

**Alaskan Way Viaduct Program Construction Traffic Mitigation  
Enhanced Transit, Transit Travel Time and Demand Management  
Performance Report**

*Prepared for:*  
WSDOT

*Prepared by:*  
King County Department of Transportation  
Metro Service Development Section

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# Projects Overview

## SUMMARY

To keep people and goods moving during construction of the Alaskan Way Viaduct Program projects, the Washington State Department of Transportation (WSDOT) invested \$31.9 million between 2008 and June 2014 and contracted with King County Metro (Metro) to enhance transit and water taxi service, improve bus monitoring equipment, and provide transportation demand management (TDM) services.

WSDOT is now continuing to mitigate traffic impacts associated with construction of the Alaskan Way Viaduct Program projects by investing \$24,067,000 for enhanced transit services (contract GCB 1883) from July 1, 2014 to June 30, 2017 and \$1,200,000 in TDM (contracts GCB 1906 and GCA 6141) from July 1, 2014 to June 30, 2017. Performance reports are a requirement of each of these contracts, and this combined report (#18) has been developed to address these contractual requirements.

This report is broken down into three sections:

- **Enhanced Transit Services:** This section compares the Summer 2015 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 Summer 2015 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: JUNE 2015 TO SEPTEMBER 2015**

### **Enhanced Transit Service summary**

- During this period, ETS trip adds were maintained on Routes 18X, 21X, 56X, 120, 121 and RapidRide E Line (formerly Route 358). No new trips were added during this period.
- No new schedule adjustments were implemented during this period.
- No flexible hours were used during this period.

### **Ridership summary**

- Peak period ridership increased in each of the four ETS pathways, and overall increased by 54% relative to the Summer 2009 baseline.
- Leading the growth in ridership at the corridor level was Pathway J (West Seattle), where WSDOT funded ETS trips on Routes 21X, 56X and 120 during the Summer 2015 service change.
- Among routes that received ETS improvements, RapidRide E Line (formerly Route 358) had the greatest increase in ridership in absolute terms, attracting over 4,010 additional rides during the peak and shoulder periods

### **Travel Time Summary**

- The WSDOT North Access and SDOT Mercer Project continue to impact pathways on Aurora Avenue N and Dexter Avenue N, however improvements realized in 2014 continue, due to near completion of the Two-Way Mercer project and improved traffic control and signal timing along the Mercer East corridor.
- Pathways inbound to the CBD, using Aurora Avenue N and Dexter Avenue N are experiencing degraded travel times during PM peak periods. Intermittent lane closures and increased travel demand continue to bring these travel times upward. Pathway B.3 (from Fremont Bridge to South Lake Union via Dexter Avenue) experienced large increases in the inbound, PM peak travel time.
- Travel times on pathways using the Alaskan Way Viaduct and surface streets in SODO continue to be impacted by the WOSCA Detour. Buses using the Alaska Way Viaduct inbound during the AM peak; continue to see travel times 2-4 minutes greater than baseline.
- Inbound, PM peak travel times increased from Spring 2015 for most pathways. This trend illustrates the impact of a continuing increase in travel demand into Downtown Seattle.

### **Transportation Demand Management Summary**

- Transit Promotions has reduced 0 trips. Scoping of the transit promotions began during this program reporting period, for implementation of part one in March 2016 and parts 2 and 3 in the spring of 2016.
- Employer Outreach has reduced 31 trips. Employer outreach was provided via continued marketing to employers in the target neighborhoods and via staff sales outreach in the Seattle Central Business District, First Hill, Pioneer Square and Belltown. 432 new Passports were sold during this period.

## **EXPENDITURES: SEPTEMBER 2009 – 3<sup>RD</sup> QUARTER 2015**

As of the end of June 2014, Metro had invoiced WSDOT \$30,843,360 (\$544,456 under GCA 5864, \$28,617,421 under GCA 5820 and \$1,681,483 under GCA 5865) of the state's \$31.9 million investment in enhanced transit and demand management services. Between July 2014 and June 2015, Metro invoiced WSDOT \$8,085,226.40 (\$7,687,337 under GCB 1883 and \$398,226.48 under GCA 6141) for the state's 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 <b>Submittal Date</b>	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 4-22-13	Volume 11 8-19-13	Volume 12 12-9-13	Volume 13 3-31-14	Volume 14 7-9-15	Volume 15 10-23-15	Volume 16 11-20-15	Volume 17 11-30-15	Volume 18 12-31-15
<b>Reporting Period of Volume Data</b>																			
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	As of April 2013	As of Aug 2013	As of Dec 2013	As of April 2014	As of Aug 2014	As of Dec 2014	As of April 2014	As of Aug 2015	As of Dec 2015
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	Jun 13 - Sep 13	Sep 13 -Feb 14	Feb 14 -Jun 14	Jun 14 - Sep 14	Sep 14 - Feb 15	Feb 15 - Jun 15	Jun 15 - Sep 15

\*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.

In the Summer of 2009, the baseline against which service in this report will be compared, Metro transit service on these pathways provided an estimated 79,530 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. The trips funded by WSDOT as part of the June service change were scheduled on routes 21 Express (X), 56X, 120 (part of Pathway J), 121 (part of Pathway I), 18X (part of pathway A) and RapidRide E Line (formerly Route 358, part of pathway B). This report compares Summer 2009 baseline performance measures with Summer of 2015 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, 2013, 2014 and 2015 is 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. 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 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 15X, 17EX, 18EX, 19, 24, 32, 33 and RapidRide D Line.

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, 26, 26X, 28, 28X, 40, 62 and RapidRide E Line.

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

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, 50, 55, 56X, 57, 116, 118X, 119X, 120, 125 and RapidRide C Line.

## 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** – System-wide ridership grew each year between 2013 and 2015 and increased by 3% over the three-year period. Higher fuel prices, a somewhat stabilized economy and a major restructuring of service are likely contributing factors to this ridership growth.

The Enhanced Transit Service Table 1 below shows that ridership growth rates were considerably in excess of the system growth rate in all four Enhanced Transit Service (ETS) pathways. Ridership increased in each corridor in each of the past three years.

**Enhanced Transit Service Table 1**

<b>3 YEAR TRANSIT CORRIDOR WEEKDAY RIDERSHIP TREND FOR SUMMER SERVICE CHANGE</b>				
<b>Ridership Group</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>% Change 2013-2015</b>
System-wide Ridership	377,000	386,000	388,000	3%
Total of Pathways	113,670	120,630	127,190	12%
Pathway A – Ballard/Magnolia	22,320	23,820	25,440	14%
Pathway B – Aurora Fremont	43,530	46,870	50,570	16%
Pathway I – SODO/Georgetown	15,040	15,210	15,050	0%
Pathway J – West Seattle	32,780	34,730	36,130	10%

## RIDERSHIP CHANGE IN SUMMER 2015 COMPARED TO 2009 BASELINE

The Enhanced Transit Service Table 2 below compares the Summer 2015 system-wide and Enhanced Transit Service pathway ridership with the Summer 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 you 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 am) and (3-6 pm) 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 about half of daily ridership. This is also true for the total of all pathways. Ridership has increased in every pathway and every time period relative to the baseline.

The system-wide and pathway trends shown in Table 2 provide more context for which we will evaluate the effectiveness of the WSDOT funded construction mitigation.

**Enhanced Transit Service Table 2**

COMPARISON OF SUMMER 2009 BASELINE WEEKDAY RIDERSHIP BY TIME OF DAY AND PATHWAY WITH SUMMER 2015 SERVICE CHANGE RIDERSHIP								
Ridership Group	Avg. Weekday		Peak Period*		Shoulder Periods		Midday Period	
	2009	2015 (% Change)	2009	2015 (% Change)	2009	2015 (% Change)	2009	2015 (% Change)
System-wide Ridership	355,000	388,000 (9%)	169,000	190,000 (12%)	64,000	69,000 (8%)	76,000	75,000 (-1%)
Total of Pathways†	79,530	122,640 [127,200] (54%)	37,770	61,250 [63,290] (62%)	14,070	21,340 [22,110] (52%)	16,420	22,330 [23,230] (36%)
Pathway A – Ballard/Magnolia	17,090	25,440 (49%)	8,500	13,510 (59%)	2,910	4,230 (45%)	3,850	4,120 (7%)
Pathway B – Aurora Fremont	31,960	50,570 (58%)	14,270	23,610 (65%)	5,930	9,440 (59%)	6,590	9,710 (47%)
Pathway I – SODO/Georgetown†	8,150	10,500 [15,050] (29%)	4,240	5,720 [7,770] (35%)	1,320	1,710 [2,470] (30%)	1,420	1,750 [2,650] (23%)
Pathway J – West Seattle†	22,330	36,130 (62%)	10,760	18,400 (71%)	3,910	5,970 (53%)	4,560	6,750 (48%)

\*Peak Period is 6-9 am and 3-6 pm; Shoulder Period is 9-10 am, 2-3 pm, and 6-7 pm; Midday is 10 am - 2 pm.  
†The increase in ridership reported in the brackets is due to the addition of route 124 to Pathway I. Route 124 began operating in Pathway I in September 2009.

## PERFORMANCE OF ENHANCED TRANSIT SERVICE ADDITIONS

Ridership increased during the peak period on all six routes that received Enhanced Transit Service (ETS) funding during the Summer 2015 service change. With the exception of Route 121, ridership also increased during the shoulder periods on routes that received ETS funding. The largest absolute change in peak and shoulder period ridership occurred on RapidRide E Line relative to Route 358, which it replaced. Peak direction frequencies (southbound in the AM; northbound in the PM) were upgraded from every 15 minutes to every 7-10 minutes on Route 358 in Fall 2011. Frequencies in the reverse peak direction (northbound in the AM; southbound in the PM) were improved when the route was converted to the E Line in Spring 2014.

In total, ridership performance of ETS routes outperformed the system-wide trend by 44 percentage points.

**Enhanced Transit Service Table 3**

COMPARISON OF RIDERSHIP PERFORMANCE OF SERVICES THAT RECEIVED WSDOT FUNDED ENHANCEMENTS WITH SUMMER 2009 BASELINE								
Route/Pathway	Avg. Weekday		Peak Period*		Shoulder Periods		Midday Period	
	2009	2015 (% Change)	2009	2015 (% Change)	2009	2015 (% Change)	2009	2015 (% Change)
18X / Pathway A	760	930 (22%)	760	810 (7%)	No Service	130 (N/A)	No Service	No Service
21X / Pathway J	750	1,020 (36%)	710	930 (31%)	40	90 (125%)	No Service	No Service
56X / Pathway J	600	740 (23%)	520	600 (15%)	60	100 (67%)	No Service	No Service
120 / Pathway J	6,650	8,920 (34%)	2,690	3,830 (42%)	1,260	1,660 (32%)	1,620	1,930 (19%)
121 / Pathway I	1,060	1,110 (5%)	730	910 (25%)	180	120 (-33%)	100	No Service
RapidRide E Line / Pathway B	9,860	16,160 (64%)	4,200	6,870 (64%)	1,750	3,090 (77%)	2,350	3,310 (41%)
Enhanced Transit Service Route Total	19,680	28,880 (47%)	9,610	13,950 (45%)	3,290	5,190 (58%)	4,070	5,240 (29%)

\*Peak Period is 6-9 am and 3-6 pm; Shoulder Period is 9-10 am, 2-3 pm, and 6-7 pm; Midday is 10 am - 2 pm.  
New ETS Routes relative to 2009 baseline: 18X, 120 and RapidRide E Line (formerly Route 358)

## 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.

**Summer 2015 Transit Capacity Compared to Summer 2009 Baseline** – The baseline is the scheduled number of seats that are supplied each weekday within a pathway group for Summer 2009. Enhanced Transit Service Table 4 shows the number of seats by time of day for Summer 2015 for the four different pathways compared to the baseline. The pathway trends shown Table 4 are provided for context to help evaluate the effectiveness of WSDOT investments.

Overall, peak period capacity increased between 2009 and 2015. The Summer 2015 service change continued the additional transit capacity added on Route 18X (Pathway A route), RapidRide E Line (formerly Route 358; Pathway B route), Route 121 (Pathway I route) and Routes 21X, 56X, and 120 (Pathway J routes). However, other significant changes were implemented in all four pathways as part of the Fall 2012 service restructure. In addition, Route 358 was converted to the RapidRide E Line in Spring 2014. These changes affected both the number of trips and the number of seats per trip, the two factors that together determine seating capacity in each corridor. Consequently, capacity increases on individual WSDOT-funded routes may not directly correlate to changes in the pathways containing those routes.

### Enhanced Transit Service Table 4

<b>SUMMER 2015 SERVICE CHANGE COMPARISON OF WEEKDAY TRANSIT SEATING CAPACITY BY CORRIDOR AND TIME OF DAY WITH SUMMER 2009 BASELINE</b>						
<b>Pathway</b>	<b>Peak Period</b>		<b>Shoulder Periods</b>		<b>Midday Period</b>	
	<b>2009</b>	<b>2015 (% Change)</b>	<b>2009</b>	<b>2015 (% Change)</b>	<b>2009</b>	<b>2015 (% Change)</b>
Pathway A – Ballard/Magnolia	9,240	11,580 (25%)	3,040	4,070 (34%)	3,690	4,310 (17%)
Pathway B – Aurora Fremont	15,490	17,200 (11%)	5,900	7,020 (19%)	7,650	8,380 (10%)
Pathway I – SODO/Georgetown*	6,290	6,230 [8,430] (-1%)	1,920	2,150 [2,990] (12%)	1,950	2,070 [3,060] (6%)
Pathway J – West Seattle	16,340	17,140 (5%)	5,830	5,880 (1%)	7,480	6,680 (-11%)
<b>Total of all Pathways</b>	<b>47,360</b>	<b>52,150</b> <b>[54,350]</b> <b>(10%)</b>	<b>16,690</b>	<b>19,120</b> <b>[19,960]</b> <b>(15%)</b>	<b>20,770</b>	<b>21,440</b> <b>[22,430]</b> <b>(3%)</b>

\*The increase in seats reported in the brackets is due to the addition of route 124 to the pathway. Route 124 began operating in pathway "I" in September 2009.

Enhanced Transit Service Table 5 compares the actual transit capacity delivered during the Summer 2015 service change to the Summer 2015 enhanced transit service proposal. The number of seats specified in the ETS proposal assumed an average seating capacity of 58 on each ETS route, whereas the number of seats provided is based on the specific coach types assigned during the service change. Because RapidRide coaches have

fewer seats than other low-floor articulated coaches, the actual number of seats provided on RapidRide E Line was slightly lower than proposed.

During the Summer 2015 service change WSDOT funds provided 17 percent more peak period transit capacity on routes 18X, 21X, 56X, 120, 121 and RapidRide E Line. As will be shown in the next section, this additional capacity helped to mitigate the impact on transit capacity level of service caused by a 45 percent increase in peak period ridership relative to the Summer 2009 baseline.

### Enhanced Transit Service Table 5

<b>COMPARISON OF WSDOT FUNDED TRANSIT CAPACITY WITH METRO FUNDED PEAK PERIOD TRANSIT CAPACITY</b>				
<b>Summer 2015</b>				
<b>Route / Pathway</b>	<b>Metro Funded Peak Period*</b>	<b>Actual WSDOT Funded*</b>	<b>June 2015 ETS Proposal†</b>	<b>% Increase in Seating Capacity Compared to Metro Peak Period</b>
18X	620	110	120	18%
21X	630	320	350	51%
56X	490	220	230	45%
120	3,310	460	460	14%
121	1,200	230	230	19%
E Line	3,450	290	350	8%
Total	9,700	1,630	1,740	17%

\*Actual average seats/trip for Summer 2015 was as follows: 18X:56, 21X:53, 56X:55, 120:58, 121:57 and E Line:48  
†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**

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

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

**Summer 2015 Transit Capacity Compared to Summer 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 Summer 2009 baseline.

Crowding happens when demand pushes the limits of capacity. Changes in crowding reflect a change in the capacity, the demand or both. The 47 percent increase in peak period ridership among routes with WSDOT-funded trips has resulted in a greater number of riders experiencing transit capacity level of service C or worse, **despite WSDOT’s investment. Overall, there** were 2,600 more AM and 2,843 more PM peak period riders experiencing transit capacity level of service C or worse than there were in Summer 2009. The increase in riders experiencing transit capacity level of service C or worse on routes with WSDOT funded trips was comparable to the increase in riders experiencing transit capacity level of service C or worse for the pathways overall, as shown in Tables 9 and 10.

**Enhanced Transit Service Table 7**

<b>COMPARISON OF SUMMER 2015 TRANSIT CAPACITY LOS WITH SUMMER 2009 BASELINE</b>								
<b>AM 6:00-9:00 Inbound</b>								
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	
	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>
18X	0.81	0.97	4	5	77%	100%	260	320
21X	0.74	0.83	4	6	66%	84%	250	400
56X	0.69	0.89	3	6	66%	100%	170	380
120	0.72	0.83	5	11	43%	66%	340	800
121	0.5	0.77	0	3	0%	59%	0	190
E Line	0.72	1.36	9	23	67%	100%	710	2,240
<b>Total</b>							<b>1,730</b>	<b>4,330</b>

**Enhanced Transit Service Table 8**

<b>COMPARISON OF SUMMER 2015 TRANSIT CAPACITY LOS WITH SUMMER 2009 BASELINE</b>								
<b>PM 3:00-6:00 Outbound</b>								
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	
	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>
18X	0.76	0.93	3	7	53%	100%	230	535
21X	0.78	0.91	4	7	80%	100%	270	480
56X	0.74	0.67	3	2	78%	56%	210	960
120	0.77	0.79	7	13	46%	64%	470	960
121	0.68	0.55	3	1	57%	24%	170	78
E Line	0.86	1.30	18	26	87%	99%	1,390	2,570
<b>Total</b>							<b>2,740</b>	<b>5,583</b>

Enhanced Transit Service tables 9, and 10 display similar information as tables 7 and 8 for all the ETS pathways. In addition they give 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**

<b>SUMMER 2015 SERVICE CHANGE COMPARISON OF INBOUND WEEKDAY PASSENGER LOADS BY CORRIDOR PEAK PERIOD SUMMARY WITH SUMMER 2009 BASELINE</b>						
<b>AM 6:00-9:00 Inbound</b>						
<b>Pathway</b>	% of riders at 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 at a transit capacity LOS of C or worse	
	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>
Pathway A – Ballard/Magnolia	38%	93%	14	44	890	3,560
Pathway B – Aurora Fremont	43%	93%	30	77	1,970	6,220
Pathway I – SODO/Georgetown	13%	44%	5	15	200	840
Pathway J – West Seattle	35%	89%	22	72	1,310	4,950
All Pathways	36%	87%	71	208	4,370	15,570
<b>Inbound Trips All Other Times of Day</b>						
	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>
Pathway A – Ballard/Magnolia	27%	37%	26	33	1,400	2,420
Pathway B – Aurora Fremont	24%	42%	46	93	2,740	6,950
Pathway I – SODO/Georgetown	17%	4%	12	3	500	150
Pathway J – West Seattle	8%	19%	8	23	550	1,800
All Pathways	20%	31%	92	152	5,190	11,320
<b>Total Inbound Trips</b>			<b>163</b>	<b>360</b>	<b>9,560</b>	<b>26,890</b>

**Enhanced Transit Service Table 10**

<b>SUMMER 2015 SERVICE CHANGE COMPARISON OF OUTBOUND WEEKDAY PASSENGER LOADS BY CORRIDOR PEAK PERIOD SUMMARY WITH SUMMER 2009 BASELINE</b>						
<b>PM 3:00 – 6:00 Outbound</b>						
<b>Corridor</b>	% of riders at 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 at a transit capacity LOS of C or worse	
	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>
Pathway A – Ballard/Magnolia	48%	76%	24	48	1,430	3,880
Pathway B – Aurora Fremont	61%	72%	51	80	3,270	6,500
Pathway I – SODO/Georgetown	45%	32%	12	13	620	810
Pathway J – West Seattle	40%	65%	25	61	1,580	4,740
All Pathways	50%	66%	112	202	6,900	15,930
<b>Outbound Trips All Other Times of Day</b>						
	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>	<b>2009</b>	<b>2015</b>
Pathway A – Ballard/Magnolia	23%	42%	23	55	1,380	4,190
Pathway B – Aurora Fremont	19%	31%	35	77	2,080	5,570
Pathway I – SODO/Georgetown	8%	19%	5	19	190	1,300
Pathway J – West Seattle	12%	51%	14	91	880	6,930
All Pathways	15%	37%	77	242	4,530	17,990
<b>Total Outbound Trips</b>			<b>189</b>	<b>444</b>	<b>11,430</b>	<b>33,920</b>

## **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 are important for Metro to be able to respond immediately to conditions on the street. In the Summer 2015 ETS proposal, Metro budgeted 1,200 hours of flexible services to meet these needs. However, no flexible hours were deployed during the course of the Summer 2015 service change.

# 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 Summer 2015 service change condition to the previous travel time report (Spring 2015) 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
- Spring 2015 service change condition: May 18, 2015 through June 5, 2015
- Summer 2015 service change condition: July 8, 2015 through August 5, 2015

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:
  - o Automatic Vehicle Identification (AVI) readers installed at endpoints of key transit corridors
  - o **Data from Metro's signpost-based Automatic Vehicle Location (AVL) system (Baseline data only)**
  - o **Logs from Metro's On-Board System (OBS)**
- 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.

## Summer 2015 Service Changes and Impacts to Travel Time Reporting

- An error in "Trip I.D." assignment and accounting of through-routed pathways made data analysis for the J.2 inbound pathway unachievable. Efforts are being made to fix this error in time for the Fall 2015 report.
- No significant service changes were implemented in June 2015 affecting any of the pathways covered in this travel time report.

# 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*
<b>A</b>	A.1	Ballard, Uptown	15 <sup>th</sup> NW/NW 85 <sup>th</sup>	1 <sup>st</sup> Ave/Denny	D-Line
	A.2	Ballard	15 <sup>th</sup> NW/NW 85 <sup>th</sup>	1 <sup>st</sup> Ave/Denny	15X, [17X, 18X]
	A.3	Magnolia	Elliot Ave/Magnolia Br.	1 <sup>st</sup> Ave/Denny	19, 24, 33
<b>B</b>	B.1	North Seattle	Aurora Ave NW/NE 85 <sup>th</sup>	3 <sup>rd</sup> Ave/Battery	E-Line
	B.2	North Seattle	Bridge Way/N 38 <sup>th</sup>	3 <sup>rd</sup> Ave/Battery	5, [5X, 26X, 28X]
	B.3	Fremont	Dexter/Westlake/Fremont	Dexter/Denny	26, 28
	B.5	South Lake Union	15 <sup>th</sup> NW/Leary Way	Denny/Westlake	40
<b>I</b>	I.1	South Seattle/Burien	1 <sup>st</sup> Ave S/E. Marginal (OB) S Alaska/E Marginal (IB)	1 <sup>st</sup> Ave/Columbia (OB) 1 <sup>st</sup> Ave/Seneca (IB)	121, 122, 123
	I.2	South Seattle/Burien	4 <sup>th</sup> Ave S/S Michigan	4 <sup>th</sup> Ave/Jackson	131, 132
<b>J</b>	J.1	West Seattle	Alaska Jct	3 <sup>rd</sup> Ave/Seneca	none
	J.2	West Seattle	35 <sup>th</sup> Ave SW/SW Morgan	3 <sup>rd</sup> Ave/Seneca	21
	J.3	West Seattle	Alaska Jct.	1 <sup>st</sup> Ave/Columbia (OB) 1 <sup>st</sup> Ave/Seneca (IB)	C-Line, [21X]
	J.4	West Seattle	California Ave/SW Fautleroy Way	3 <sup>rd</sup> Ave/Yesler	116, 118, 119
	J.5	West Seattle/Burien	Delridge Way/Andover	1 <sup>st</sup> Ave/Columbia (OB) 1 <sup>st</sup> Ave/Seneca (IB)	120, 125
	J.7	West Seattle	Admiral Way/California Ave	1 <sup>st</sup> Ave/Columbia (OB) 1 <sup>st</sup> Ave/Seneca (IB)	56X, 57
<b>CBD</b>	CBD2A	2 <sup>nd</sup> Ave	2nd Ave/Pike **	5th Ave/Weller **	Many
	CBD3	3 <sup>rd</sup> Ave	3 <sup>rd</sup> Ave/Stewart	3 <sup>rd</sup> Ave/Yesler	Many
	CBD4	4 <sup>th</sup> Ave	4 <sup>th</sup> Ave/Jackson	4 <sup>th</sup> Ave/Stewart	Many
	CBD5	5 <sup>th</sup> Ave	5 <sup>th</sup> Ave/Pine	5 <sup>th</sup> Ave/Weller	Many
	Columbia	Columbia St	3rd Ave/Seneca	1st Ave/Columbia	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 CBD pathways they are not all listed here.

\*\* Adjusted start/end point due to transition to new OBS data source

## 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: Summer 2015, Spring 2015, and Baseline Travel Speeds**

Performance by Pathway Group: Summer 2015, Spring 2015 & 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	Summer 15'	13.7	13.7 - 16.2	12.3 - 15.3
		Spring 15'	13.6	13.1 - 15.3	12.3 - 15.3
		Baseline	14.9	12.1 - 23.6	11.4 - 19.0
B	Aurora, Fremont	Summer 15'	15.0	13.7 - 22.3	11.4 - 17.2
		Spring 15'	15.4	14.3 - 22.5	11.7 - 18.8
		Baseline	18.6	11.0 - 22.7	11.0 - 20.3
I	SODO, Georgetown	Summer 15'	15.8	17.1 - 29.4	13.8 - 24.6
		Spring 15'	16.0	17.1 - 24.4	14.4 - 28.3
		Baseline	17.7	16.4 - 48.4	12.7 - 21.7
J (1st)	West Seattle (1st)	Summer 15'	15.1	15.2 - 15.4	13.4 - 18.4
		Spring 15'	14.2	13.8 - 15.2	13.2 - 17.6
		Baseline	15.9	11.9 - 20.7	12.4 - 21.0
J (AWV)	West Seattle (AWV)	Summer 15'	24.8	18.7 - 31.3	20.6 - 29.6
		Spring 15'	25.0	17.8 - 31.0	23.9 - 35.5
		Baseline	30.1	20.1 - 36.6	22.1 - 33.8
CBD	2nd-5th Aves	Summer 15'	6.9	6.8 - 10.5	5.1 - 6.7
		Spring 15'	7.0	6.5 - 7.7	5.3 - 6.7
		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.

## **Summer 2015 Highlights**

The Summer 2015 reporting period saw increases of pm peak travel times from Spring 2015, for all pathway groups in the inbound direction. SR 99 closures and detours continue to divert traffic to surface streets and impact transit travel times. However, uniform increases in travel time for inbound pathways indicate increase demand for travel into the CBD, a reflection of continued population growth as well as seasonal demand of tourists visiting downtown Seattle. Additionally, continuing development in the South Lake Union neighborhood continues to impact roadway access and impact travel times.

Increased travel time was most severe for the inbound B.3 pathway, using Dexter Avenue N, into South Lake Union. Backups of vehicles on Mercer Street entering Interstate-5 are impacting vehicles travelling southbound on Dexter Avenue. Development and roadway construction on Mercer Street, changes in signal timing and the addition of bicycle lanes have exasperated these issues in the Summer 2015 reporting period. Median travel time for the pm peak has increased by as much as 9 minutes.

Outbound pathways have either stayed consistent with travel times observed in Spring 2015 or improved slightly.

### **A Pathways**

Inbound buses continue to have travel times 2-5 minutes greater than the baseline condition, with the greatest increases seen during the pm peak hours. Morning travel times have improved from the Spring 2015 reporting period as an outcome of extended restrictions on parking within bus lanes on Elliot Avenue W.

### **B Pathways**

Buses using Aurora, Dexter and Westlake Avenues, southbound continue to experience increased travel times. The pm peak has seen travel times increase from the Spring 2015 reporting period by 2-9 minutes, with the greatest degradation on Dexter Avenue. Northbound buses continue to match travel times recorded in the baseline period.

### **I Pathways**

Outbound and inbound travel times in the am peak period remain unchanged from Spring 2015. Travel time continues to be 2-4 minutes greater than the baseline for inbound am buses. Inbound pm travel times have gotten worse from the Spring 2015 reporting period, consistent with the trend seen among all pathways.

### **J Pathways**

No significant changes were seen in travel time on J pathways during the Summer 2015 reporting period.

### **CBD Pathways and Columbia Street**

Southbound 2<sup>nd</sup> Ave continues to experience travel times 3-7 minutes greater than baseline conditions and these have increased from the Spring 2015 reporting period. Despite the increase in travel times, variation in travel times has improved from previous conditions. Travel times on 4<sup>th</sup> and 5<sup>th</sup> Avenues, north and southbound respectively, have increased by 1-3 minutes in the pm peak hours with the largest increases seen on 4<sup>th</sup> Avenue. These observations of continuing degradation of travel times are consistent with past reporting.

## 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 travel times remain relatively unchanged in Summer 2015 compared to Spring 2015. Pathway J.3 had shown increases in travel time after the beginning of the Wosca Detour, but then showed improvement after implementation of RapidRide improvements. Route 21X benefits from a few of the Rapid Ride improvements, such as the AM peak period bus lane on Avalon Way, but does not receive the full complement of C Line RapidRide improvements. Based on previous and current travel time results, route 21X is likely experiencing travel times about 2 minutes longer than the baseline condition during the AM peak flow.

**Route 56X [Pathway J.7]** – Pathway J.7 is a peak-only pathway using the AWW. This pathway shows slight improvement in travel time in the AM peak compared to Spring 2015, while other AWW pathways show an increase in AM travel times.

**Route 121 [Pathway I.1]** – Pathway I.1 is a peak-only pathway with limited reverse-peak trips. Travel times have remained about the same compared to Spring 2015, with the exception of PM inbound trips where travel times have increased by 1-2 minutes. AM inbound travel times are still 3 – 4 minutes greater than baseline conditions.

**Route 120 [Pathway J.5]** – Pathway J.5 shows little to change to travel time compared to the Spring 2015 reporting period. Midday trips inbound saw an increase of 1-2 minute travel times. AM travel times are about 2 minutes longer than baseline conditions.

**Route 18X [Pathway A.2]** – Pathway A.2, a peak-only pathway using 15<sup>th</sup> Ave and Elliott Ave, remains consistent with travel times from Spring 2015 during both AM and PM peaks. Travel times on this pathway during AM and PM peaks are about 1 – 4 minutes longer than baseline conditions.

**RapidRide E Line [Pathway B.1]** – Pathway B.1 continues to experience improvement on travel times from the baseline in the outbound direction. Inbound pm peak travel times continue to be worse than baseline and have seen an increase of two minutes compared to Spring 2015 conditions. Pathway B.1 has previously shown improvement due to RapidRide improvements and BAT lanes north of the Aurora Bridge, therefore Pathway B.2 provides a better picture of the effect that construction activities in the South Lake Union area have on Pathway B.1 compared to baseline. PM Peak travel times in the outbound direction on Pathway B.2 are one minute worse than baseline travel times.

## **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 travel times remain relatively unchanged in Spring 2015 compared to Fall 2014. Pathway J.3 had shown increases in travel time after the beginning of the Wosca Detour, but then showed improvement after implementation of RapidRide improvements. Route 21X benefits from a few of the Rapid Ride improvements, such as the AM peak period bus lane on Avalon Way, but does not receive the full complement of C Line RapidRide improvements. Based on previous and current travel time results, route 21X is likely experiencing travel times about 2 minutes longer than the baseline condition during the AM peak flow.

**Route 56X [Pathway J.7]** – Pathway J.7 is a peak-only pathway using the AWW. This pathway shows slight improvement in travel time in the AM peak compared to Fall 2014, while other AWW pathways show an increase in AM travel times. AM inbound travel times on this pathway are highly variable due to continued use of the Wosca Detour.

**Route 121 [Pathway I.1]** – Pathway I.1 is a peak-only pathway with limited reverse-peak trips. Travel times have remained about the same compared to Fall 2014, with the exception of PM inbound trips where travel times have increased by one minute. AM inbound travel times are still 3 – 4 minutes greater than baseline conditions.

**Route 120 [Pathway J.5]** – Pathway J.5 shows about one minute of increased travel time in the AM peak compared to Fall 2014, consistent with other AWW pathways and a continuation of travel time added in Fall 2014 as well. AM travel times are about 2 minutes longer than baseline conditions.

**Route 18X [Pathway A.2]** – Pathway A.2, a peak-only pathway using 15<sup>th</sup> Ave and Elliott Ave, remains consistent with travel times from Fall 2014 during both AM and PM peaks. Travel times on this pathway during AM and PM peaks are about 1 – 4 minutes longer than baseline conditions.

**RapidRide E Line [Pathway B.1]** – Pathway B.1 continues to experience improvement on travel times compared to both the baseline and Fall 2014 conditions as construction activities for the North Access Project come closer to completion. Pathway B.1 has previously shown improvement due to RapidRide improvements and BAT lanes north of the Aurora Bridge, therefore Pathway B.2 provides a better picture of the effect that construction activities in the South Lake Union area have on Pathway B.1 compared to baseline. PM Peak travel times in the outbound direction on Pathway B.2 are one minute worse than baseline travel times.

# 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 AWW program. WSDOT is investing \$800,000 July 1, 2015 to June 30, 2017 in strategic trip reduction projects to complement the Enhanced Transit Service project with employer outreach and promotions of the enhanced transit service. 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 *800 peak round trips each weekday*. A description of the TDM projects follows in TDM Table 1 below:

**TDM Table 1**

TDM Project Definitions	
Program	Description
<p><b>Employer Outreach</b> <b>\$335,000 WSDOT</b></p>	<p><b>To be implemented in 3 parts:</b></p> <ol style="list-style-type: none"> <li>1) Market and sell ORCA Passport to employers in Central Business District, Pioneer Square, First Hill, and Belltown. <b>Deliverable:</b> Conduct outreach in the markets described above and distribute 400 transit passes. Conduct 12 outreach events at employers to encourage increased use and/or distribution of Passport. <b>Budget:</b> \$200,000</li> <li>2) Provide incentives to get new ORCA Passport customers on board along the viaduct travel shed including Central Business District, Pioneer Square, First Hill and Belltown. Outreach focused on weekday, peak-period commuters. <b>Deliverable:</b> Distribute 400 incentives. <b>Budget:</b> \$65,000</li> <li>3) Outreach to employers with high proportion of low-income employees to encourage use of transit and promote ORCA LIFT. Will focus on hotel employers with staff arriving to work during the peak period. <b>Deliverable:</b> Engage 6 hotels in the target area and host 6 events. <b>Budget:</b> \$70,000</li> </ol>

<p><b>Transit Promotions</b> <b>\$445,000 WSDOT</b></p>	<p><b>To be implemented in 3 parts:</b></p> <ol style="list-style-type: none"> <li>1) Support 7-10 day viaduct closure in February 2016 (estimated date), with messaging to try new modes of transportation during closure in exchange for incentives to get started. Advertise via traditional and social media (radio, billboards, local newspaper ads, Facebook, Twitter, etc). Drive people to website with pertinent information, sign up and incentive information. <b>Deliverable:</b> Promote enhanced transit to 10,000 households in identified neighborhoods. <b>Budget:</b> \$55,000</li> <li>2) Conduct 4 to 6 corridor-based mailings along corridors with enhanced transit service. Communicate value of bus routes on and connecting to the corridor and potential for connections to transit by active modes of transportation where facilities are available. Focus mailings on corridors in neighborhoods identified in previously completed traffic analysis such as West Seattle, White Center, South Park and Burien and on corridors where routes have added trips – 18X, 21X, 56, 120 and 121. <b>Deliverable:</b> Conduct a minimum of 4 mailings along corridor with enhanced transit service. Promote transit services to 30,000 households served by enhanced transit. <b>Budget:</b> \$215,000</li> <li>3) Support enhanced transit service by delivering an ongoing campaign that includes local print and online geo-targeted media, outreach events, and messaging at bus stops or on buses to existing riders to ride more. Focus on corridors in neighborhoods identified in previously completed traffic analysis such as West Seattle, White Center, South Park and Burien and on corridors where routes have added trips – 18X, 21X, 56, 120 and 121 corridors noted above. <b>Deliverable:</b> Promote enhanced transit to 30,000 households. <b>Budget:</b> \$175,000</li> </ol>
<p><b>Strategic Plan and Measurement</b> <b>\$20,000 WSDOT</b></p>	<p>Analyze and report on overall results of transportation demand management efforts.</p>

## TDM PROGRAM TIMELINE

The program schedule is below:

**TDM Table 2**

	2015				2016				2017			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>TDM Program Timeline</b>												
Employer Outreach			◆									◆
Transit Promotions					◆							◆
Strategic Plan and Measurement				◆								◆

## TDM Program Update and Performance

Listed below in TDM Table 3 are the TDM program updates for July 1, 2015 to September 25, 2015.

At the beginning of the contract, Metro worked with WSDOT staff to develop the methodology to measure performance. The factors used to measure progress in the AWV TDM program used past performance and other factors to estimate performance. 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.

**TDM Table 3**

<b>TDM Program Update – (July 1, 2015 – September 25, 2015)</b>	
<b>Employer Outreach</b>	<p><b>Performance:</b> This program has reduced 31 trips.  <b>Activities:</b> Employer outreach was provided via continued marketing to employers in the target neighborhoods and via staff sales outreach in the Seattle Central Business District, First Hill, Pioneer Square and Belltown. 432 new Passports were sold during this period.</p>
<b>Transit Promotions</b>	<p><b>Performance:</b> This program has reduced 0 trips.  <b>Activities:</b> Scoping of the transit promotions began during this program reporting period, for implementation of part one in March 2016 and parts 2 and 3 in the spring of 2016.</p>

As of this reporting period, 31 trips have been reduced.

**TDM 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
Employer Outreach	400	31			
Subtask 1			Transit Passes Distributed	400	432
Subtask 1			Outreach events held	12	2
Subtask 2			Transit Incentives Distributed	400	432
Subtask 3			Hotels engaged	6	0
Subtask 3			Outreach events held	6	0
Transit Promotions	400	0			
Subtask 1			Households	10,000	0
Subtask 2			Households	30,000	0
Subtask 2			Household mailings completed	4	0
Subtask 3			Households	30,000	0
<b>TOTAL</b>	<b>800</b>	<b>31</b>			

**TDM BUDGET AND EXPENDITURE – SEPTEMBER 2015**

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

**TDM Table 5**  
3Q2014 - Jul-Sep 2015

Activity	Expenses this period	Total Expenses to date	% of total
<b>Employer Outreach</b>	\$30,175.48	\$30,175.48	9.0%
Subtask 1	\$15,390.48	\$15,390.48	7.7%
Subtask 2	\$12,770.00	\$12,770.00	36.9%
Subtask 3	\$0.00	\$0.00	0.0%
<b>Transit Promotions</b>	\$0.00	\$0.00	0.0%
Subtask 1	\$0.00	\$0.00	0.0%
Subtask 2	\$0.00	\$0.00	0.0%
Subtask 3	\$0.00	\$0.00	0.0%
<b>Measurement</b>	\$0.00	\$0.00	0.0%
Total	\$30,175.48	\$30,175.48	3.8%

**Task:** Employer Outreach  
**Task Lead:** Sunny Knott

**Total Average Daily Round Trips Reduced Through Distribution of New Passports**

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

$$= ((54.1\%) - (46.4\%)) * (0,399) = \mathbf{31}$$

ORCA Passport	
During Program Implementation	
Alternate Mode Share (transit and vanpool) for Passport Sites	54.1%
Alternate Mode Share for Non-Passport Sites	46.4%
Retention of Newly Distributed Passports	90.0%

	Service Period	New Passports Issued			Passports Expiring	Passports Retained	Passports in Use*			Average Passports in Use
		CBD & Pioneer Square	First Hill	Belltown			CBD & Pioneer Square	First Hill	Belltown	
Program Period	Summer 2015	432	0	0			432	0	0	399
	Winter 2015						432	0	0	
	Summer 2016				432	389	389	0	0	
	Winter 2016				0	0	389	0	0	
	Summer 2017				389	350	350	0	0	
Post Program Period	Summer 2017 - Post				0	0	350	0	0	
	Winter 2017				350	315	315	0	0	
	Summer 2018				0	0	315	0	0	
	Winter 2018				315	284	284	0	0	
	Summer 2019				0	0	284	0	0	
	<i>Sub-Total</i>	432	0	0						
	<b>Grand Total</b>			<b>432</b>						

\*passports in use are calculated per neighborhood, assuming that, at the time of their expiration (after one year), cards have a retention rate as specified above

Weekday Ridership, Winter through 0									WSDOT Analysis						
Pathway / Route	Composite Baseline		Targeted Promotions by Pathway or Route and Service Period						Annualized Trip Reductions					Total Round Trips Reduced	
	Winter	Summer	Summer 2015	Winter 2015	Summer 2016	Winter 2016	Summer 2017	Summer 2015	Winter 2015	Summer 2016	Winter 2016	Summer 2017	Summer 2015 through Summer 2017		
Pathway I - SODO / Georgetown	14,967	14,352											0		
Pathway J - West Seattle	32,830	32,919											0		
Pathway A - Ballard / Magnolia	22,438	22,913											0		
Pathway B - Aurora / Fremont	43,531	43,800											0		
													0		
													0		
													0		

\*Performance of the transit promotions is measured at the transit pathway level which includes routes with enhanced transit services funded by WSDOT. We are unable to distinguish between the effects of the promotion versus the enhanced transit service so their performance is measured jointly. However, not all performance of the enhanced transit service is represented here since measurements are only shown for periods when promotions were implemented.

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

	Summer 2015	Winter 2015	Summer 2016	Winter 2016	Summer 2017		Total
Households / Employees Reached	0						

# Interpreting the Hourly Pathway Summaries

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

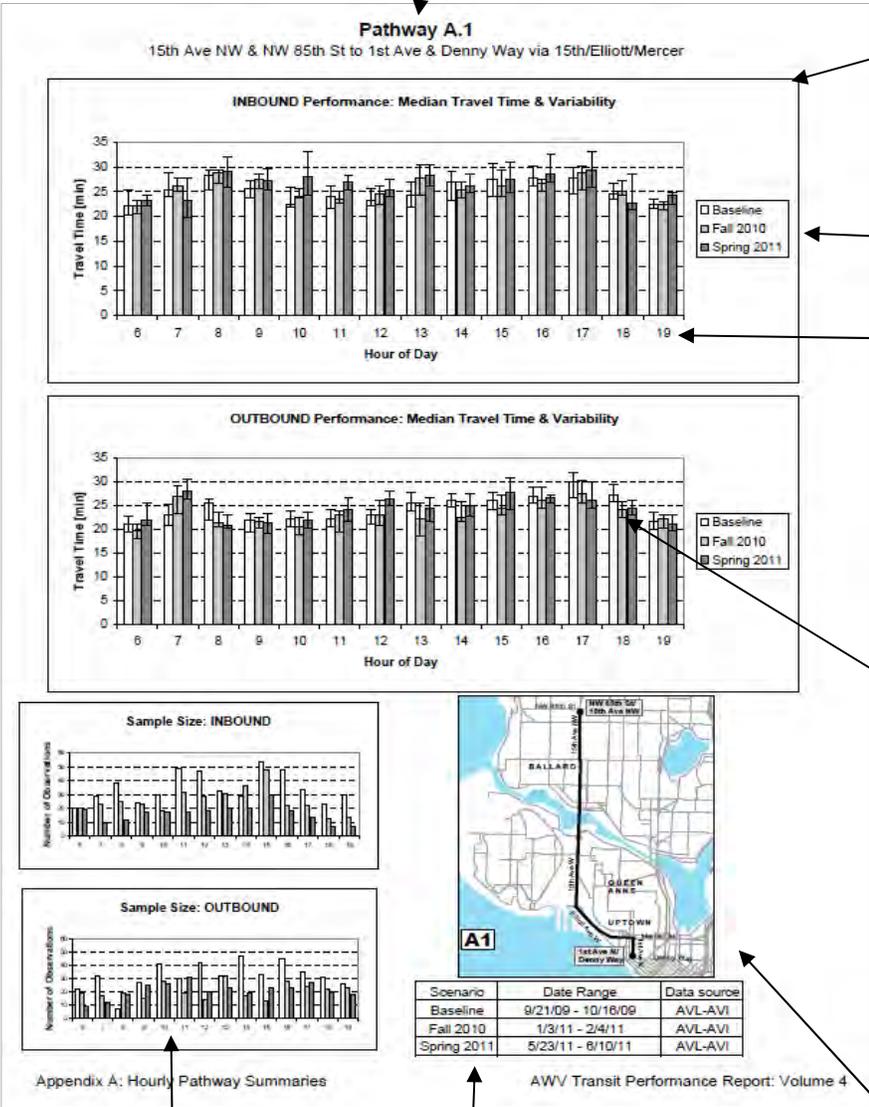
**Direction**  
Most pathways have two directions, either inbound/outbound or northbound/southbound. Inbound trips generally head into the Seattle CBD, and outbound trips generally originate in the CBD. Separate charts are provided for the two directions.

**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.



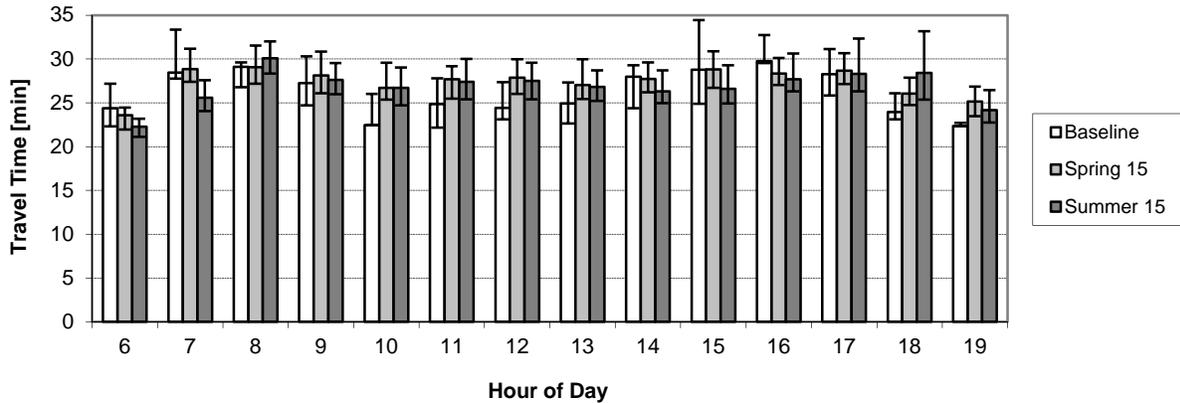
**Sample Size Charts**  
These charts show the number of observations used within each slice of travel time data. These charts provide an indication of the quality and relevancy of the data that is presented in the larger charts.

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

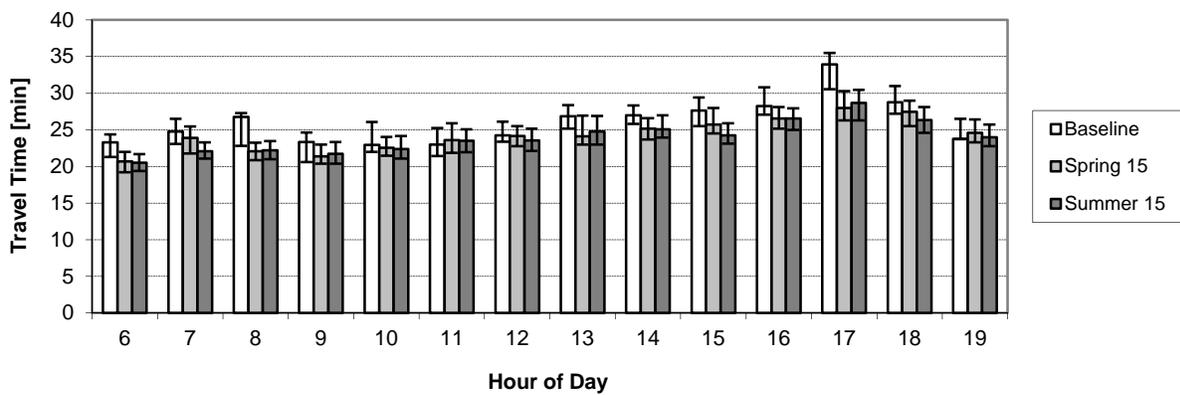
## Pathway A.1

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

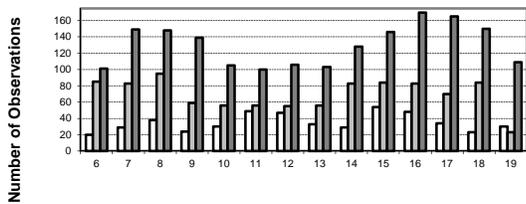
### INBOUND Performance: Median Travel Time & Variability



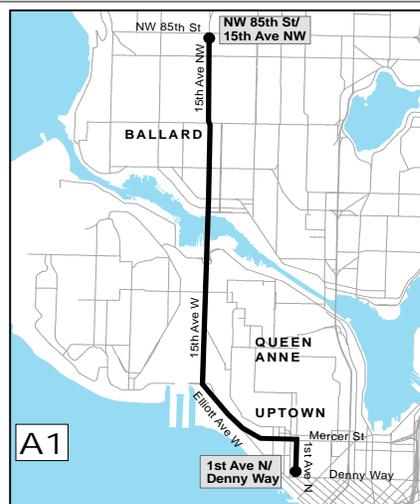
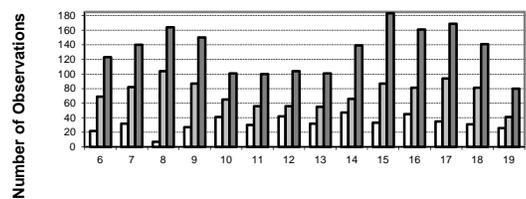
### OUTBOUND Performance: Median Travel Time & Variability



### Sample Size: INBOUND



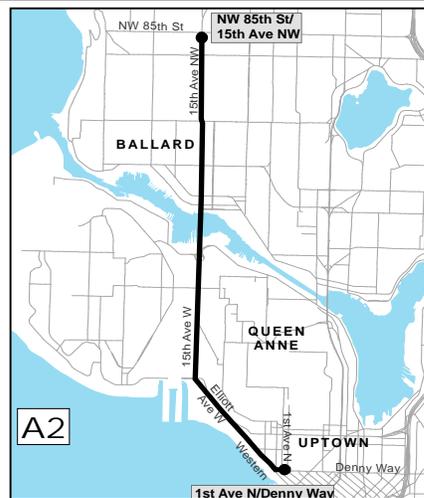
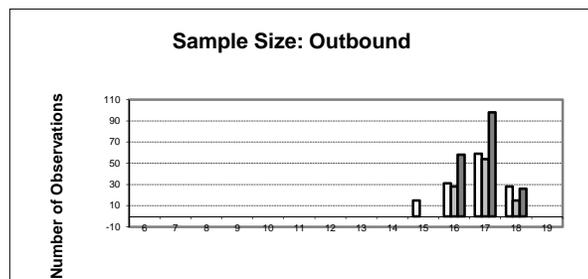
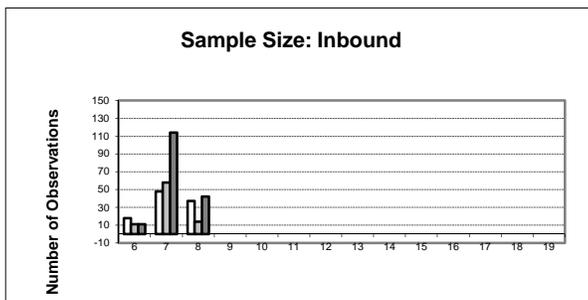
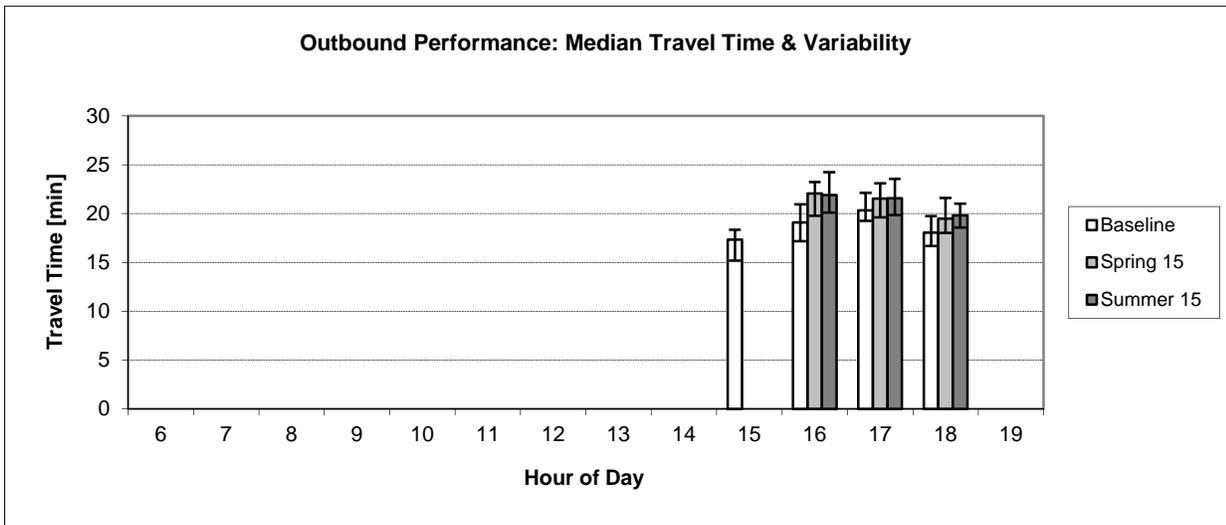
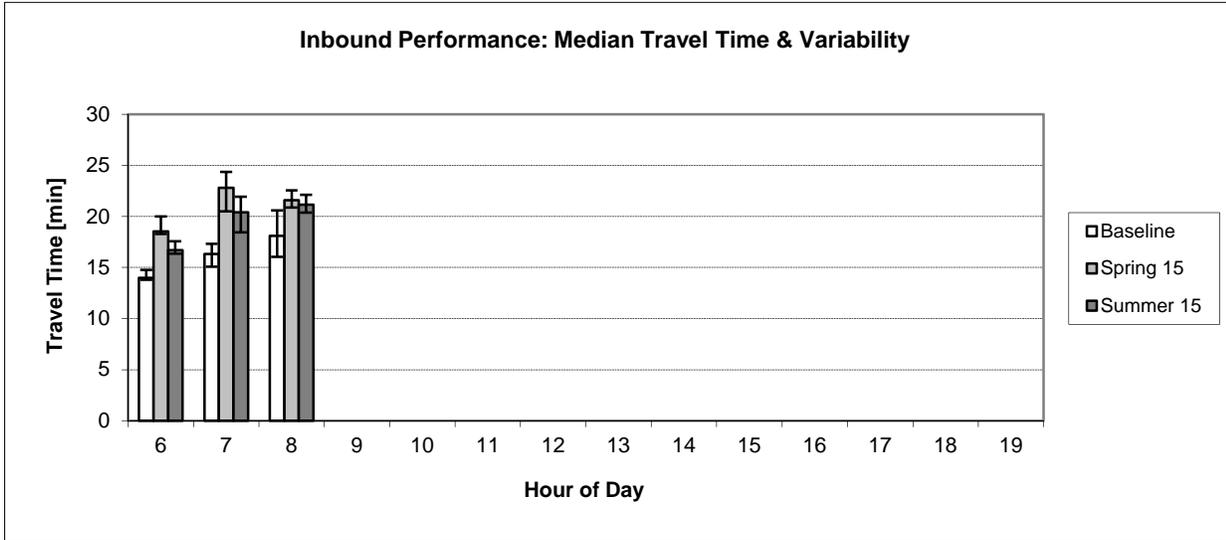
### Sample Size: OUTBOUND



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Spring 15	5/18/15 - 6/05/15	TSP
Summer 15	7/8/15 - 8/5/15	TSP

## Pathway A.2

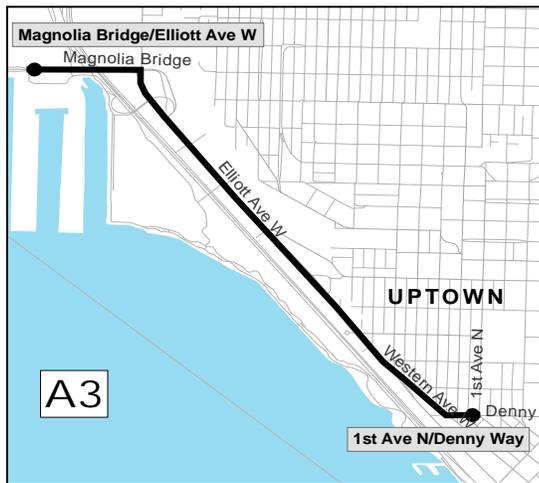
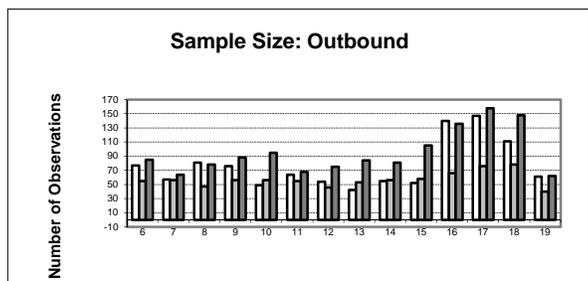
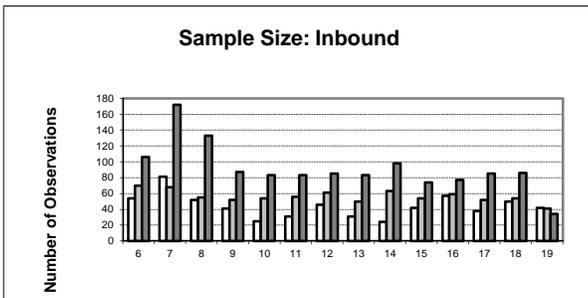
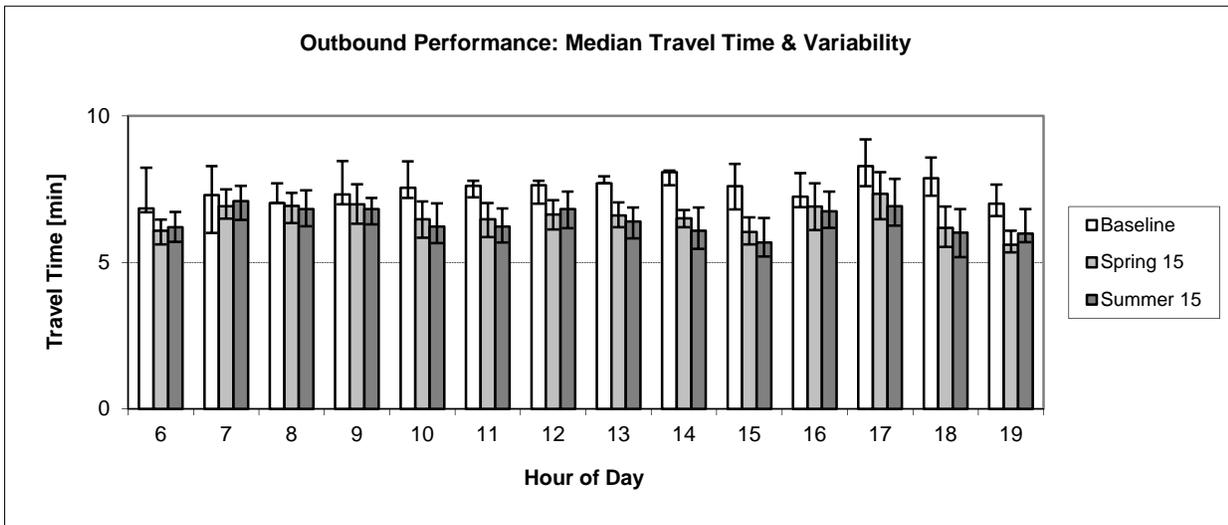
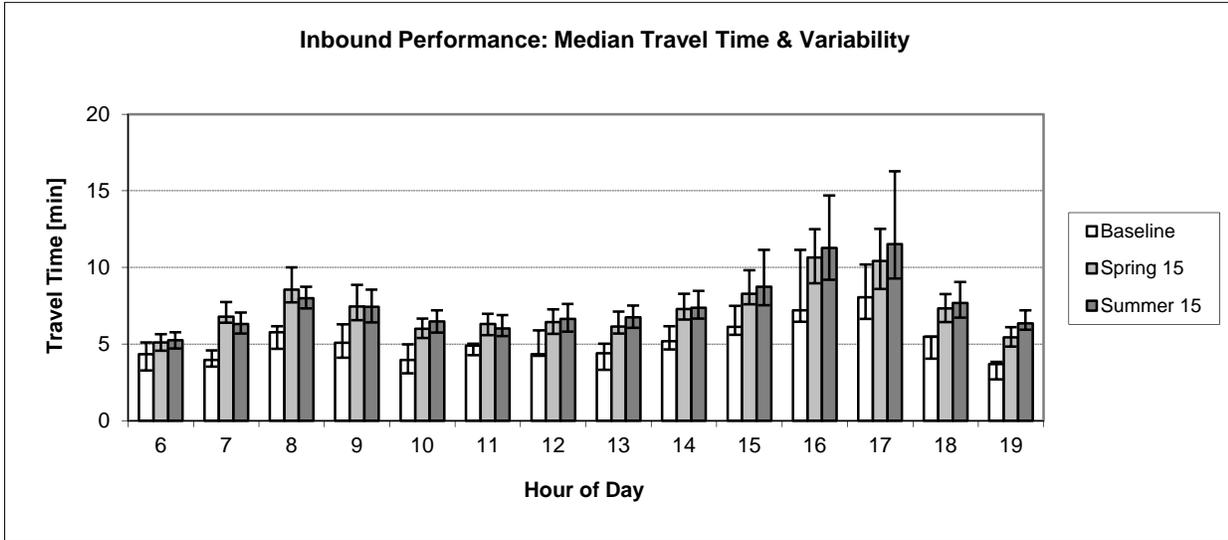
15th Ave NW & NW 85th St to 1st Ave & Denny Way via 15th/Elliott/Western (Peak Only)



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Spring 15	5/18/15 - 6/05/15	AVL-AVI
Summer 15	7/8/15 - 8/5/15	AVL-AVI

## Pathway A.3

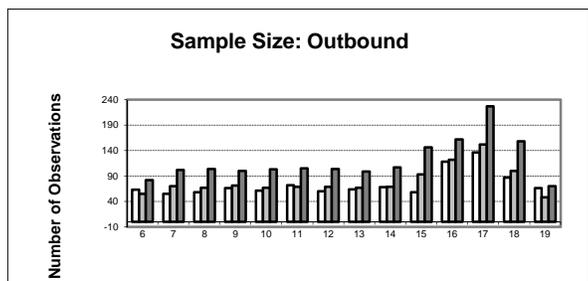
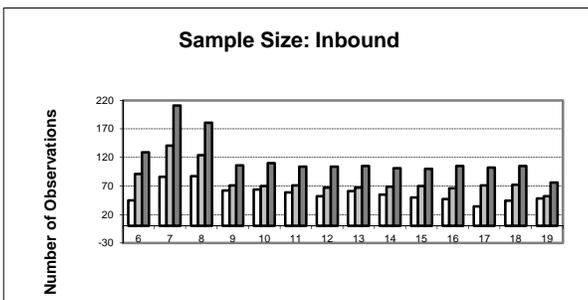
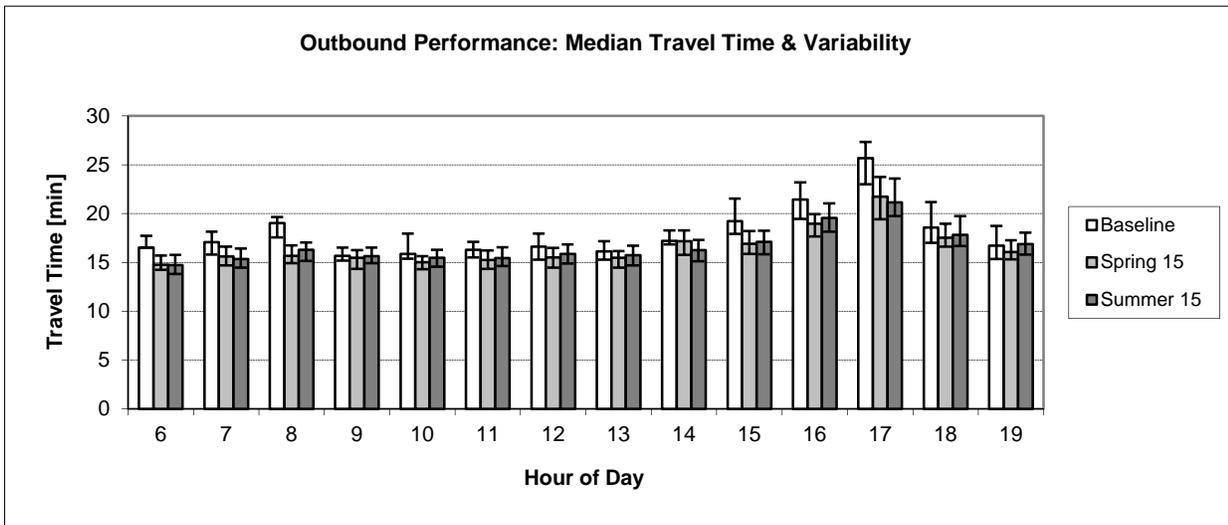
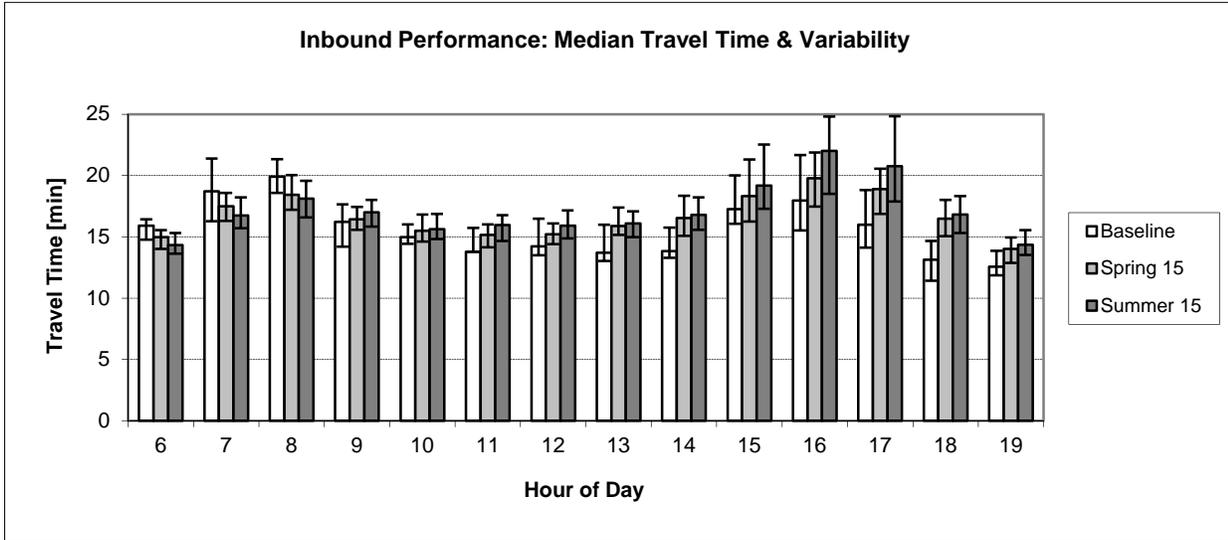
Magnolia Bridge to 1st Ave & Denny Way via Elliott/Western



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Spring 15	5/18/15 - 6/05/15	AVL-AVI
Summer 15	7/8/15 - 8/5/15	AVL-AVI

## Pathway B.1

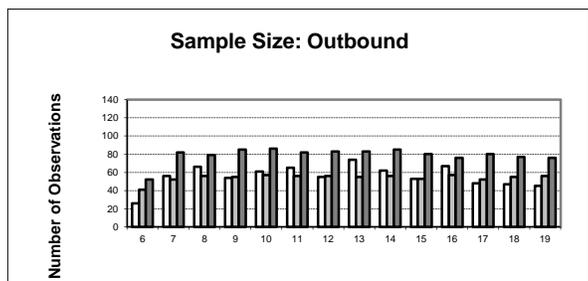
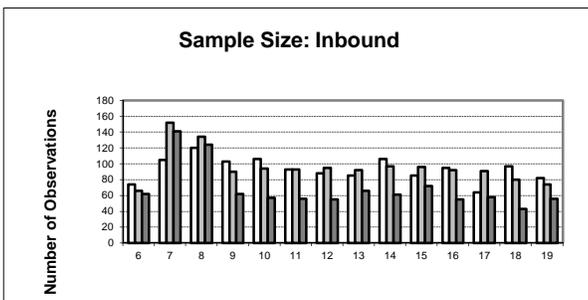
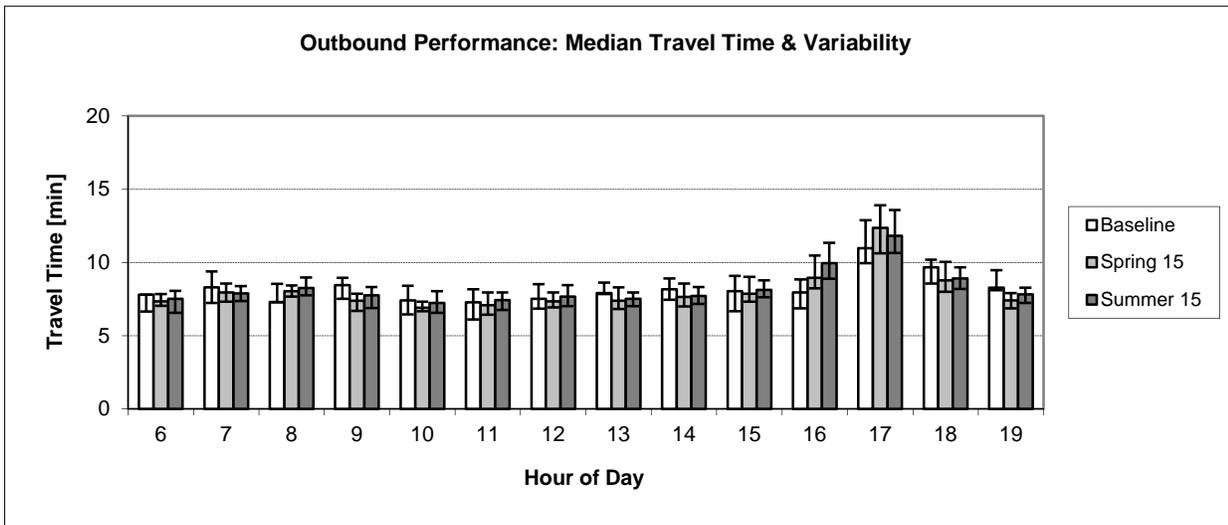
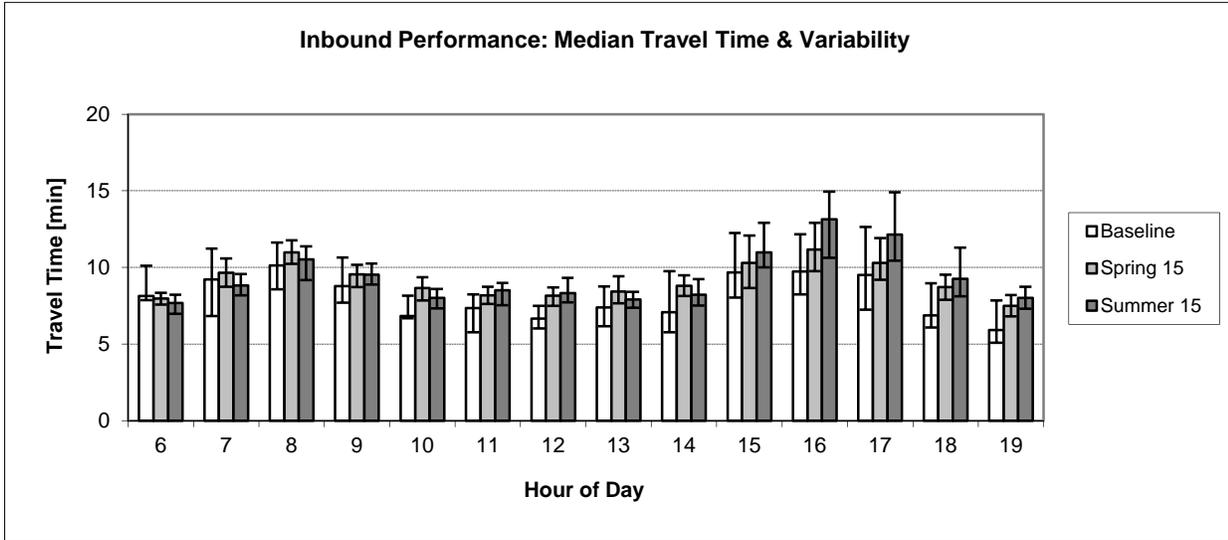
Aurora Ave N & N 85th St to 3rd Ave & Battery St via Aurora Ave



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Spring 15	5/18/15 - 6/05/15	AVL
Summer 15	7/8/15 - 8/5/15	AVL

## Pathway B.2

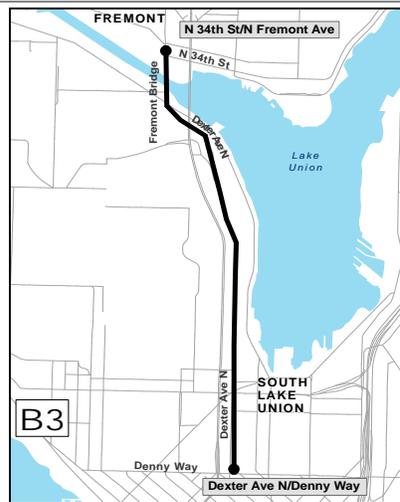
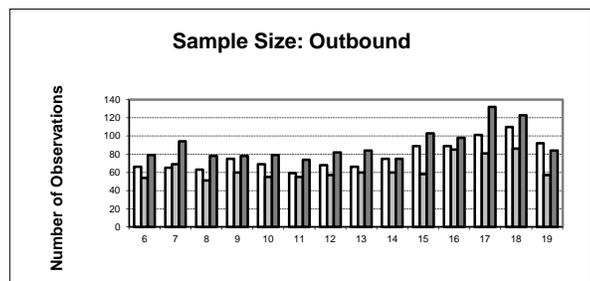
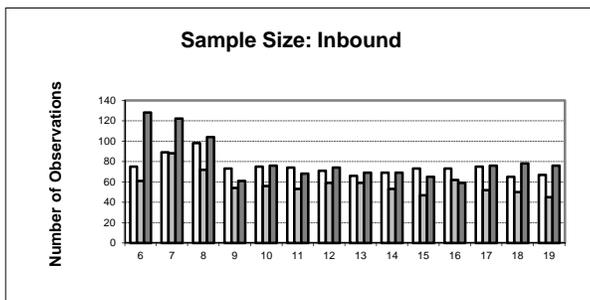
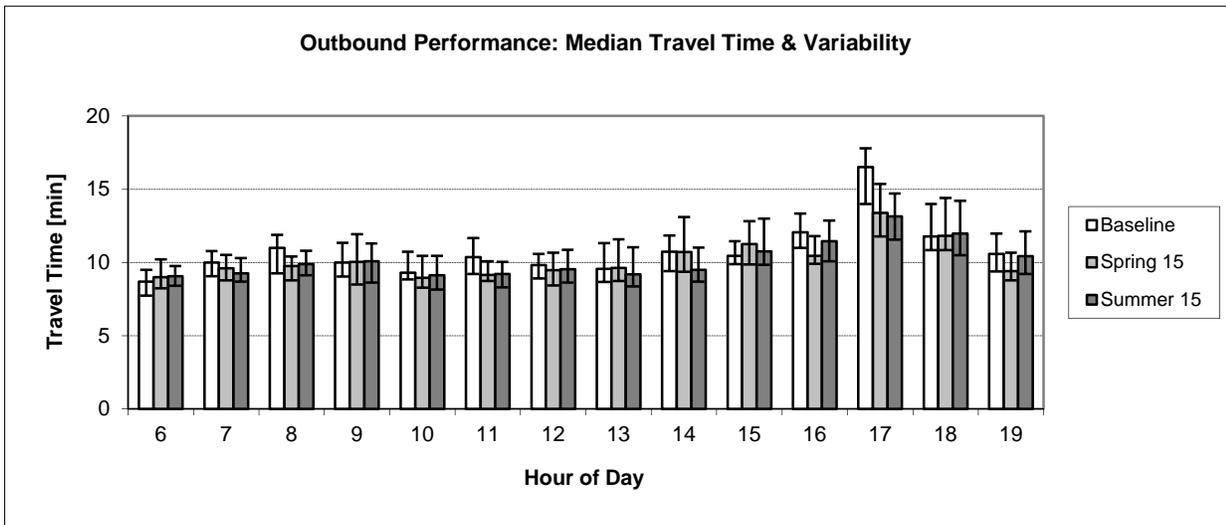
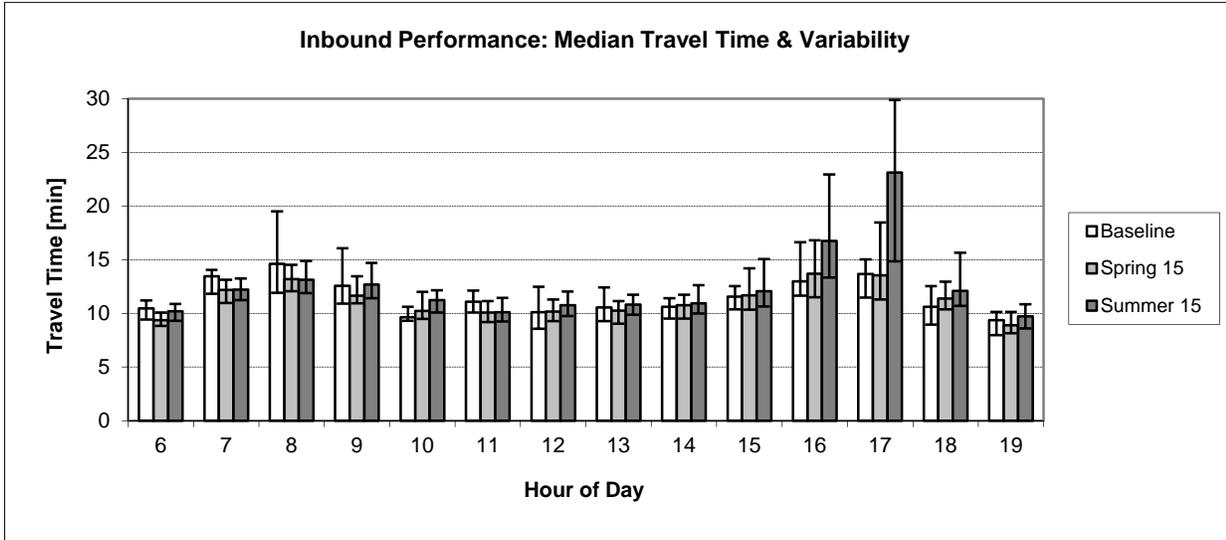
Bridge Way & N 38th St to 3rd Ave & Battery via Aurora Ave



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Spring 15	5/18/15 - 6/05/15	AVL
Summer 15	7/8/15 - 8/5/15	AVL

## Pathway B.3

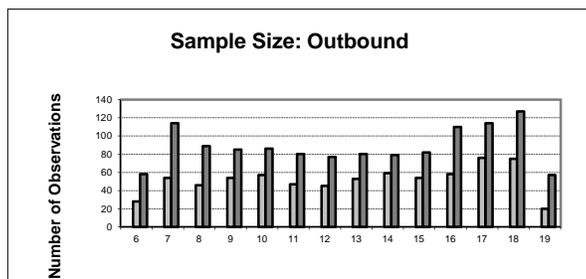
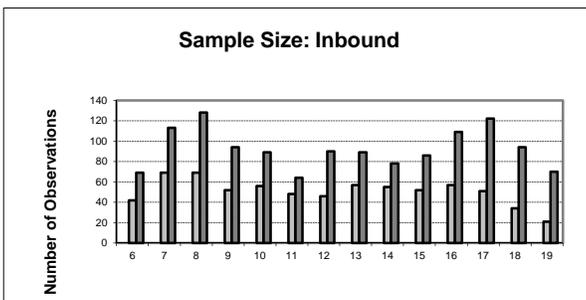
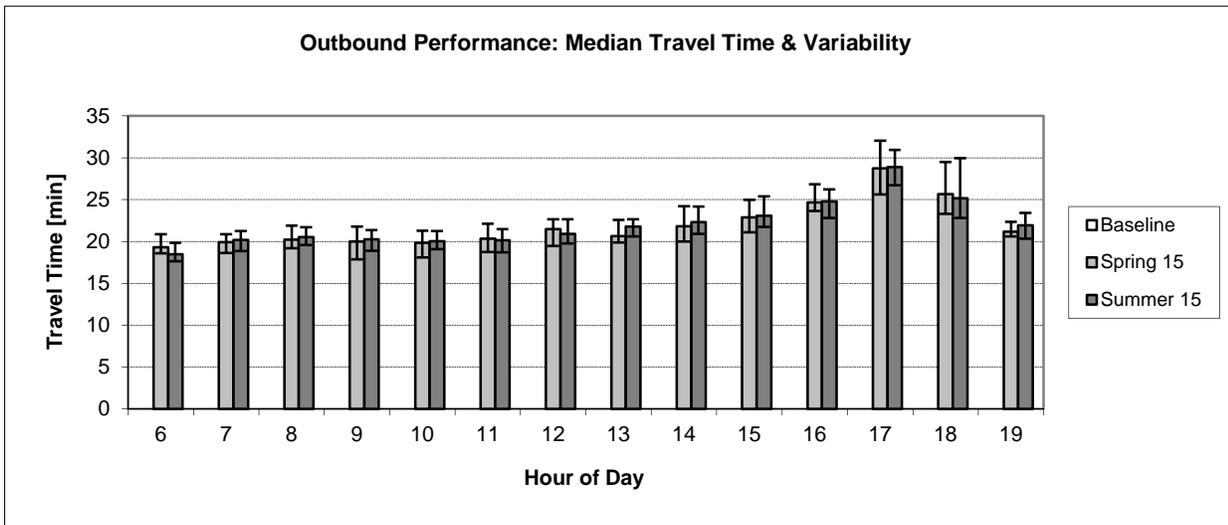
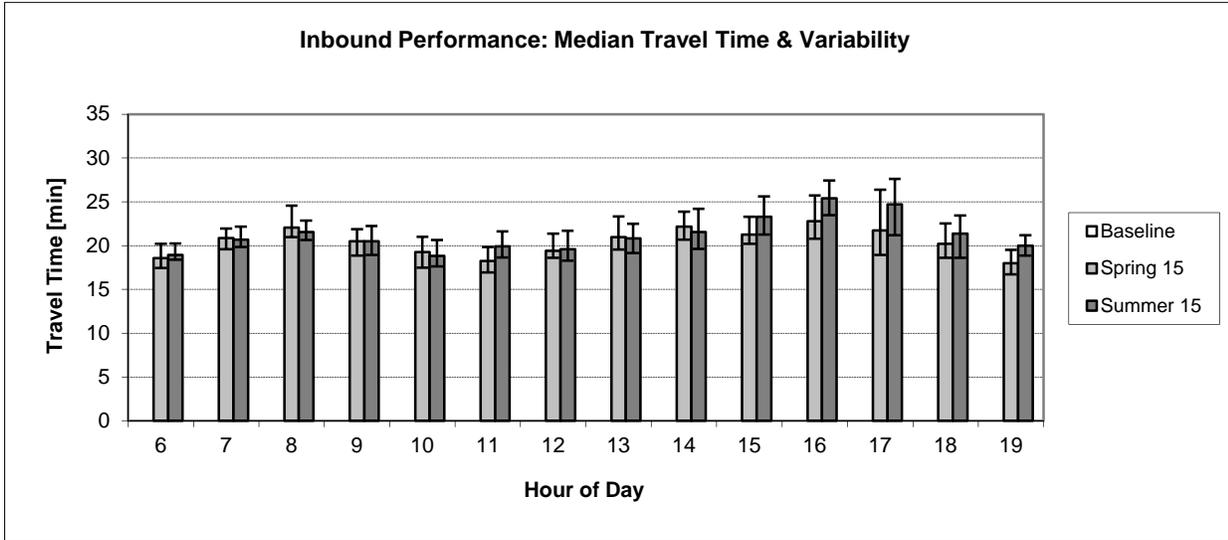
Fremont Ave N & N 34th St to Denny Way & Dexter Ave via Dexter



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL
Spring 15	5/18/15 - 6/05/15	AVL
Summer 15	7/8/15 - 8/5/15	AVL

## Pathway B.5

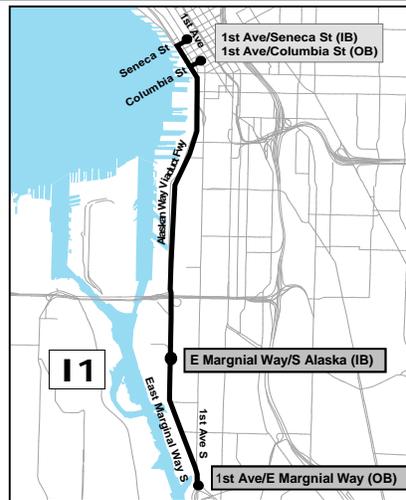
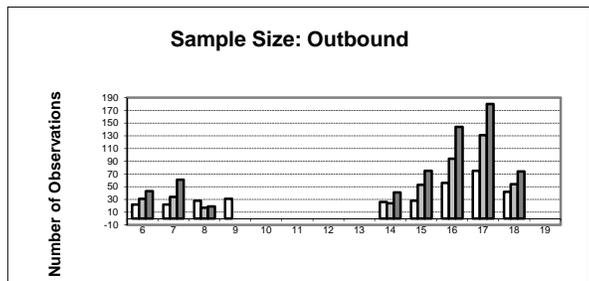
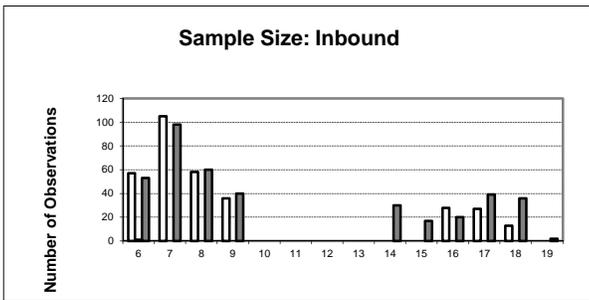
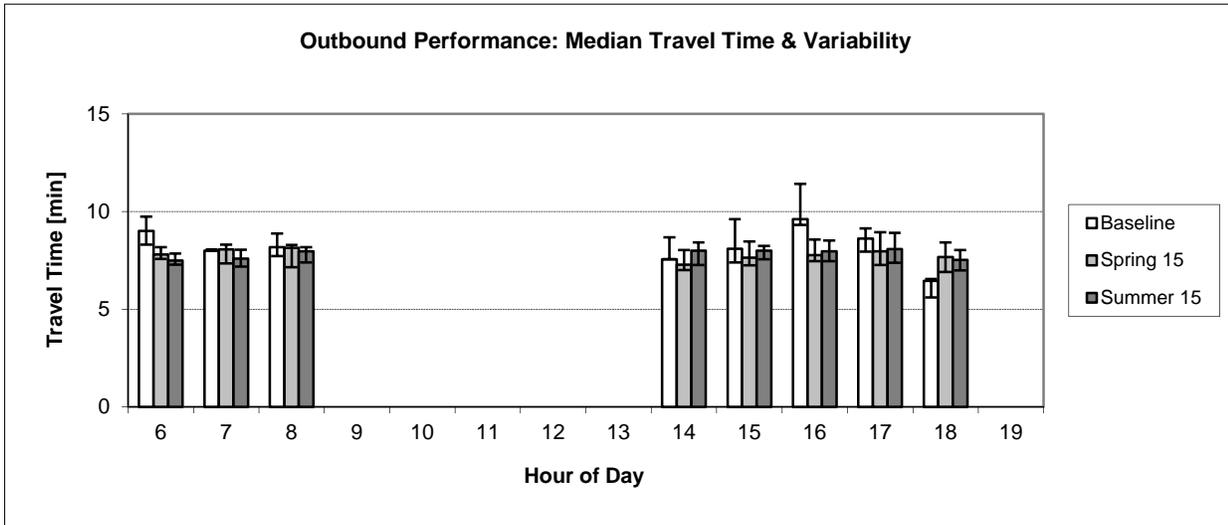
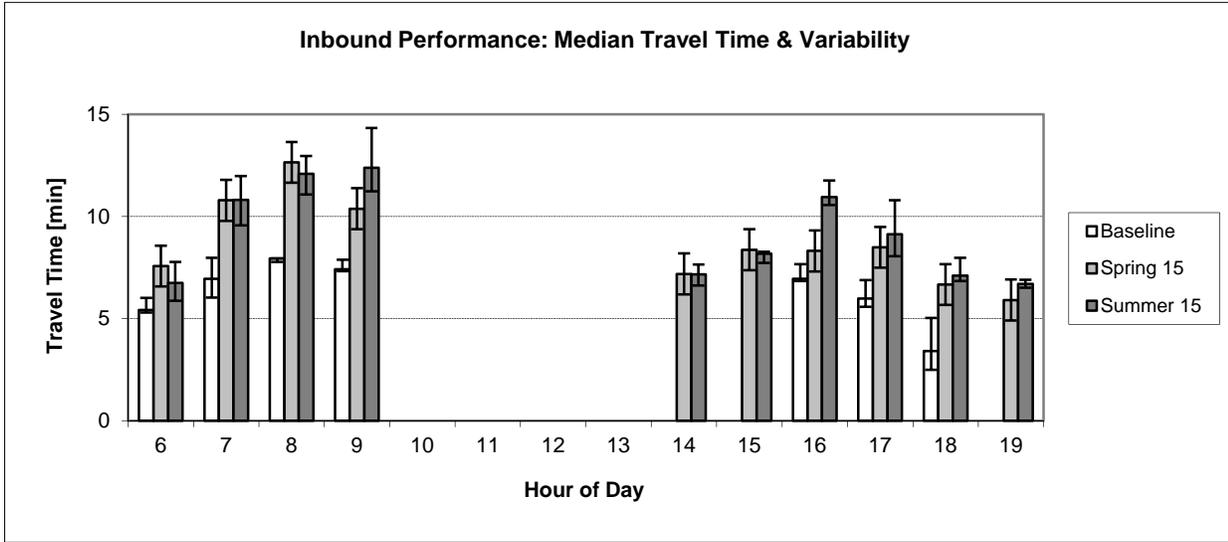
Westlake Ave/9th Ave & Denny Way to Leary Way & 15th Ave NW via Westlake Ave



Scenario	Date Range	Data source
Baseline	Pathway was not used	N/A
Spring 15	5/18/15 - 6/05/15	AVL
Summer 15	7/8/15 - 8/5/15	AVL

# Pathway I.1

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



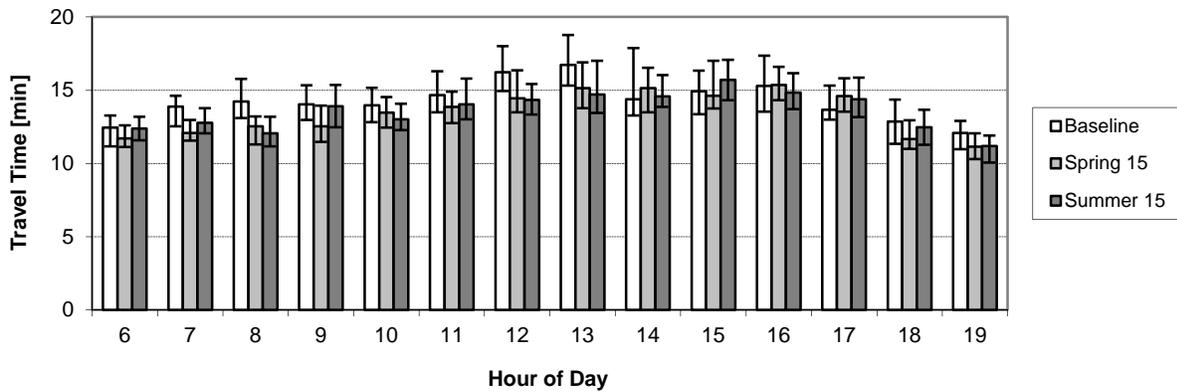
Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Spring 15	5/18/15 - 6/05/15	AVL-AVI
Summer 15	7/8/15 - 8/5/15	AVL-AVI

## Pathway I.2

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

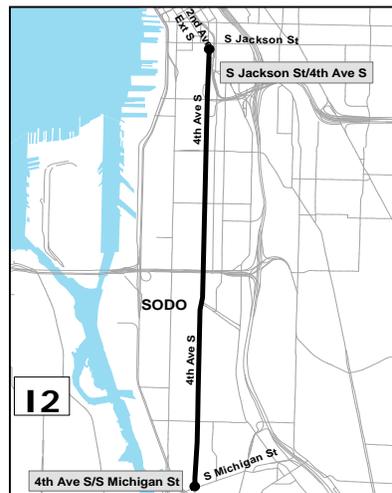
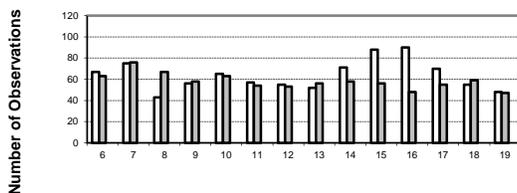
DATA NOT AVAILABLE

Outbound Performance: Median Travel Time & Variability



DATA NOT AVAILABLE

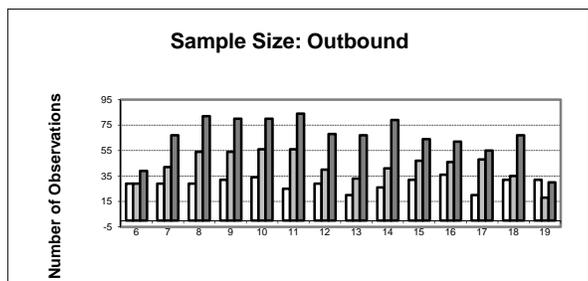
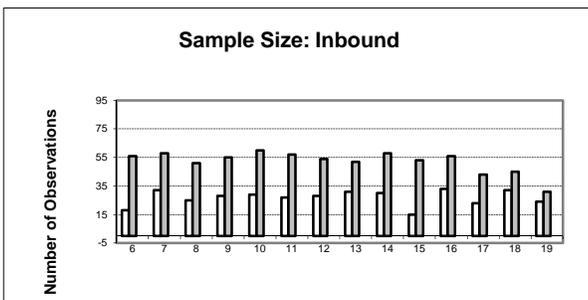
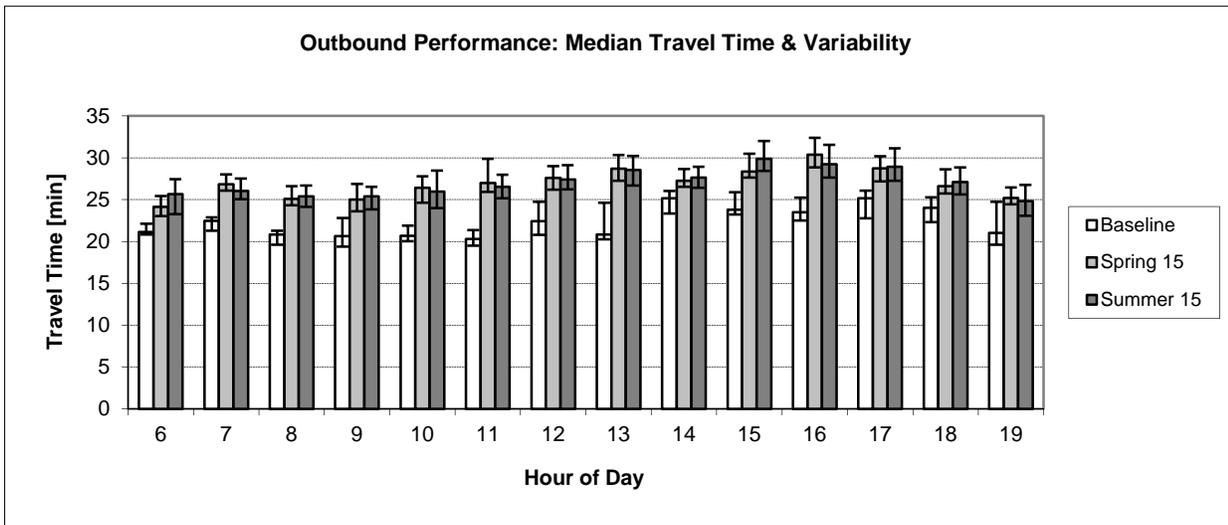
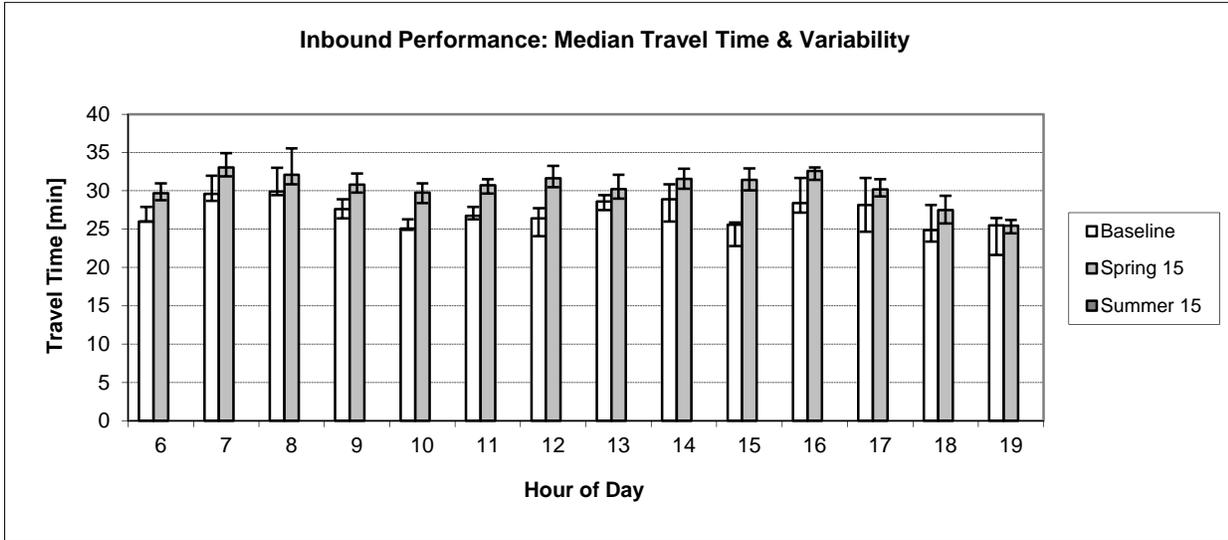
Sample Size: Outbound



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Spring 15	5/18/15 - 6/05/15	AVL-AVI
Summer 15	7/8/15 - 8/5/15	AVL

## Pathway J.2

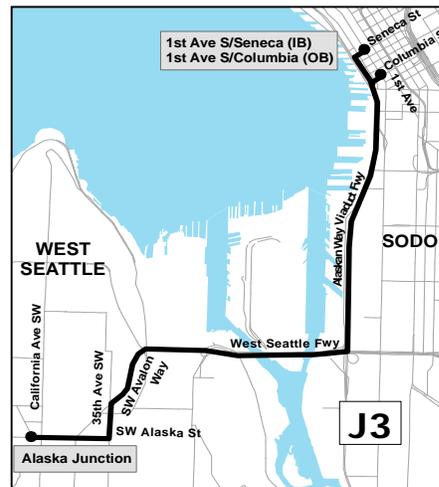
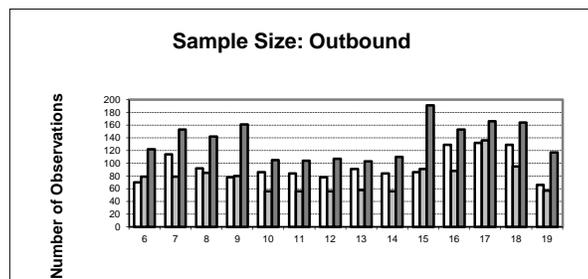
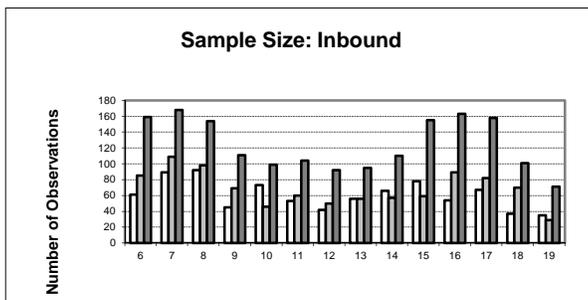
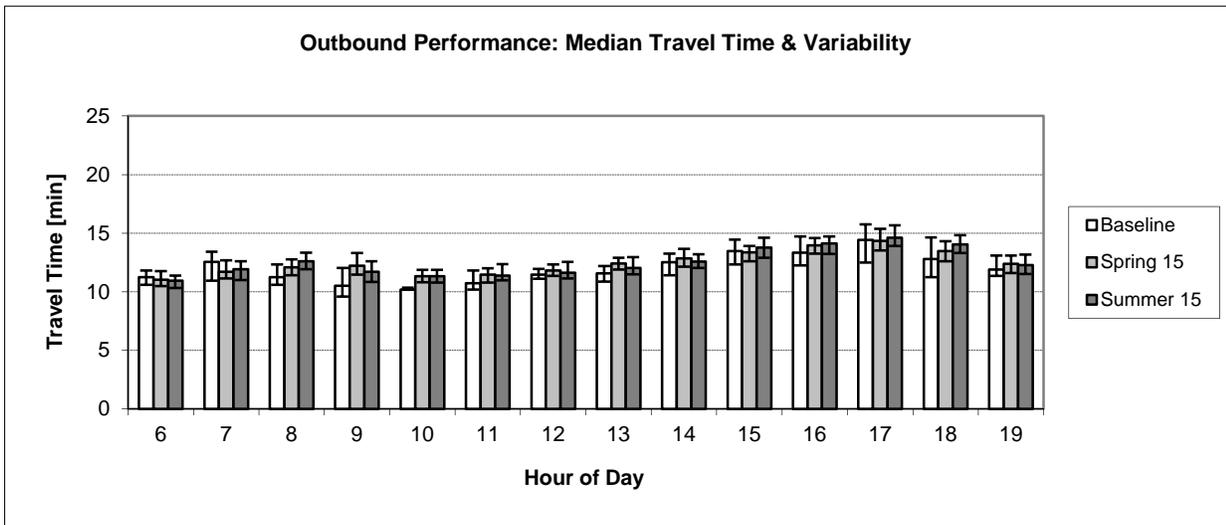
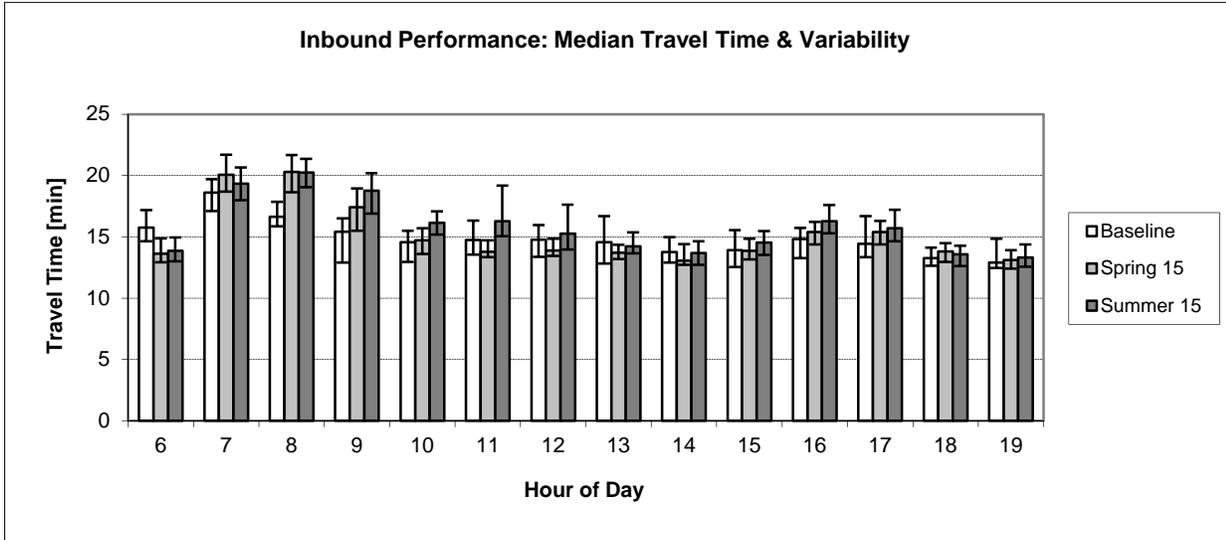
35th Ave SW & SW Morgan St to 3rd Ave & Seneca St via 1st Ave S



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Spring 15	5/18/15 - 6/05/15	AVL-AVI
Summer 15	7/8/15 - 8/5/15	AVL-AVI

## Pathway J.3

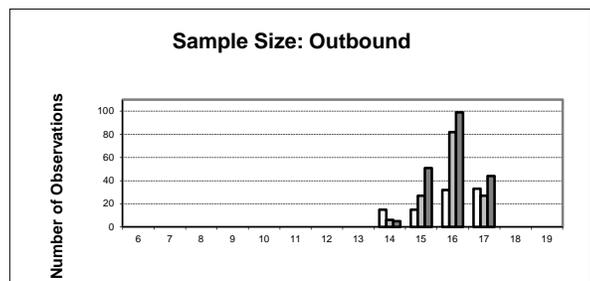
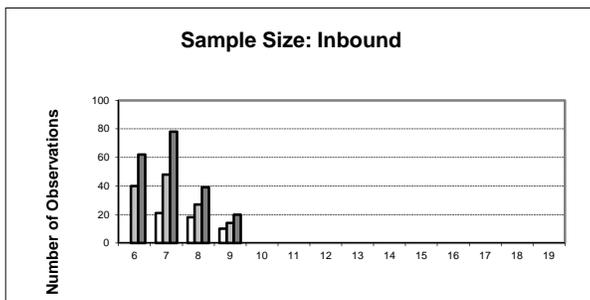
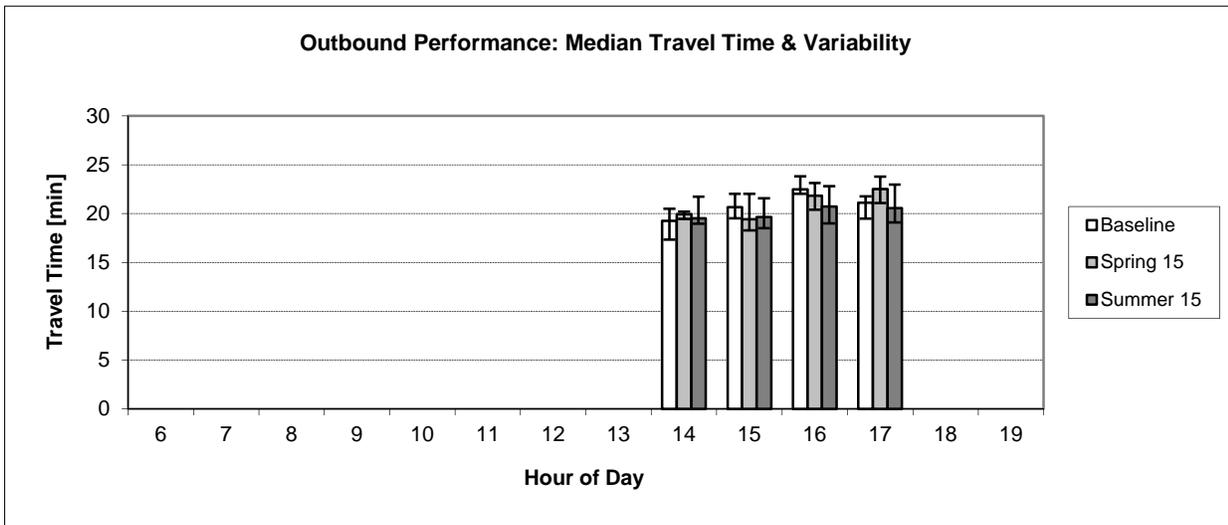
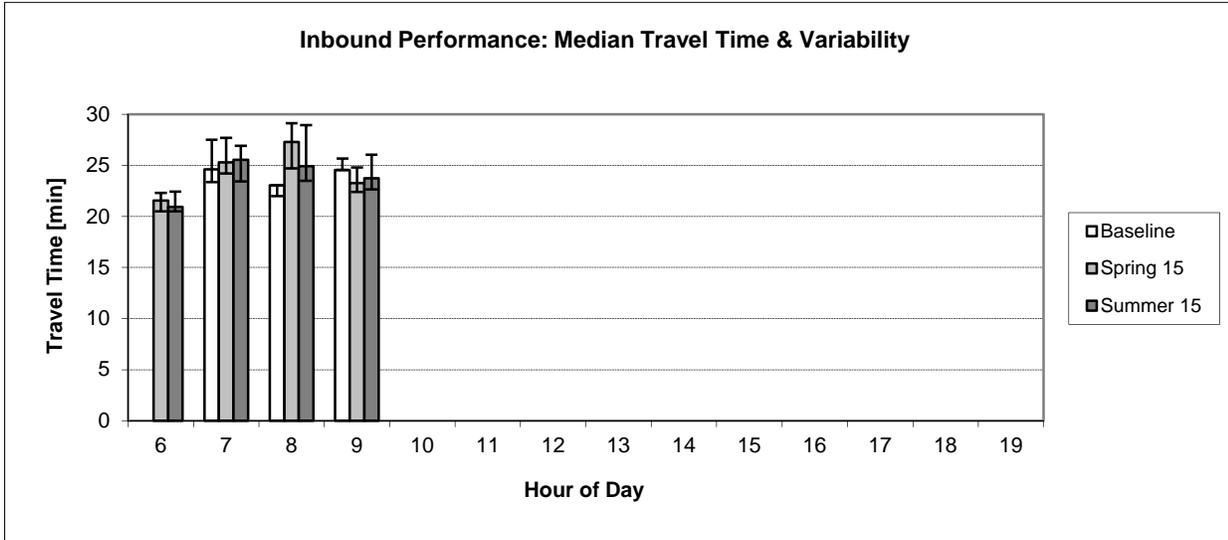
Alaska Junction to 1st Ave & Seneca/Columbia St via Alaskan Way Viaduct



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Spring 15	5/18/15 - 6/05/15	TSP-AVI
Summer 15	7/8/15 - 8/5/15	TSP-AVI

## Pathway J.4

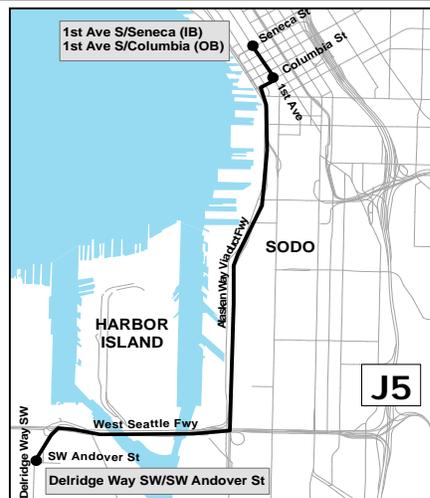
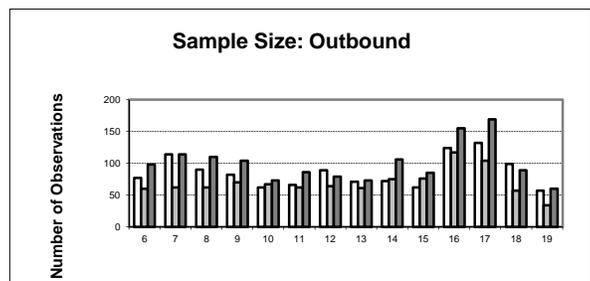
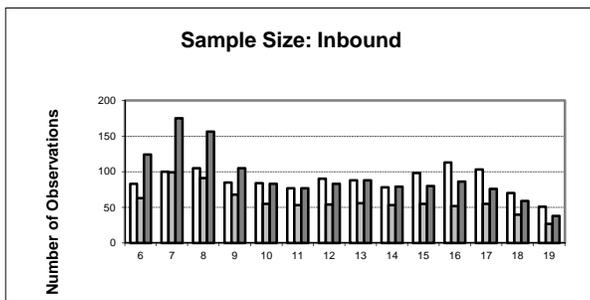
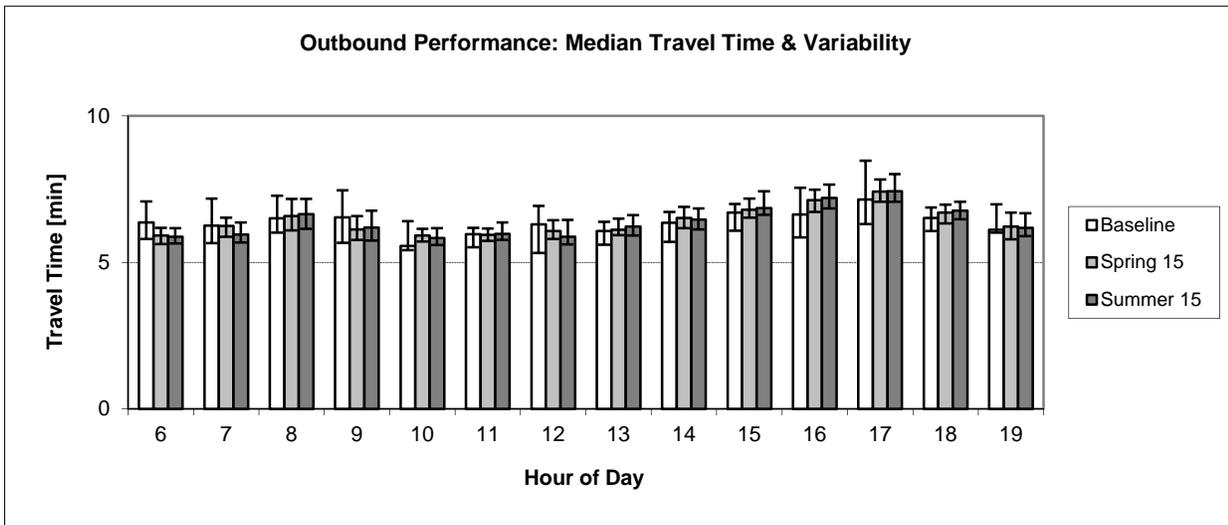
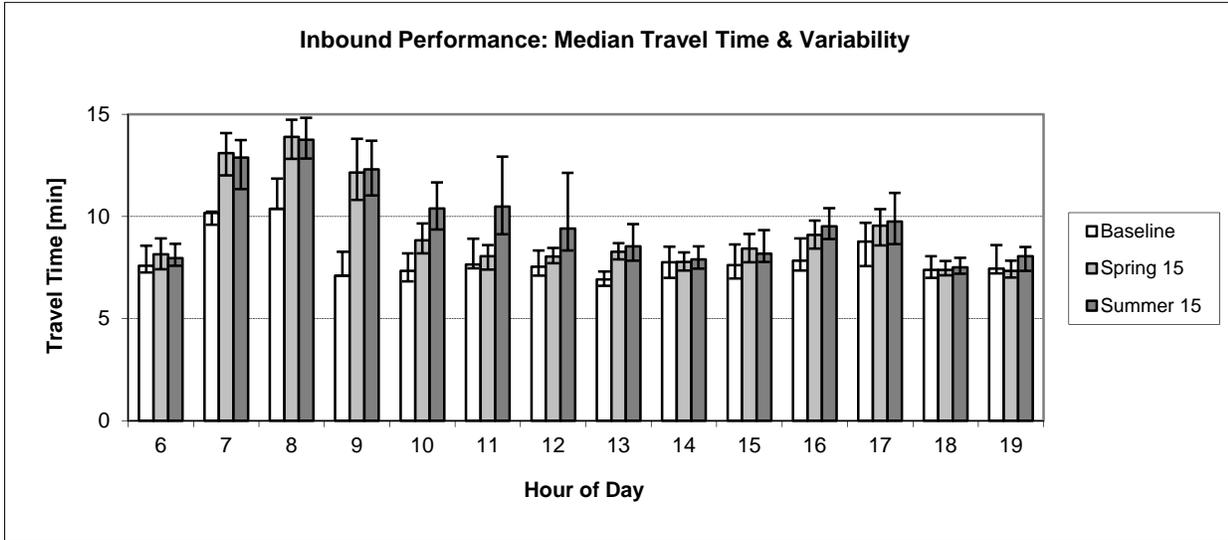
California Ave SW & SW Fauntleroy Way SW to 3rd Ave & Yesler St via 1st Ave S (Peak Only)



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVL-AVI
Spring 15	5/18/15 - 6/05/15	AVL-AVI
Summer 15	7/8/15 - 8/5/15	AVL-AVI

## Pathway J.5

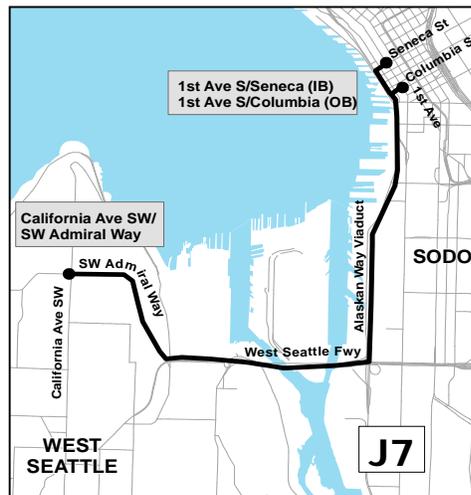
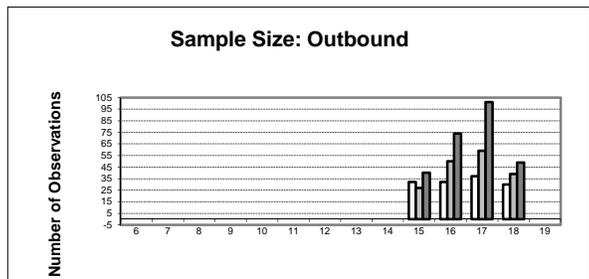
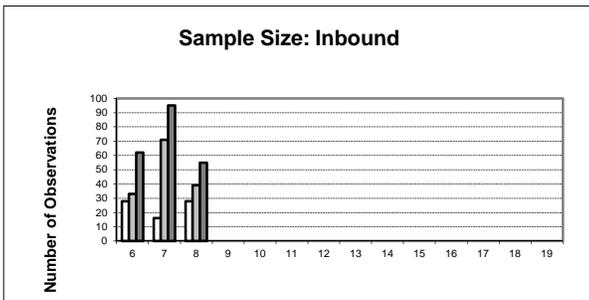
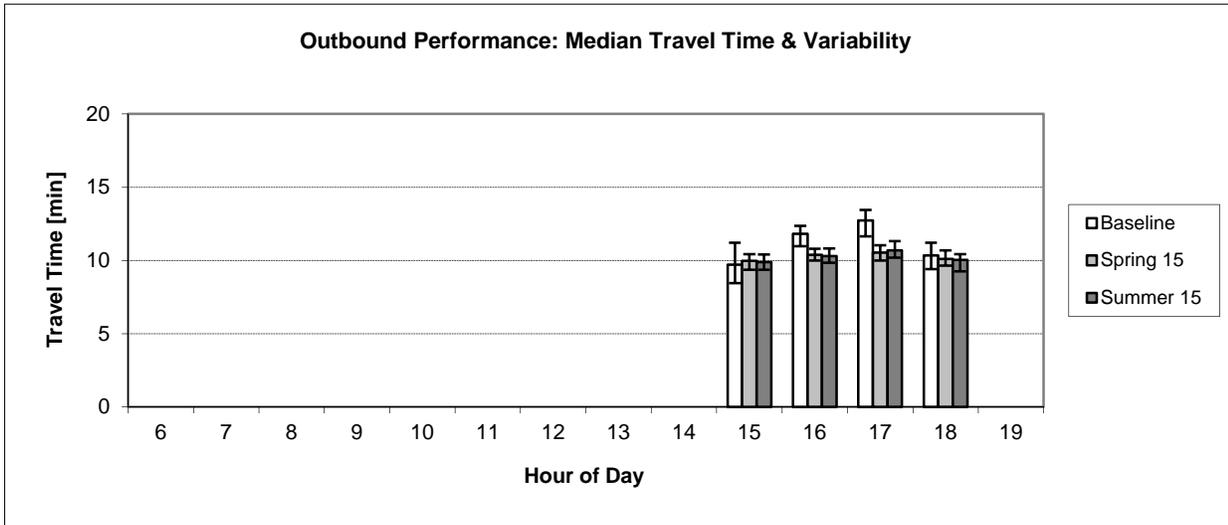
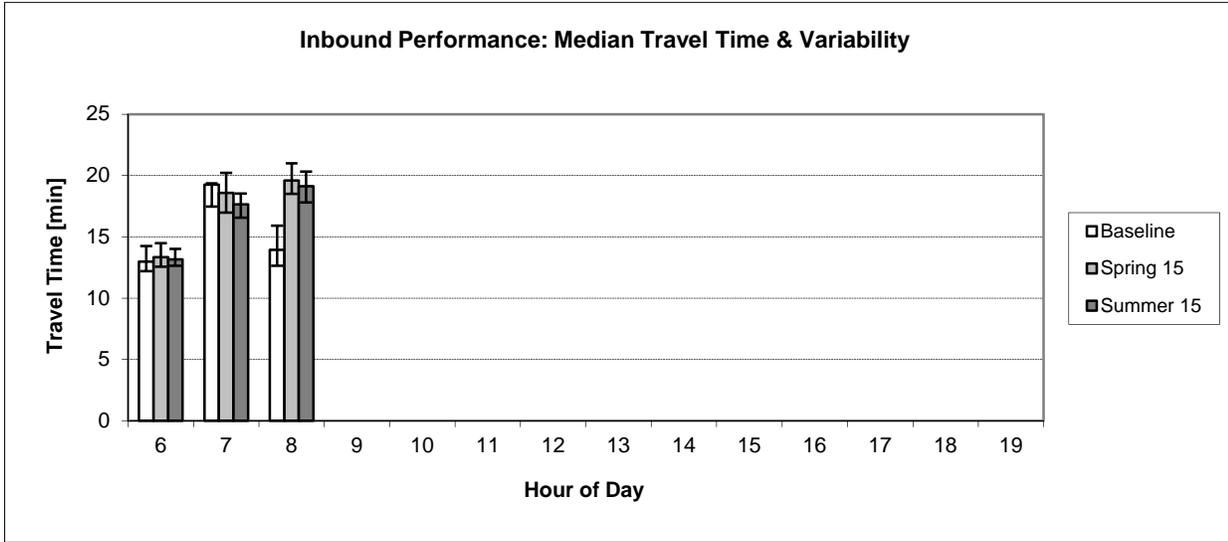
Delridge Way SW & SW Andover St to 1st Ave & Seneca/Columbia St via AWW



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Spring 15	5/18/15 - 6/05/15	AVI
Summer 15	7/8/15 - 8/5/15	AVI

# Pathway J.7

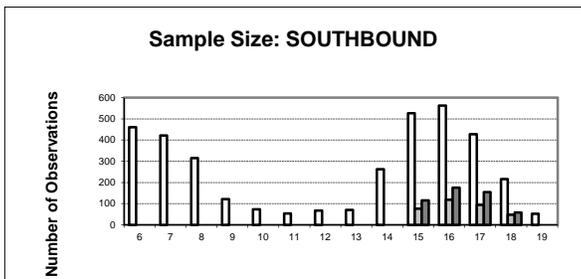
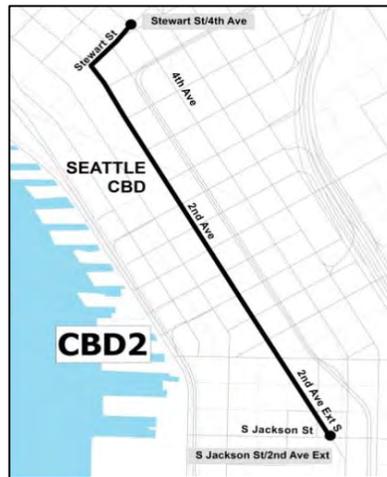
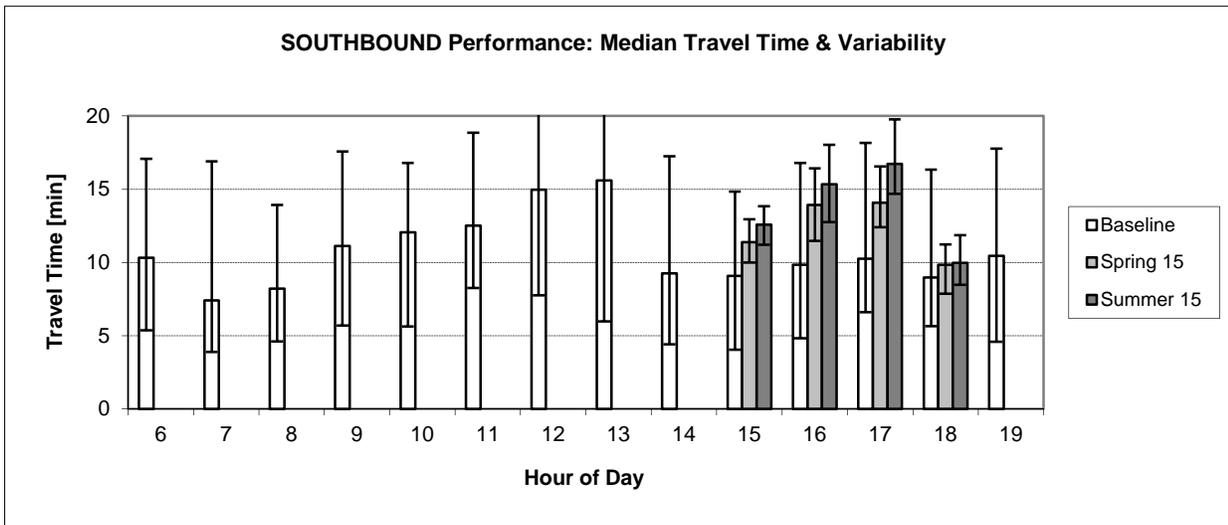
Admiral Way SW & California Ave SW to 1st Ave & Seneca/Columbia St via AWV (Peak Only)



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI-AVL
Spring 15	5/18/15 - 6/05/15	AVI-AVL
Summer 15	7/8/15 - 8/5/15	AVI-AVL

# Pathway CBD2

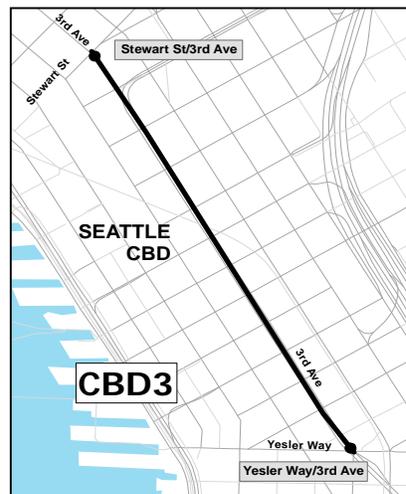
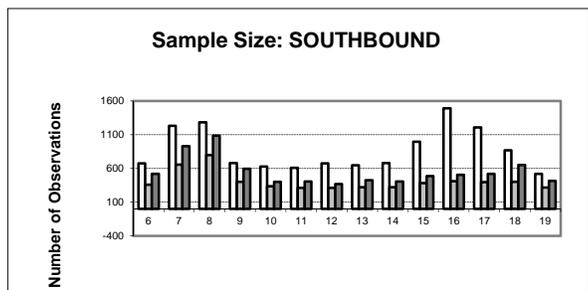
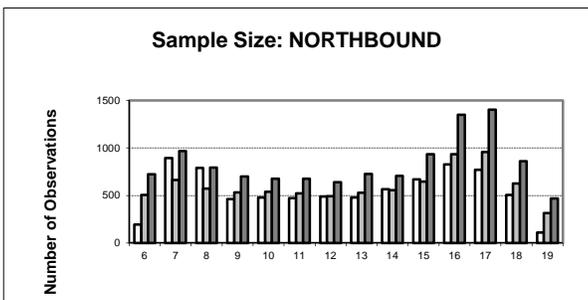
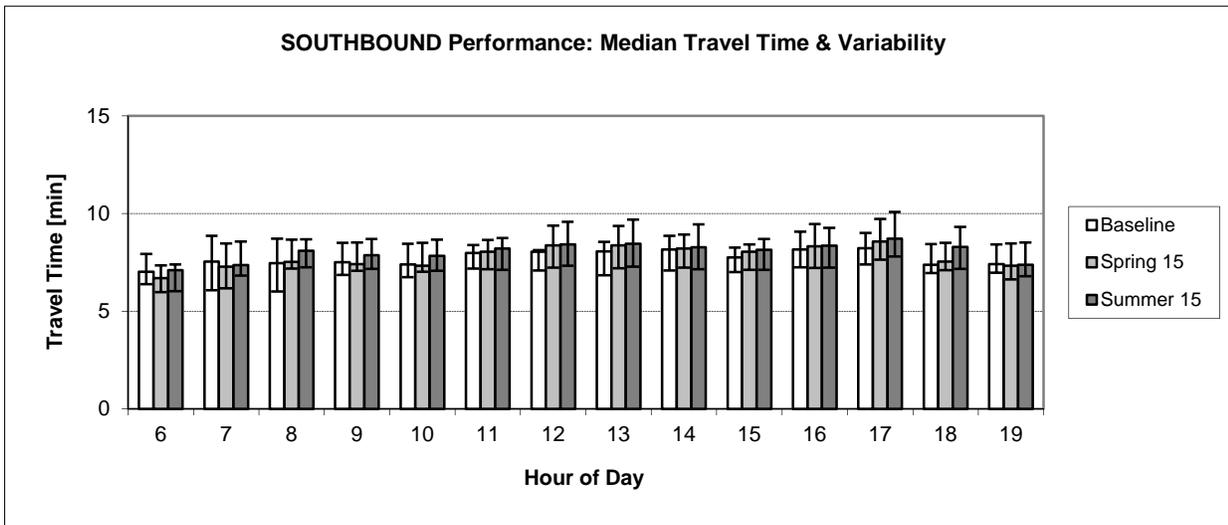
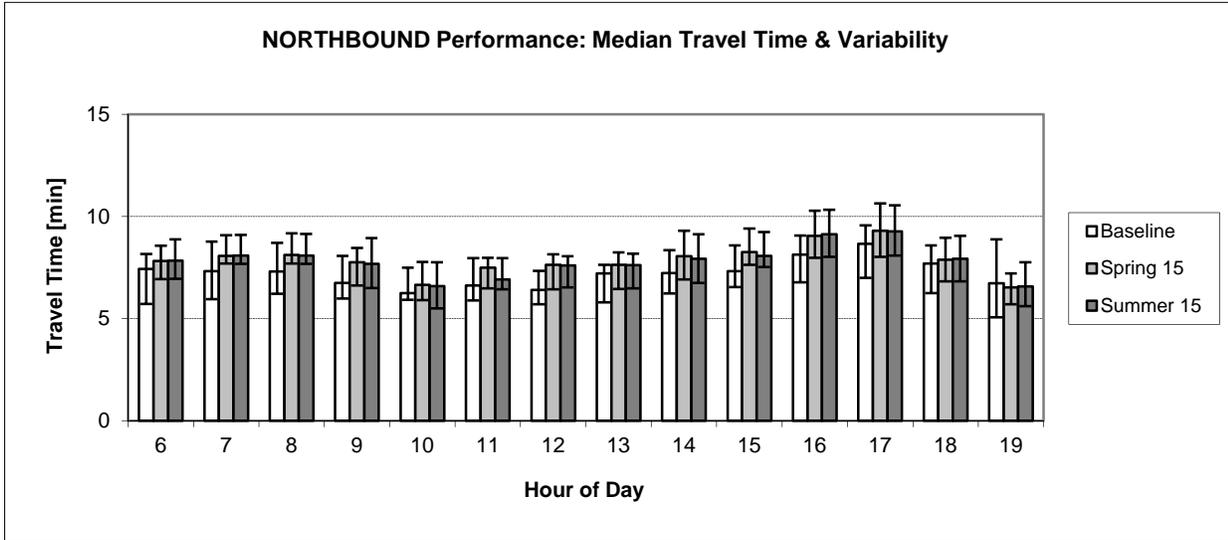
## Second Avenue: Pike St to Jackson St



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Spring 15	5/18/15 - 6/05/15	AVI
Summer 15	7/8/15 - 8/5/15	AVI-AVL

## Pathway CBD3

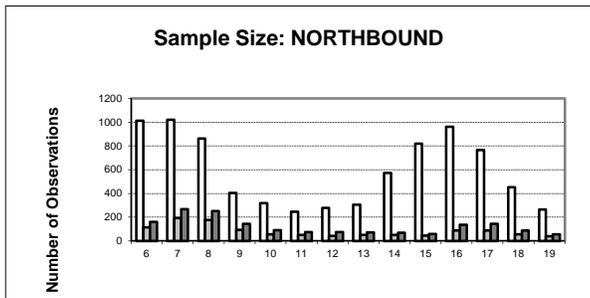
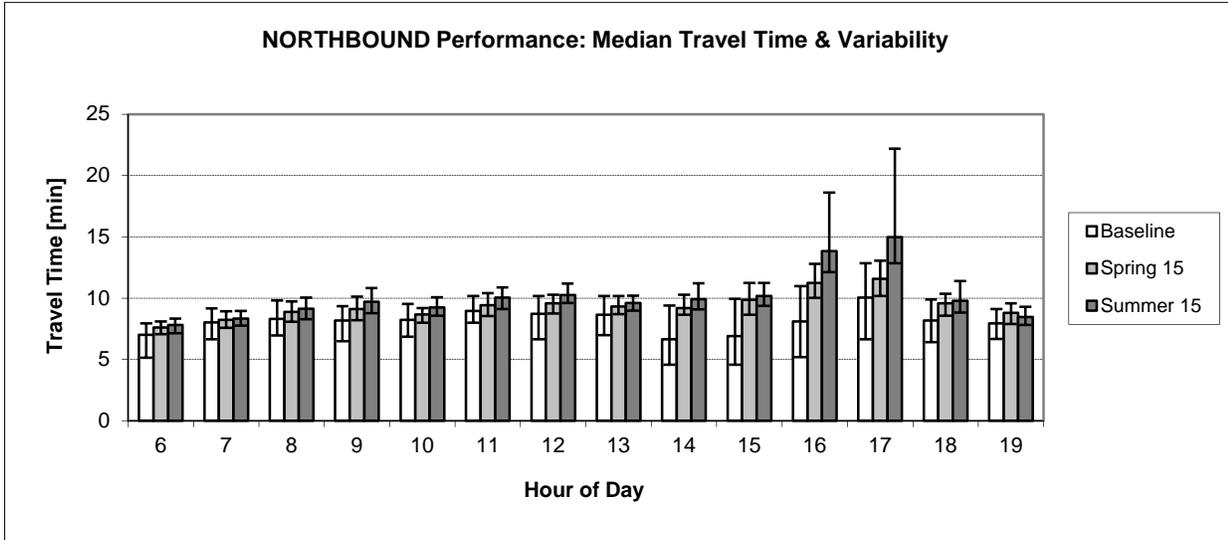
Third Ave: Stewart St to Yesler Way



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Spring 15	5/18/15 - 6/05/15	AVI
Summer 15	7/8/15 - 8/5/15	AVI

## Pathway CBD4

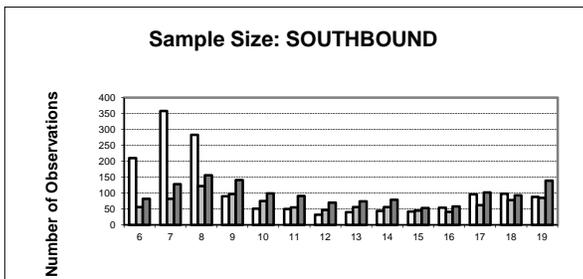
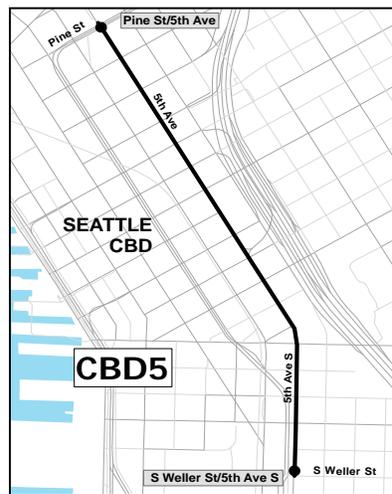
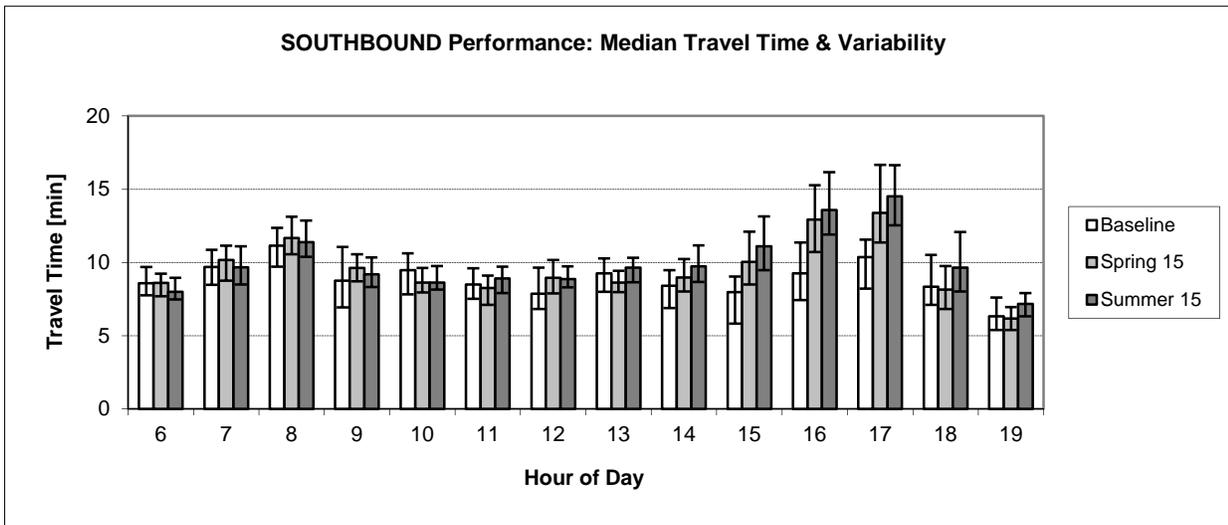
Fourth Ave: Jackson St to Stewart St



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Spring 15	5/18/15 - 6/05/15	AVI
Summer 15	7/8/15 - 8/5/15	AVI-AVL

# Pathway CBD5

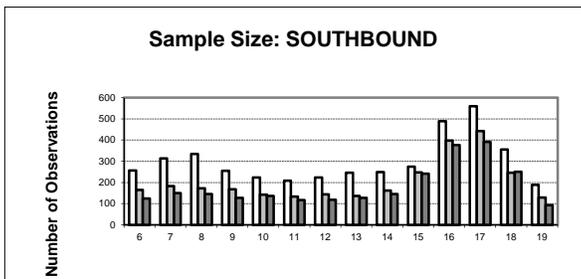
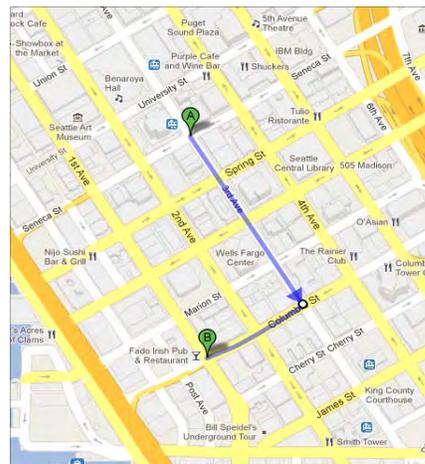
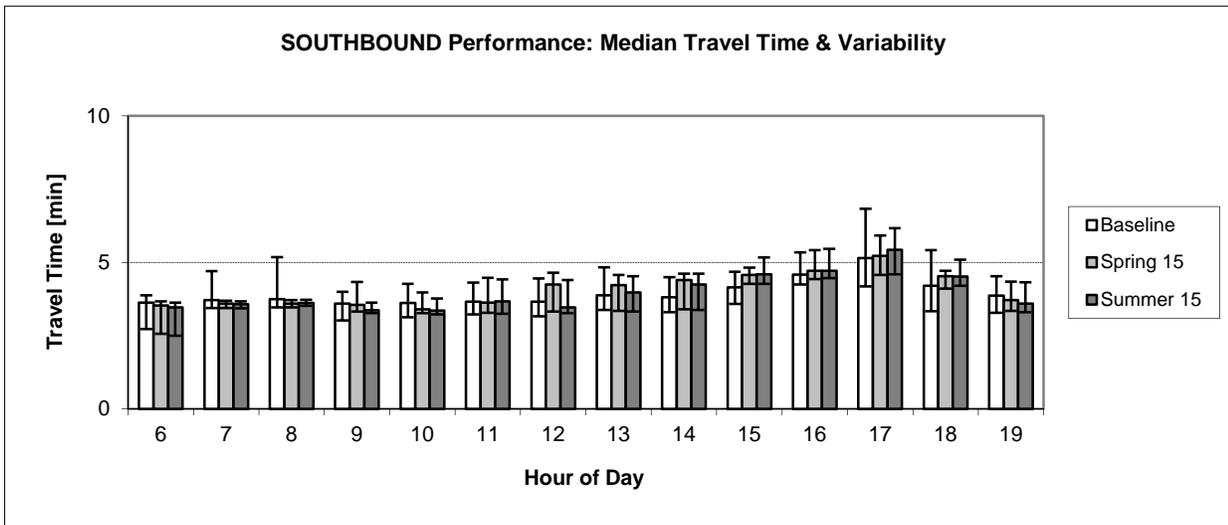
Fifth Ave: Pine St to Weller St



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Spring 15	5/18/15 - 6/05/15	AVI
Summer 15	7/8/15 - 8/5/15	AVI

# Pathway Columbia

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



Scenario	Date Range	Data source
Baseline	9/21/09 - 10/16/09	AVI
Spring 15	5/18/15 - 6/05/15	AVI
Summer 15	7/8/15 - 8/5/15	AVI