2016 Multimodal Transportation Count Report

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CITY OF BEND

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Chapter 1: Background

BACKGROUND

This chapter provides background on the development of the City's multimodal transportation system users count program and documents key features of the program. Additional information on the history and evolution of the City's count program and best practices for conducting bicycle and pedestrian counts is provided in the technical memorandums in *Appendix A.*

COUNT PROGRAM PURPOSE

The purpose of the City's count program is to provide critical field data to support operations, maintenance, and funding decisions for the City's multimodal transportation system. The program was developed based on a review of current practices within the City, County, BPRD and ODOT and discussions with City staff and project Technical Advisory Committee (TAC). The following sub-sections document the goals of the count program, intended data uses, and considerations for the program.

Count Program Goals

The City of Bend has developed the following goals for its count program:

- The count program should be easy to implement with minimal staff time required for maintenance or data manipulation. Data should be accessible without a field visit.
- The data should provide mode split information.
- Locations for data collection should be selected to allow for corridor trend analysis as well as regional analysis.
- Locations for data collection should supplement locations where ODOT, Deschutes County, and BPRD already collect regular data.
- Locations for data collection should be developed systematically rather than randomly in response to requests.
- The storage system for the counts should allow for incorporating data from other agencies as well as other projects such as Traffic Impact Analyses.
- The storage program should provide some flexibility to allow for future changes to incorporate new data, such as demographics.

Data Uses

In order to meet the goals above and ensure that meaningful data is collected through the count program, a list of potential uses of the data was developed. For the count program to be successful long-term, the data collected needs to be actively used and respond to high-priority needs. The intent is not to collect data randomly or at locations that only support a short term need or single citizen request but to be systematic in collecting data that will support the City's role as the road authority for transportation system development, operations and maintenance. The following data functions

articulate existing data needs or activities the City intends to pursue in the future with the count program data.

- Monitor use and trends
  - Identify trends in the transportation system (coverage counts)
  - Quantify mode split on key corridors
  - Assess changes in mode split on key corridors
  - Quantify the number of people walking and biking
  - Quantify the number of transit riders
- Measure project success
  - Understand traffic changes before and after project implementation (including roadway projects as well as pedestrian/bike projects) – "before" data may also be used for grant applications.
- Plan for the future
  - Understand where transportation issues exist today (congestion, etc.) and system operations to:
    - ✓ Be able to require development to complete appropriate mitigation
    - ✓ Appropriately plan for the future of the transportation network
    - ✓ Prioritize maintenance activities and operations
  - Understand which areas experience the heaviest use (across all modes) to appropriately prioritize maintenance activities
  - Understand the number of users at various times and seasons to appropriately time signals to maximize operations performance
- Improve safety analysis
  - Use volume data in addition to crash data to understand exposure and system influences

Other Considerations for Location Selection

To further inform the selection of count locations, the following were reviewed:

- Locations of counts currently collected by other agencies (ODOT, BPRD) and identification of locations the City would like other agencies to count in the future.
- Locations where volunteers have historically collected counts.
- Bridges which provide key locations for capturing travel patterns across the river.
- Underpasses which provide key locations for capturing travel patterns across a corridor.
- The City's defined opportunity areas which were developed by the Urban Growth Boundary (UGB) Technical Advisory Committees.
- Neighborhood Greenway (bike boulevard) corridors and enhanced crossings.

- The location of parks, schools, and other known destinations attracting high volumes of people walking and biking.
- Locations where counts are regularly collected for updating the City's travel demand model.
- Committed, built and conceptual roadway improvements.

The maps in *Attachment A* of Technical Memorandum 5.3, provided in *Appendix A* illustrate the data reviewed.

COUNTING PROGRAM

Based on the count program purpose and available resources, an iterative process was used to define the count locations, types, priority, and schedule.

Count Locations, Types and Priority

The count program was broken up into vehicle count locations and multimodal count locations to more easily select and view high priority locations for data.

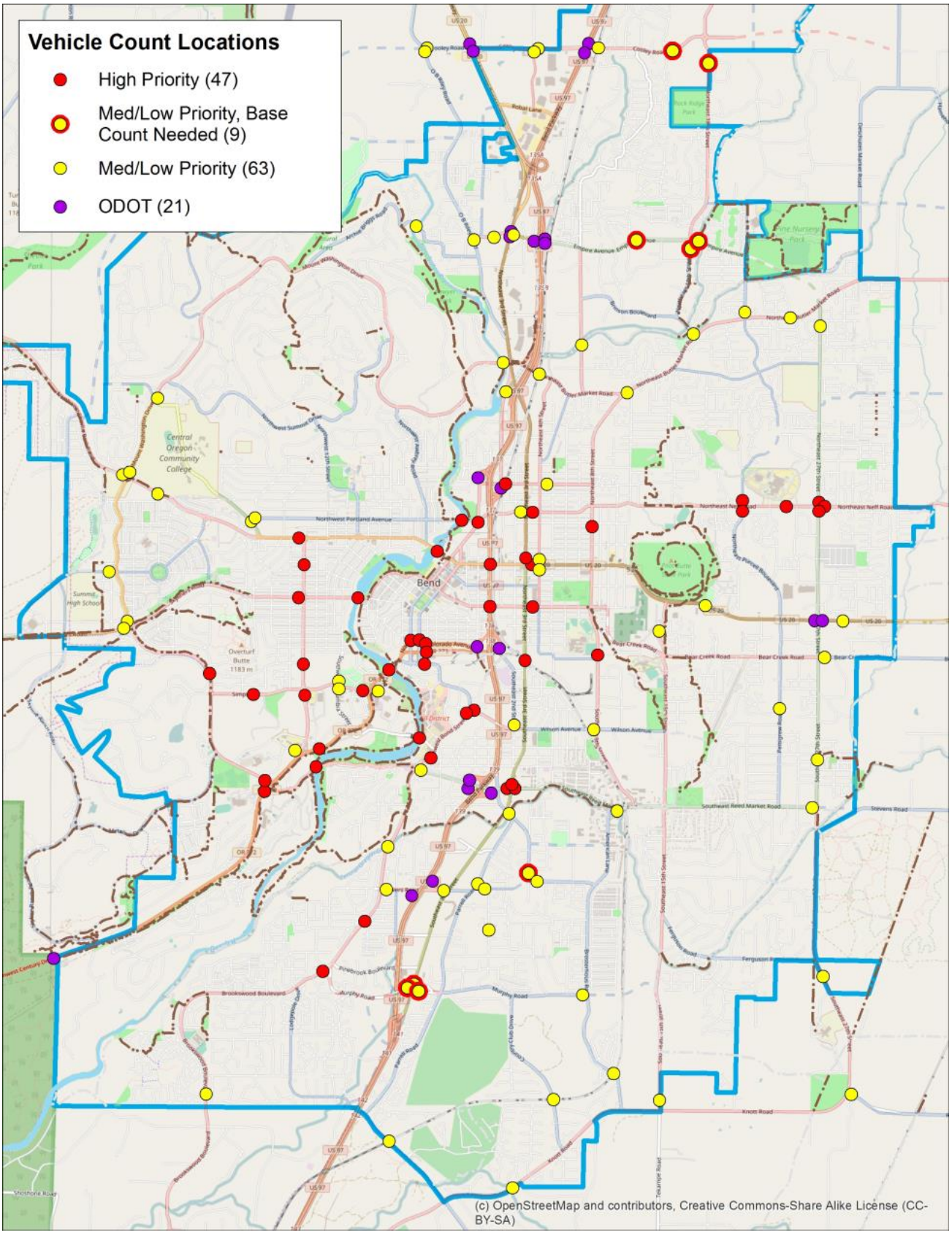
Vehicle Counts

At the vehicle count locations, twenty-four hour link count data will be collected. Link counts were selected over turning movement counts in order to more cost effectively provide corridor volume data while also providing vehicle speed and classification data. Vehicle count locations were prioritized into the following categories:

- **High priority** locations where data will be collected annually (these locations include bridges, high volume roadways, and a representation of the opportunity areas)
- **Medium priority** locations where data will be collected every two years (half of these locations will be counted one year and the other half the next year)
- **Medium priority** locations where **base counts** are needed (at these locations, data will be collected during year one of the data collection program to provide a base count and then during alternating years in the future)
- **ODOT** locations (ODOT collects data at these locations which is available to the City).

A map of the vehicle count locations is provided in Exhibit 1-1. *Attachment B* of Technical Memorandum 5.3 provides a larger map and list of locations.

Exhibit 1-1. Vehicle Count Locations



Multimodal Counts

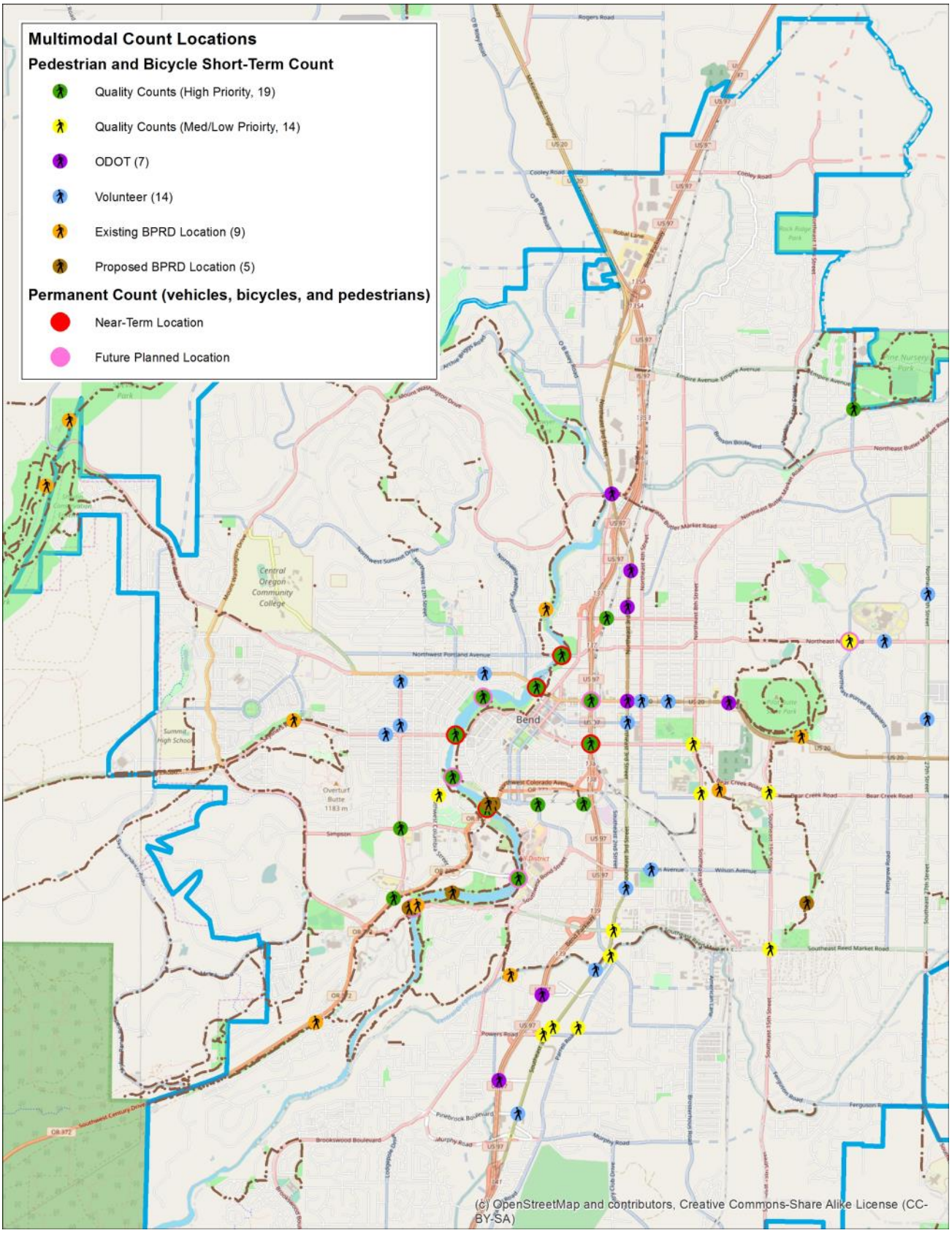
At the multimodal locations, a variety of options are available for collecting bicycle, pedestrian, and/or vehicle data, including:

- **BPRD** currently collects counts at a variety of locations using portable TraffX counters that are installed long-term on select trails around the community and sometimes moved to new locations as needed. Additional locations were identified where the City would also like BPRD to collect data as future resources allow.
- **ODOT** currently collects counts on its facilities using video cameras. The locations are primarily based on requests from the City.
- **Volunteers** currently count several times throughout the year at identified locations. These counts include bicycle turning movement counts at intersections and bicycle and pedestrian screenline counts at roadway segments.
- **Short-term counts** can be collected via video by a data collection firm. These counts can provide whatever data is desired, from intersection turning movement counts to screenline counts.
- **Long-term counts** can be collected via a variety of technologies, including roadway tubes, infrared sensors, and inductive loops. These technologies can be installed permanently or be designed to be portable for shorter installations.

Multimodal count locations were identified to utilize all of the above options. Long-term count locations were selected primarily at bridges or key undercrossings and intended to provide mode split and information about seasonal trends and annual walking and biking trends. The long-term count locations were prioritized to identify locations to install in the near-term (summer 2016) and in the future as funding is available. Short-term count locations were selected to capture information about opportunity areas, existing bicycle routes, key crossings, and trails. The short-term count locations are intended to be counted by a data collection firm in the spring, with volunteers counting the highest priority locations again in the fall.

A map of the multimodal count locations is provided in Exhibit 1-2. *Attachment C* of Technical Memorandum 5.3 provides a larger map and list of locations.

Exhibit 1-2. Multimodal Count Locations



Count Schedule

The schedule for the count program is shown in Table 1-1. The schedule is intended to be followed each year with changes made as needed.

Table 1-1. Count Program Schedule

	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Reassess count locations, types and priorities based on past report	◊	◊										
Collect spring counts at annual locations					◊							
Collect summer counts at select locations							◊					
Collect fall bicycle and pedestrian counts with volunteers plus any annual locations not collected in spring									◊			
Produce annual report summarizing data collection from past year (spring, summer and fall counts, plus permanent counts)											◊	◊

Notes:

- Contact data collection firm three months in advance of data collection to schedule counts.
- Check construction schedule two weeks in advance of data collection to assess any conflicts with count locations.

COUNT STORAGE AND SHARING

In the future, the City's count data will be available online via the City's new online mapping program. Counts conducted as part of the City's annual data collection effort will be available, as well as:

- Historical data collected before the program was updated;
- Data collected by BPRD on trails;
- ODOT data collected at Automatic Traffic Record (ATR) stations and 48-hour counts collected on a rotating cycle every three years within the City.

REPORT ORGANIZATION AND PURPOSE

This report is intended to provide a yearly update on the City's count program, including changes in counting locations, frequency, or timeframe. In addition, it provides a summary of the data collected within the year. In future reports, trends over-time will also be assessed to determine overall changes in vehicle, bicycle and pedestrian volumes at key locations. This report is organized into the following chapters:

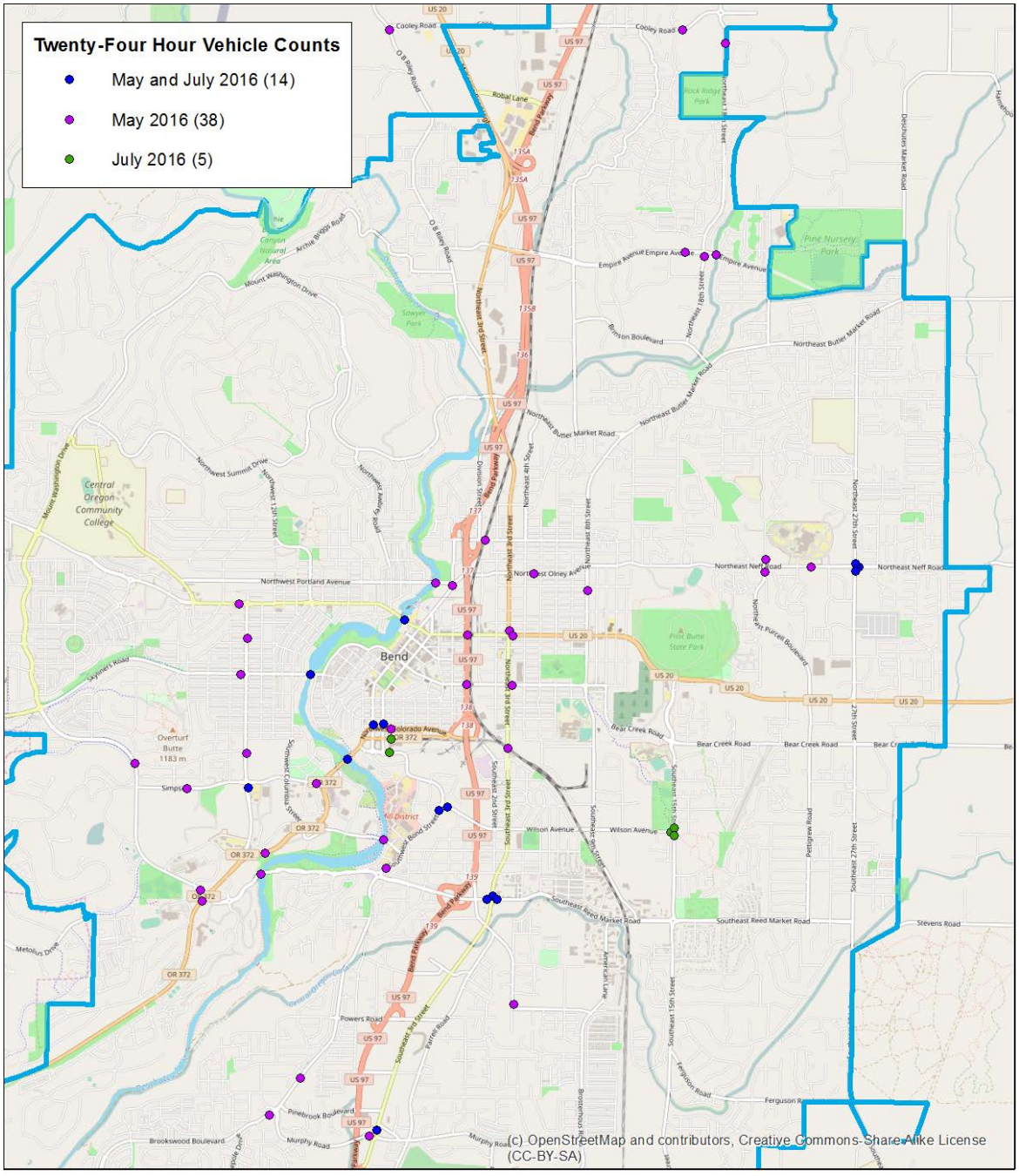
1. Twenty-Four Hour Vehicle Counts
2. Short-Term Bike and Pedestrian Counts
3. Turning Movement Counts
4. Continuous Multimodal Counts
5. Mode Split
6. *Historical Trends (to be added in the future)*

Chapter 2: Twenty-Four Hour Vehicle Counts

TWENTY-FOUR HOUR VEHICLE COUNTS

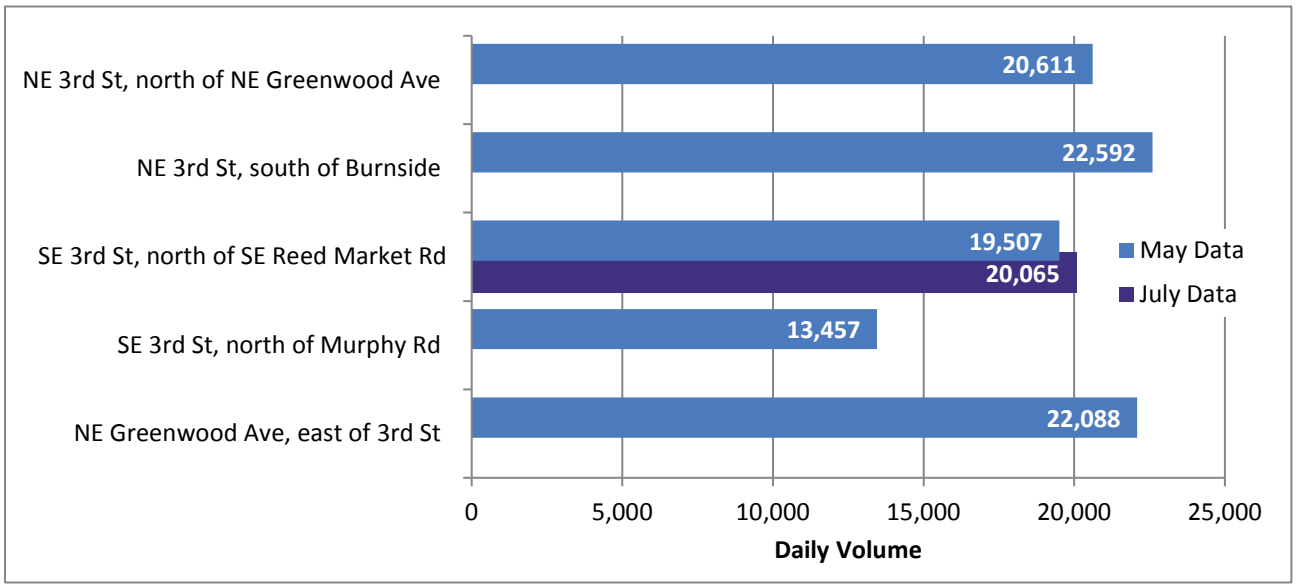
Twenty-four hour tube counts were collected at a variety of locations in May and July to assess vehicle volumes, classification, and speeds. The counts were collected by direction and collected in 15-minute intervals. The intent of the counts is to enable vehicle volumes to be monitored over time as well as compare seasonal changes. Therefore, counts were collected in both May and July at some locations. The counts collected in May and/or July are shown in Exhibit 2-1.

Exhibit 2-1. Twenty-Four Hour Vehicle Count Locations



The locations where data was collected in May and/or July are summarized in the exhibits below, with locations grouped by classification and ordered alphabetically. Exhibit 2-2 shows the data collected at principal arterials.

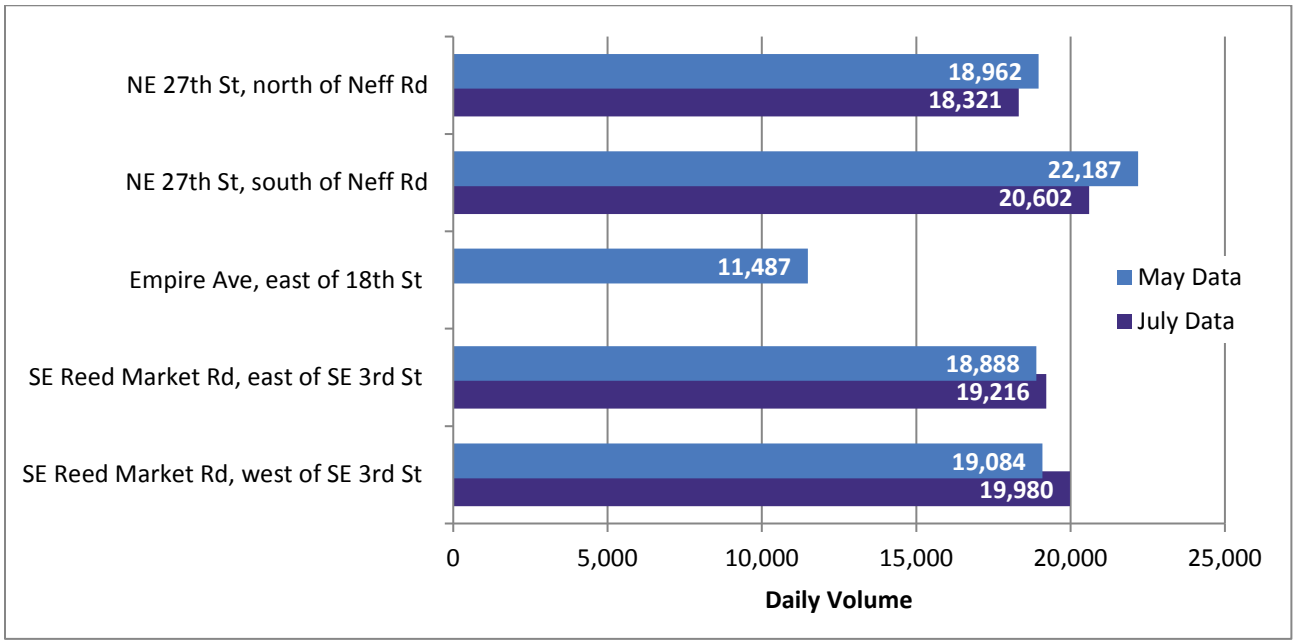
Exhibit 2-2. Daily Volume at Principal Arterials



As seen in Exhibit 2-2, two-directional volumes range from approximately 13,500 to 22,600 with an average of 19,720 for principal arterials.

Exhibit 2-3 shows the data collected at major arterials.

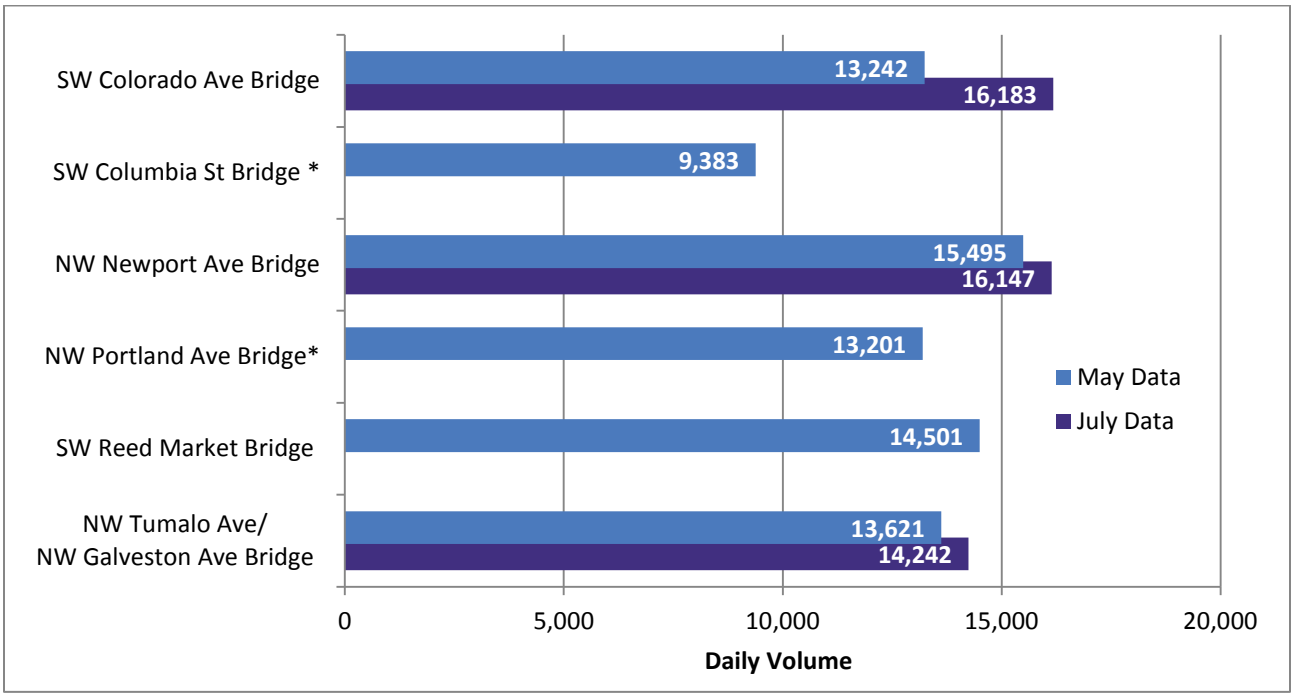
Exhibit 2-3. Daily Volume at Major Arterials



As seen in Exhibit 2-3, two-directional volumes range from approximately 11,500 to 22,200 with an average of 18,122 for the May counts and 19,530 for the July counts on major arterials.

Exhibit 2-4 shows the data collected at bridge locations.

Exhibit 2-4. Daily Volume Bridge Locations



*Note: SW Columbia Street is classified as a local roadway and NW Portland Avenue as a major collector; all other bridges counted are minor arterials

As seen in Exhibit 2-3, two-directional volumes range from approximately 9,400 to 16,200 with an average of 13,241 for the May counts and 15,524 for the July counts on bridges.

Exhibits 2-5 and 2-6 show the data collected at minor arterials, divided up by locations east of US 97 and locations west of US 97.

Exhibit 2-5. Daily Volume at Minor Arterials – East of US 97

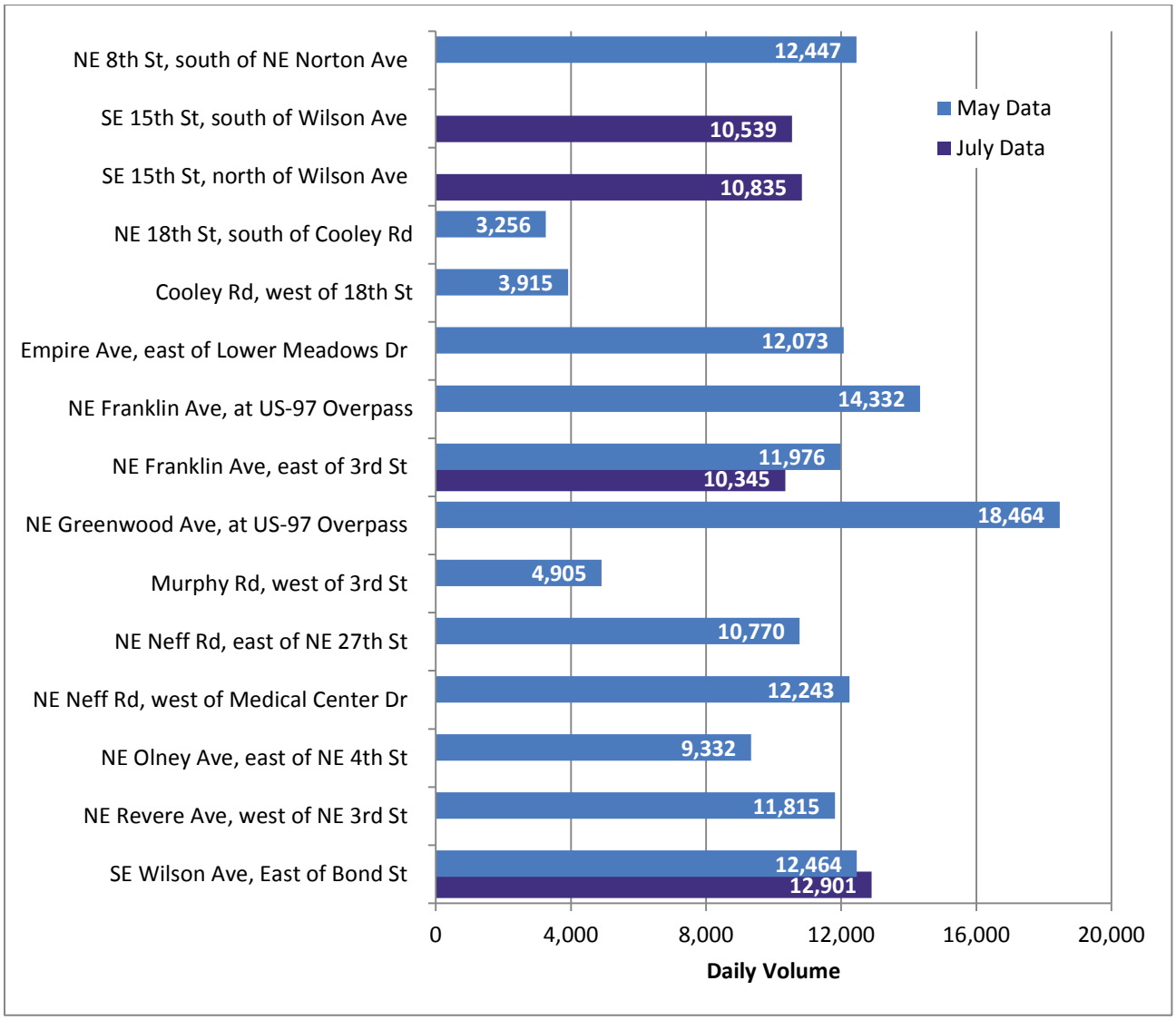
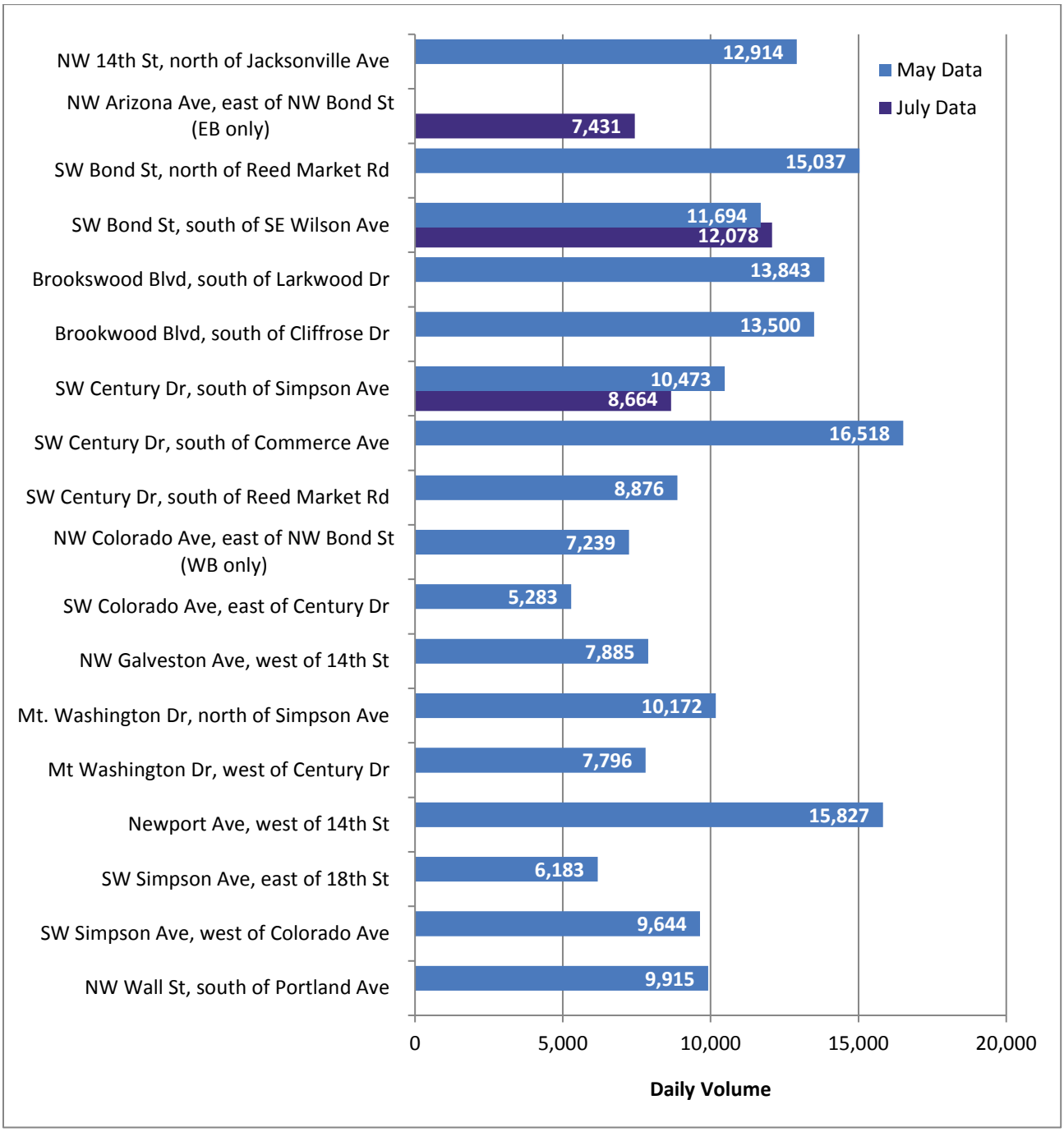


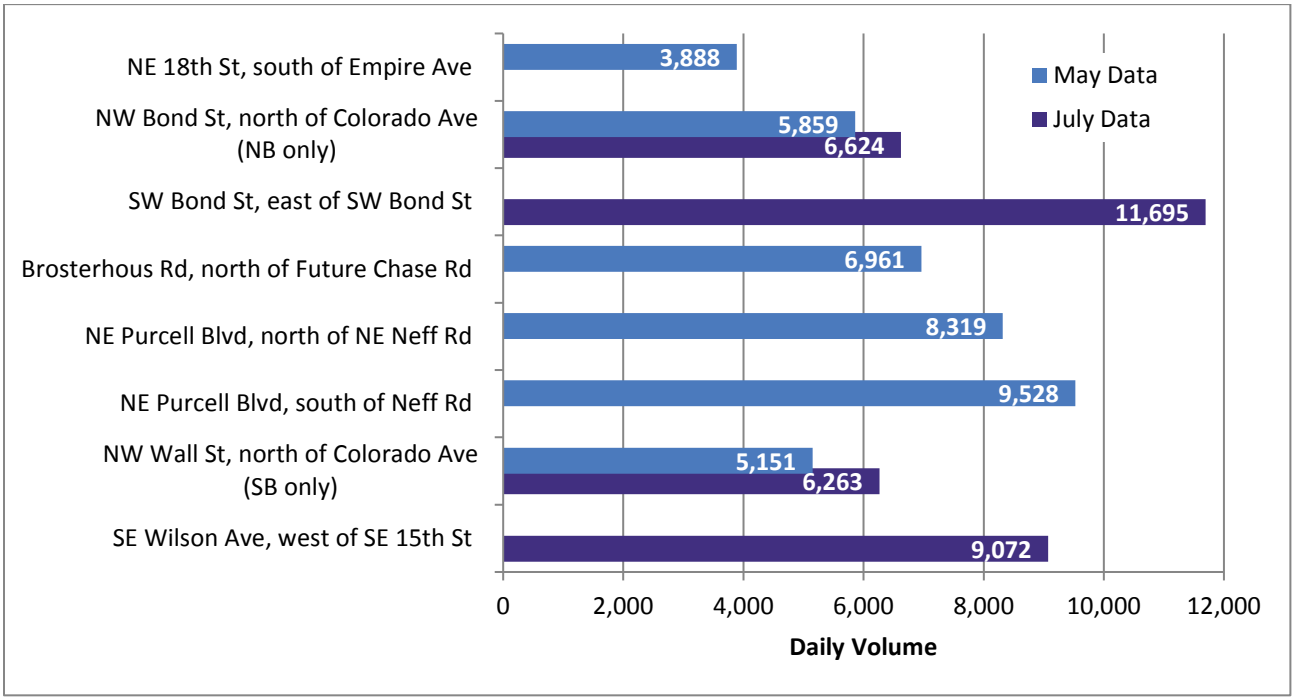
Exhibit 2-6. Daily Volume at Minor Arterials – West of US 97



As seen in the exhibits, two-directional volumes range from approximately 3,330 to 18,500 with an average of 10,812 for the May counts and 10,894 for the July counts on minor arterials (excluding one-directional counts).

Exhibit 2-7 shows the data collected at major collectors.

Exhibit 2-7. Daily Volume at Major Collectors



As seen in the exhibit, two-directional volumes range from approximately 3,900 to 11,700 with an average of 7,174 for the May counts and 10,384 for the July counts on major collectors (excluding one-directional counts).

Only one count was taken on a local roadway, which was on the SW Columbia Street Bridge in May. 9,383 vehicles were recorded over the course of the day.

Table 2-1 summarizes the data collected by roadway classification.

Table 2-1. Count Summary by Season and Roadway Classification

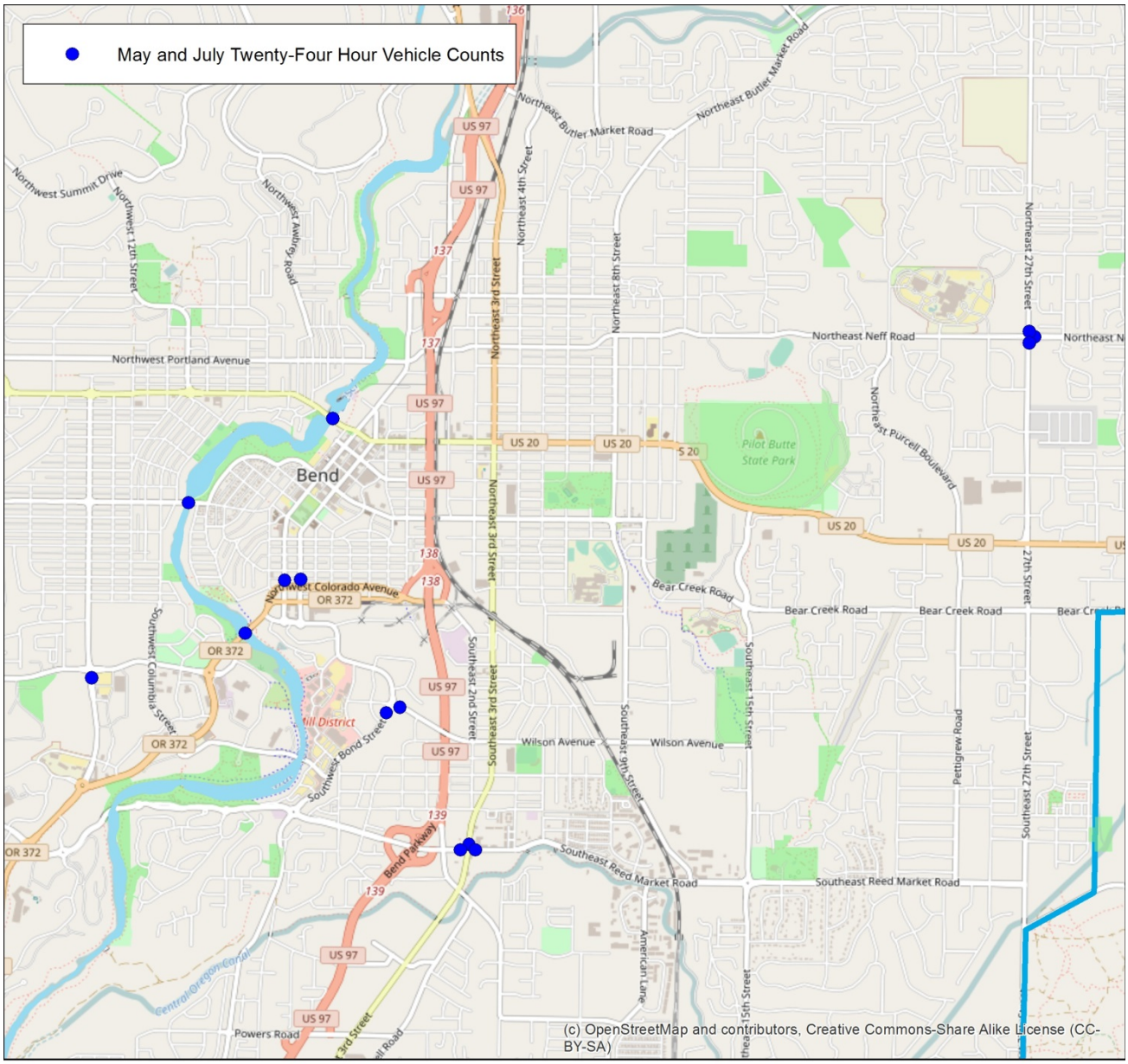
Classification	Season	Roadways (Total/2-dir.)	Minimum	Maximum	Average	85th Percentile
Principal Arterial	May	5/5	13,457	22,592	19,651	22,290
	July	1/1	-	-	20,065	-
Major Arterial	May	5/5	11,487	22,187	18,122	20,325
	July	4/4	18,321	20,602	19,530	20,322
Minor Arterial	May	35/34	3,256	18,464	11,043	14,528
	July	10/9	8,664	16,183	12,437	15,766
Major Collector	May	6/4	3,888	9,528	7,174	8,984
	July	4/2	9,072	11,695	10,384	11,302
Bridges*	May	6/6	9,383	15,495	13,241	14,750
	July	3/3	14,242	16,183	15,524	16,172

*Note: SW Columbia Street is classified as a local roadway and NW Portland Avenue as a major collector; all other bridges counted are minor arterials

MAY VERSUS JULY DATA

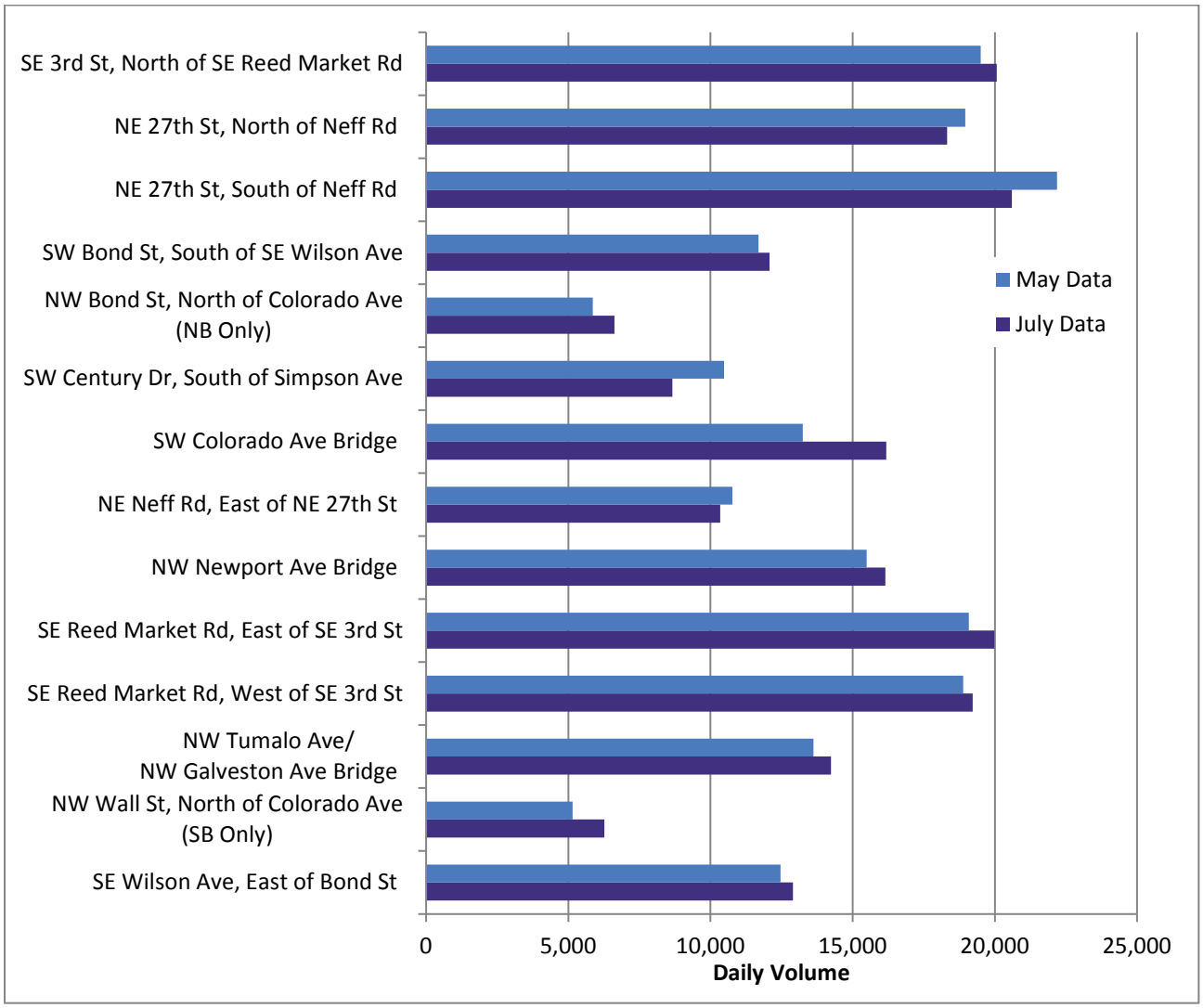
Twenty-four hour tube counts were taken at fourteen locations in both May (when school was in session) and July to assess seasonal variations in vehicle counts, especially related to the summer. The count locations are shown in Exhibit 2-8.

Exhibit 2-8. May and July Twenty-Four Hour Vehicle Count Locations



The total daily volume counted in May and July at each location is shown in Exhibit 2-9.

Exhibit 2-9. May versus July Daily Volume by Location



As seen in Exhibit 2-9, total volumes did not change significantly between May and July, with a system-wide increase of 2% from May to July. Volumes changed by less than five percent at all locations except:

- **NE 27th Street, South of Neff Road** (decreased 7% from 22,187 daily volume to 20,602 daily volume)
- **NW Bond Street, North of Colorado Avenue** (increased 13% from 5,859 daily volume to 6,624 daily volume)
- **SW Century Drive, South of Simpson Avenue** (decreased 17% from 10,473 daily volume to 8,664 daily volume)
- **SW Colorado Avenue Bridge** (increased 22% from 13,242 daily volume to 16,183 daily volume)
- **NW Wall Street, North of Colorado Avenue** (increased 22% from 5,151 daily volume to 6,263 daily volume)

Exhibit 2-10 illustrates the system-wide volume by direction. Again, the exhibit shows that there isn't a significant difference between May and July data.

Exhibit 2-10. May versus July Daily Volume by Direction

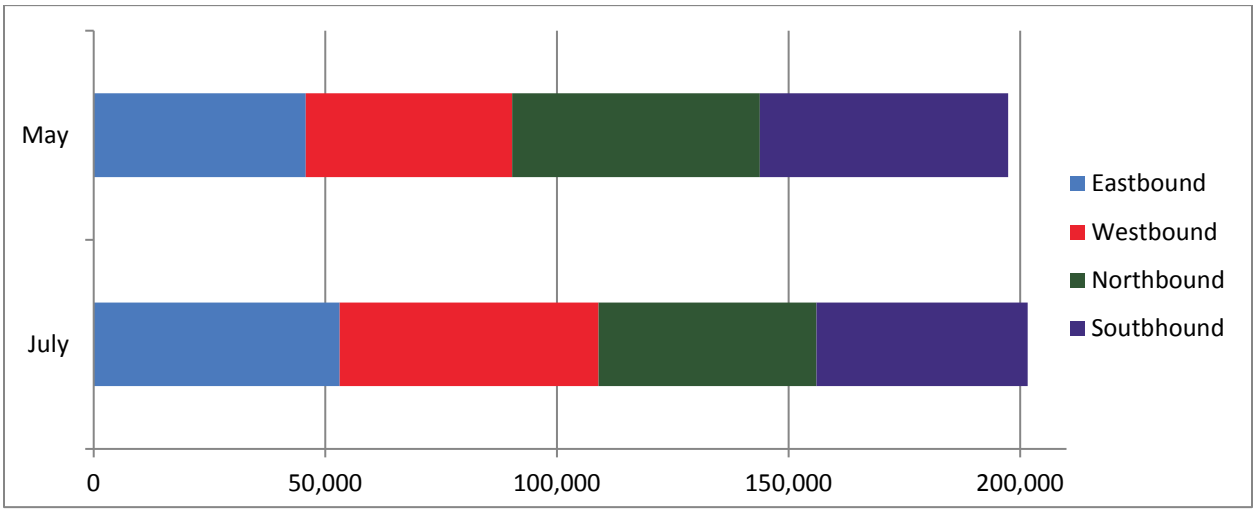
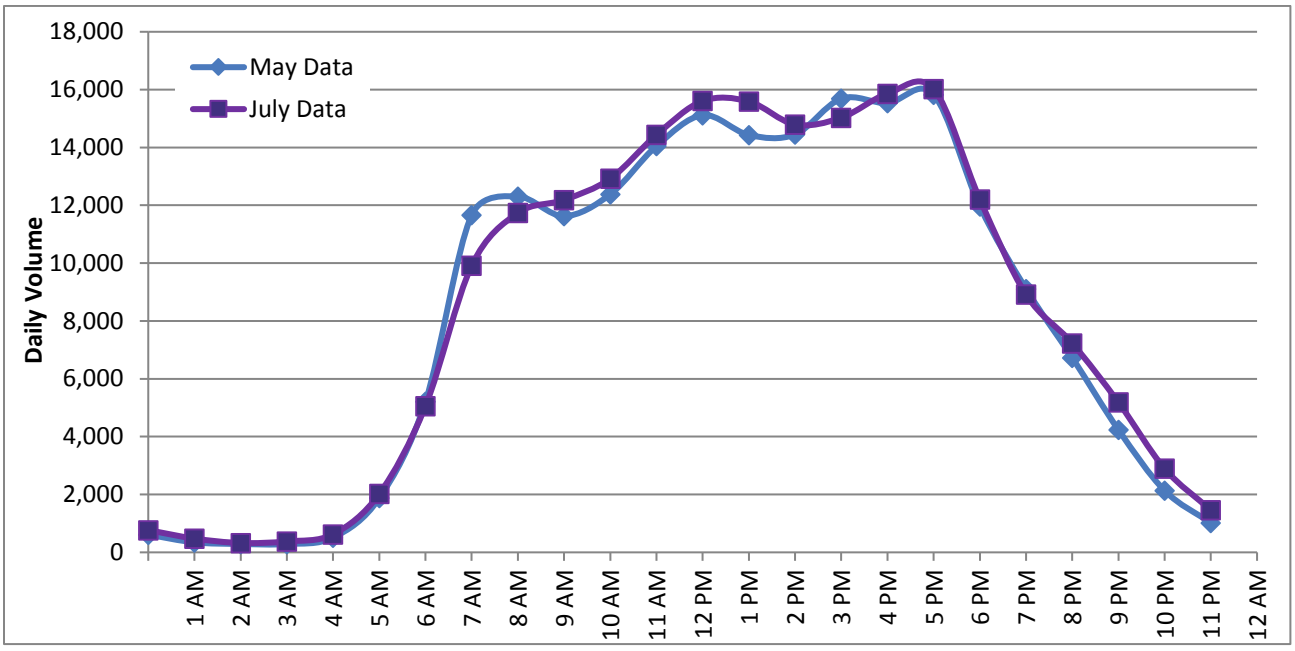


Exhibit 2-11 illustrates the system-wide volume by time-of-day. As seen in the exhibit, there are slight variations between the May and July counts, with May counts showing a more pronounced morning peak hour (potentially due to the influence of school-related traffic). July volumes are slightly higher through the midday and later evening hours. Overall, the hourly profile of traffic volumes is not significantly different in July compared to May.

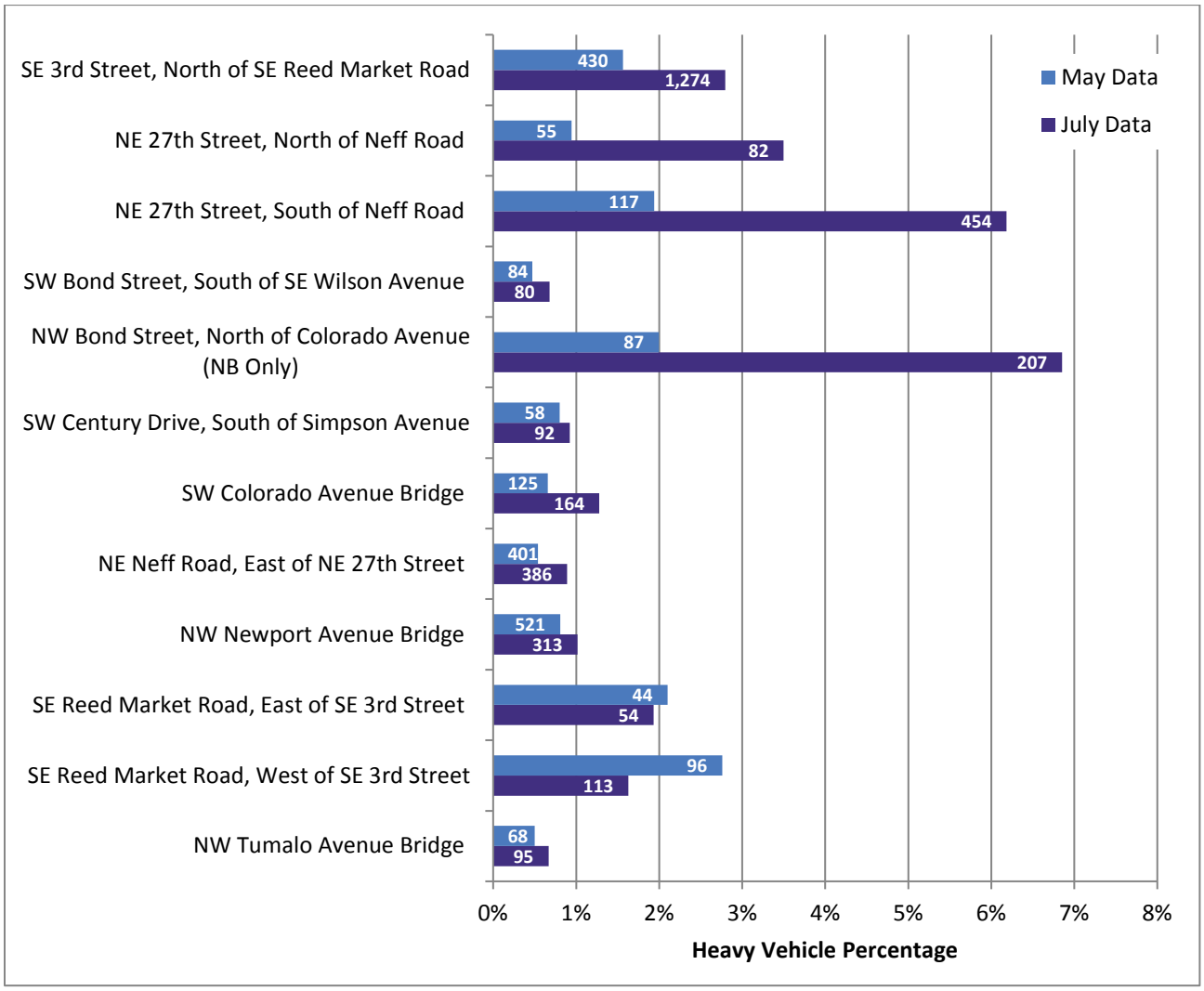
Exhibit 2-11. May versus July Daily Volume by Time of Day



The heavy vehicle percentage reflects the portion of vehicles that are considered Class 7 or above, based on FHWA's vehicle classification system (with details provided in *Appendix B)*. Class 7 includes

single unit four or more axle trucks. Exhibit 2-12 illustrates the daily heavy vehicle percentages collected at each location for May and July.

Exhibit 2-12. May versus July Daily Heavy Vehicle Percentage Location



Note: total number of heavy vehicles for each location displayed

As seen in the exhibit, the heavy vehicle percentages were higher in most locations in July compared to May. This is potentially due to the greater number of recreational vehicles, trucks delivering goods, and construction activity on the roadways during the summer. Only two locations (SE Reed Market Road, east of SE 3rd Street and SE Reed Market Road, west of SE 3rd Street) experienced a higher percentage of heavy vehicles in May compared to July.

Individual summaries for each location are provided below. The locations are organized by classification and provided in alphabetical order. Key metrics are provided, including total daily volume, weekday AM peak hour (7:00-9:00 a.m.), weekday PM peak hour (4:00-6:00 p.m.), and overall peak hour. Heavy vehicle percentages by direction are provided at each location in the following pages. *Appendix B* also includes a further breakdown of vehicles by class.

Chapter 2a: Twenty-Four Hour Vehicle Counts at Principal Arterials

LOCATION: NE 3RD STREET, NORTH OF NE GREENWOOD AVENUE (ID 4763)

Functional Classification: Principal Arterial
Cross-Section: Five vehicle lanes, sidewalks

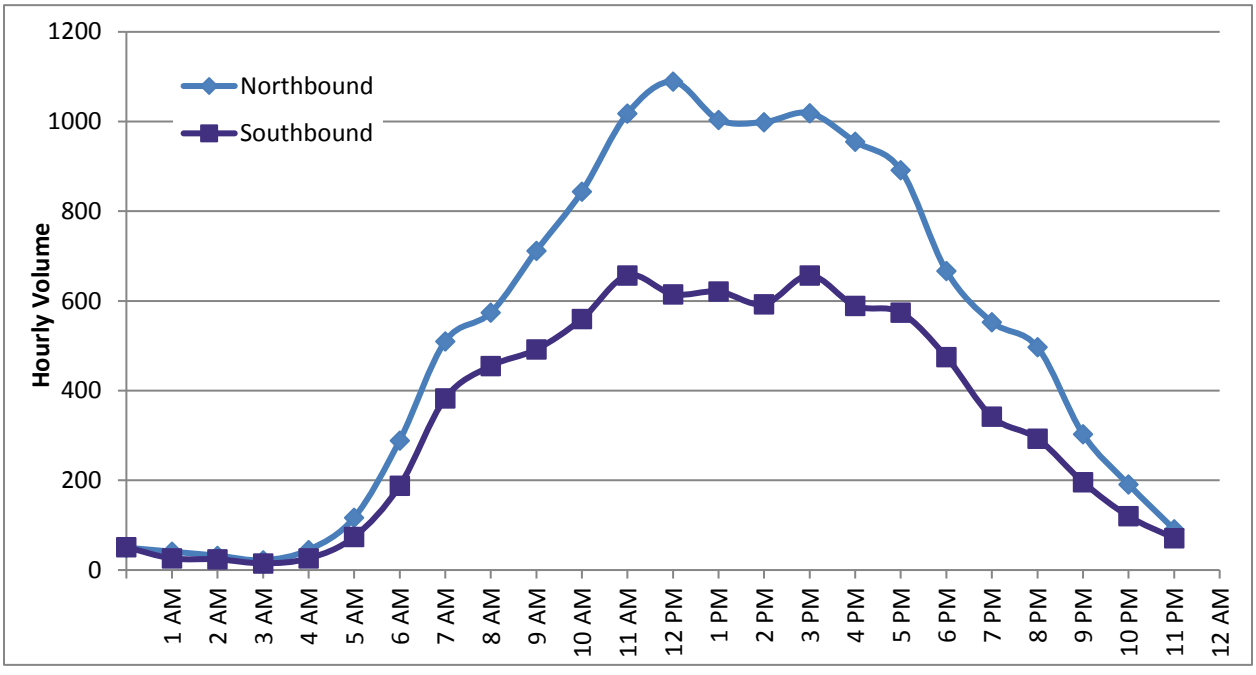
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 20,611|12,514 NB/8,097 SB
AM Peak Hour (8:00 AM): 1,029
PM Peak Hour (4:00 PM): 1,544
Overall Peak Hour (12:00 PM): 1,704

Average Speed: 24 mph
85th Percentile Speed: 32 mph
Mode Speed: 28 mph

Heavy Vehicles: 4.3% NB/1.2% SB



LOCATION: NE 3RD STREET, SOUTH OF BURNSIDE (ID 798)

Functional Classification: Principal Arterial
Cross-Section: Two vehicle lanes

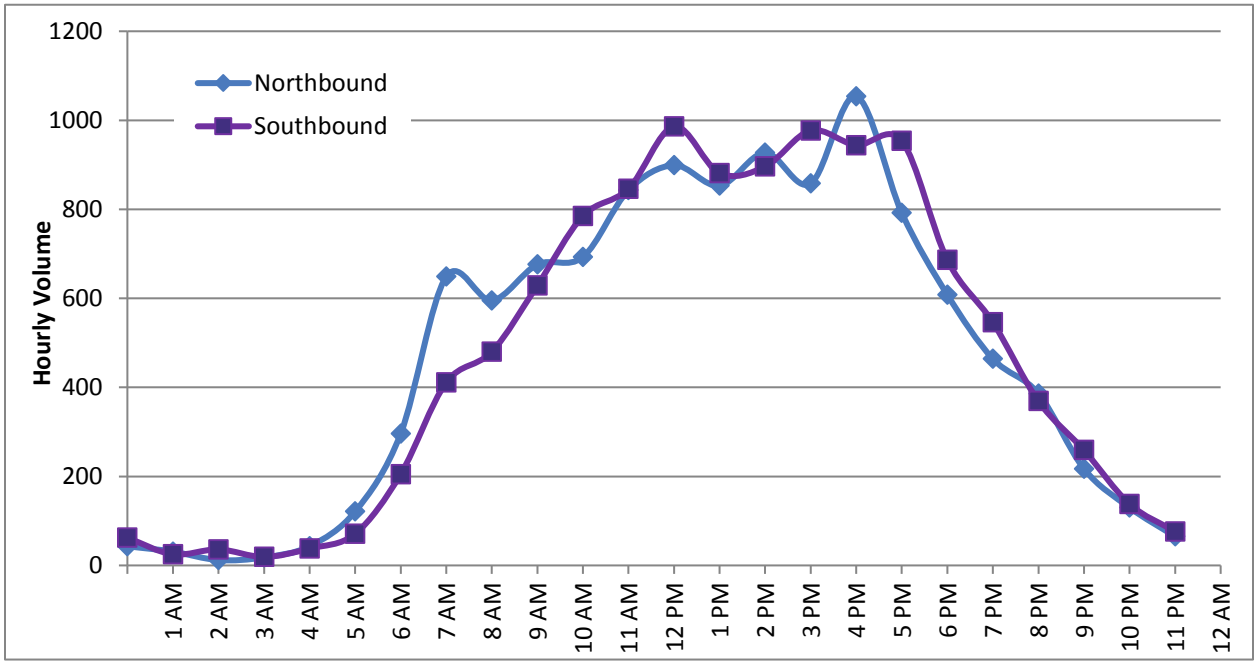
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 22,592|11,273 NB/11,319 SB
AM Peak Hour (8:00 AM): 1,075
PM Peak Hour (4:00 PM): 1,998
Overall Peak Hour (4:00 PM): 1,998

Average Speed: 33 mph
85th Percentile Speed: 39 mph
Mode Speed: 38 mph

Heavy Vehicles: 1.3% NB/1.0% SB



LOCATION: SE 3RD STREET, NORTH OF SE REED MARKET ROAD (ID 41050)

Functional Classification: Principal Arterial
Cross-Section: Five vehicle lanes, bike lanes, sidewalks

Source: Google Earth,

Dates: Tuesday, May 17, 2016 and Tuesday, July 19, 2016

May

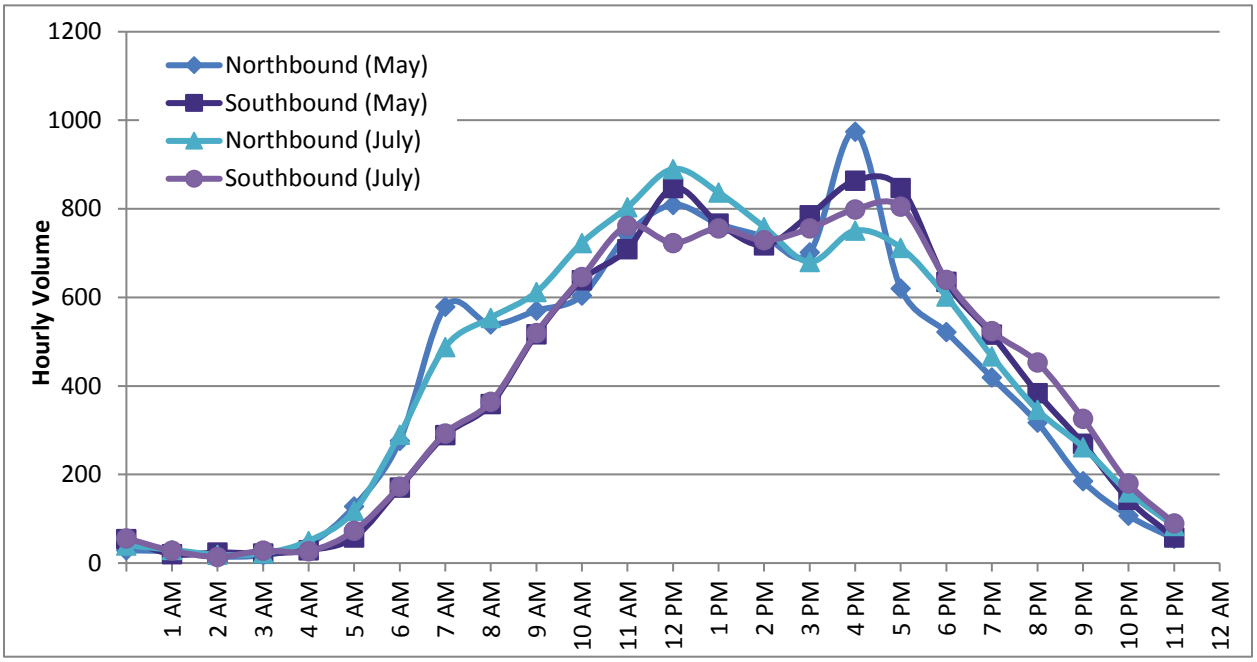
Total Vehicles: 19,507 | 9,781 NB/9,726 SB
AM Peak Hour (8:00 AM): 898
PM Peak Hour (4:00 PM): 1,838
Overall Peak Hour (4:00 PM): 1,838

Average Speed: 30 mph
85th Percentile Speed: 37 mph
Mode Speed: 33 mph
Heavy Vehicles: 1.7% NB/1.5% SB

July

Total Vehicles: 20,065 | 10,300 NB/9,765 SB
AM Peak Hour (8:00 AM): 918
PM Peak Hour (4:00 PM): 1,550
Overall Peak Hour (12:00 PM): 1,613
Daily volumes 4% lower than in May

Average Speed: 28 mph
85th Percentile Speed: 36 mph
Mode Speed: 33 mph
Heavy Vehicles: 3.0% NB/2.6% SB



LOCATION: SE 3RD STREET, NORTH OF MURPHY ROAD (ID 41755)

Functional Classification: Principal Arterial
Cross-Section: Five vehicle lanes, bike lanes, sidewalks

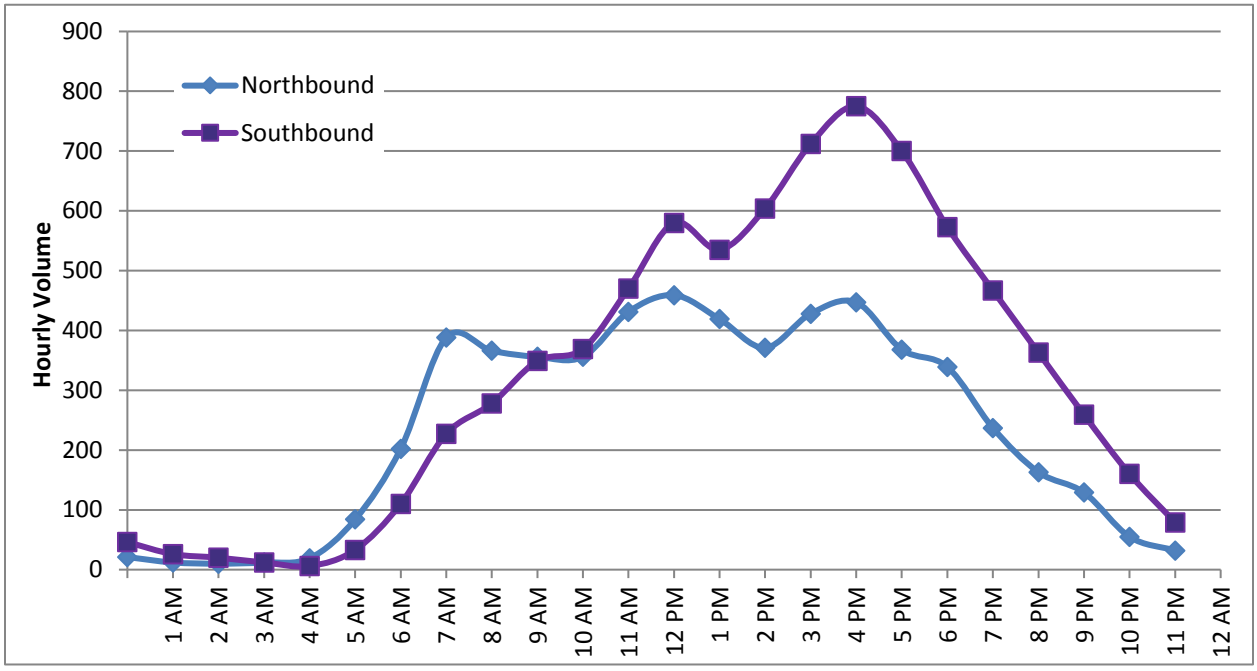
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 13,457 | 5,704 NB/7,753 SB
AM Peak Hour (8:00 AM): 644
PM Peak Hour (4:00 PM): 1,222
Overall Peak Hour (4:00 PM): 1,222

Average Speed: 33 mph
85th Percentile Speed: 40 mph
Mode Speed: 38 mph

Heavy Vehicles: 1.6% NB/2.2% SB



LOCATION: NE GREENWOOD AVENUE, EAST OF 3RD STREET (ID 48365)

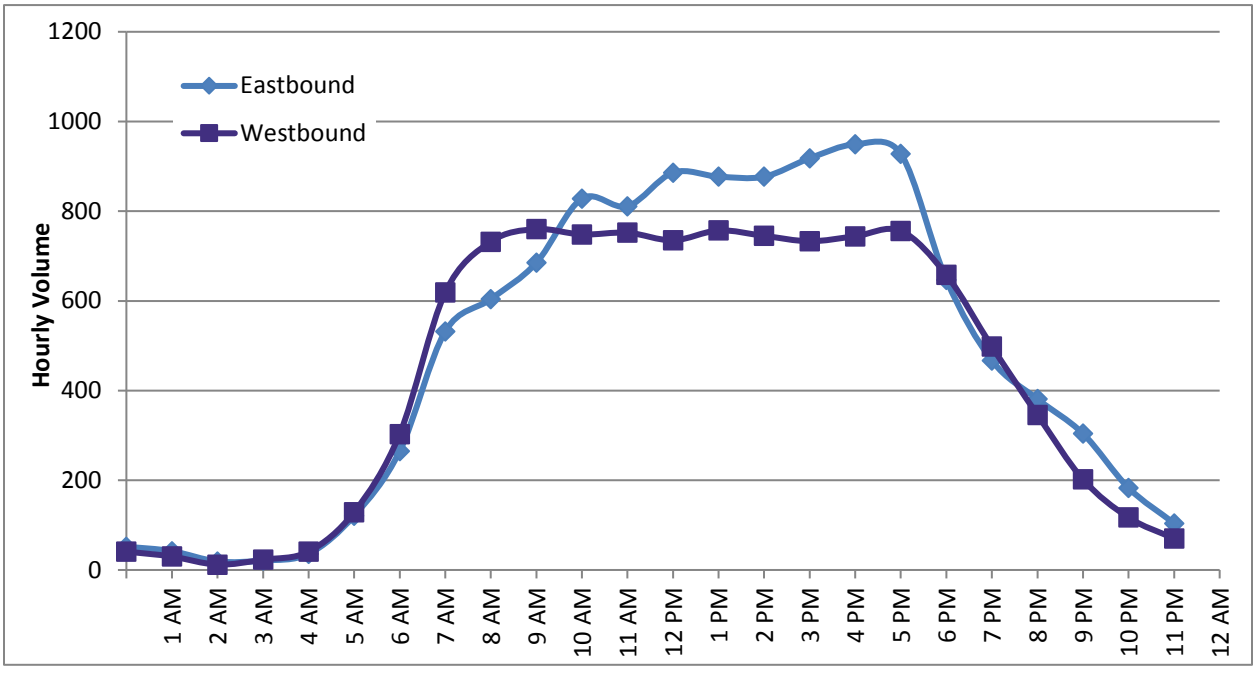
Functional Classification: Principal Arterial
Cross-Section: Five vehicle lanes, bike lanes east of NE 3rd Street, sidewalks

Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 22,088 | 11,537 EB/10,551 WB
AM Peak Hour (8:00 AM): 1,336
PM Peak Hour (4:00 PM): 1,693
Overall Peak Hour (4:00 PM): 1,693

Average Speed: 20 mph
85th Percentile Speed: 28 mph
Mode Speed: 23 mph
Heavy Vehicles: 1.9% EB/2.9% WB



Chapter 2b: Twenty-Four Hour Vehicle Counts on Major Arterials

LOCATION: NE 27TH STREET, NORTH OF NEFF ROAD (48355)

Functional Classification: Major Arterial
Cross-Section: Four-three vehicle lanes, bike lanes, sidewalks

Source: Google Earth

Dates: Wednesday, May 18/Thursday, May 19, 2016 and Tuesday, July 19, 2016

May

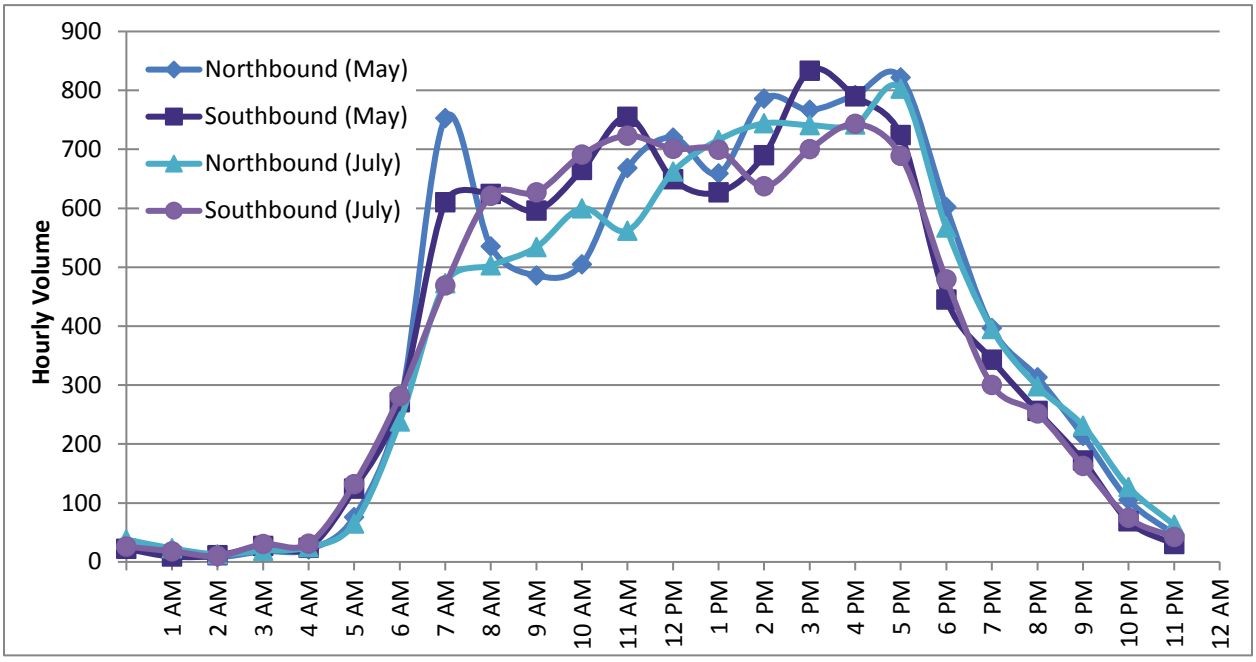
Total Vehicles: 18,962 | 9,596 NB/9,366 SB
AM Peak Hour (7:00 AM): 1,363
PM Peak Hour (4:00 PM): 1,582
Overall Peak Hour (3:00 PM): 1,600

Average Speed: 32 mph
85th Percentile Speed: 39 mph
Mode Speed: 33 mph
Heavy Vehicles: 1.1% NB/0.8% SB

July

Total Vehicles: 18,321 |9,182 NB/9,139 SB
AM Peak Hour (8:00 AM): 1,124
PM Peak Hour (5:00 PM): 1,492
Overall Peak Hour (5:00 PM): 1,492
Daily volumes 3% lower than in May

Average Speed: 33 mph
85th Percentile Speed: 40 mph
Mode Speed: 38 mph
Heavy Vehicles: 4.5% NB/2.5% SB



LOCATION: NE 27TH STREET, SOUTH OF NEFF ROAD (ID 48356)

Functional Classification: Major Arterial
Cross-Section: Four vehicle lanes, landscaped median, bike lanes, sidewalks

Source: Google Earth

Dates: Thursday, May 19, 2016 and Tuesday, July 19, 2016

May

Total Vehicles: 22,187 | 11,278 NB/10,909 SB
AM Peak Hour (7:00 AM): 1,449
PM Peak Hour (4:00 PM): 1,732
Overall Peak Hour (4:00 PM): 1,732

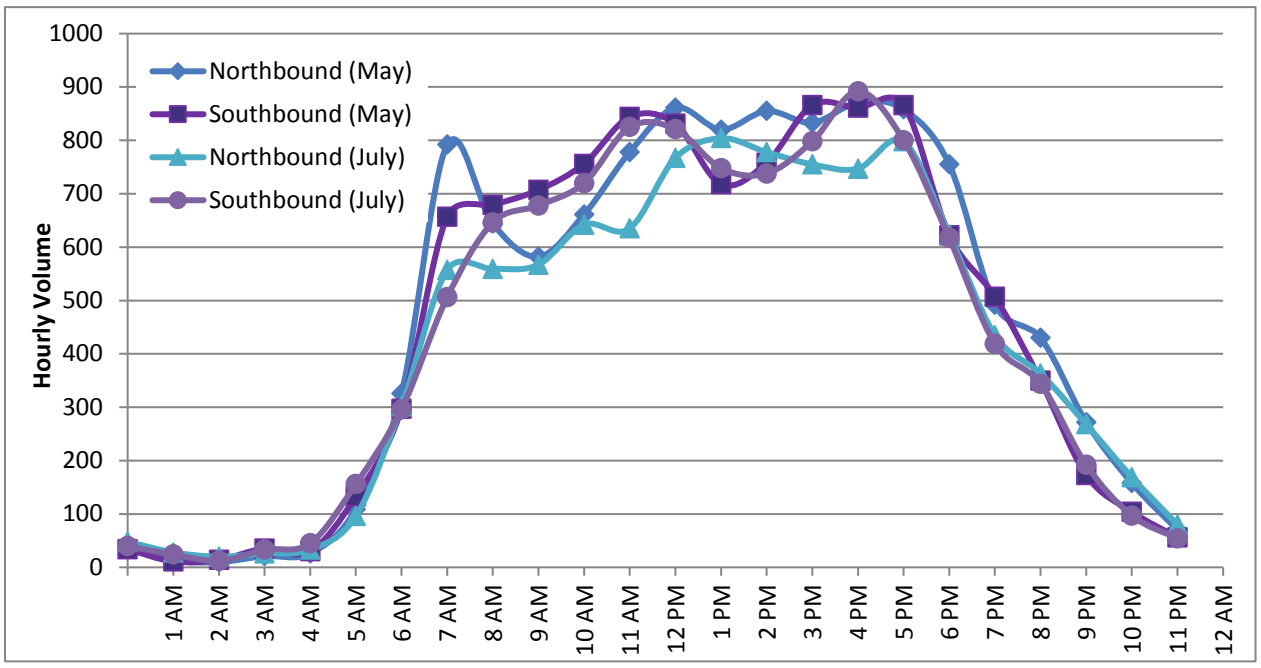
Average Speed: 32 mph
85th Percentile Speed: 38 mph
Mode Speed: 33 mph
Heavy Vehicles: 2.2% NB/1.7% SB

July

Total Vehicles: 20,602 |10,101 NB/10,501 SB
AM Peak Hour (8:00 AM): 1,205
PM Peak Hour (4:00 PM): 1,639
Overall Peak Hour (4:00 PM): 1,639
Daily volumes 7% lower than in May

Average Speed: 34 mph
85th Percentile Speed: 41 mph
Mode Speed: 38 mph

Heavy Vehicles: 6.6% NB/5.8% SB



LOCATION: EMPIRE AVENUE, EAST OF 18TH STREET (ID 236)

Functional Classification: Major Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

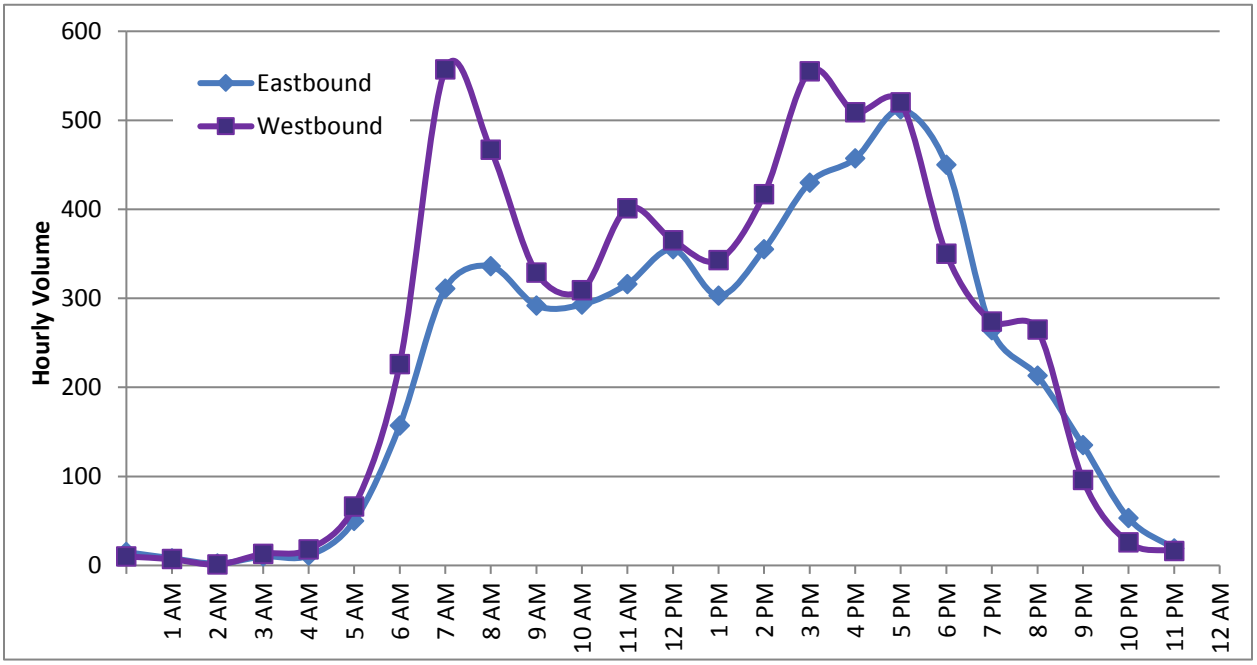
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 11,487 | 5,347 EB/6,140 WB
AM Peak Hour (7:00 AM): 868
PM Peak Hour (5:00 PM): 1,032
Overall Peak Hour (5:00 PM): 1,032

Average Speed: 32 mph
85th Percentile Speed: 37 mph
Mode Speed: 33 mph

Heavy Vehicles: 0.9% EB/0.5% WB



LOCATION: SE REED MARKET ROAD, EAST OF SE 3RD STREET (ID 806)

Functional Classification: Major Arterial
Cross-Section: Four vehicle lanes, bike lanes, sidewalks

Source: Google Earth

Dates: Tuesday, May 17, 2016 and Tuesday, July 19, 2016

May

Total Vehicles: 18,888 | 10,123 EB/8,765 WB
AM Peak Hour (8:00 AM): 1,261
PM Peak Hour (5:00 PM): 1,397
Overall Peak Hour (3:00 PM): 1,440

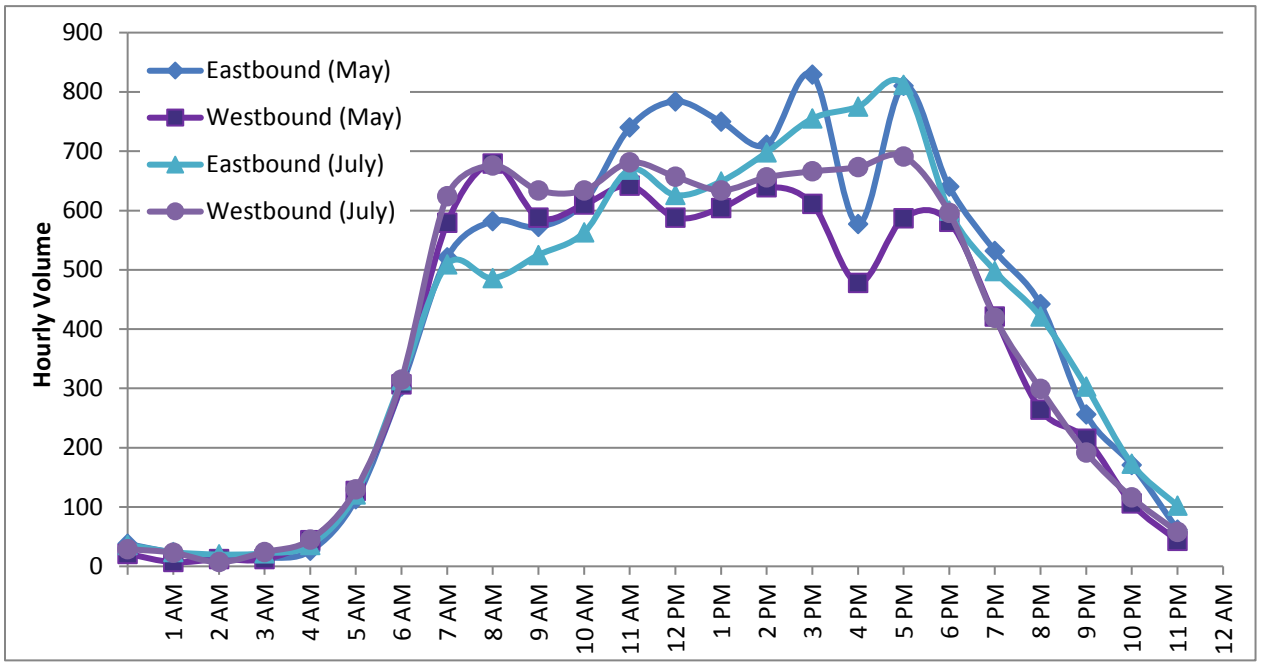
Average Speed: 25 mph
85th Percentile Speed: 33 mph
Mode Speed: 28 mph
Heavy Vehicles: 4.1% EB/1.2% WB

July

Total Vehicles: 19,216 |9,737 EB/9,479 WB
AM Peak Hour (8:00 AM): 1,162
PM Peak Hour (5:00 PM): 1,503
Overall Peak Hour (5:00 PM): 1,503
Daily volumes 2% higher than in May

Average Speed: 28 mph
85th Percentile Speed: 36 mph
Mode Speed: 33 mph

Heavy Vehicles: 1.8% EB/1.4% WB



LOCATION: SE REED MARKET ROAD, WEST OF SE 3RD STREET (ID 805)

Functional Classification: Major Arterial
Cross-Section: Four vehicle lanes, bike lanes, sidewalks

Source: Google Earth,

Dates: Thursday, May 19, 2016 and Tuesday, July 19, 2016

May

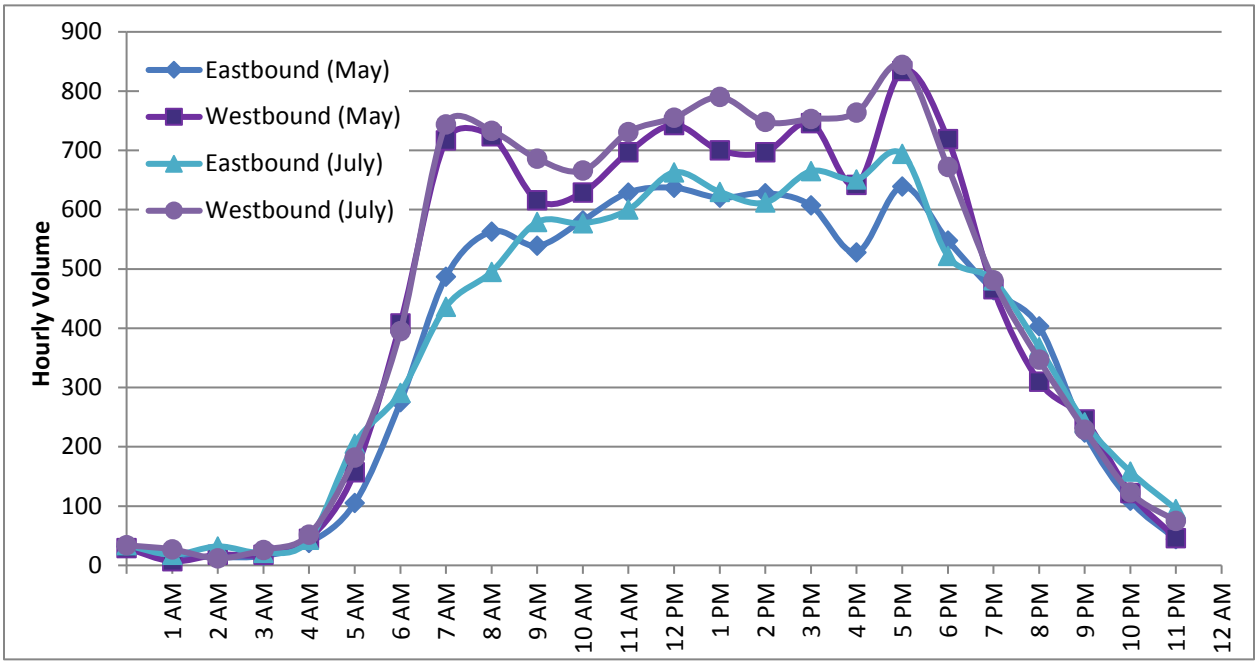
Total Vehicles: 19,084 | 8,748 EB/10,336 WB
AM Peak Hour (8:00 AM): 1,287
PM Peak Hour (5:00 PM): 1,473
Overall Peak Hour (5:00 PM): 1,473

Average Speed: 23 mph
85th Percentile Speed: 32 mph
Mode Speed: 28 mph
Heavy Vehicles: 1.5% EB/2.6% WB

July

Total Vehicles: 19,980 |9,111 EB/10,869 WB
AM Peak Hour (8:00 AM): 1,228
PM Peak Hour (5:00 PM): 1,538
Overall Peak Hour (5:00 PM): 1,538
Daily volumes 4% lower than in May

Average Speed: 22 mph
85th Percentile Speed: 30 mph
Mode Speed: 23 mph
Heavy Vehicles: 1.4% EB/2.4% WB



Chapter 2c: Twenty-Four Hour Vehicle Counts at Bridge Locations

LOCATION: SW COLORADO AVENUE/NW GALVESTON AVENUE BRIDGE (ID 206)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalk on north side

Source: Google Earth

Dates: Tuesday, May 17, 2016 and Tuesday, July 19, 2016

May

Total Vehicles: 13,242 | 5,936 EB/7,279 WB
AM Peak Hour (8:00 AM): 890
PM Peak Hour (5:00 PM): 1,147
Overall Peak Hour (5:00 PM): 1,147

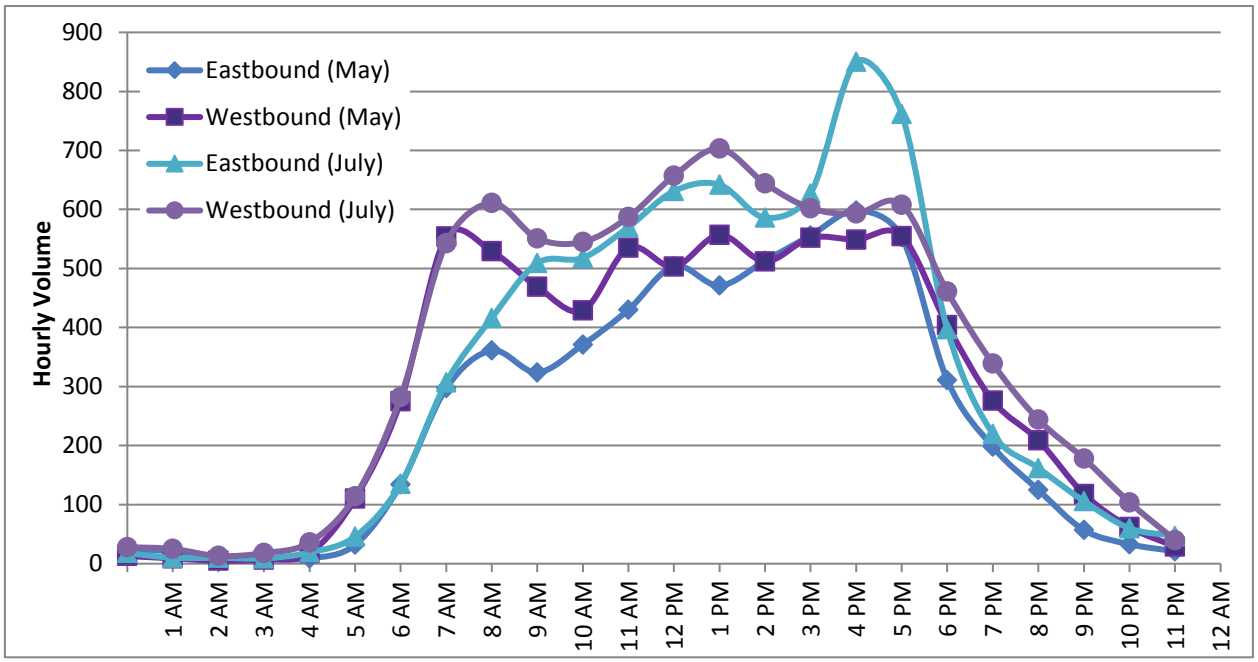
Average Speed: 25 mph
85th Percentile Speed: 31 mph
Mode Speed: 28 mph
Heavy Vehicles: 0.8% EB/0.5% WB

July

Total Vehicles: 16,183 |7,657 EB/8,526 WB
AM Peak Hour (8:00 AM): 1,027
PM Peak Hour (4:00 PM): 1,443
Overall Peak Hour (4:00 PM): 1,443
Daily volumes 22% higher than in May

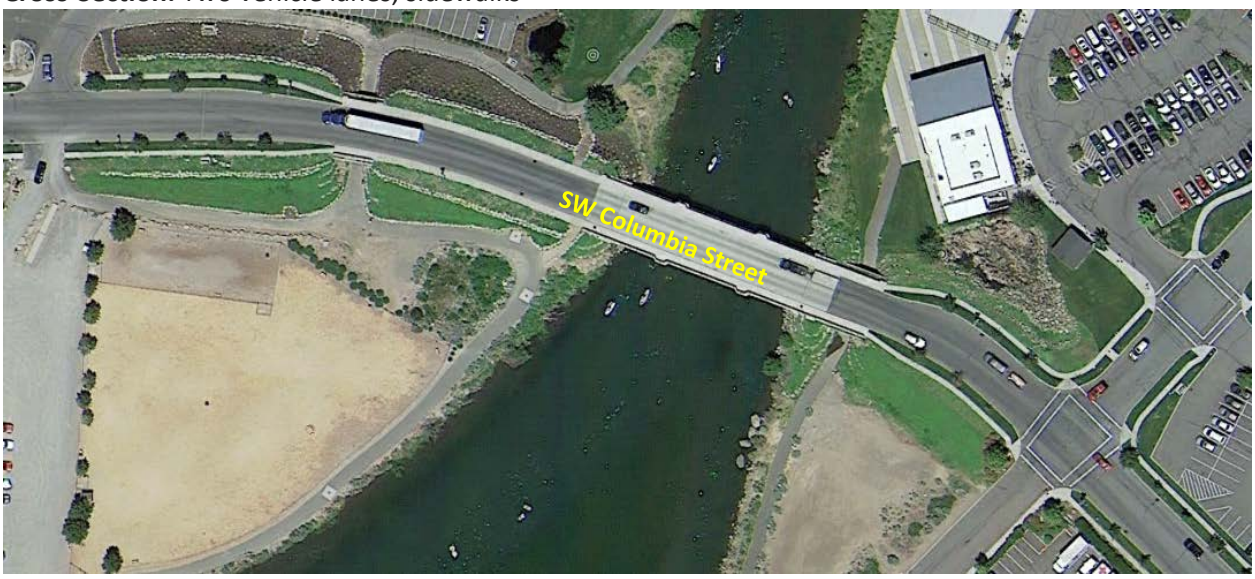
Average Speed: 30 mph
85th Percentile Speed: 37 mph
Mode Speed: 33 mph

Heavy Vehicles: 1.3% EB/1.2% WB



LOCATION: SW COLUMBIA STREET BRIDGE (ID 750)

Functional Classification: Local
Cross-Section: Two vehicle lanes, sidewalks



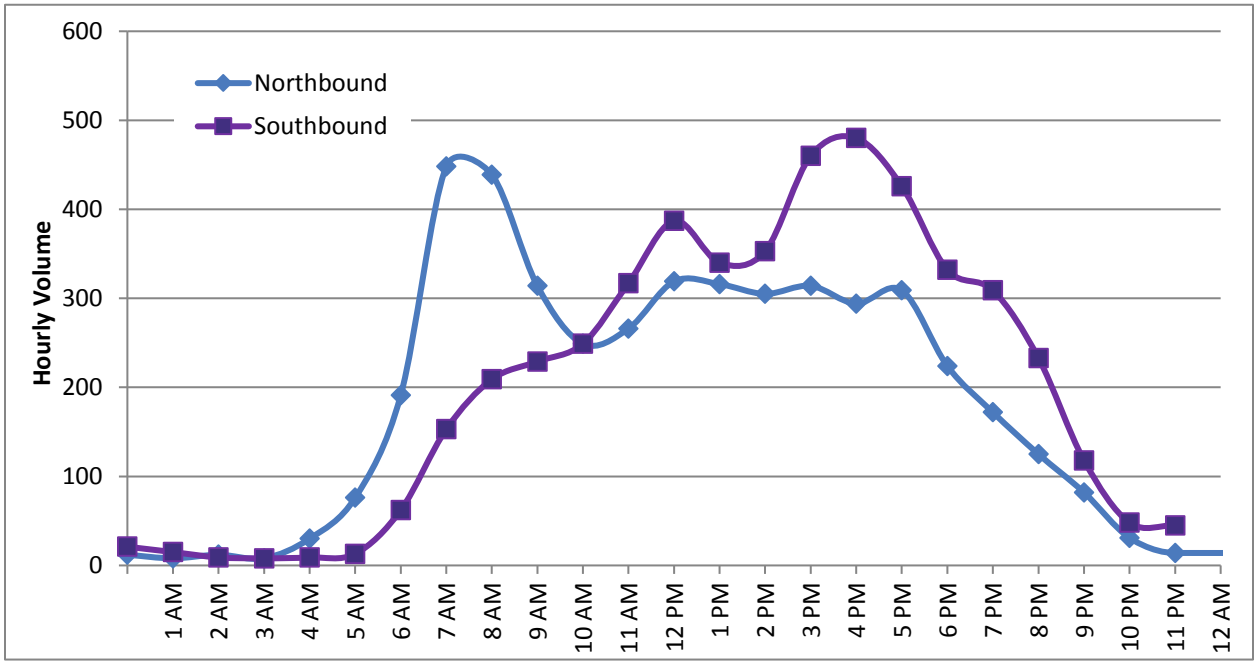
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 9,383 | 4,558 NB/4,825 SB
AM Peak Hour (8:00 AM): 648
PM Peak Hour (4:00 PM): 774
Overall Peak Hour (3:00/4:00 PM): 774

Average Speed: 24 mph
85th Percentile Speed: 29 mph
Mode Speed: 28 mph

Heavy Vehicles: 0.6% NB/0.8% SB



LOCATION: NW NEWPORT AVENUE BRIDGE (ID 361)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, two-way left-turn lane, bike lanes, sidewalks

Source: Google Earth

Dates: Thursday, May 19, 2016 and Tuesday, July 19, 2016

May

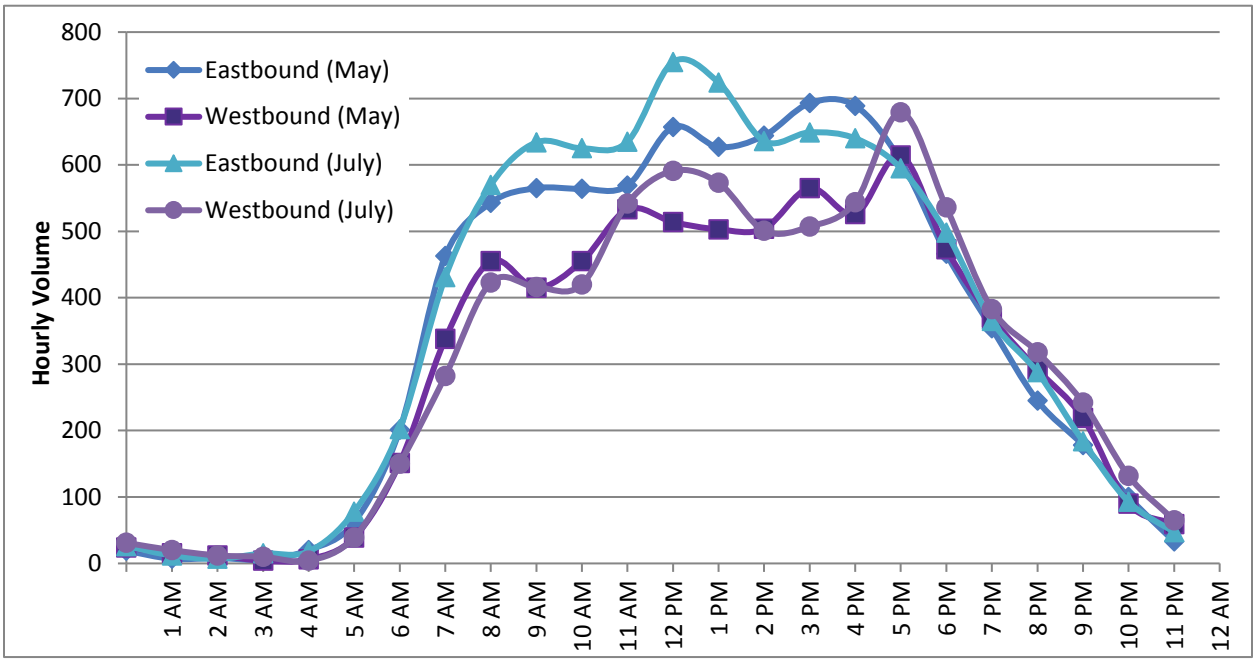
Total Vehicles: 15,495 | 8,319 EB/7,176 WB
AM Peak Hour (8:00 AM): 998
PM Peak Hour (5:00 PM): 1,220
Overall Peak Hour (3:00 PM): 1,258

Average Speed: 26 mph
85th Percentile Speed: 32 mph
Mode Speed: 28 mph
Heavy Vehicles: 0.6% EB/1.0% WB

July

Total Vehicles: 16,147 |8,727 EB/7,420 WB
AM Peak Hour (8:00 AM):993
PM Peak Hour (5:00 PM): 1,274
Overall Peak Hour (12:00 PM): 1,346
Daily volumes 4% higher than in May

Average Speed: 27 mph
85th Percentile Speed: 33 mph
Mode Speed: 28 mph
Heavy Vehicles: 1.0% EB/1.1% WB



LOCATION: NW PORTLAND AVENUE BRIDGE (ID 751)

Functional Classification: Major Collector
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

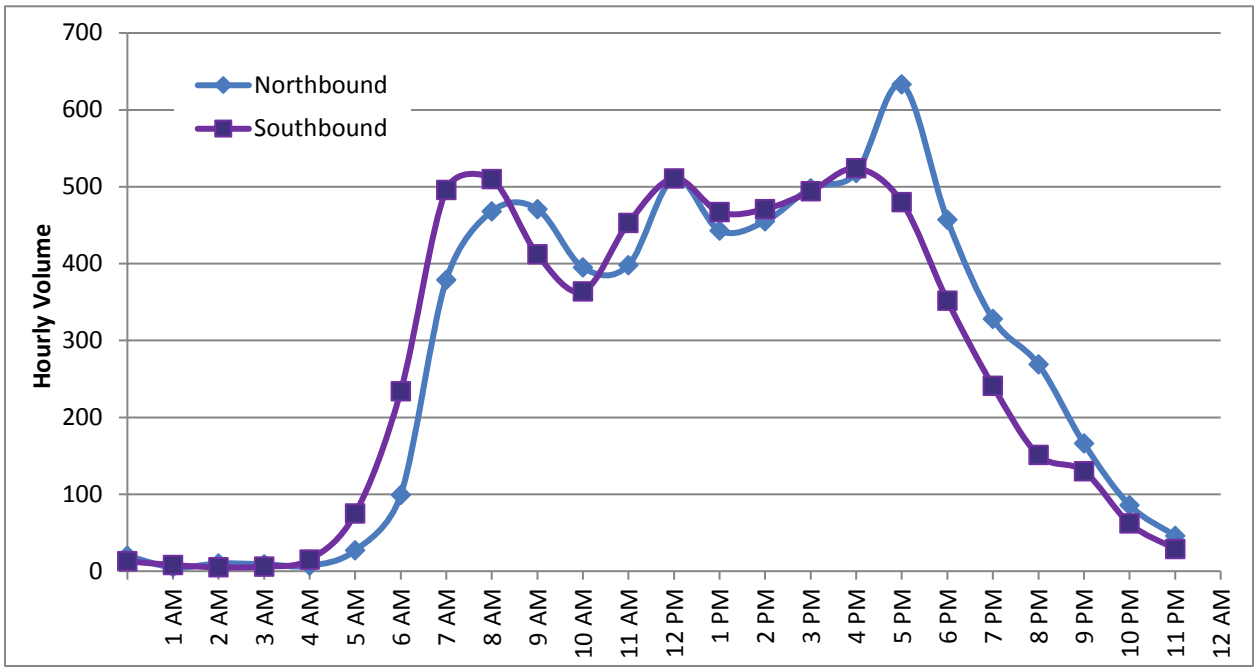
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 13,201 |6,698 EB/6,503 WB
AM Peak Hour (8:00 AM): 978
PM Peak Hour (5:00 PM): 1,113
Overall Peak Hour (5:00 PM): 1,113

Average Speed: 28 mph
85th Percentile Speed: 34 mph
Mode Speed: 33 mph

Heavy Vehicles: 0.6% EB/0.7% WB



LOCATION: SW REED MARKET BRIDGE (ID 423)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, raised median, bike lanes, sidewalks

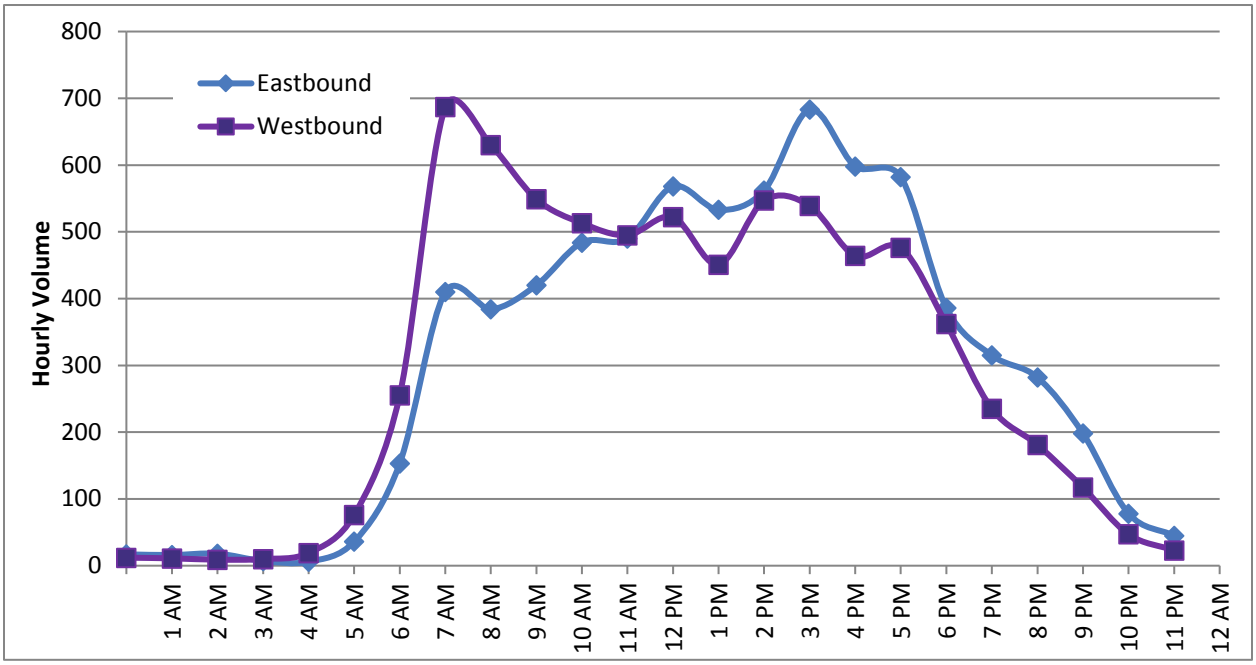
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 14,501 | 7,271 EB/7,230 WB
AM Peak Hour (7:00 AM): 1,097
PM Peak Hour (4:00 PM): 1,062
Overall Peak Hour (3:00 PM): 1,222

Average Speed: 23 mph
85th Percentile Speed: 29 mph
Mode Speed: 28 mph

Heavy Vehicles: 2.0% EB/2.8% WB



LOCATION: NW TUMALO AVENUE BRIDGE (ID 267)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

Source: Google Earth

Dates: Tuesday, May 17, 2016 and Thursday, July 21, 2016

May

Total Vehicles: 13,621 | 7,108 EB/6,513 WB
AM Peak Hour (8:00 AM): 857
PM Peak Hour (5:00 PM): 1,108
Overall Peak Hour (3:00 PM): 1,115

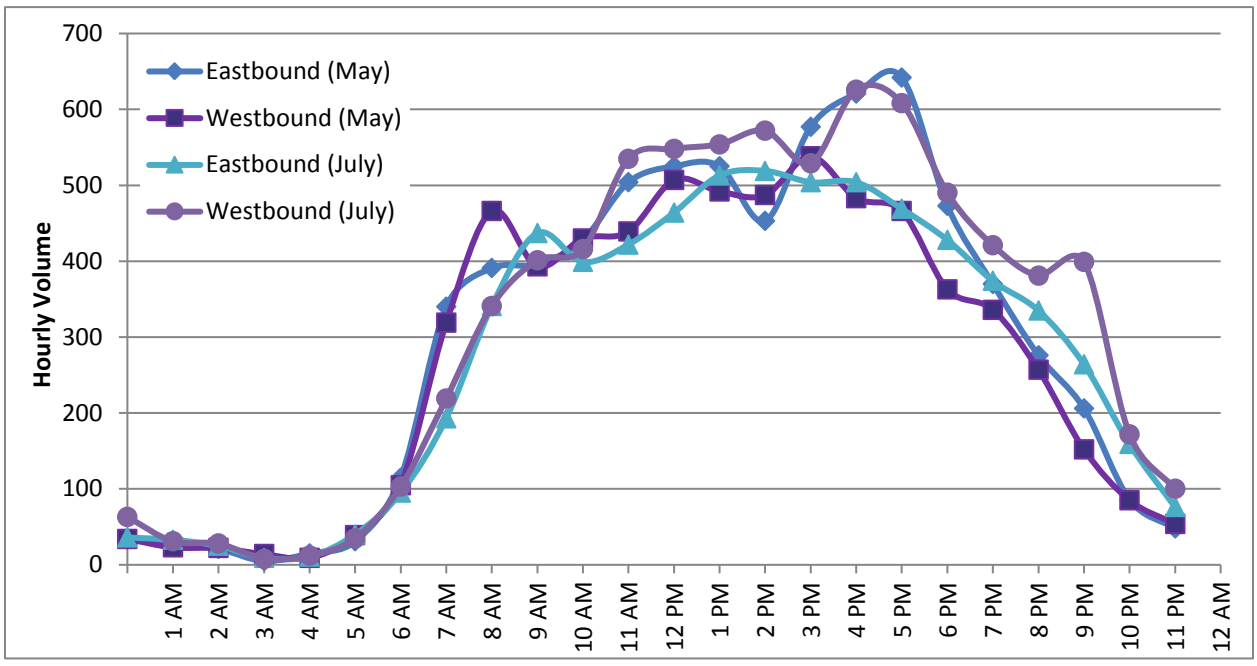
Average Speed: 22 mph
85th Percentile Speed: 27 mph
Mode Speed: 23 mph
Heavy Vehicles: 0.5% EB/0.4% WB

July

Total Vehicles: 14,242 |6,650 EB/7,592 WB
AM Peak Hour (8:00 AM): 682
PM Peak Hour (4:00 PM): 1,130
Overall Peak Hour (4:00 PM): 1,130
Daily volumes 5% higher than in May

Average Speed: 21 mph
85th Percentile Speed: 28 mph
Mode Speed: 23 mph

Heavy Vehicles: 0.7 NB/0.7% SB



Chapter 2d: Twenty-Four Hour Vehicle Counts at Minor Arterials

LOCATION: NE 8TH STREET, SOUTH OF NE NORTON AVENUE (ID 70)

Functional Classification: Minor Arterial
Cross-Section: Three vehicle lanes, bike lanes, sidewalk on east side

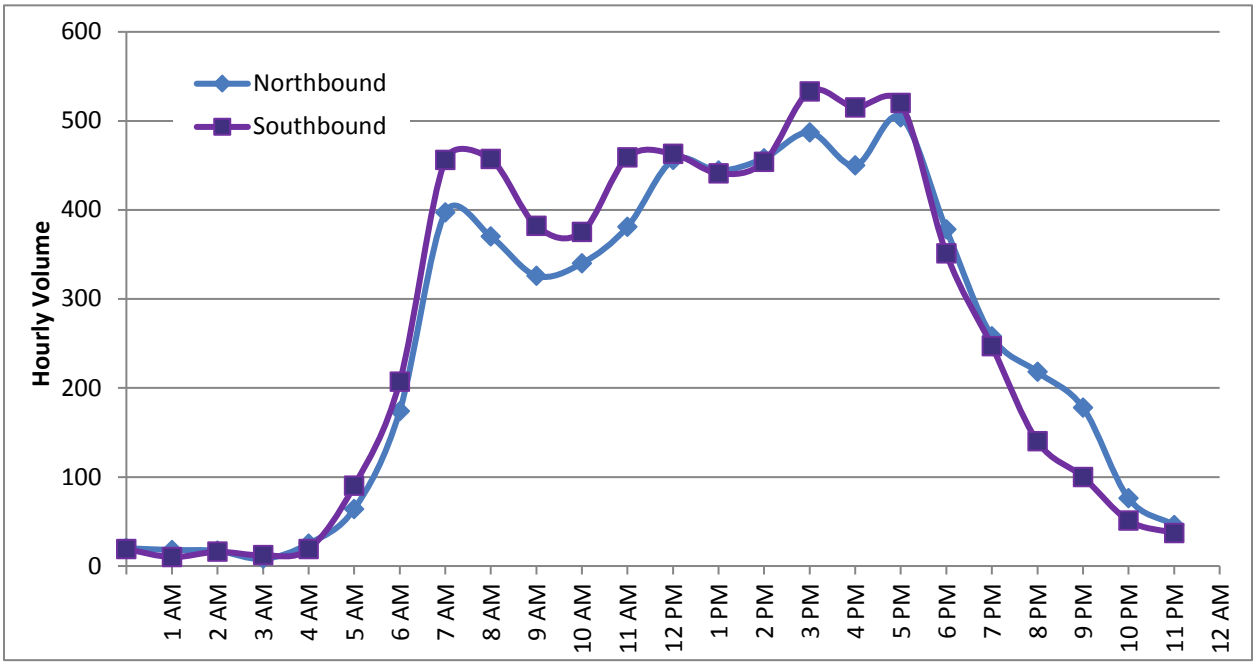
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 12,447 | 6,093 NB/6,354 SB
AM Peak Hour (7:00 AM): 853
PM Peak Hour (5:00 PM): 1,024
Overall Peak Hour (5:00 PM): 1,024

Average Speed: 28 mph
85th Percentile Speed: 34 mph
Mode Speed: 28 mph

Heavy Vehicles: 0.9 % NB/1.0% SB



LOCATION: NW 14TH STREET, NORTH OF JACKSONVILLE AVENUE (ID 11)

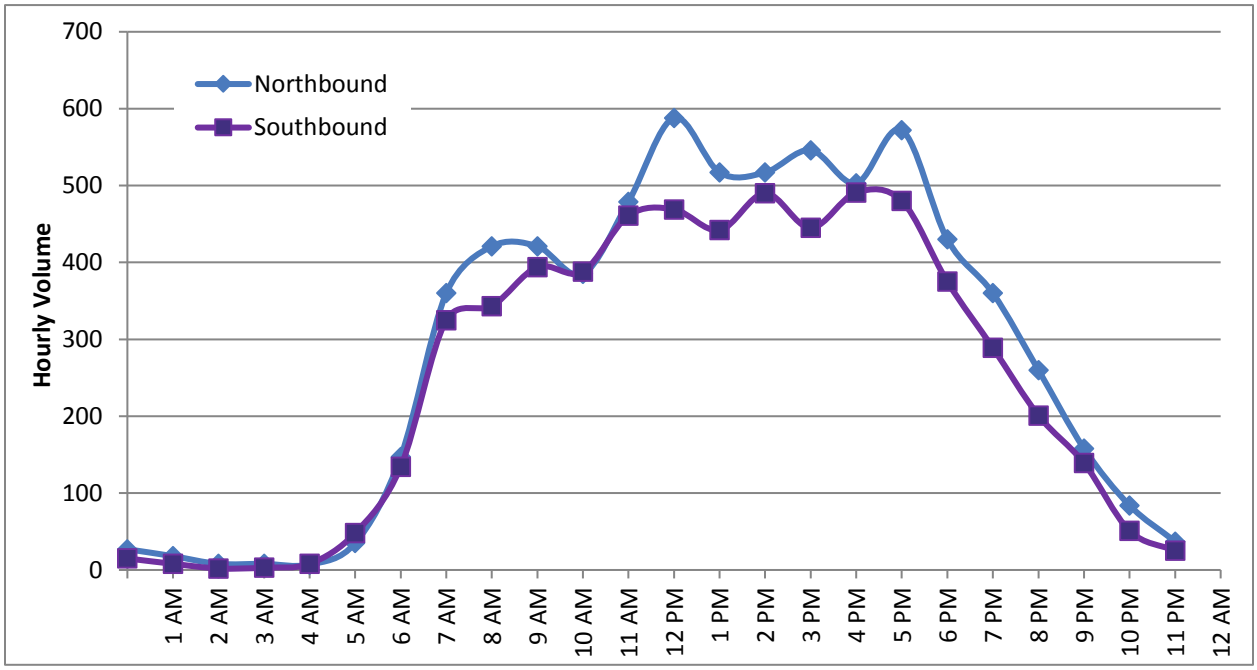
Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 12,914 | 6,888 NB/6,026 SB
AM Peak Hour (8:00 AM): 764
PM Peak Hour (5:00 PM): 1,052
Overall Peak Hour (12:00 PM): 1,057

Average Speed: 23 mph
85th Percentile Speed: 28 mph
Mode Speed: 23 mph
Heavy Vehicles: 0.2% NB/0.3% SB



LOCATION: SE 15TH STREET, NORTH OF WILSON AVENUE (ID 41030)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalk

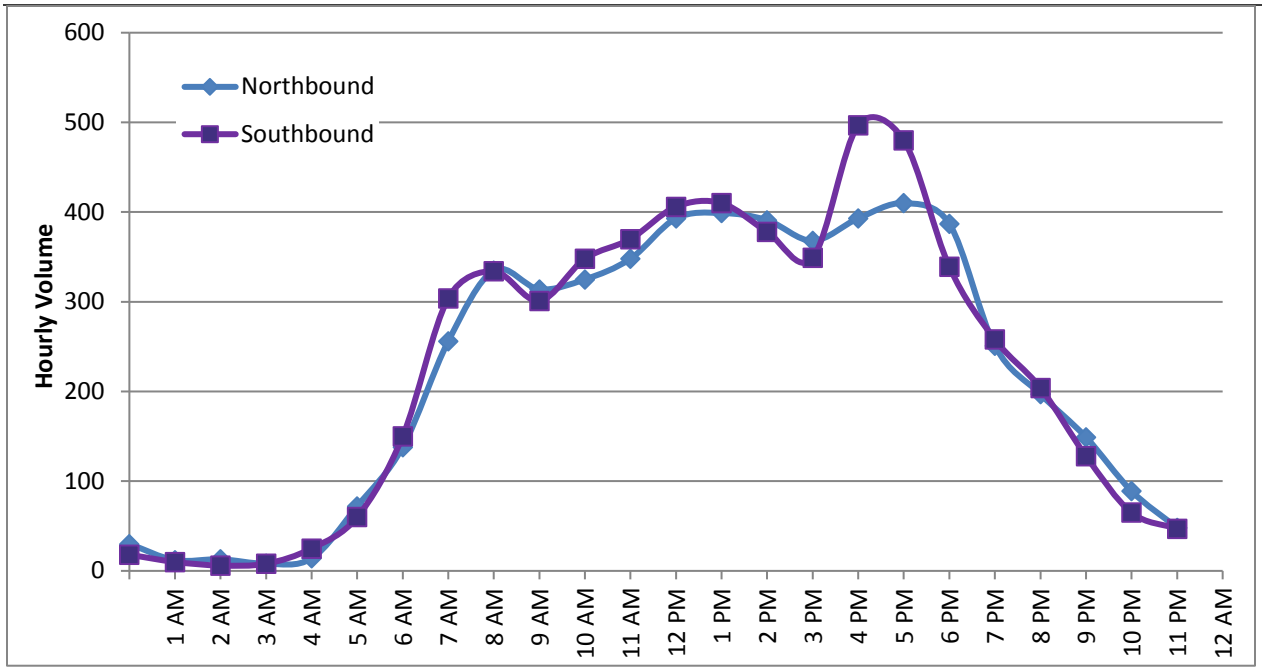
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 10,835 | 5,340 NB/5,495 SB
AM Peak Hour (8:00 AM): 669
PM Peak Hour (4:00/5:00 PM): 890
Overall Peak Hour (4:00/5:00 PM): 890

Average Speed: 28 mph
85th Percentile Speed: 37 mph
Mode Speed: 28 mph

Heavy Vehicles: 0.9% NB/0.9% SB


600
500
400
300
200
100
0
Hourly Volume
Northbound
Southbound
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM
12 AM

LOCATION: SE 15TH STREET, SOUTH OF WILSON AVENUE (ID 41034)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalk

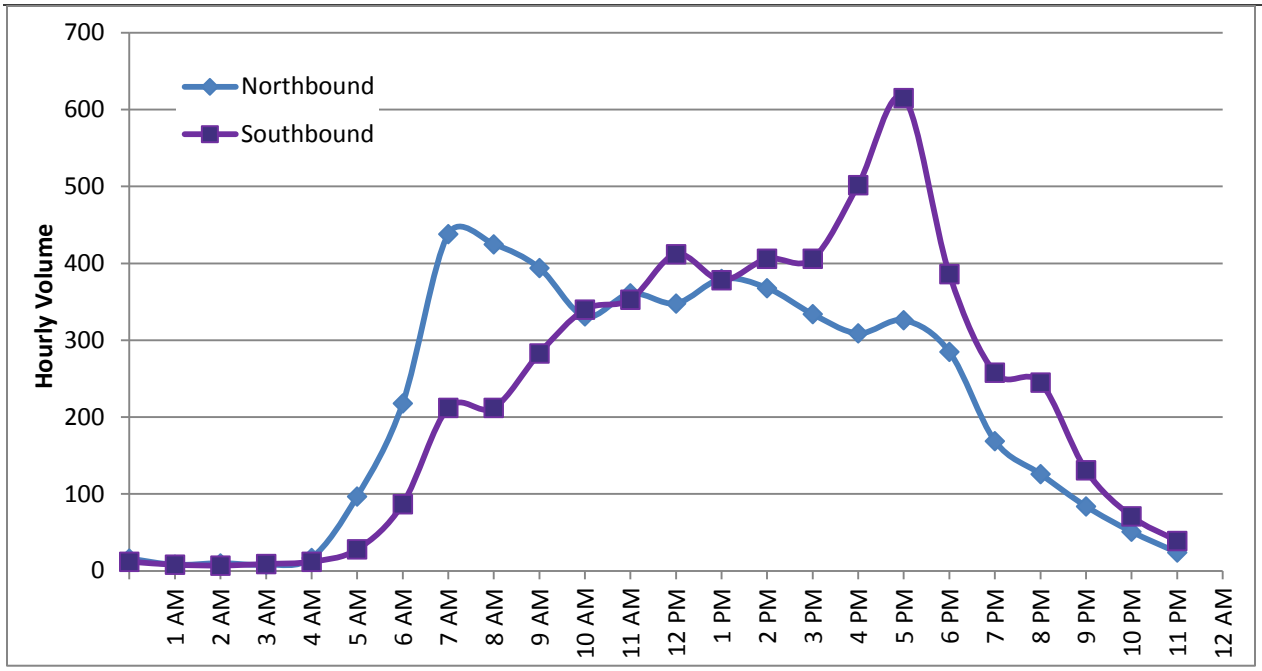
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 10,539 | 5,127 NB/5,412 SB
AM Peak Hour (7:00 AM): 650
PM Peak Hour (5:00 PM): 941
Overall Peak Hour (5:00 PM): 941

Average Speed: 36 mph
85th Percentile Speed: 42 mph
Mode Speed: 38 mph

Heavy Vehicles: 1.2% NB/1.2% SB


700
600
500
400
300
200
100
0
Hourly Volume
Northbound
Southbound
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM
12 AM

LOCATION: NE 18TH STREET, SOUTH OF COOLEY ROAD (ID 791)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

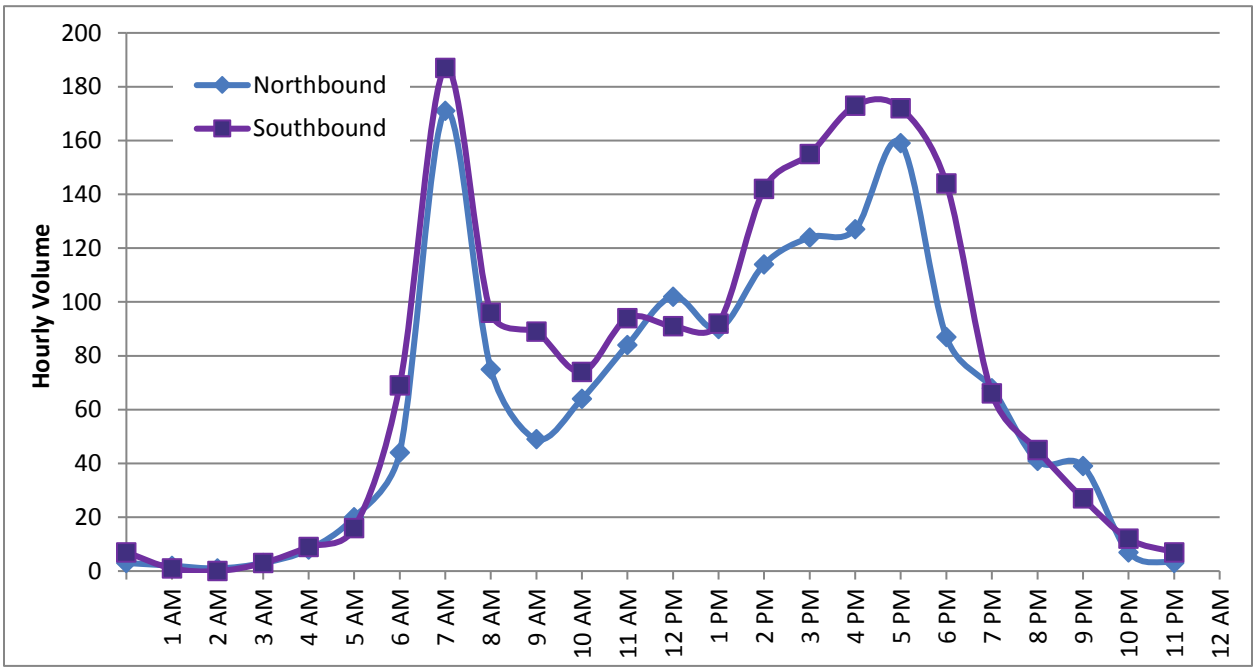
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 3,256 | 1,485 NB/1,771 SB
AM Peak Hour (7:00 AM): 358
PM Peak Hour (5:00 PM): 331
Overall Peak Hour (7:00 AM): 358

Average Speed: 27 mph
85th Percentile Speed: 32 mph
Mode Speed: 28 mph

Heavy Vehicles: 1.0% NB/1.6% SB



LOCATION: NW ARIZONA AVENUE, EAST OF NW BOND STREET (ID 812)

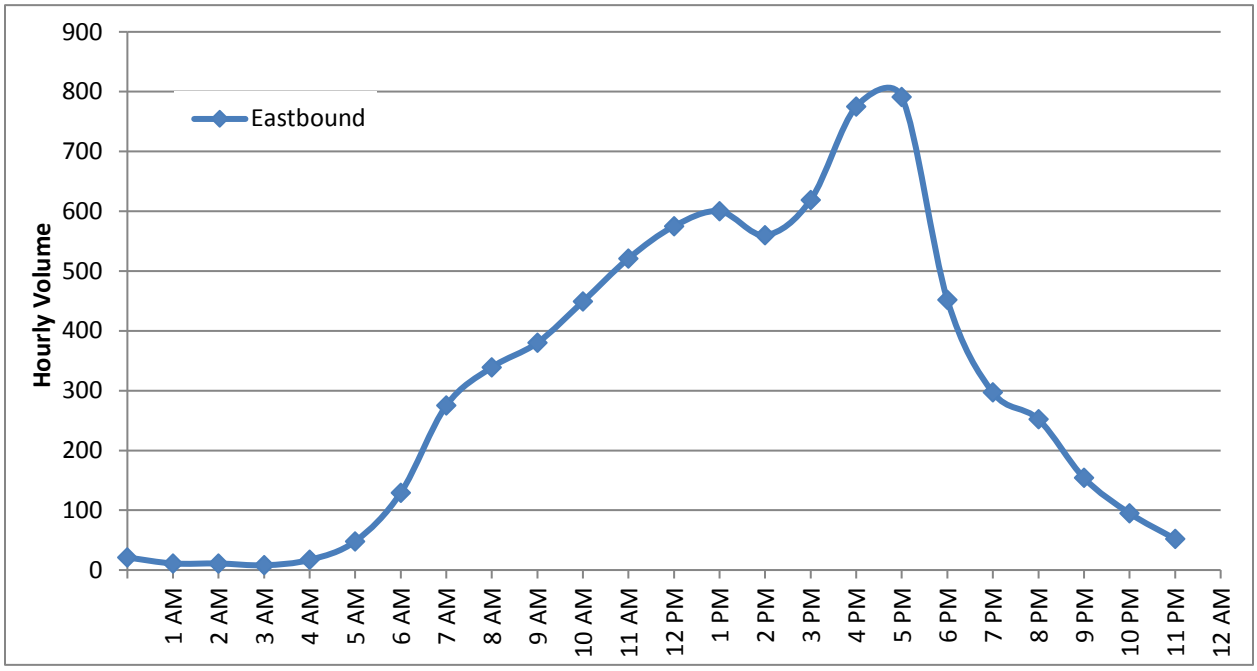
Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, on-street parking, sidewalks

Source: Google Earth

Date: Tuesday, July 19, 2016

Total Vehicles: 7,431 EB
AM Peak Hour (8:00 AM): 339
PM Peak Hour (5:00 PM): 791
Overall Peak Hour (5:00 PM): 791

Average Speed: 23 mph
85th Percentile Speed: 29 mph
Mode Speed: 23 mph
Heavy Vehicles: 3.0% EB



LOCATION: SW BOND STREET, SOUTH OF SE WILSON AVENUE (ID 804)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, striped or raised median, bike lanes, sidewalks

Source: Google Earth

Dates: Tuesday, May 17, 2016 and Thursday, July 21, 2016

May

Total Vehicles: 11,694 |5,942 NB/5,752 SB
AM Peak Hour (8:00 AM): 752
PM Peak Hour (4:00 PM): 968
Overall Peak Hour (4:00 PM): 968

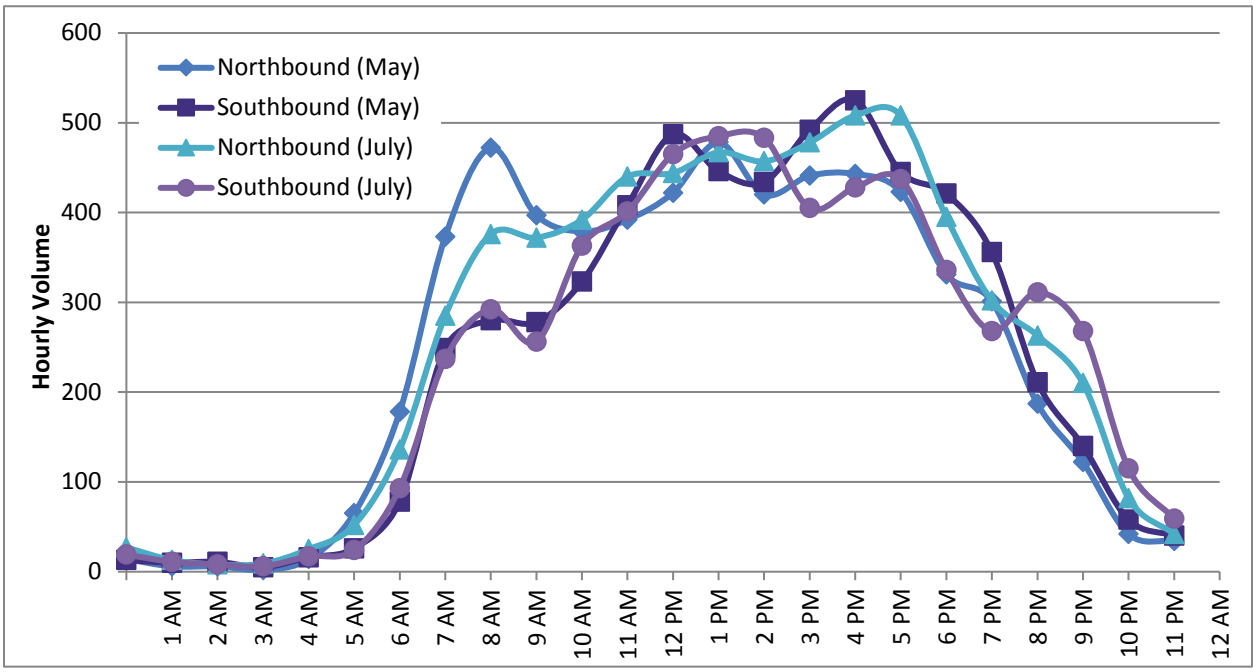
Average Speed: 25 mph
85th Percentile Speed: 31 mph
Mode Speed: 28 mph
Heavy Vehicles: 0.5% NB/0.5% SB

July

Total Vehicles: 12,078 |6,291 NB/5,787 SB
AM Peak Hour (8:00 AM): 668
PM Peak Hour (5:00 PM): 945
Overall Peak Hour (1:00 PM): 952
Daily volumes 3% higher than in May

Average Speed: 24 mph
85th Percentile Speed: 28 mph
Mode Speed: 23 mph

Heavy Vehicles: 0.5% NB/0.9% SB



LOCATION: SW BOND STREET, NORTH OF REED MARKET ROAD (ID 122)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, striped or raised median, bike lanes, sidewalks

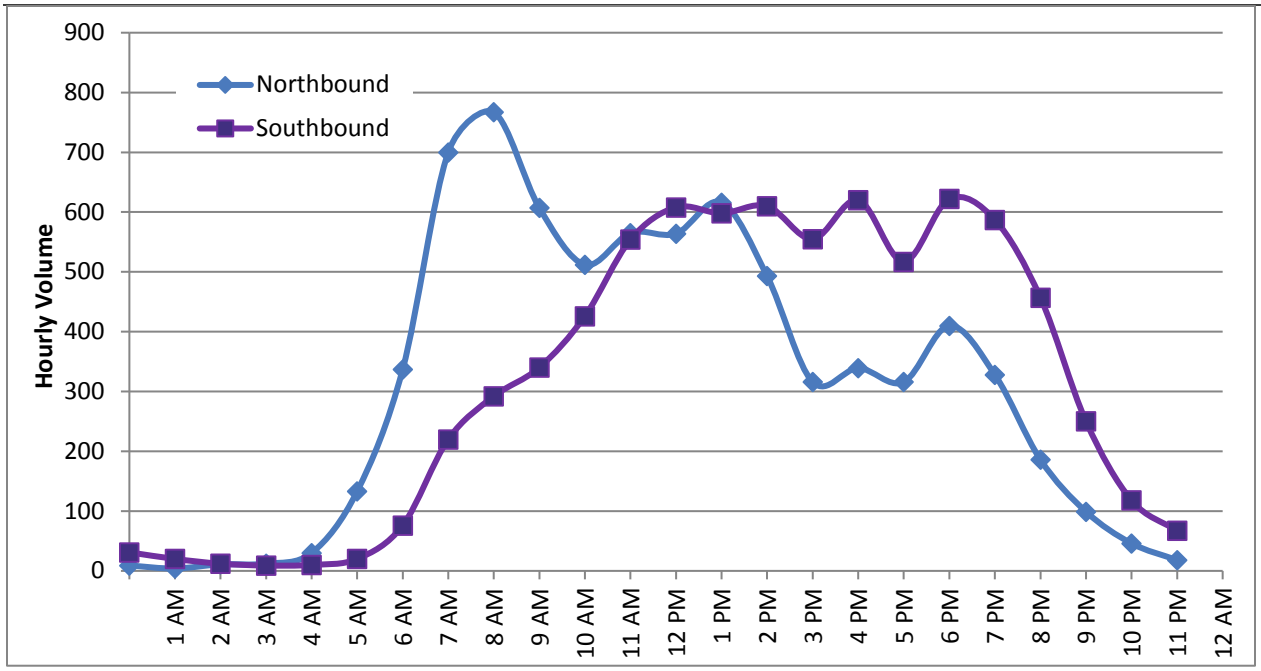
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 15,037|7,418 NB/7,619 SB
AM Peak Hour (8:00 AM): 1,059
PM Peak Hour (4:00 PM): 959
Overall Peak Hour (1:00 PM): 1,214

Average Speed: 24 mph
85th Percentile Speed: 32 mph
Mode Speed: 28 mph

Heavy Vehicles: 0.6% NB/0.8% SB



LOCATION: BROOKWOOD BOULEVARD, SOUTH OF CLIFFROSE DRIVE (ID 138)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks (gaps in sidewalk on east side)

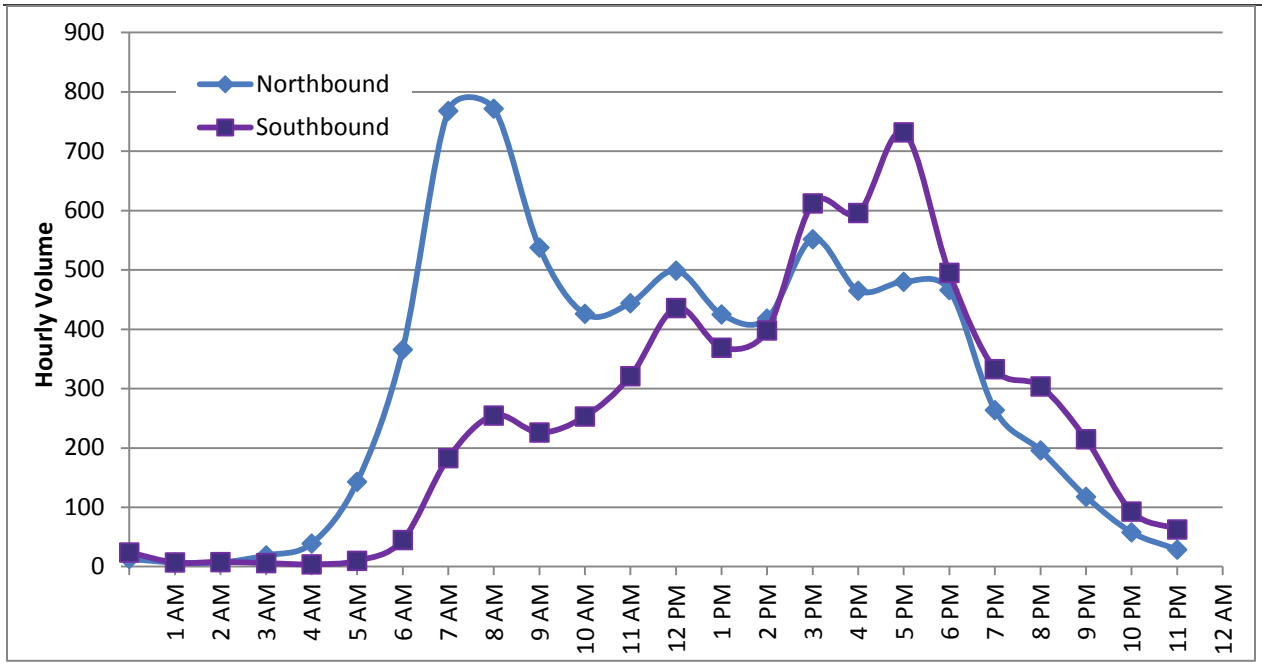
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 13,500 | 7,512 NB/5,988 SB
AM Peak Hour (8:00 AM): 1,027
PM Peak Hour (5:00 PM): 1,212
Overall Peak Hour (5:00 PM): 1,212

Average Speed: 37 mph
85th Percentile Speed: 43 mph
Mode Speed: 38 mph

Heavy Vehicles: 0.6% NB/0.5% SB


900
800
700
600
500
400
300
200
100
0
Hourly Volume
Northbound
Southbound
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM
12 AM

LOCATION: BROOKSWOOD BOULEVARD, SOUTH OF LARKWOOD DRIVE (ID 809)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks (gaps in sidewalk on east side)

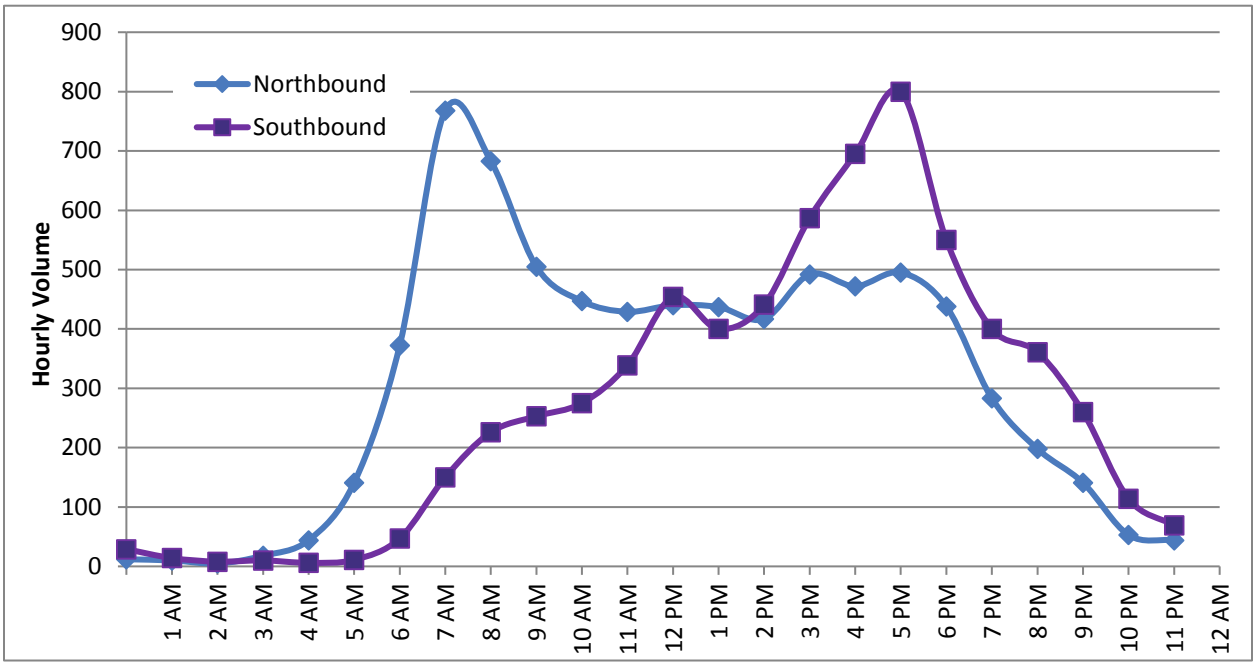
Source: Google Earth, Note that aerial is outdated and Murphy Road has been extended to Larkwood Drive with a roundabout on Brookswood Boulevard

Date: Thursday, May 19, 2016

Total Vehicles: 13,843 | 7,344 NB/6,499 SB
AM Peak Hour (7:00 AM): 918
PM Peak Hour (5:00 PM): 1,295
Overall Peak Hour (5:00 PM): 1,295

Average Speed: 29 mph
85th Percentile Speed: 34 mph
Mode Speed: 33 mph

Heavy Vehicles: 0.5% NB/0.5% SB



LOCATION: SW CENTURY DRIVE, SOUTH OF SIMPSON AVENUE (ID 41016)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

Source: Google Earth

Dates: Tuesday, May 17, 2016 and Tuesday, July 19, 2016

May

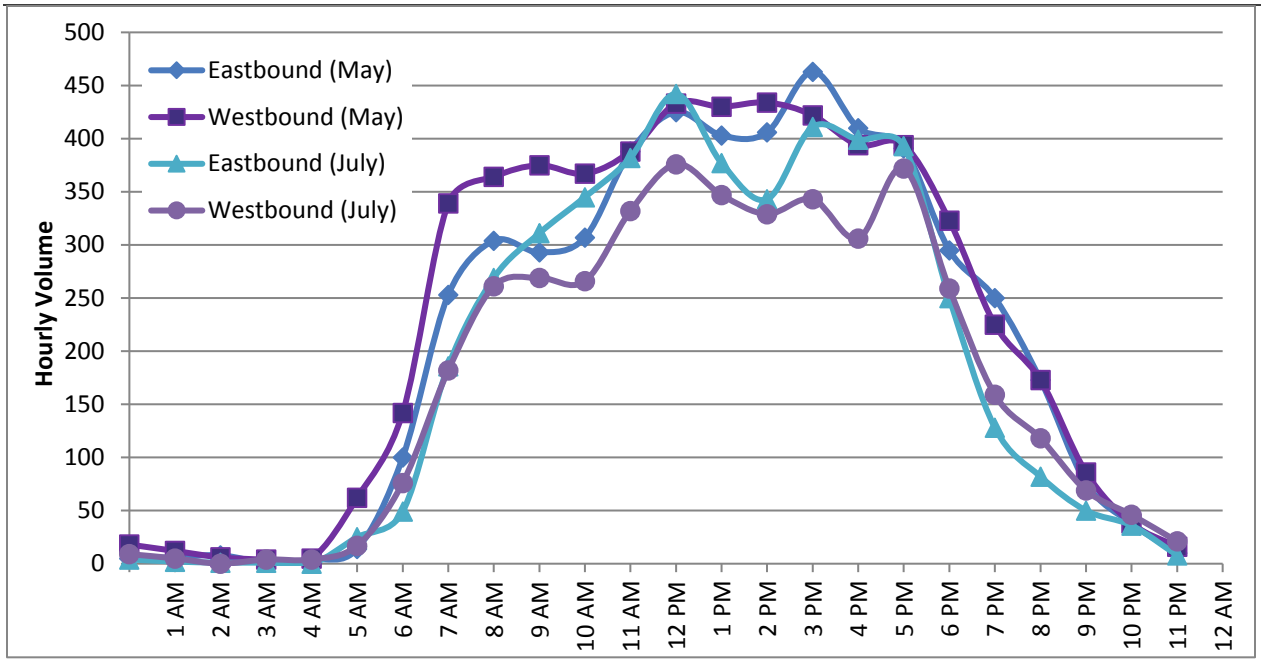
Total Vehicles: 10,473 | 5,023 NB/5,450 SB
AM Peak Hour (8:00/9:00 AM): 668
PM Peak Hour (4:00 PM): 804
Overall Peak Hour (3:00 PM): 885

Average Speed: 30 mph
85th Percentile Speed: 36 mph
Mode Speed: 33 mph
Heavy Vehicles: 0.8% NB/0.8% SB

July

Total Vehicles: 8,664 | 4,494 NB/4,170 SB
AM Peak Hour (8:00 AM): 530
PM Peak Hour (5:00 PM): 765
Overall Peak Hour (12:00 PM): 818
Daily volumes 17% lower than in May

Average Speed: 32 mph
85th Percentile Speed: 38 mph
Mode Speed: 33 mph
Heavy Vehicles: 0.8% NB/1.0% SB



LOCATION: SW CENTURY DRIVE, SOUTH OF COMMERCE AVENUE (ID 808)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks (some gaps on east side)

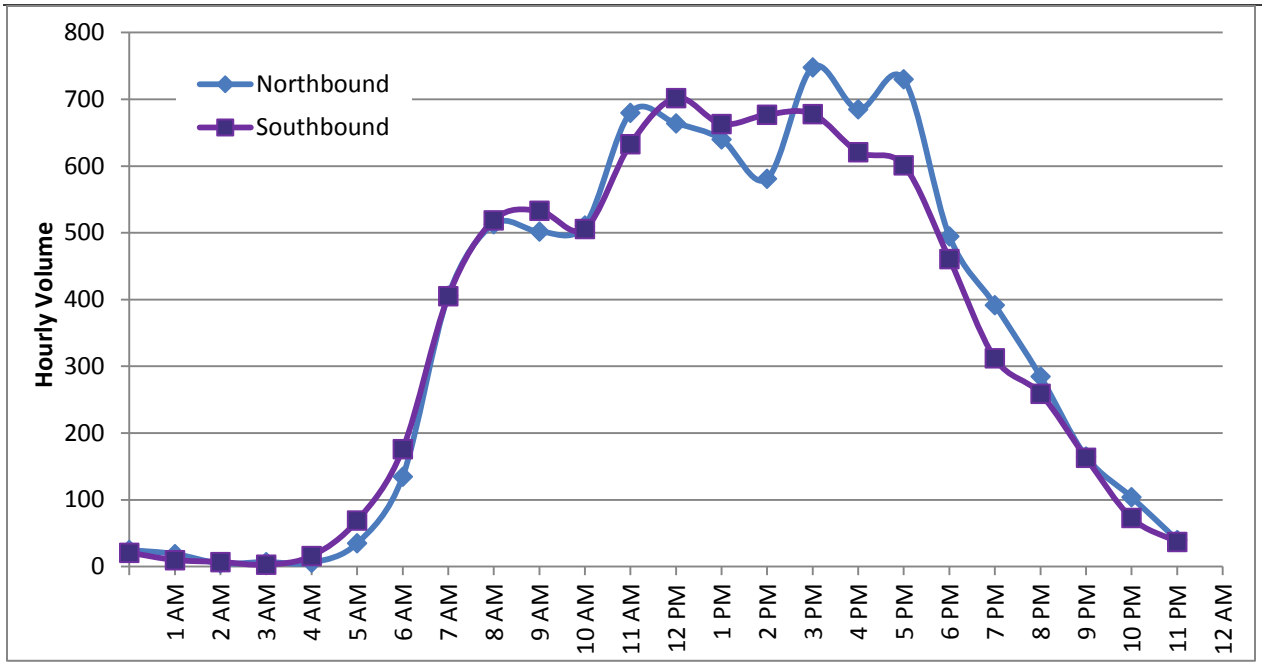
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 16,518 | 8,373 NB/8,145 SB
AM Peak Hour (9:00 AM): 1,035
PM Peak Hour (5:00 PM): 1,331
Overall Peak Hour (3:00 PM): 1,426

Average Speed: 24 mph
85th Percentile Speed: 30 mph
Mode Speed: 28 mph

Heavy Vehicles: 0.4% NB/0.1% SB


800
700
600
500
400
300
200
100
0
Hourly Volume
Northbound
Southbound
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM
12 AM

LOCATION: SW CENTURY DRIVE, SOUTH OF REED MARKET ROAD (ID 41038)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

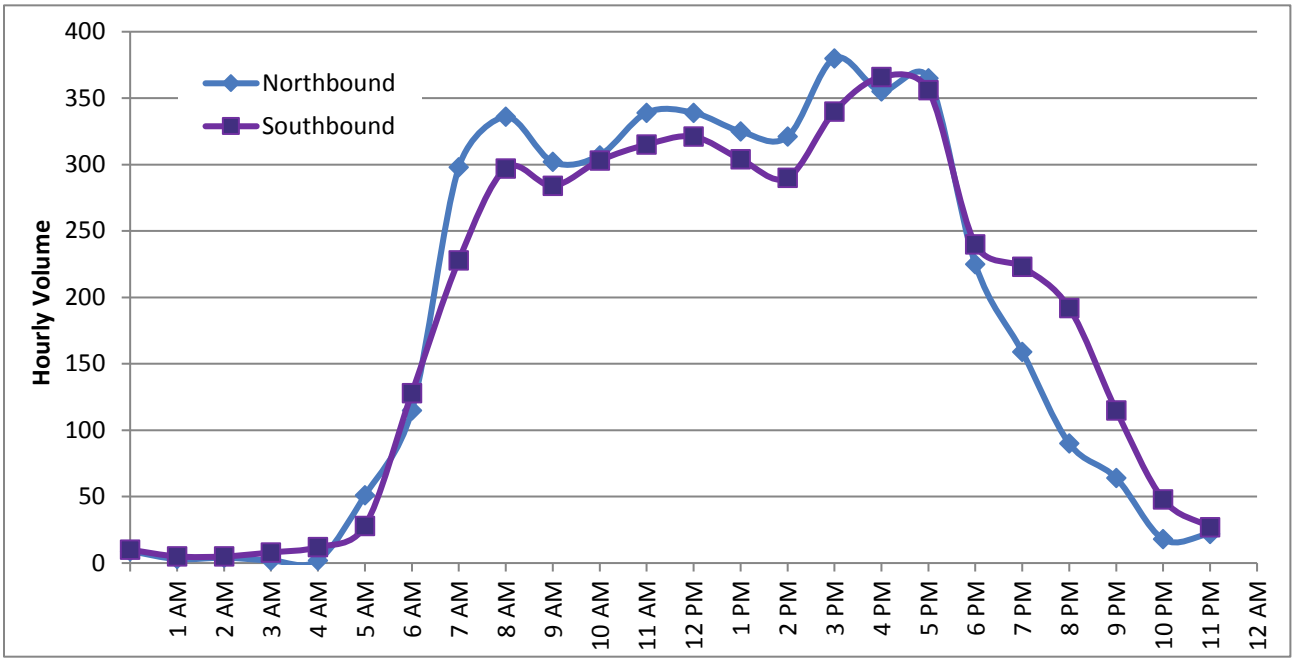
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 8,876 | 4,431 NB/4,445 SB
AM Peak Hour (8:00 PM): 633
PM Peak Hour (4:00/5:00 PM): 721
Overall Peak Hour (4:00/5:00 PM): 721

Average Speed: 37 mph
85th Percentile Speed: 43 mph
Mode Speed: 38 mph

Heavy Vehicles: 1.5% NB/1.0% SB



LOCATION: NW COLORADO AVENUE, EAST OF NW BOND STREET (ID 797)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes (westbound only), bike lane, street parking, sidewalks

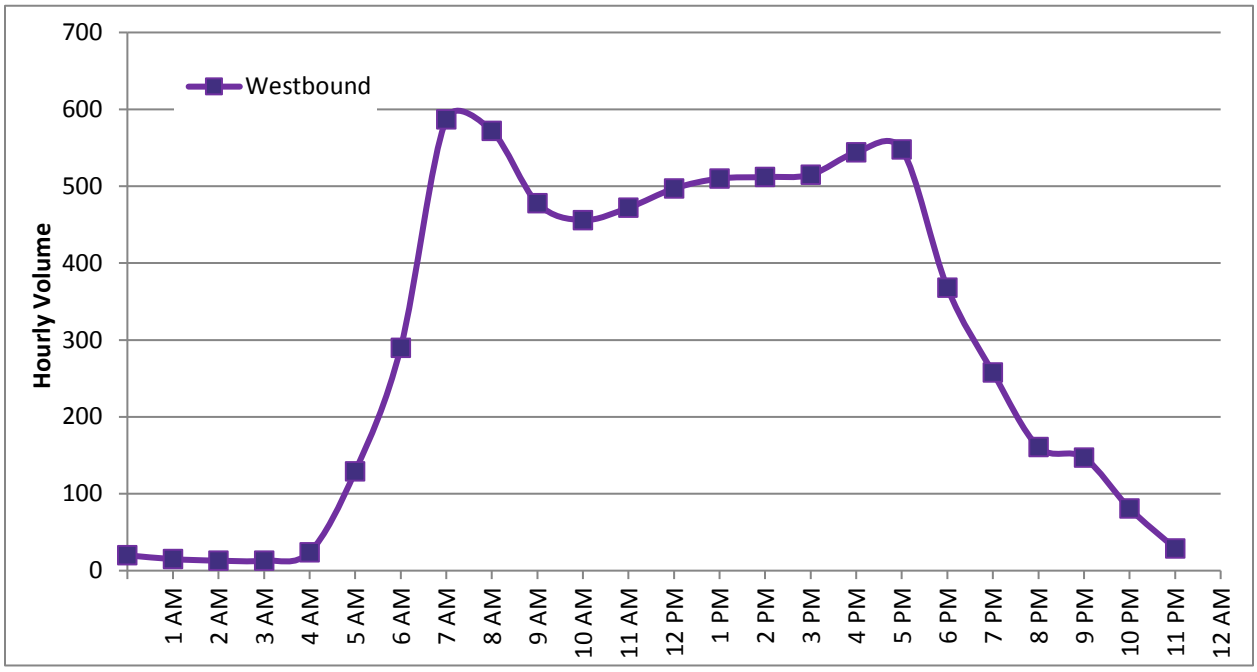
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 7,239 WB
AM Peak Hour (7:00 AM): 587
PM Peak Hour (5:00 PM): 548
Overall Peak Hour (7:00 AM): 587

Average Speed: 19 mph
85th Percentile Speed: 28 mph
Mode Speed: 23 mph

Heavy Vehicles: 1.3% WB



LOCATION: SW COLORADO AVENUE, EAST OF CENTURY DRIVE (ID 803)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, landscape median, bike lanes, sidewalks

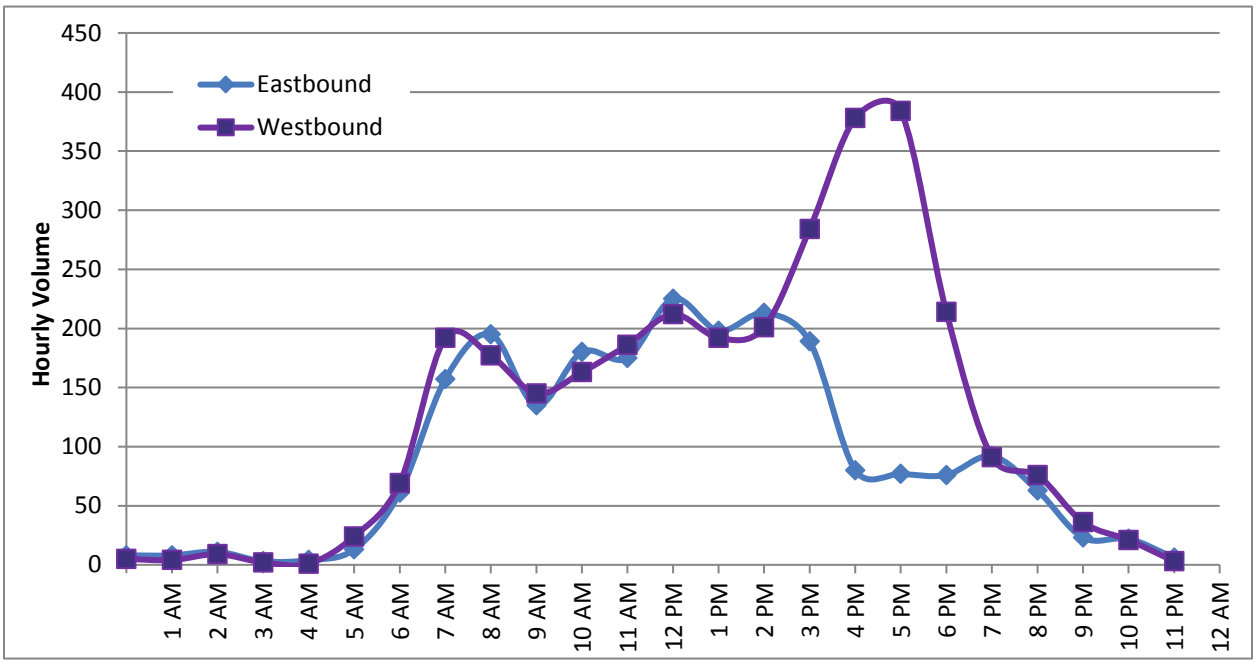
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 5,283 | 2,214 EB/3,069 WB
AM Peak Hour (8:00 AM): 372
PM Peak Hour (5:00 PM): 461
Overall Peak Hour (3:00 PM): 473

Average Speed: 29 mph
85th Percentile Speed: 36 mph
Mode Speed: 33 mph

Heavy Vehicles: 0.9% EB/1.0% WB



LOCATION: COOLEY ROAD, WEST OF 18TH STREET (ID 790)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, landscaped median, bike lanes, sidewalks

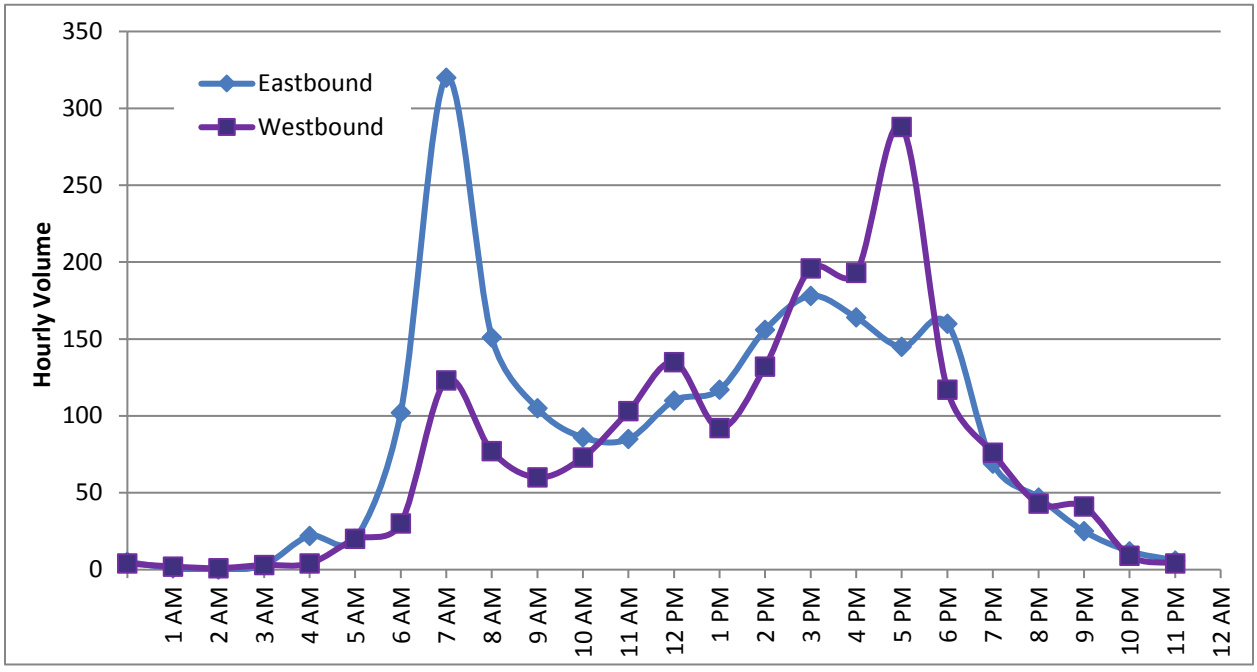
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 3,915 | 2,089 EB/1,825 WB
AM Peak Hour (7:00 AM): 443
PM Peak Hour (5:00 PM): 433
Overall Peak Hour (7:00 AM): 443

Average Speed: 31 mph
85th Percentile Speed: 35 mph
Mode Speed: 33 mph

Heavy Vehicles: 1.5% EB/1.0% WB



LOCATION: EMPIRE AVENUE, EAST OF LOWER MEADOWS DRIVE (ID 238)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, landscaped median, bike lanes, sidewalk on south side of the roadway

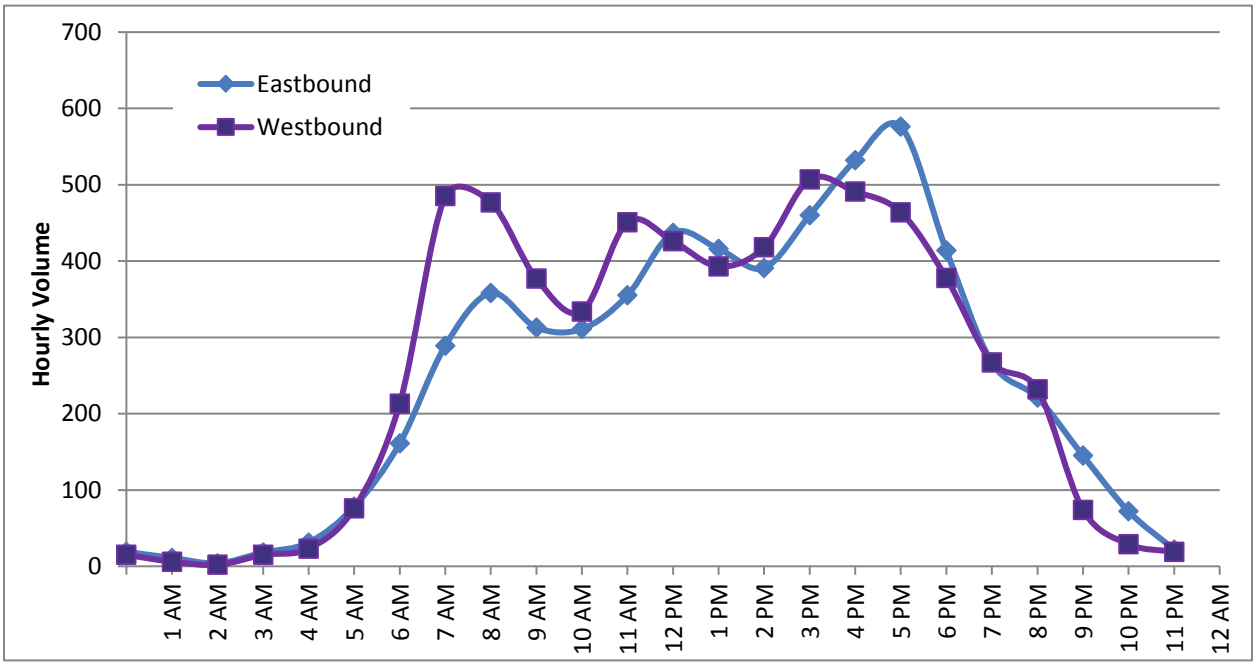
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 12,073 | 5,901 EB/6,172 WB
AM Peak Hour (8:00 AM): 835
PM Peak Hour (5:00 PM): 1,040
Overall Peak Hour (5:00 PM): 1,040

Average Speed: 39 mph
85th Percentile Speed: 43 mph
Mode Speed: 38 mph

Heavy Vehicles: 1.8% EB/1.9% WB



LOCATION: NE FRANKLIN AVENUE, AT US-97 OVERPASS (ID 794)

Functional Classification: Minor Arterial, switches to Principal Arterial east of US-97
Cross-Section: Two vehicle lanes

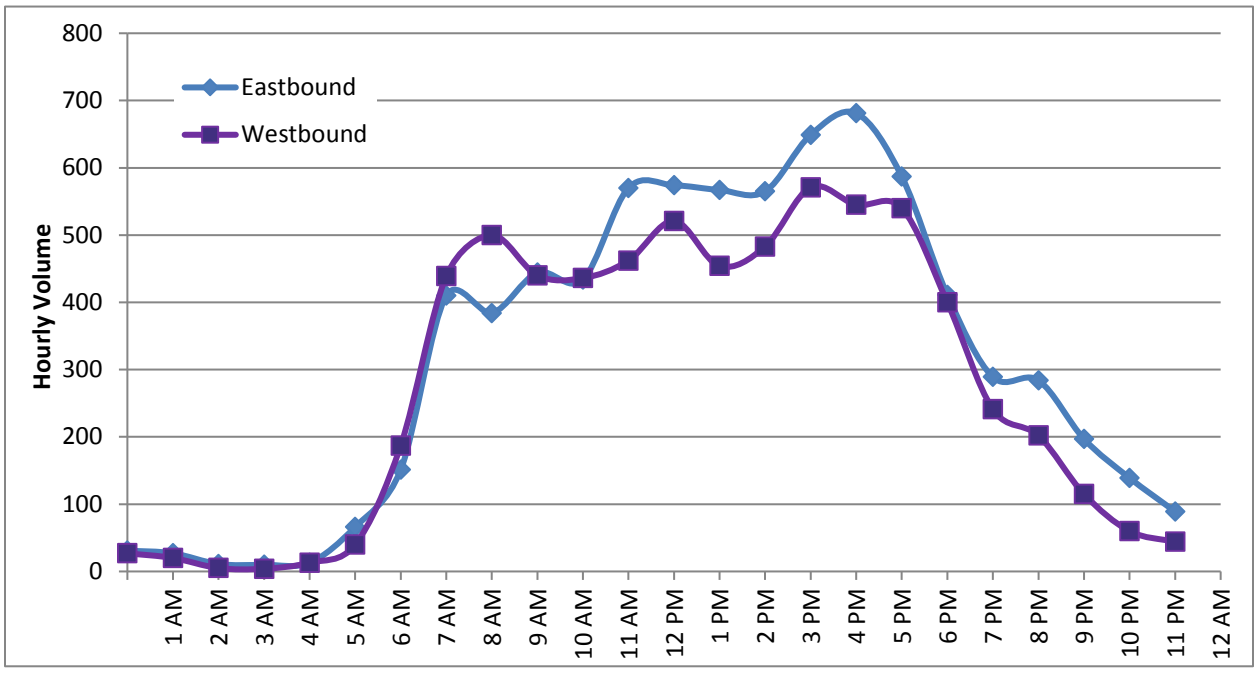
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 14,332|7,583 EB/6,749 WB
AM Peak Hour (8:00 AM): 884
PM Peak Hour (4:00 PM): 1,226
Overall Peak Hour (4:00 PM): 1,226

Average Speed: 22 mph
85th Percentile Speed: 28 mph
Mode Speed: 23 mph

Heavy Vehicles: 0.5% EB/0.5% WB



LOCATION: NE FRANKLIN AVENUE, EAST OF 3RD STREET (ID 48393)

Functional Classification: Minor Arterial
Cross-Section: Four vehicle lanes, left-turn lanes, bike lanes, sidewalks

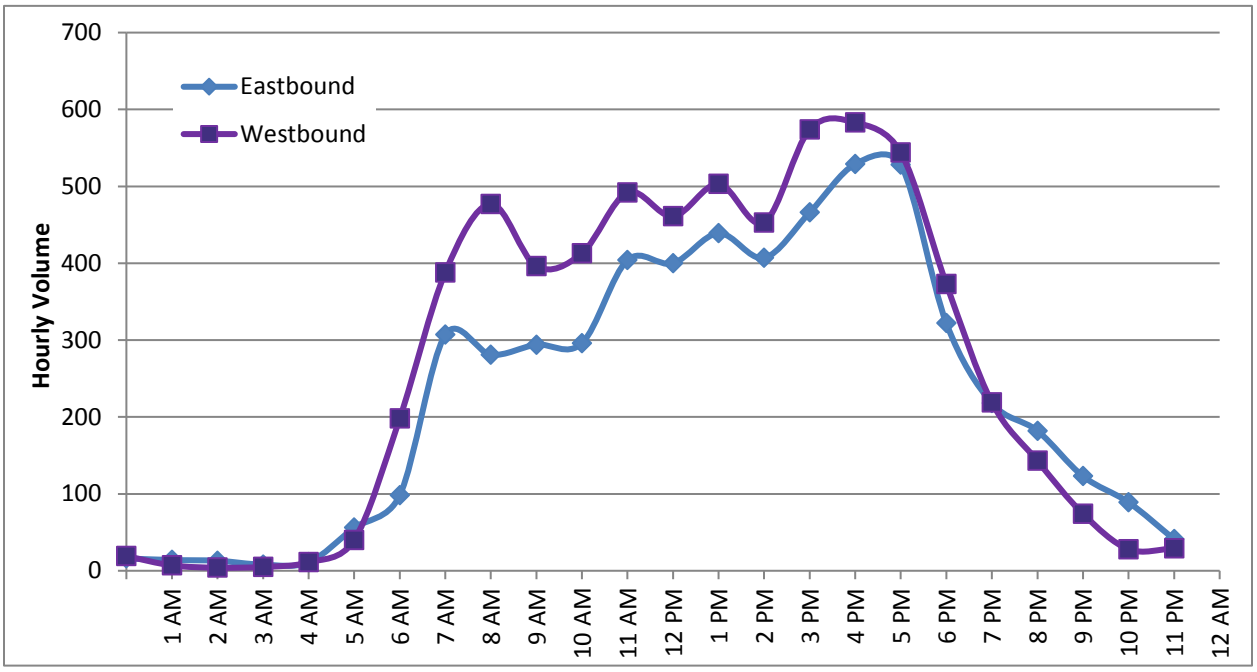
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 11,976|5,542 EB/6,434 WB
AM Peak Hour (8:00 AM): 758
PM Peak Hour (4:00 PM): 1,112
Overall Peak Hour (4:00 PM): 1,112

Average Speed: 23 mph
85th Percentile Speed: 29 mph
Mode Speed: 28 mph

Heavy Vehicles: 0.9% EB/0.5% WB



LOCATION: NW GALVESTON AVENUE, WEST OF 14TH STREET (ID 48386)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, sidewalks

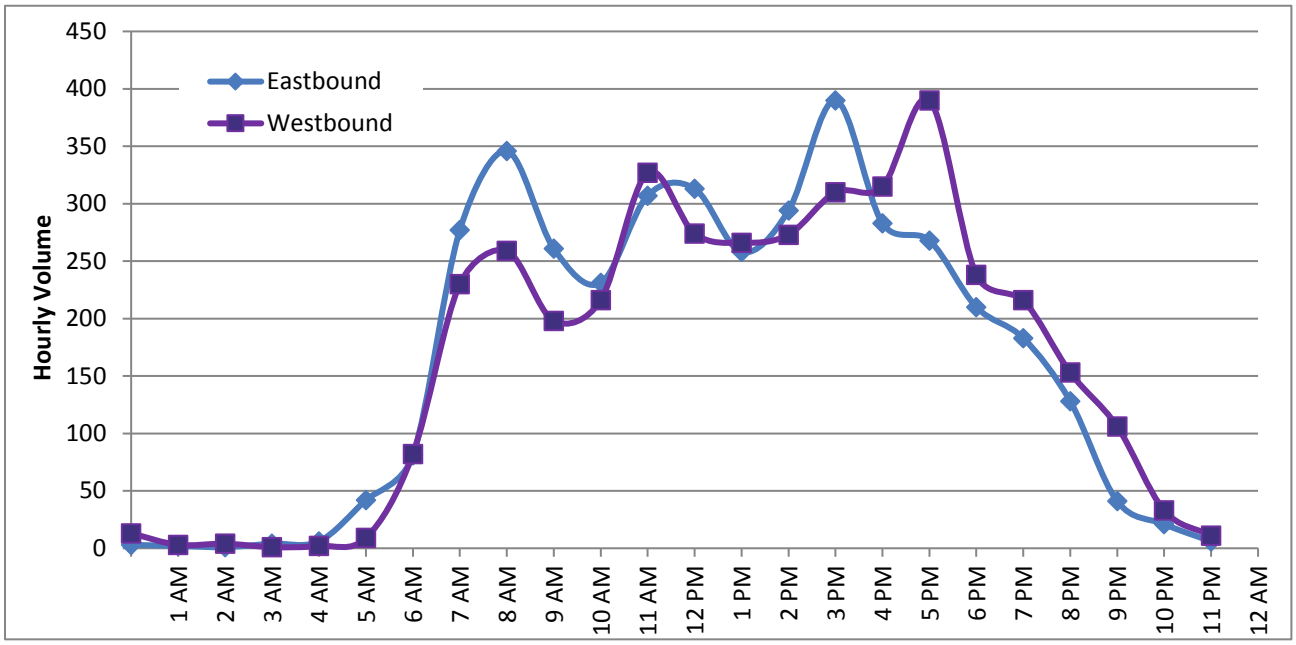
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 7,885 | 3,956 EB/3,929 WB
AM Peak Hour (8:00 AM): 605
PM Peak Hour (8:00 PM): 658
Overall Peak Hour (3:00 PM): 700

Average Speed: 21 mph
85th Percentile Speed: 26 mph
Mode Speed: 23 mph

Heavy Vehicles: 0.1% EB/0.1% WB



LOCATION: NE GREENWOOD AVENUE, AT US-97 OVERPASS (ID 324)

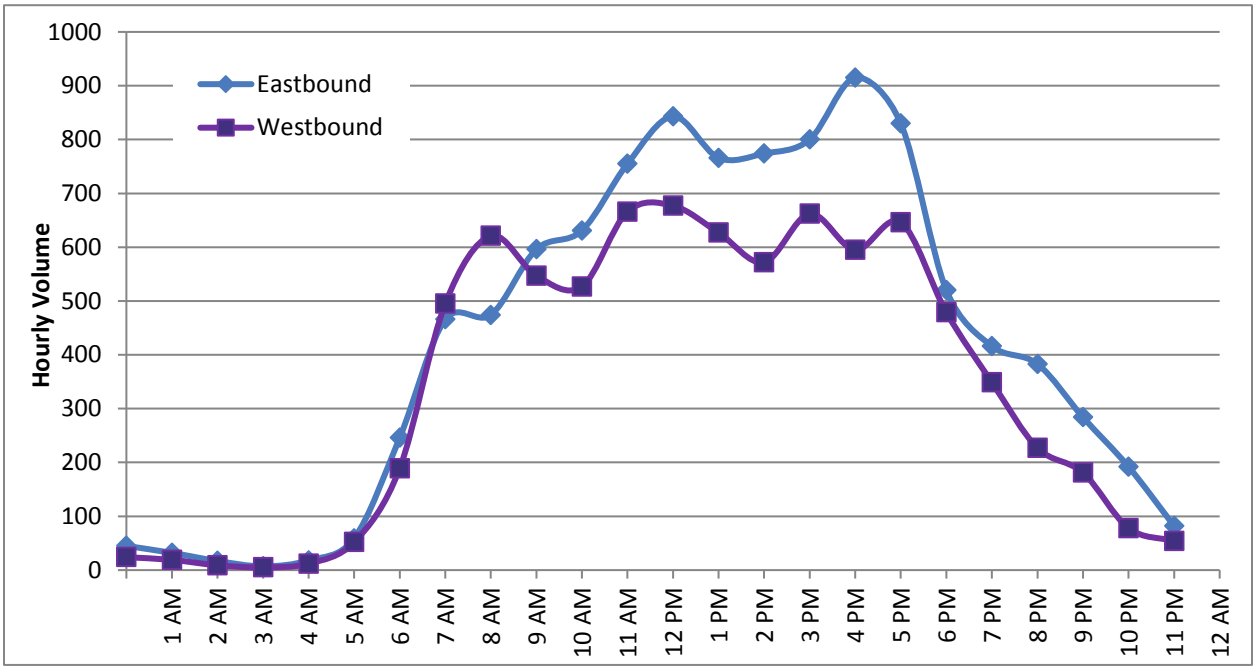
Functional Classification: Minor Arterial
Cross-Section: Four vehicle lanes

Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 18,464|8,313 EB/10,151 WB
AM Peak Hour (8:00 AM): 1,095
PM Peak Hour (4:00 PM): 1,510
Overall Peak Hour (12:00 PM): 1,520

Average Speed: 26 mph
85th Percentile Speed: 32 mph
Mode Speed: 28 mph
Heavy Vehicles: 1.7% EB/1.8% WB



LOCATION: MT WASHINGTON DRIVE, NORTH OF SIMPSON AVENUE (ID 801)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

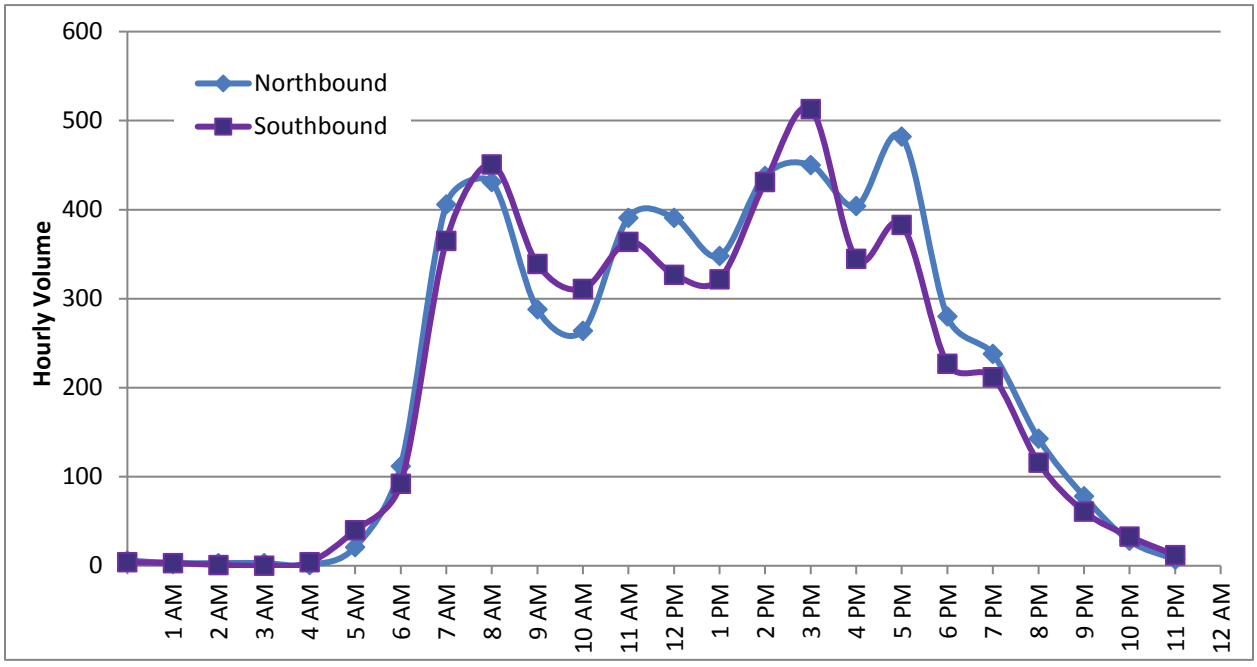
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 10,712 | 5,216 NB/4,956 SB
AM Peak Hour (8:00 AM): 882
PM Peak Hour (5:00 PM): 865
Overall Peak Hour (3:00 PM): 963

Average Speed: 34 mph
85th Percentile Speed: 39 mph
Mode Speed: 38 mph

Heavy Vehicles: 1.5% NB/1.4% SB



LOCATION: MT WASHINGTON DRIVE, WEST OF CENTURY DRIVE (ID 802)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

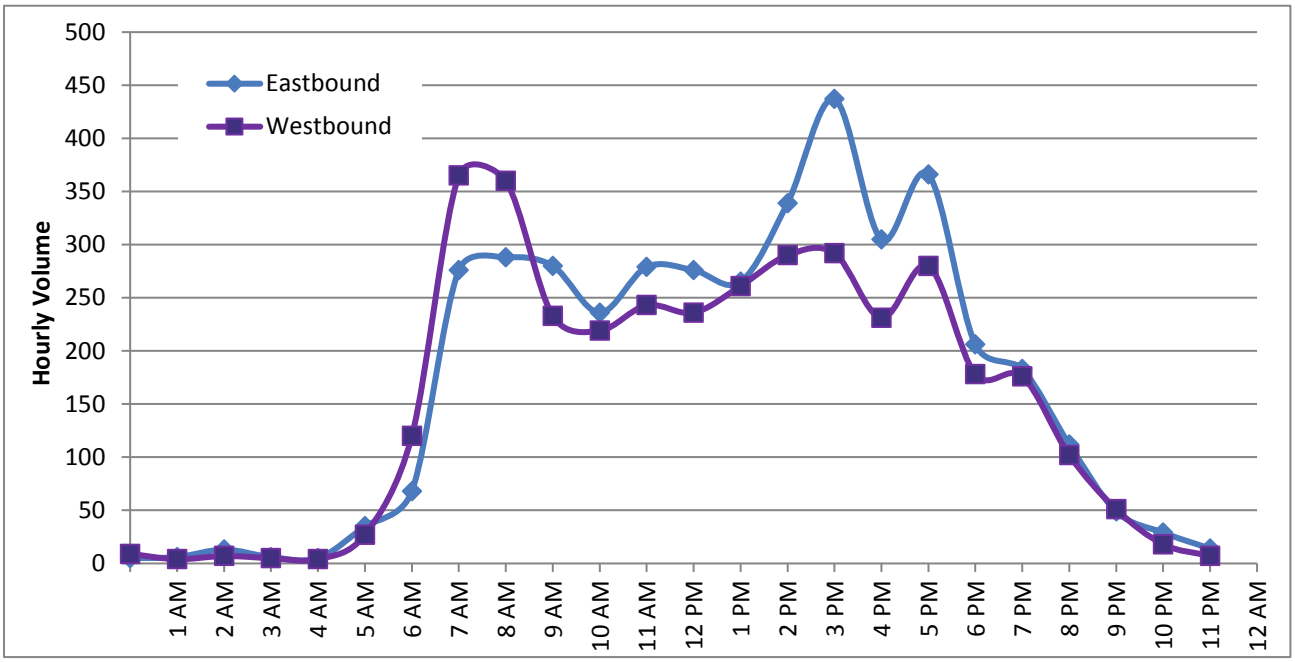
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 7,796 | 4,078 EB/3,718 WB
AM Peak Hour (8:00 AM): 648
PM Peak Hour (5:00 PM): 646
Overall Peak Hour (3:00 PM): 729

Average Speed: 30 mph
85th Percentile Speed: 35 mph
Mode Speed: 33 mph

Heavy Vehicles: 1.2% EB/0.7% WB



LOCATION: MURPHY ROAD, WEST OF 3RD STREET (ID 810)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

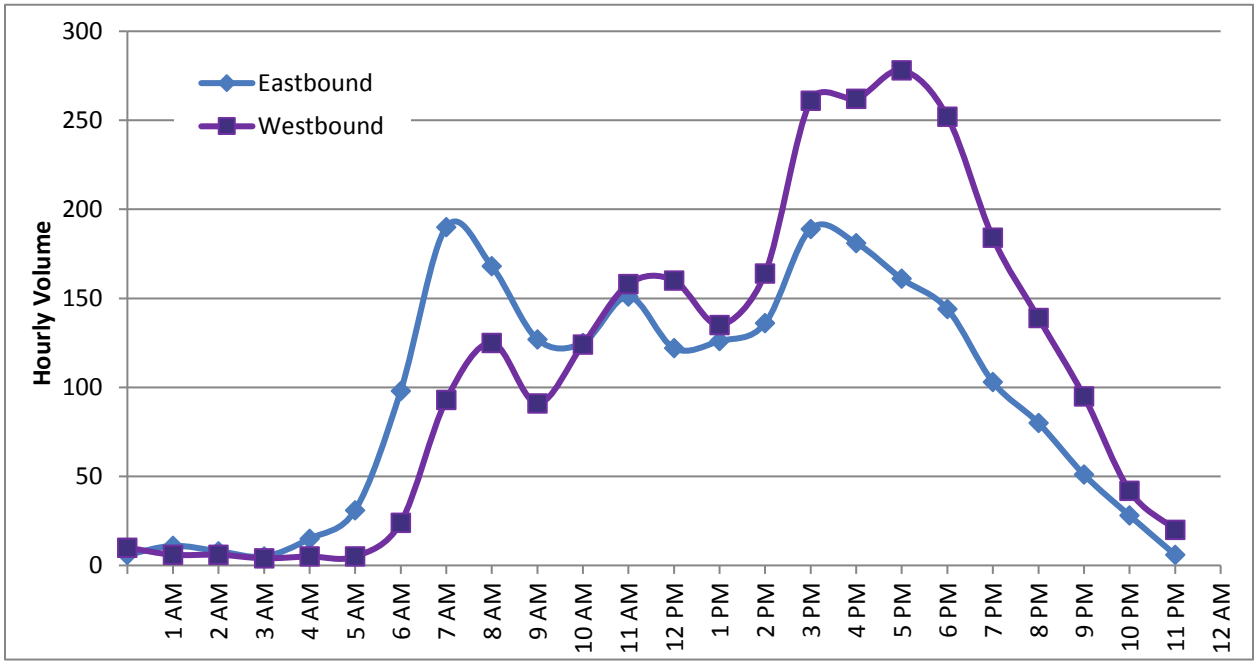
Source: Google Maps (construction activity on Murphy Road east of 3rd Street at time of counts)

Date: Tuesday, May 17, 2016

Total Vehicles: 4,905 | 2,262 EB/2,643 WB
AM Peak Hour (8:00 AM): 293
PM Peak Hour (4:00 PM): 443
Overall Peak Hour (3:00 PM): 450

Average Speed: 37 mph
85th Percentile Speed: 43 mph
Mode Speed: 38 mph

Heavy Vehicles: 0.1% EB/0.3% WB



LOCATION: MURPHY ROAD, EAST OF 3RD STREET (LOCATION ID 811)

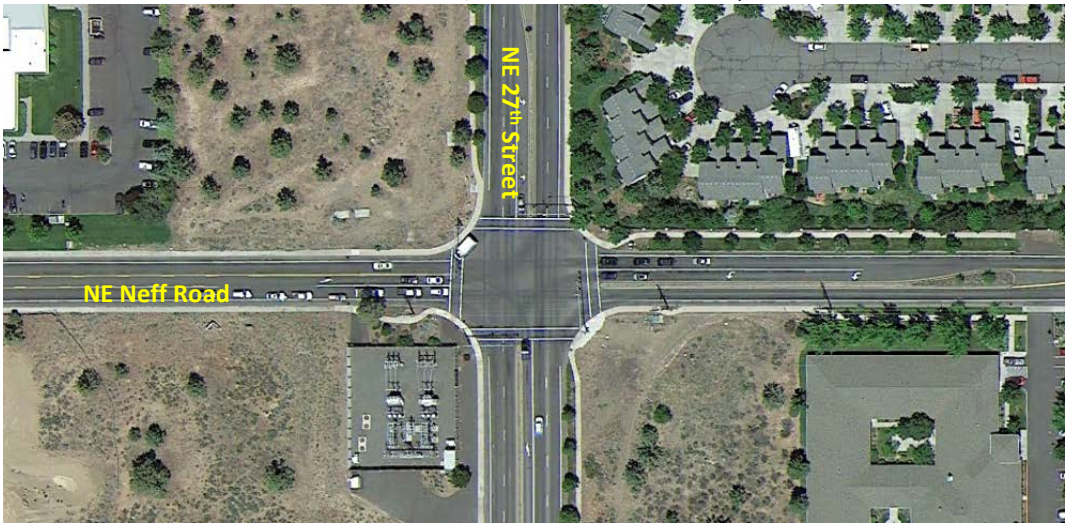
Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

Source: Google Maps (Construction completed at time of counts)

Location not counted due to construction activity

LOCATION: NE NEFF ROAD, EAST OF NE 27TH STREET (ID 48353)

Functional Classification: Minor Arterial
Cross-Section: Three-two vehicle lanes, bike lanes, sidewalks (north sidewalk ends east of NE 27th Street)



Source: Google Earth

Date: Thursday, May 19, 2016 and Tuesday, July 19, 2016

May

Total Vehicles: 10,770 | 5,223 EB/5,547 WB
AM Peak Hour (7:00 AM): 861
PM Peak Hour (5:00 PM): 1,102
Overall Peak Hour (5:00 PM): 1,102

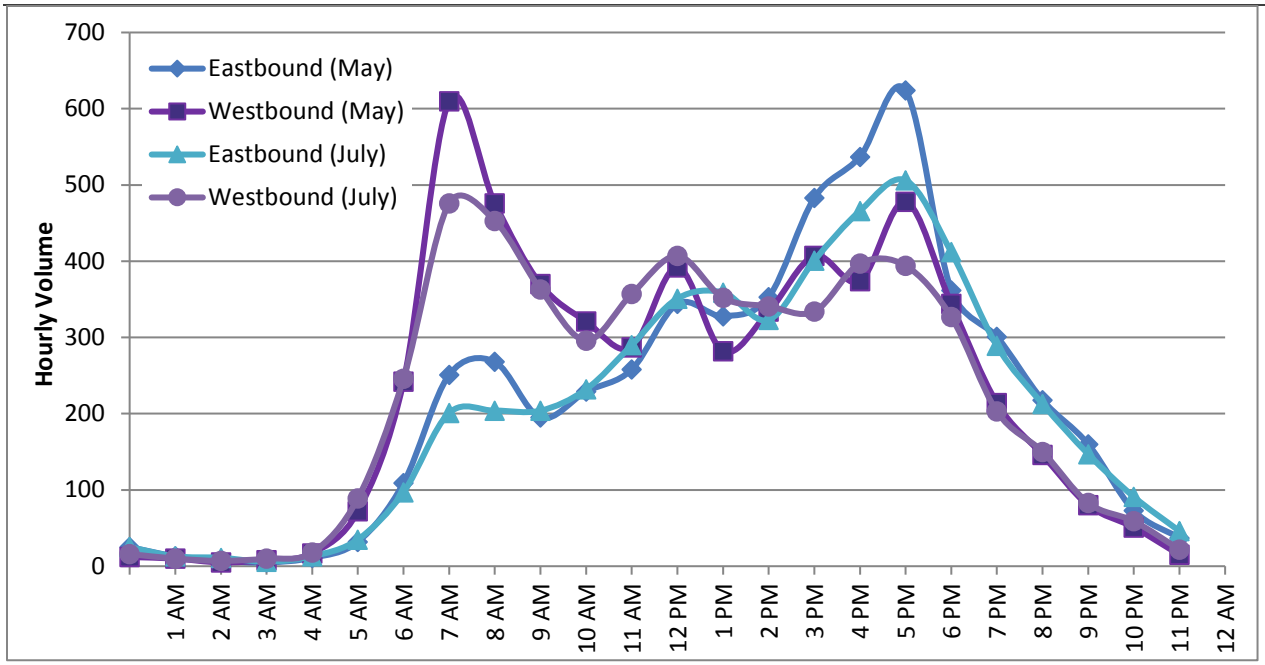
Average Speed: 29 mph
85th Percentile Speed: 36 mph
Mode Speed: 33 mph
Heavy Vehicles: 0.6% EB/0.5% WB

July

Total Vehicles: 10,345 |4,935 EB/5,410 WB
AM Peak Hour (7:00 AM): 677
PM Peak Hour (5:00 PM): 900
Overall Peak Hour (5:00 PM): 900
Daily volumes 4% lower than in May

Average Speed: 32 mph
85th Percentile Speed: 38 mph
Mode Speed: 33 mph

Heavy Vehicles: 1.1% EB/0.7% WB



LOCATION: NE NEFF ROAD, WEST OF MEDICAL CENTER DRIVE (ID 335)

Functional Classification: Minor Arterial
Cross-Section: Three vehicle lanes, bike lanes, sidewalks

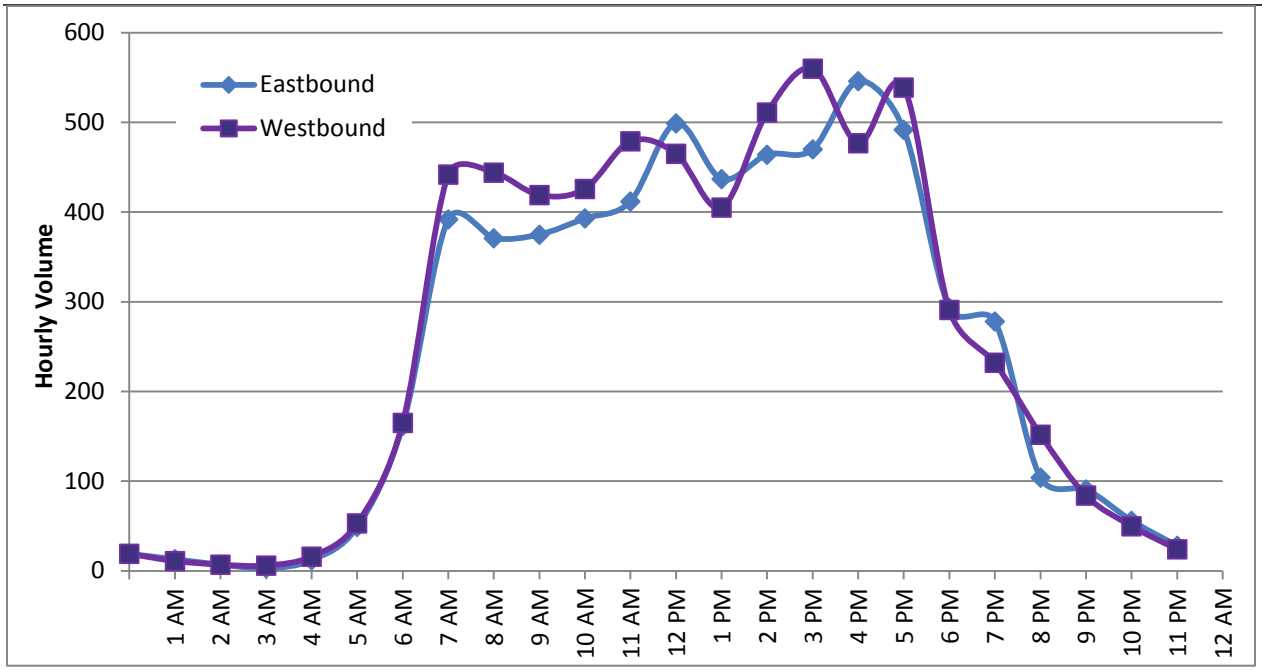
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 12,243 | 5,966 EB/6,277 WB
AM Peak Hour (7:00 AM): 834
PM Peak Hour (5:00 PM): 1,031
Overall Peak Hour (5:00 PM): 1,031

Average Speed: 30 mph
85th Percentile Speed: 36 mph
Mode Speed: 33 mph

Heavy Vehicles: 0.3% EB/0.2% WB


600
500
400
300
200
100
0
Hourly Volume
Eastbound
Westbound
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM
12 AM

LOCATION: NEWPORT AVENUE, WEST OF 14TH STREET (ID 355)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, two-way left-turn lane, bike lanes, sidewalks

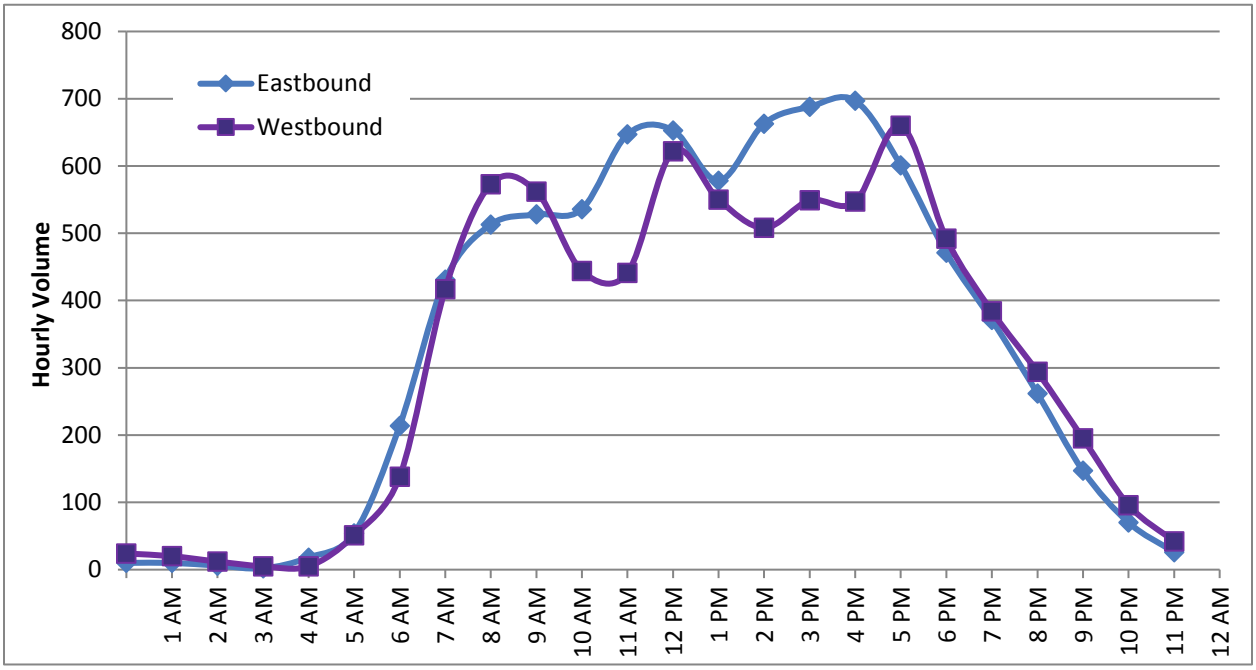
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 15,827 | 8,196 EB/7,631 WB
AM Peak Hour (8:00 AM): 1,086
PM Peak Hour (5:00 PM): 1,261
Overall Peak Hour (12:00 PM): 1,275

Average Speed: 25 mph
85th Percentile Speed: 31 mph
Mode Speed: 28 mph

Heavy Vehicles: 0.9% EB/0.6% WB



LOCATION: NE OLNEY AVENUE, EAST OF NE 4TH STREET (ID 48345)

Functional Classification: Minor Arterial
Cross-Section: Two-three vehicle lanes, bike lanes, sidewalks

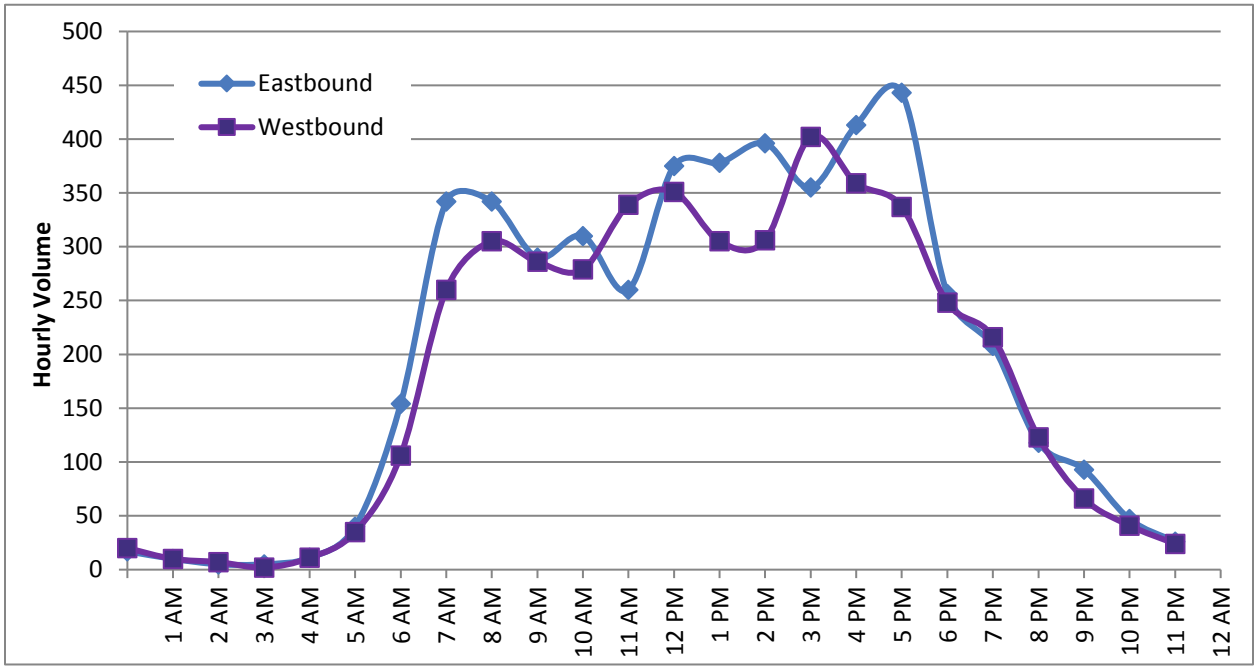
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 9,332 | 4,894 EB/4,438 WB
AM Peak Hour (8:00 AM): 647
PM Peak Hour (5:00 PM): 780
Overall Peak Hour (5:00 PM): 780

Average Speed: 21 mph
85th Percentile Speed: 25 mph
Mode Speed: 23 mph

Heavy Vehicles: 0.3% EB/0.5% WB



LOCATION: NE REVERE AVENUE, WEST OF NE 3RD STREET (ID 793)

Functional Classification: Minor Arterial
Cross-Section: Four vehicle lanes, sidewalks

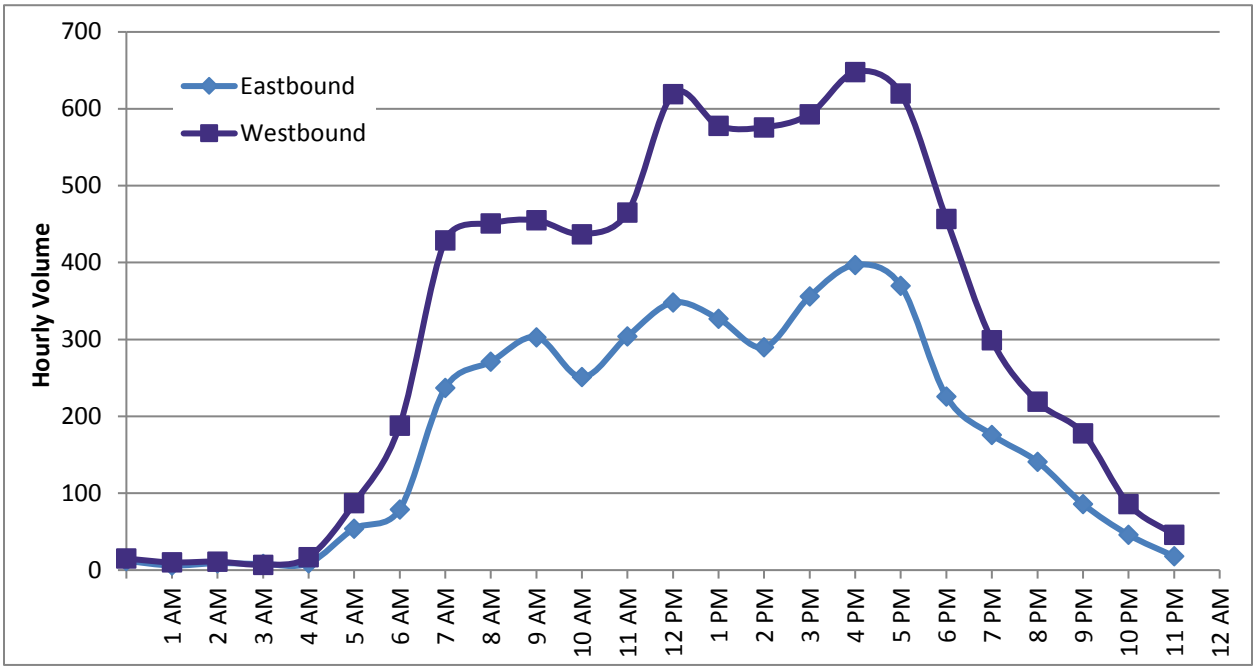
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 11,815|4,324 EB/ 7,941 WB
AM Peak Hour (8:00 AM): 722
PM Peak Hour (4:00 PM): 1,045
Overall Peak Hour (4:00 PM): 1,045

Average Speed: 21 mph
85th Percentile Speed: 28 mph
Mode Speed: 23 mph

Heavy Vehicles: 1.6% EB/0.8% WB



LOCATION: SW SIMPSON AVENUE, WEST OF COLORADO AVENUE (ID 799)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

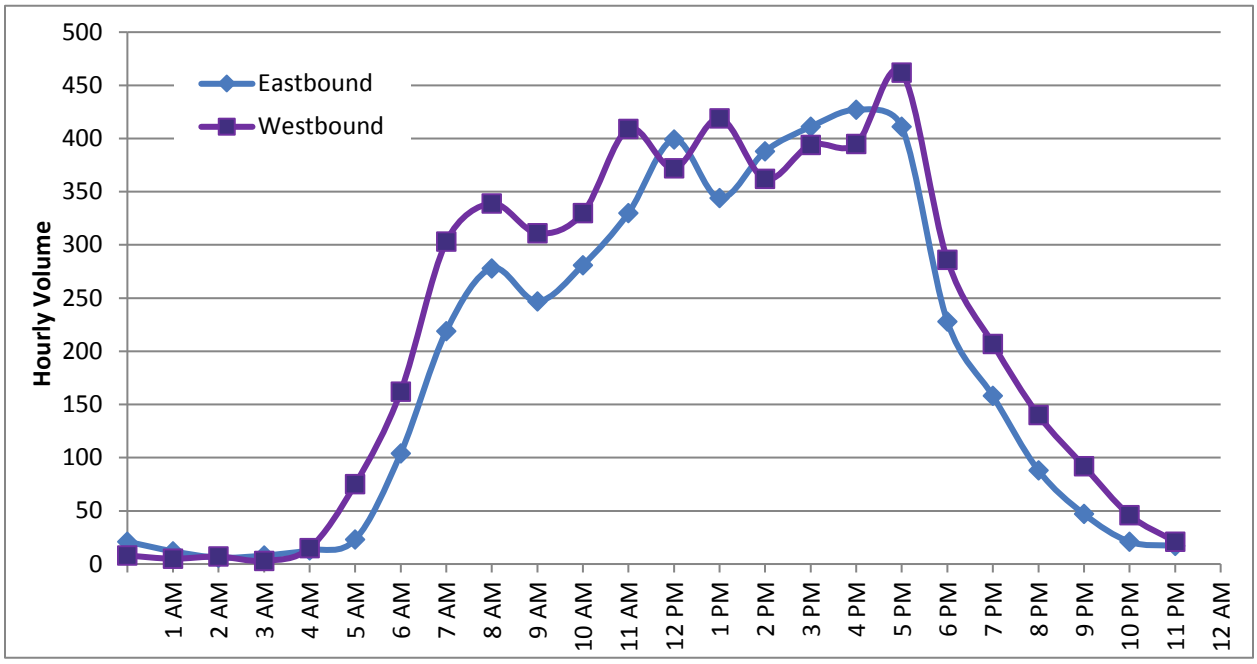
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 9,644 | 4,481 EB/5,163 WB
AM Peak Hour (8:00 AM): 617
PM Peak Hour (5:00 PM): 873
Overall Peak Hour (5:00 PM): 873

Average Speed: 25 mph
85th Percentile Speed: 29 mph
Mode Speed: 28 mph

Heavy Vehicles: 0.9% EB/1.0% WB



LOCATION: SW SIMPSON AVENUE, EAST OF 18TH STREET (ID 800)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks

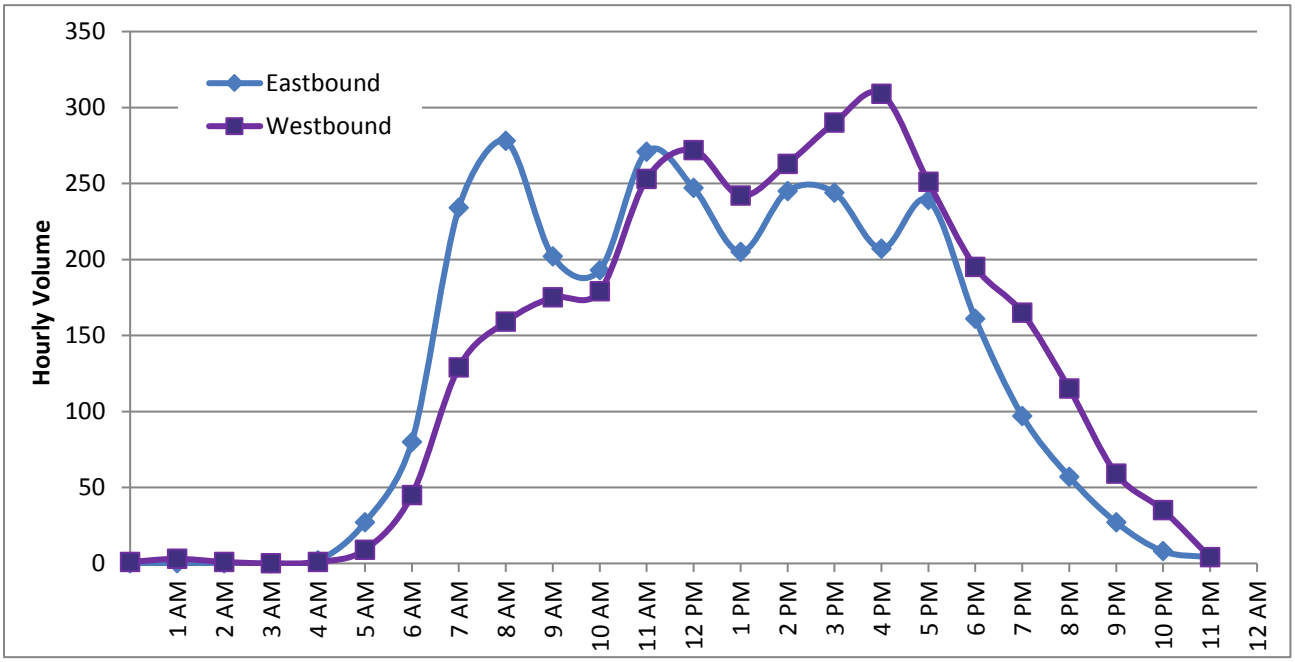
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 6,183 | 3,028 EB/3,155 WB
AM Peak Hour (8:00 AM): 437
PM Peak Hour (4:00 PM): 516
Overall Peak Hour (3:00 PM): 534

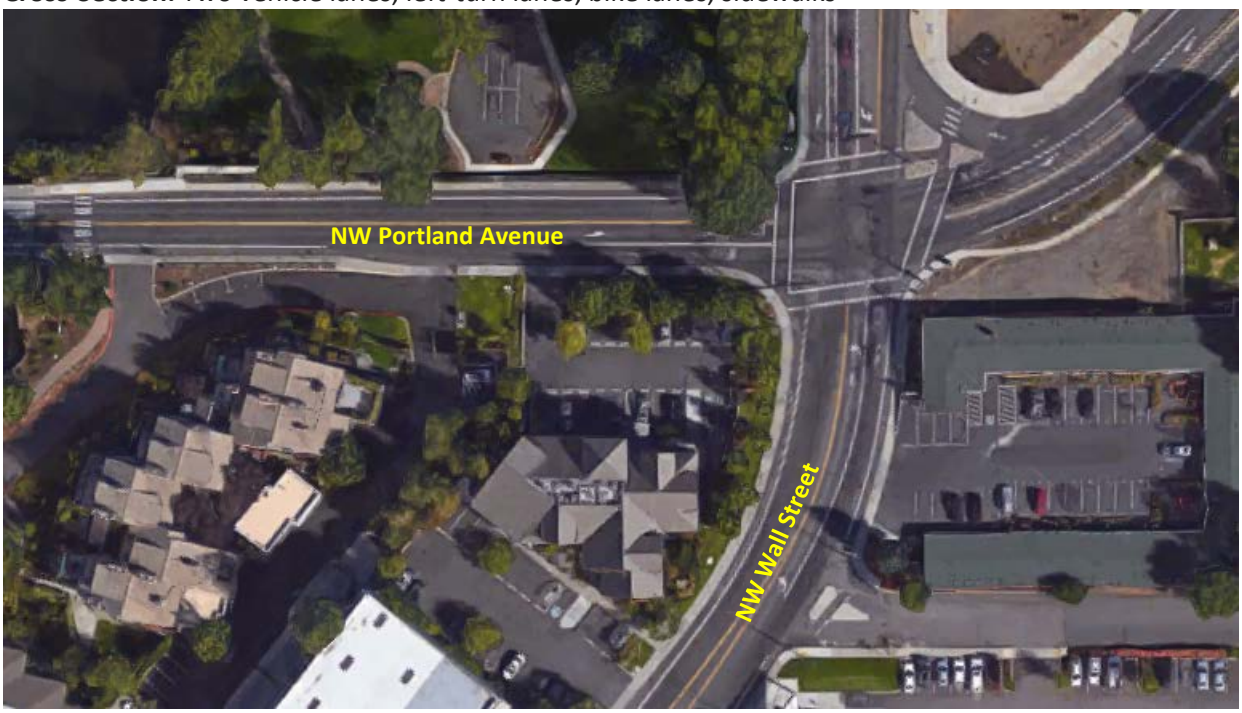
Average Speed: 39 mph
85th Percentile Speed: 46 mph
Mode Speed: 43 mph

Heavy Vehicles: 1.2% EB/1.2% WB



LOCATION: NW WALL STREET, SOUTH OF PORTLAND AVENUE (ID 48344)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, left-turn lanes, bike lanes, sidewalks



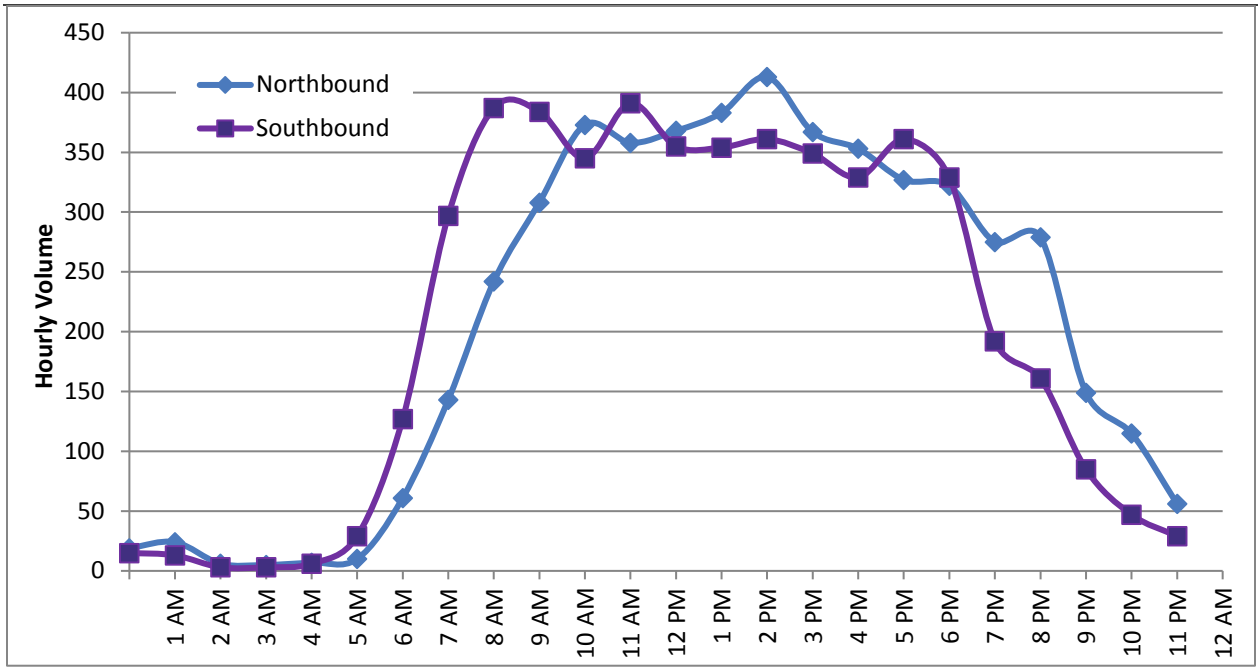
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 9,915 |4,963 NB/4,952 SB
AM Peak Hour (9:00 AM): 692
PM Peak Hour (5:00 PM): 688
Overall Peak Hour (2:00 PM): 774

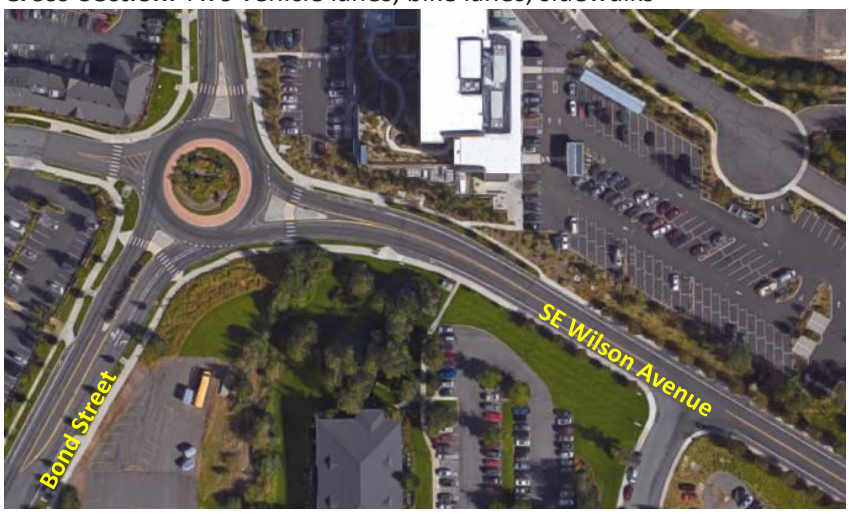
Average Speed: 22 mph
85th Percentile Speed: 29 mph
Mode Speed: 28 mph

Heavy Vehicles: 0.8% NB/1.4% SB



LOCATION: SE WILSON AVENUE, EAST OF BOND STREET (ID 480)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks



Source: Google Earth

Dates: Tuesday, May 17, 2016 and Tuesday, July 19, 2016

May

Total Vehicles: 12,464 |6,235 EB/6,229 WB
AM Peak Hour (7:00 AM): 812
PM Peak Hour (5:00 PM): 1,133
Overall Peak Hour (5:00 PM): 1,133

Average Speed: 29 mph
85th Percentile Speed: 34 mph
Mode Speed: 33 mph
Heavy Vehicles: 0.9% EB/0.7% WB

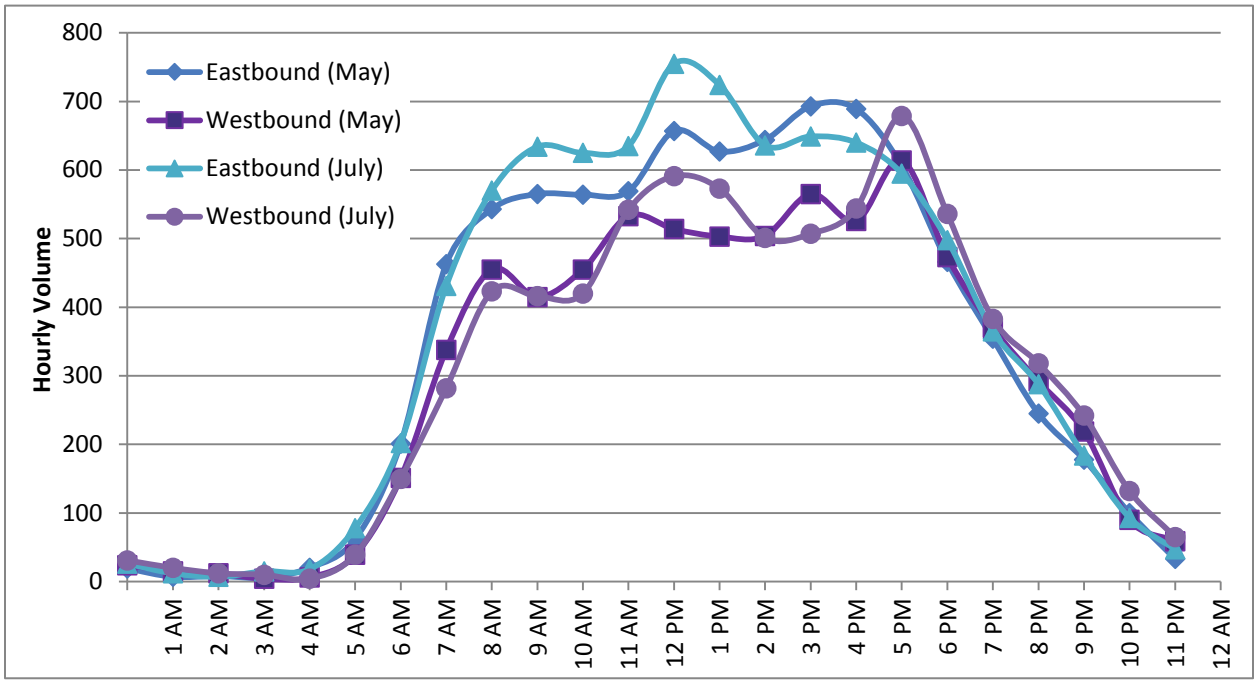
July

Total Vehicles: 12,901 |6,280 EB/6,621 WB
AM Peak Hour (8:00 AM): 827
PM Peak Hour (4:00 PM): 1,075

Average Speed: 27 mph
85th Percentile Speed: 34 mph
Mode Speed:28 mph

Overall Peak Hour (12:00 PM): 1,139 **Heavy Vehicles:** 1.0% EB/0.8% WB

Daily volumes 4% higher than in May



Chapter 2e: Twenty-Four Hour Vehicle Counts at Major Collectors

LOCATION: NE 18TH STREET, SOUTH OF EMPIRE AVENUE (ID 41782)

Functional Classification: Major Collector
Cross-Section: Three vehicle lanes, bike lanes, sidewalks

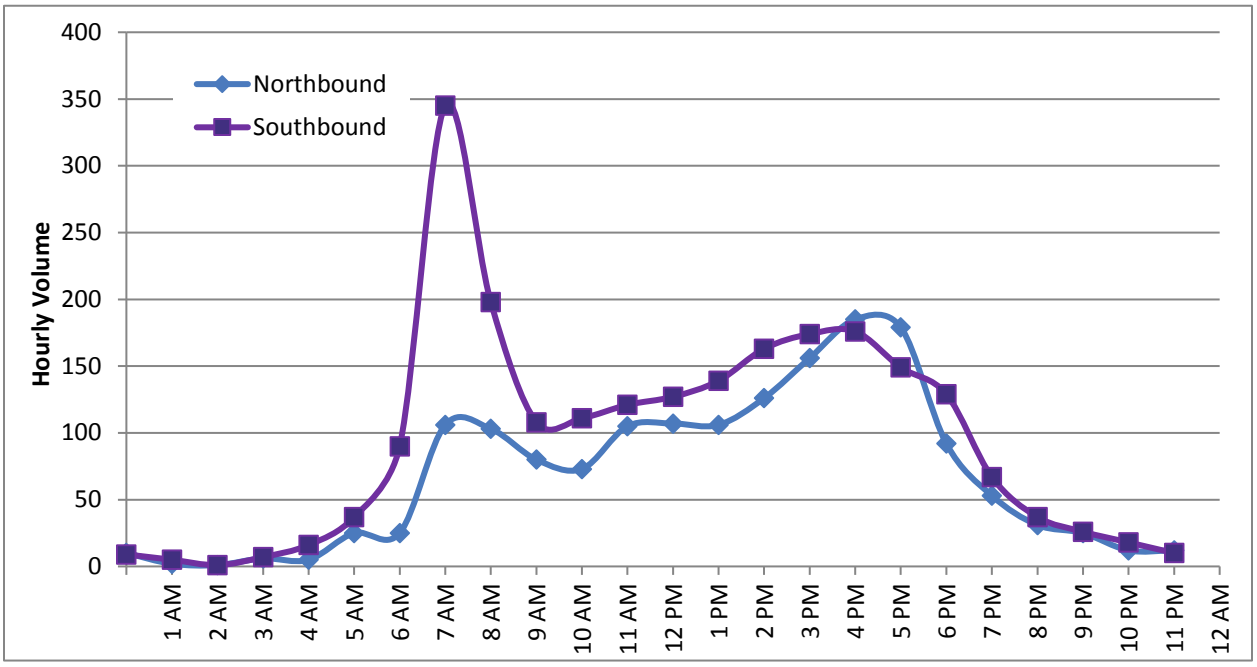
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 3,888 | 1,625 NB/2,263 SB
AM Peak Hour (7:00 AM): 451
PM Peak Hour (4:00 PM): 361
Overall Peak Hour (7:00 AM): 451

Average Speed: 29 mph
85th Percentile Speed: 35 mph
Mode Speed: 33 mph

Heavy Vehicles: 1.8% NB/1.9% SB



LOCATION: NW BOND STREET, NORTH OF COLORADO AVENUE (ID 796)

Functional Classification: Major Collector
Cross-Section: Two vehicle lanes, bike lane, street parking, sidewalks

Source: Google Earth

Dates: Tuesday, May 17, 2016 and Tuesday, July 19, 2016

May

Total Vehicles: 5,859 NB
AM Peak Hour (8:00 AM): 391
PM Peak Hour (5:00 PM): 491
Overall Peak Hour (12:00 PM): 527

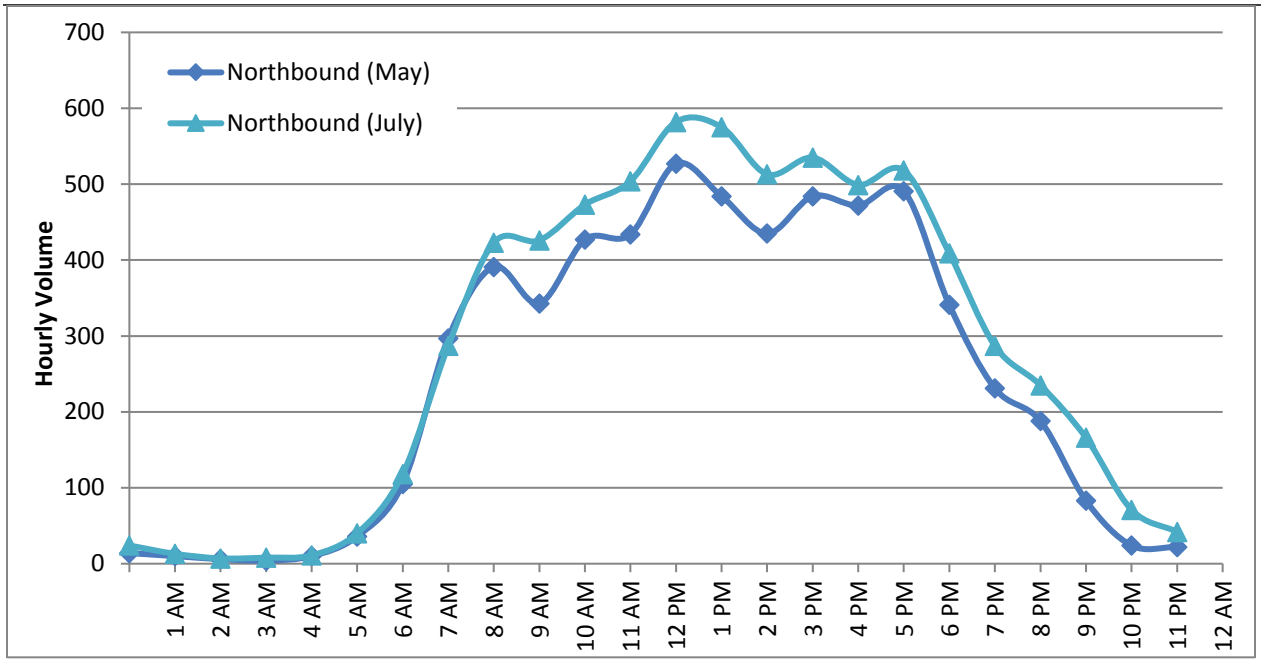
Average Speed: 21 mph
85th Percentile Speed: 25 mph
Mode Speed: 23 mph
Heavy Vehicles: 2.0% NB

July

Total Vehicles: 6,624 NB
AM Peak Hour (8:00 AM): 410
PM Peak Hour (5:00 PM): 505
Overall Peak Hour (12:00 PM): 569
Daily volumes 13% higher than in May

Average Speed: 22 mph
85th Percentile Speed: 28 mph
Mode Speed: 23 mph

Heavy Vehicles: 6.9% NB


Northbound (May)
Northbound (July)
Hourly Volume
700
600
500
400
300
200
100
0
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM
12 AM

LOCATION: SW BOND STREET, EAST OF SW BOND STREET (ID 813)

Functional Classification: Major Collector
Cross-Section: Two vehicle lanes, on-street parking, sidewalk

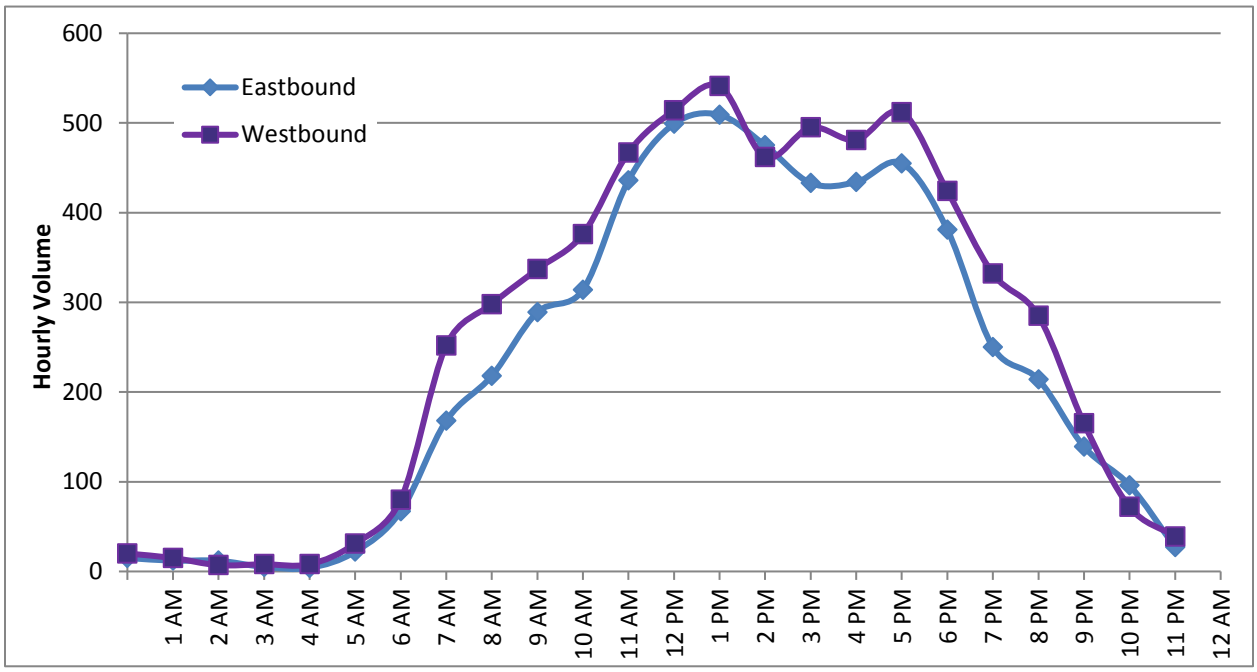
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 11,695 | 5,474 EB/6,221 WB
AM Peak Hour (8:00 AM): 516
PM Peak Hour (5:00 PM): 967
Overall Peak Hour (1:00 PM): 1,050

Average Speed: 20 mph
85th Percentile Speed: 26 mph
Mode Speed: 23 mph

Heavy Vehicles: 1.0% EB/0.9% WB



LOCATION: BROSTERHOUS ROAD, NORTH OF FUTURE CHASE ROAD (ID 41753)

Functional Classification: Major Collector
Cross-Section: Two vehicle lanes

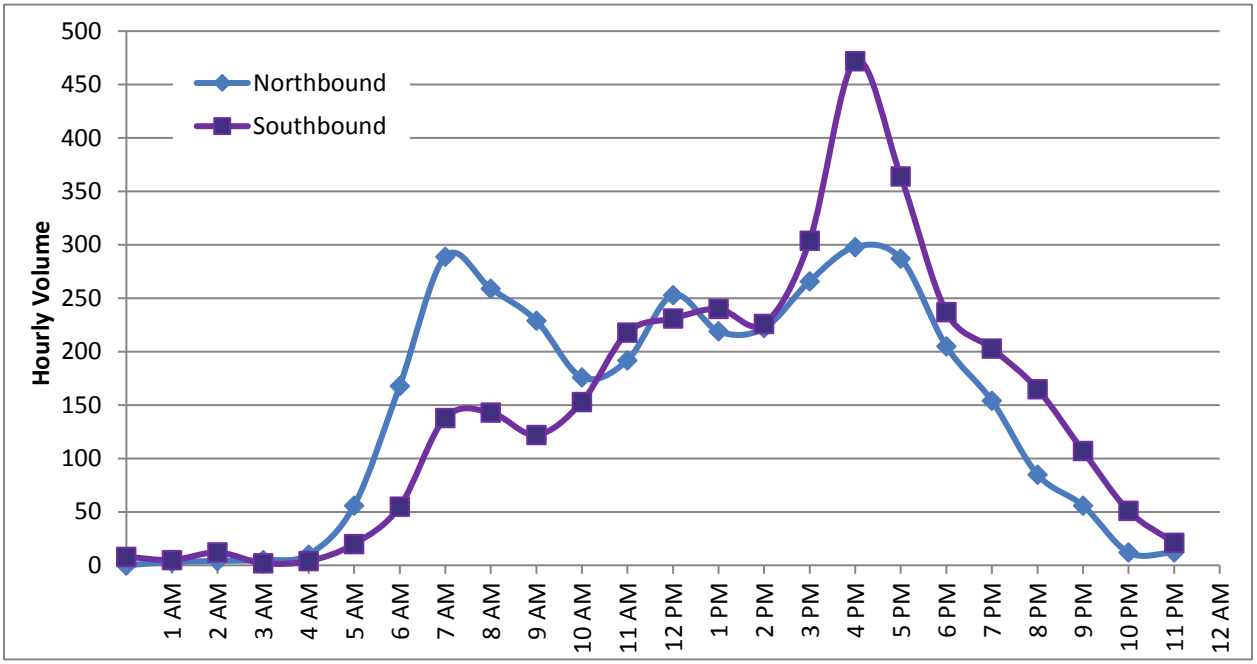
Source: Google Earth

Date: Tuesday, May 17, 2016

Total Vehicles: 6,961 | 3,460 NB/3,501 SB
AM Peak Hour (7:00 AM): 427
PM Peak Hour (4:00 PM): 770
Overall Peak Hour (4:00 PM): 770

Average Speed: 34 mph
85th Percentile Speed: 39 mph
Mode Speed: 38 mph

Heavy Vehicles: 0.6 % NB/1.0% SB



LOCATION: NE PURCELL BOULEVARD, NORTH OF NE NEFF ROAD (ID 407)

Functional Classification: Major Collector
Cross-Section: Two vehicle lanes, sidewalks with gap on east side

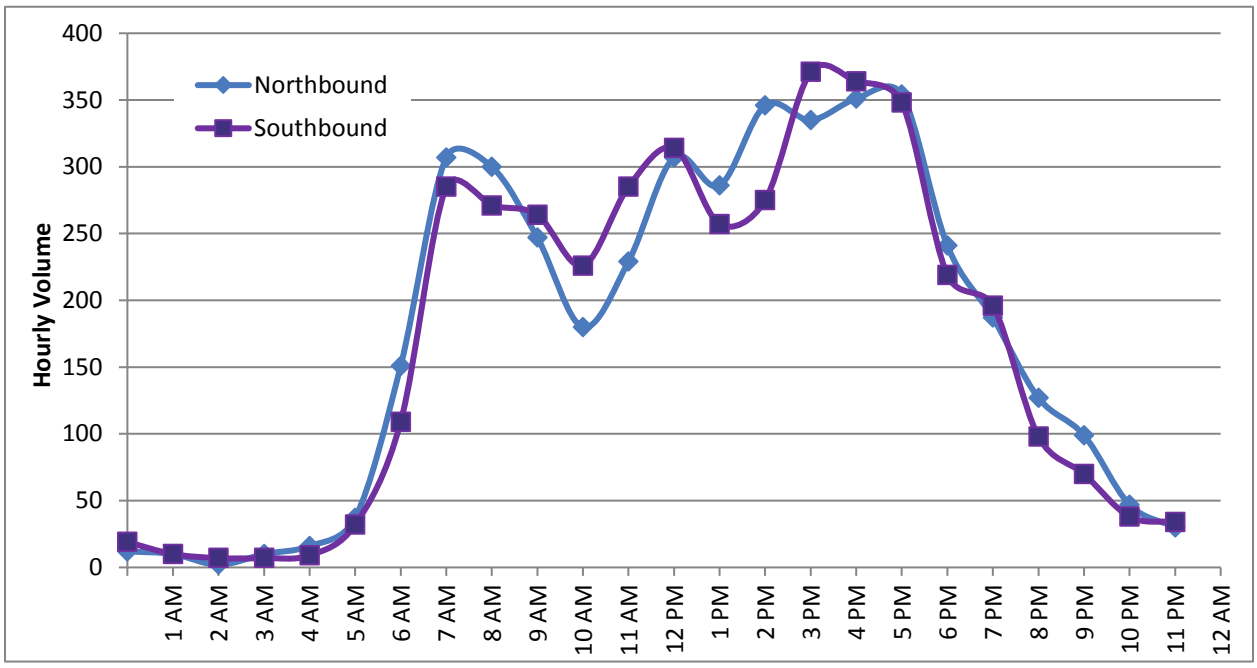
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 8,319 | 4,211 NB/4,108 SB
AM Peak Hour (7:00 AM): 592
PM Peak Hour (4:00 PM): 715
Overall Peak Hour (4:00 PM): 715

Average Speed: 27 mph
85th Percentile Speed: 33 mph
Mode Speed: 28 mph

Heavy Vehicles: 0.8% NB/0.4% SB



LOCATION: NE PURCELL BOULEVARD, SOUTH OF NEFF ROAD (ID 792)

Functional Classification: Major Collector
Cross-Section: Two vehicle lanes, sidewalks with gap on east side

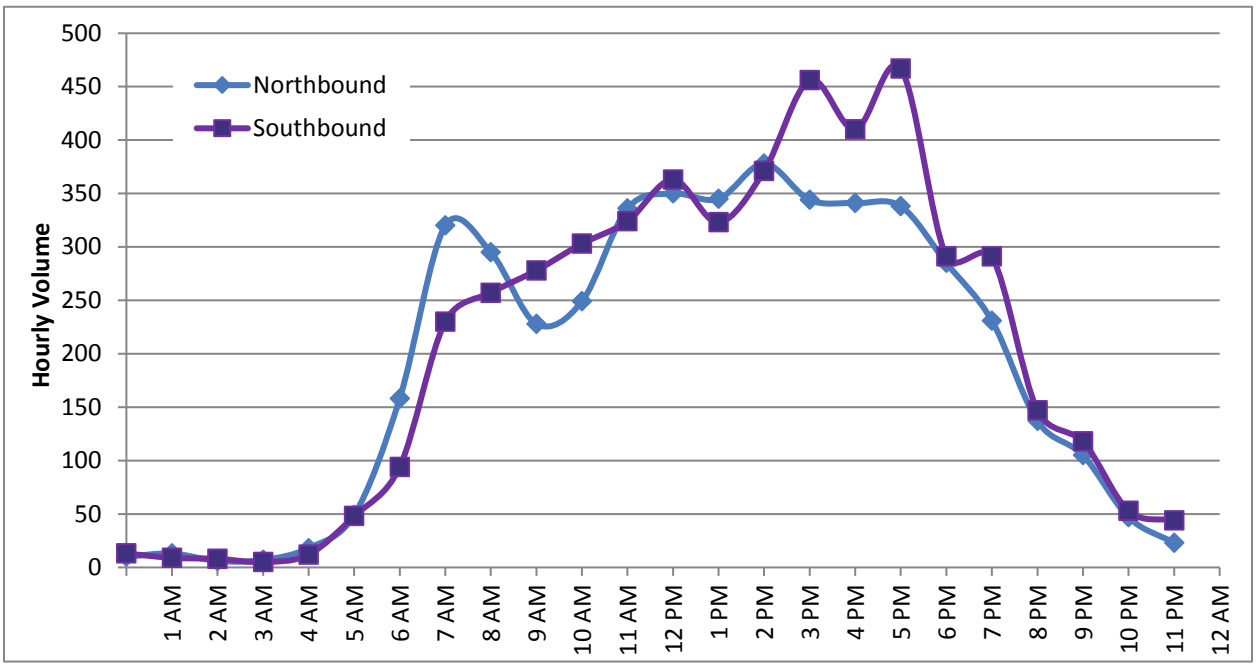
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 9,528 | 4,613 NB/4,915 SB
AM Peak Hour (8:00 AM): 552
PM Peak Hour (4:00 PM): 805
Overall Peak Hour (4:00 PM): 805

Average Speed: 22 mph
85th Percentile Speed: 28 mph
Mode Speed: 23 mph

Heavy Vehicles: 0.8% NB/0.5% SB



LOCATION: NW WALL STREET, NORTH OF COLORADO AVENUE (ID 795)

Functional Classification: Major Collector
Cross-Section: Two vehicle lanes, bike lane, street parking, sidewalks

Source: Google Earth

Dates: Tuesday, May 17, 2016 and Tuesday, July 19, 2016

May

Total Vehicles: 5,151 SB
AM Peak Hour (8:00 AM): 281
PM Peak Hour (4:00 PM): 468
Overall Peak Hour (4:00 PM): 468

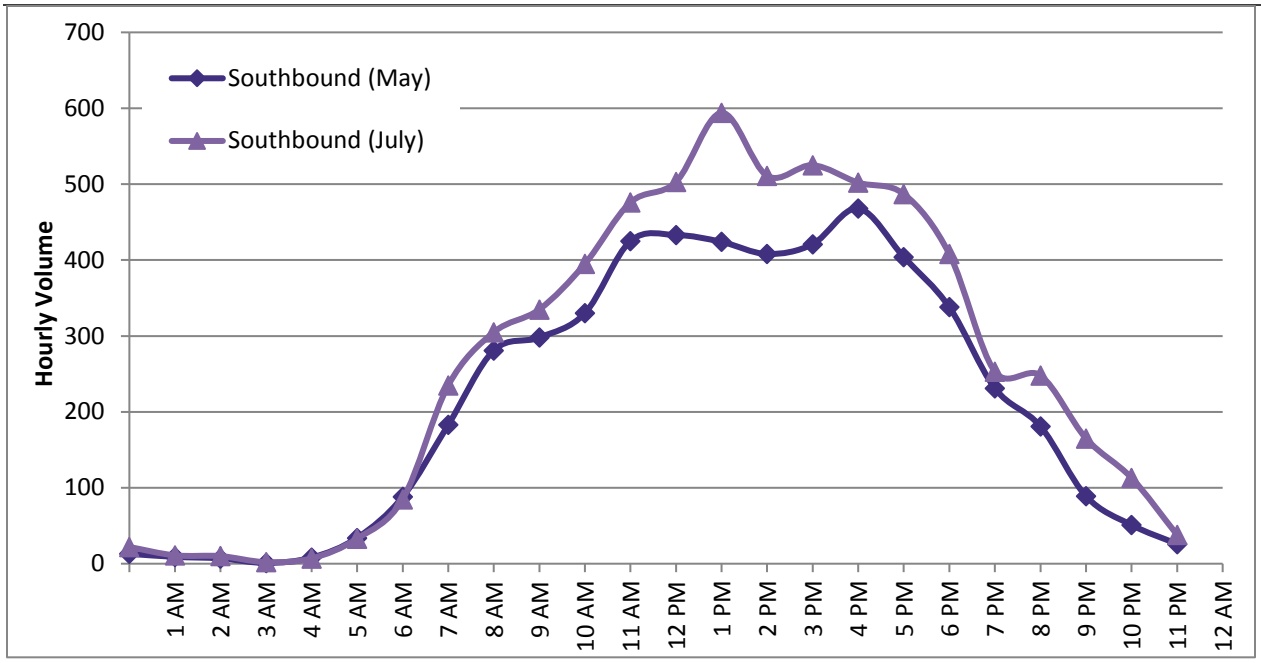
Average Speed: 20 mph
85th Percentile Speed: 25 mph
Mode Speed: 23 mph
Heavy Vehicles: 0.9% SB

July

Total Vehicles: 6,263 SB
AM Peak Hour (8:00 AM): 305
PM Peak Hour (4:00 PM): 502
Overall Peak Hour (1:00 PM): 594
Daily volumes 22% higher than in May

Average Speed: 17 mph
85th Percentile Speed: 24 mph
Mode Speed: 23 mph

Heavy Vehicles: 0.9% SB


700
600
500
400
300
200
100
0
Hourly Volume
Southbound (May)
Southbound (July)
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM
12 AM

LOCATION: WILSON AVENUE, WEST OF SE 15TH STREET (ID 41029)

Functional Classification: Major Collector
Cross-Section: Three vehicle lanes, bike lanes, sidewalk

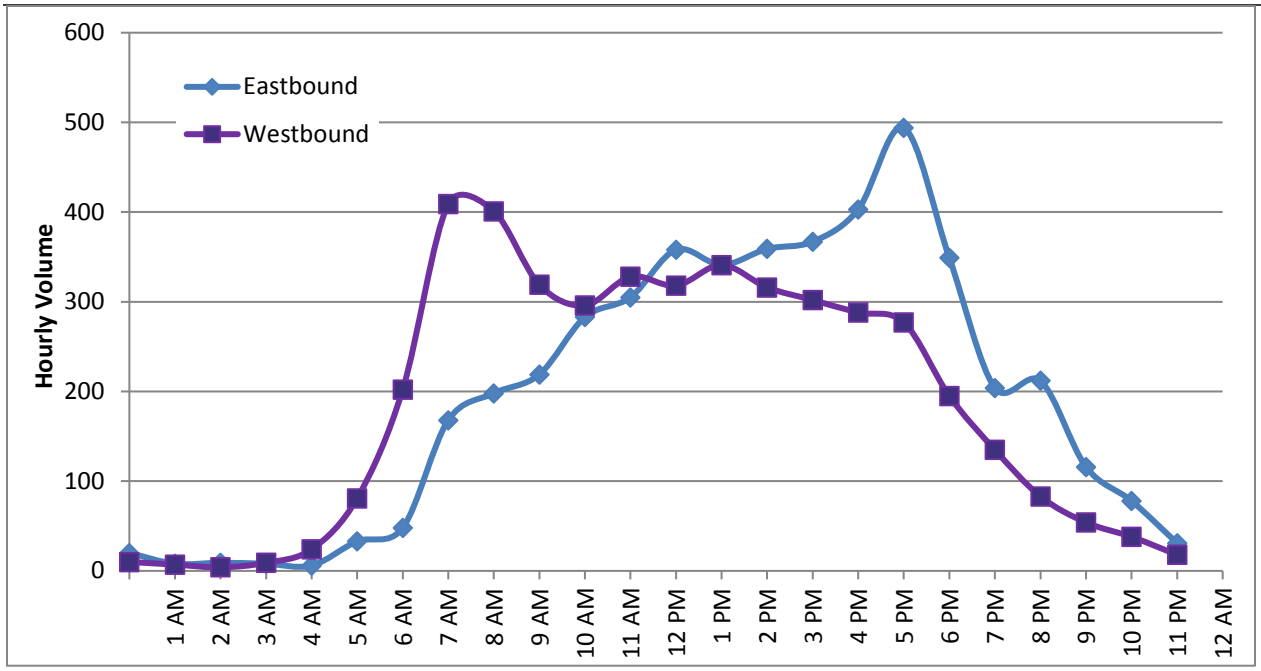
Source: Google Earth

Date: Thursday, May 19, 2016

Total Vehicles: 9,072 | 4,617 EB/4,455 WB
AM Peak Hour (8:00 AM): 599
PM Peak Hour (5:00 PM): 771
Overall Peak Hour (5:00 PM): 771

Average Speed: 23 mph
85th Percentile Speed: 28 mph
Mode Speed: 23 mph

Heavy Vehicles: 1.1% EB/1.0% WB

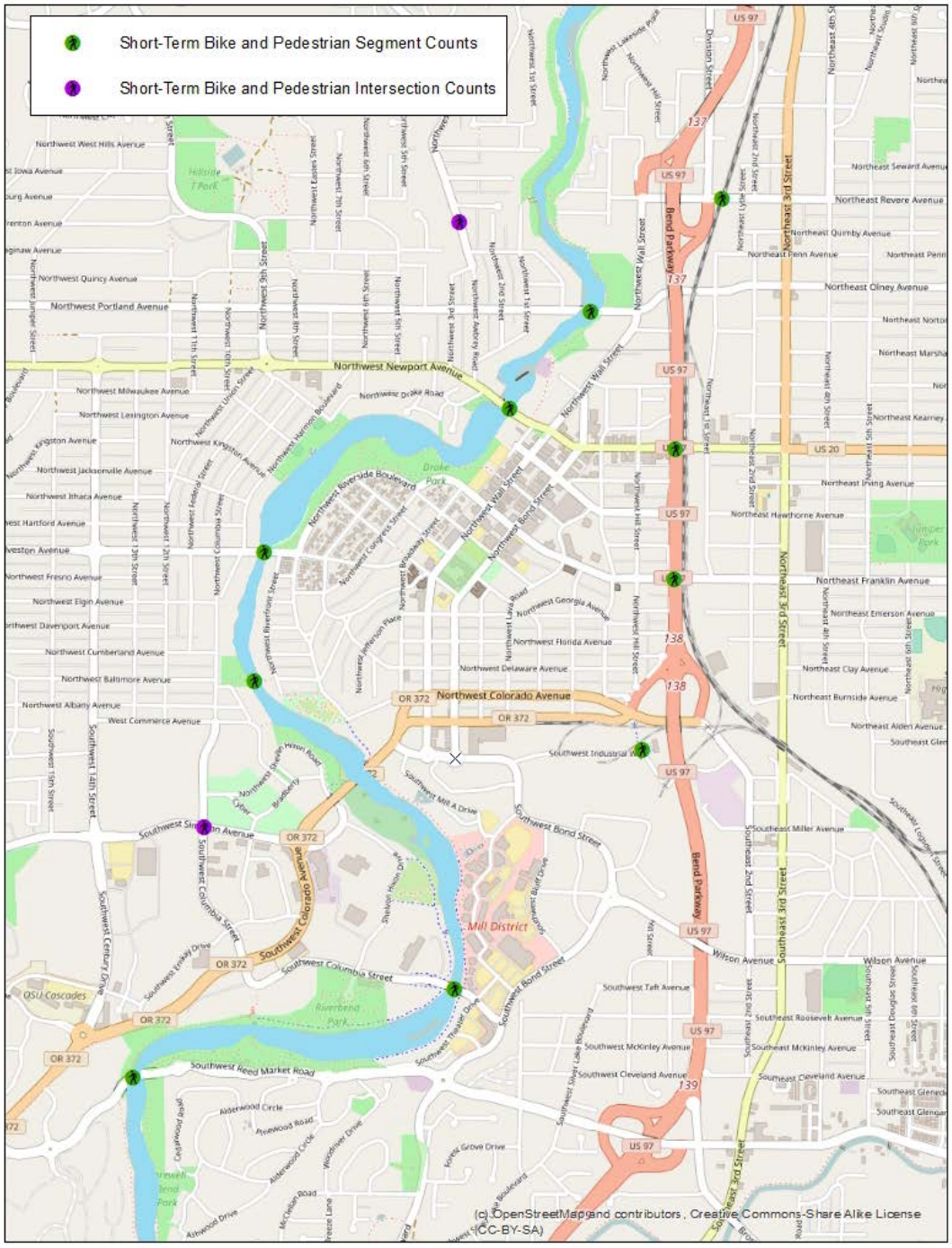

600
500
400
300
200
100
0
Hourly Volume
Eastbound
Westbound
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM
12 AM

Chapter 3: Short-Term Bike and Pedestrian Counts

SHORT-TERM BIKE AND PEDESTRIAN COUNTS

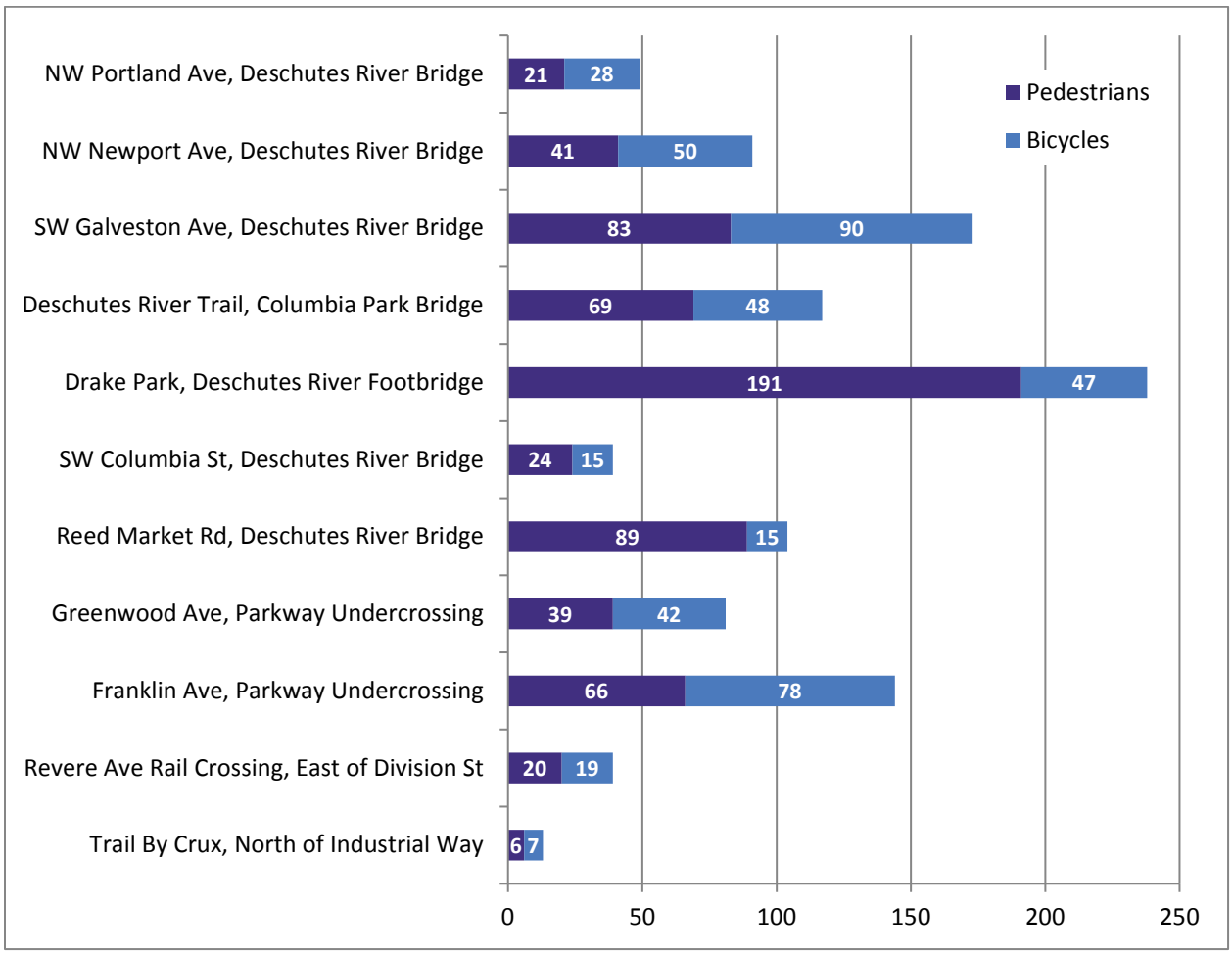
Short-term count locations were selected to capture information about opportunity areas, existing bicycle routes, key crossings, and trails. Data was collected at the short-term count locations in May 2016. Both segment and intersection counts were collected. The count locations are shown in the map in Exhibit 3-1.

Exhibit 3-1. Short-Term Bike and Pedestrian Count Locations



The chart in Exhibit 3-2 compares the total number of bicyclists and pedestrians recorded at each segment count location for the two hour peak period (3:30 – 5:30 p.m.) on May 17th, 2017. The Deschutes River Bridges are listed in order from north to south.

Exhibit 3-2. Bike and Pedestrian Counts by Location



As seen in the table, the highest number of pedestrians was counted at the Deschutes River Footbridge in Drake Park, followed by the Reed Market Road Deschutes River Bridge. The highest number of bicyclists was counted on SW Galveston Avenue at the Deschutes River Bridge, followed by Franklin Avenue at the Parkway Undercrossing.

A summary of the counts collected at each location are provided in the following pages. The segment count locations are summarized first in the order shown in the table above, followed by the intersection count locations.

LOCATION: NW PORTLAND AVENUE, DESCHUTES RIVER BRIDGE

Functional Classification: Major Collector
Cross-Section: Two vehicle lanes, bike lanes, sidewalks
Source: Video data

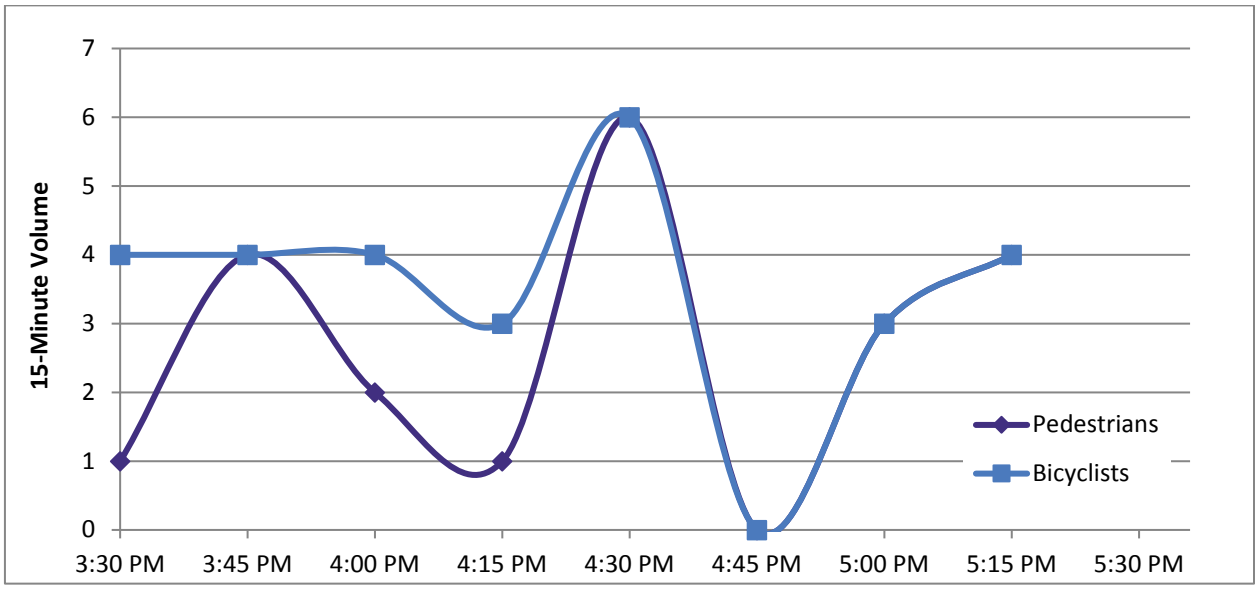
Source: Google Earth

Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Total Pedestrians: 21| 9 WB/12 EB

Total Bicyclists: 28 | 16 WB/12 EB

Bicyclists on sidewalk: 2
Bicyclists in roadway: 26



LOCATION: NEWPORT AVENUE, DESCHUTES RIVER BRIDGE

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks
Source: Video data

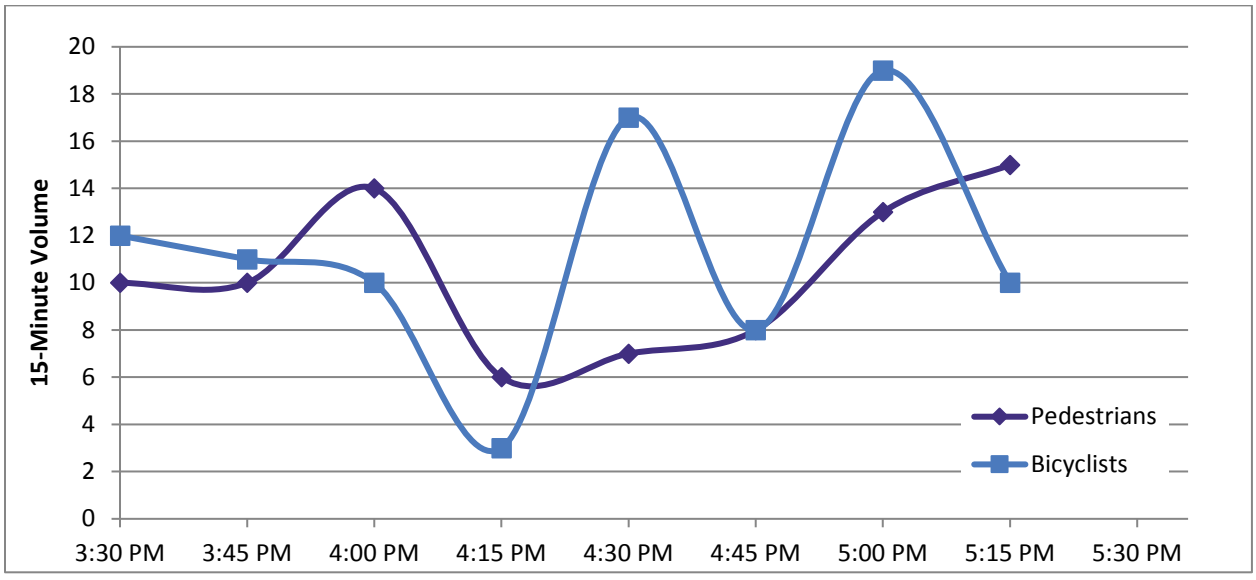
Source: Google Earth

Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Total Pedestrians: 41| 23 WB/18 EB

Total Bicyclists: 50 | 29 WB/21 EB

Bicyclists on sidewalk: 15
Bicyclists in roadway: 35



LOCATION: SW GALVESTON AVENUE, DESCHUTES RIVER BRIDGE

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks
Source: Video data

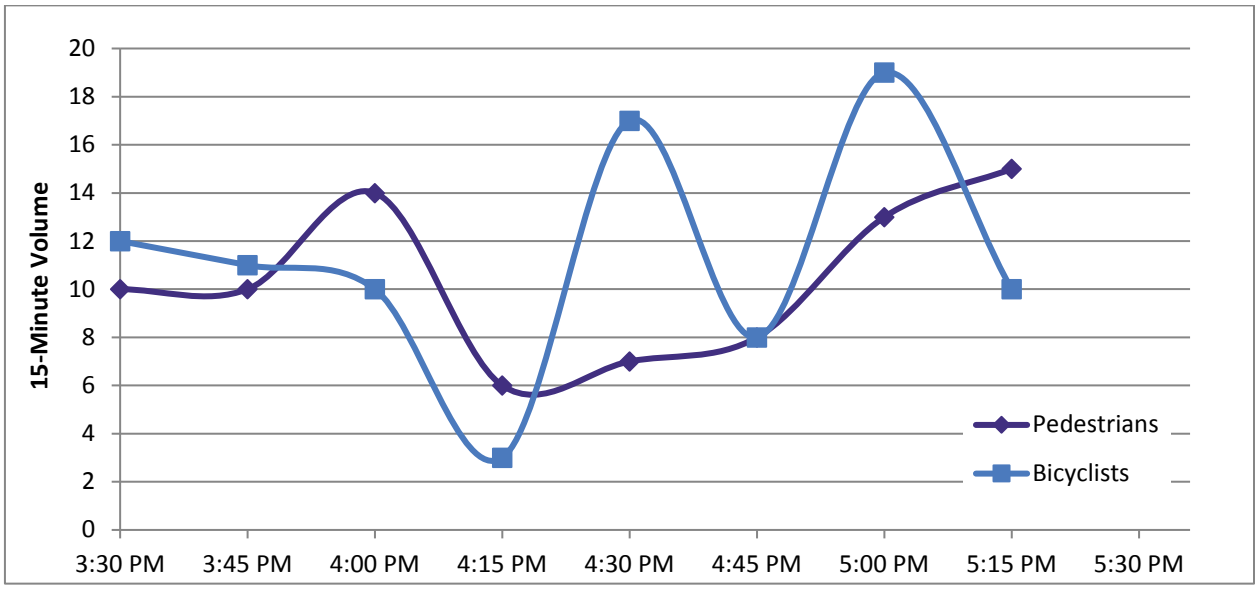
Source: Google Earth

Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Total Pedestrians: 83| 40 WB/43 EB

Total Bicyclists: 90| 47 WB/73 EB

Bicyclists on sidewalk: 22
Bicyclists in roadway: 68



LOCATION: DESCHUTES RIVER TRAIL, COLUMBIA PARK BRIDGE

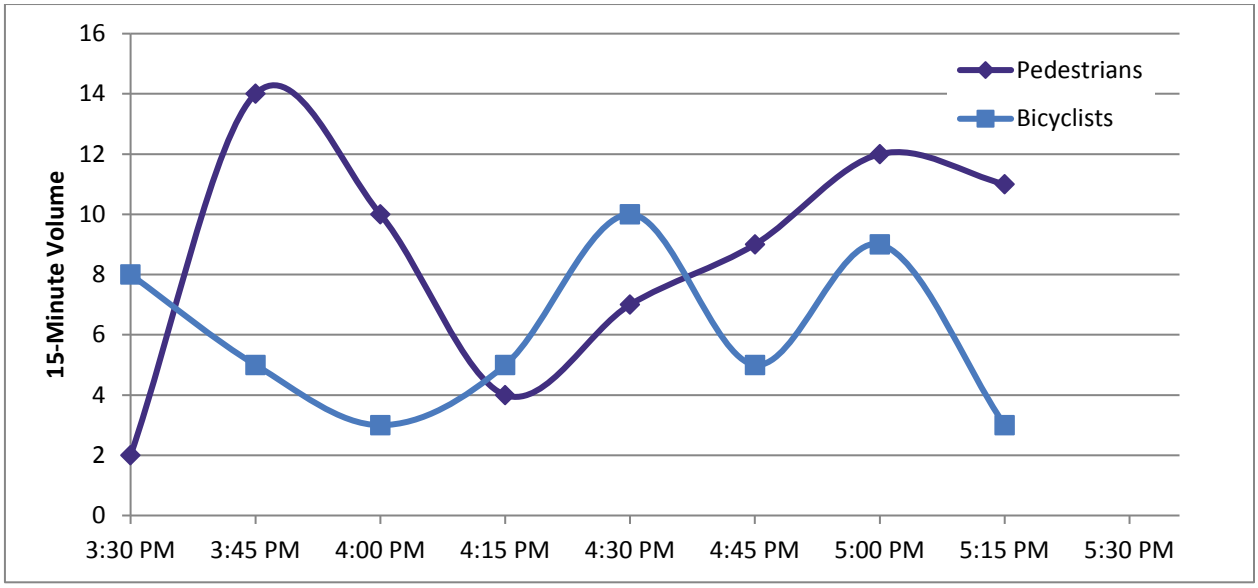
Functional Classification: NA (Trail)
Cross-Section: Bridge
Source: Video data

Source: Google Earth

Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Total Pedestrians: 69| 32 WB/37 EB

Total Bicyclists: 48| 30 WB/18 EB



LOCATION: DRAKE PARK, DESCHUTES RIVER FOOTBRIDGE

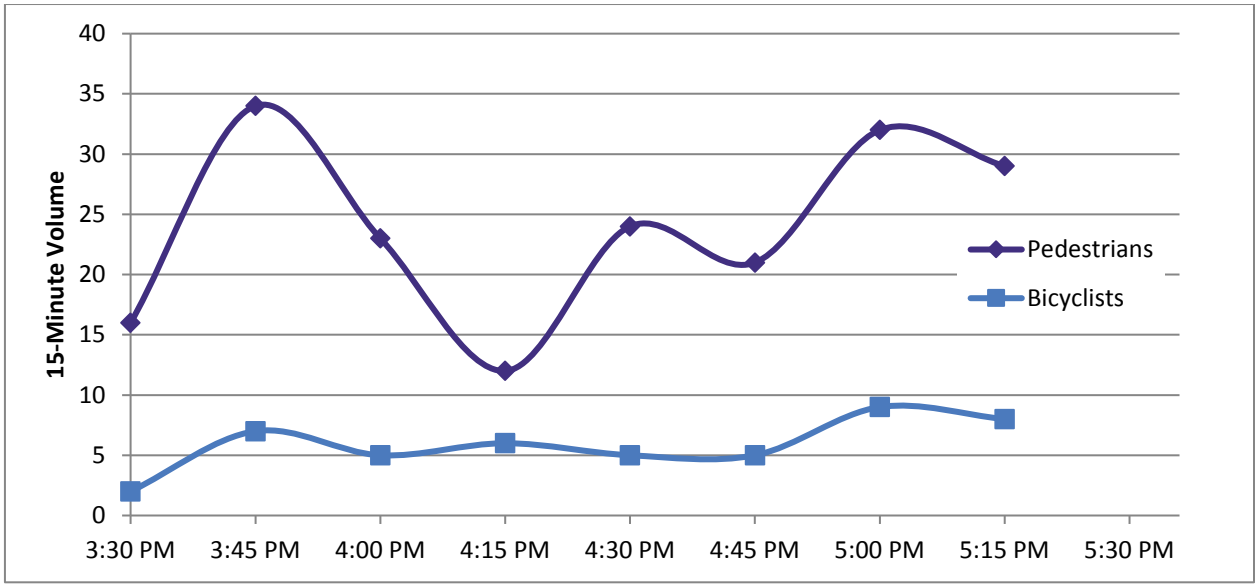
Functional Classification: NA (Trail)
Cross-Section: Wooden bridge
Source: Video data

Source: Google Earth

Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Total Pedestrians: 191| 92 WB/99 EB

Total Bicyclists: 47| 29 WB/18 EB



LOCATION: SW COLUMBIA STREET, DESCHUTES RIVER BRIDGE

Functional Classification: Local
Cross-Section: Two vehicle lanes, sidewalks
Source: Video data

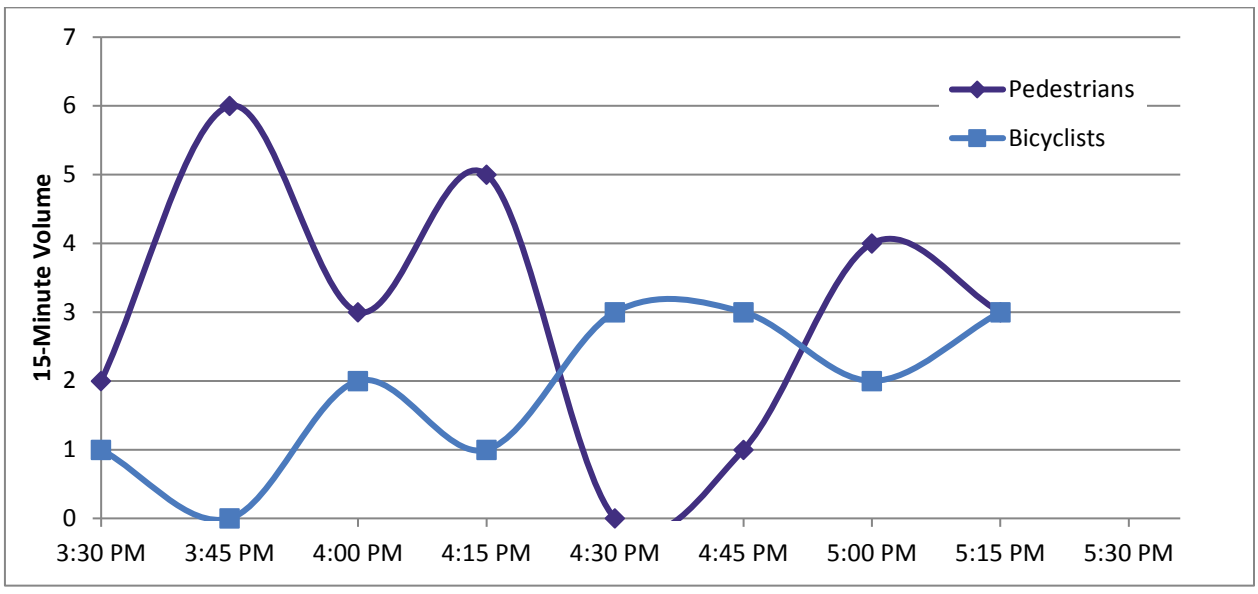
Source: Google Earth

Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Total Pedestrians: 24| 8 WB/16 EB

Total Bicyclists: 15| 7 WB/8 EB

Bicyclists on sidewalk: 2
Bicyclists in roadway: 13



LOCATION: REED MARKET ROAD, DESCHUTES RIVER BRIDGE

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, raised median, bike lanes, sidewalks
Source: Video data

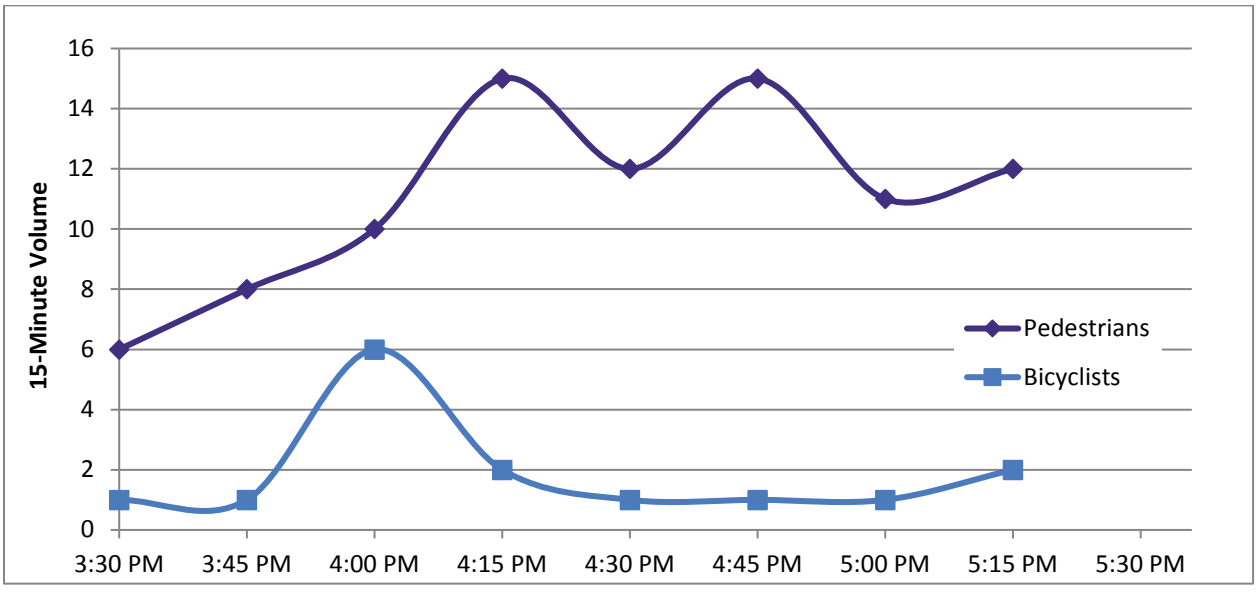
Source: Google Earth

Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Total Pedestrians: 89| 45 WB/44EB

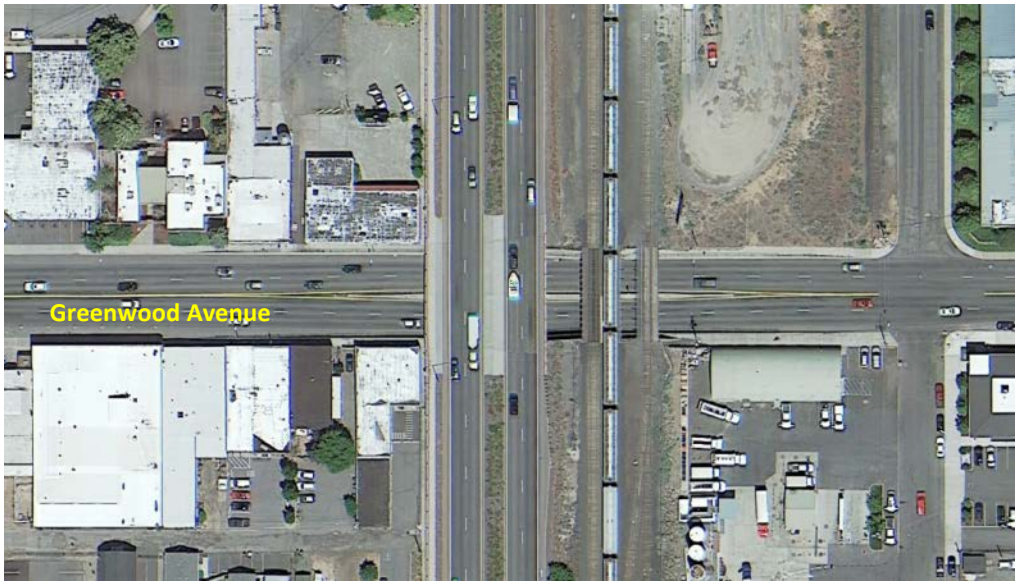
Total Bicyclists: 15| 6 WB/9 EB

Bicyclists on sidewalk: 6
Bicyclists in roadway: 9



LOCATION: GREENWOOD AVENUE, PARKWAY UNDERCROSSING

Functional Classification: Minor Arterial
Cross-Section: Four vehicle lanes with separated bike/pedestrian path on either side
Source: Video data



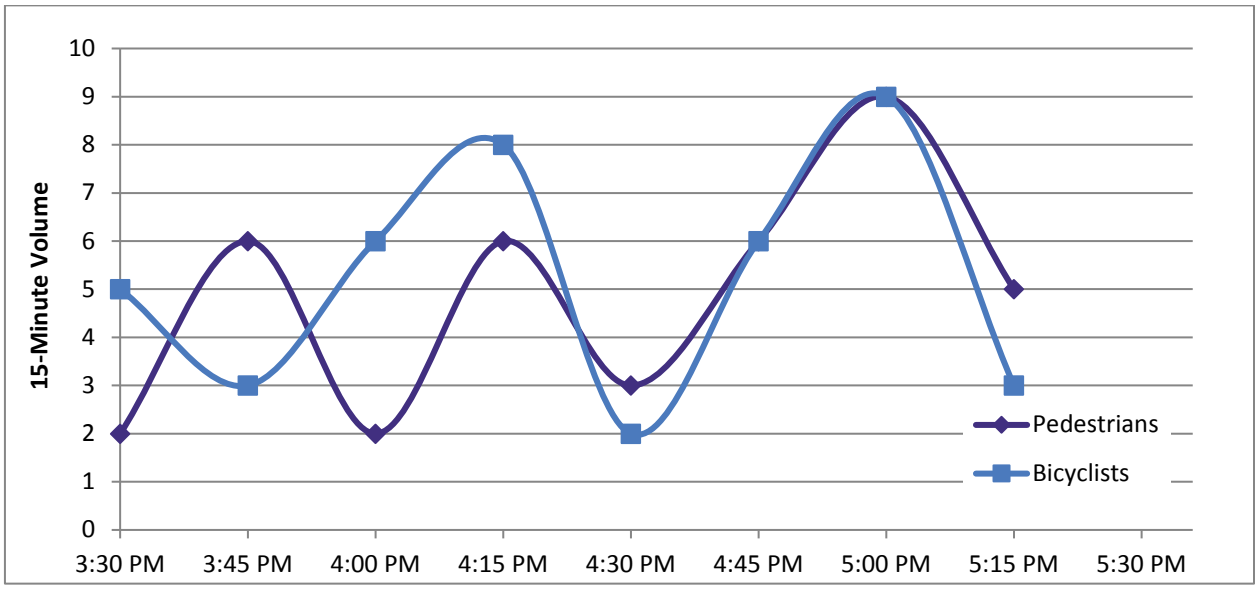
Source: Google Earth

Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Total Pedestrians: 39| 18 WB/21 EB

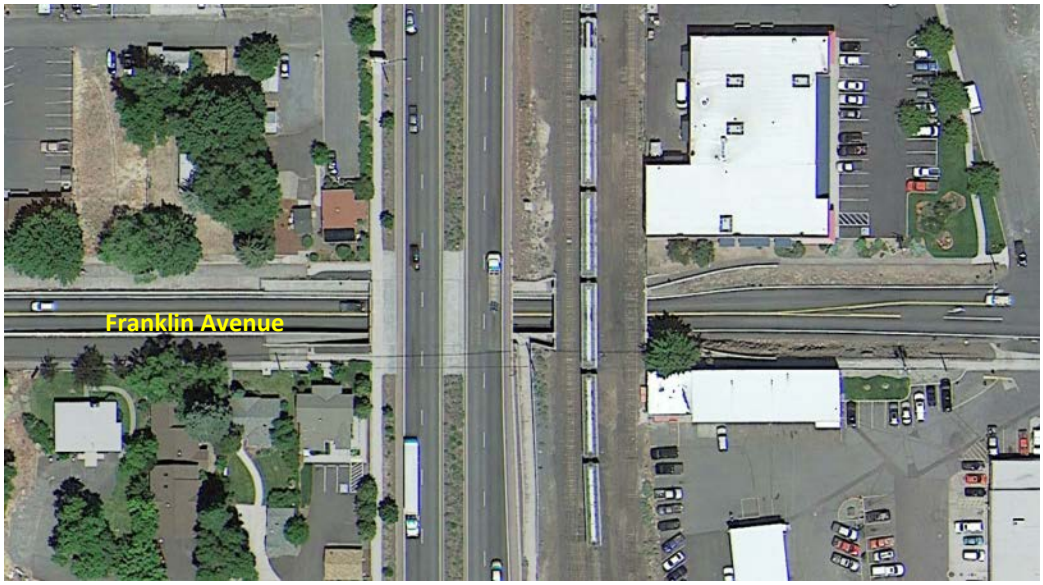
Total Bicyclists: 42| 22 WB/20 EB

Bicyclists on sidewalk: 18
Bicyclists in roadway: 24



LOCATION: FRANKLIN AVENUE, PARKWAY UNDERCROSSING

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes with separated bike/pedestrian path on either side
Source: Video data



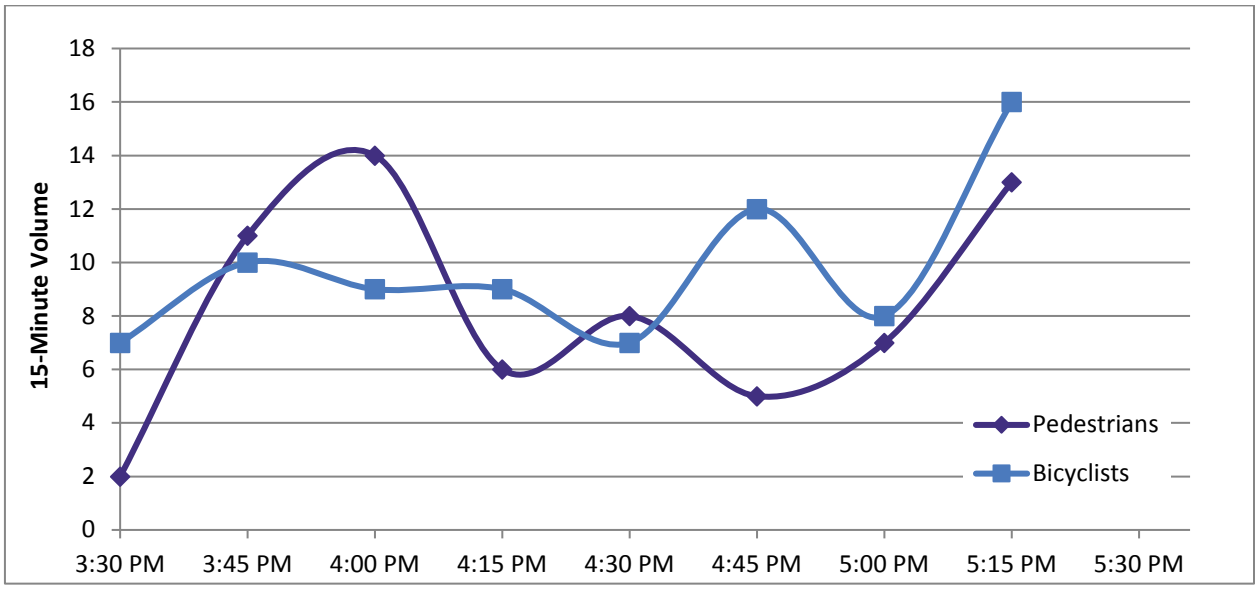
Source: Google Earth

Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Total Pedestrians: 66| 35 WB/31 EB

Total Bicyclists: 78| 53 WB/25 EB

Bicyclists on sidewalk: 73
Bicyclists in roadway: 5



LOCATION: NE REVERE AVENUE RAIL CROSSING, EAST OF DIVISION STREET

Functional Classification: Minor Arterial
Cross-Section: Four vehicle lanes, sidewalks
Source: Video data

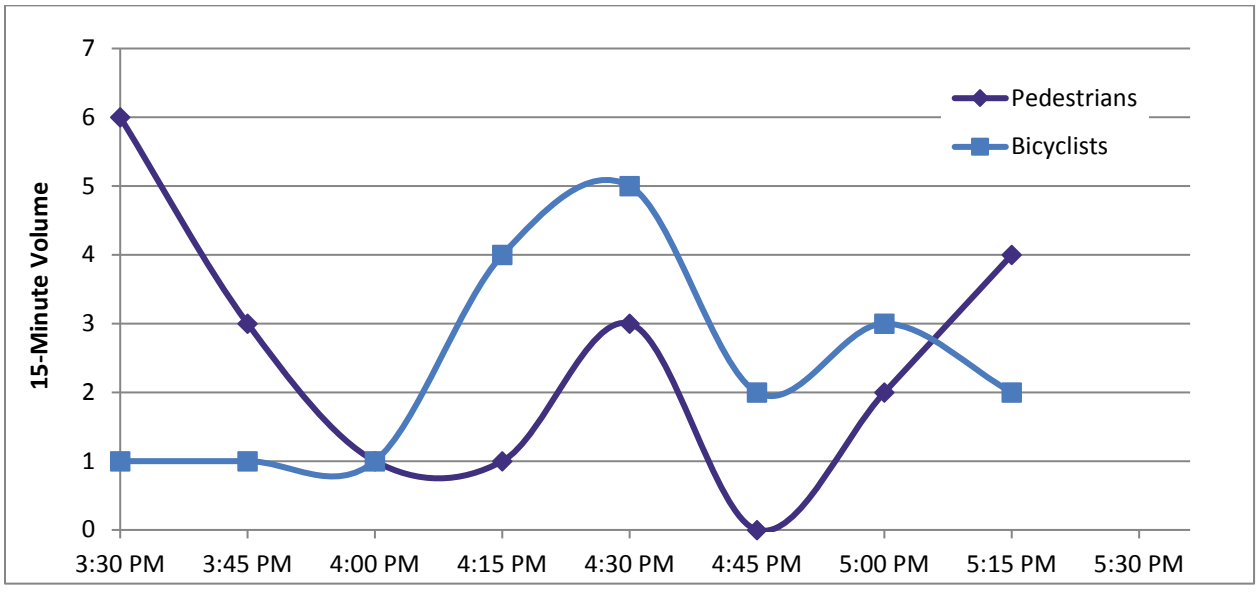
Source: Google Earth

Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Total Pedestrians: 20| 14 WB/6 EB

Total Bicyclists: 19| 10 WB/9 EB

Bicyclists on sidewalk: 7
Bicyclists in roadway: 12



LOCATION: TRAIL BY CRUX, NORTH OF INDUSTRIAL WAY

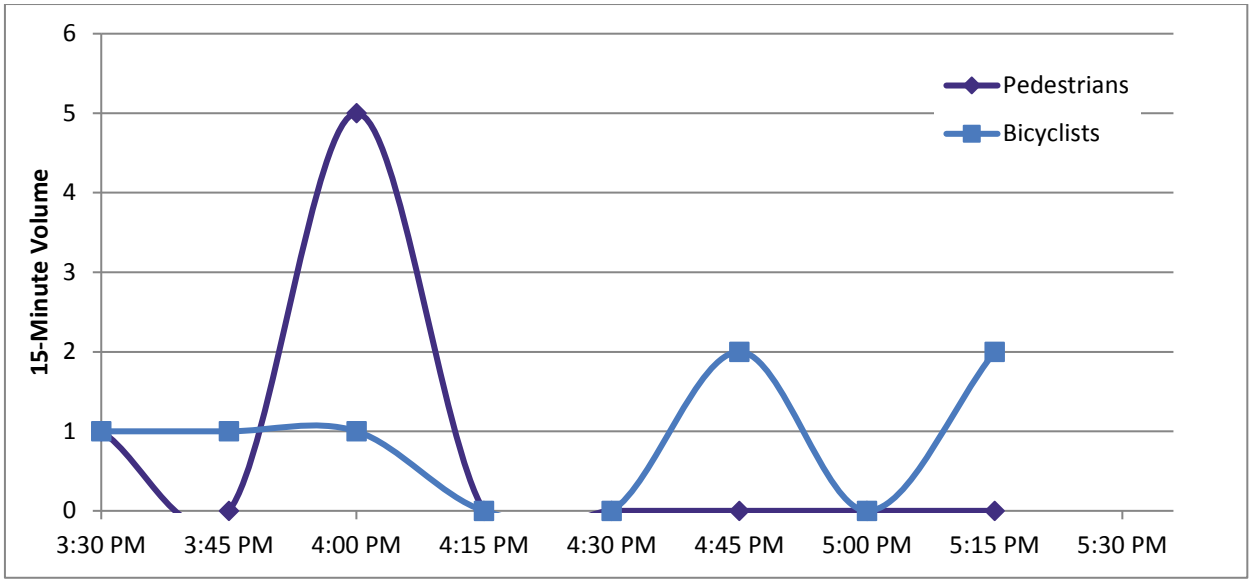
Functional Classification: NA (Trail)
Cross-Section: Two vehicle lanes, bike lanes, sidewalks
Source: Video data

Source: Google Earth

Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Total Pedestrians: 6| 5 SB/1 NB

Total Bicyclists: 7| 3 SB/4 NB

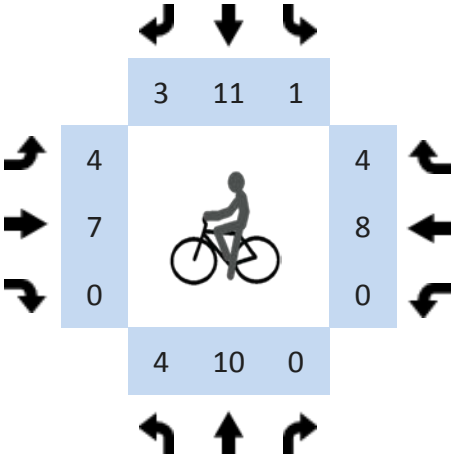


LOCATION: SW COLUMBIA STREET/SW SIMPSON AVENUE

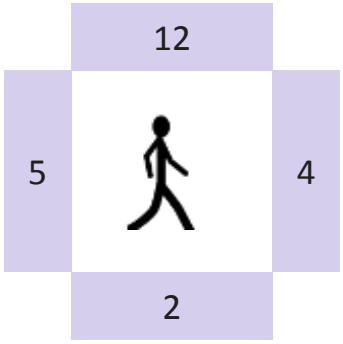
Source: Google Earth

Functional Classification: Minor Arterial/Local
Cross-Section: Bicycle lanes and sidewalks on both roadways, except for gap in southbound bicycle lane on SW Columbia Street between SW Shevlin Hixon Drive and SW Simpson Avenue
Traffic Control: All-way-stop-control
Source: Bicycle Turning Movement Count and Pedestrian Crosswalk Count
Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Bicyclists:



Pedestrians:

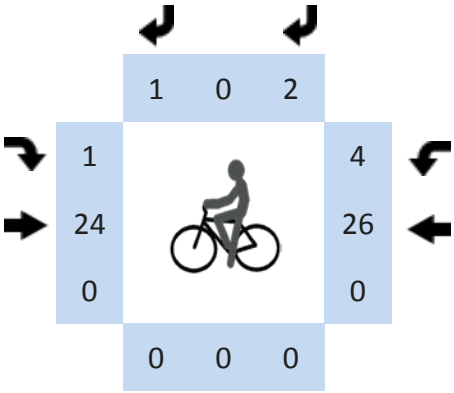


LOCATION: SW BOND STREET/SW INDUSTRIAL WAY

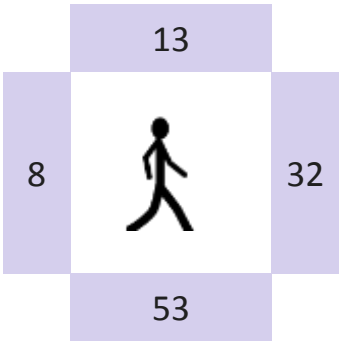
Source: Google Earth

Functional Classification: Major Collector/Major Collector
Cross-Section: Sidewalks on both roadways
Traffic Control: Roundabout
Source: Bicycle Turning Movement Count and Pedestrian Crosswalk Count
Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.

Bicyclists:



Pedestrians:



Chapter 4: Multimodal Turning Movement Counts

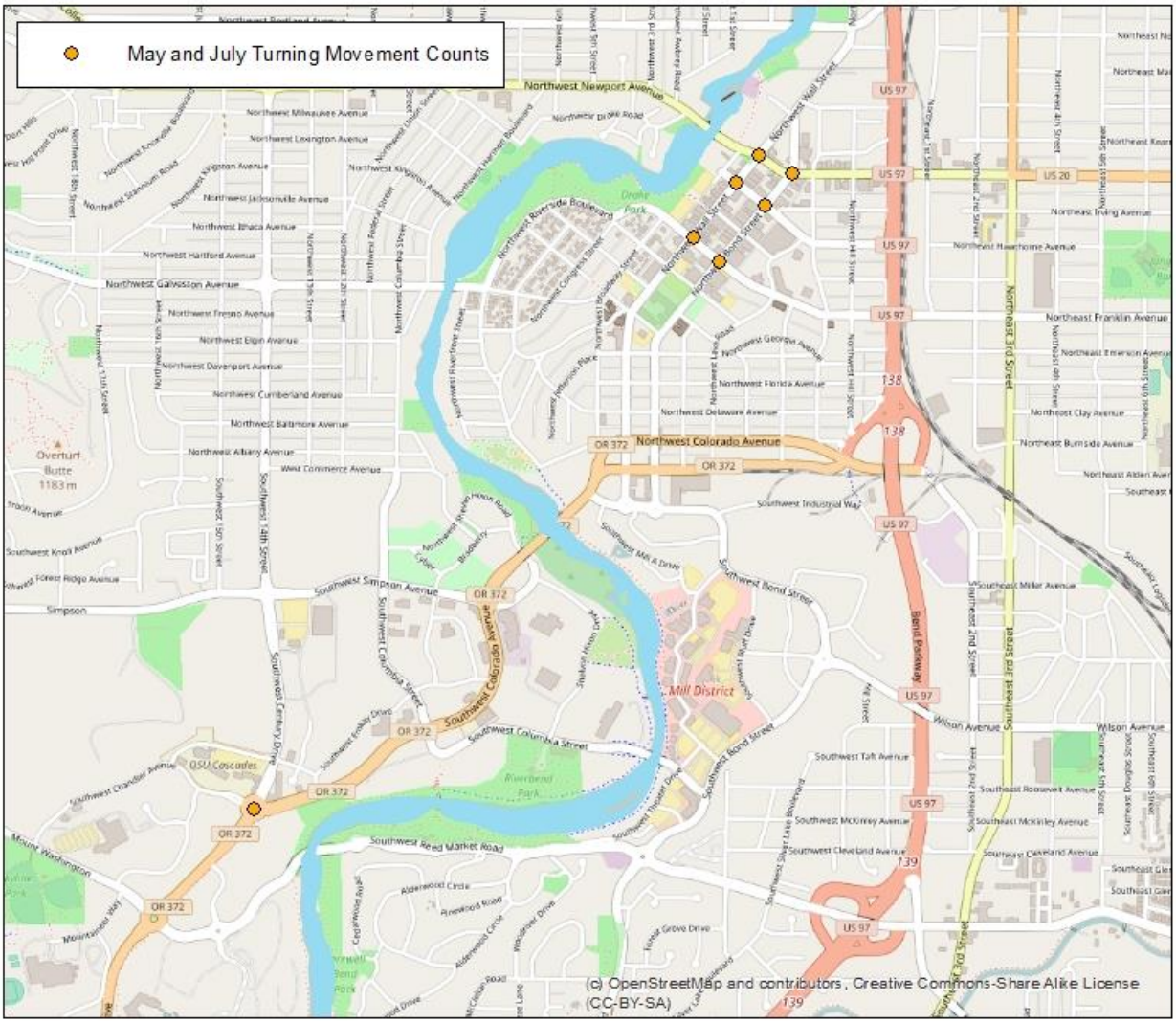
MULTIMODAL TURNING MOVEMENT COUNTS

Counts were collected at several intersections in May and June to assess multimodal volumes. The counts include:

- Vehicle turning movement counts
- Bicycle turning movement counts
- Pedestrians using crosswalks
- Heavy vehicle percentages by movement

Multimodal turning movement counts can be used for a variety of purposes, including assessing vehicle operations for each movement at an intersection, quantifying pedestrian and bicycle demand, and quantifying exposure to more fully assess crash data. Locations where counts were collected are shown in Exhibit X. These counts are collected by recording and reviewing video data.

Exhibit 4-1. Multimodal Turning Movement Count Locations



The turning movement counts collected are summarized below and compared by location for each peak period. Exhibit 4-2 shows the total entering vehicles, bikes and pedestrians at each location during the morning peak hour.

Exhibit 4-2. Morning Peak Hour Total Entering Volumes by Location

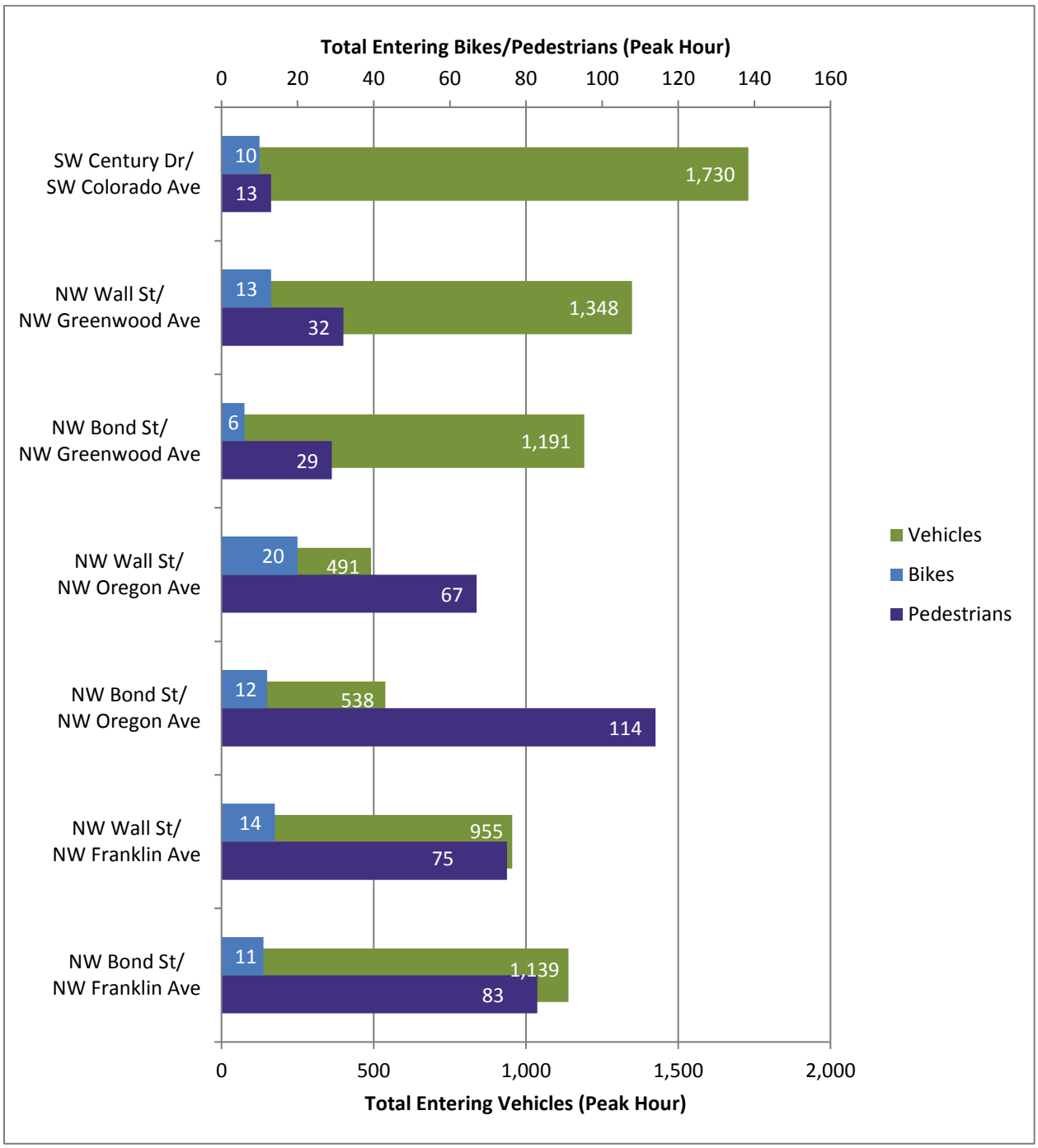


Exhibit 4-3 shows the total entering vehicles, bikes and pedestrians at each location during the midday peak hour. Note that the scales have been adjusted to account for the significantly higher volumes observed at most locations during the midday peak period.

Exhibit 4-3. Midday Peak Hour Total Entering Volumes by Location

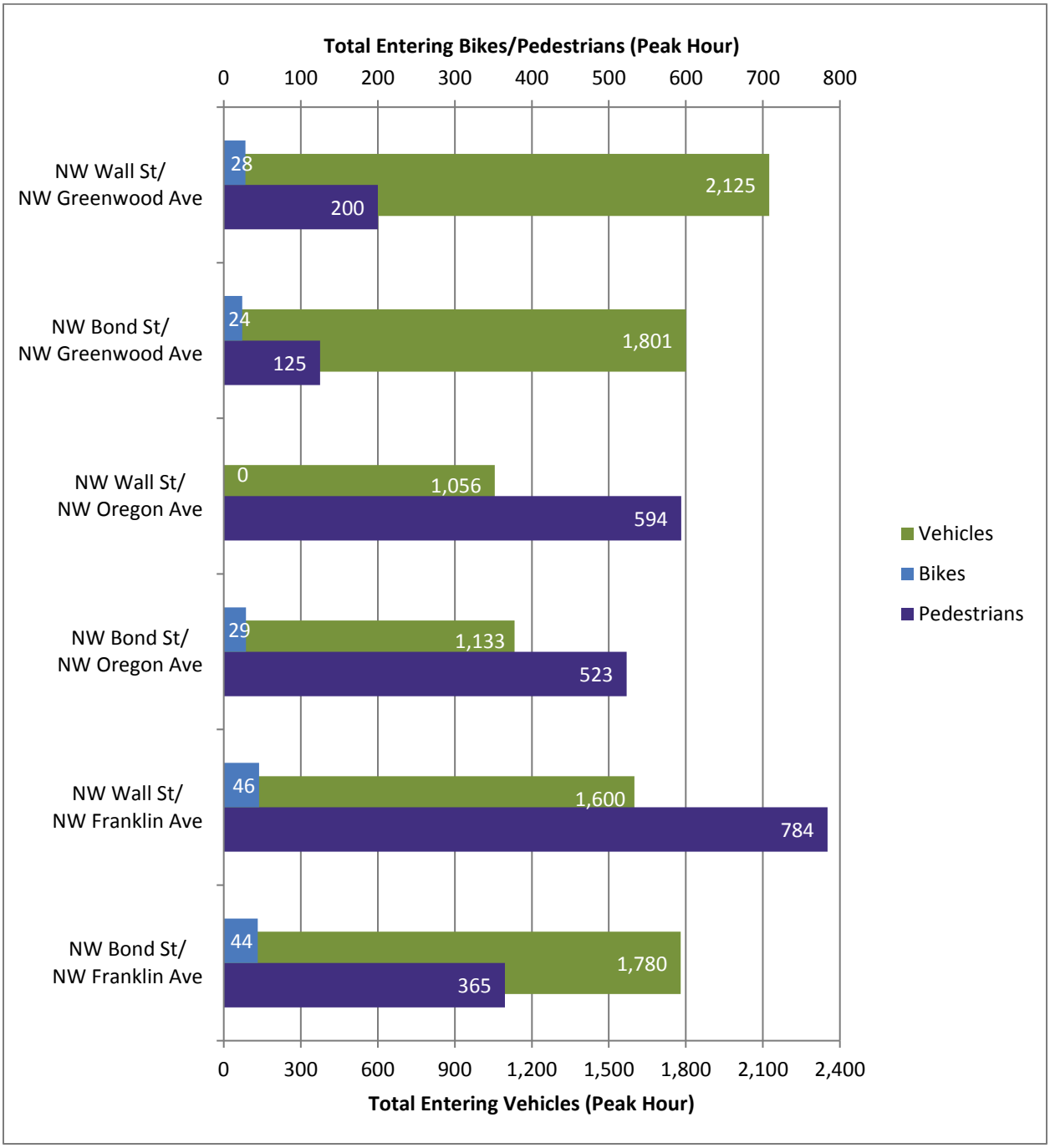
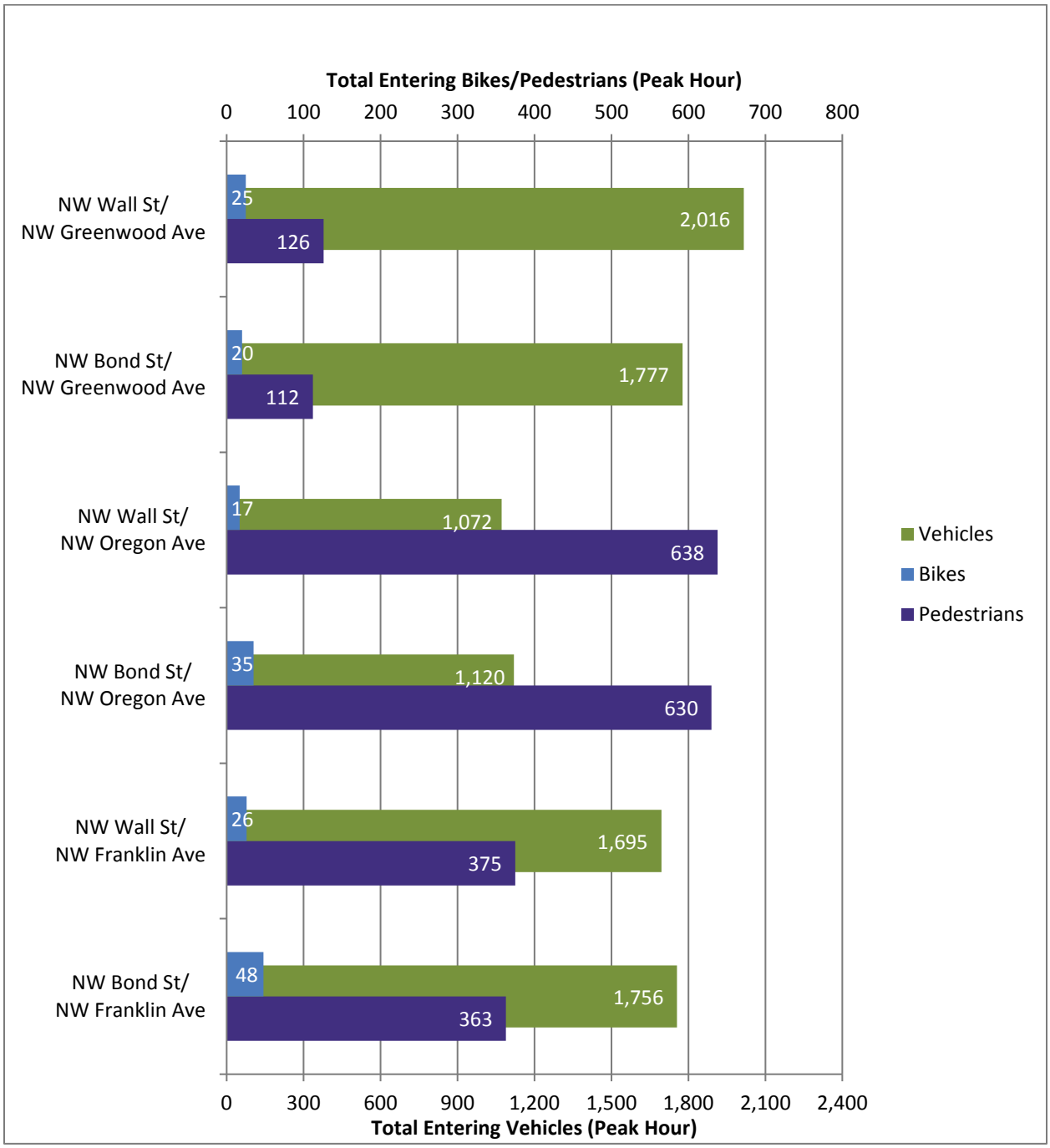


Exhibit 4-4 shows the total entering vehicles, bikes and pedestrians at each location during the evening peak hour. Note that the same scale is employed as was used for the midday peak period.

Exhibit 4-3. Evening Peak Hour Total Entering Volumes by Location



Summaries for the traffic counts collected at each location are provided in the following pages, using the same order shown in the graphs above.

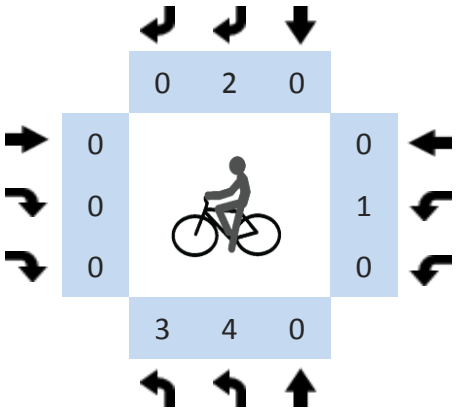
LOCATION: SW CENTURY DRIVE/SW COLORADO AVENUE (ID 770)

Functional Classification: Minor Arterial/ Minor Arterial
Cross-Section: Bicycle lanes on SW Century Drive and east leg of SW Colorado Avenue; Drive, sidewalks/trails on all roadways
Traffic Control: Roundabout
Source: Turning Movement Counts
Date: Tuesday, May 17, 2016, 3:30-5:30 p.m.
Peak Hour: 3:30-4:30 p.m.

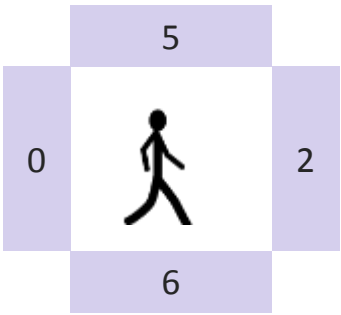
Vehicles and Heavy Vehicles Percentage:

	SB	6%	1%	4%	SB	
EB		31	233	79		WB
1%	142	SW Century Drive/			28	0%
5%	265	SW Colorado Avenue			177	7%
1%	140	5/17/2016, 3:30-4:30 p.m.			122	3%
EB		92	293	128		WB
	NB	1%	3%	7%	NB	

Bicyclists:



Pedestrians:



LOCATION: NW WALL STREET/NW GREENWOOD AVENUE (NOT ON MAP)

Functional Classification: Minor Arterial/ Minor Arterial
Cross-Section: Sidewalks on all roadways
Traffic Control: Signal
Source: Turning Movement Counts
Date: Tuesday, July 19, 2016; 7:00-9:00 a.m., 11:00 a.m.-1:00 p.m., and 4:00-6:00 p.m.
Peak Hours: 7:55-8:55 a.m., 11:55 a.m.-12:55 p.m.; 5:00-6:00 p.m.

Weekday Morning Peak Hour:

Vehicles and Heavy Vehicles Percentage:

	SB	1%	7%	0%	SB	
EB		88	185	61		WB
6%	97	NW Wall Street/			11	0%
5%	349	NW Greenwood Avenue			354	8%
2%	90	7/19/2016, 7:55-8:55 a.m.			113	6%
EB		0	0	0		WB
	NB	0%	0%	0%	NB	

Bicyclists:

		1	8	1		
	2				0	
	3				6	
	5				2	
		0	0	0		

Pedestrians:

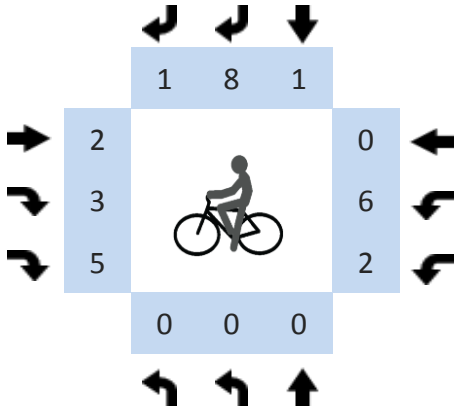
	7	
11		8
	6	

Weekday Midday Peak Hour:

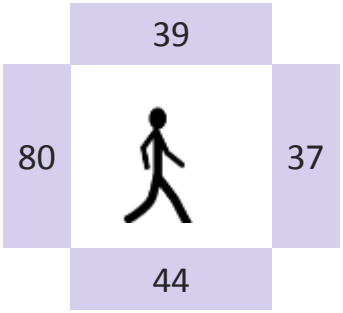
Vehicles and Heavy Vehicles Percentage:

	SB	2%	1%	9%	SB	
EB		163	133	194		WB
3%	164	NW Wall Street/			23	0%
4%	471	NW Greenwood Avenue			471	3%
3%	174	7/19/2016, 11:55a.m.-12:55 p.m.			232	2%
EB		0	0	0		WB
	NB	0%	0%	0%	NB	

Bicyclists:



Pedestrians:

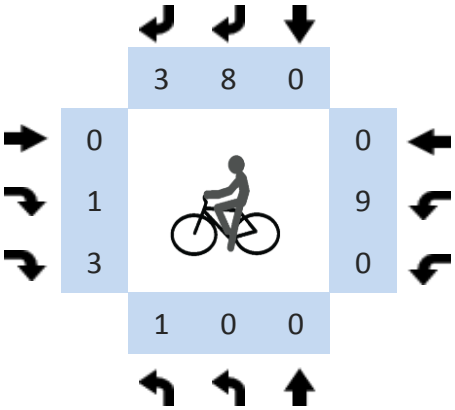


Weekday Evening Peak Hour:

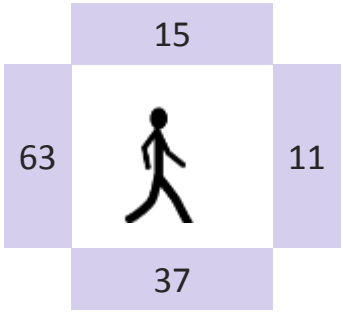
Vehicles and Heavy Vehicles Percentage:

	SB	2%	0%	2%	SB	
EB		153	339	87		WB
2%	129	NW Wall Street/			18	0%
3%	360	NW Greenwood Avenue			548	1%
1%	153	7/19/2016, 5:00-6:00 p.m.			229	0%
EB		0	0	0		WB
	NB	0%	0%	0%	NB	

Bicyclists:



Pedestrians:



LOCATION: NW BOND STREET/NW GREENWOOD AVENUE (NOT ON MAP)

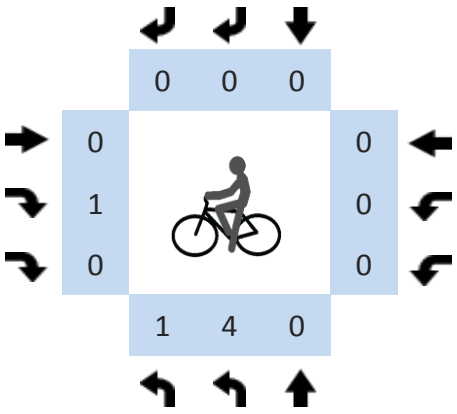
Functional Classification: Minor Arterial/ Minor Arterial
Cross-Section: Sidewalks on all roadways
Traffic Control: Signal
Source: Turning Movement Counts
Date: Tuesday, July 19, 2016; 7:00-9:00 a.m., 11:00 a.m.-1:00 p.m., and 4:00-6:00 p.m.
Peak Hours: 7:55-8:55 a.m., 11:55 a.m.-12:55 p.m.; 5:00-6:00 p.m.

Weekday Morning Peak Hour:

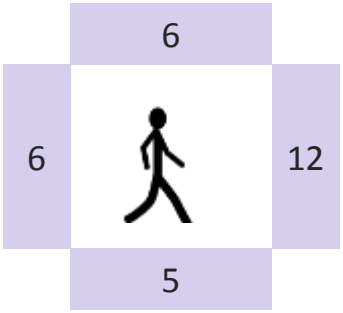
Vehicles and Heavy Vehicles Percentage:

	SB	0%		0%		0%	SB	
EB		0		0		0		WB
0%	19	NW Bond Street/					33	3%
5%	397	NW Greenwood Avenue					391	7%
0%	0	7/19/2016, 7:55-8:55 a.m.					0	0%
EB		96		144		111		WB
	NB	10%		3%		4%	NB	

Bicyclists:



Pedestrians:

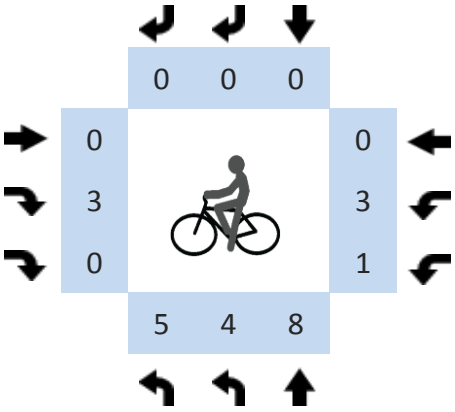


Weekday Midday Peak Hour:

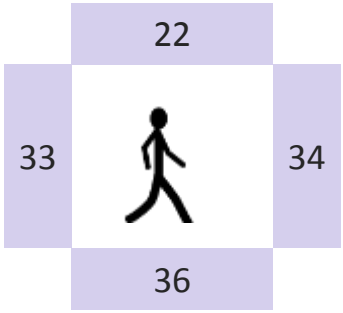
Vehicles and Heavy Vehicles Percentage:

	SB	0%	0%	0%	SB		
EB		0	0	0		WB	
0%	17	NW Bond Street/			40	5%	
4%	553	NW Greenwood Avenue			513	3%	
0%	0	7/19/2016, 11:55a.m.-12:55 p.m.			0	0%	
EB		205	265	208		WB	
	NB	2%	2%	2%	NB		

Bicyclists:



Pedestrians:

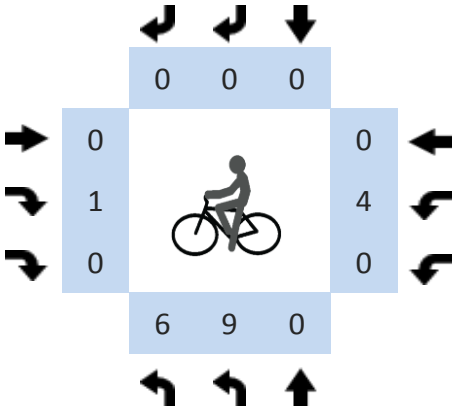


Weekday Evening Peak Hour:

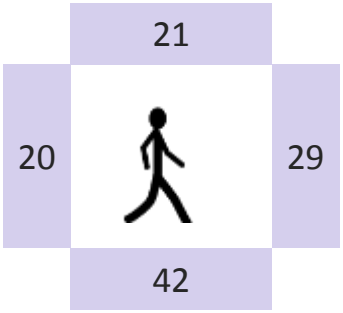
Vehicles and Heavy Vehicles Percentage:

	SB	0%		0%		0%	SB	
EB		0		0		0		WB
9%	11	NW Bond Street/					25	0%
3%	447	NW Greenwood Avenue					577	1%
0%	0	7/19/2016, 5:00-6:00 p.m.					0	0%
EB		239		267		211		WB
	NB	1%		1%		0%	NB	

Bicyclists:



Pedestrians:



LOCATION: NW WALL STREET/NW OREGON AVENUE (NOT ON MAP)

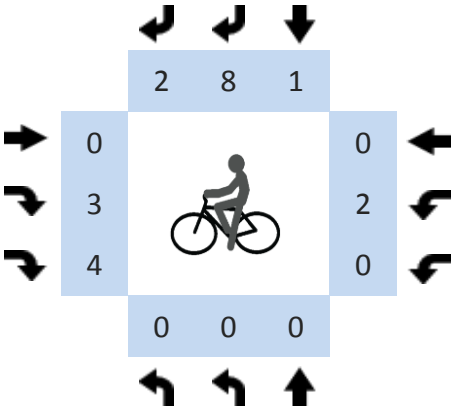
Functional Classification: Minor Arterial/ Major Collector
Cross-Section: Sidewalks on all roadways
Traffic Control: Signal
Source: Turning Movement Counts
Date: Tuesday, July 19, 2016; 7:00-9:00 a.m., 11:00 a.m.-1:00 p.m., and 4:00-6:00 p.m.
Peak Hours: 8:00-9:00 a.m., 12:00-1:00 p.m.; 4:40-5:40 p.m.

Weekday Morning Peak Hour:

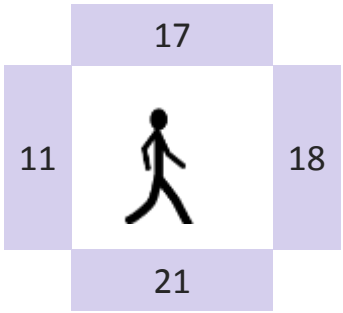
Vehicles and Heavy Vehicles Percentage:

	SB	0%	5%	2%	SB		
EB		14	317	50			WB
0%	0	NW Wall Street/			0		0%
21%	19	NW Oregon Avenue			22		0%
4%	23	7/19/2016, 8:00-9:00 a.m.			46		0%
EB		0	0	0			WB
	NB	0%	0%	0%	NB		

Bicyclists:



Pedestrians:

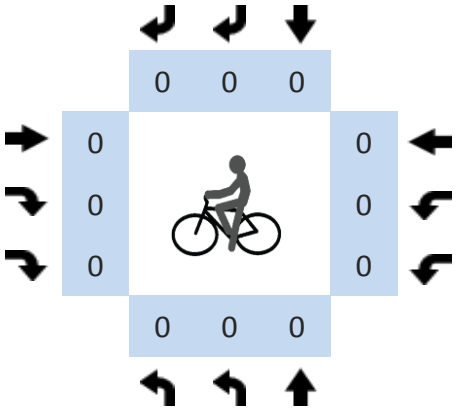


Weekday Midday Peak Hour:

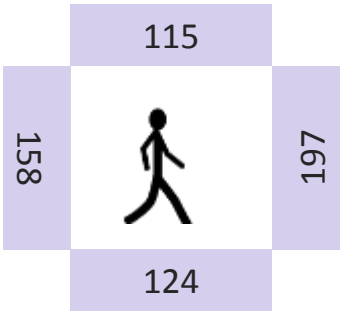
Vehicles and Heavy Vehicles Percentage:

	SB	7%	3%	0%	SB		
EB		54	608	105			WB
0%	0	NW Wall Street/			0		0%
13%	30	NW Oregon Avenue			61		7%
0%	30	7/19/2016, 12:00-1:00 p.m.			168		1%
EB		0	0	0			WB
	NB	0%	0%	0%	NB		

Bicyclists:



Pedestrians:



Weekday Evening Peak Hour:

Vehicles and Heavy Vehicles Percentage:

	SB	0%	1%	0%	SB		
EB		63	602	84			WB
0%	0	NW Wall Street/			0		0%
0%	43	NW Oregon Avenue			63		0%
0%	65	7/19/2016, 4:40-5:40 p.m.			152		1%
EB		0	0	0			WB
	NB	0%	0%	0%	NB		

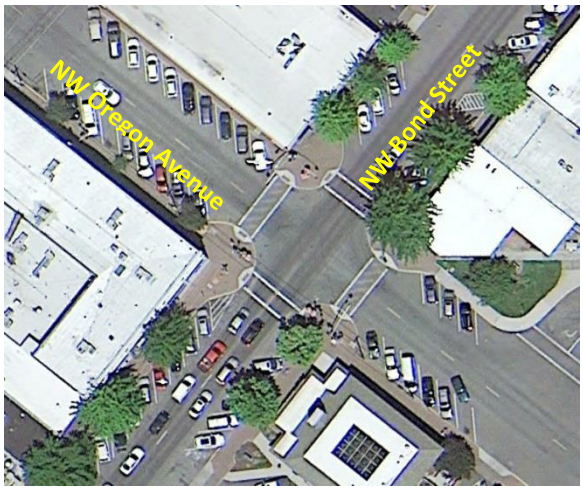
Bicyclists:

		2	5	1			
0	0				0		
0	0				8		
0	0				1		
		0	0	0			

Pedestrians:

		187					
157						128	
		166					

LOCATION: NW BOND STREET/NW OREGON AVENUE (NOT ON MAP)



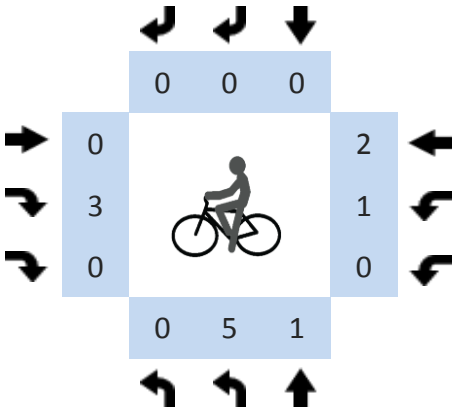
Functional Classification: Minor Arterial/ Major Collector
Cross-Section: Sidewalks on all roadways
Traffic Control: Signal
Source: Turning Movement Counts
Date: Tuesday, July 19, 2016; 7:00-9:00 a.m., 11:00 a.m.-1:00 p.m., and 4:00-6:00 p.m.
Peak Hours: 8:00-9:00 a.m., 12:00-1:00 p.m.; 4:40-5:40 p.m.

Weekday Morning Peak Hour:

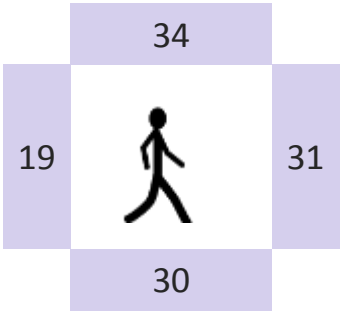
Vehicles and Heavy Vehicles Percentage:

	SB	0%		0%		0%	SB	
EB		0		0		0		WB
14%	21	NW Bond Street/					32	3%
2%	48	NW Oregon Avenue					29	0%
0%	0	7/19/2016, 8:00-9:00 a.m.					0	0%
EB		41		324		43		WB
	NB	2%		5%		2%	NB	

Bicyclists:



Pedestrians:

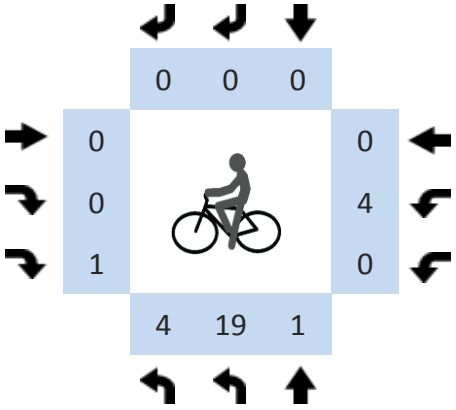


Weekday Midday Peak Hour:

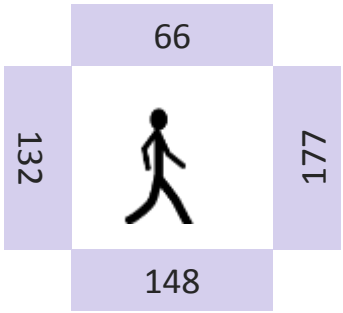
Vehicles and Heavy Vehicles Percentage:

	SB	0%	0%	0%	SB			
EB		0	0	0		WB		
0%	70	NW Bond Street/			125	2%		
3%	101	NW Oregon Avenue			78	3%		
0%	0	7/19/2016, 12:00-1:00 p.m.			0	0%		
EB		135	522	102		WB		
	NB	0%	2%	1%	NB			

Bicyclists:



Pedestrians:

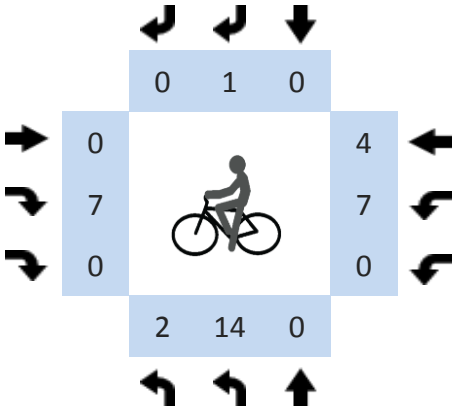


Weekday Evening Peak Hour:

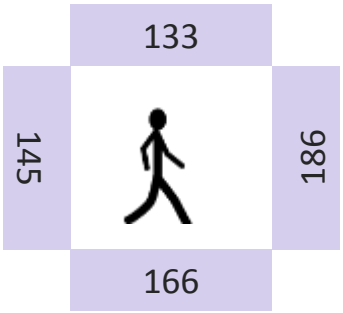
Vehicles and Heavy Vehicles Percentage:

	SB	0%		0%		0%	SB	
EB		0		0		0		WB
1%	79	NW Bond Street/				179	0%	
1%	88	NW Oregon Avenue				89	1%	
0%	0	7/19/2016, 4:40-5:40 p.m.				0	0%	
EB		116		500		69		WB
	NB	1%		1%		1%	NB	

Bicyclists:



Pedestrians:



LOCATION: NW WALL STREET/NW FRANKLIN AVENUE (ID 764)

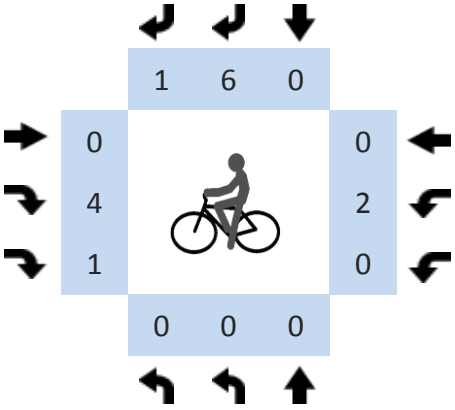
Functional Classification: Major Collector/Minor Arterial (Wall Street transitions at Franklin)/ Minor Arterial
Cross-Section: Sidewalks on all roadways, sharrows on westbound NW Franklin Avenue and bike lane at eastbound NW Franklin Avenue at intersection
Traffic Control: Signal
Source: Turning Movement Counts
Date: Tuesday, July 19, 2016; 7:00-9:00 a.m., 11:00 a.m.-1:00 p.m., and 4:00-6:00 p.m.
Peak Hours: 7:55-8:55 a.m., 11:55 a.m.-12:55 p.m.; 4:40-5:40 p.m.

Weekday Morning Peak Hour:

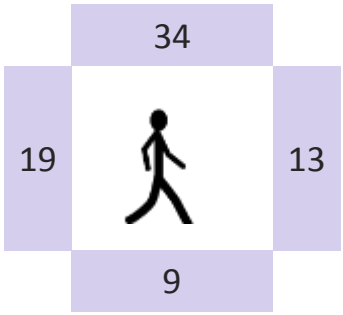
Vehicles and Heavy Vehicles Percentage:

	SB	8%	4%	1%	SB	
EB		77	198	85		WB
0%	0	NW Wall Street/			0	0%
3%	260	NW Franklin Avenue			211	5%
0%	10	7/19/2016, 7:55-8:55 a.m.			114	4%
EB		0	0	0		WB
	NB	0%	0%	0%	NB	

Bicyclists:



Pedestrians:

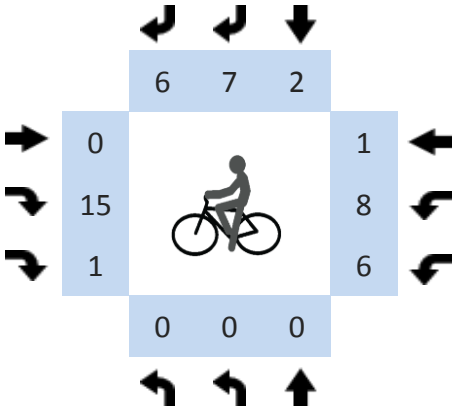


Weekday Midday Peak Hour:

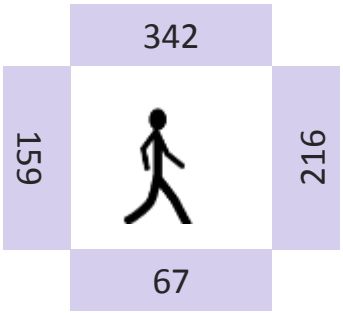
Vehicles and Heavy Vehicles Percentage:

	SB	1%	3%	2%	SB		
EB		207	356	151		WB	
0%	0	NW Wall Street/			0	0%	
5%	390	NW Franklin Avenue			311	4%	
0%	31	7/19/2016, 11:55a.m.-12:55 p.m.			154	4%	
EB		0	0	0		WB	
	NB	0%	0%	0%	NB		

Bicyclists:



Pedestrians:

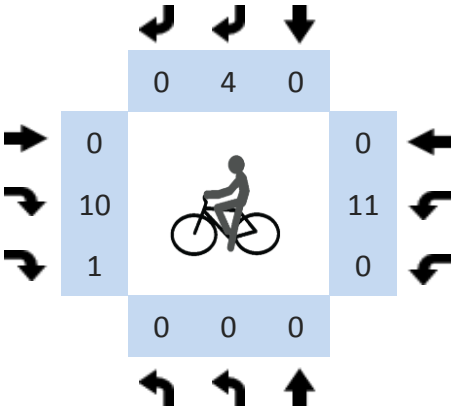


Weekday Evening Peak Hour:

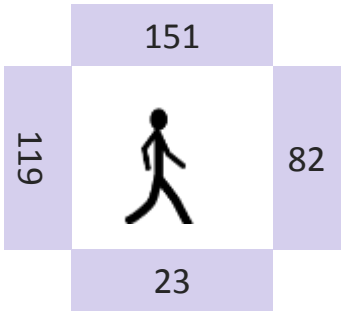
Vehicles and Heavy Vehicles Percentage:

	SB	2%	1%	0%	SB	
EB		237	392	131		WB
0%	0	NW Wall Street/			0	0%
2%	388	NW Franklin Avenue			366	1%
0%	30	7/19/2016, 4:40-5:40 p.m.			151	1%
EB		0	0	0		WB
	NB	0%	0%	0%	NB	

Bicyclists:



Pedestrians:



LOCATION: NW BOND STREET/NW FRANKLIN AVENUE (ID 765)

Functional Classification: Major Collector/Minor Arterial (Bond Street transitions at Franklin)/ Minor Arterial
Cross-Section: Sidewalks on all roadways, sharrows on NW Franklin Avenue at intersection
Traffic Control: Signal
Source: Turning Movement Counts
Date: Tuesday, July 19, 2016; 7:00-9:00 a.m., 11:00 a.m.-1:00 p.m., and 4:00-6:00 p.m.
Peak Hours: 7:55-8:55 a.m., 11:55 a.m.-12:55 p.m.; 4:40-5:40 p.m.

Weekday Morning Peak Hour:

Vehicles and Heavy Vehicles Percentage:

	SB	0%		0%		0%	SB		
EB		0		0		0			WB
4%	107			NW Bond Street/			70		6%
2%	234			NW Franklin Avenue			290		5%
0%	0			7/19/2016, 7:55-8:55 a.m.			0		0%
EB			52		258	128			WB
	NB	0%		3%		4%	NB		

Bicyclists:

		0	0	0				
0						0		
1						2		
0						0		
		0	6	2				

Pedestrians:

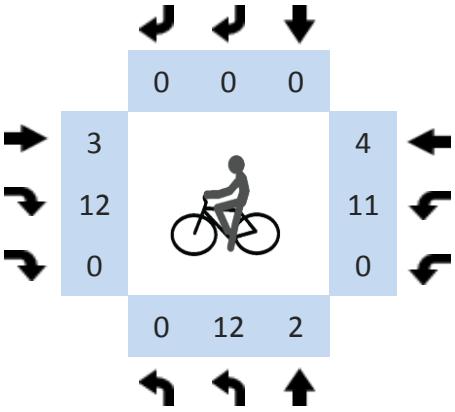
	21	
1		56
	5	

Weekday Midday Peak Hour:

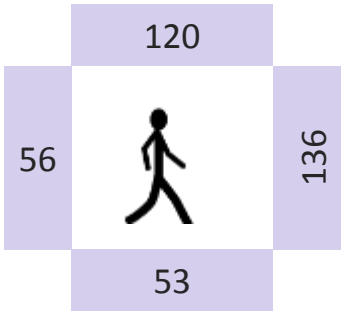
Vehicles and Heavy Vehicles Percentage:

	SB	0%	0%	0%	SB		
EB		0	0	0		WB	
1%	187	NW Bond Street/			134	1%	
6%	346	NW Franklin Avenue			399	4%	
0%	0	7/19/2016, 11:55a.m.-12:55 p.m.			0	0%	
EB		79	444	191		WB	
	NB	1%	2%	3%	NB		

Bicyclists:



Pedestrians:

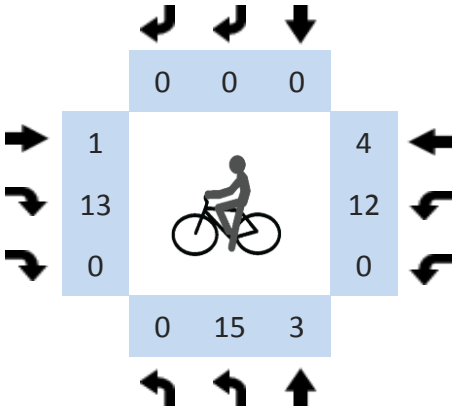


Weekday Evening Peak Hour:

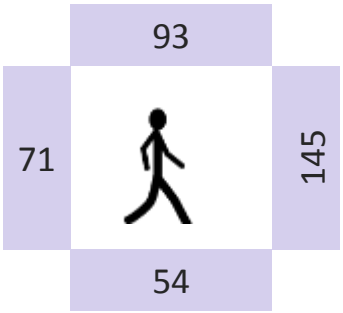
Vehicles and Heavy Vehicles Percentage:

	SB	0%		0%		0%	SB	
EB		0		0		0		WB
0%	180	NW Bond Street/					106	2%
3%	335	NW Franklin Avenue					443	1%
0%	0	7/19/2016, 4:40-5:40 p.m.					0	0%
EB		67		434		191		WB
	NB	1%		1%		2%	NB	

Bicyclists:



Pedestrians:

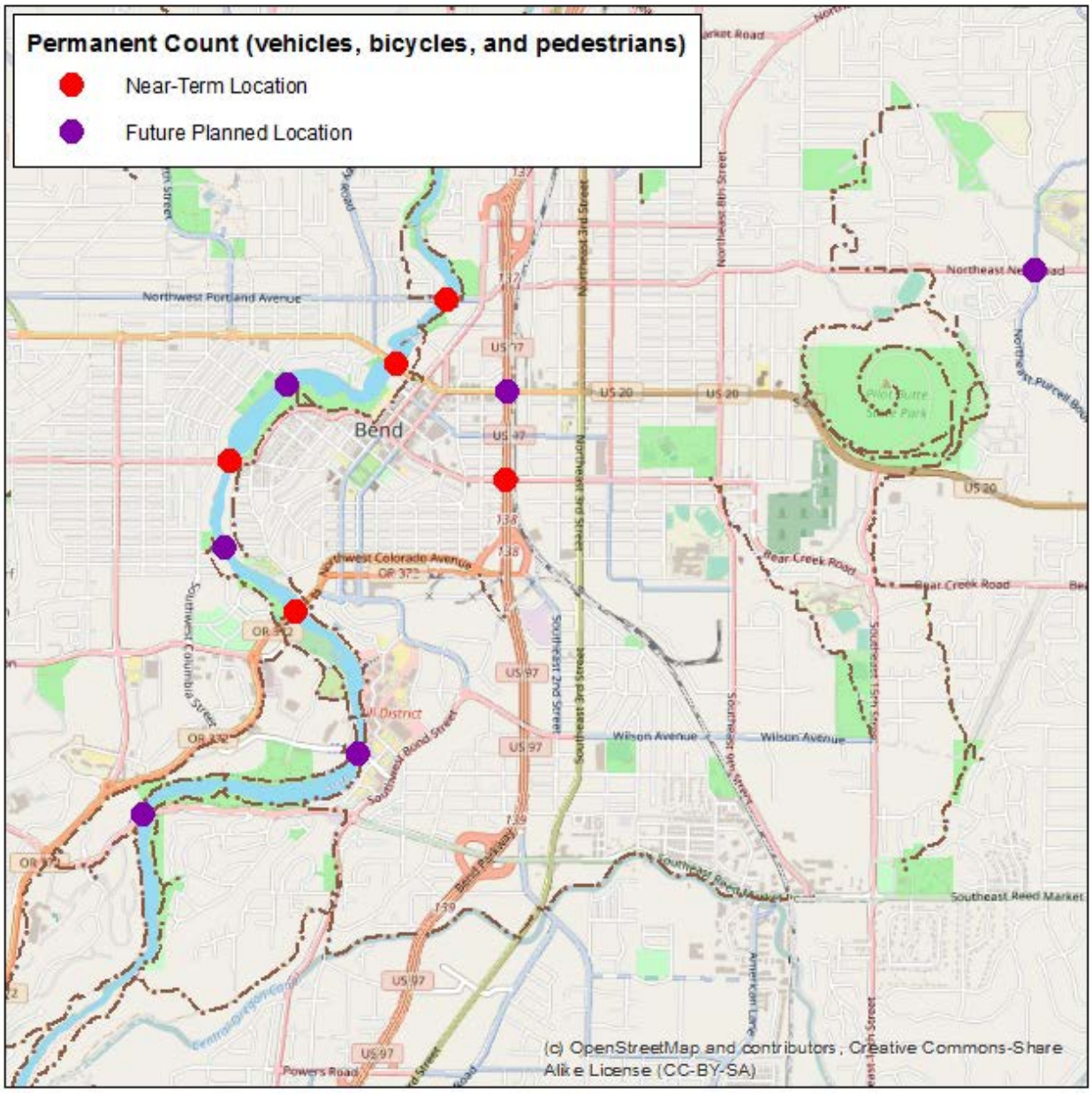


Chapter 5: Mode Split

MODE SPLIT

Permanent counters will be installed in 2017 at the near-term locations shown in Exhibit 5-1. The future planned locations indicate locations where there is interest in establishing a permanent count station in the future when funding becomes available.

Exhibit 5-1. Permanent Count Locations

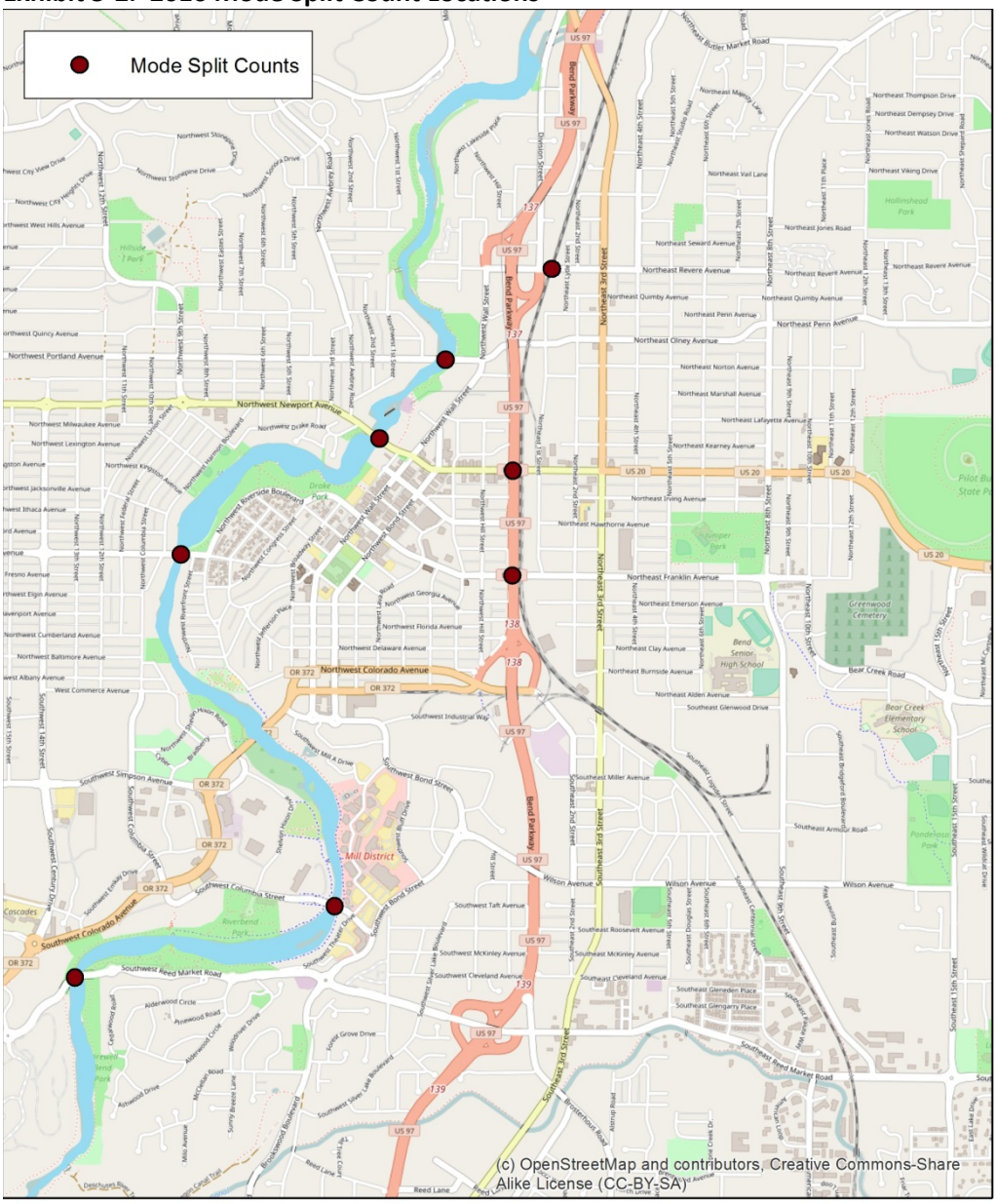


In future reports, these counters will provide mode split data at key locations.

In the 2016 data collection, vehicle, bicycle and pedestrian data was collected at eight locations for the weekday afternoon peak hours (3:30-5:30 p.m.). While in the future permanent counters will provide a

more comprehensive look at multimodal data, the 2016 data provides a limited perspective at these locations, shown in Exhibit 5-2.

Exhibit 5-2. 2016 Mode Split Count Locations



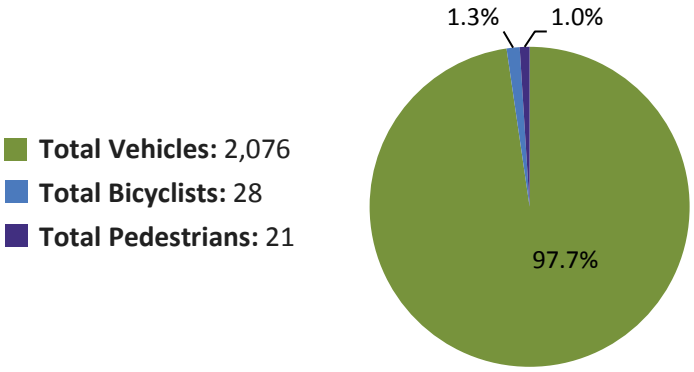
The following pages provide a summary of the vehicle, bicycle and pedestrian data collected at these locations.

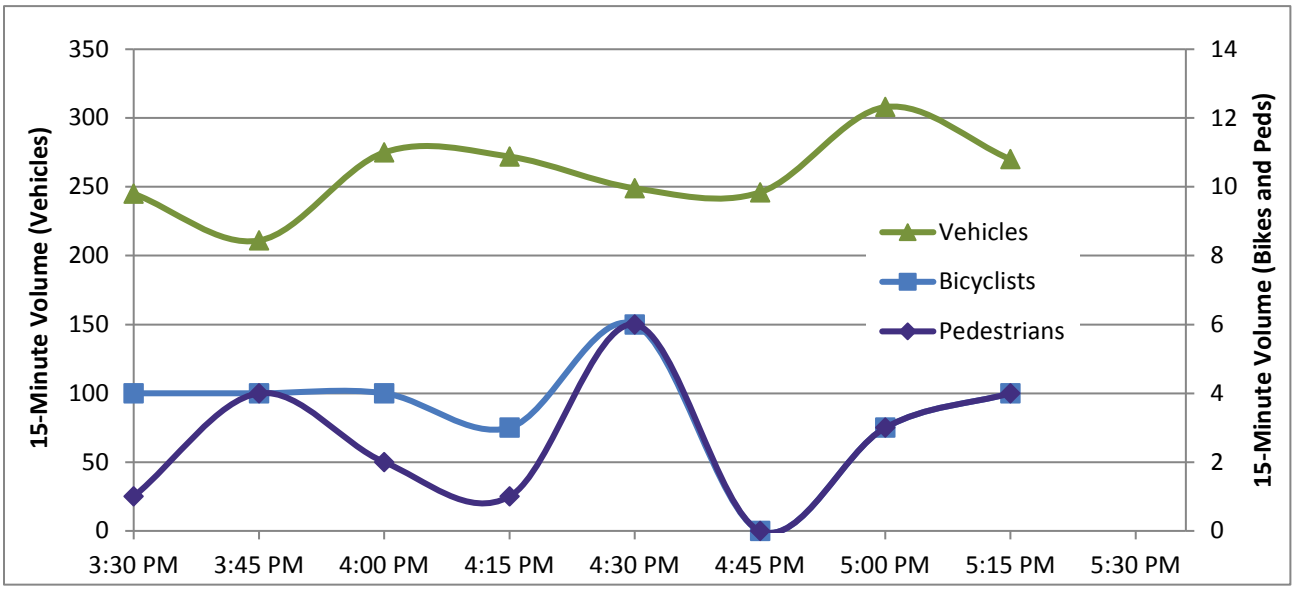
LOCATION: NW PORTLAND AVENUE, DESCHUTES RIVER BRIDGE (ID 751)

Functional Classification: Major Collector
Cross-Section: Two vehicle lanes, bike lanes, sidewalks
Source: Video data and tube counts

Source: Google Earth

Date: Tuesday, May 17, 2016 (bike and peds) and Thursday, May 19, 2016 (vehicles)



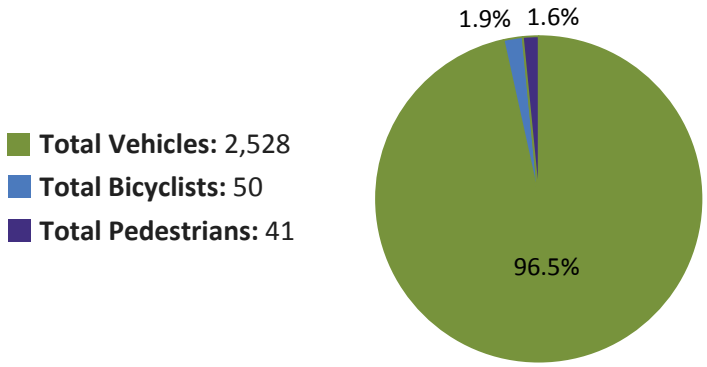


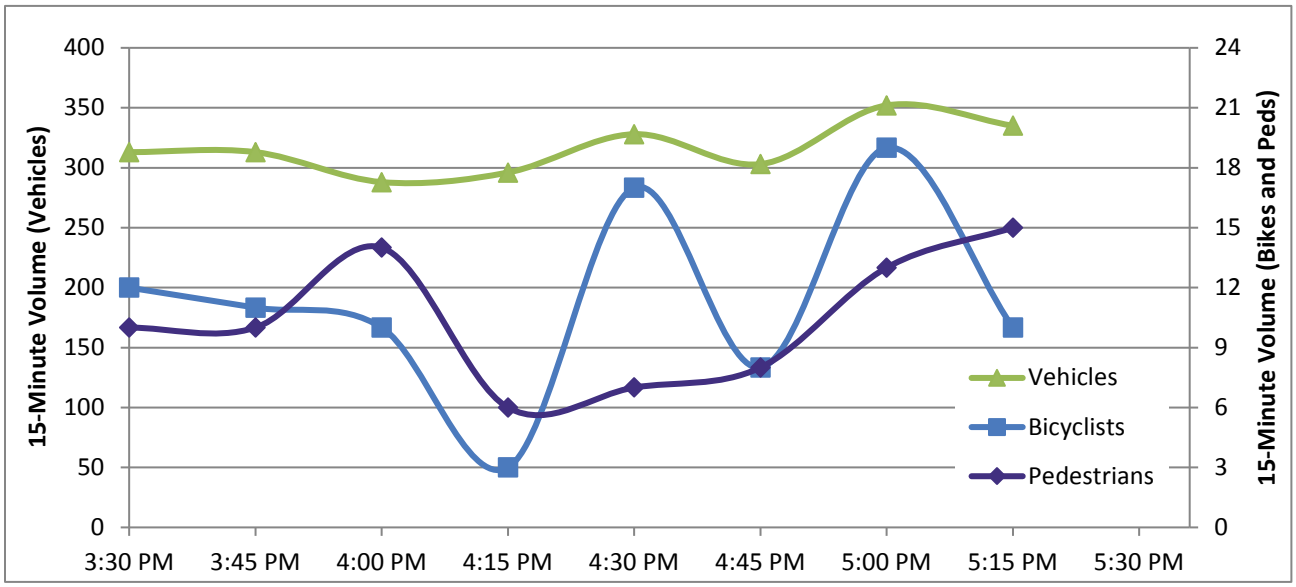
LOCATION: NEWPORT AVENUE, DESCHUTES RIVER BRIDGE (ID 361)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks
Source: Video data and tube counts

Source: Google Earth

Date: Tuesday, May 17, 2016 (bike and peds) and Thursday, May 19, 2016 (vehicles)



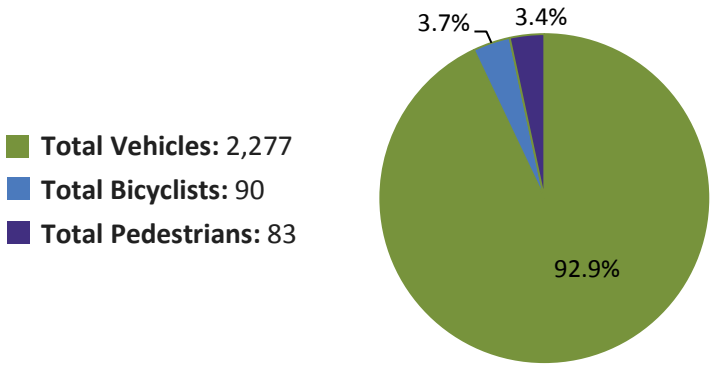


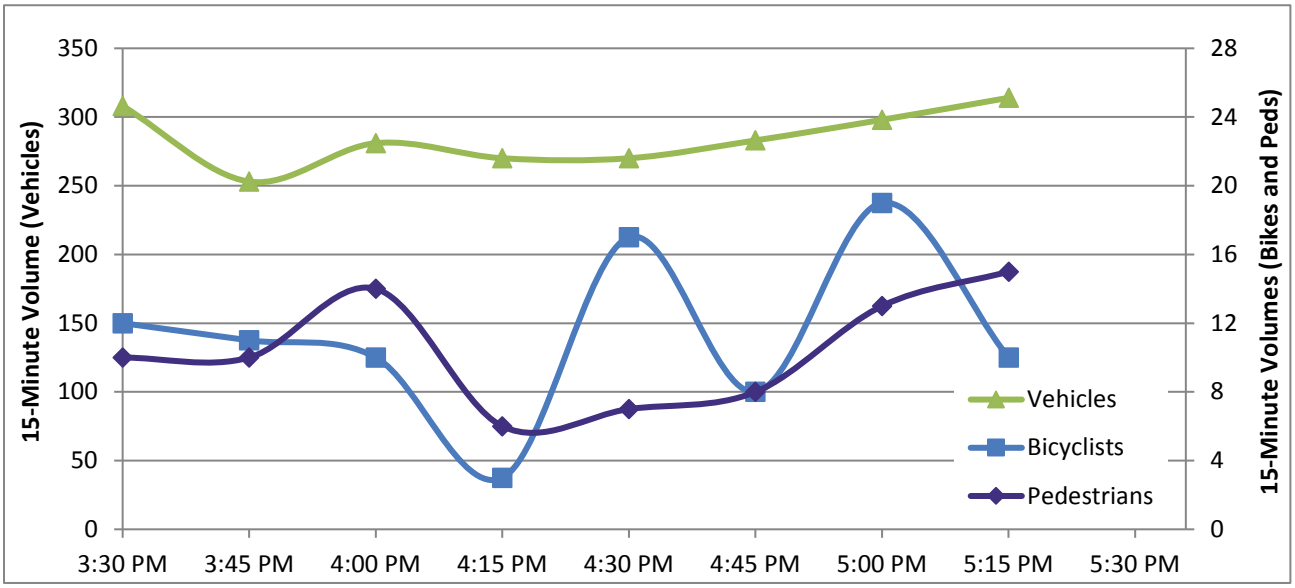
LOCATION: SW GALVESTON AVENUE, DESCHUTES RIVER BRIDGE (ID 267)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, bike lanes, sidewalks
Source: Video data and tube counts

Source: Google Earth

Date: Tuesday, May 17, 2016 (bike, peds and vehicles)



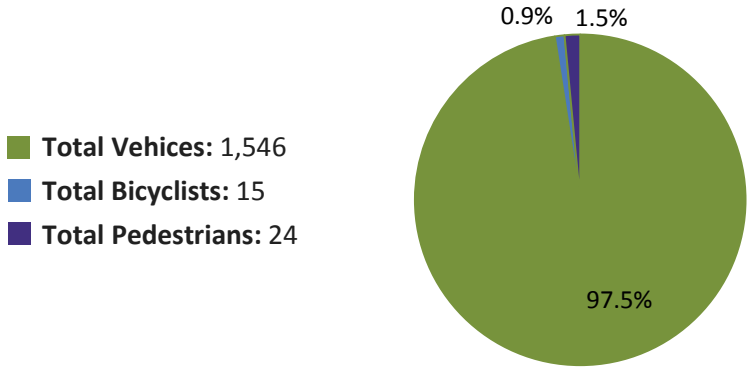


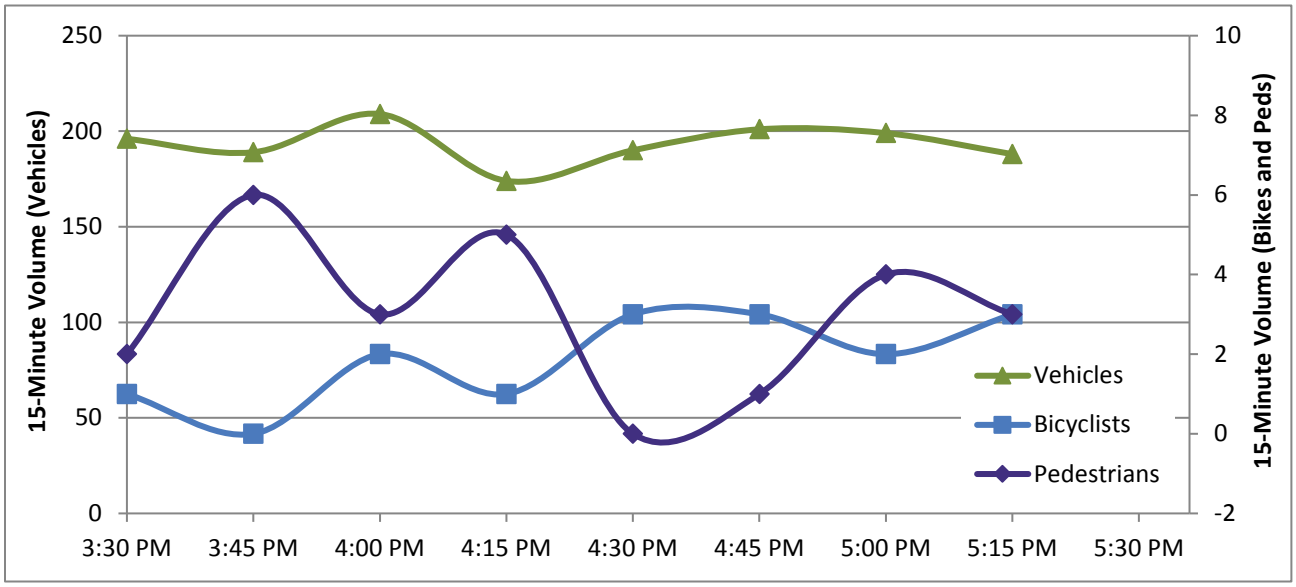
LOCATION: SW COLUMBIA STREET, DESCHUTES RIVER BRIDGE (ID 750)

Functional Classification: Local
Cross-Section: Two vehicle lanes, sidewalks
Source: Video data and tube counts

Source: Google Earth

Date: Tuesday, May 17, 2016 (bike, peds and vehicles)



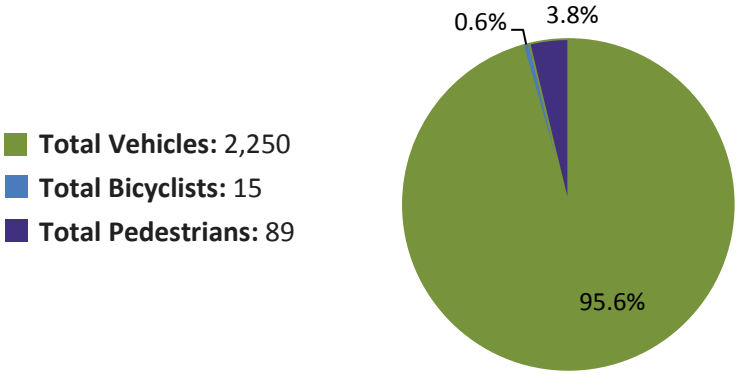


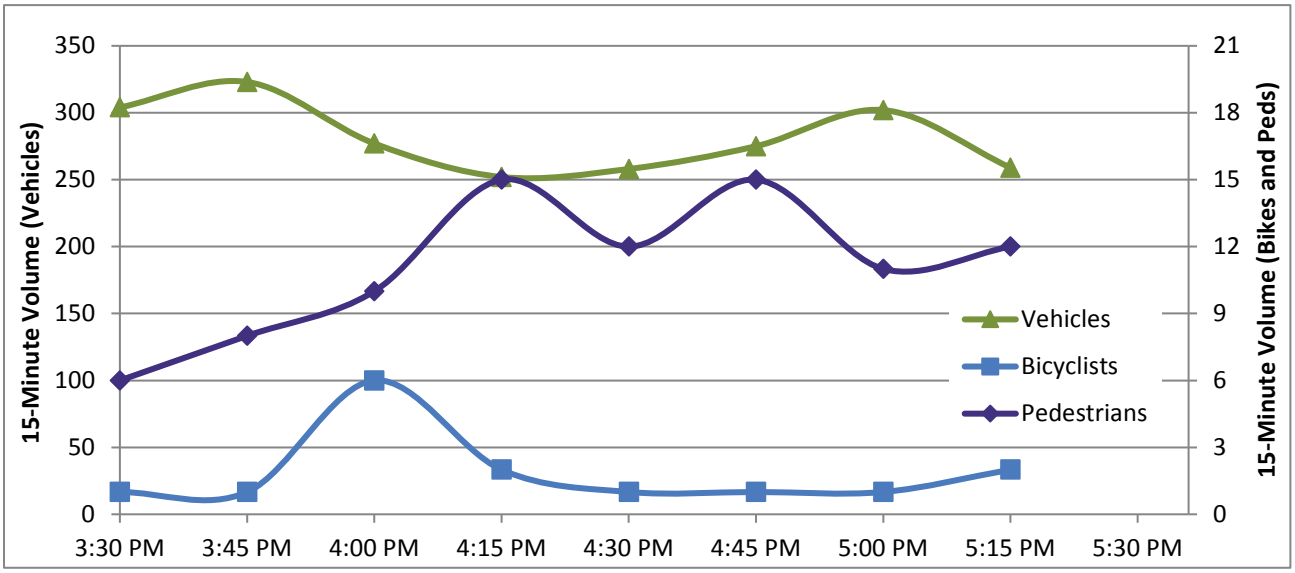
LOCATION: REED MARKET ROAD, DESCHUTES RIVER BRIDGE (ID 423)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes, raised median, bike lanes, sidewalks
Source: Video data and tube counts

Source: Google Earth

Date: Tuesday, May 17, 2016 (bike and peds) and Thursday, May 19, 2016 (vehicles)



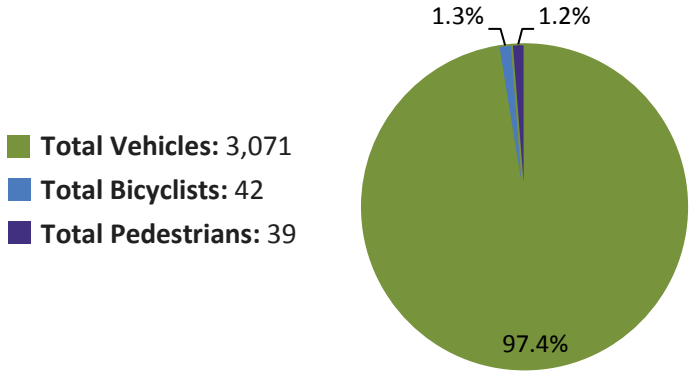


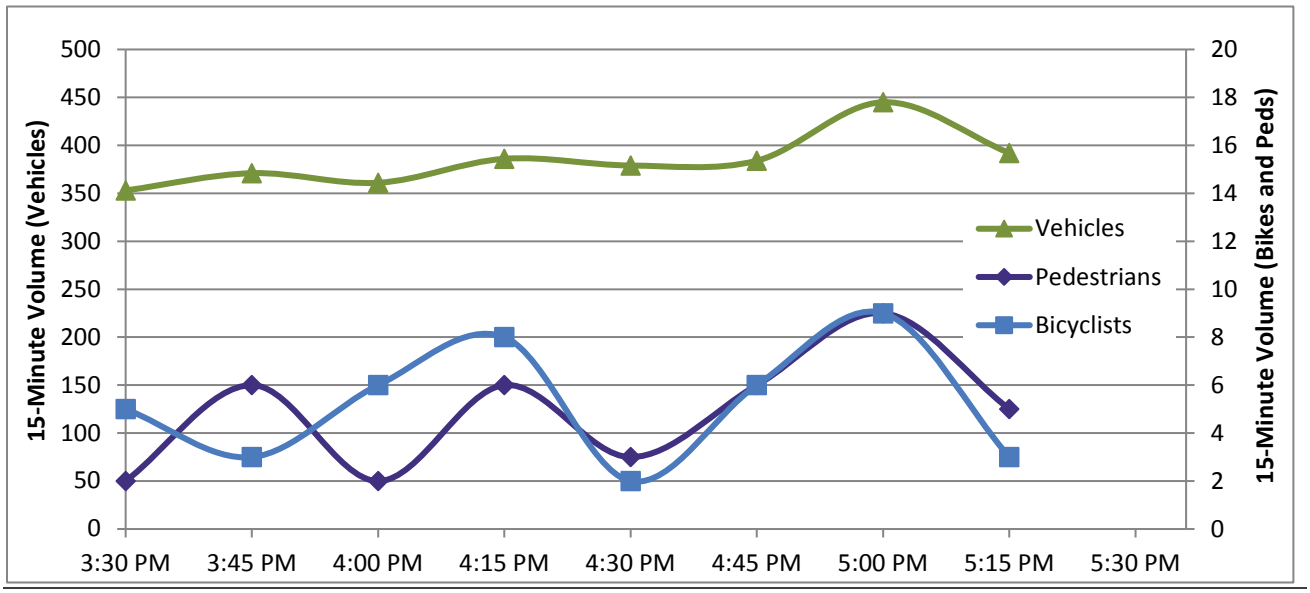
LOCATION: GREENWOOD AVENUE, PARKWAY UNDERCROSSING (ID 324)

Functional Classification: Minor Arterial
Cross-Section: Four vehicle lanes with separated bike/pedestrian path on either side
Source: Video data and tube counts

Source: Google Earth

Date: Tuesday, May 17, 2016 (bike and peds) and Thursday, May 19, 2016 (vehicles)



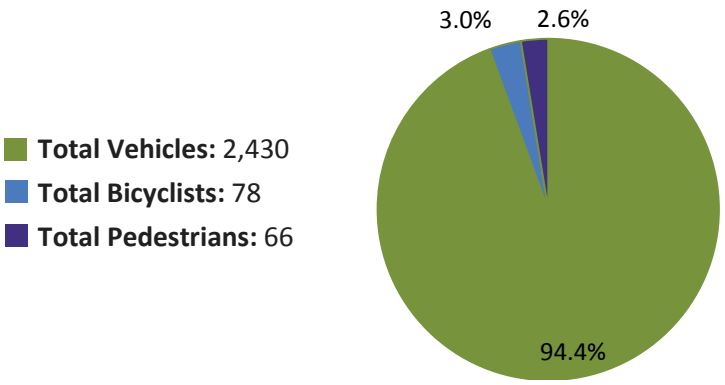


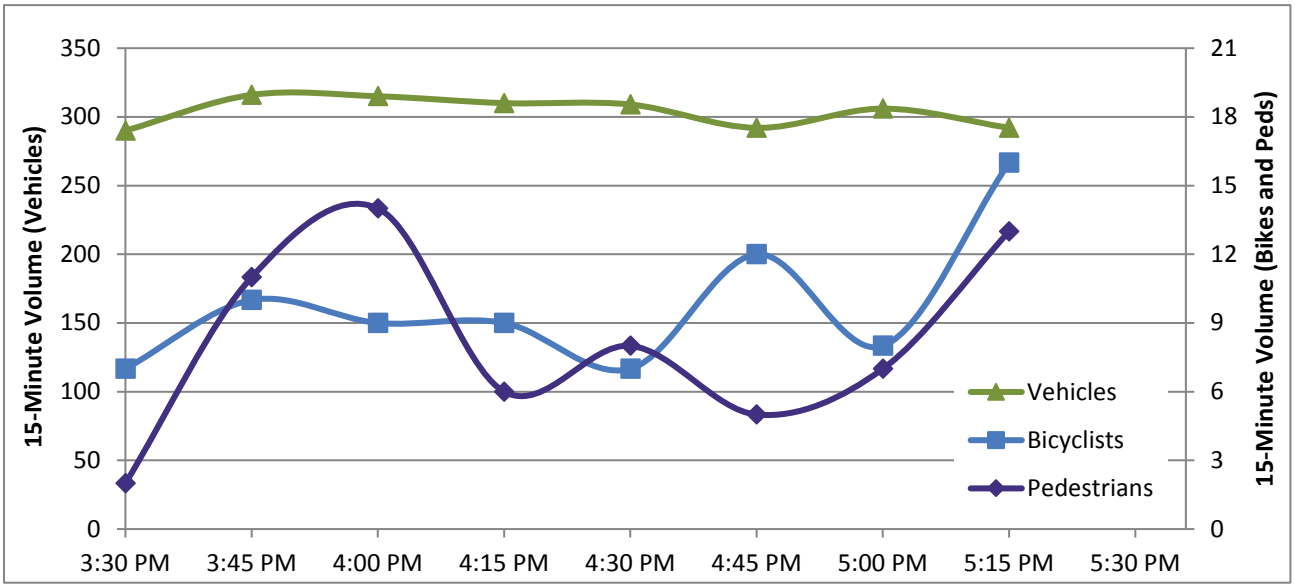
LOCATION: FRANKLIN AVENUE, PARKWAY UNDERCROSSING (ID 794)

Functional Classification: Minor Arterial
Cross-Section: Two vehicle lanes with separated bike/pedestrian path on either side
Source: Video data and tube counts

Source: Google Earth

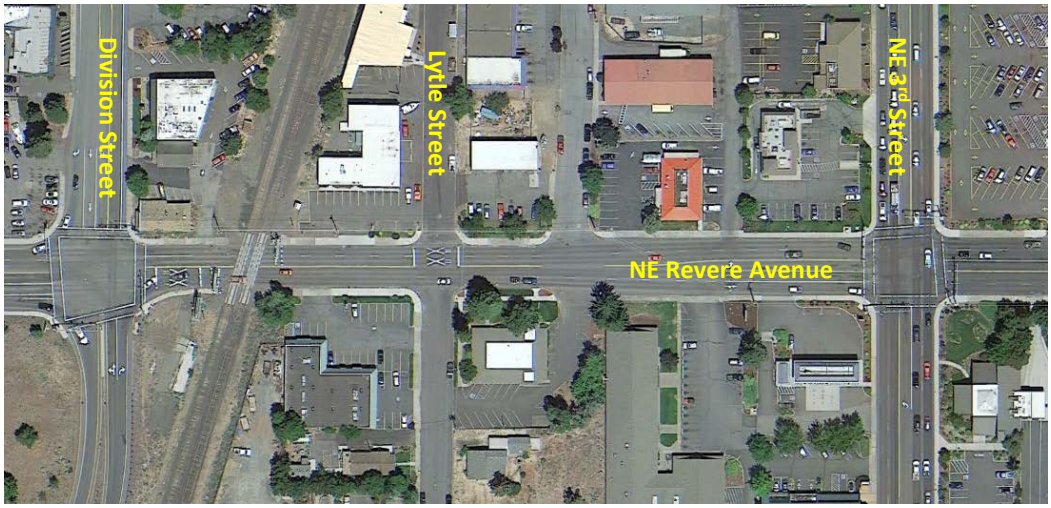
Date: Tuesday, May 17, 2016 (bike and peds) and Thursday, May 19, 2016 (vehicles)





LOCATION: NE REVERE AVENUE, EAST OF DIVISION STREET (ID 793)

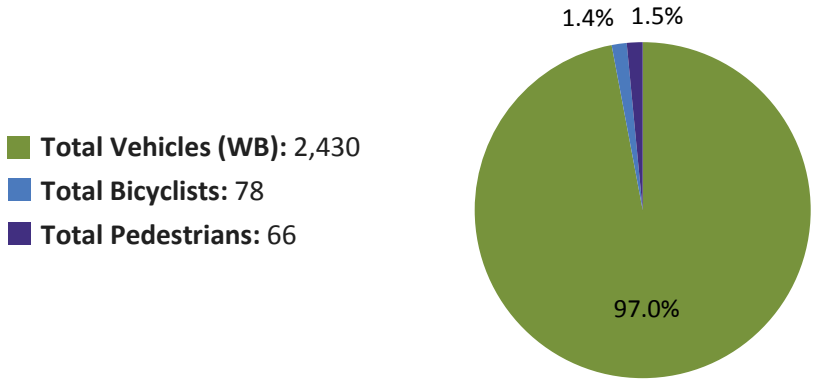
Functional Classification: Minor Arterial
Cross-Section: Four vehicle lanes, sidewalks
Source: Video data and tube counts

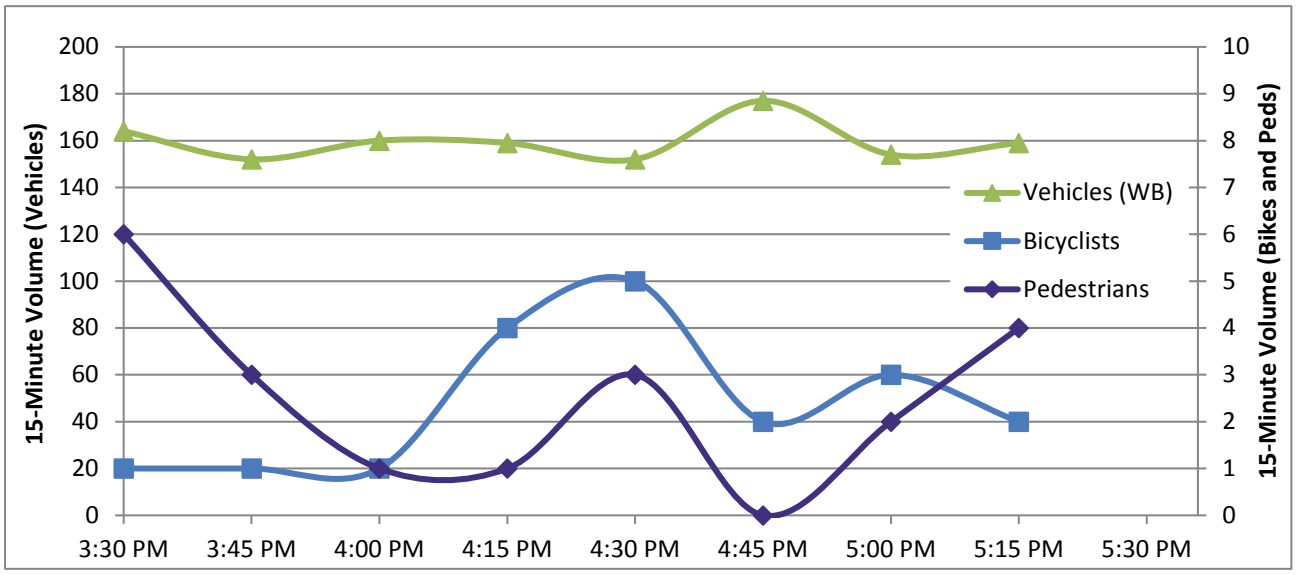


Source: Google Earth

Note: bike/ped count collected at rail crossing, vehicle count collected farther east past Lytle Street

Date: Tuesday, May 17, 2016 (bike and peds) and Thursday, May 19, 2016 (vehicles)





Chapter 6: ODOT Vehicle Data

ODOT VEHICLE DATA

The Oregon Department of Transportation (ODOT) has several permanent counters in Bend on ODOT roadways that show historical data. ODOT collects continuous data statewide through Automated Traffic Recorder (ATR) or Counters. ATRs are placed at specific locations to record the distribution and variation of traffic flow by hour of the day, day of the week, and/or month of the year. The data is provided on ODOT's website online. In the Bend area, there are 6 count stations that collect traffic data continuously (see Exhibit 6-1 for a map of locations). This data is presented below in Figures 6-10. The data presented is the average daily traffic (ADT) for each month.

Exhibit 6-1. ODOT ATR Locations in the Bend Area

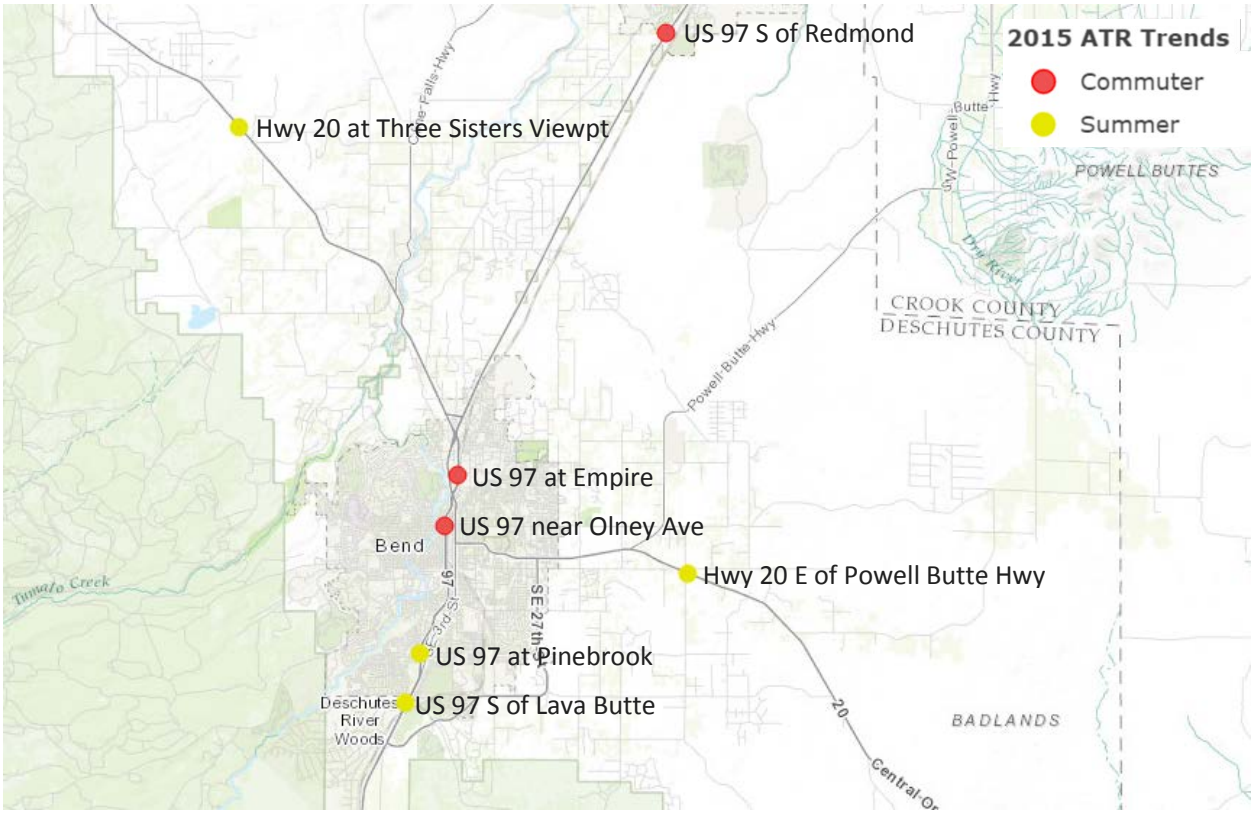


Table 6-1 shows the growth in volumes from 2015 to 2016 at each ATR location.

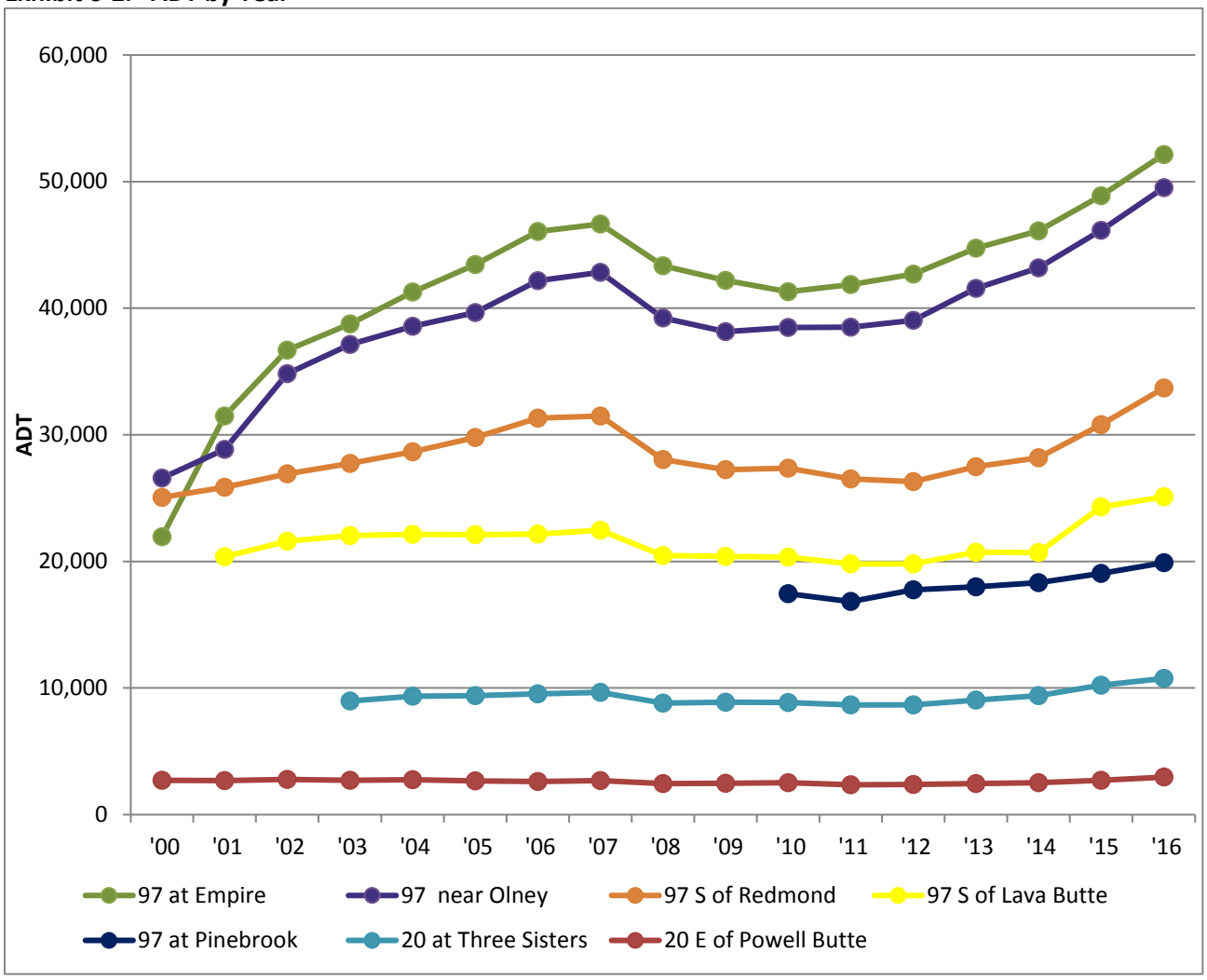
Table 6-1.ADT Data by ATR Location

Location	2015 ADT	2016 ADT	Growth
09-003: US 97 S of Lava Butte	24,300	25,097	3.3%
09-005: Hwy 20 E of Powell Butte Hwy	2,703	2,961	9.5%
09-007: US 97 at Empire	48,885	52,144	6.7%
09-009: US 97 near Olney Avenue	46,158	49,523	7.3%
09-015: Hwy 20 at Three Sisters Viewpont	10,224	10,755	5.2%
09-020: US 97 S of Redmond	30,800	33,693	9.4%
09-025: US 97 at Pinebrook	19,059	19,899	5.5%

As seen in the table, volumes at all locations grew by at least 3% between 2015 and 2016.

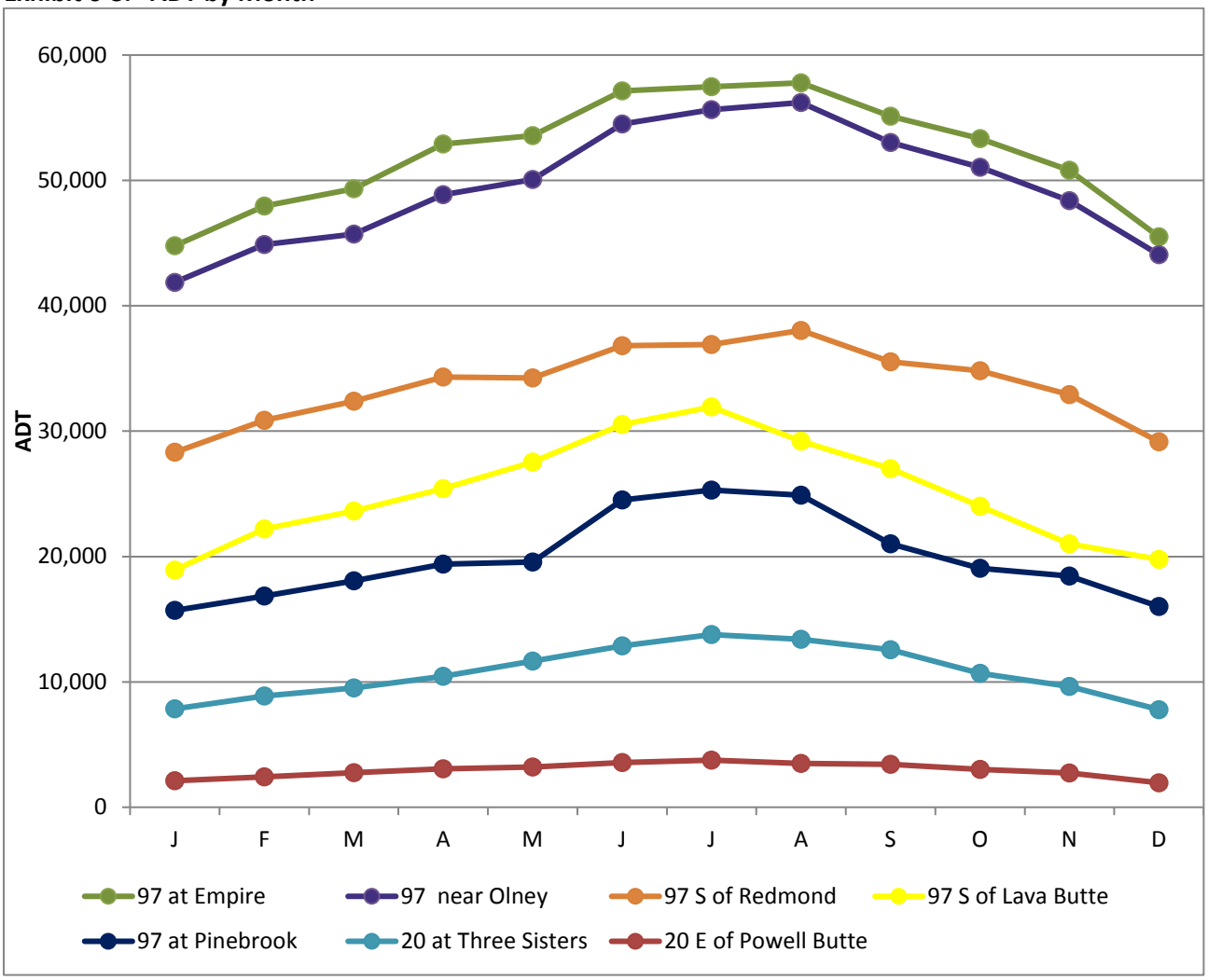
Exhibit 6-2 summarizes the ADT by year at each of the ATR locations in and around Bend.

Exhibit 6-2. ADT by Year



As seen in the exhibit, all locations experienced a dip in traffic between 2007 and 2008, with most locations seeing a steady increase in vehicle volumes over the last few years. Exhibit 6-3 shows the ATR data from 2016 by month.

Exhibit 6-3. ADT by Month

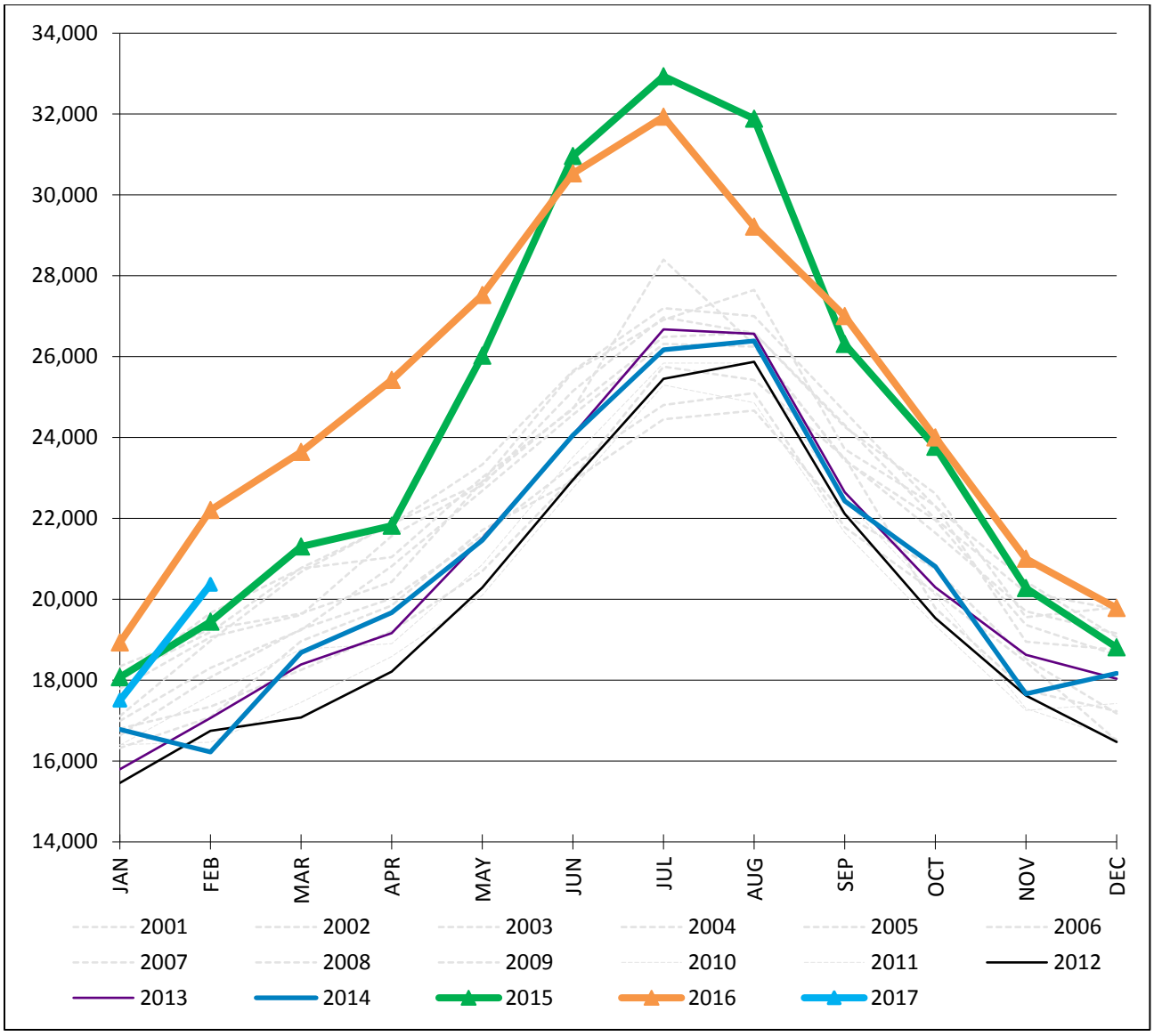


As seen in Exhibit 6-3, all locations peaked in July or August with the lowest volumes in January or December.

The following pages provide a summary of the data collected at the ATR locations to-date. The graphs show average ADT by month for each year the ATR has been in operation.

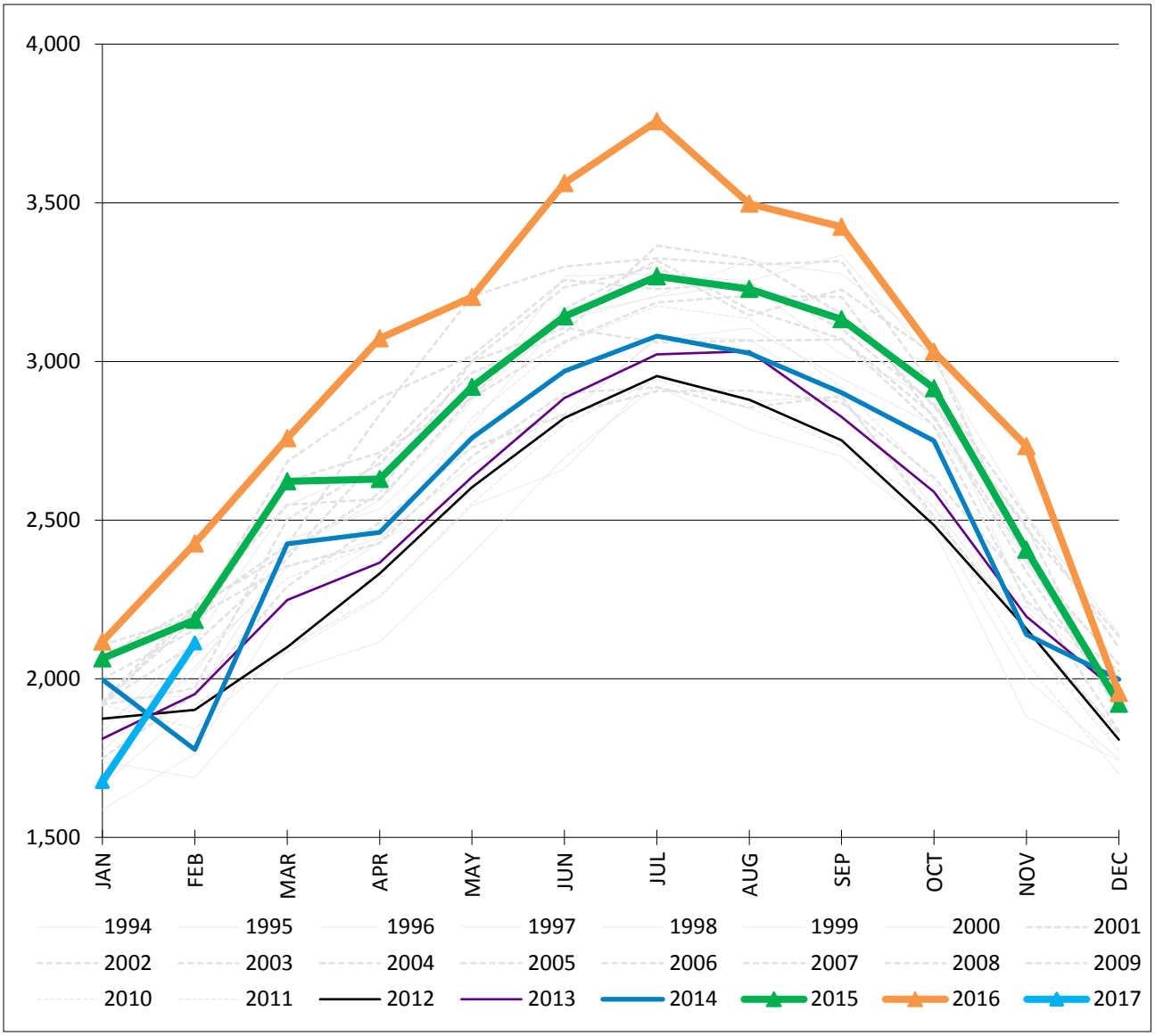
LOCATION:US 97 SOUTH OF LAVA BUTTEE

ATR Number: 09-003
Location Details: US 97 at milepost 142.41; 0.17 miles south of China Hat Road
Source: ATR Data
Average ADT in 2016: 25,097



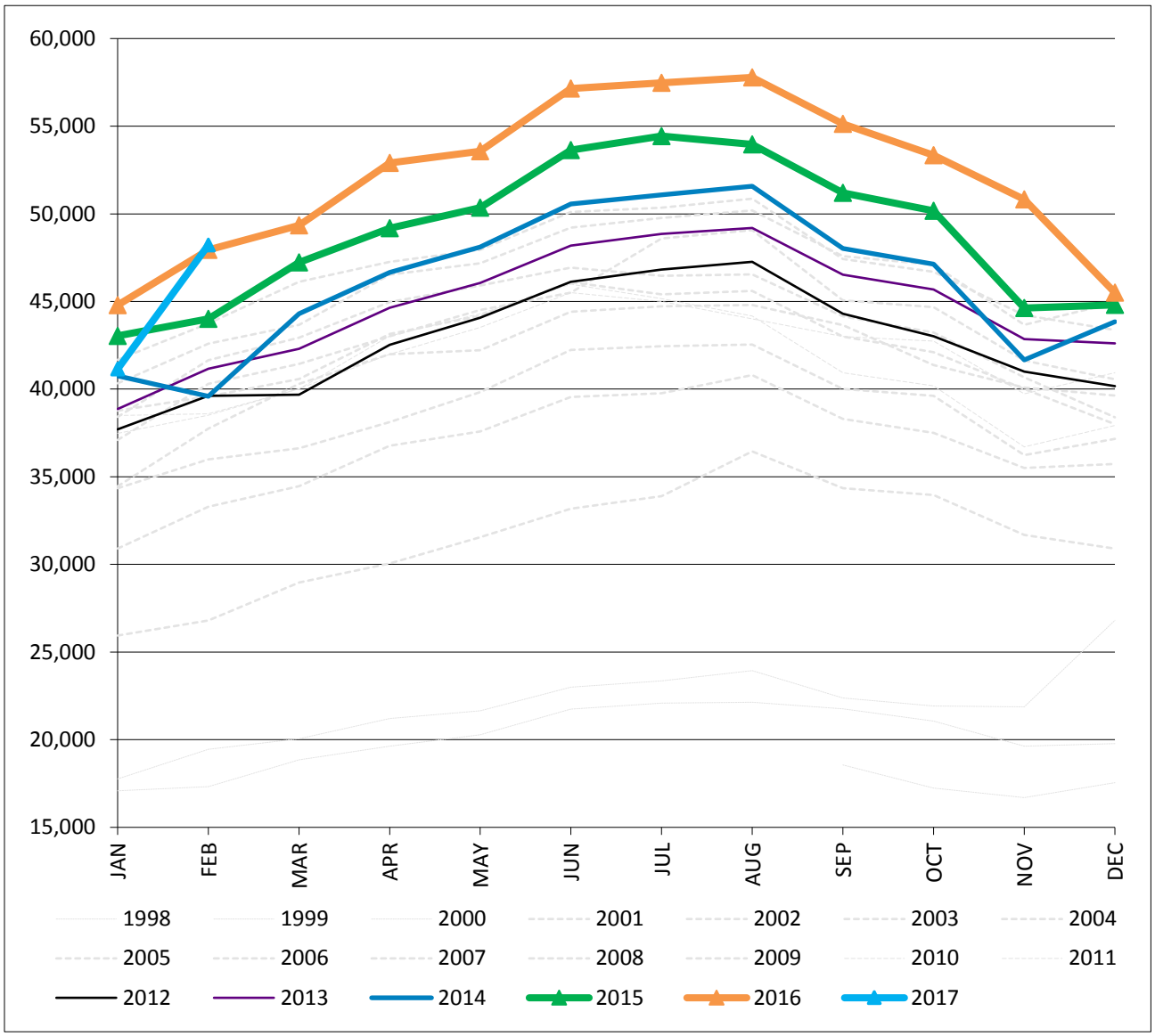
LOCATION:HWY 20 EAST OF POWELL BUTTE HIGHWAY

ATR Number: 09-005
Location Details: US 20 at milepost 6.28; 1.49 miles east of Powell Butte Road
Source: ATR Data
Average ADT in 2016: 2,961



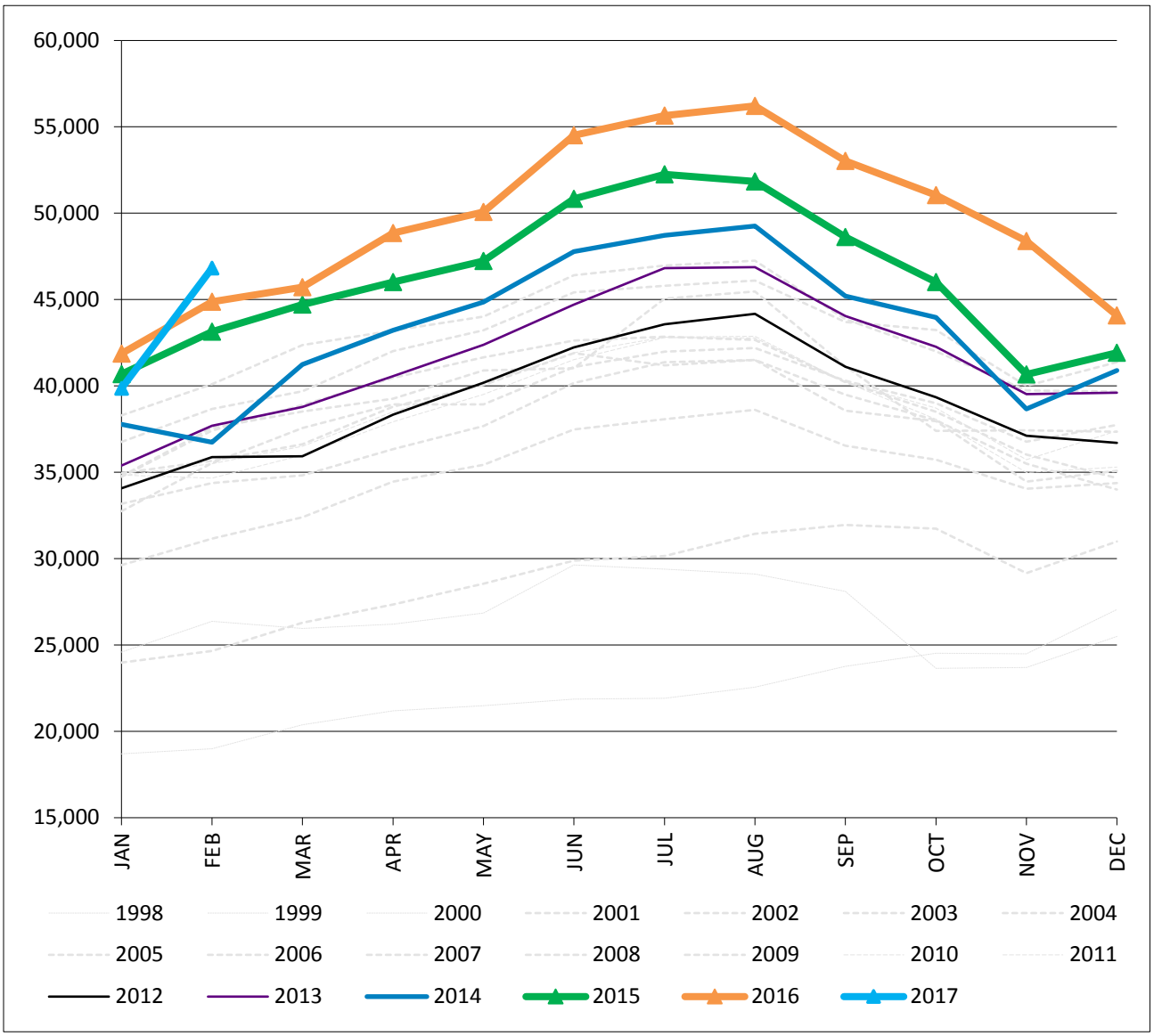
LOCATION: US 97 AT EMPIRE

ATR Number: 09-007
Location Details: US 97 at milepost 135.95; 0.49 miles south of Empire Avenue Interchange
Source: ATR Data
Average ADT in 2016: 2,961



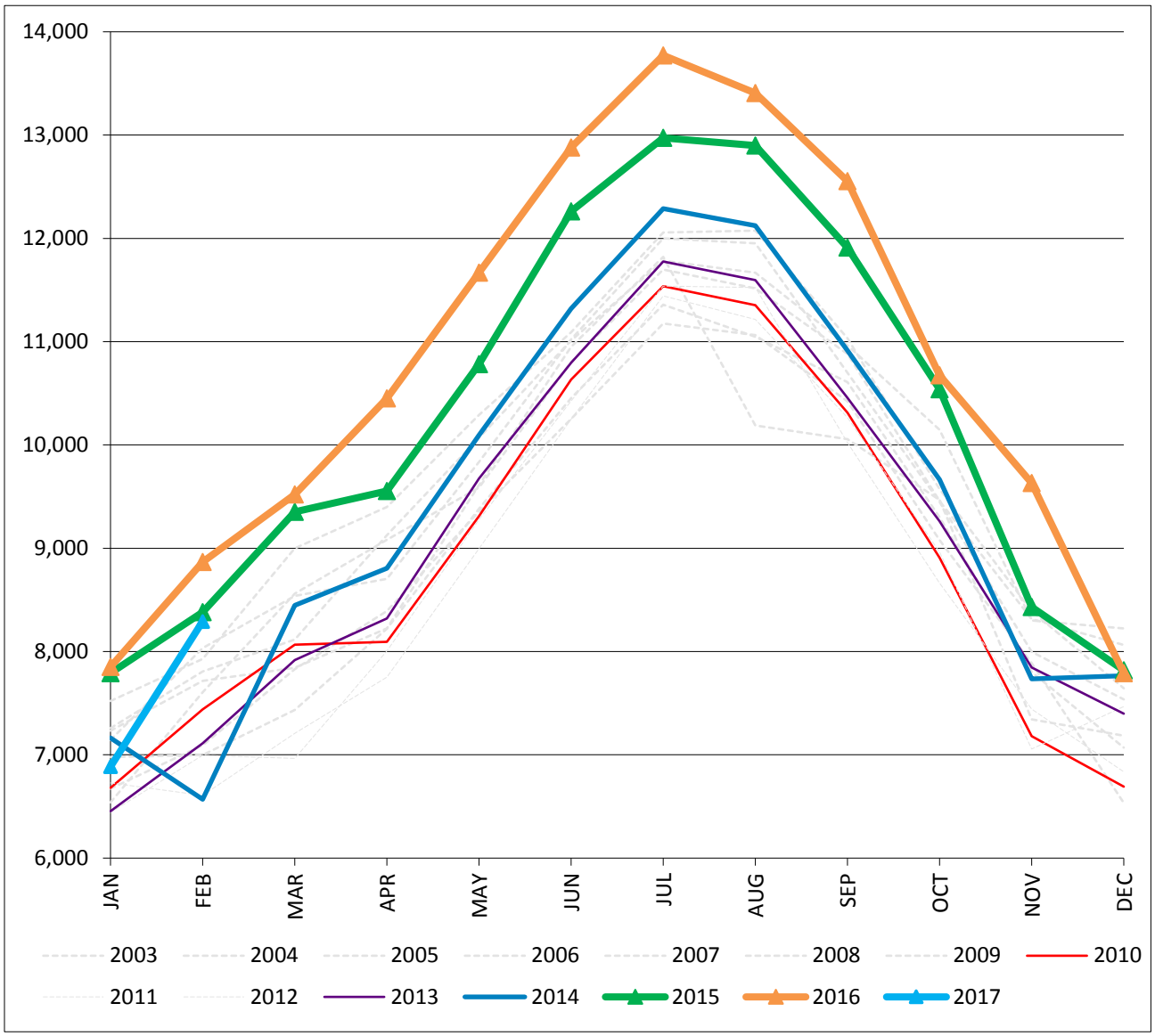
LOCATION: US 97 NEAR OLNEY AVENUE

ATR Number: 09-009
Location Details: US 97 at milepost 137.36; 0.23 miles south of Revere Avenue Interchange
Source: ATR Data
Average ADT in 2016: 49,523



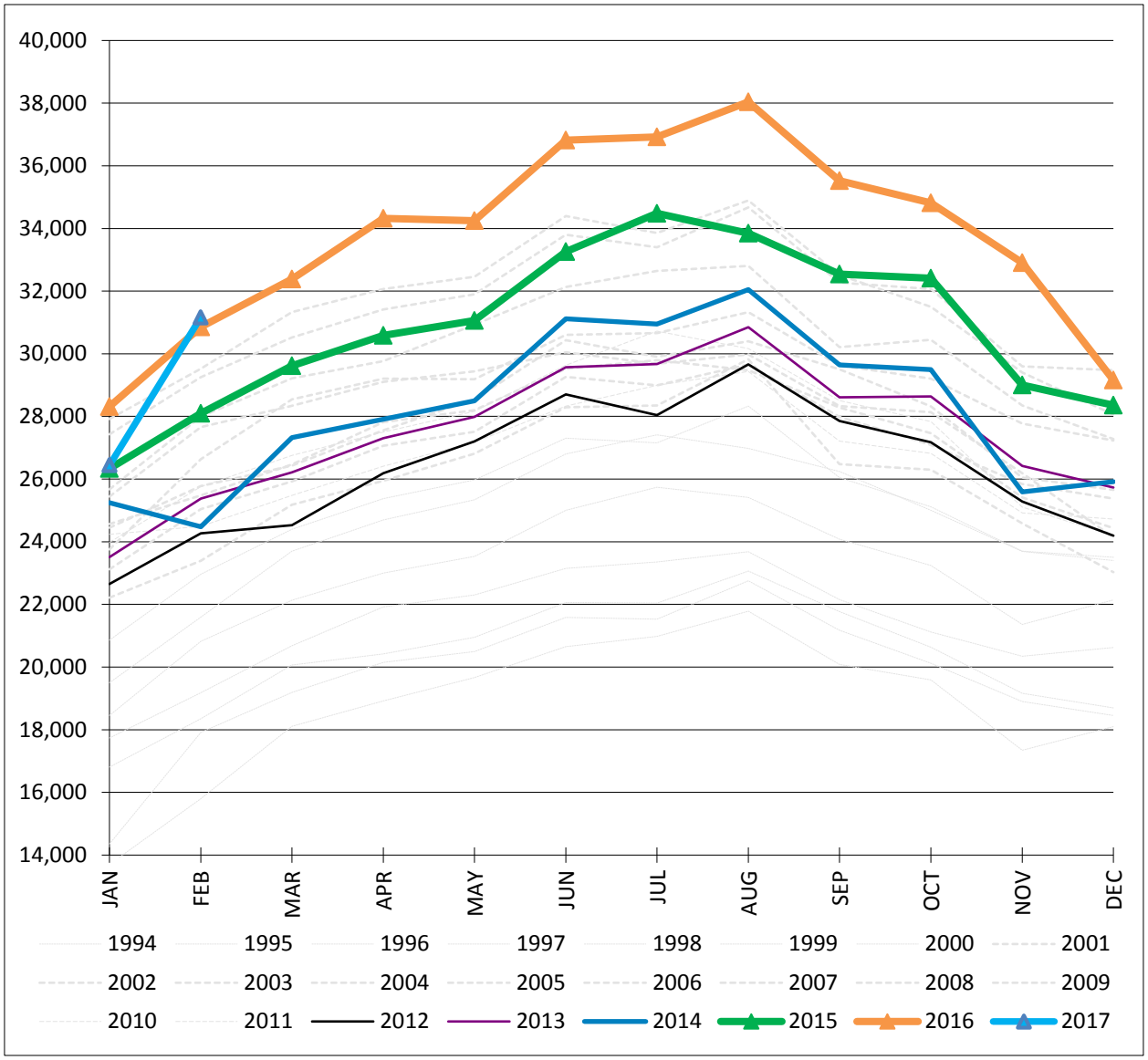
LOCATION: HWY 20 AT THREE SISTERS VIEWPOINT

ATR Number: 09-015
Location Details: US 20 at milepost 9.25; 0.47 miles south of Innes Market Road
Source: ATR Data
Average ADT in 2016: 10,755



LOCATION: US 97 SOUTH OF REDMOND

ATR Number: 09-020
Location Details: US 97 at milepost 245.39; 0.79 miles south of Yew Avenue
Source: ATR Data
Average ADT in 2016: 3,693



LOCATION: US 97 AT PINEBROOK

ATR Number: 09-025
Location Details: US 97 at milepost 140.45; 0.07 miles north of Pinebrook Boulevard
Source: ATR Data
Average ADT in 2016: 15,580