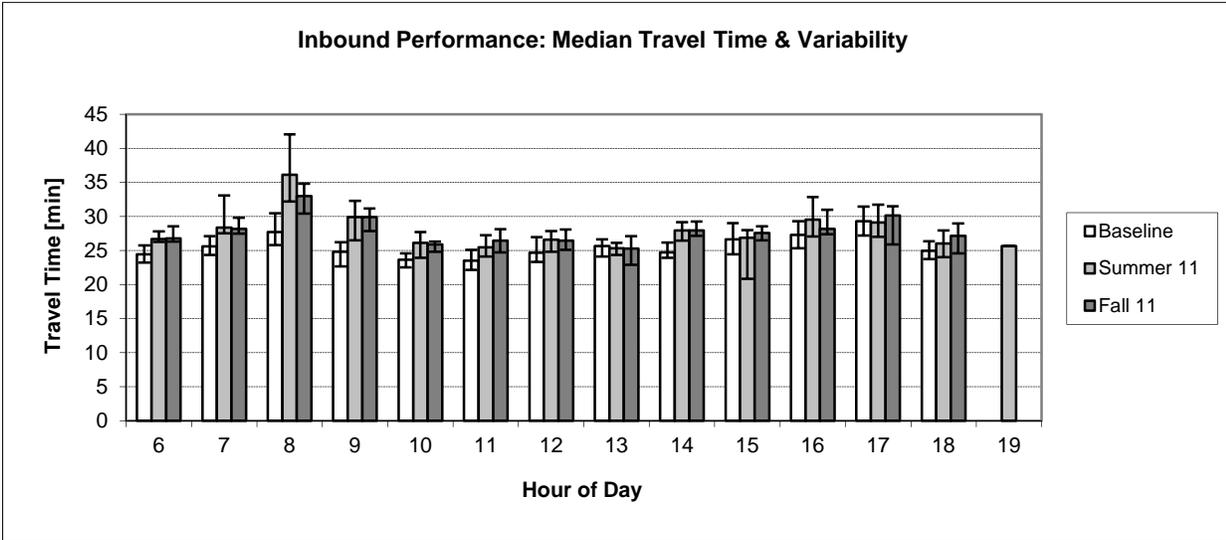
1st Ave S & East Marginal Way to 4th/2nd Ave & Jackson St via 1st Ave S



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Summer 11	9/6/11 - 9/30/11	AVL-AVI
Fall 11	10/31/11 - 11/18/11	AVL-AVI

Pathway J.1

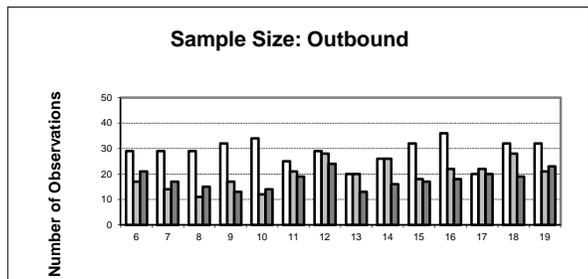
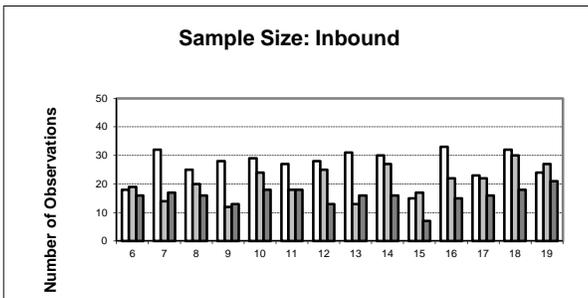
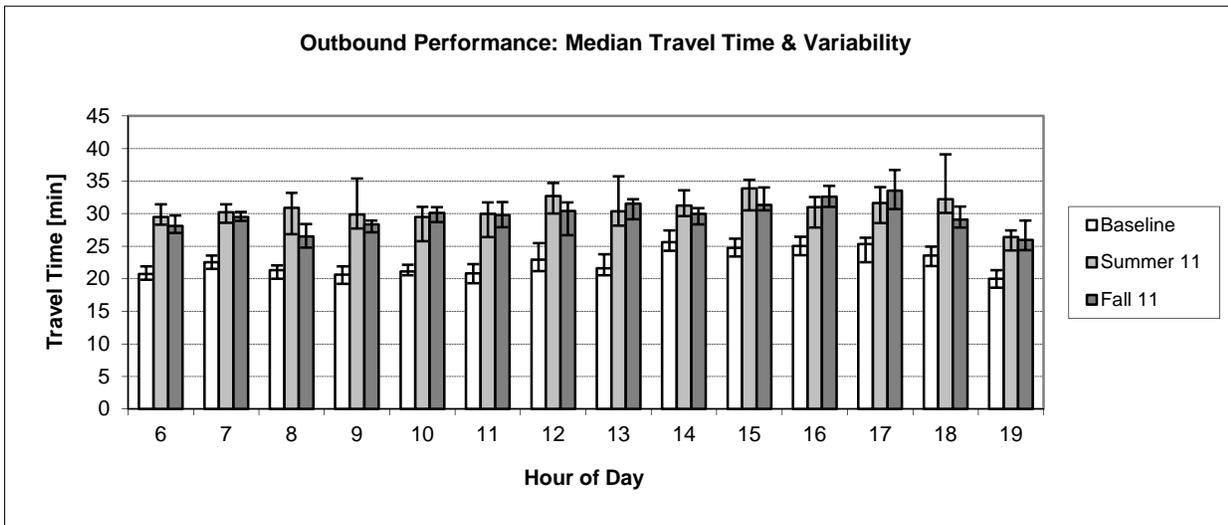
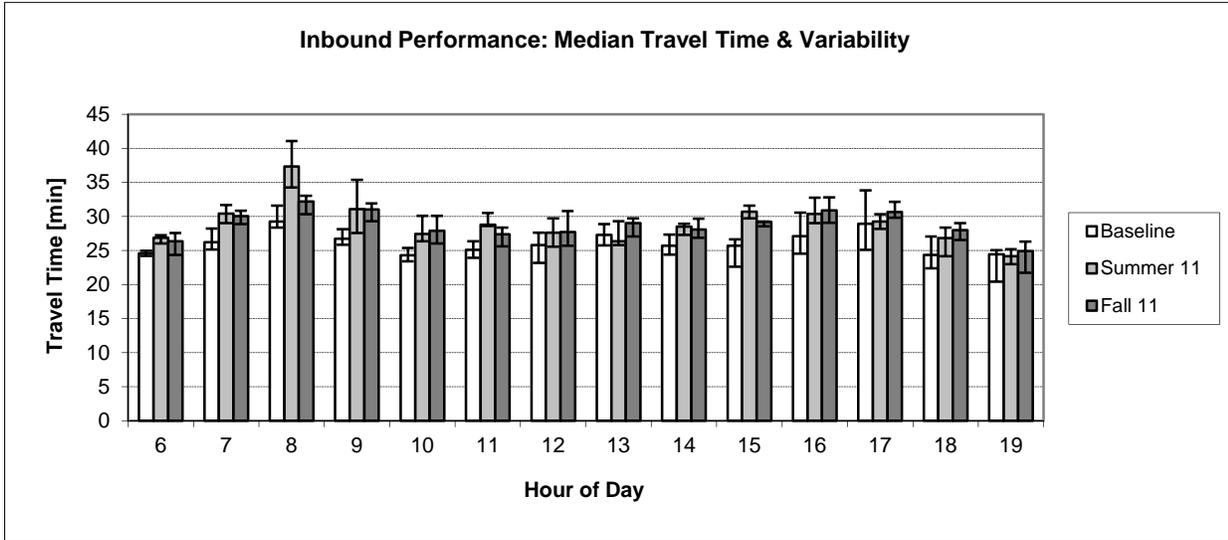
Alaska Junction to 3rd Ave & Seneca St via 1st Ave S



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI-AVI
Summer 11	9/6/11 - 9/30/11	AVI-AVI
Fall 11	10/31/11 - 11/18/11	AVI-AVI

Pathway J.2

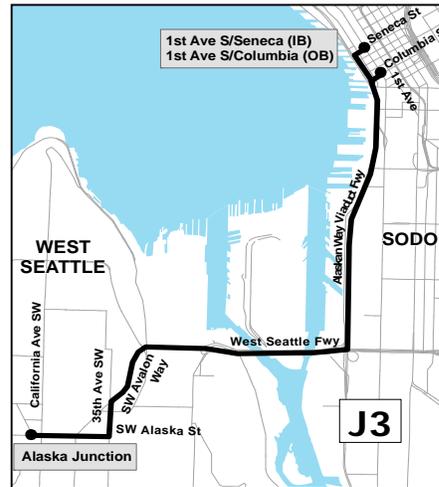
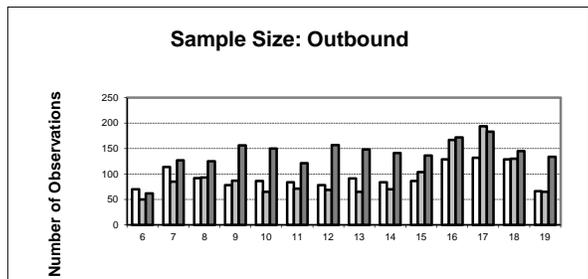
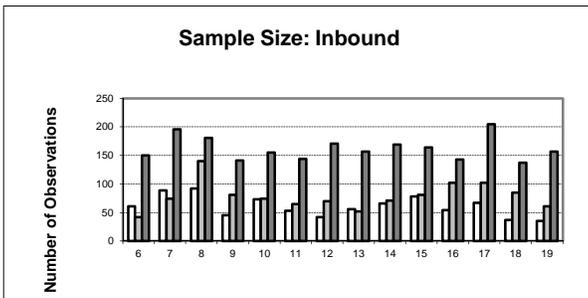
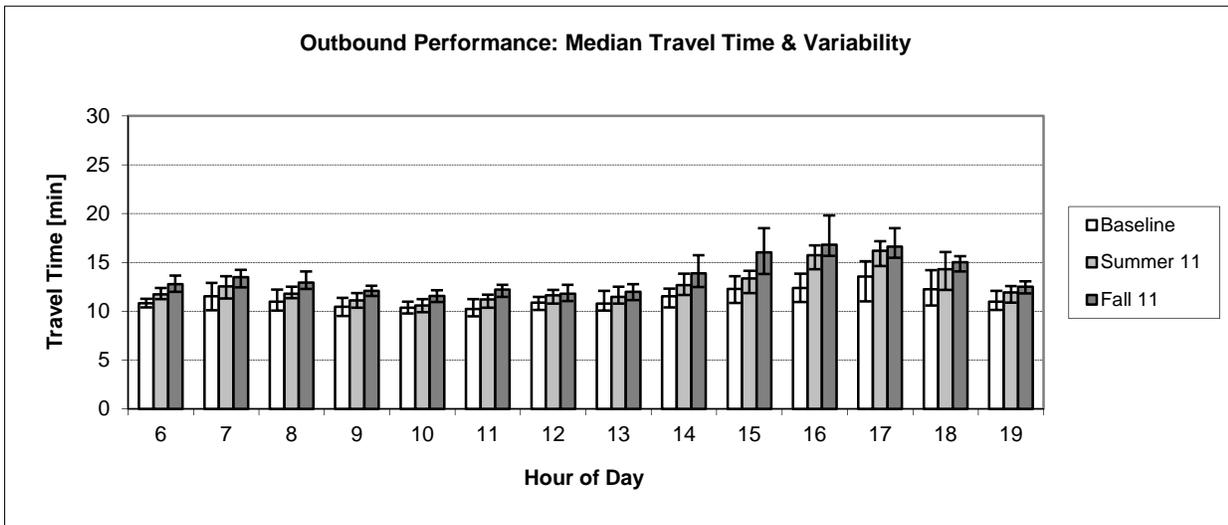
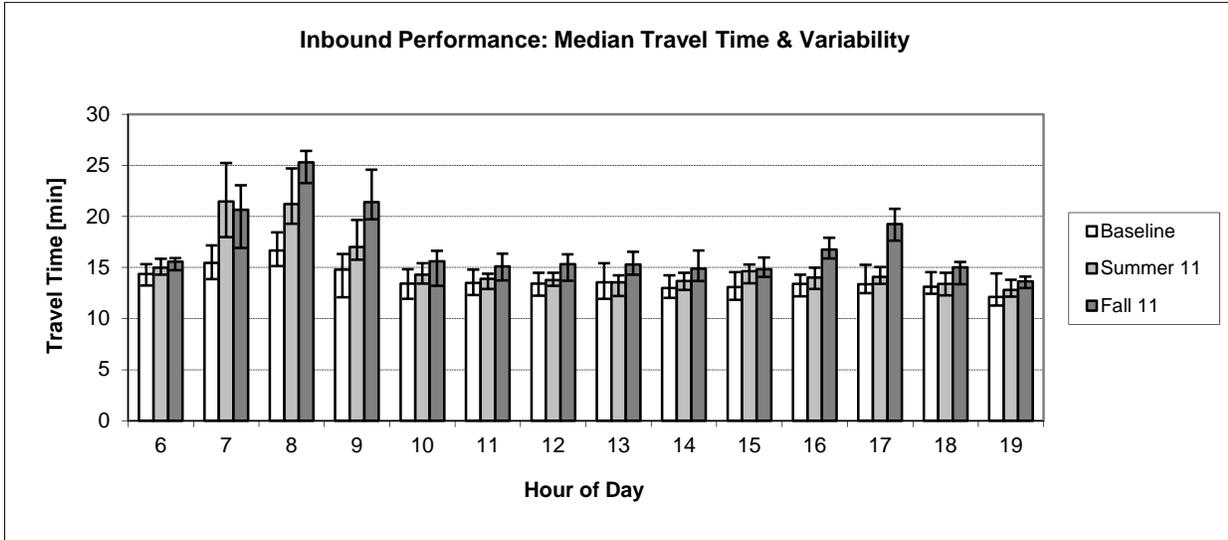
35th Ave SW & SW Morgan St to 3rd Ave & Seneca St via 1st Ave S



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Summer 11	9/6/11 - 9/30/11	AVL-AVI
Fall 11	10/31/11 - 11/18/11	AVL-AVI

Pathway J.3

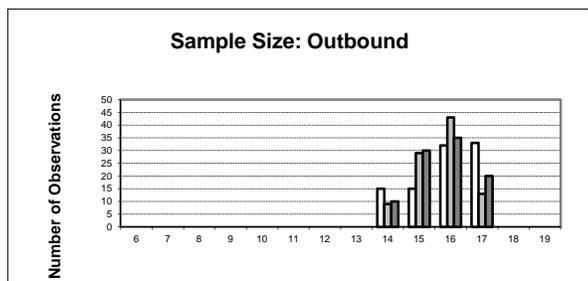
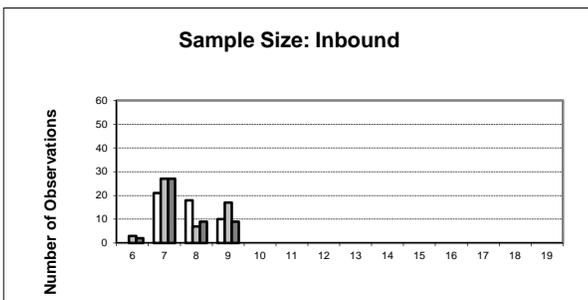
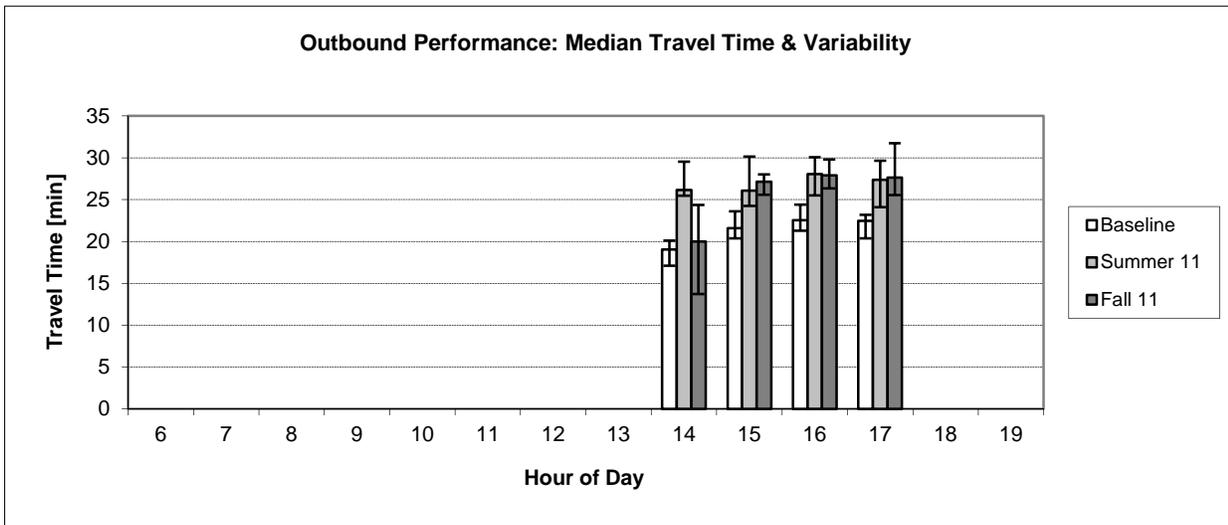
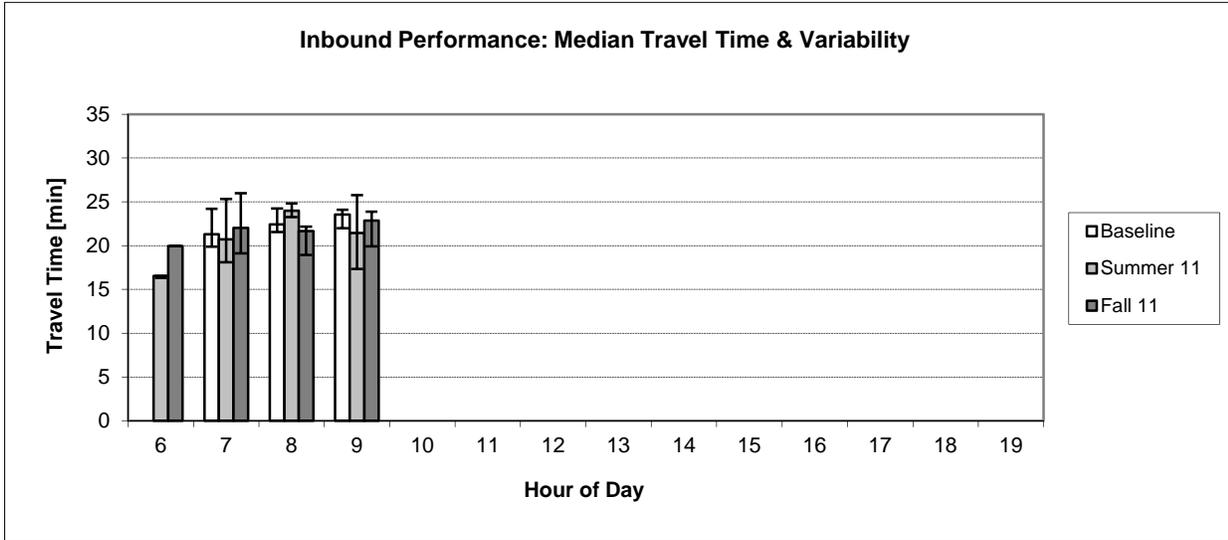
Alaska Junction to 1st Ave & Seneca/Columbia St via Alaskan Way Viaduct



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Summer 11	9/6/11 - 9/30/11	AVI
Fall 11	10/31/11 - 11/18/11	AVI

Pathway J.4

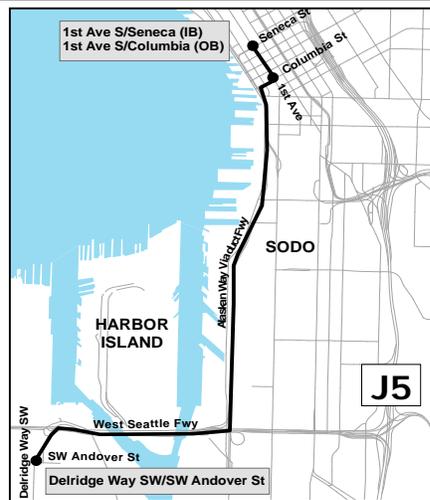
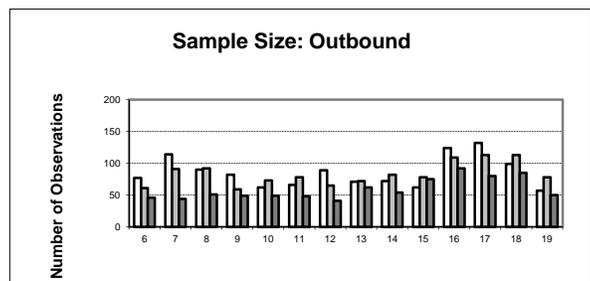
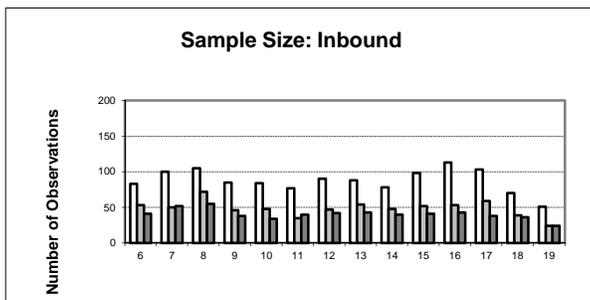
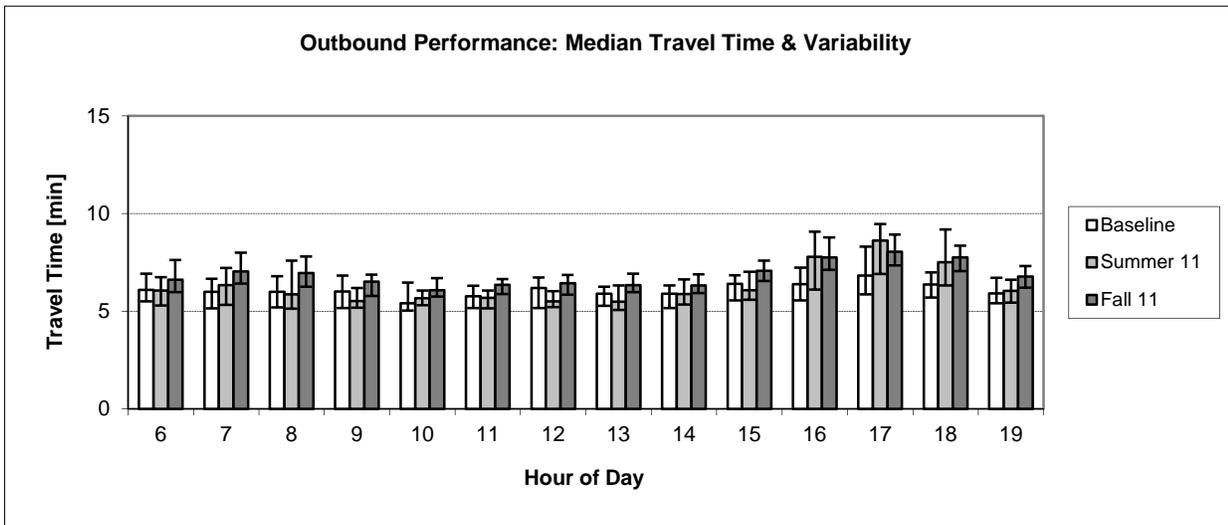
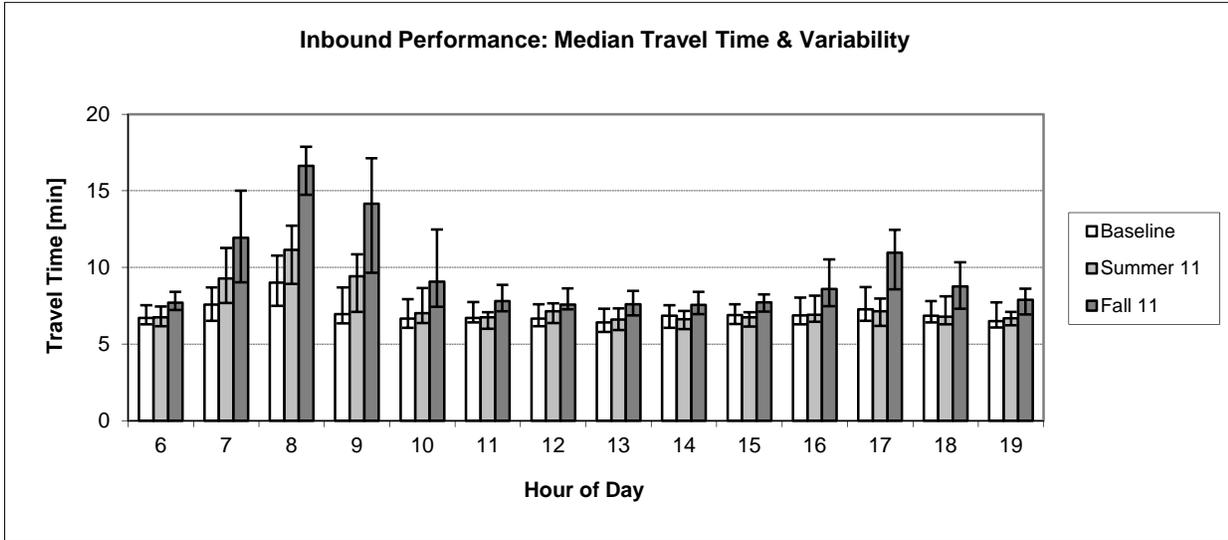
California Ave SW & SW Fauntleroy Way SW to 3rd Ave & Yesler St via 1st Ave S (Peak Only)



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Summer 11	9/6/11 - 9/30/11	AVL-AVI
Fall 11	10/31/11 - 11/18/11	AVL-AVI

Pathway J.5

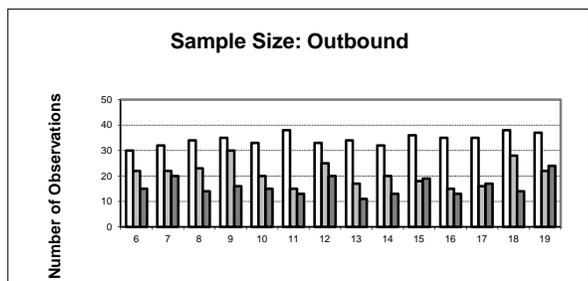
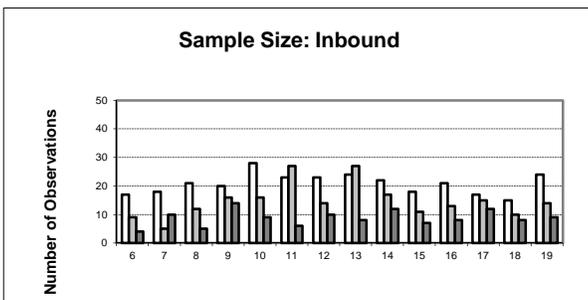
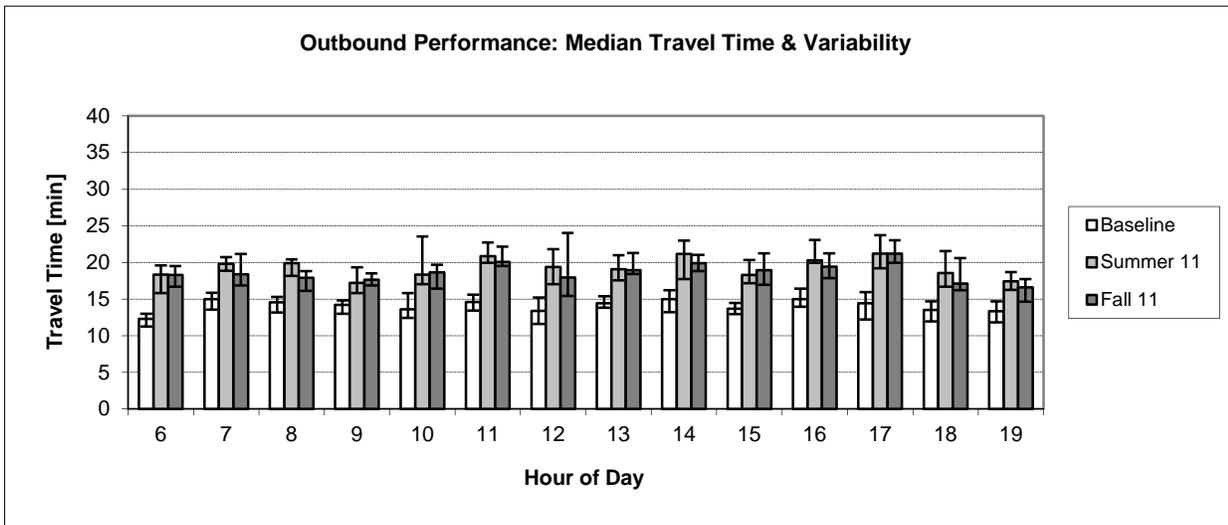
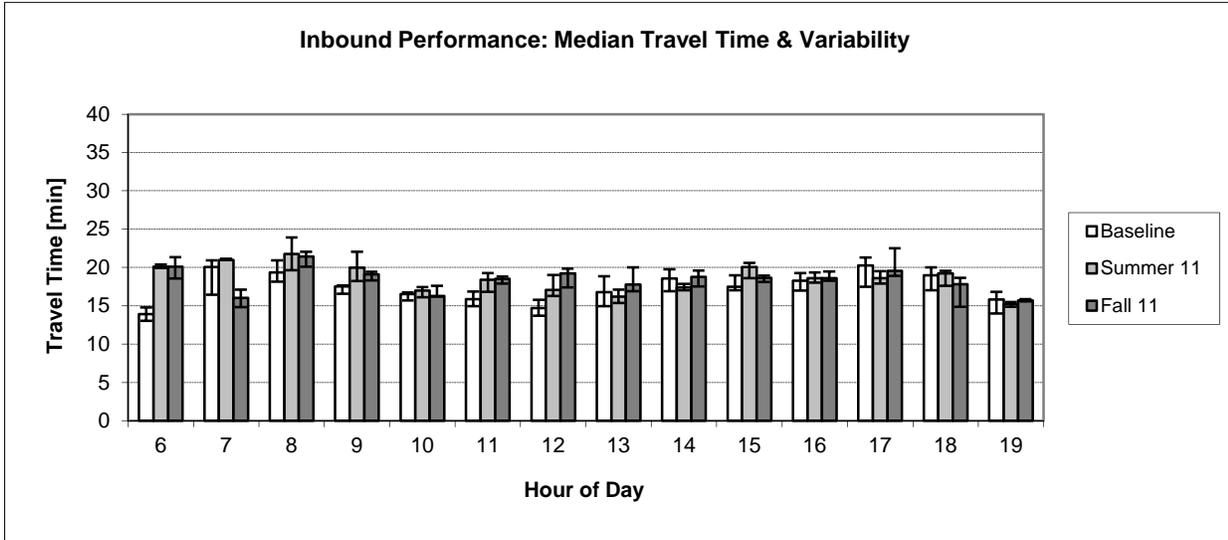
Delridge Way SW & SW Andover St to 1st Ave & Seneca/Columbia St via AWW



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Summer 11	9/6/11 - 9/30/11	AVI
Fall 11	10/31/11 - 11/18/11	AVI

Pathway J.6

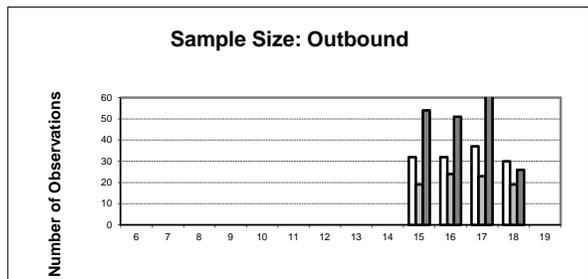
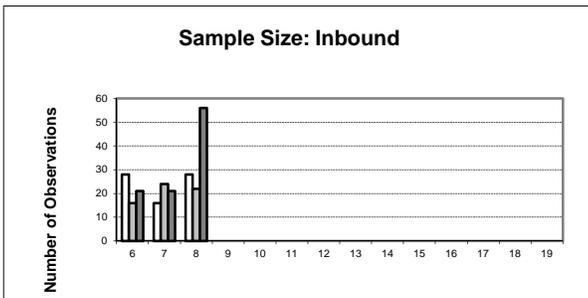
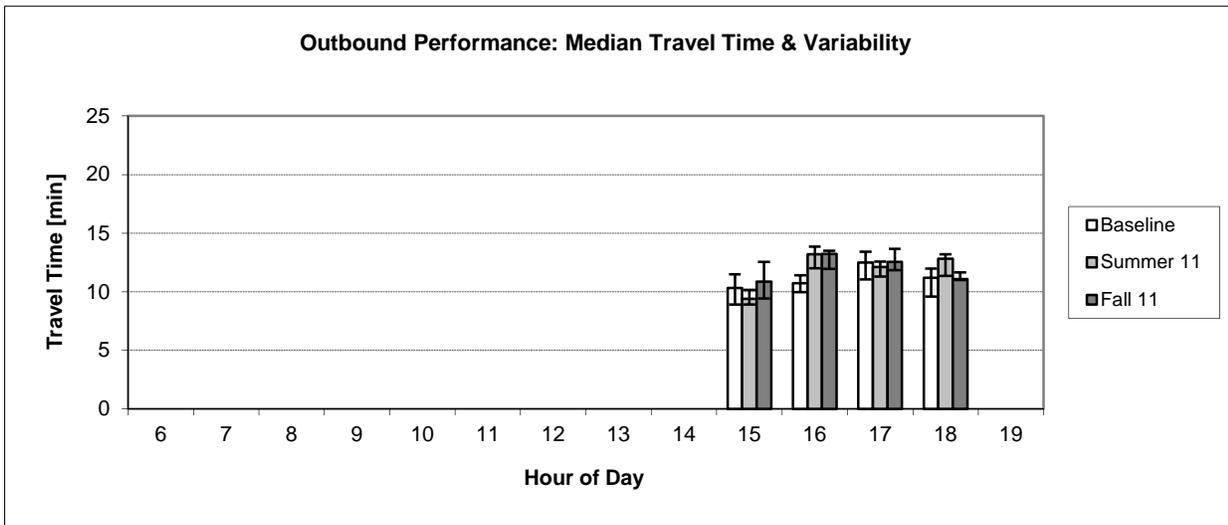
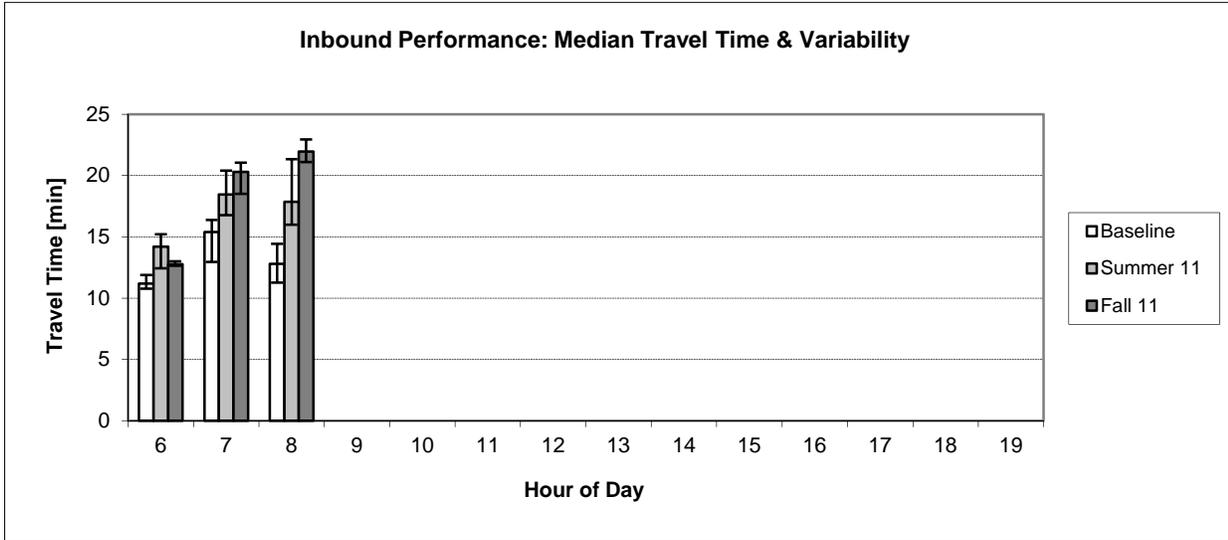
Admiral Way SW & California Ave SW to 2nd/4th Ave & S Jackson St via 1st Ave S



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Summer 11	9/6/11 - 9/30/11	AVL-AVI
Fall 11	10/31/11 - 11/18/11	AVL-AVI

Pathway J.7

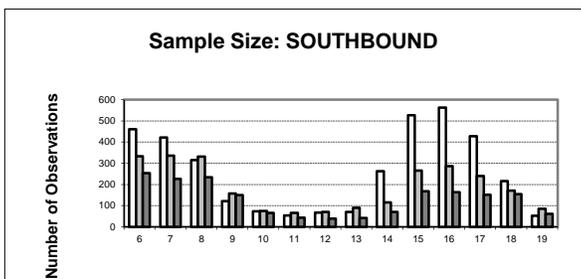
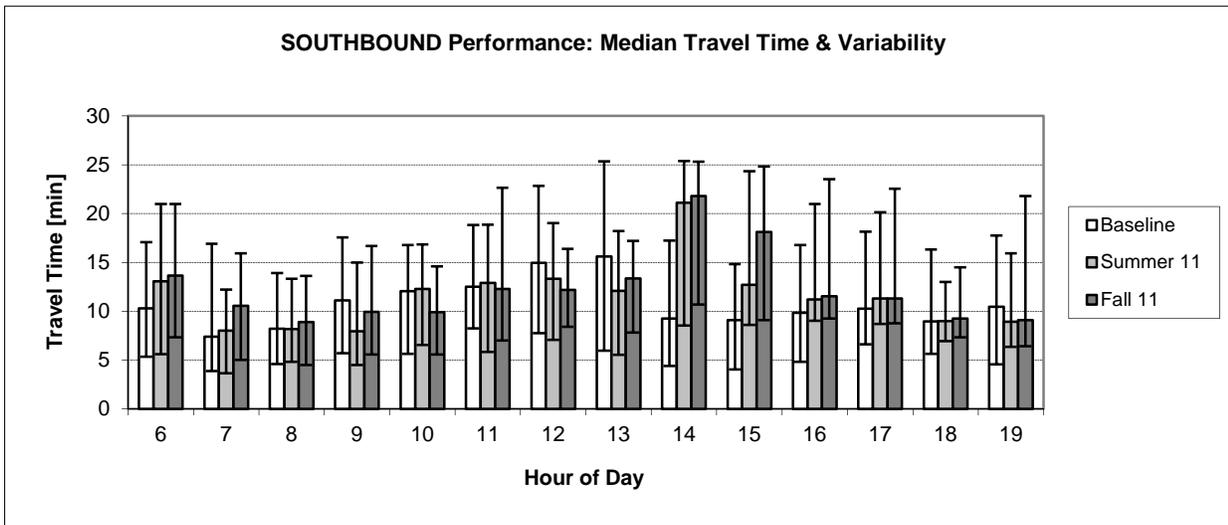
Admiral Way SW & California Ave SW to 1st Ave & Seneca/Columbia St via AWV (Peak Only)



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI-AVL
Summer 11	9/6/11 - 9/30/11	AVI-AVL
Fall 11	10/31/11 - 11/18/11	AVI-AVL

Pathway CBD2

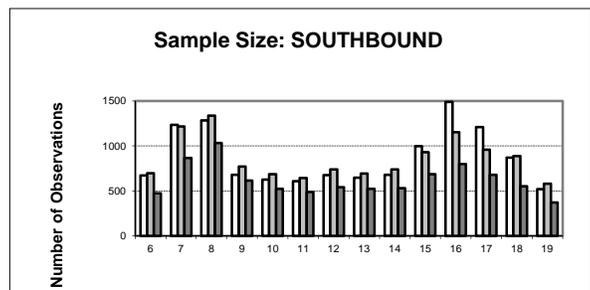
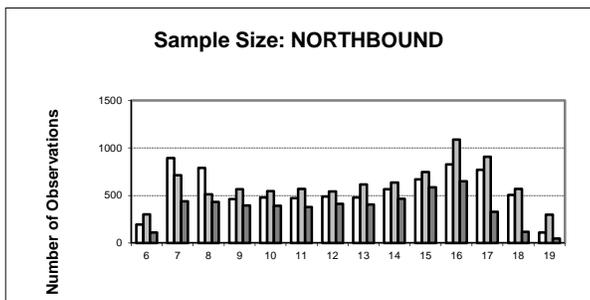
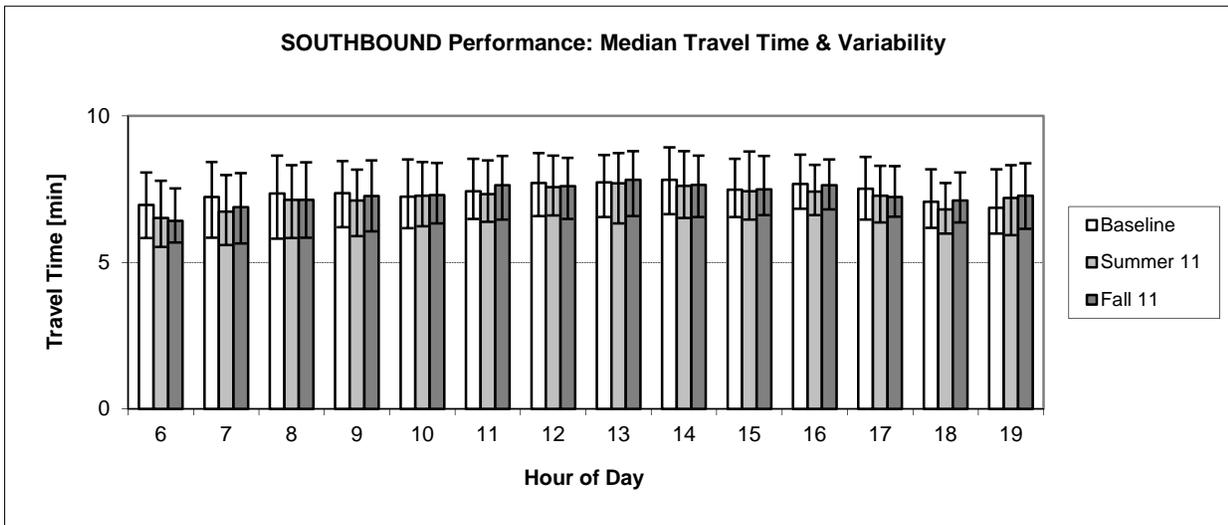
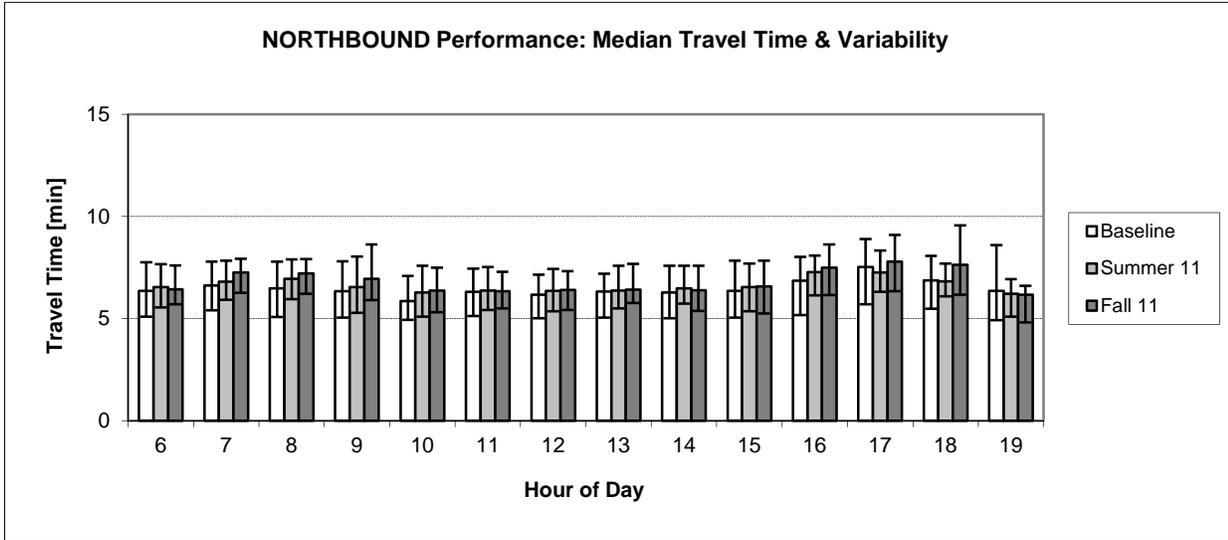
Second Avenue: Pike St to Jackson St



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Summer 11	9/6/11 - 9/30/11	AVI
Fall 11	10/31/11 - 11/18/11	AVI

Pathway CBD3

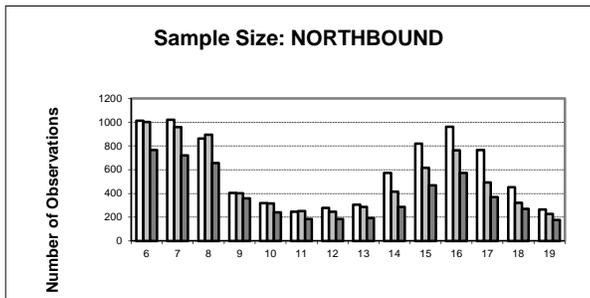
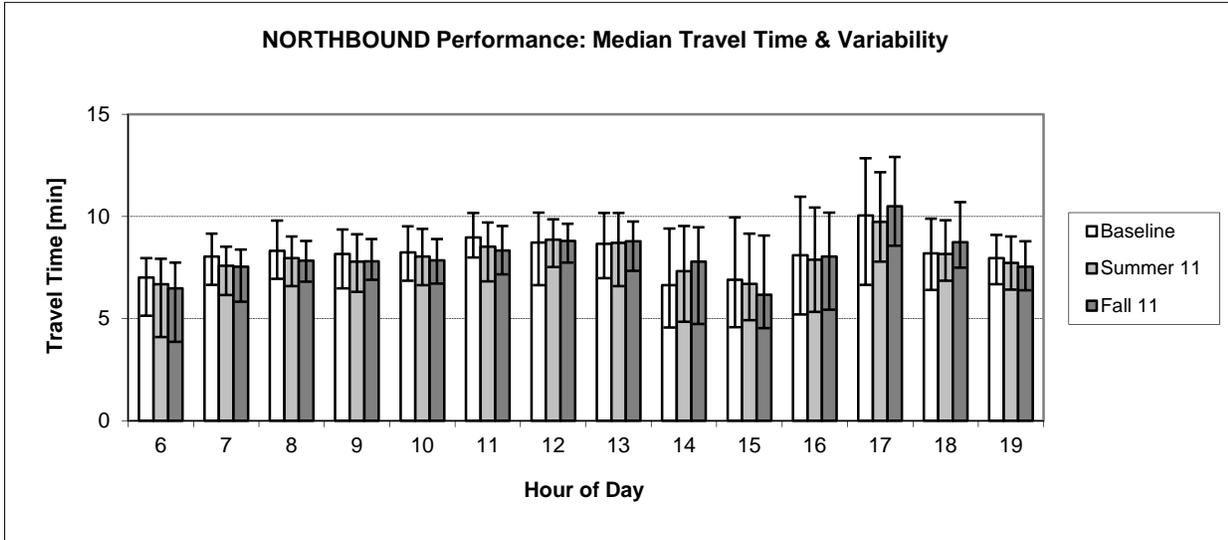
Third Ave: Stewart St to Yesler Way



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Summer 11	9/6/11 - 9/30/11	AVI
Fall 11	10/31/11 - 11/18/11	AVI

Pathway CBD4

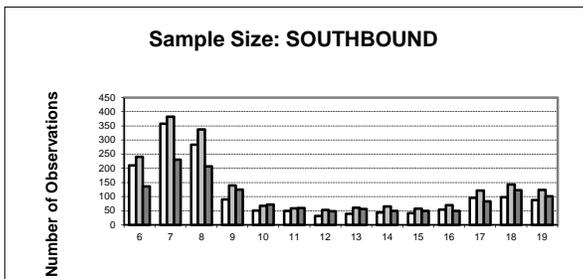
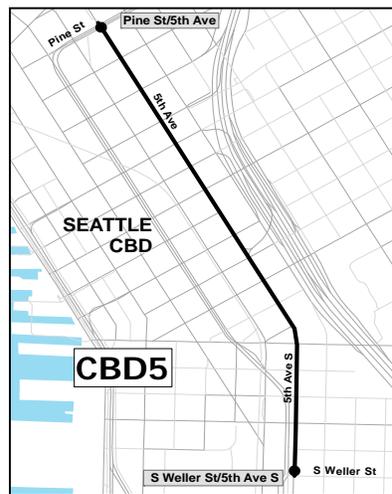
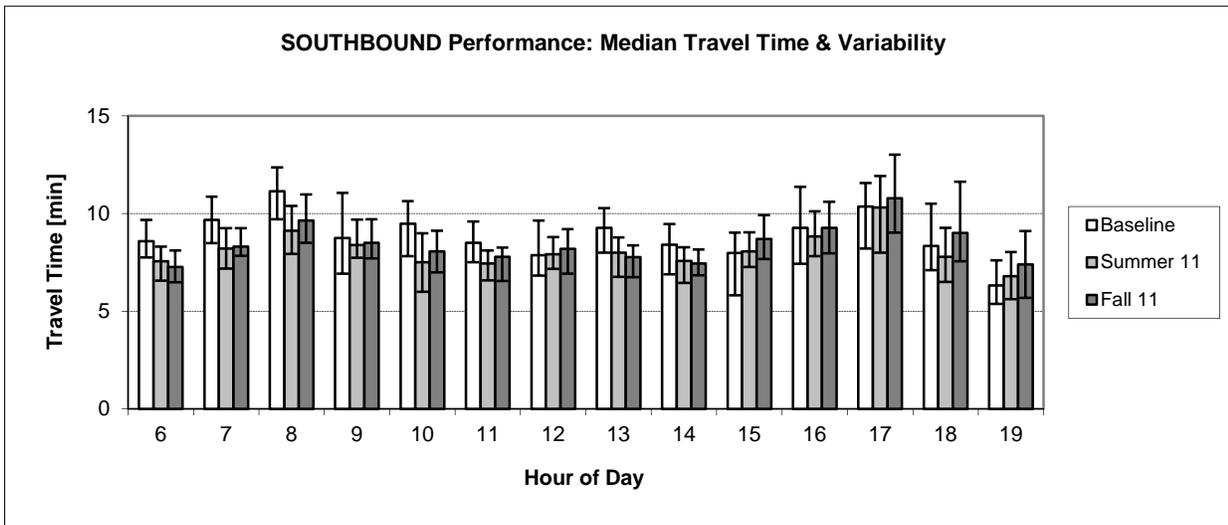
Fourth Ave: Jackson St to Stewart St



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Summer 11	9/6/11 - 9/30/11	AVI
Fall 11	10/31/11 - 11/18/11	AVI

Pathway CBD5

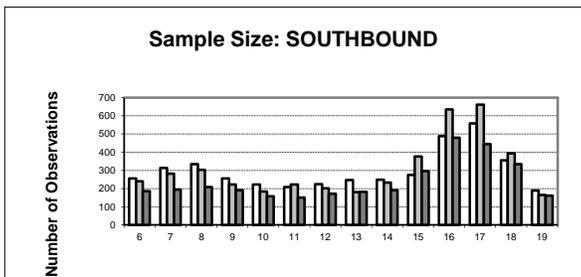
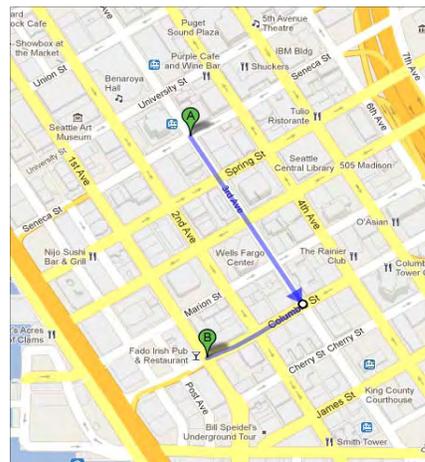
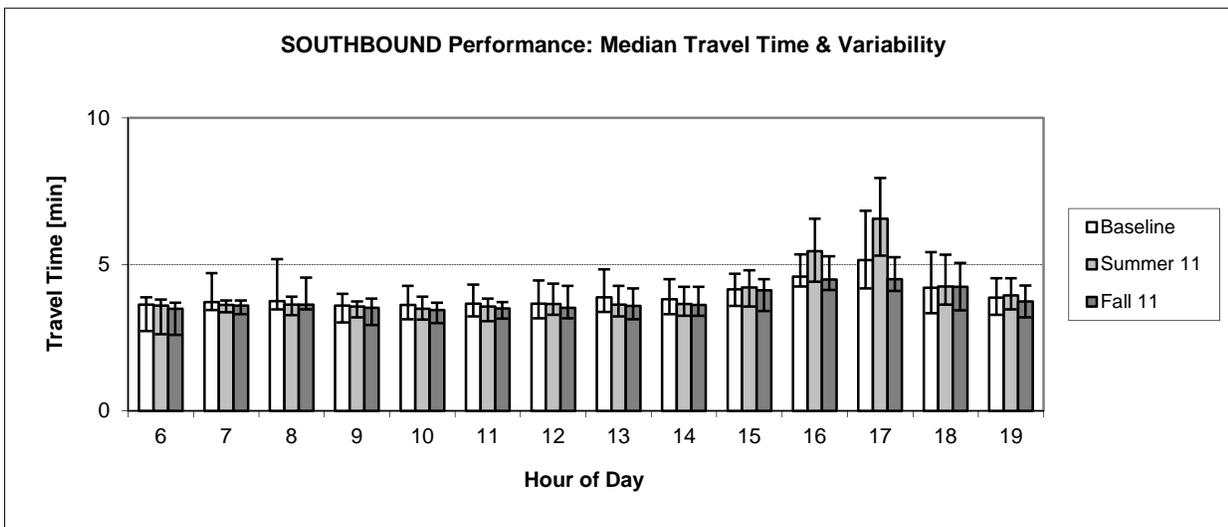
Fifth Ave: Pine St to Weller St



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Summer 11	9/6/11 - 9/30/11	AVI
Fall 11	10/31/11 - 11/18/11	AVI

Pathway Columbia

Columbia Street: 3rd & Seneca to 1st & Columbia



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Summer 11	9/6/11 - 9/30/11	AVI
Fall 11	10/31/11 - 11/18/11	AVI