CONGESTION MANAGEMENT PROCESS UPDATE & STATUS OF THE SYSTEM REPORT

Anchorage Bowl & Chugiak-Eagle River

Status of the System Report

with

Solstice Alaska Consulting, Inc. & Parsons Brinckerhoff

February, 2016

Congestion Management Process Update & Status of the System Report

Anchorage Bowl & Chugiak-Eagle River

prepared for

Municipality of Anchorage

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date

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1.0 Introduction

The following document corresponds to the Status of the System Report, prepared by Cambridge Systematics Inc., Solstice Alaska Consulting Inc., and Parsons Brinckerhoff, for the Municipality of Anchorage, as part of the Congestion Management Plan (CMP) Update Project.

The Status of the System Report is a document that describes the current transportation conditions in a region. The main objective of this report is to describe the current conditions of transportation infrastructure and services in the Anchorage Metropolitan Area. To reach this objective, this document follows three main guidelines:

- **Historical trends**. This document presents and examines historical trends and data from previous Status of the System reports. This activity provides the necessary tools to analyze Anchorage's transportation infrastructure evolution in recent years, providing valuable information to the Municipality regarding the current state of the system.

- **Current data**. The diagnosis evaluation consists of describing the transportation infrastructure and service conditions, through the most current data available. The data used to describe the current conditions comes from different sources and data collection efforts made by the Municipality of Anchorage, as well as other stakeholders involved.

- **Effectiveness**. Through different metrics presented, it is possible to identify previous project's effectiveness at reducing congestion. Furthermore, this report will allow the Municipality of Anchorage determine gaps and needs for short-term congestion management projects.

1.1 The Anchorage Transportation System

Anchorage is Alaska's most populous city. To address the region's demand for mobility and accessibility, Anchorage transportation infrastructure includes an extensive network of roadway, airport, port, railroad, transit, bicycle, and pedestrian systems. This report provides a diagnostic evaluation of the current state of these systems in Anchorage, according to the following categories:

- Road System. This section provides parameters that depict current conditions in Anchorage. Among the parameters evaluated are Level of Service (LOS), Travel Times, and Vehicles Miles Traveled (VMT).

- Public Transportation. This section provides a description of current conditions of Anchorage's public transportation service provider "People Mover", including the paratransit service "AnchorRIDES". The metrics provided include operational parameters, like bus-hours of service, ridership, and travel times.

- Ride Sharing. Ride sharing systems allow users to have access to vehicles without owning them. In recent years, this type of transportation alternative has been growing at a considerable rate across the US, as well as many other countries. This section presents

basic user statistics to continue monitoring this growth in Anchorage, showing metrics such as number of registered participants, active carpoolers, and active vanpoolers.

- Pedestrian and Bicycles. This section provides information of the current state of pedestrian and bicycle systems. Furthermore, crash information is provided to characterize pedestrian and bicyclists' safety.

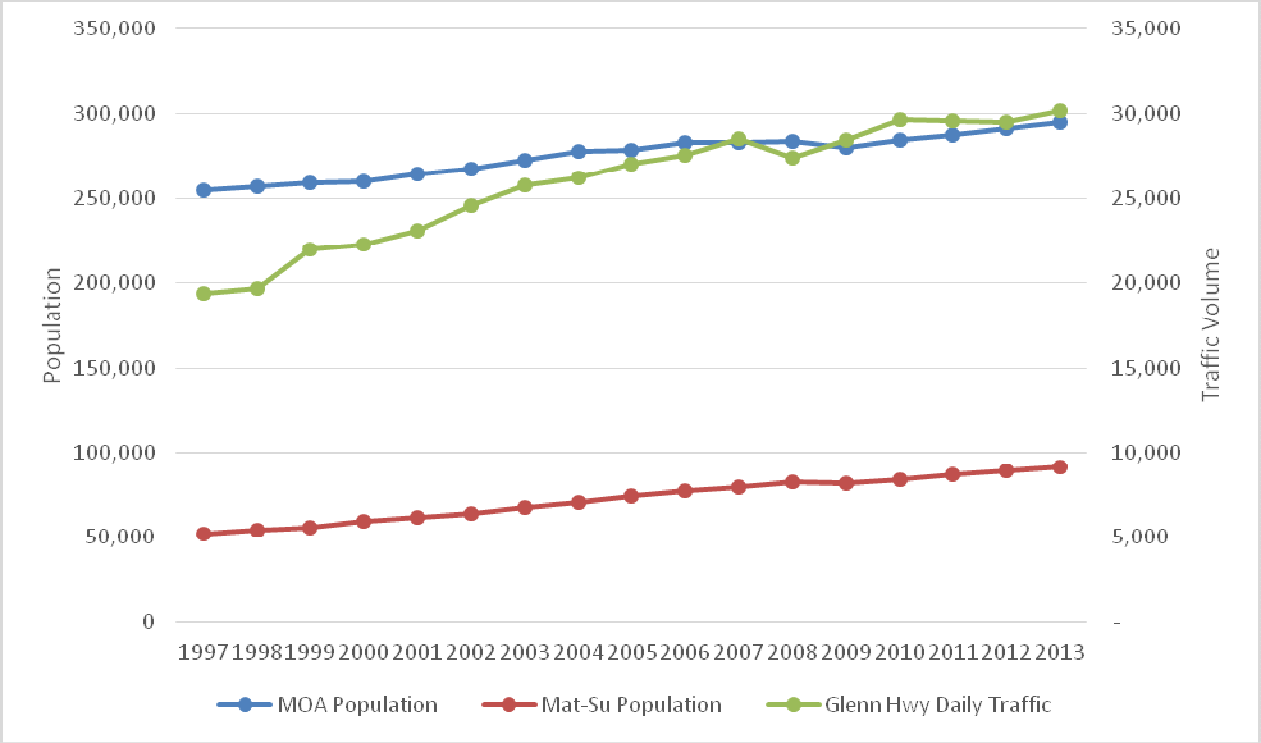
- Intermodal Goods Movement and Regional Connections. Finally, volumes of air cargo, port activity, railroad transportation, and motor freight transportation are presented. This section seeks to characterize current conditions in good movement services in Anchorage.

The parameters and metrics used for this evaluation follow closely the parameters used in the previous Status of the System Report, prepared by the Municipality of Anchorage and Spring Planning Services, in 2010. The objective of this approach is to follow up on previous efforts and obtain comparable data to evaluate Anchorage's progress in congestion and urban transportation issues.

1.2 Changes in Population and Traffic Growth

During the past decade, population growth has been growing relatively steady on the Municipality of Anchorage, as on the Matanuska-Susitna Borough. Figure 1.1 shows population growth on these municipalities from 1997 to 2013, as well as traffic volumes across the main roadway connecting them, the Glenn Highway. We can observe in this figure a constant population growth in the area, and how traffic growth mirrors population growth. Since 2010 – considering 2009 as a threshold of the most recent recession – population growth rates in the counties of Anchorage and Matanuska-Susitna, are in average 1.3% and 2.8%, respectively. Traffic on Glenn highway has increased by 1.4% in these years. Although 2011 and 2012 presented a reduction in traffic volumes on Glenn Highway, traffic in 2013 resumed its increase at a rate of 2.3%. This comparison enables us to assume that in a short-term period, the Anchorage Metropolitan area will continue to grow and traffic volumes will continue to increase.

Figure 1.1 Population and Traffic growth, Anchorage Metropolitan Area, 1997-2013



Source: US Census American Community Survey 5-year Estimates, Status of the System Report 2010, Volumes from DOT & PF Annual Traffic Volume Reports

1.3 Transportation Improvement Plan

An understanding of current conditions is helped by reviewing short-term plans considered to improve the transportation infrastructure and services. The Transportation Improvement Plan (TIP) 2015-2018 was consulted[1] to identify the projects that have been considered already, and those that are close to being implemented. The following lists present a summary of the projects considered.

1.3.1 Road System

The system with the most number of projects considered in the upcoming three years is the road system. It is important to note that there are a number of facilities that will have significant improvements, including Glenn Highway, Seward Highway, and Spenard Road. The following list presents the entire list of projects considered in the TIP, in order of appearance

[1] http://www.muni.org/Departments/OCPD/Planning/AMATS/AMATS%20TIP%20Docs/2015-18%20TIP%20PC%20Approved%208-28-14.pdf, accessed in 05/08/2015

(Highway Safety Improvement Program, Roadway Improvements, National Highway System, and Other Improvements):

- Glenn Highway Moose-Vehicle Crash Mitigation.
- Regional High Friction Surface Treatment Project.
- Jewel Lake Road: 88th St to Strawberry Two-Way Left Turn Lane.
- Central Region Sign Assembly Compliance Improvement.
- Lake Otis Parkway at 68th St Channelization Improvements.
- Seward Highway MP 99-100 Passing Lanes.
- C Street Railroad Crossing – Pathway Traffic Control Devices.
- CR Traffic Safety Corridor Left Turn Lanes.
- Muldoon Road Channelization Improvements: 11th Court to Boundary Avenue.
- Dowling Road Extension West/Reconstruction: Minnesota Drive to Old Seward Highway.
- O'Malley road Reconstruction: Seward highway to Hillside Drive.
- Abbott Road Rehabilitation: Lake Otis Parkway to Hillside Drive.
- Pavement Replacement Program.
- Spenard Road Rehabilitation: Minnesota Drive to Benson Boulevard.
- Spenard Road Rehabilitation: Hillcrest to Benson.
- Minnesota Drive Mobility and Safety Study: Westchester Lagoon to Seward Highway.
- Spenard Road Corridor Strategic Plan.
- Glenn Highway Integrated Corridor Management Study.
- Ingra Gambell Couplet Extension Reconnaissance Study.
- C St Ocean Dock Road Access Ramp Reconnaissance Study.
- Rabbit Creek Reconstruction: Seward Highway to Goldenview Drive.
- Birch Road Rehabilitation: Huffman Rd to Abbott Rd.
- Safety Improvement Program.
- Seward Highway: Midtown Congestion Relief including 36th and Seward Intersection.

- Glenn Highway/Muldoon Road Interchange Reconstruction.
- 5th and 6th Avenue Repainting.
- Ingra St and Gambell St Repaving.
- Glenn Highway, Hiland Road to Artillery Road Reconstruction
- Anchorage Area Principal Arterial Pavement Resurfacing and ADA Compliance.
- Dimond Center Intermodal Parking facility
- Seward Highway – Anchorage to Portage Glacier Road ITS Project.

1.3.2 Public Transportation

The main public transportation operator in the AMATS region is People Mover, and the main paratransit service provider is AnchorRIDE. The majority of the projects considered in the TIP 3-year program are related to maintenance and replacement of vehicles and equipment. The following list is a complete description of the projects included in the TIP, in order of appearance:

- Preventive Maintenance/Capital Maintenance.
- Fleet Replacement/Expansion - AnchorRIDES.
- ADA Complementary Paratransit Services.
- Bus Stop Improvements to Comply with ADA Requirements.
- ITS/Automated Operating System/Management Information Systems.
- Fleet Improvement/Supporting Equipment/Support Vehicles.
- Transit Planning Program.
- Transit Centers/Support Facilities.
- 1% Transit security on the Alaska Railroad Corporation Projects.
- Railcars Preventive Maintenance.
- Track Rehabilitation.
- Anchorage Ridesharing/Transit Marketing.
- People Mover Veterans Transportation Community Living Initiative.
- People Mover State of Good repair Vehicle Replacement.

- People Mover Bus Stop Improvements

While outside of the AMATS boundaries and the area of study, ValleyMover operates fixed schedule largely for commuters traveling from the Mat-Su Borough to Anchorage. In 2014, the agency operated six buses, had $235,749 in transit fares, along with 80,401 unlinked passenger trips with a passenger car revenue miles of 349,818 and passenger car revenue hours of 10,511(National Transit Database, http://www.ntdprogram.gov/ntdprogram/data.htm, Jan. 2016).

Currently, Valley Mover serves about 400 people a day (200 round/trips) with six buses according to executive director Jennifer Tew. Buses stop at Meadow Lakes, Wasilla, Trunk Road and Anchorage (Personal communication, January 29, 2016). Of these riders, 64 individuals transfer to the PeopleMover system to primarily bus routes 3, 7, and 9. While this service provides a measure of congestion relief along the Glenn Highway corridor and continued coordination with ValleyMover is highly recommended - since the agency is outside of AMATS purview, their routes, schedules, funding, passenger travel behavior and needs, and potential congestion mitigation strategies remain within their agency and board of director's control.

1.3.3 Pedestrian and Bicycle Systems

Pedestrian and Bicycle projects are aggregated ion the TIP program as Non-motorized projects. It is noticeable that the region seeks to improve bicycle conditions, as most of the projects included in the program are related to bicycle improvements. The following list presents a complete list of the projects considered in the TIP program, in order of appearance:

- Bicycle Plan Project Implementation.
- Pedestrian Plan Project Implementation.
- Dimond Center Pedestrian and Transit Improvements.
- Anchorage Areawide Trail Rehabilitation.
- Implement Bike Plan – Multi-Use Path on Benson between Lois Dr. and Minnesota Blvd.
- Implement Bike Plan – Multi-Use Path on O'Malley Road.
- Implement Bike Plan – Signage.
- Air Quality Public & Business Awareness Education Campaign.

1.3.4 Freight Distribution and Regional Connection Elements

Finally, the projects concerning freight distribution and regional connections can be seen in the TIP in the Other Federal, State, and Local Funded Projects within AMATS Area. It is noticeable that most of the projects included in the TIP consider improving the Port's operations. The following list presents the projects included in the TIP, in order of appearance:

- Port of Anchorage Intermodal Facility Improvements.
- Rail Extensions, Signalization and Remotely Controlled Power Switches.
- Knik Arm Crossing Access Connections.
- Knik Arm Crossing Toll Financed Bridge Facilities.

1.4 Introduction Summary

At the end of each section, a summary of the results is presented and discussed, to give a clear understanding of the evaluation performed. This introductory section provides a general introduction to the system. The transportation service in Anchorage includes services such as road systems, public transportation, good movements, pedestrian and bicycle activity. As population growth in the area continues to increase at a rate of 1-3% , transportation will continue to require important investments to satisfy new demand and foster sustainable and environmentally friendly growth throughout the region.

2.0 Road System

2.1 Level of Service Performance

One of the most common performance measure to describe congestion on roadways is Level of Service (LOS). LOS is a metric that reflects congestion levels on roadways, according to the available roadway capacity, speed, or delay experienced. The LOS output is a relative parameter, varying from 'A' to 'F', 'A' being uncongested and 'F' saturated conditions. In general, an LOS of C or better is considered to be an acceptable level of service and an LOS of D is approaching the capacity of the roadway or intersection. An LOS of E or worse represents operating conditions that are at or above capacity.

This section presents two different analysis, the Freeway Segment Level of Service, and the Intersection Level of Service.

2.1.1 Highway Segment Level of Service

The Highway Segment Level of Service seeks to represent traffic conditions in roadways where flow is continuous, like in freeways and highways. The LOS for access-controlled highways is determined from the traffic density (passenger cars per mile per lane), using procedures presented in the *Highway Capacity Manual*[2]. Density is calculated by considering the freeway geometry and peak traffic volume. Once the road's density is determined, Table 2.1 allows us to determine the LOS per segment analyzed.

Table 2.1 Highway Capacity Manual LOS Criteria for Highway Segments

Level of Service	Density (passenger cars per hour per lane)	Speed (mph)	Traffic Volume (passenger cars per hour per lane)
A	0-11	65	0-410
B	11-18	65	710-1170
C	18-26	65	1170-1680
D	26-35	60-65	1680-2090
E	35-45	52-60	2090-2350
F	>45	<52	>2350

Source: Highway Capacity Manual, 2000.

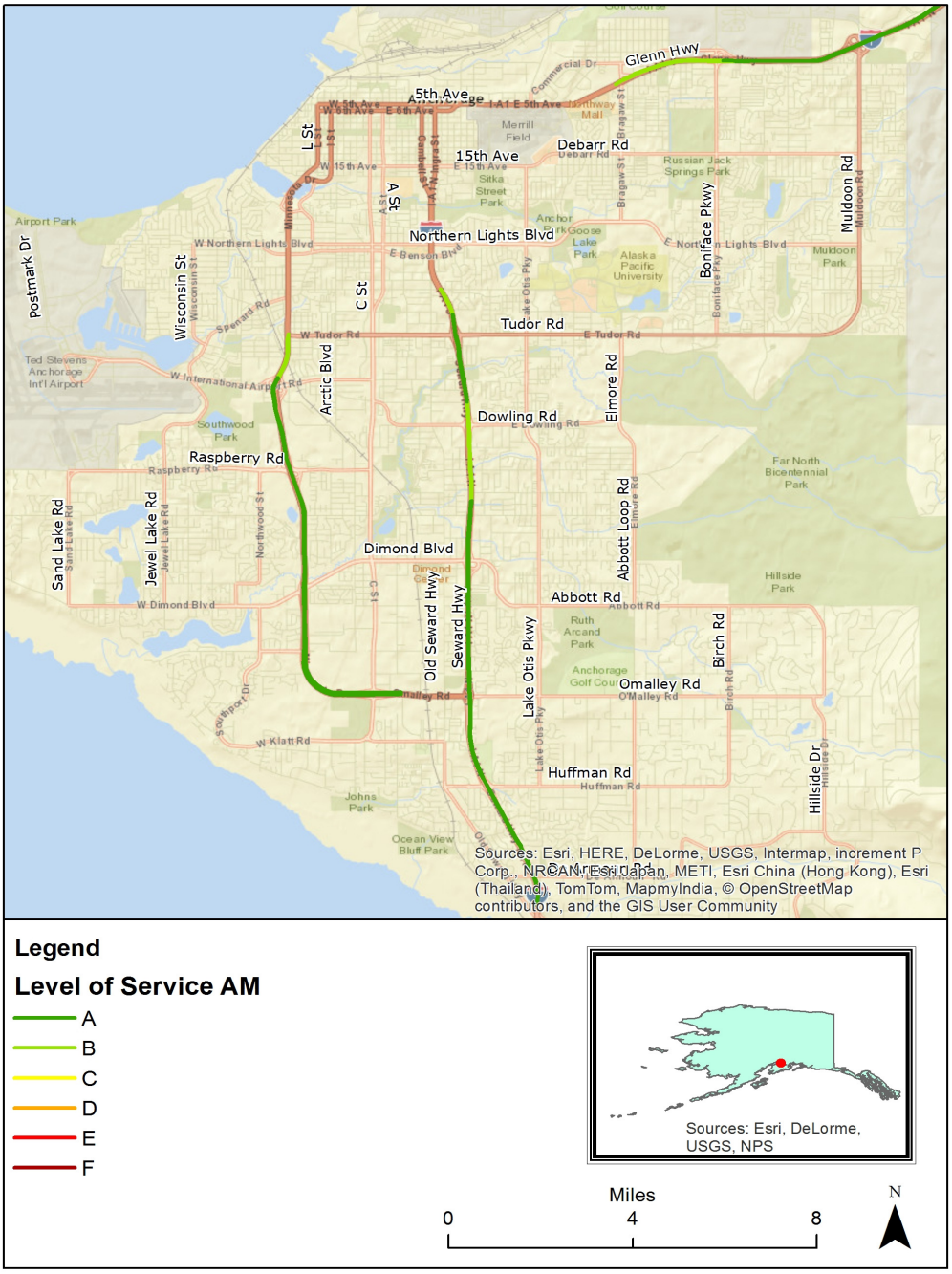
To determine the Highway LOS, the Average Annual Daily Traffic (AADT) was obtained for 2013, from the "Central Region Annual Traffic Volume Report 2011-2013" report. The report

[2] Transportation Research Board, National Research Council, Highway Capacity Manual, 2000

presents AADT by highway segment. To determine the required vehicle per hour per lane metric, the percentage of hourly data was used, in this case this data was obtained from the Glenn Highway – West of Bragaw permanent counter, the Seward Highway – South of 76th Ave permanent counter, and Minnesota Drive – South of International Airport Road.

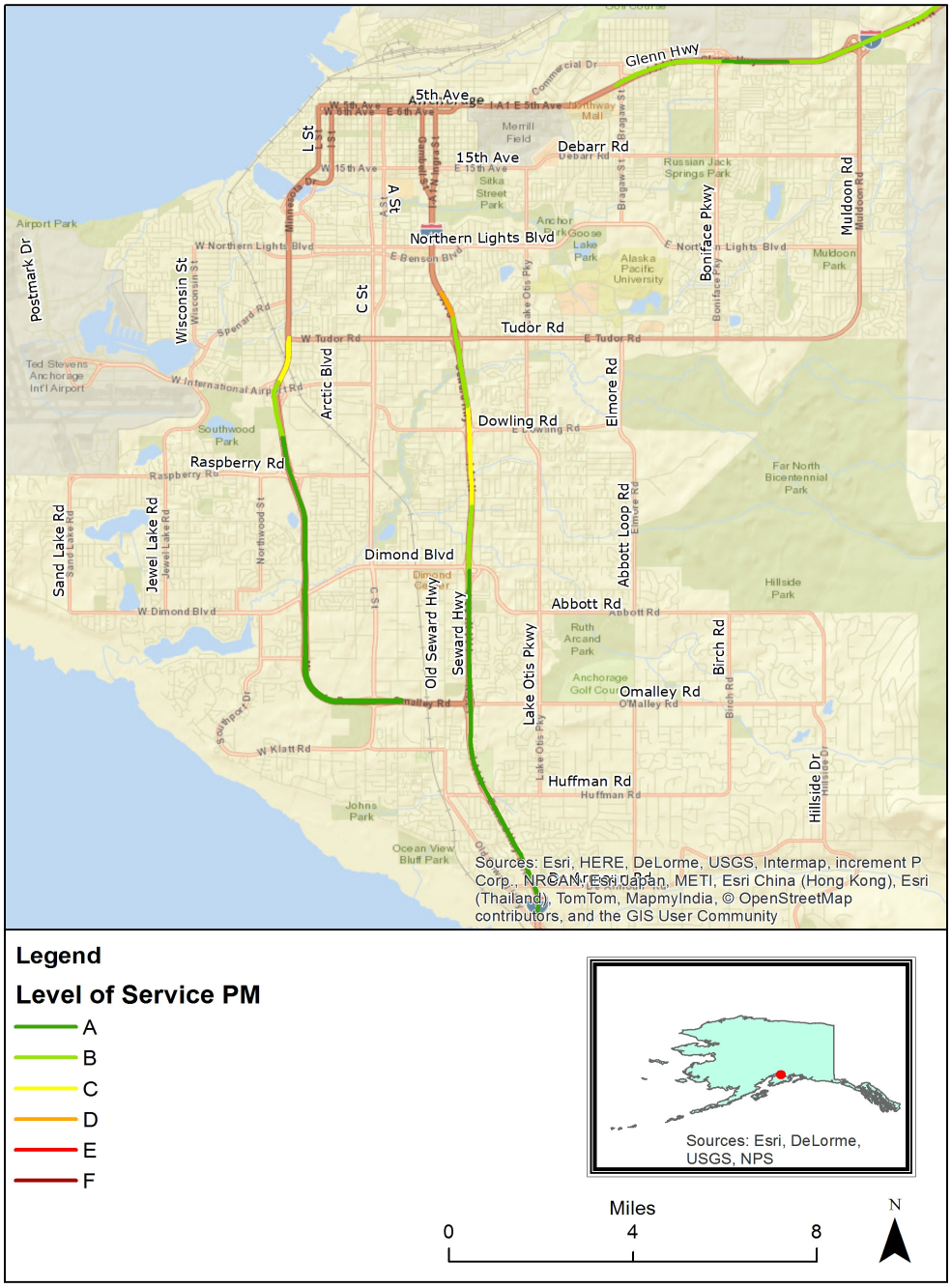
Figures 2.1 and 2.2 show the results of the LOS analysis for the highways present in Anchorage. We can observe that in the AM peak period (from 7 AM to 9 AM), conditions on the main highways in Anchorage are above the LOS 'C'. For the PM peak period, Seward Highway and Minnesota Drive present congested LOS, with the highest level of congestion being present on Seward Highway, between 36th Ave and Tudor Rd.

Figure 2.1 Freeway LOS, Average AM Peak Hour, 2013



Source: Municipality of Anchorage Traffic Department Travel Time Reports, Volumes from DOT & PF Annual Traffic Volume Reports

Figure 2.2 Freeway LOS, Average PM Peak Hour, 2013



Source: Municipality of Anchorage Traffic Department Travel Time Reports, Volumes from DOT & PF Annual Traffic Volume Reports

2.1.2 Intersection Level of Service

The Intersection Level of Service (LOS) is a parameter which describes traffic conditions on roadways on which traffic is interrupted by intersection control systems, such as stop signs or traffic signals. Similar to the highway LOS, this metric reflects congestion levels on intersections, according to the available roadway capacity, speed, or delay experienced. The LOS output is a relative parameter, varying from 'A' to 'F', 'A' being uncongested, and 'F'

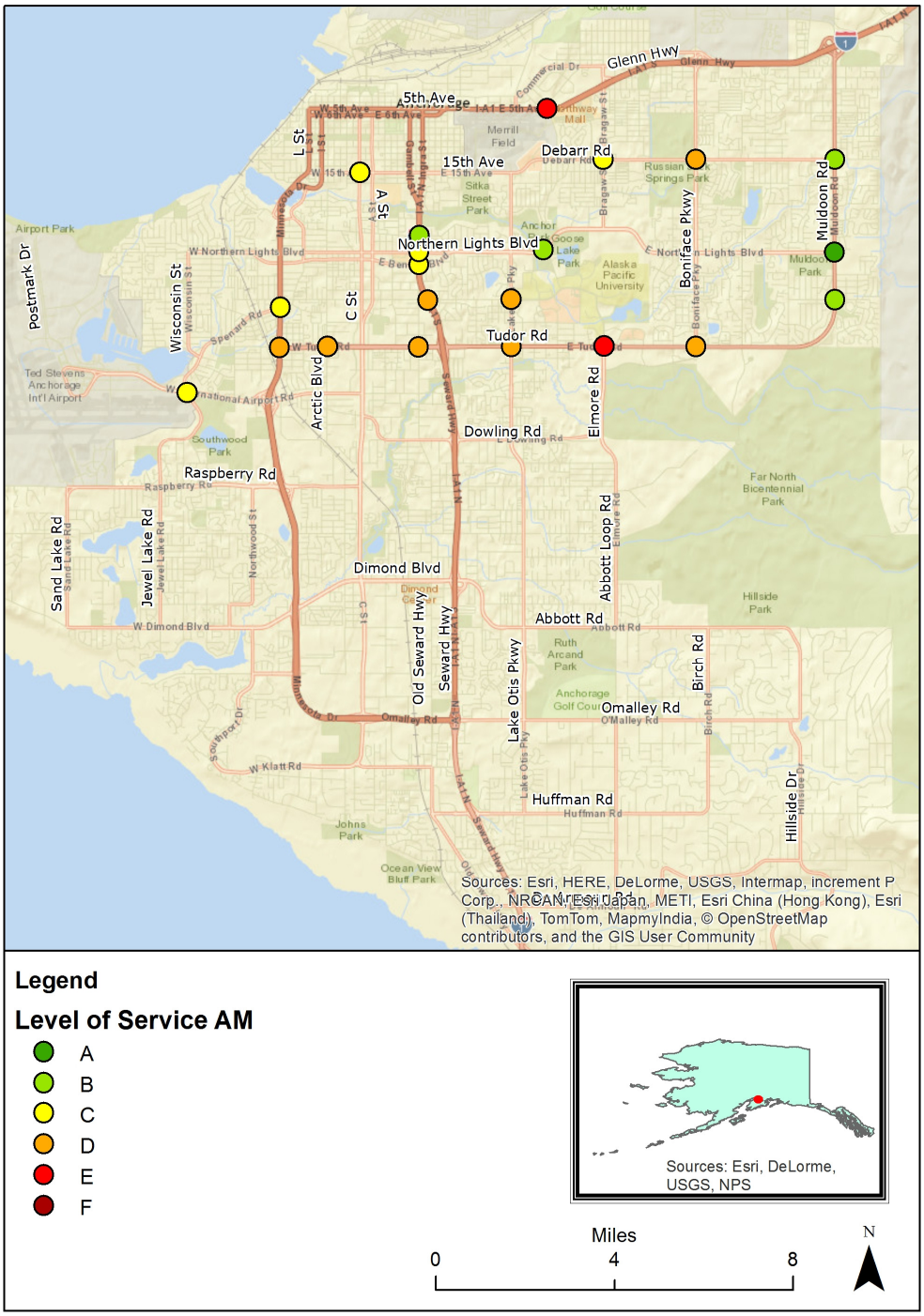
saturated conditions. In general, an LOS of 'C' or better is considered to be an acceptable level of service and an LOS of 'D' is approaching the capacity of the roadway or intersection. An LOS of 'E' or worse represents operating conditions that are at or above capacity. To determine the Intersection LOS, traffic counts, traffic signal timings, and roadway geometric characteristics were analyzed using the traffic software Synchro. The source of the traffic volumes and traffic signal timings was the Municipality of Anchorage, corresponding to 2013 traffic conditions.

It is important to notice that the LOS metric is a parameter of delay, which is correlated with congestion, but is not collinear. Thus, the LOS is a helpful metric to identify undesirable levels of delay, but not necessarily heavy congestion. Long delays could be caused by poorly timed traffic signals, multi-modal traffic, or particular operational conditions. Furthermore, causes for congestion are poorly identified through LOS parameters, especially if there is no data on all intersections. In this study, delay is used to identify intersections with high levels of delay, and this study assumes that congestion is present on highly-delayed intersections. To identify heavily congested intersections, including causalities, more detailed data is required.

Figure 2.3 shows the results of the Intersection LOS evaluation during the AM peak hour. The intersections with the lowest LOS is Glenn Highway & Airport Heights Dr. and Tudor Rd & Elmore Rd, with a LOS of 'E'. A corridor that can be observed with low LOS levels is Tudor Rd, which has a LOS of 'D' across the corridor. It is important to observe that Seward Highway also has a LOS level 'D' once it enters the urban core at 36th St.

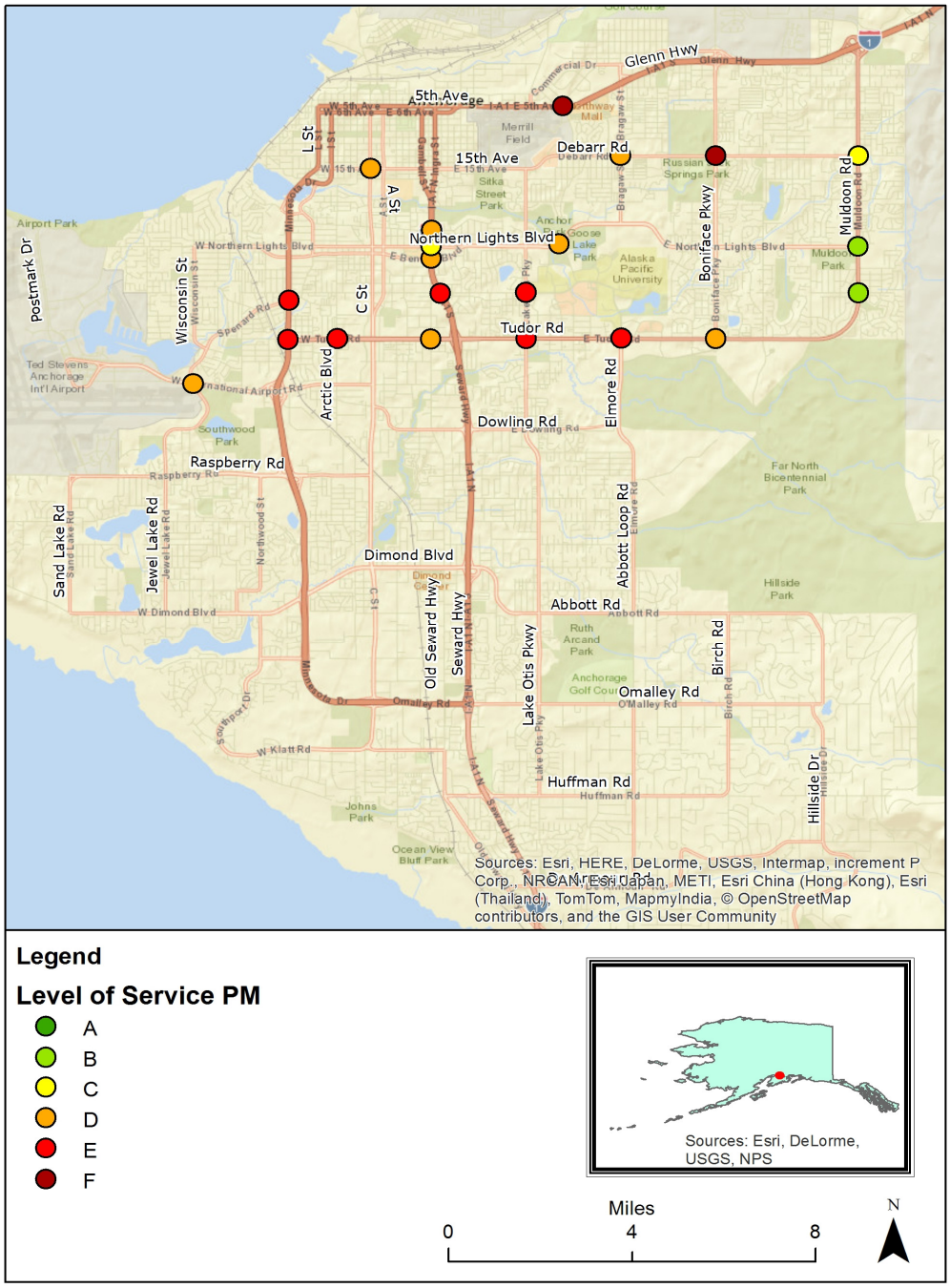
Figure 2.3 shows the results of the Intersection LOS evaluation during the PM peak hour. In general, there are higher congestion levels than during the morning peak period. As with the AM peak period, Glenn Highway presents a low LOS of 'F' in the afternoon. Tudor Rd, also presents low LOS levels of 'E' across the corridor. Finally, Seward Highway also presents a lower LOS level than in the morning, showing saturated condition with an 'E' LOS.

Figure 2.3 Intersection LOS, AM Peak Period, 2013



Source: Municipality of Anchorage, Traffic Data Management System Report.

Figure 2.4 Intersection LOS, PM Peak Period, 2013



Source: Municipality of Anchorage, Traffic Data Management System Report.

2.1.3 Comparison of 2010 and 2014 Level of Service

The intersections presented were also analyzed in the previous Status of the System report. Table 2.2 shows a comparison between the LOS obtained previously, and the results obtained during this evaluation. In 2010 Synchro was used to evaluate intersection LOS and used a range between 'A' and 'H'. The accepted Highway Capacity Manual method only provides for Level of Service 'A' through 'F' but since 'F' represents 100% saturation in both methods it is

assumed for purposes of comparison that LOS F, G and H in the 2009 LOS evaluation are all equivalent to LOS F in the 2013 analysis.

Table 2.2 Comparison of Intersection LOS PM Peak Periods 2009 and 2013

Intersection	LOS 2009	LOS 2013	Change
Lake Otis Parkway and 36th Avenue	E	E	Same
Lake Otis Parkway and Tudor Road	E	E	Same
Seward Highway and Fireweed Lane	E	D	Better
Seward Highway and Northern Lights Boulevard	F	C	Better
Seward Highway and Benson Boulevard	F	D	Better
Seward Highway and 36th Avenue	*F	E	Better
Old Seward Highway and Tudor Road	*F	D	Better
Northern Lights Boulevard and UAA Drive	F	D	Better
5th Avenue and Airport Heights Road	E	F	Worse
15th Avenue and C Street	**F	D	Better
Boniface Parkway and Debarr Road	F	F	Same
Boniface Parkway and Tudor Road	E	D	Better
Minnesota Drive and Spenard Road	F	E	Better
Minnesota Street and Tudor Road	F	E	Better
Bragaw Road and Debarr Road	E	D	Better
Muldoon Road and Debarr Road	C	C	Same
Muldoon Road and Northern Lights Boulevard	B	B	Same
Muldoon Road and 36th Avenue	D	B	Better
Arctic Boulevard and Tudor Road	F	E	Better
International Airport Road and Spenard Road	C	D	Worse
Elmore Road and Tudor Road	F	E	Better

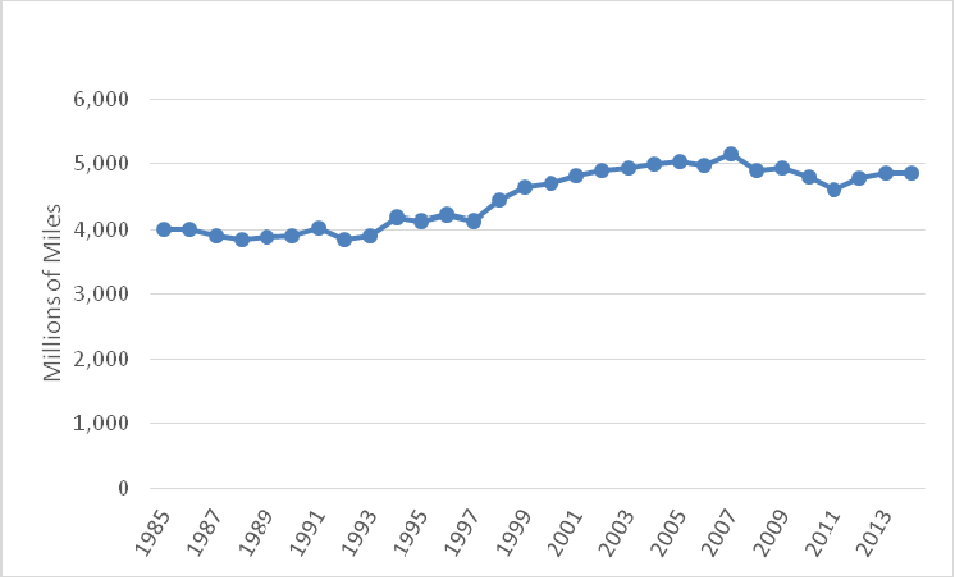
Source: Status of the System 2010 Report, Delay and LOS from Synchro's HCM 2010 Signalized Intersection Summary. * Reported as "H" using the 2009 methodology. ** Reported as "G" using the 2009 methodology. "H" and "G" are equivalent to "F" using the 2013 methodology.

2.2 Vehicle Miles of Travel

Vehicle Miles Traveled (VMT) is a metric commonly used to understand the usage of road infrastructure. This metric is commonly calculated by multiplying the Average Annual Daily Traffic (AADT) by the average travel speed.

VMT in the state moderately increased in the past decades. Figure 2.5 shows the total VMT at the State level over the past 28 years.

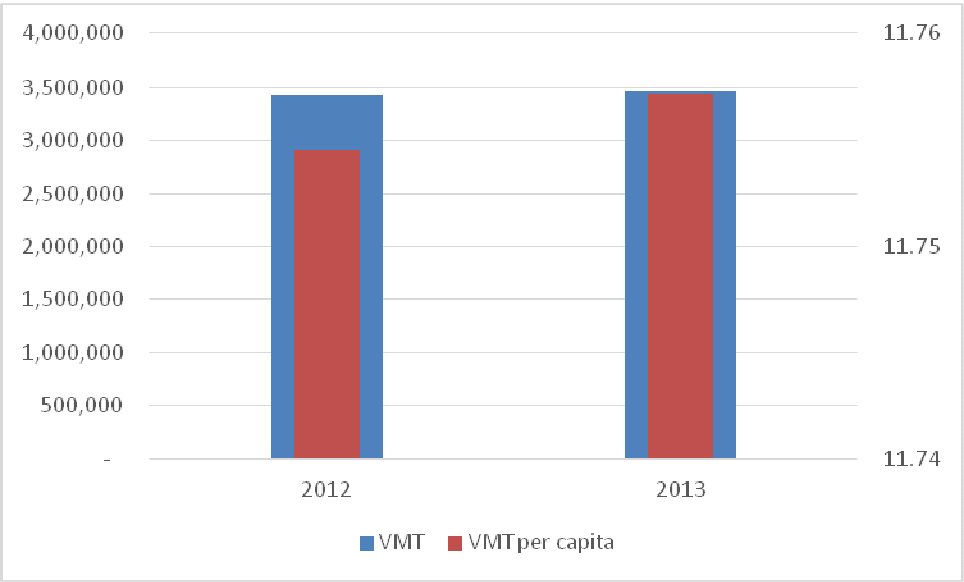
Figure 2.5 State of Alaska Total VMT, 1985-2013



Source: Alaska's Annual HPMS Report

Figure 2.6 shows the change in VMT in the Anchorage urban area, as reported in ADOTP&F's 2013 HPMS Report. We can observe that VMT increase moderately from 2012 to 2013, from 3,426,100 to 3,471,173 miles traveled. Population in Anchorage also increased moderately in this year, from a population of 291,470 to 295,237. From these statistics, we can observe that auto usage in Anchorage has increased moderately between these years.

Figure 2.6 Anchorage's Vehicle Miles per Capita, 2012 and 2013



Source: Alaska's 2013 HPMS Report

2.3 Travel Times

A clear and straightforward metric of the road transportation system's performance and congestion level is travel time. Travel time is a metric that shows the average time taken to go from a certain origin or intersection to a relevant destination. This metric is applicable across different modes, including automobiles, transit vehicles, and bicycles.

To determine the performance of the road system, travel times and speeds for automobiles were collected during the fall of 2013, on the following 9 different Anchorage corridors (same corridors involved in previous Status of the System reports):

- Seward Highway (from 5th Ave to Old Seward Highway)
- Glenn Highway (from C St to North Birchwood)
- Minnesota Drive (from 5th Ave to Seward Highway)
- Northern Lights Boulevard (from Minnesota Drive to Muldoon Rd)
- Tudor Rd (from Minnesota Drive to Glenn Highway)
- Lake Otis Parkway (from 15th Ave to O'Malley Rd)
- C St (from O'Malley Rd to Ocean Dock Rd)
- Debarr Rd (from I St to Muldoon Rd)
- Dimond Blvd/ Abbott Rd (from Jewel Lake Otis Pkwy to Lake Otis Parkway)

Drivers in instrumented vehicles made multiple trips during the months of September, October, and early November 2013 on each corridor from 7 to 9 a.m. (AM peak period), between 11 a.m. and 1 p.m. (Midday peak period), and from 4 to 6 p.m. (PM peak period). They drove at the same speed as other motorists and recorded their locations and clock times at major intersections along the way. Travel time measurement runs were made in each direction of travel for each corridor. Table 2.3 lists the average corridor travel minutes by time of day and direction for each corridor. The overall corridor speeds for the morning and afternoon peak periods also are shown for each direction of travel.

Table 2.3 Automobile Travel Time Summary

Corridor	Direction	Length (miles)	Average Travel Time (minutes)			Average Speed (mph)	
			AM peak period	Midday peak period	PM peak period	AM peak period	PM peak period
Seward Highway	north	9.2	11.5	11.2	11.5	42.4	44.3
	south	9.2	11.4	12.8	12.5	43.3	40.5

Corridor	Direction	Length (miles)	Average Travel Time (minutes)			Average Speed (mph)	
			AM peak period	Midday peak period	PM peak period	AM peak period	PM peak period
Glenn Highway*	north/east	14	22.6	21.7	25.6	48.2	42.8
	south/west	14	25.4	22.5	22.9	42.3	46.4
Minnesota Drive	north	8.2	12.8	12.0	13.2	35.2	36.7
	south	8.2	13.0	13.3	17.9	36.7	32.7
Northern Lights Boulevard	east	6.2	14.4	11.2	16.5	28.7	25.2
	west	6.2	13.7	11.5	14.5	28.9	28.5
Tudor Rd	north/east	8.8	15.6	16.1	20.8	36.8	32.8
	south/west	8.8	16.3	17.1	20.6	36.3	29.1
Lake Otis Parkway**	north	5.9	17.9	16.0	17.1	30.3	28.7
	south	5.9	17.2	15.0	22.4	28.0	27.9
C St	north	7.3	15.6	15.1	14.9	28.8	28.7
	south	7.3	15.0	16.4	17.0	28.0	25.1
Debarr Road/15th Avenue	east	5.6	14.3	13.9	18.4	26.7	25.5
	west	5.6	12.8	10.9	12.4	26.9	28.8
Dimond Blvd/Abbott Road	east	5.3	9.9	10.6	12.4	34.2	32.6
	west	5.3	9.8	11.3	12.1	34.1	29.3

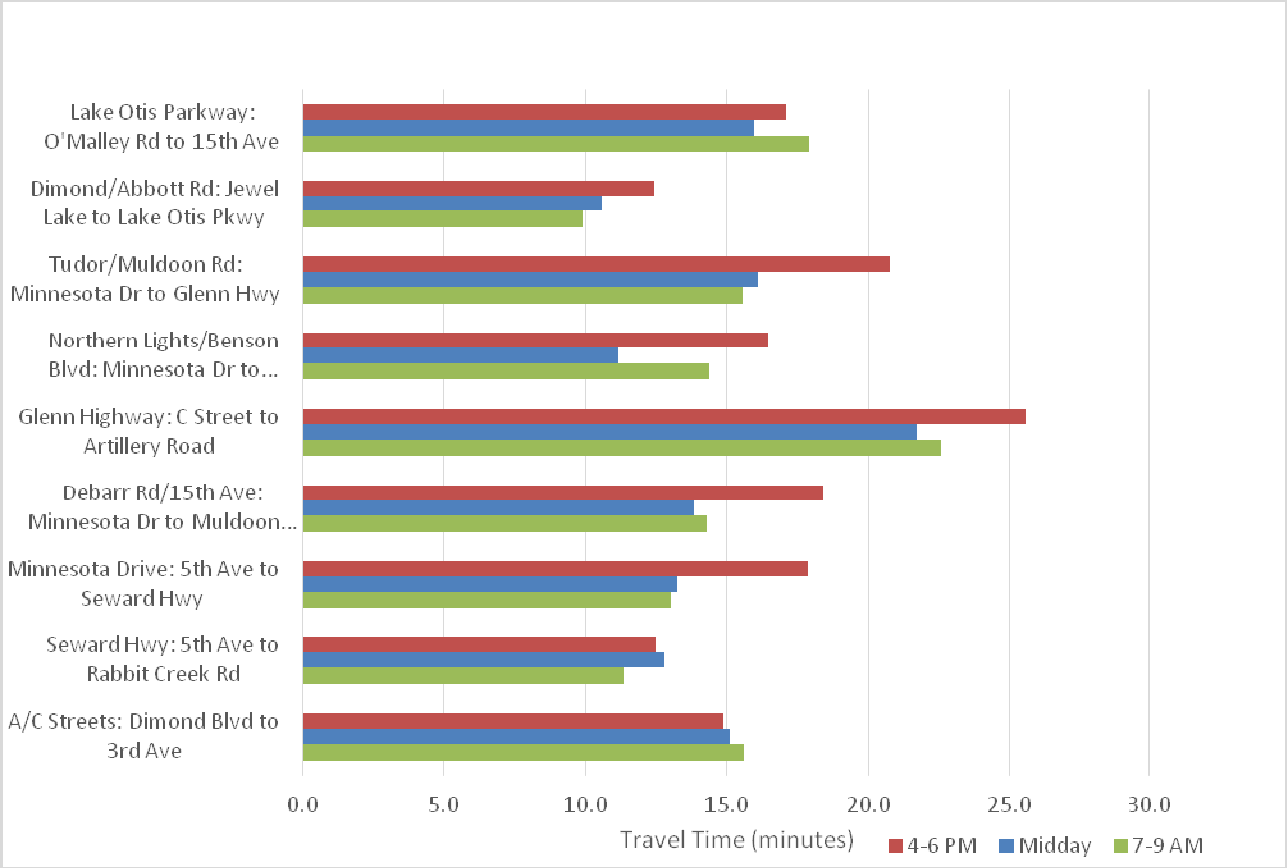
Source: Municipality of Anchorage Traffic Department Travel Time Reports.

*Note: These travel times refer to the corridor from C St to Birchwood, which is a longer corridor from data collection efforts done for previous Status of the System Report.

**Note: These travel times refer to the corridor from 15th Ave to Huffman, which is a longer corridor from data collection efforts done for previous Status of the System Report.

A comparison between the different peak period travel times, across the nine different corridors can be observed in Figure 2.7.

Figure 2.7 Automobile Travel Times by Time of Day, by direction described

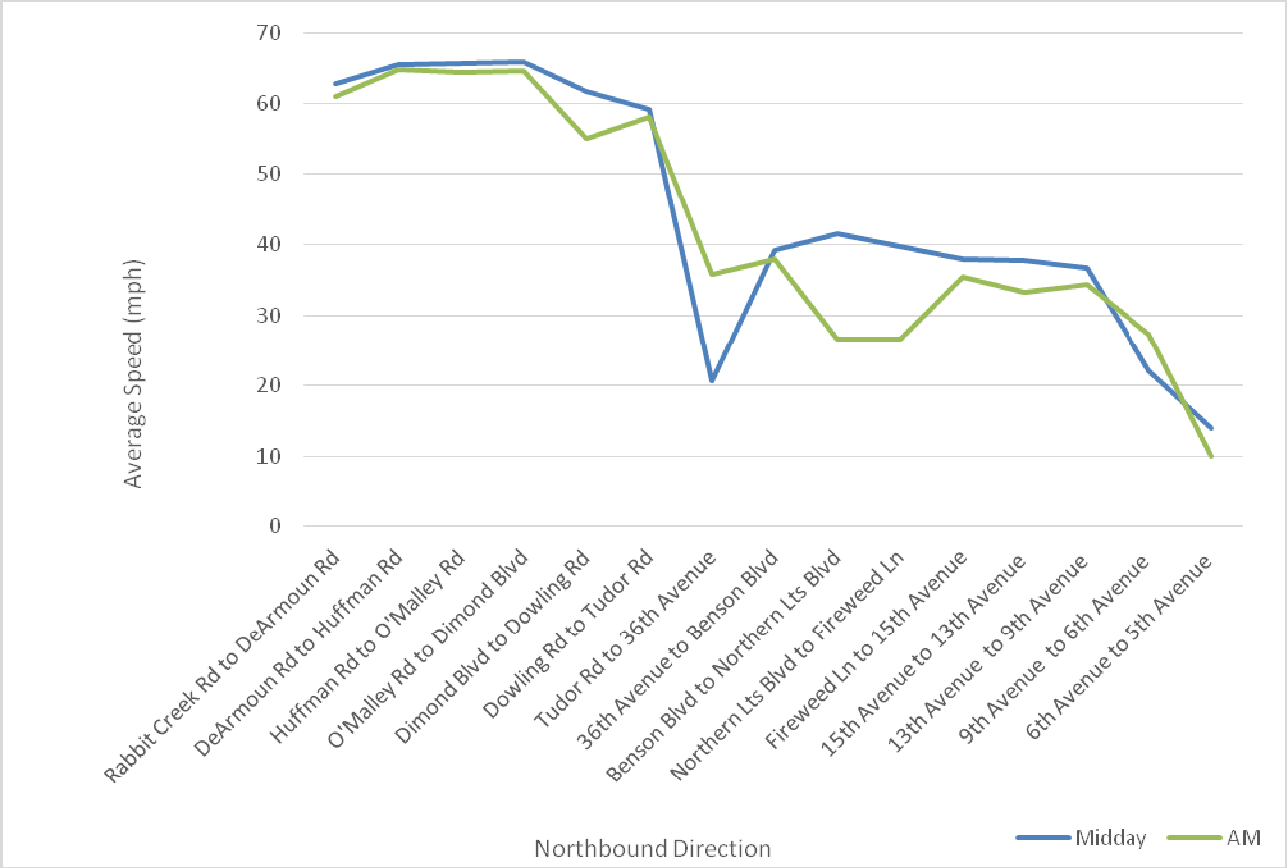


Source: Municipality of Anchorage Traffic Department Travel Time Reports.

It can be observed in Figure 2.7 that the PM peak period presents longer travel times generally across the different corridors monitored. This result is consistent with what was observed in previous Status of the System reports.

For comparison purposes with previous Status of the System reports, an analysis of the Seward Highway is presented in Figure 2.8. The travel times presented in Figure 2.7 do not tell the whole story for the Glenn Highway and Seward Highway, both of which contain arterial segments and freeway segments. As expected, speeds are significantly slower on the arterial segments compared to the freeway segments. Figure 2.8 shows the morning commute travel speeds on the northbound Seward Highway, where speeds are above 50 mph until Tudor Road, where speeds quickly drop to about 25 mph as the highway approaches the arterial segments and is slowed by the traffic lights in the Midtown district. This effect is consistent with previous Status of the System reports.

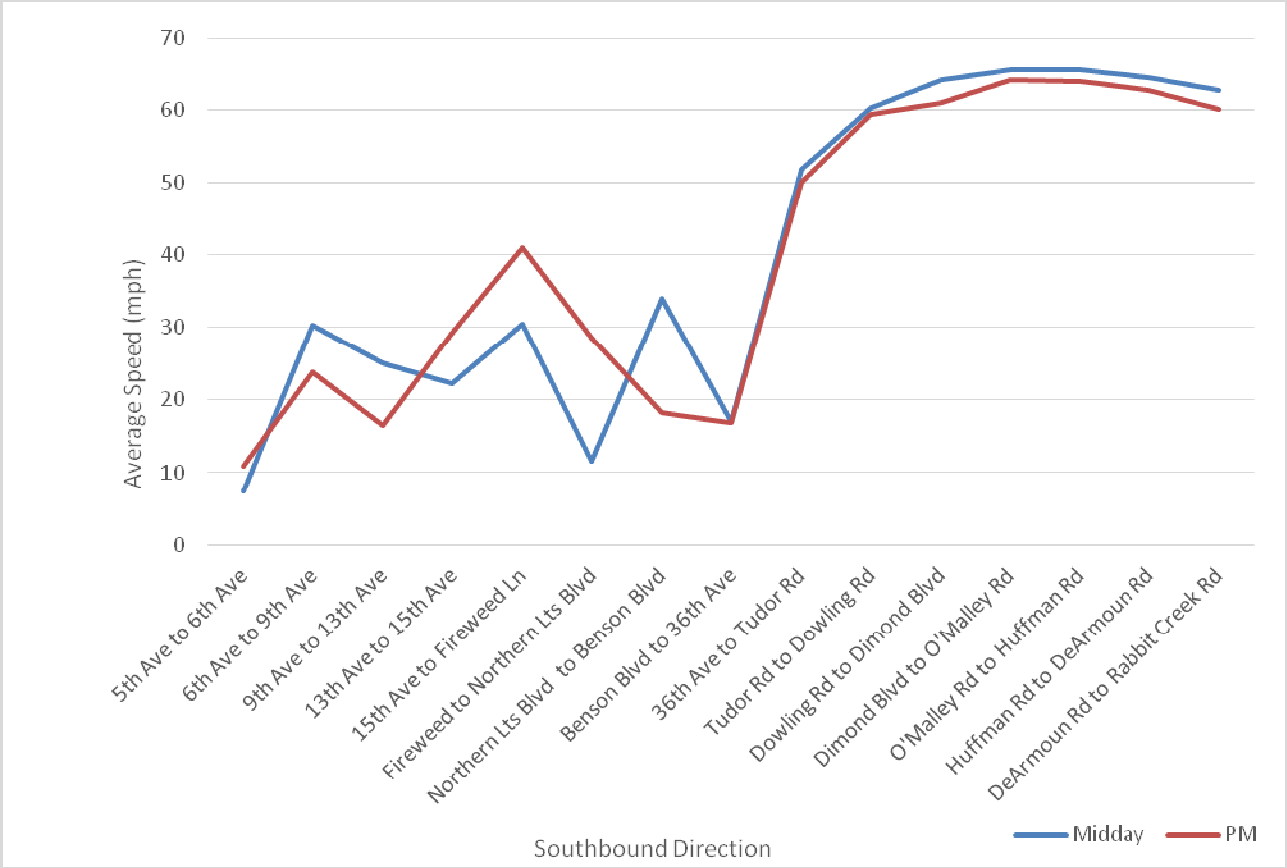
Figure 2.8 Morning Automobile Travel Times on the Seward Highway Corridor



Source: Municipality of Anchorage Traffic Department Travel Time Reports.

This effect is even more pronounced during the afternoon commute. Figure 2.9 shows how traffic speeds increase significantly on Seward Highway (southbound) after traffic reaches the last traffic light at 36th Avenue. Several segments along the arterial portion of the Seward Highway are among the slowest streets in the entire road network.

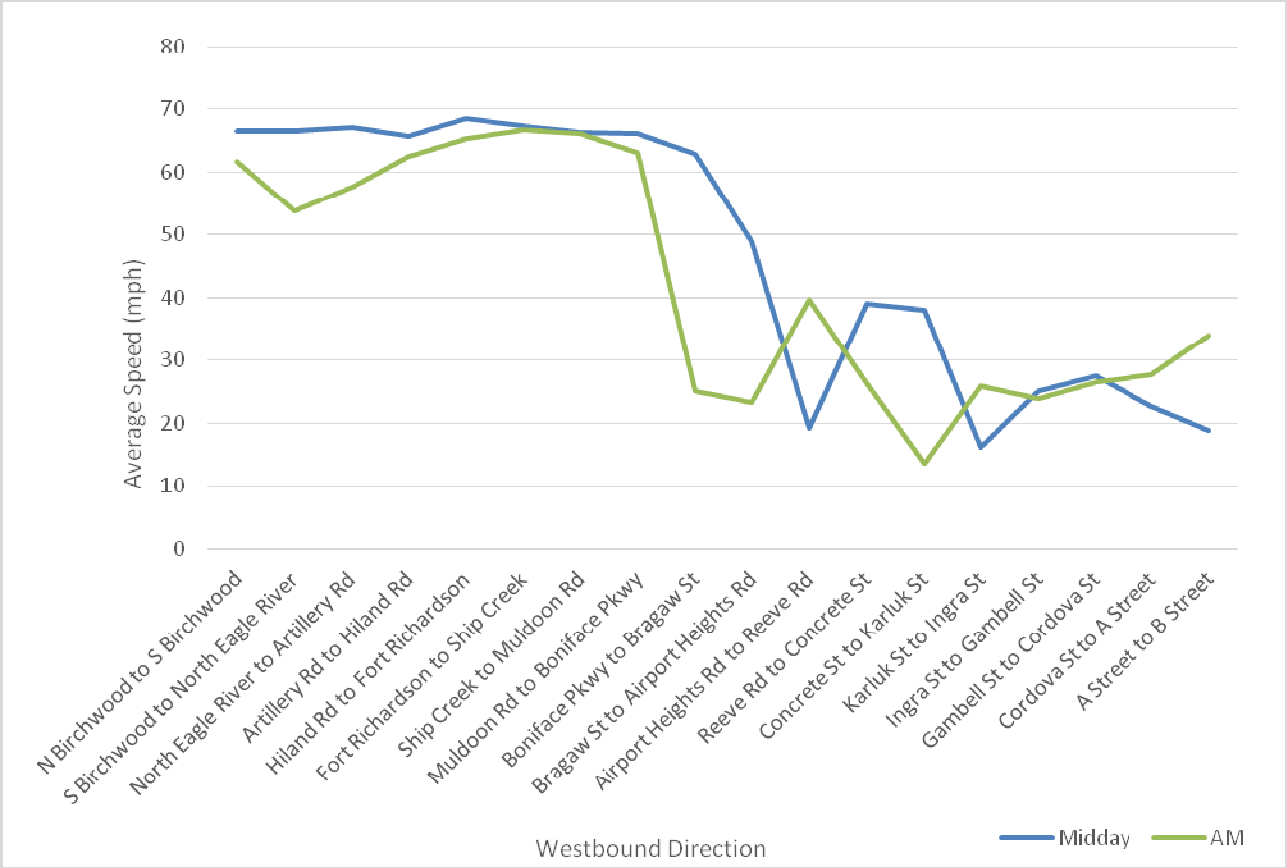
Figure 2.9 Automobile Travel Times on Seward Highway, PM Peak Period



Source: Municipality of Anchorage Traffic Department Travel Time Reports.

Similar conditions can be observed on Glenn Highway, another important commuting corridor in the Anchorage region. Figure 2.10 shows the speed profile for Glenn Highway during the AM peak period, on the westbound direction.

Figure 2.10 Automobile Travel Times on Glenn Highway, AM Peak Period

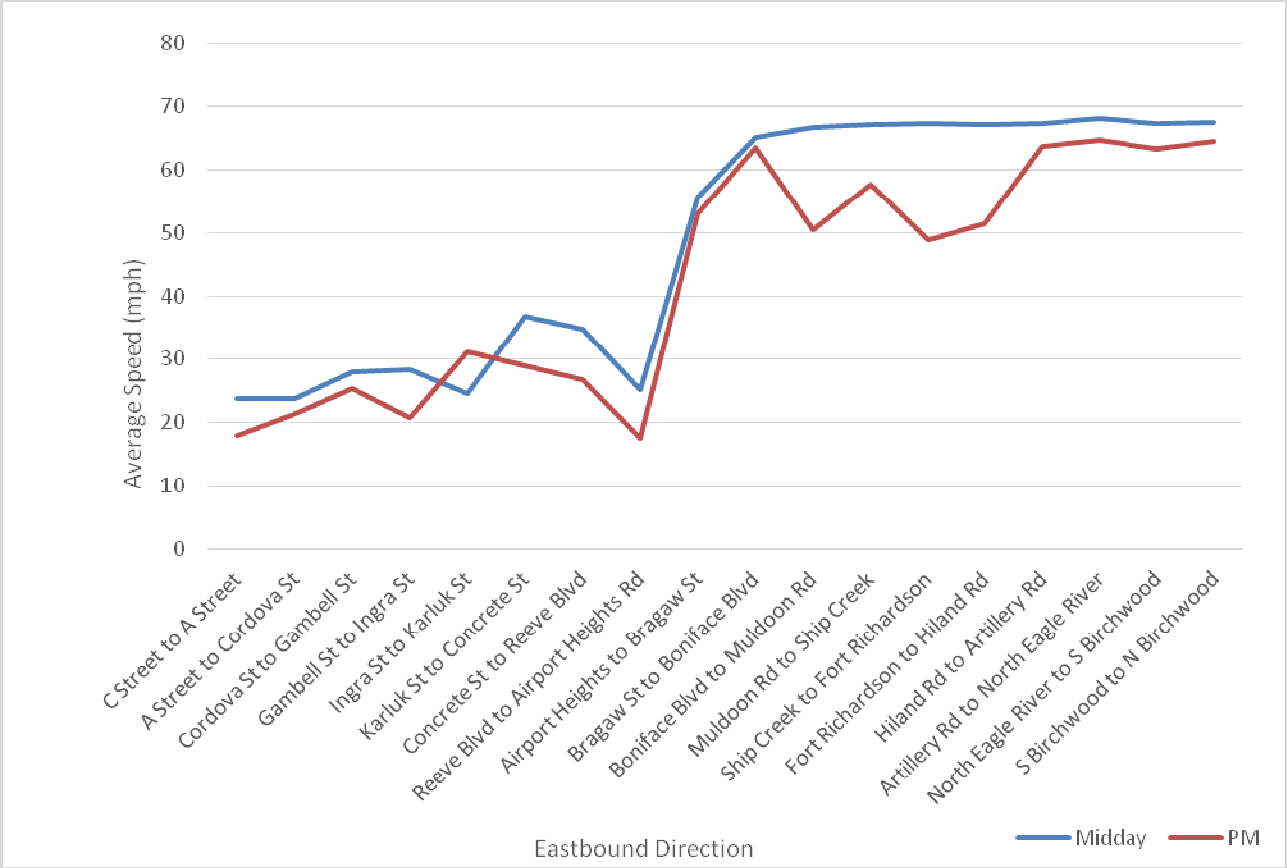


Source: Municipality of Anchorage Traffic Department Travel Time Reports.

Figure 2.10 shows the differences between the speeds present on Glenn Highway during the AM and Midday peak periods. It can be observed that in general the AM peak periods present lower speeds, particularly on the 'plateau' section (between Birchwood and Bragaw St), where speeds are at free flow conditions during the Midday peak period, but lower during the AM peak period.

The same conditions can be observed in Figure 2.11, during the PM peak period. As it can be expected, this characteristic is more evident during the PM peak periods, when longer travel times are experienced compared to other peak periods.

Figure 2.11 Automobile Travel Times on Glenn Highway, PM Peak Period

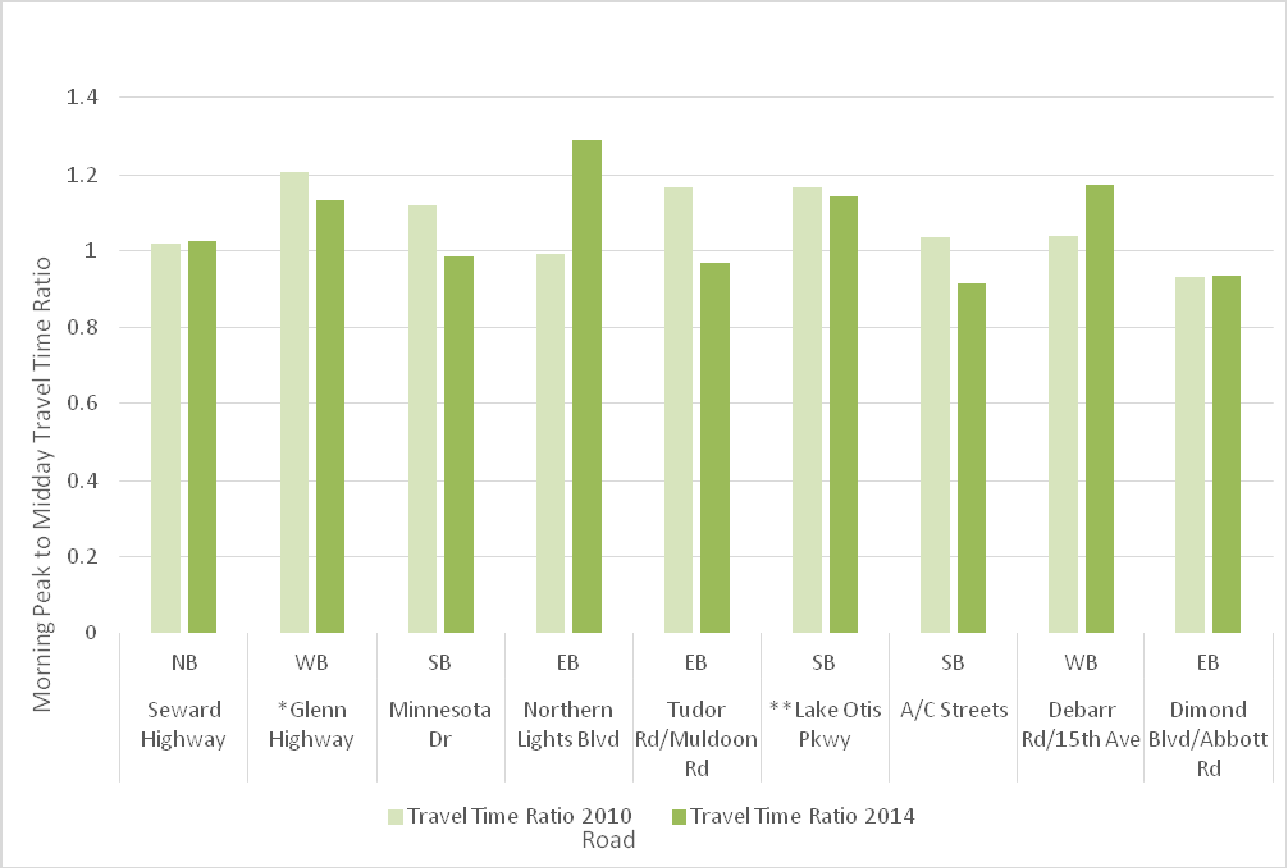


Source: Municipality of Anchorage Traffic Department Travel Time Reports.

2.3.1 Commute Congestion Delays

A strong asset of the travel time evaluation is that it allows analyst to compare a commonly used metric across different time periods. Figure 2.12 and 2.13 help illustrate this characteristic, as the AM and PM peak periods are compared to the Midday peak period, and with previous Status of the System results.

Figure 2.12 AM-Midday Peak Period Travel Time Ratio Comparison



Source: Municipality of Anchorage Traffic Department Travel Time Reports, Status of the System Report 2010.

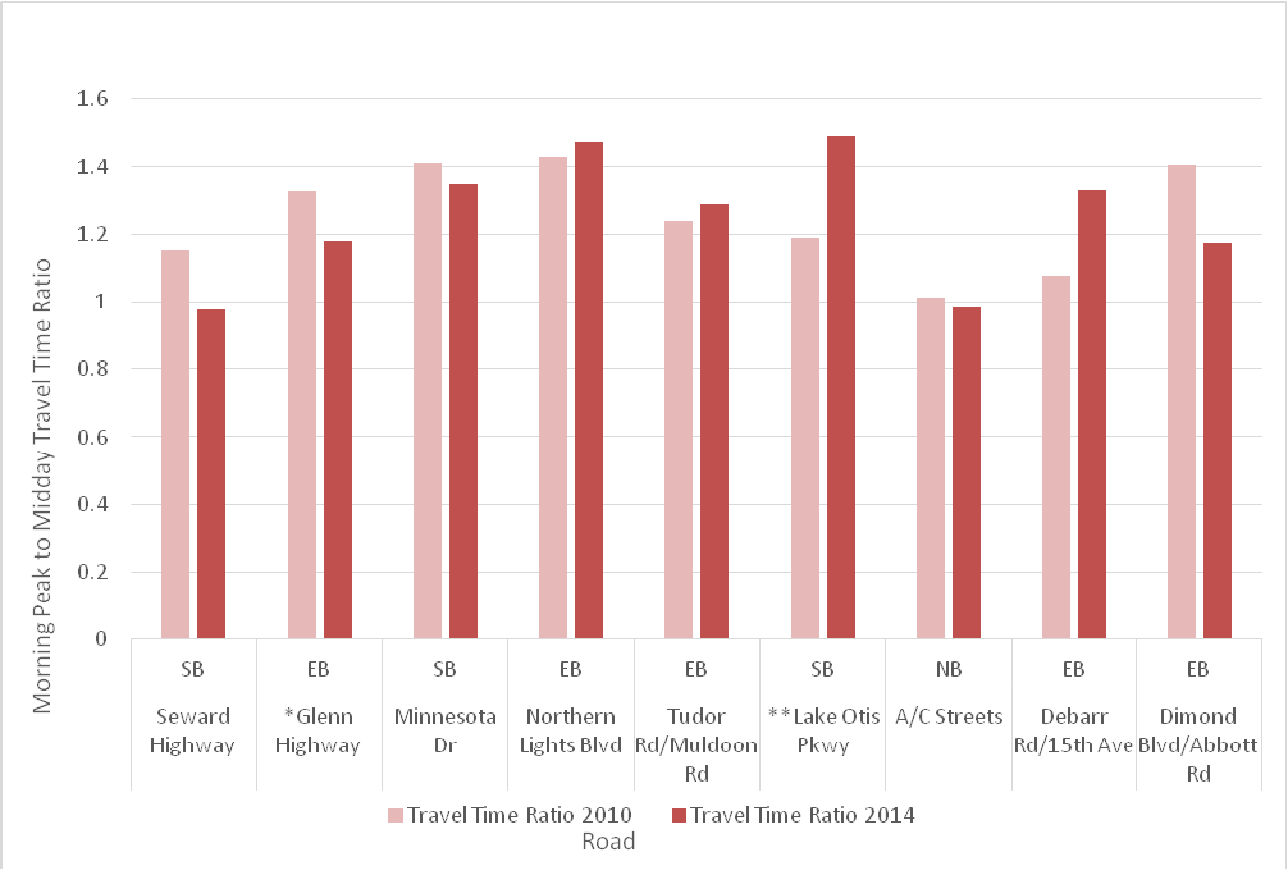
Note: *Glenn Highway was previously reported from C St to Artillery Road, the section currently presented is from C St to Birchwood. Data is not fully comparable

Note: **Lake Otis Parkway was previously reported from 15th Ave to O'Malley Road. Currently, Lake Otis Parkway is presented from 15th to Huffman Rd. Furthermore, the intersection of 40th and Lake Otis Parkway had improvements done between these years. Data is not fully comparable.

Figure 2.12 shows the differences in travel times between the AM and Midday peak periods using a travel time ratio. If the travel time ratio is above 1, that means the AM peak period is higher than the Midday travel time. Also, differences with the last Status of the System report can be observed. We can see that almost half of the corridors have a larger travel time in the AM peak period, particularly the Northern Lights Blvd corridor, where travel time is approximately 20% greater than during the midday. Glenn Highway and Seward Highway have reduced travel times since 2010, but travel times continue to be above the Midday peak values.

Figure 2.13 shows similar results, for the PM peak period. The graph shows that 7 of the 9 corridors analyzed have longer travel times during the PM peak period, compared with the Midday peak period, with Lake Otis Parkway and Northern Lights Boulevard the corridors with the largest difference. Conditions on Seward Highway are similar to the Midday peak period, and show travel time reductions from 2010.

Figure 2.13 PM-Midday Peak Period Travel Time Ratio Comparison



Source: Municipality of Anchorage Traffic Department Travel Time Reports, Status of the System Report 2010.

Note: *Glenn Highway was previously reported from C St to Artillery Road, the section currently presented is from C St to Birchwood. Data is not fully comparable

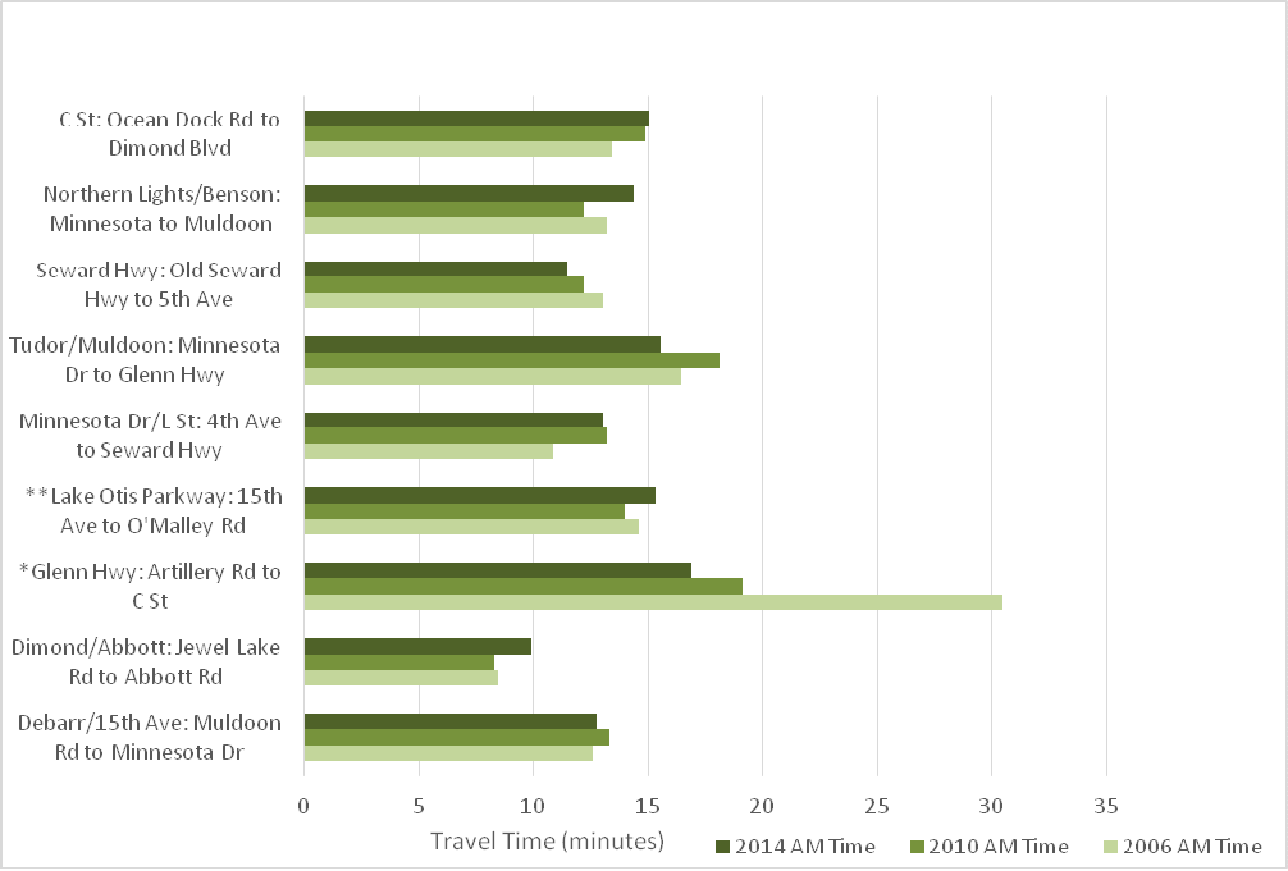
Note: **Lake Otis Parkway was previously reported from 15th Ave to O'Malley Road. Currently, Lake Otis Parkway is presented from 15th to Huffman Rd. Furthermore, the intersection of 40th and Lake Otis Parkway had improvements done between these years. Data is not fully comparable.

2.3.2 Travel Time Comparisons with Previous Years

The MOA has been conducting travel time surveys for the same nine corridors since 1998. For 1998, 2006, and 2010 travel time data were collected in the fall; and in 2003, travel time

studies were performed in the spring. Because travel behavior and volume may differ between spring and fall, only the recent fall travel time runs were considered to be suitable for comparison purposes. The three sets of measurements (2006, 2010, and 2014) permit a comparison of how travel times have changed during the 8-year period. Figures 2.14 and 2.15 show the results from this analysis.

Figure 2.14 AM Peak Period Travel Times: 2006, 2009, 2013



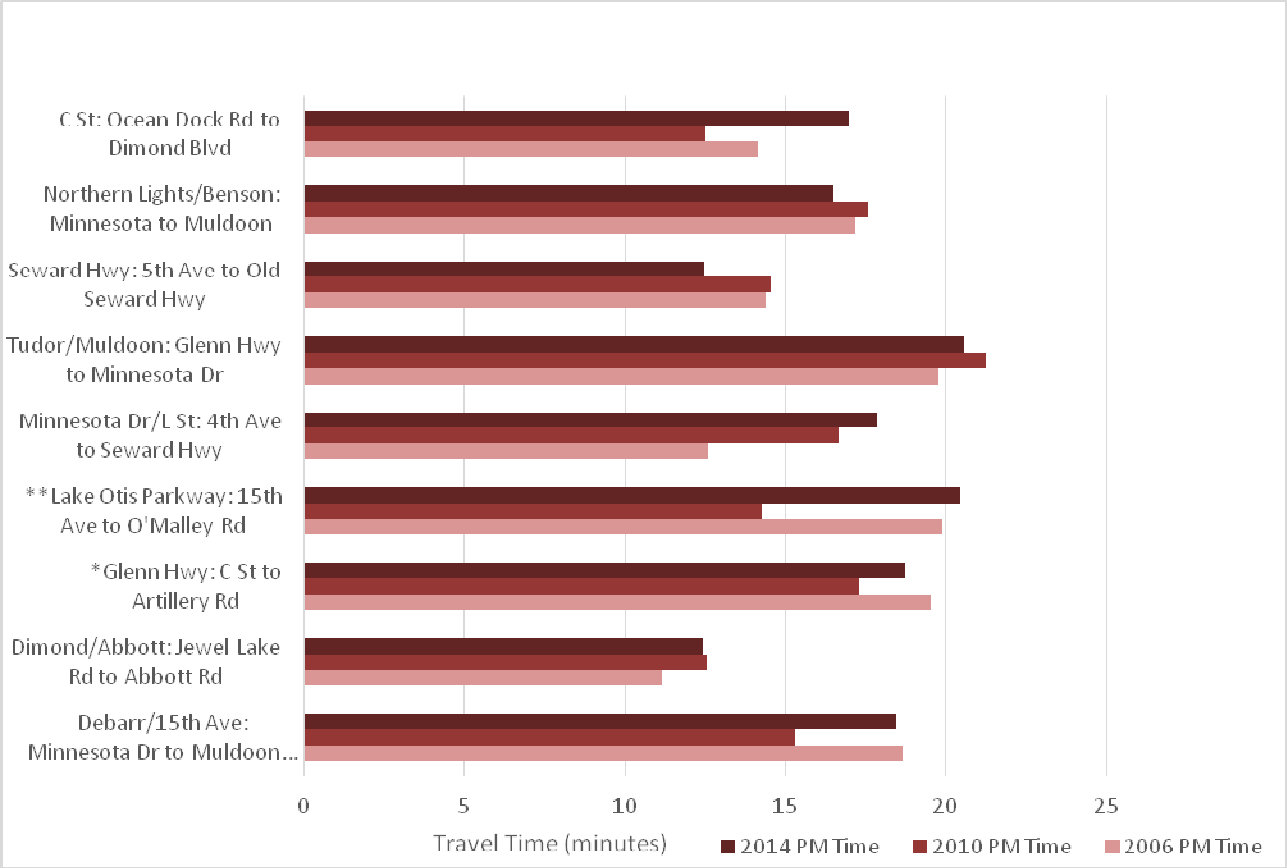
Source: Municipality of Anchorage Traffic Department Travel Time Reports, Status of the System Report 2010.

Note: * This graph shows the travel times from Artillery Rd to C St, a shorter corridor from the one data was collected from. This is presented for comparison purposes with previous years. The graph of the complete corridor, from Birchwood St to C St, can be seen in Appendix A.

Note: ** This graph shows the travel times from 15th Ave to O'Malley Rd, a shorter corridor from the one data was collected from. This is presented for comparison purposes with previous years. The graph of the complete corridor, from 15th Ave to Huffman, can be seen in Appendix A. Furthermore, the intersection of 40th and Lake Otis Parkway had improvements done between these years. Data is not fully comparable.

We can observe in Figure 2.14 that travel times remain similar to previously reported travel times, except for Glenn Highway and Lake Otis Parkway (see note). Other corridors do not present significant changes.

Figure 2.15 PM Peak Period Travel Times: 2006, 2009, 2013



Source: Municipality of Anchorage Traffic Department Travel Time Reports, Status of the System Report 2010.

Note: * This graph shows the travel times from C St to Artillery Rd, a shorter corridor from the one data was collected from. This is presented for comparison purposes with previous years. The graph of the complete corridor, from C St to Birchwood, can be seen in Appendix A.

Note: ** This graph shows the travel times from 15th Ave to O'Malley Rd, a shorter corridor from the one data was collected from. This is presented for comparison purposes with previous years. The graph of the complete corridor, from 15th Ave to Huffman, can be seen in Appendix A. Furthermore, the intersection of 40th and Lake Otis Parkway had improvements done between these years. Data is not fully comparable.

Figure 2.15 shows how travel times have increased in general in the PM peak period across the different corridors. Aside from the travel time increases presented on Glenn Highway and Lake Otis Parkway (see notes), other corridors experiencing increased travel times from previous years are C St, Minnesota Dr, and Debarr/15th Ave.

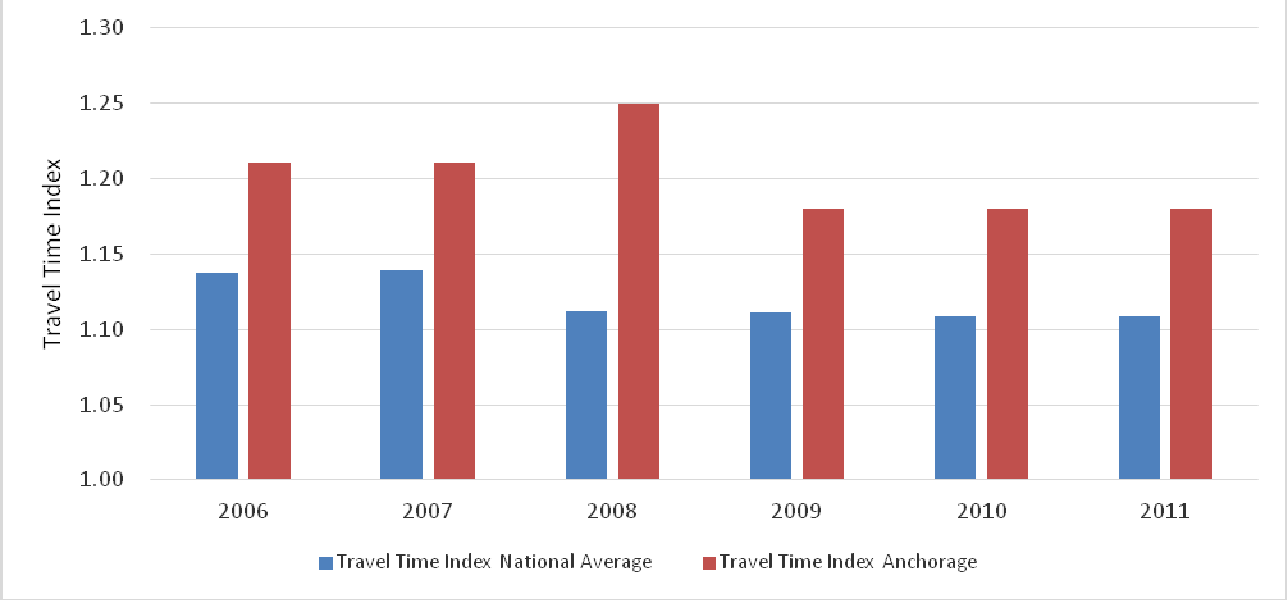
In summary, from Figure 2.13, we can observe that travel times during the PM peak period are considerably higher than during the Midday peak period. This result is consistent with results obtained in the previous Status of the System report. Of the corridors evaluated, Figure 2.14 and 2.15 show that, besides Glenn Highway and Lake Otis Parkway (see notes) C St and Minnesota Drive presented a slight increase in travel time during the PM peak hours.

2.3.3 Congestion Comparison with other Metropolitan Areas

The Texas Transportation Institute (TTI) at Texas A&M University has been monitoring congestion in urban areas of the United States since 1982. Its latest publication, *2012 Urban Mobility Report*[3], provides congestion estimates for all 498 urban areas and specific congestion estimates calculated for 101 individual urban areas.

Figure 2.16 shows the Travel Time Index obtained and published by TTI for the Anchorage region, as well as the average obtained for small Metropolitan Areas (with a population below the 500,000 threshold). The Travel Time Index presented is the ratio of peak period travel time to free flow travel time. Similar to the travel time ratio obtained for Figures 2.12 and 2.13, this metric allows us to observe the percentage increase in in travel time, from free flow conditions.

Figure 2.16 Travel Time Index Comparison with Average Similar Metropolitan Areas



Source: Texas Transportation Institute (TTI) & Texas A&M University

[3] Source: http://mobility.tamu.edu/ums/

We can observe in Figure 2.16 that Anchorage's Travel Time Index is above the average small metropolitan area. According to TTI data, average travel times in Anchorage are 18% higher than on free flow conditions. Average small metropolitan areas are 11% higher. This general comparison is not representative of overall traffic conditions, and does not describe with sufficient precision congestion issues in Anchorage. Anchorage has specific characteristics and conditions that are not comparable with average metropolitan areas in the US. Differences are driven by geography, topography and climate. However, this graph is helpful inputting Anchorage's general conditions in perspective with other metropolitan areas.

2.4 Traffic Safety

One of the most important metrics to follow on roadways usage is traffic safety. One of the main objectives of mobility components in transportation systems is to allow people and goods to move to a desired destination in a safe manner. To understand safety concerns on current infrastructure, crash records are presented and analyzed. Table 2.4 and Figure 2.17 show crash trends in the Municipality of Anchorage.

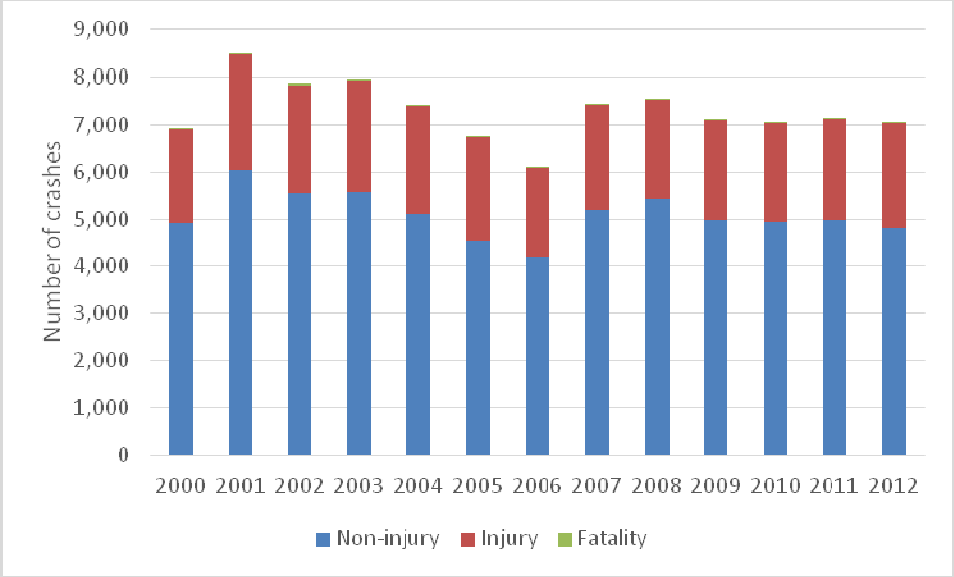
Table 2.4 Vehicle Crashes by Type, 2000-2012

Year	Total Accidents	Non-injury	Injury	Fatality
2000	6,922	4,933	1,961	28
2001	8,515	6,034	2,454	27
2002	7,874	5,558	2,282	34
2003	7,969	5,580	2,364	25
2004	7,410	5,124	2,259	27
2005	6,767	4,538	2,214	15
2006	6,115	4,191	1,909	15
2007	7,454	5,204	2,226	24
2008	7,533	5,426	2,091	16
2009	7,109	4,970	2,119	20
2010	7,057	4,945	2,100	12
2011	7,136	4,983	2,135	18
2012	7,054	4,801	2,238	15

Source: Municipality of Anchorage Traffic Engineering 2012 Annual Traffic Report, Status of the System 2010 Report.[4]

[4] Small inconsistencies in crash reports can be observed with data from Alaska DOT. These differences are small, not having a significant impact on general trends.

Figure 2.17 Vehicle Crashes by Type, 2000-2012



Source: Municipality of Anchorage Traffic Engineering 2012 Annual Traffic Report, Status of the System 2010 Report.[5]

We can observe in Figure 2.17 that crashes have varied in a range of 6,000 to 8,000 crashes per year. However, in recent years, the total number of crashes has not changed as drastically, being in the vicinity of 7,100 crashes per year. There is no clear sign that crashes have been reduced in the last decade. However, considering that VMT has increased in recent years, this can be taken a small improvement from previous years. As far as fatal crashes, Table 2.2 shows that the number of crashes varies significantly, and there is no evident pattern suggesting that this type of crashes has increased or decreased.

2.4.1 Effects of Crashes on Non-Recurring Congestion

One of the main causes of non-recurring congestion are crashes and incident management on freeways. However, in order to measure this indicator, a more detailed dataset is required measuring the duration or impact of non-recurring events. However, from the Status of the System Report 2010, we know that vehicular crashes may have a substantial effect on highway travel speeds, especially in areas where there are no alternative routes around the accident, such as the Glenn Highway.

Table 2.5 shows the number of vehicular crashes on the Glenn Highway as reported in the previous Status of the System report, and updated with the Annual Traffic Crashes Report, prepared by Alaska DOT. In every year, except 2007, more than one crash per day occurred on average on this highway stretch. This statistic implies that there is a considerable probability that crashes on Glenn Highway could be causing traffic daily.

[5] Small inconsistencies in crash reports can be observed with data from Alaska DOT. These differences are small, not having a significant impact on general trends.

Table 2.5 Severity of Glenn Highway Crashes, 2000-2013

Year	Number of Fatality	Total Number of Crashes
2000	1	464
2001	4	457
2002	4	547
2003	5	428
2004	5	459
2005	7	522
2006	1	482
2007	1	405
2008	3	290
2009	1	388
2010	3	540
2011	1	456

Source: Alaska Department of Transportation and Public Facilities Annual Traffic Crashes Reports.

2.5 Road System Summary

In this report, several performance measures are presented to characterize the current status of the roadway system. From the analysis the following conclusions were drawn:

- The results show that the PM peak period roadway network has a higher level of congestion than the AM peak period.
- The highway system is currently operating on a desirable level of congestion, given that the LOS levels in the highway segments analyzed were mostly above the acceptable level of service "C". However, in the afternoon in particular, the system is operating at levels below acceptable, particularly on Glenn Highway and Seward Highway in the sections close to and within the urban core.
- With respect to the LOS at the intersection level, we observed that there are several intersections below acceptable levels of service. In the AM peak period, the intersection that requires more attention is Glenn Highway with Airport Heights Drive. In the afternoon peak period, this intersection has the same characteristics. Furthermore, traffic conditions in the PM peak period deteriorate across the Tudor Rd corridor.
- Evaluating total VMT at the state level and the Anchorage municipality level, we observe that in general, VMT has increased moderately in both.
- The evaluation of travel times across different corridors in Anchorage show similar results to the ones obtained in the LOS analysis. Although data is not fully comparable with

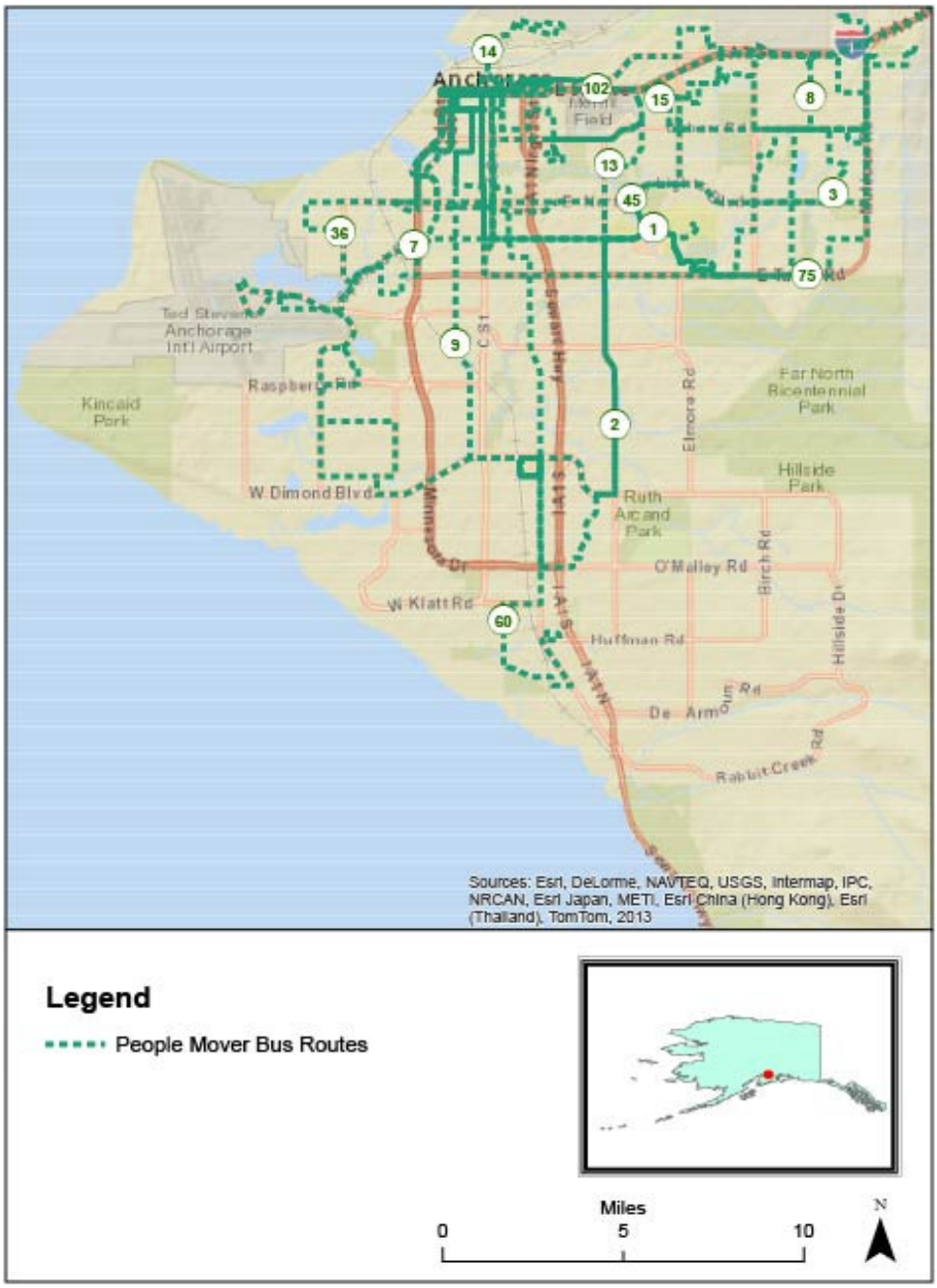
previous Status of the System reports on Glenn Highway and Lake Otis Parkway, these corridors presented the highest increase in travel times. In the PM peak period, C St, Minnesota Dr, and Debarr Rd also presented an increase in travel times.

- Analyzing traffic safety data, we observed that the total number of crashes in the region has remained stable at approximately 7,100 crashes per year. However, given that VMT has increased moderately, this can be observed as a moderate improvement over previous years.

3.0 Public Transportation

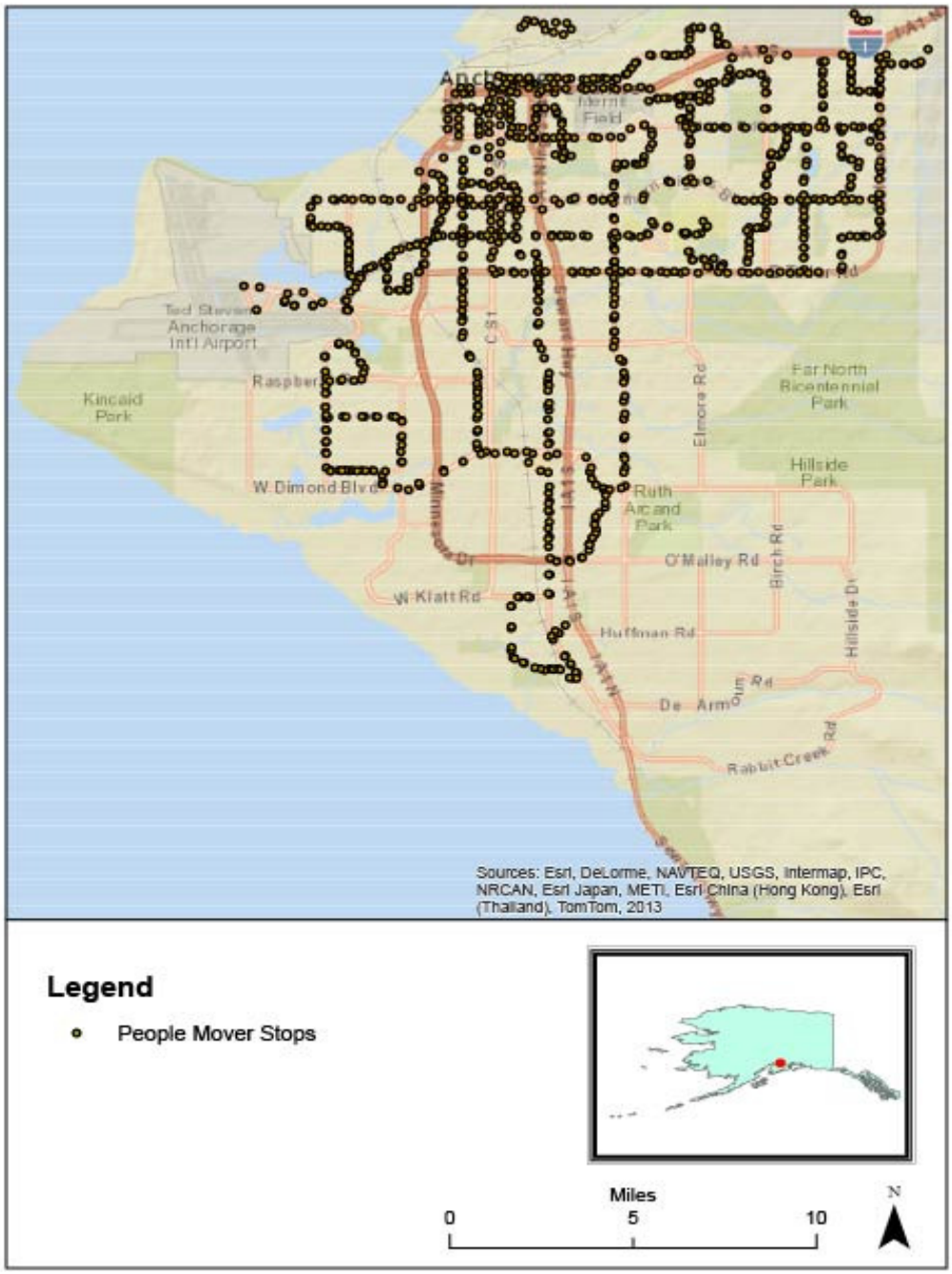
Anchorage's public transportation system, "People Mover", began operations in July 1974. Currently, People Mover has 14 regular transit routes, and provides paratransit services through "AnchorRIDES". Figure 3.1 shows the location of the 14 different fixed bus routes in Anchorage, and Figure 3.2 shows active bus stops in the Anchorage region.

Figure 3.1 People Mover Bus Routes in Anchorage Bowl, 2015



Source: Municipality of Anchorage

Figure 3.2 People Mover Bus Stops in Anchorage Bowl, 2015



Source: Municipality of Anchorage

Table 3.1 shows operating and passenger statistics of People Mover. Ridership has increased in the last couple of decades, peaking in 2008 with a total of 4,220,667 passengers. However since 2008, ridership has decreased, falling below the 4 million threshold in 2013.

Table 3.1 People Mover Operating and Passenger Statistics, 1996 -2013

Year	Peak Period Buses	Time Table Hours	Passenger Boardings
1996	38	105,569	3,052,690
1997	42	107,315	3,161,658
1998	42	108,666	3,220,524
1999	39	107,414	3,316,060
2000	40	104,506	3,356,982
2001	40	109,255	3,339,940
2002	41	110,449	3,120,567
2003	43	114,614	3,339,451
2004	46	124,734	3,536,059
2005	46	131,037	3,975,074
2006	46	130,324	3,948,228
2007	46	130,184	3,989,137
2008	46	132,120	4,220,667
2009	45	131,125	4,184,141
2010	43	126,655	4,145,569
2011	43	122,880	4,148,501
2012	43	122,673	4,088,549
2013	44	122,926	3,986,877

Source: Status of the System 2010, National Transit Database.

Figure 3.3 shows the average daily riders by People Mover, according to the day of the week. On average, People Mover has experienced stable or slightly declining ridership over the last 5 years.

There are several factors that influence transit ridership. In 2008, People Mover experienced its highest annual ridership in history. Gas prices were at an all-time high and the start of a nation-wide economic downturn had begun. Over the recent few years, Anchorage, like the rest of the country, has experienced declining gas prices that has somewhat correlated with declining ridership. Figure 3.3 shows the relationship between gas prices and ridership. Another potential factor is the operating budget. In 2008, the People Mover operating budget was almost $11.7 million. Since 2008, the operating budget has not kept up with inflation. If that were the case, the operating budget would have been about $13.4 million in 2015, but was only $12.7 million. Additionally, there have been two fare increases since 2008. The industry standard states that a 10% increase in fares will result in a 3% decrease in riders. Fares for monthly passes increased 10% and day passes increased 25% in January 2011. Fares for single rides increased 14% and monthly passes increased 9% in January 2014. Other fare increases in 2014 included seniors, people with disabilities, veterans, and youth passes.

The last major route restructure took place in 2002 and since, population and development trends have changed. It's also possible that the primary goal of People Mover has been a blend of maximizing ridership and maximum service coverage. Over the years, service coverage may have come at the cost of higher ridership. As a result, some routes may have lower ridership than if there was more frequent service elsewhere, but they're designed to provide service coverage, not maximize riders. In 2016, People Mover will re-examine the Anchorage bus network through a visioning project called Anchorage Talks Transit. The goal of this effort will be to have a community dialogue and to make choices about how the bus system operates. Policy and service change recommendations will be included to leverage existing resources in a way that results in an ideal bus network for Anchorage today.

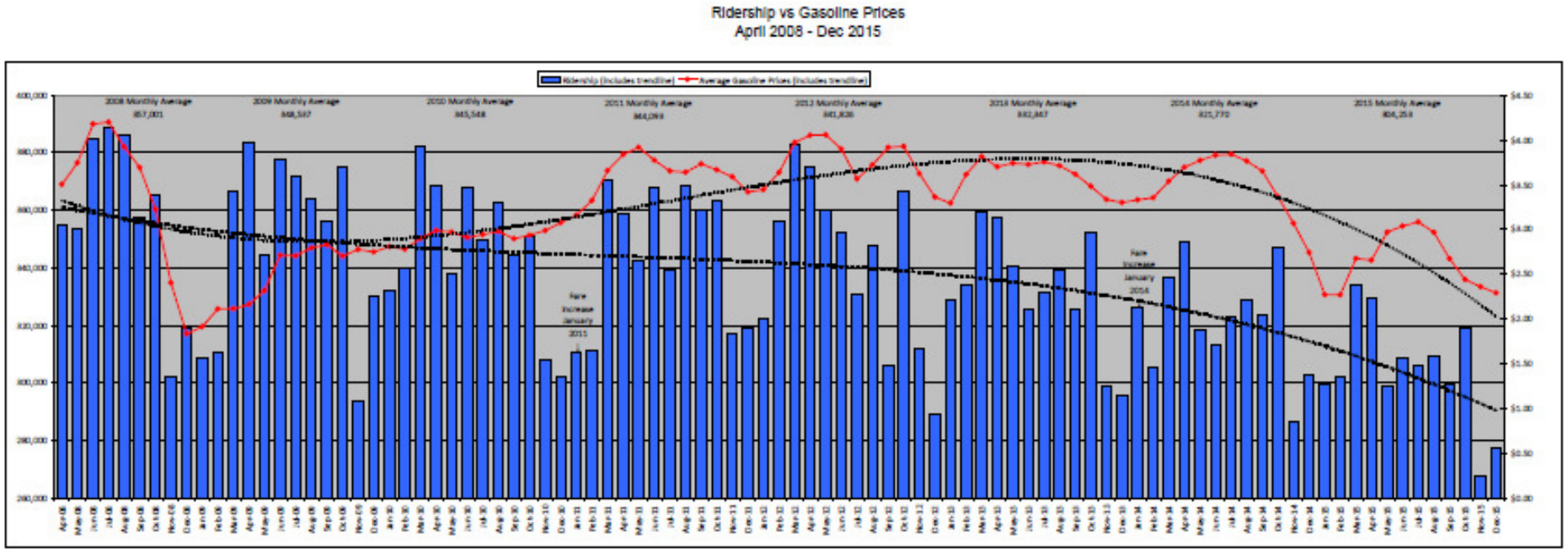
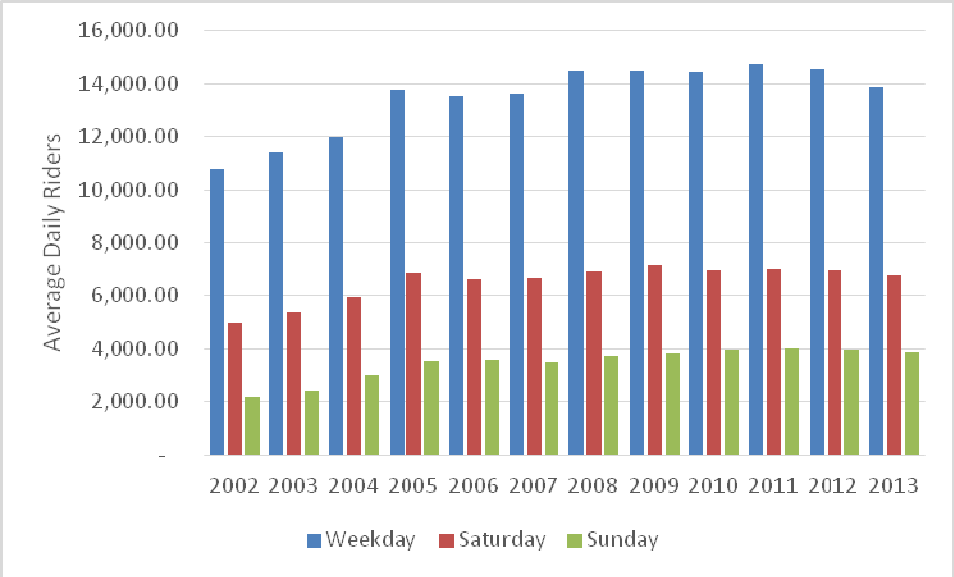


Figure 3.3 Fuel Prices & Transit Ridership

Source: MOA Public Transportation Department, Feb. 2016

Figure 3.4 People Mover Average Daily Riders



Source: Status of the System 2010, National Transit Database.

3.1 Service Hours and Service Productivity Changes

An important characteristic of public transportation is the frequency of service. Table 3.2 shows the latest frequencies on different days and periods, according to the schedules posted on People Mover's website. Long frequencies imply longer travel times, making the service less attractive.

Table 3.2 People Mover Routes and Schedules, August 2015

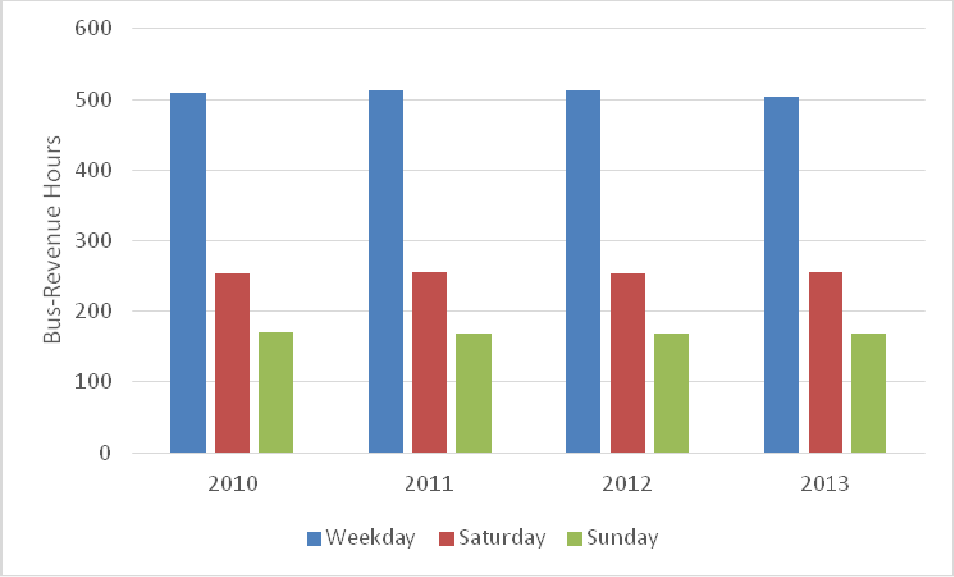
		Weekday		Weekend	
	Service Span (hours)	Service Frequency (minutes)		Service Frequency (minutes)	
Rote		Peak Periods	Midday	Saturday	Sunday
1 – Lake Otis Pkwy and Muldoon Rd	15:42	60	60	60	60
2 – Lake Otis Pkwy–Downtown	16:37	60	60	60	60
3 – Northern Lights	17:00	30	30	60	60
7 – Spenard Rd/Jewel Lake Rd	17:15	30	30	60	60
8 – Northway Mall	15:40	60	60	60	60
9 – Arctic Boulevard	15:37	30	30	60	60
13 – 15th Ave, UAA, and Muldoon	15:55	60	60	60	60

Rd					
14 – Government Hill	15:19	60	60	60	60
15 – 15th Avenue	15:58	30	30	60	60
36 – 36th Avenue	16:43	60	60	60	60
45 – Mountain View	17:21	30	30	60	60
60 – Old Seward Highway	15:47	60	60	60	60
75 – Tudor Road	15:37	30,60	60	60	60
102 – Eagle River–Downtown	14:45	30	no service	no service	no service

Source: People Mover Website, Accessed 8/5/2015.

Another useful metric to determine the operation of transit services is average daily bus revenue hours. This metric shows the time in which buses are active to provide the service. According to the data provided by the service provider to the National Transit Database, the average daily bus revenue hours has decreased from a peak in 2011 of 513 hours in an average weekday, to 503 hours.

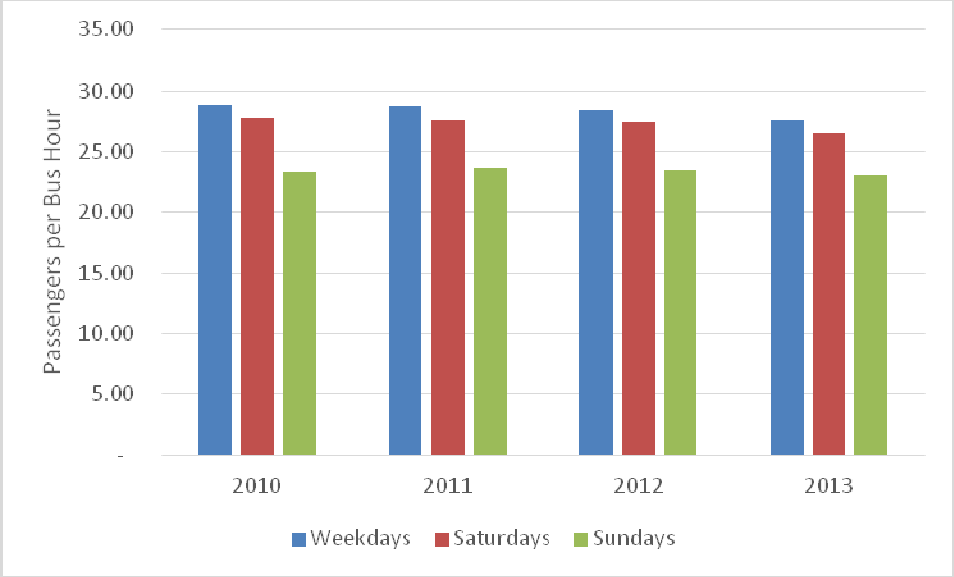
Figure 3.5 Average Daily Bus Revenue Hours, 2010-2013



Source: National Transit Database

With the information from the average daily bus revenue hours, and the ridership information, you can determine an average productivity rate. This productivity metric was calculated by dividing the number of passengers moved by the number of revenue hours. We can observe in figure 3.5 that productivity has decreased slightly from 28.8 passengers per bus hours in 2010, to 27.5 passengers per bus hours in 2013.

Figure 3.6 People Mover Productivity, 2002-2010



Source: National Transit Database

3.2 Transit Mode Share for Journeys to Work

To understand how the transit service is being used, it is useful to see how it affects the users' mode share. Table 3.3 shows data from the US Census Bureau, describing which modes of transportation commuters are using to go to work. Based on the data from 2000 and 2010, the years when the census took place, transit mode share experienced a decrease after 2000 but has increased back nearly to the 2000 level by 2013. Mean travel time for all modes, however, has shown a steady increase over the past 5 years.

Table 3.3 US Census Mode Shares and Travel Time for Journeys to Work by Anchorage Residents, 2000, 2009-2013

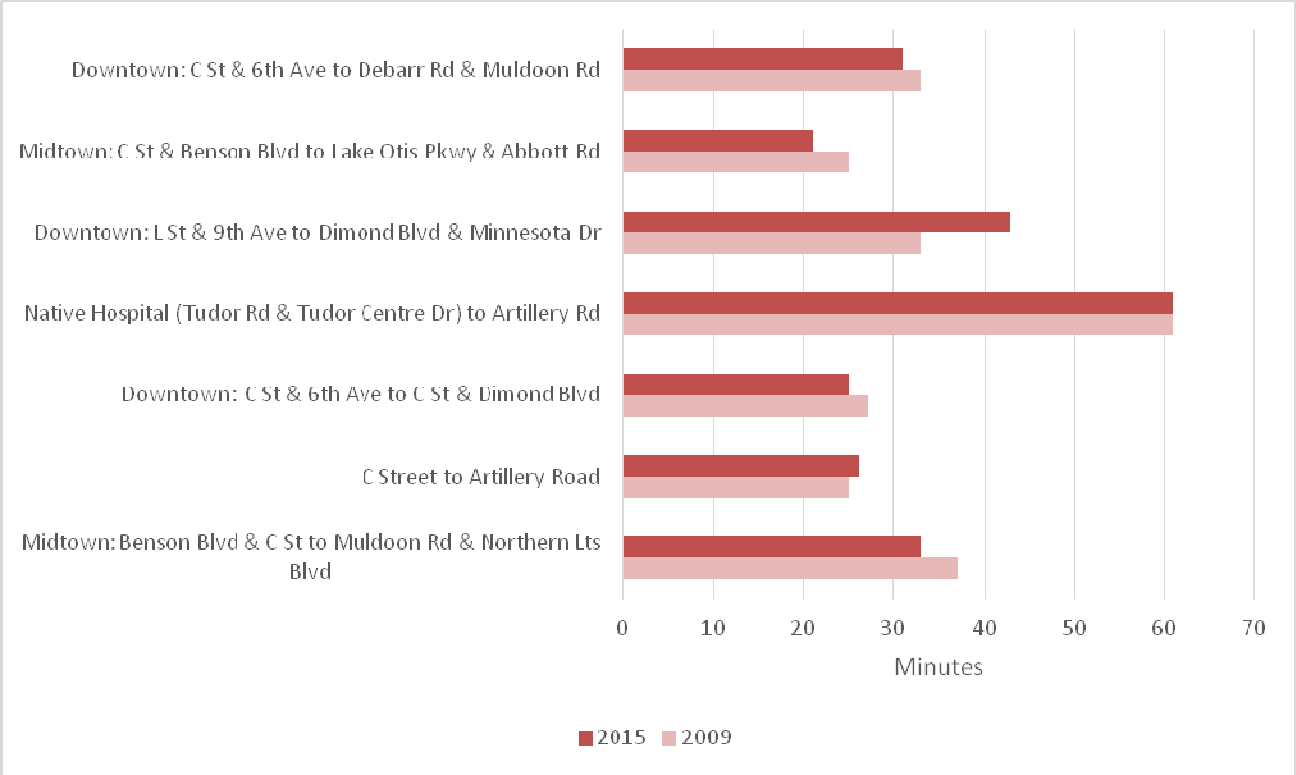
	Percentage of All Travel to Work					
Mode to Travel to Work	**2000**	**2009**	**2010**	**2011**	**2012**	**2013**
Automobile, truck, or van – drove alone	74.4	75.9	75.9	75.7	75.4	75.1
Automobile, truck, or van – carpooled	14.6	13	13.2	12.9	13	12.6
Public transportation (including taxicab)a	2	1.4	1.5	1.7	1.7	1.9
Walked	2.7	2.8	2.6	2.7	2.7	2.8
Other means	2.6	3	3.1	3.3	3.5	3.8
Worked at home	3.7	3.9	3.7	3.7	3.6	3.8
Travel Time	**2000**	**2009**	**2010**	**2011**	**2012**	**2013**
Mean travel time to work (minutes)	18.7	18	18.2	18.6	19	19.4

Source: U.S. Census American Community Survey 5 year estimates.

3.3 People Mover Travel Times

An important metric to describe the quality of the service and the effect of congestion on the user is travel time. For this purpose, travel times across seven corridors in 2015 are shown in Figure 3.6, along with the travel times registered in the previous Status of the System report.

Figure 3.7 Travel Time Comparison for Transit Vehicles at PM Peak Period, 2009 and 2015



Source: Municipality of Anchorage, Public Transportation. Status of the System Report 2010.

Figure 3.6 shows that most travel times in 2015 remained similar to those of 2009. Only one corridor, the L St & 9th Ave to Dimond Blvd & Minnesota Drive, corresponding to Route 7, experienced a significant increase its travel time.

3.4 AnchorRIDES Paratransit Services

AnchorRIDES operational statistics present similar trends to the ones observed in the People Mover's data. Table 3.4 shows how ridership has increased from 172,972 passenger in 2001, to a peak demand of 198,510 passengers in 2011. However, in recent years - 2012 and 2013 - passenger trips have been decreasing. However, the decrease in demand has not affected the productivity index, or passenger per revenue hour, as the system has adjusted to the demand, an important characteristic of on-demand paratransit services.

Table 3.4 AnchorRIDES Operating Data. 2001-2013

Year	Revenue Hours	Fleet Miles	Passenger Trips	Passenger/Revenue Hours
2001	58,039	1,070,935	172,972	2.73
2002	66,271	1,168,943	180,663	2.82
2003	68,313	1,241,080	192,884	2.79
2004	70,143	1,252,168	196,021	2.73
2005	68,534	1,279,421	190,875	2.29
2006	63,002	1,131,333	183,055	2.23
2007	86,419	1,172,992	180,451	2.09
2008	84,428	1,135,879	191,606	2.27
2009	83,517	1,131,220	194,875	2.33
2010	84,492	1,148,703	197,756	2.34
2011	99,867	1,264,545	198,510	1.99
2012	94,515	1,180,408	196,446	2.08
2013	84,350	1,073,816	184,021	2.18

Source: Status of the System Report 2010, National Transit Database.

AnchorRIDES is the state designated coordinated transportation system for the urbanized greater Anchorage area providing human service transportation on behalf of local, state and non-profit agencies. Trips provided by AnchorRIDES are funded from a variety of mutually exclusive funding sources and grants. When a funding source or grant is reduced or eliminated, there is a direct correlation to a reduction in trips provided.

A review of AnchorRIDES' operating history has revealed multiple reasons for the decline in passenger trips, revenue hours, and fleet miles. Medicaid Home and Community Based (HCB) Waiver funded trips declined by 35% in 2013 due to a state back-log in recipient certifications and a MMIS IT software migration problem. The senior Transportation program had a reduction of 3,000 trips in 2013 due to the closure of the Foster Grandparent agency. The Rural Alaska Community Action Program, Inc. took over a year later as the new Foster Grandparent agency and is only funding approximately 1/3 of the trips the former agency funded. Municipal ADA paratransit and senior contract trips have not decreased at the level of the other coordinated trips, and in 2015 municipal trips increased by 5%. Additionally, we are pursuing Non-Emergent Medicaid Transportation (NEMT) certification for general Medicaid ground transportation trips to replace the Medicaid HCB Waiver trips reductions that have occurred since 2013.

3.5 Public Transportation Summary

Analyzing the performance measures presented, the following conclusions can be drawn for the public transportation service in Anchorage:

- Public transportation services in Anchorage are starting to show a decline in their performance measures. After reaching an all-time high ridership in 2008, breaking the threshold of the 4 million passengers, ridership started to decrease, going below the 4 million passengers in 2013.

- The decrease in ridership has affected other operational performance measures. Bus revenue hours decreased from 2010 to 2013; the number of passengers per bus revenue hours (the productivity index presented) decreased too.

- The percentage of commuters using public transportation decreased from 2% in 2000 to 1.5% in 2010. However, estimations using the American Community Survey (a sample dataset), estimate that this share has increased in 2013 back to 2%. This may be an indication that the decline is ridership is more pronounced in off-peak periods than peak periods.

- Travel time data showed that service delays have not increased from previous years, except on Route 7. The corridor from the L St & 9th Ave to Dimond Blvd & Minnesota Drive increased its travel time from 33 to 43 minutes.

- Demand has decreased for the paratransit service AnchorRIDES. However, the variation in the productivity index has not been affected by the reduction in demand.

4.0 Ride Sharing

An increasingly important transportation mode is ride sharing. Anchorage's ride sharing system, "Share-A-Ride", works to reduce traffic congestion and improve air quality by promoting alternatives to driving alone. As of February 1st, 2014, vRide, Anchorage Share-A-Ride's vanpool contractor, provides vanpool ride-matching services.

The Municipality of Anchorage is investing in a multimodal trip planning tool and smartphone app that provides a one-stop shop allowing travelers to easily and comprehensively compare travel options (transit, biking, walking, driving, carpooling, carsharing, vanpooling etc.). One of the biggest draws of RideAmigos is the multimodal trip data, GIS information, administration tools, and functions that are not currently available to AMATS, Transit, the Planning Department, or Air Quality for planning and implementation purposes.
The RideAmigos system leverages a highly intuitive, contemporary interface that provides rapid access to the region's transportation options within a comprehensive system. The robust multimodal dashboard provides commuters with modal comparison in time, distance, economic, environmental, health, and other custom data points. This system is carefully engineered to match and promote only relevant trip data.

As Anchorage evolves from the traditional mind-set of offering a single mode 'Ride Matching' system our ability to incentivize and track local carpools increases. Funding for the RideAmigos project is from a Federal Transit Administration and Department of Defense grant. Additionally, funding for the annual maintenance fee is programmed into the 2015-2018 TIP.9

4.1 Ride Sharing Statistics

Table 4.1 shows Ride sharing statistics of the service provided in Anchorage.

Table 4.1 Anchorage Ride Sharing Statistics, 2005-2013

Year	Registered Applicants	Active Carpools	Active carpoolers	Active vanpools	Active vanpoolers
2005	4602	328	659	24	375
2006	4822	278	557	41	569
2007	4946	181	365	42	637
2008	4774	179	361	52	810
2009	4823	179	361	52	917
2010	N/A	N/A	N/A	N/A	N/A
2011	5151	137	276	66	1152
2012	5291	135	272	65	992
2013	2249	124	250	65	972
2014	1507	N/A	N/A	65	840

Source: Status of the System. Interim 2035 Metropolitan Transportation Plan

Table 4.1 shows how Anchorage's ride sharing use has changed over time. Active carpools and carpoolers have decreased significantly over the past 10 years[6] although it should be noted that once formal carpools are formed they may continue at some point on an informal basis and thus not be reflected in the above data. Vanpools on the other hand have gone up and down over the 10 year period shown above with significant increases between 2005 and 2011, and a moderate decline over the past 4 years.

4.2 Monitoring Commuter Vehicle Occupancy

The objective of ride-sharing programs is to reduce the number of single occupant vehicles for commuting trips. This goal helps reduce congestion during peak hours by reducing vehicular demand. The previous Status of the System report presents data on average persons per vehicle during the AM peak period. This data shows that occupancy rates dropped from approximately 1.25 to 1.05 in 2009. Updated information on these data is not currently available.

4.3 Ride Sharing Summary

- It was observed that the use of Anchorage's ride sharing system is in decline. The active number of carpoolers decreased from 659 users in 2005 to 250 in 2013. Furthermore, the number of active vanpooler also decreased from 1152 participants in 2011, to 840 in 2014.
- With the investment in RideAmigos additional ride sharing data will become available.

[6] The number of active carpools and active carpoolers was not collected in 2014 due to a change in collection methods.

5.0 Pedestrian and Bicycles

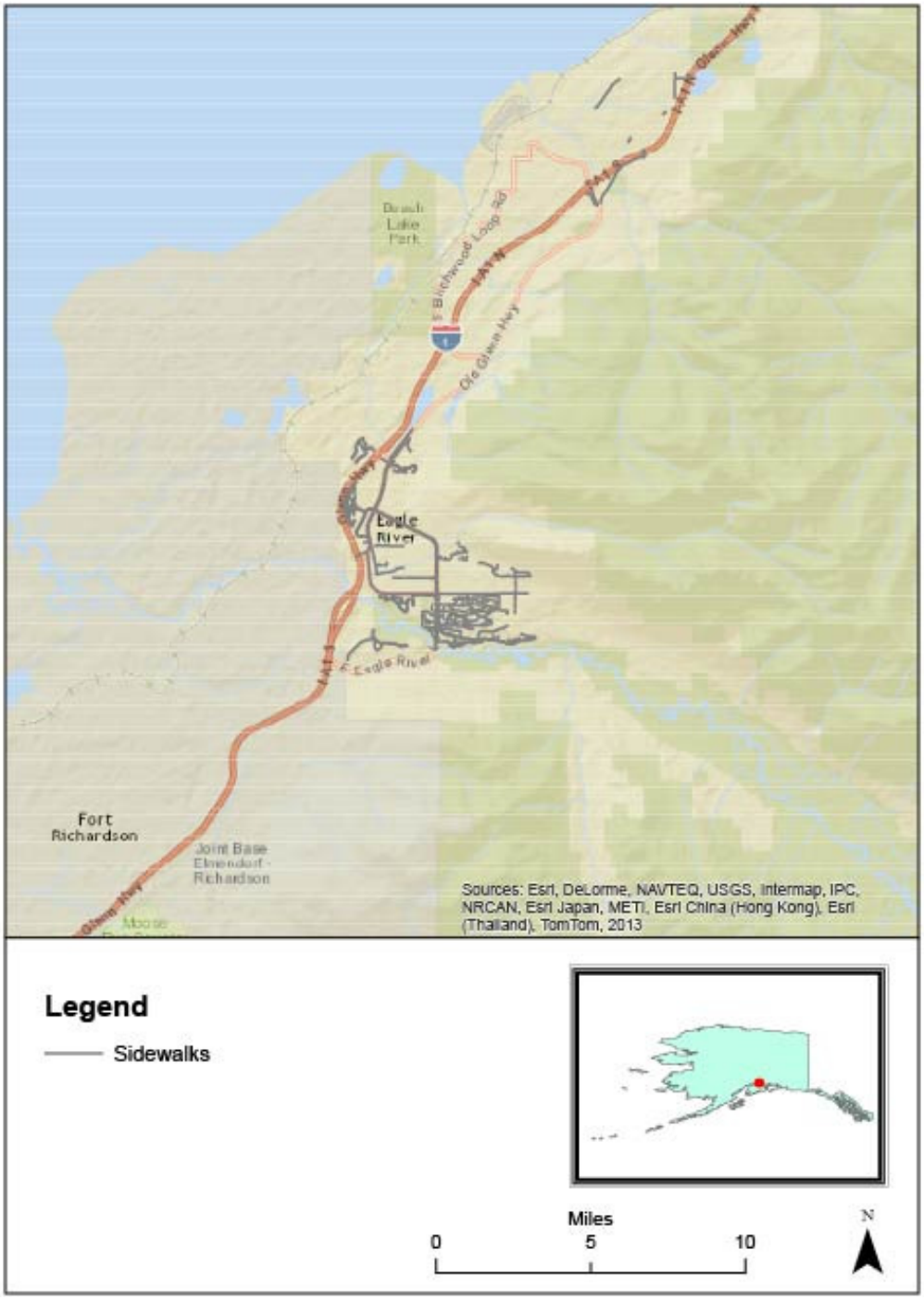
5.1 Pedestrian Environment

Anchorage has approximately 435 miles of sidewalks. Figure 5.1 and 5.2 show the current location of sidewalk infrastructure in Anchorage and Eagle River region, respectively.

Figure 5.1 Existing Sidewalks in the Anchorage Bowl, 2014

Source: Municipality of Anchorage

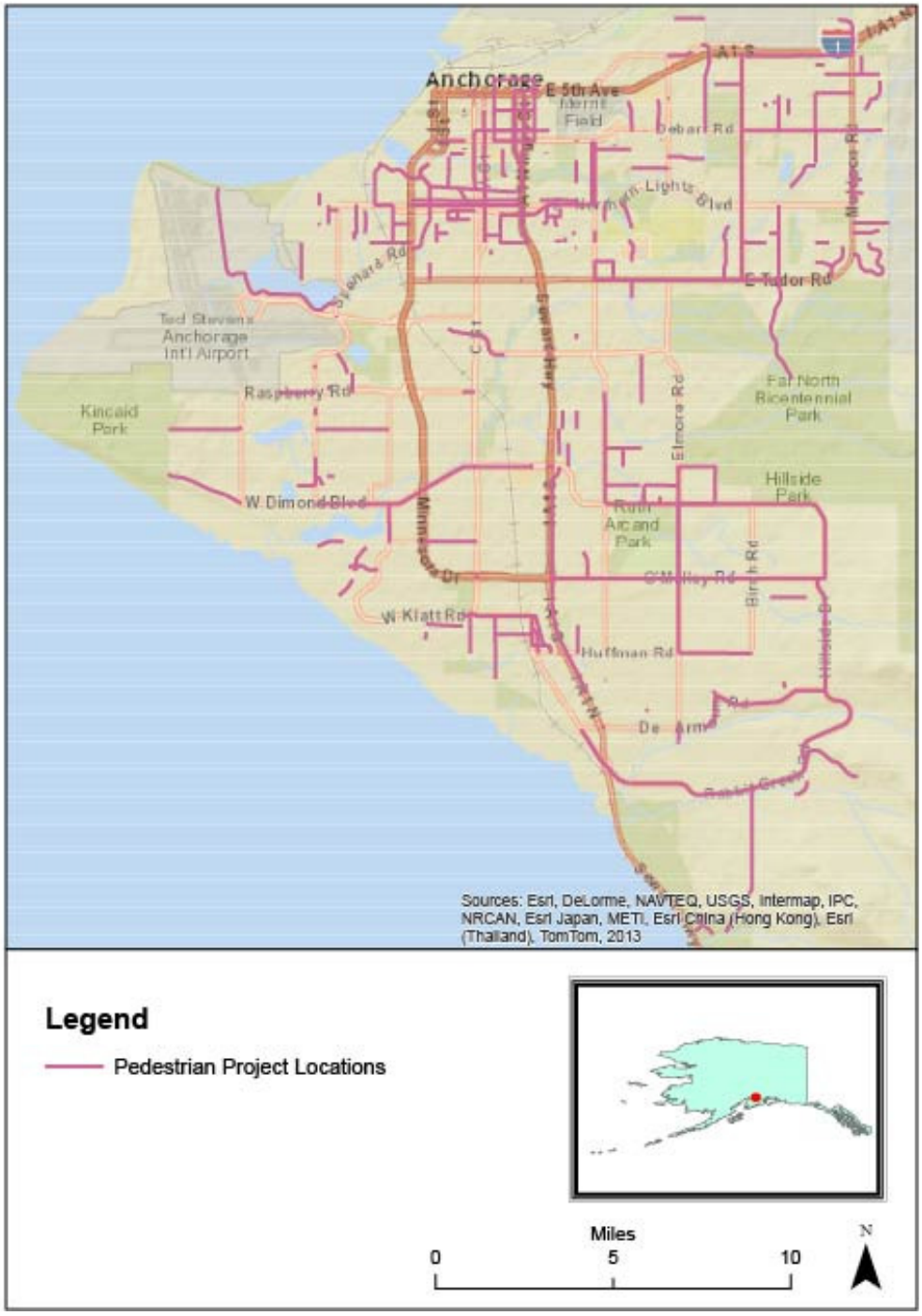
Figure 5.2 Existing Sidewalks in the Eagle River Region, 2014



Source: Municipality of Anchorage

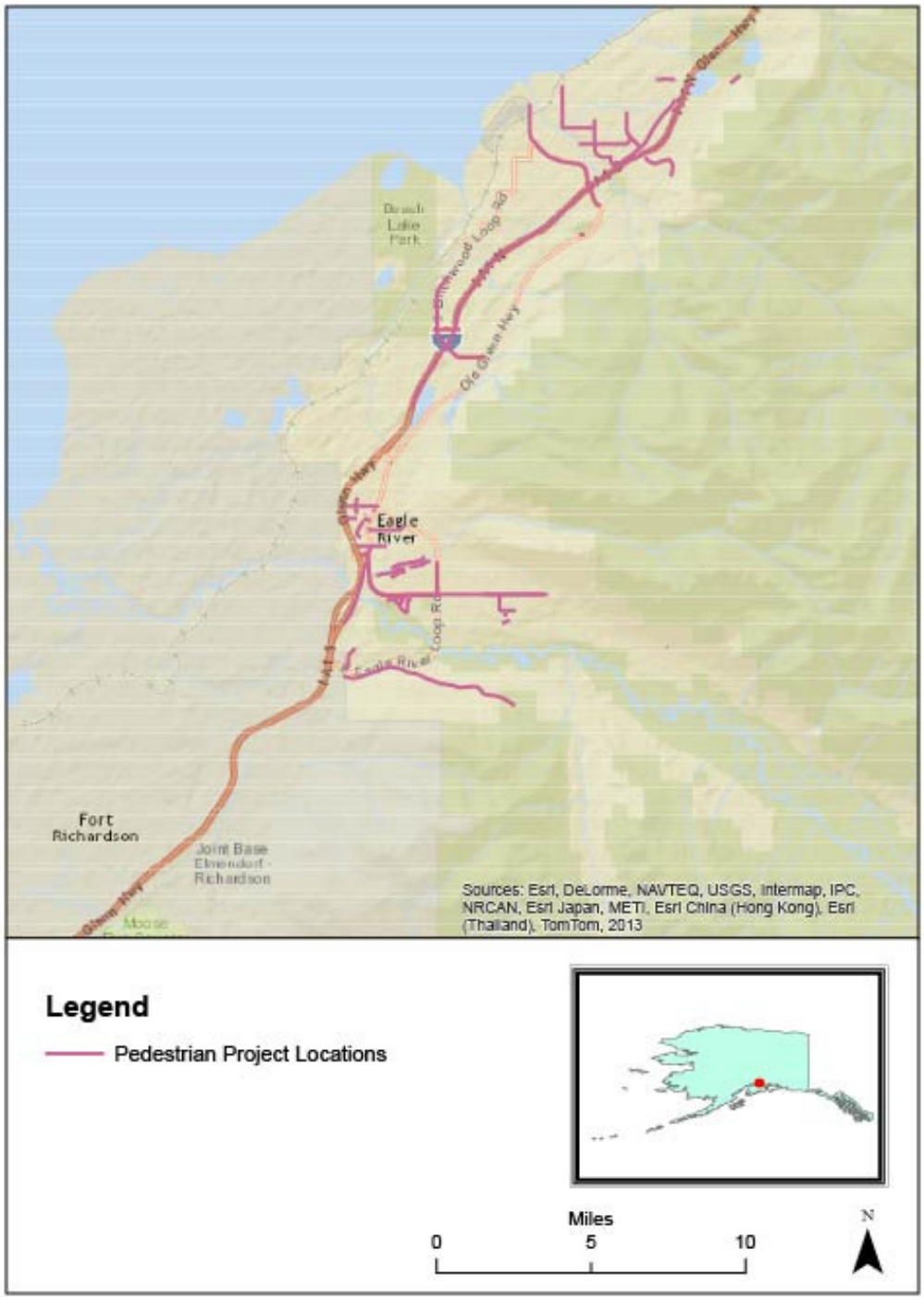
According to the TIP plans, approximately 155 miles of sidewalks will be improved upon in the near future. These sidewalks are shown in Figure 5.3 and 5.4, for Anchorage and the Eagle River region, respectively.

Figure 5.3 Anchorage Bowl Pedestrian Projects, 2015



Source: Municipality of Anchorage

Figure 5.4 Eagle River Region Pedestrian Projects, 2014



Source: Municipality of Anchorage

5.2 Bicycle Environment

An important mode of transportation, particularly in urban regions, is the bicycle system. Gathering data of bicycle-users activity currently requires a great amount of time and resources. For this reason, as an approximate measure of bicycle activities, bike to work counts can be used. Table 5.1 shows the bicycle counts during Bike to Work Day, from 2007 to

2012. This metric can be used to provide a broad perspective of the popularity of bicycles in the region. Table 5.1 shows how the number of bicyclists more than doubled from 2009 to 2012, which suggests that there are more users willing to try bicycling for their travel needs than five years ago.

Table 5.1 Bike to Work Day Counts, 2007-2012

Location	2007	2008	2009	2010	2011	2012
Coastal/Chester Trail – West end of Westchester Lagoon	124	188	170	259	263	403
A St and Chester Trail	225	308	274	258	568	693
Seward Highway and Chester Creek Trail	238	316	301	436	593	719
Chester Trail – Northern Lights Boulevard overpass at Goose Lake	159	242	231	336	455	466
Campbell Trail at Bittner House – South of Dowling	67	71	81	120	139	123
Tudor Road and Elmore Road	94	160	179	341	412	408
Tudor Road and C St	170	171	209	303	266	364
Lake Otis Parkway and 36th Avenue	91	103	99	128	123	132
Lake Otis Parkway and Abbott Road	55	71	51	87	96	111
10th Avenue and N Street	63	101	72	109	129	161
15th Avenue and Arctic Boulevard/E Street	115	122	93	138	192	170
Benson Boulevard and Minnesota Drive	21	31	37	52	56	65
Boniface and Glenn			58			
Glenn and Muldoon						121
Jewel Lake and International						170
Total	**1,422**	**1,884**	**1,855**	**2,567**	**3,292**	**4,106**

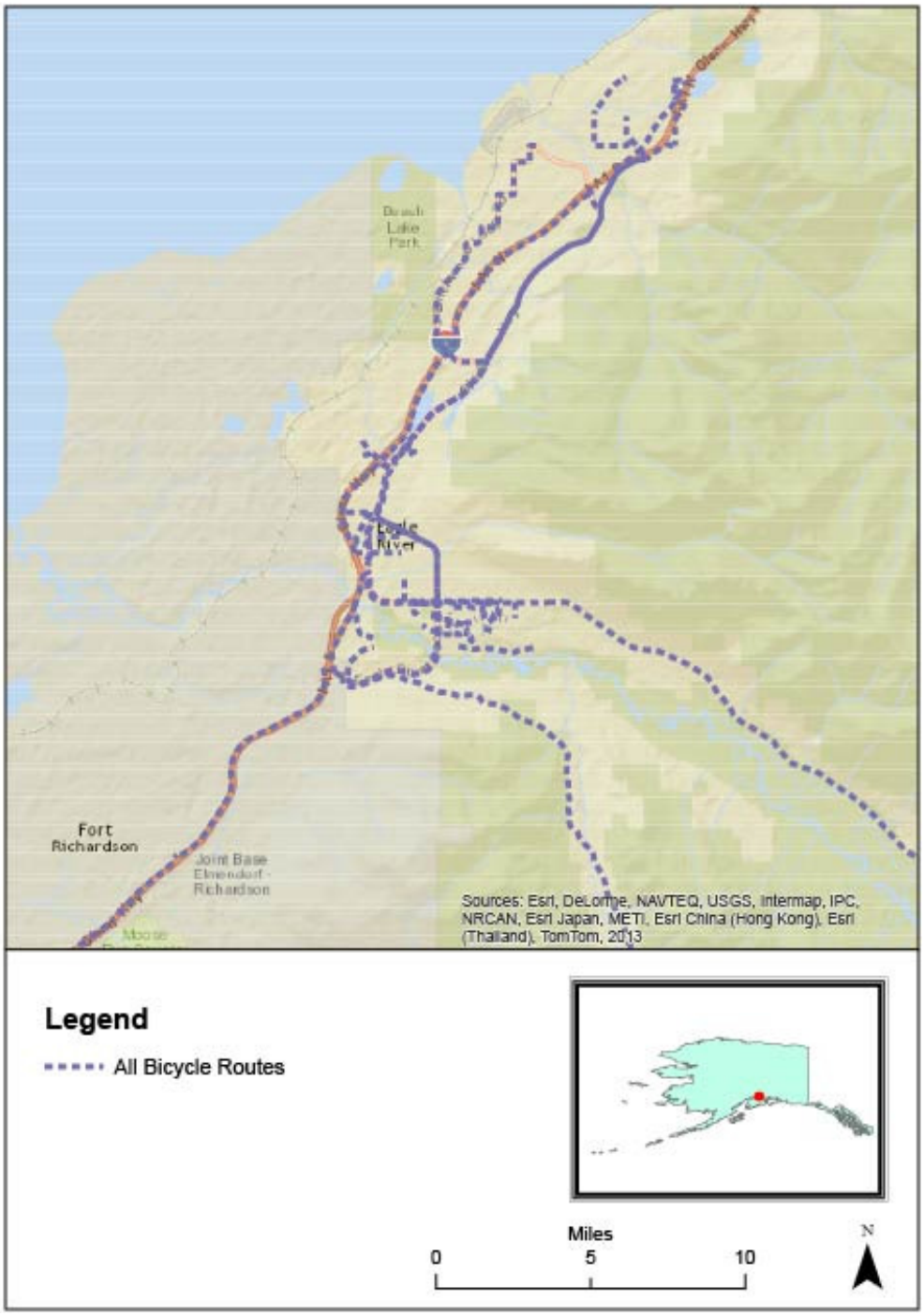
Source: Annual Traffic Report, Municipality of anchorage, Traffic Engineering.

Figure 5.6 and 5.7 show bicycle facilities in Anchorage and the Eagle River region, respectively. According to Anchorage's Bicycle Plan 2010, the bicycle infrastructure network is 214.7 miles long. Of the entire network, 166.4 miles correspond to multi-use pathways, 37.8 miles are greenbelt trails, 8.1 miles are bicycle lanes, and 2.4 miles are shared roadways.

Figure 5.5 Anchorage Bowl Bicycle Facilities, 2014

Source: Municipality of Anchorage

Figure 5.6 Eagle River Region Bicycle Facilities, 2014



Source: Municipality of Anchorage

5.3 Pedestrian and Bicycle Safety

An important metric of pedestrian and bicycle activity is related to the users' safety. Table 5.2 shows the number of vehicle-to-pedestrian and vehicle-to-bicycle crashes, along with the number of fatalities.

Table 5.2 Bicycle and Pedestrian Crash Statistics, 2000-2012

	Bicycle-Vehicle		Pedestrian-Vehicle	
Year	Accidents	Fatalities	Accidents	Fatalities
2003	168	1	122	6
2004	134	1	117	9
2005	127	0	97	4
2006	100	0	90	4
2007	158	0	110	9
2008	128	1	107	1
2009	143	2	126	6
2010	155	0	116	3
2011	123	2	106	5
2012	152	0	137	8

Source: Annual Traffic Report, Municipality of Anchorage, Traffic Engineering.[7]

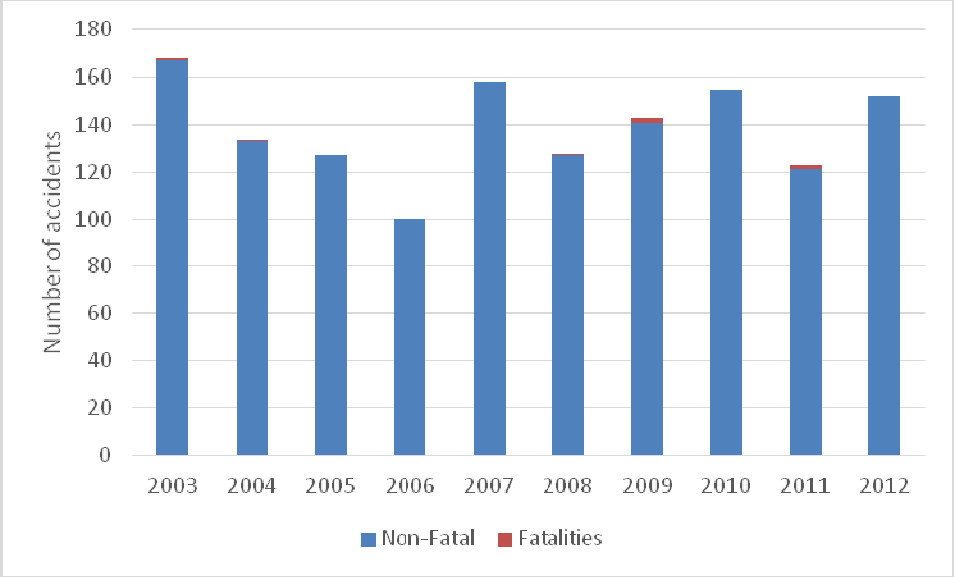
Figure 5.7 and 5.8 show the information of Table 5.2, to visualize a trend among the crashes recorded. There is no clear trend of crashes being reduced in recent years.

Figure 5.7 Pedestrian-Vehicle Crashes, 2000-2013

Source: Annual Traffic Report, Municipality of Anchorage, Traffic Engineering.

[7] Small inconsistencies in crash reports can be observed with data from Alaska DOT. These differences are small, not having a significant impact on general trends.

Figure 5.8 Bicycle-Vehicle Crashes, 2000-2013



Source: Annual Traffic Report, Municipality of Anchorage, Traffic Engineering.

5.4 Pedestrian and Bicycles Summary

According to the information collected, the following conclusions can be drawn:

- The current extent of pedestrian infrastructure network in Anchorage is approximately 435 miles. Near-term plans consider improving and constructing an additional 155 miles of the pedestrian network.
- The number of participants to Bike to Work Day has more than doubled from 2009 to 2012. This could be seen as an increase in popularity of this mode of transportation, and a potential increase of bicycle usage in the region.
- According to Anchorage's Bicycle Plan 2010, the bicycle infrastructure network is 214.7 miles long. Of the entire network, 166.4 miles correspond to multi-use pathways, 37.8 miles are greenbelt trails, 8.1 miles are bicycle lanes, and 2.4 miles are shared roadways. There is a need to increase the amount of bicycle lanes and shared roadways in the network.
- It is difficult to determine if the total number of vehicle-pedestrian crashes has reduced with time. The same conclusion can be drawn for vehicle-bicycle crashes.

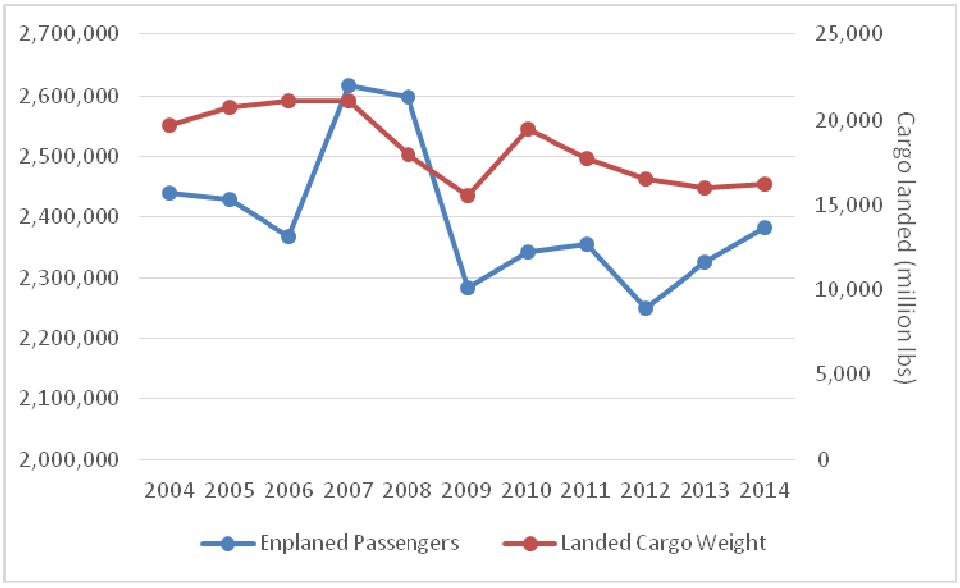
6.0 Intermodal Goods Movement and Regional Connections

One of the most important transportation performance measures is the performance of cargo transportation and good movements. Planes, ships, trains and trucks have important roles in the region's economic growth. Anchorage serves as an important gateway of consumable and manufactured goods to the rest of the state. This section presents the latest available statistics of freight transportation in Anchorage.

6.1 International Airport

An important node of transportation in Anchorage is the Ted Stevens Anchorage International Airport (TSAIA). TSAIA is an airport that supports domestic and international passenger flights, and cargo movement. Figure 6.1 shows the total number of enplaned passengers in the past decade, as well as the total cargo landed, according to the information collected by the Federal Aviation Administration.

Figure 6.1 TSAIA Passenger and Cargo Volumes 2000-2013



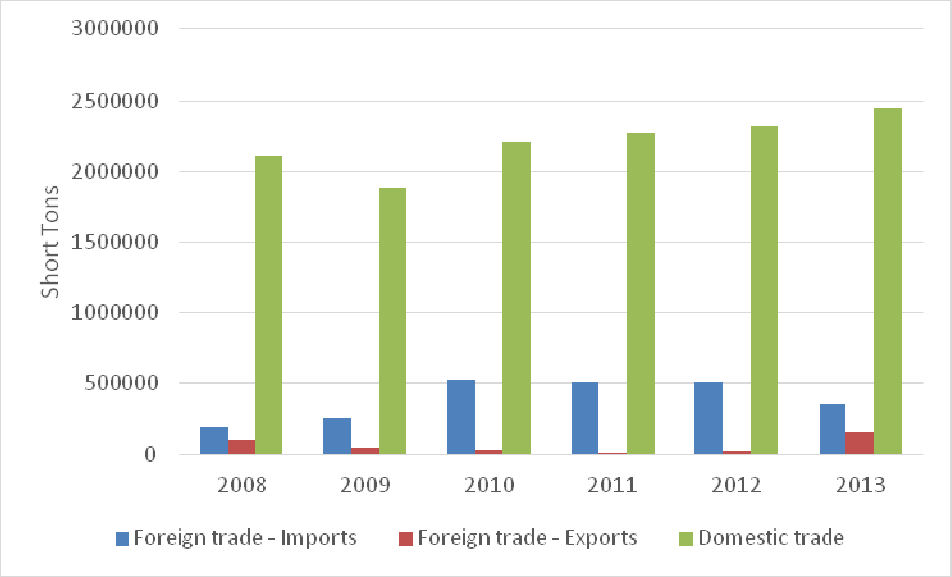
Source: Federal Aviation Administration.

We can observe in Figure 6.1 that both type of air transportation modes suffered a decline in 2009, possibly due to the economic depression of 2009. In 2010, both modes recovered, but do not show constant growth. However, in the most recent year, both passenger numbers and air cargo showed an increase from the previous year, by 3 and 2 per cent, respectively.

6.2 Port of Anchorage

The Port of Anchorage (POA) is a deep-water port that gives service through 4 bulk carrier berths and two petroleum berths. It is estimated that 90% of the consumer goods for 85% of Alaska comes through the POA[8]. Figure 6.2 shows the tonnage that has moved through the port in recent years, according to the cargo type.

Figure 6.2 Port of Anchorage Tonnage, 2000-2013



Source: American Association of Port Authorities.

We can observe in Figure 6.2 that the main type of cargo transported through the POA corresponds to domestic trade. Domestic trade, similar to other modes of commercial transportation, suffered a decline in 2009, but since 2010, it has increased at an average constant rate of 3%. Foreign trade increased from 2008 to peak in 2010 with approximately 557,870 short tons. Foreign trade has decreased since, specially imports, which constitute the greatest volumes of goods. However, in 2013, POA experienced a significant increase in exports, increasing tenfold in volume from 2012.

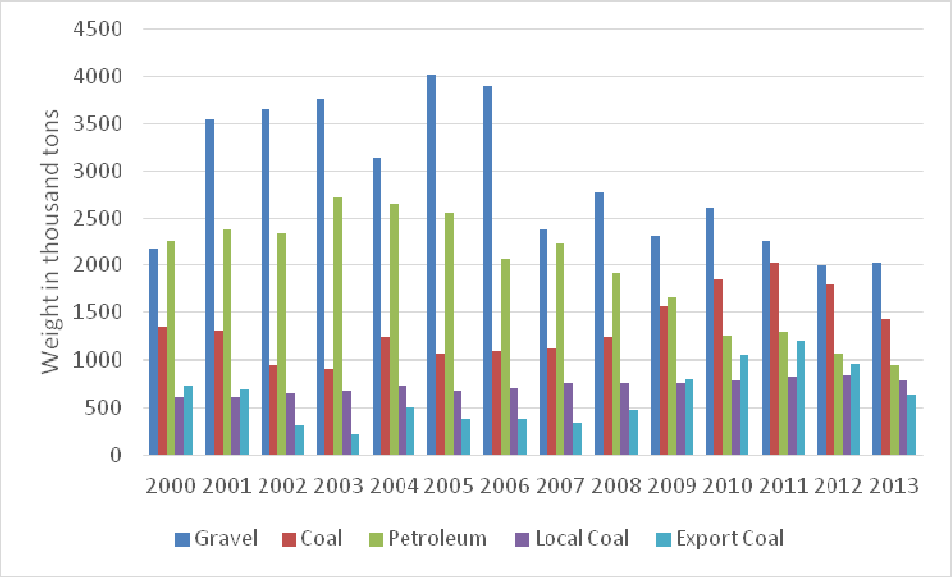
6.3 Railroad Transport

Railroad freight transportation is an important component of Anchorage transportation needs, given that it provides mobility to goods that would otherwise require transportation via truck loads, which would further stress the roadway network. Figure 6.3 shows how railroad cargo levels have changed from 2000 to 2013. We can observe from Figure 6.3 that rail cargo has decreased since peaking in 2005. Gravel cargo is approximately half of the tonnage moved in

[8] http://www.portofanc.com/images/documents/2.poa%20quick%20facts%2001.11.2013.pdf

2005, Petroleum decreased even further, reducing the tonnage moved from approximately 2.5 million tons in 2005 to less than a 1 million in 2013. However, coal rail shipment has increased, particularly for export, as tonnage increased from a low 224 thousand tons in 2003 to a peak in 2011 of 1195 thousand tons of coal for export.

Figure 6.3 Alaska Railroad Freight Tonnage



Source: Alaska Railroad.

6.4 Motor Freight and Regional Highway Links

The most important mode of transportation for freight movement in Anchorage is truck transportation. Most of all goods designated to Anchorage are transported by trucks, as a large share of freight movements from the Port of Anchorage and the airport are moved through trucks. Table 6.1 shows the truck volumes at selected locations in Anchorage, as collected by Alaska Department of Transportation & Public Facilities Annual Traffic Volume Report 2013. This table follows the format used in the previous Status of the System report, to show a comparison of volumes with previous years.

Table 6.1 Daily Truck Volumes at Selected Locations, 2012

Roadway Location	Number of Single-Unit Trucks	Number of Truck/Tractor Units	Trucks as a Percentage of All Vehicles (%)
Ocean Dock Road, Port of Anchorage	300	625	50.2
Glenn Highway, at Eklutna Heights	1323	496	6.3
O'Malley Road, east of Seward Highway	483	25	3.2
Debarr Road, east of Wintergreen Street	358	18	1.91
Seward Highway, south of 76th Avenue	2161	215	6.9

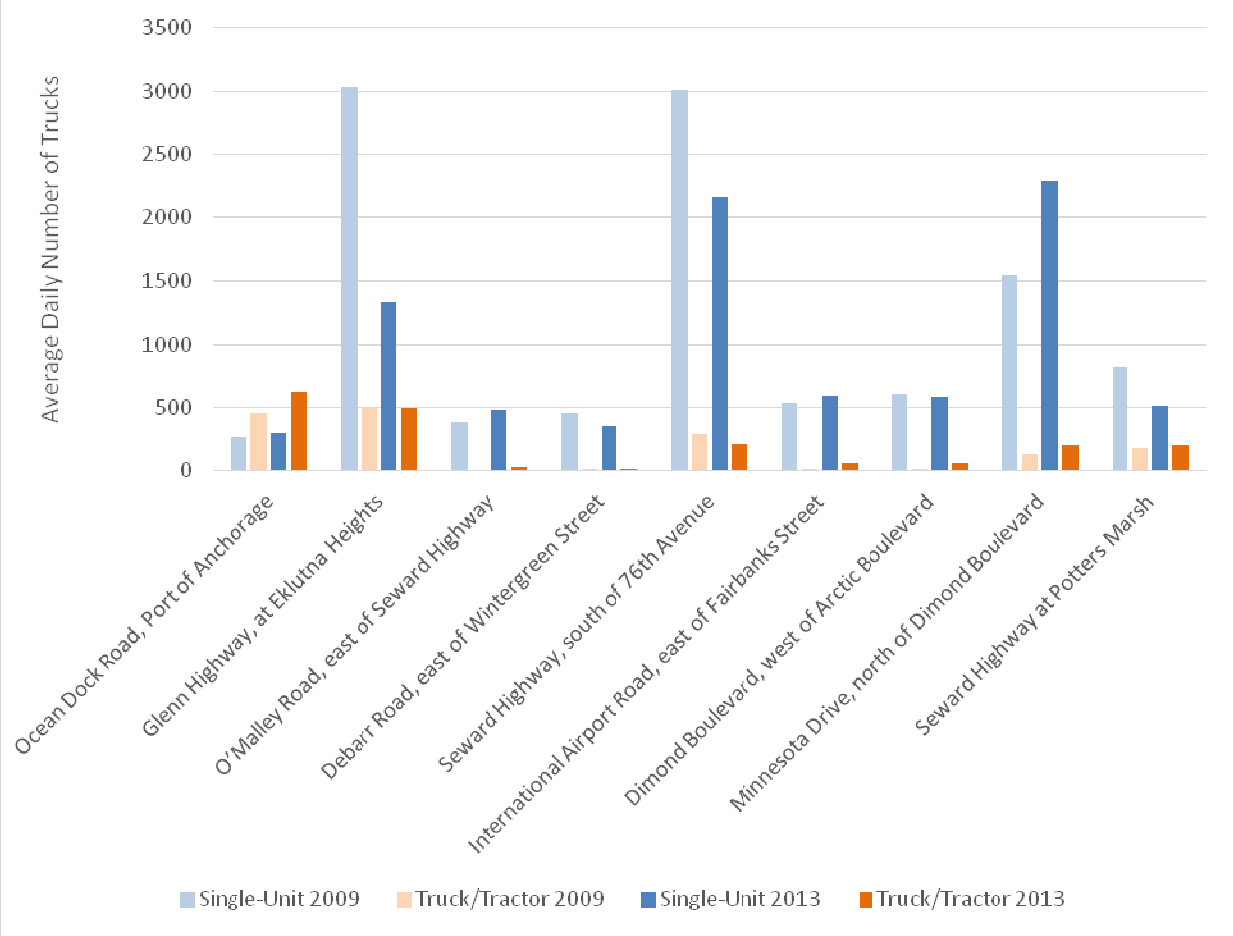
International Airport Road, east of Fairbanks Street	593	56	4.7
Dimond Boulevard, west of Arctic Boulevard	590	56	2.4
Minnesota Drive, north of Dimond Boulevard	2289	205	6.7
Seward Highway at Potters Marsh	514	204	8.0

Source: Alaska Department of Transportation & Public Facilities Annual Traffic Volume Report 2013.

Note: Single-unit trucks include delivery trucks, dump trucks, concrete trucks, and gas trucks.

Figure 6.4 shows the comparison with volumes reported in the previous Status of the System report. Single-unit truck volumes have declined in general. However, trucks and tractor volumes have moderately increased in general, which could represent an improvement in truck good movements, as the use of trucks and cargo may represent a more efficient movement of goods, with fewer vehicles on the network.

Figure 6.4 Motor Freight Comparison, 2009 to 2013

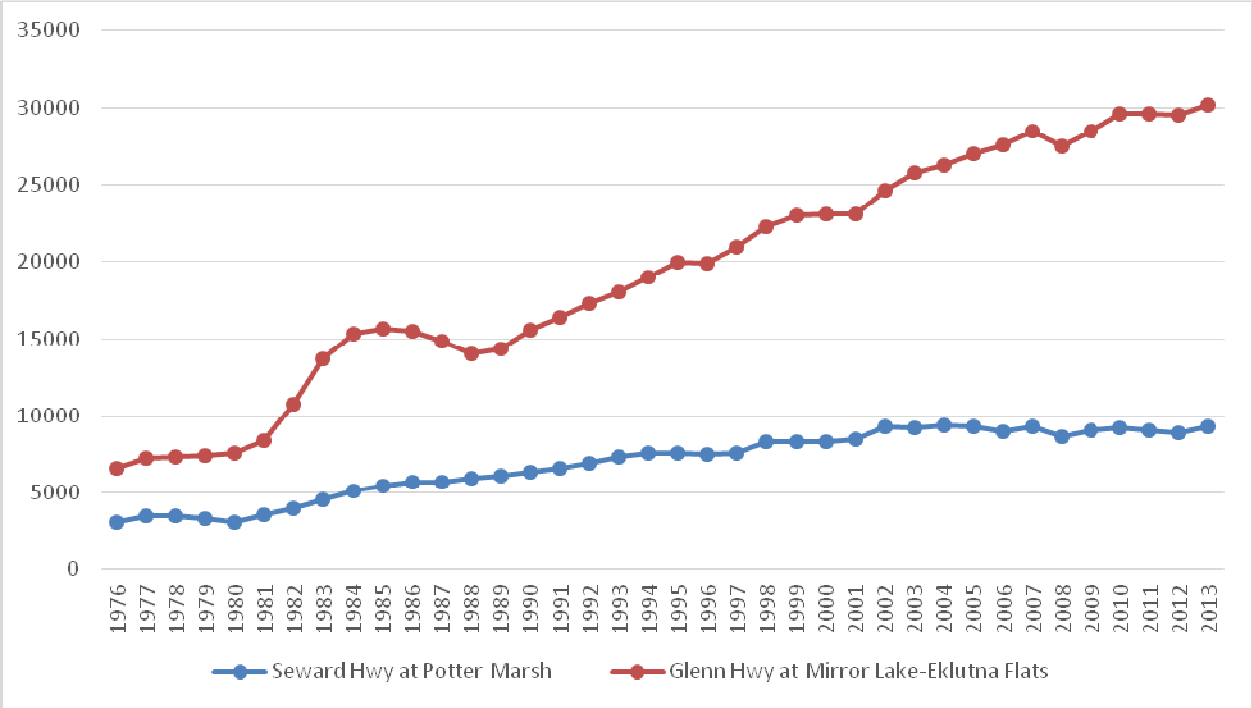


Source: Alaska Department of Transportation & Public Facilities Annual Traffic Volume Report, Status of the System Report 2010.

6.5 Regional Highway Connections

As a representation of the connectivity between the Anchorage Metropolitan Area with the rest of the State, daily traffic volumes at the two main road links – Glenn Highway and Seward Highway – can be analyzed. Figure 6.1 shows daily traffic volumes reported in the Alaska Department of Transportation & Public Facilities Annual Traffic Volume Report. We can observe that Anchorage's connectivity continues to increase, particularly with Matanuska-Susitna Borough and the north of the State, as traffic volumes on Glenn Highway continue to increase.

Figure 6.5 Daily Traffic Volumes across AMATS Boundaries, 1976-2013



Source: Alaska Department of Transportation & Public Facilities Annual Traffic Volume Report, Status of the System Report 2010.

6.6 Intermodal Good Movement and Regional Connections Summary

According to the information collected, the following conclusions can be drawn:

- Air passengers and cargo suffered a decline in volume in 2009. Volumes since do not show signs of a stable recovery. However, in the most recent year, both passenger numbers and air cargo showed an increase from the previous year, by 3 and 2 per cent, respectively.

- The Port of Anchorage also showed the lowest volume in 2009. Since then, domestic cargo, which represents the mayor type of cargo movement, has increased at an average rate of

3%. It is also worth noticing that in the most recent years, foreign exports increased in 2013 by ten times the volume registered in 2012.

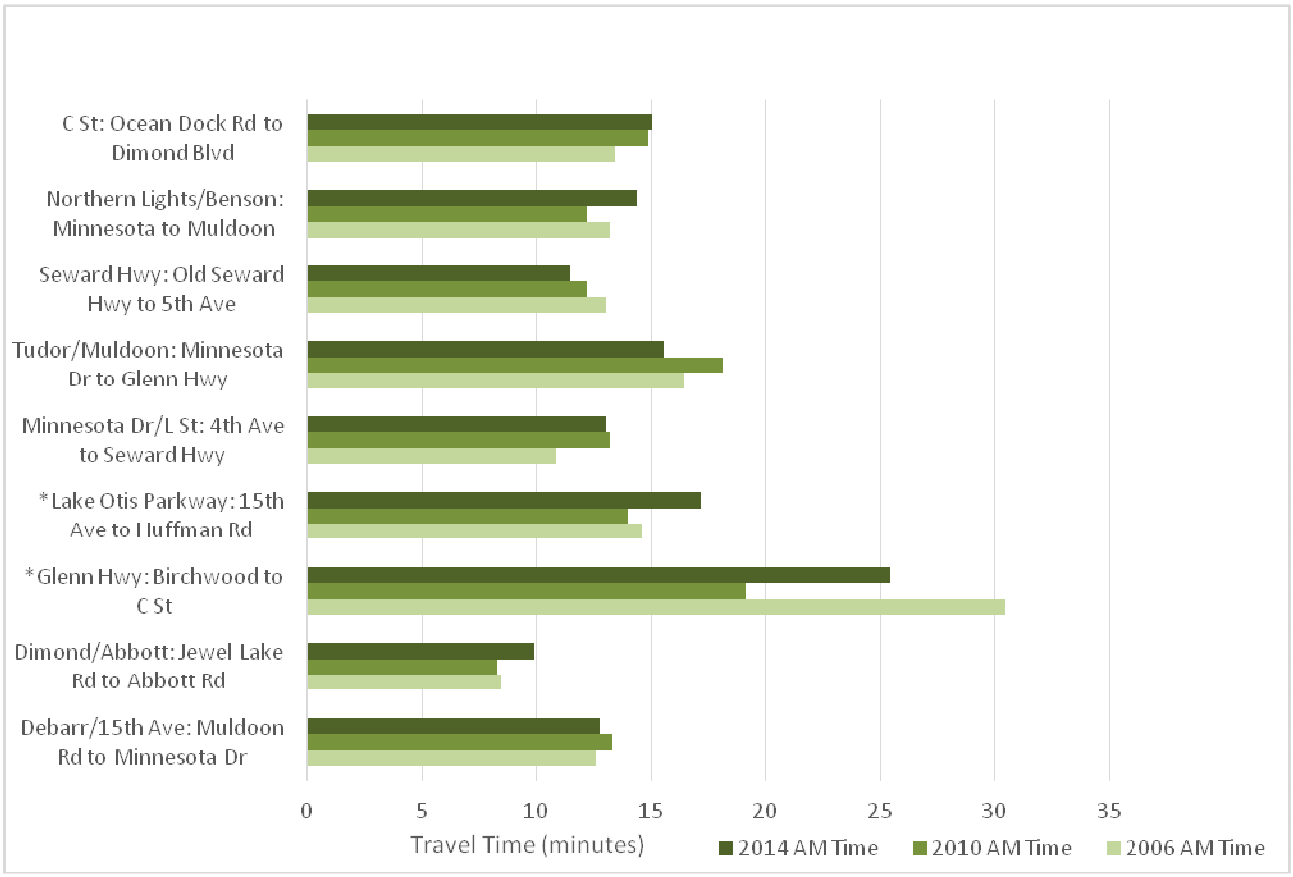
- Rail cargo has decreased since peaking in 2005. Gravel cargo was approximately half of the tonnage moved in 2005. Petroleum decreased even further, reducing the tonnage moved from approximately 2.5 million tons in 2005 to less than 1 million in 2013. However, coal rail shipment has increased, particularly for export, as tonnage increased from a low of 224 thousand tons in 2003 to a peak in 2011 of 1195 thousand tons of coal for export.

- Motor freight has also shown a decrease in volumes from previous years. The main highways, Glenn Highway and Seward Highway, experienced a reduction in the number of single unit vehicles by 50% and 25%, respectively, without increasing the number of truck and tractors. However, other roads have experienced increases in the number of trucks and tractors.

- The main Highway connections of Anchorage with the rest of Alaska, Glenn Highway and Seward Highway, have experienced increased traffic volumes from previous years, particularly on the Glenn Highway which connects the fast-growing Mat-Su Borough and areas to the north and east.

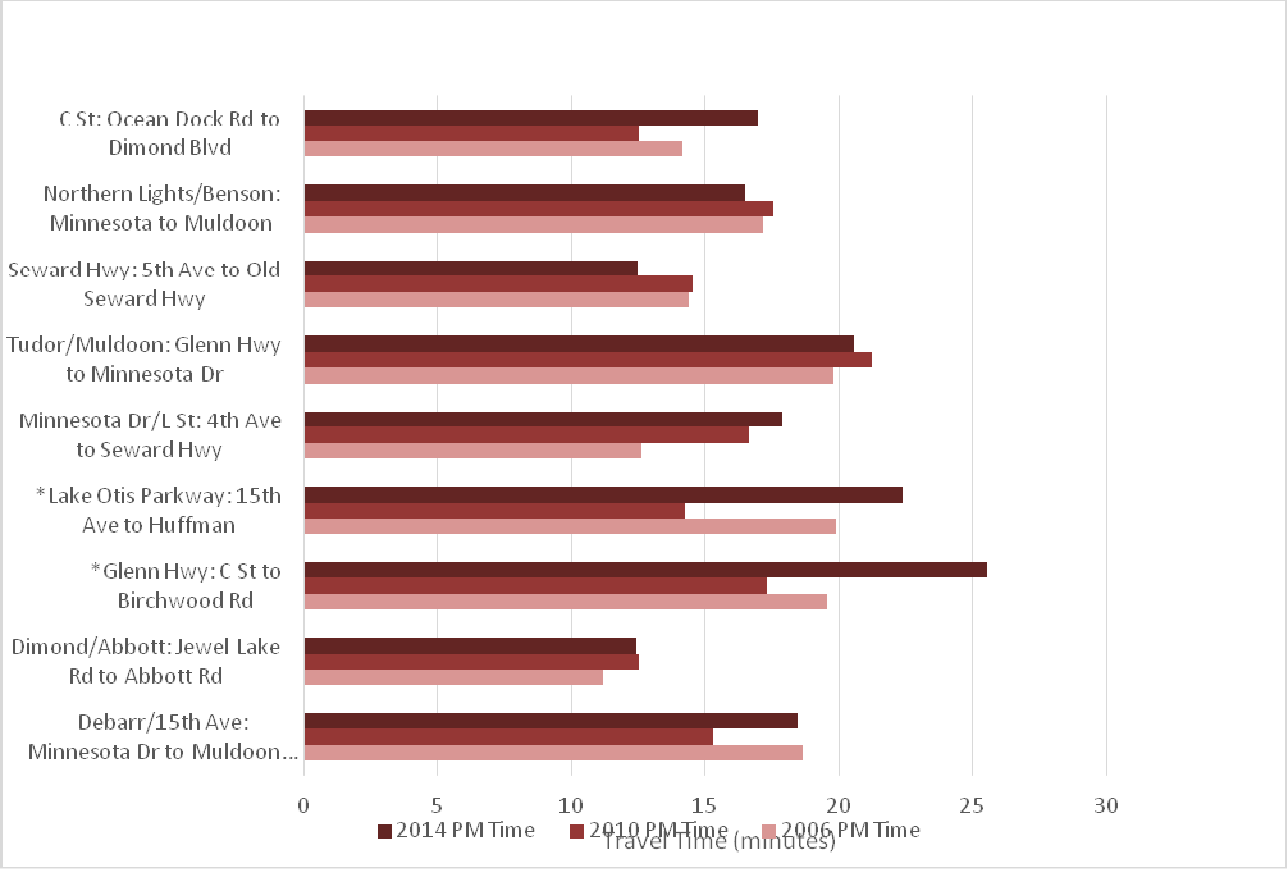
Appendix A. Travel Times for Complete Corridors

Figure A.1 AM Peak Period Travel Times: 2006, 2009, 2013



*Note: This graph shows a larger corridor than the one used in previous Status of the System reports. For future corridor comparisons, this data should be compared.

Figure A.2 PM Peak Period Travel Times: 2006, 2009, 2013



*Note: This graph shows a larger corridor than the one used in previous Status of the System reports. For future corridor comparisons, this data should be compared.