MARITIME TRANSPORTATION RESEARCH AND EDUCATION CENTER
TIER 1 UNIVERSITY TRANSPORTATION CENTER
U.S. DEPARTMENT OF TRANSPORTATION

A Supply Chain-Oriented Methodology to Analyze Performance of Port-Related Multimodal Freight Infrastructure

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Project Description

Truck activity is logically connected to vessel activity at a port. In turn, vessel activity is also influenced by truck shipments. Although one might expect a direct and straightforward relation between these two types of shipments, that is rarely the case. Different truck capacities, customs clearance, and regulations play a critical role in determining the actual relation between these two types of shipments. This project aims at shedding light on the nuances of maritime and roadway flow relations by quantitatively analyzing the linkages between these two types of shipments.

The study used different statistical techniques to determine the relations of vessel and truck activity. The ultimate purpose of this study is to provide a clearer quantitative understanding of the relationship between maritime and truck shipments, and by doing so, to provide tools to develop a system for managing trucks that maximizes efficiency for industry, while minimizing industry's negative impacts on a region.

This study is based on previous efforts; however, as opposed to past analyses that looked at vessel call impacts on truck counts solely, this work focuses on the effect of maritime flows on travel time.

For this purpose, the study team selected the Port of Beaumont as a case study, because the port's activity takes place in a defined area and is connected to a road system that is not too complex. Appendix A provides an illustration of the Port of Beaumont cargo area.

Methodological Approach

The methodology comprises two major phases: Data-related activities and statistical analysis. Data activities include data collection and data preparation. The statistical analysis includes the models´ specification and results.

Data Collection

The first step of the ground-sea freight flow analysis was to identify needed and available data sources. The requirements of the data are summarized in terms of temporal and geographical perspectives as follows:

- The time resolution of the data should be detailed enough to show the actual fluctuations of the traffic at the port and on the roads nearby. Although finer temporal disaggregation is preferred, daily-level data are acceptable.
- Temporal coverage of data should be at least one year or more to consider any seasonal trend and to allow adequate sample for weekly analysis.
- The geographic area, especially the roadways, should cover the major traffic arteries to and from the port. Ideally, it should exclude the road segments whose traffic may be influenced by the outer traffic generators other than the Port of Beaumont.

Considering the key requirements and available data sources, researchers decided to collect daily-level data for the year 2021 from the following sources:

- Truck volume data: National Performance Management Research Data Set (NPMRDS).
- Vessel call data: Port of Beaumont Administration plus Automated Identification System (AIS) data from marinecadastre.com.
- Commodity data: Vessel call data from the Port of Beaumont Administration.

The AIS data provide an incoming and outgoing vessel list. However, this dataset does not include any commodity-related information such as type of cargo, tonnage, import and export description, etc. Commodity flow data helped in analyzing the relationship with ground traffic, while vessel “in-and-out” data only provides an indirect measure of freight traffic.

Researchers cross-checked the AIS call data with the vessel call data supplied by the port and combined the AIS data with the vessel call data.

Data Preparation

The data collected from the different sources needed to be preprocessed before the analysis. Raw data attributes that are not relevant to the purpose of this analysis were removed to facilitate data handling. Some records had incorrect or missing values; however, these incorrect records were corrected and kept.

Ground Traffic Volume: NPMRDS Data

The National Performance Management Research Data Set (NPMRDS) is a database archive of speed and travel time data sponsored by the FHWA. It covers the National Highway System (NHS) and provides authorized users (state Departments of Transportation and their partnering agencies, such as Metropolitan Planning Organizations) with 5-minute speed and travel time data along with the road segment attributes such as Traffic Message Channel (TMC) ID, road name, direction, length, functional system, facility type, and Annual Average Daily Traffic (AADT) counts. AADT could not be used for this analysis because it is too aggregated. However, NPMRDS has added a data density field that researchers can use to estimate the range of truck traffic volume for any given timeframe since 2017.

The main reason for using NPMRDS data for ground volume estimates is that it allows a higher resolution in time-period aggregation than other datasets. Other sources of traffic volume data typically aggregate the data at monthly or yearly levels. This level of aggregation is not detailed enough for this work.

For the daily-level travel time, speed, and volume data, researchers obtained 5-minute resolution traffic data from the NPMRDS portal. Researchers identified the relevant roadway segments near the Port of Beaumont in the geographic interface of the NPMRDS analytics and downloaded the year 2021 data set (Figure 1). The travel time, speed, and data density values were then processed for daily average values for the fourteen bidirectional segments. Figure 1 displays the geographic coverage of the roadway segments near the port.

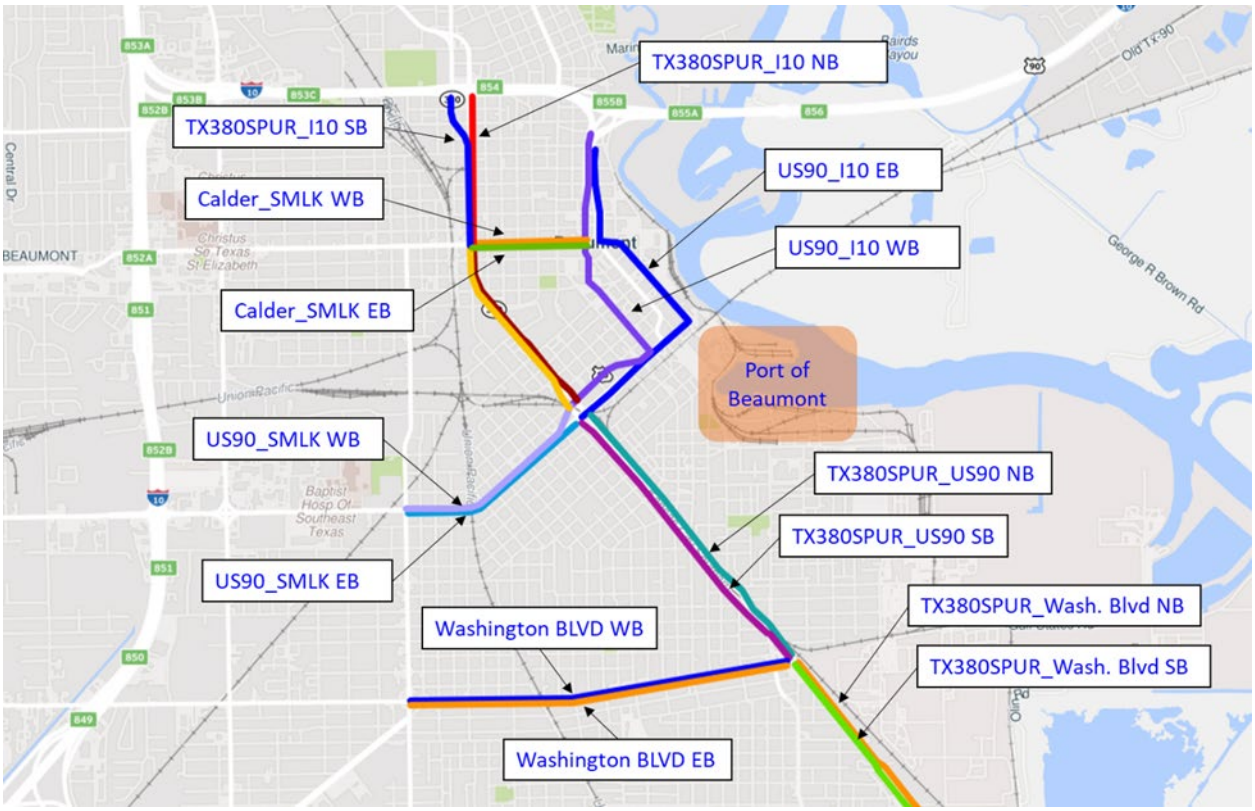


Figure 1. Main Roadways Connected to Beaumont.[1]

Table 1 shows the list of the road segments near the Port of Beaumont. US-90 is the nearest road to the port area connecting I-10 in the north. TX-380-SPUR serves the south of Beaumont area.

[1]*Road coding: NB, SB, EB, and WB denote the direction of the road. Underscore "_" denotes the location of the intersection of the segment.*

Table 1. List of Roadway Segments near Port of Beaumont.

Code Name	Road Name	Direction	Intersection	Length (miles)
Calder_SMLK EB	Calder Ave	Eastbound	US-90/Pearl St.	0.53
Calder_SMLK WB	Calder Ave	Westbound	S M L King Jr Pkwy	0.53
TX380SPUR_I10 NB	TX-380-Spur	Northbound	I-10	0.68
TX380SPUR_I10 SB	TX-380-Spur	Southbound	Calder Ave	0.69
TX380SPUR_US90 NB	TX-380-Spur	Northbound	US-90/College St	1.43
TX380SPUR_US90 SB	TX-380-Spur	Southbound	Washington Blvd	1.43
TX380SPUR_Wash NB	TX-380-Spur	Northbound	Washington Blvd	1.05
TX380SPUR_Wash SB	TX-380-Spur	Southbound	E Lavaca St	1.04
US90_I10 EB	US-90	Eastbound	I-10	1.64
US90_I10 WB	US-90	Westbound	S M L King Jr Pkwy	1.57
US90_SMLK EB	US-90	Eastbound	S M L King Jr Pkwy	0.92
US90_SMLK WB	US-90	Westbound	S 4TH St	0.96
Washington EB	Washington Blvd	Eastbound	S M L King Jr Pkwy	1.73
Washington WB	Washington Blvd	Westbound	S 4TH St	1.73

Researchers used the NPMRDS data sets with the smallest resolution (5 minutes) in each time period (epoch). Each record contained speed and traffic data density during the five-minute period. Records with no data were reported as blanks.

The NPMRDS data set does not show actual counts. Instead, it shows counts by range using the following codes:

A: Fewer than five reporting vehicles.
B: Five to nine reporting values.
C: Ten or more reporting vehicles.

To convert these ranges to truck traffic volume nominal counts, researchers estimated average condition of the traffic volume of that time period by replacing “A” with 3 vehicles, “B” with 7 vehicles and “C” with 11 vehicles.

After aggregating to daily values, speed and traffic volumes were plotted as an initial review process. Figure 2 is an example plot showing truck speed and volume plots for both directions of US-90@I-10 segments during year 2021. Appendix A includes the speed-volume plots of the rest of the segments.

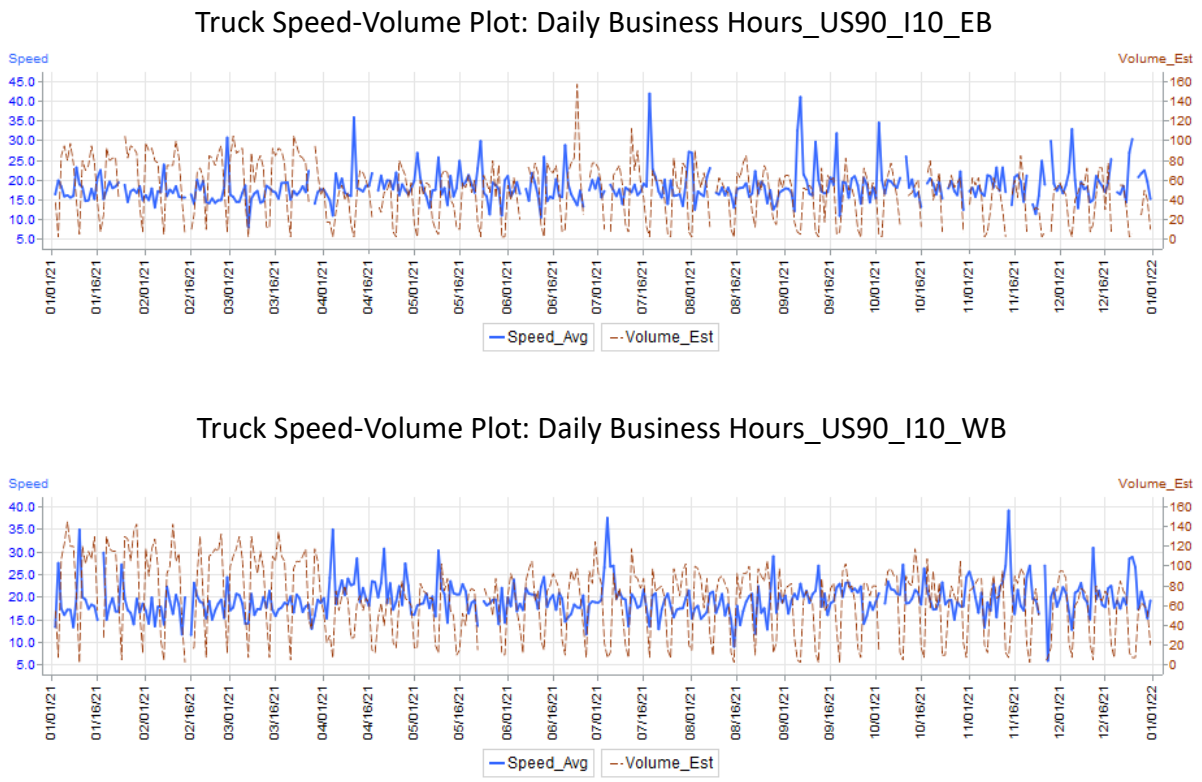


Figure 2. Average Daily Truck Speed-Volume Plots for US90_I-10 EB & WB.

Commodity Data: Vessel Call Data (from Port of Beaumont Administration)

Data provided by the Port of Beaumont Administration contain information about the vessel calls, including dock, vessel name, arrival time, departure time, type of cargo, and tonnage. Researchers considered only data pertaining to flows that crossed the docks of the port authority.

Merge of Volume and Commodity Data

At the final step of data preparation, researchers merged truck traffic volume and commodity data -at daily level- using the same time periods (year 2021). The resulting data set contained 365 travel time/speed, and volume observations for the year 2021; however, vessel calls accounted for only 114 observations.

Statistical Analysis

The objective of the statistical analysis is to explore relationships between truck traffic and vessel activities at Port of Beaumont by assessing effects of vessel calls on truck travel time. For that purpose, three different statistical techniques were used:

1. Lagged linear regression analysis.
2. Lagged non-linear regression models.
3. Analysis of Variance (ANOVA).

The methodology included the following steps:

1. Check linearity.
2. Check homogeneity and normality.
3. Run linear or non-linear models.
4. Select a model.

The first step was a linearity check between the sample size and speeds, which was necessary to decide the general type of models to use for assessing the relations. Homogeneity and normality are assumptions needed in linear models. Homogeneity looks at having a steady or constant variability (i.e., variance) through different values of the explanatory variable (i.e., sample count). Normality looks at the shape of the distribution, which when not normal would yield inaccurate results using simple linear regression, and thus other techniques such as generalized linear models should be implemented.

When the relation between sample size and speeds were found not to be linear, researchers evaluated eight different non-linear models:

1. Exponential trend.
2. Logarithmic.
3. Power curve.
4. Reciprocal.
5. Log reciprocal.
6. Modified exponential.
7. Gompertz.
8. Logistic.

Final data used for the statistical analysis comprised 365 observations, pertaining to a full year (2021) worth of travel time and volume daily-level data. However, this final data set contained only 114 data points of vessel calls. The latter presented a challenge since intermittent or sparse data (i.e., few non-zero data points) are not ideal for causal, or correlational analyses.

The study team explored vessel-to-truck traffic relations 5 days before, and 5 days after a vessel call occurred, for a total of 10 lags (positive and negative lags combined), in addition to same-day vessel-to-truck traffic relations. Because of the latter, a total of nine models (one linear and eight non-linear) were developed and tested for the linear and non-linear regression analysis for each road segment.

As will be seen in the results section, the lagged- linear and non-linear regression analyses did not return statistically significant results for most models. Therefore, the study team moved to an ANOVA assessment to determine the statistical significance of the mean differences between subgroups. Those subgroups were defined as lags (or days) that presented no vessel call and lags/days that coincide with

vessel calls. In the ANOVA assessment, the study team produced data subsets (or subsamples) to increase resolution of results. These data subsets consisted of observations within peak hours, and observations pertaining to specific flow directions: import or export. The ANOVA was performed in different peak hours and import and export combinations. More specifically, the ANOVA evaluated the following:

1. All observations.
2. Peak-hour observations.
3. Import vs. export.
4. Peak-hour-Import and peak-hour-export.

The ANOVA analysis used three tests for assessing the differences between pairs or groups (namely multiple comparison tests). The tests used in this analysis are:

1. Bonferroni.
2. Sidek.
3. Scheffe.

These tests compare the means of the different groups and evaluate their statistical significance.

Results from the complete and different statistical analyses are presented in the following section.

Results/Findings

For the regression analysis, Travel time observations were selected for the following intersections as listed in Table 1:

1. US90_I10 EB
2. US90_I10 WB
3. Calder_SMLK EB
4. Calder_SMLK WB
5. TX380SPUR_I10 NB
6. TX380SPUR_I10 SB
7. US90_SMLK EB
8. US90_SMLK WB
9. TX380SPUR_US90 NB
10. TX380SPUR_US90 SB
11. Washington EB
12. Washington WB
13. TX380SPUR_Wash NB
14. TX380SPUR_Wash SB

The travel time (AvgTTL) lags--5 days before and after the day of the vessel call--were regressed with the call tonnage. The R squared for the first regression analysis yielded values less than 0.1 thus, showing no significant relationship between truck travel time and vessel trips. The team performed a second regression analysis eliminating all blank observations (adding zeroes to blank observations) which did not improve significance. A summary table of regression results can be found in Appendix C.

Because no significant results were obtained from the regression model, an ANOVA assessment was selected as an alternate approach for four subsets: all observations, peak-hour observations, import vs. export flows, and peak-hour-Import/export. Statistically significant results (i.e., test´s p-values less than 0.05) for all observations are shown in Table 2. A summary of ANOVA results can be found in Appendix D.

Table 2. ANOVA Results All Observations.

Intersection	Predictor	Mean Diff	Bon	Sid	Sch
US90_I10_EB	**AvgTTL4**	85.0965	0.013	0.013	0.013
US90_I10_WB	**AvgTTL**	55.5954	0.036	0.036	0.036
TX380SPUR_I10_NB	**AvgTTL4**	13.03074	0.03	0.03	0.03
TX380SPUR_I10 SB	**AvgTTL1**	-8.63475	0.047	0.047	0.047
US90_SMLK_WB	**AvgTTL-1**	-25.04652	0.04	0.04	0.04
US90_SMLK_WB	**AvgTTL4**	31.6788	0.024	0.024	0.024
Washington EB	**AvgTTL1**	-52.0977	0.023	0.023	0.023

An additional ANOVA assessment was performed but this time for peak-hour observations. Only a select few models demonstrated significant levels below 0.05 for this run (see Table 3).

Table 3. ANOVA Results Peak-Hour Observations.

Intersection	Predictor	Mean Diff	Bon	Sid	Sch
US90_I10_EB	**AvgTTL-4**	99.63	0.017	0.017	0.017
US90_I10_WB	**AvgTTL**	71.1849	0.009	0.009	0.009
TX380SPUR_I10_NB	**AvgTTL-1**	16.89903	0.015	0.015	0.015
	AvgTTL3	17.44362	0.012	0.012	0.012
	AvgTTL4	14.34138	0.049	0.049	0.049
US90_SMLK_WB	**AvgTTL1**	-34.5342	0.026	0.026	0.026
TX380SPUR_Wash_NB	**AvgTTL-5**	13.5288	0.041	0.041	0.041

Next, ANOVA runs were performed for the observations filtered by peak hours and flow of cargo type resulting in four different sets of results. The results were not consistent in terms of significant lags and road segments throughout the different subsets (see Table 4 and Table 5).

Table 4. ANOVA Results Export/Import.

Intersection	DepVar	ExportNoFilter		ImportNoFilter	
		Bon/Sid/ Sch	MeanDiff	Bon/Sid/ Sch	MeanDiff
US90_I10 EB	**AvgTTL4**	0.023	148.6848		
TX380SPUR_I10 NB	**AvgTTL-5**			0.038	14.22084
	AvgTTL-3	0.03	23.6721		
US90_SMLK EB	**AvgTTL-4**	0.035	48.2334		
	AvgTTL2			0.048	25.22817
US90_SMLK WB	**AvgTTL-1**			0.037	-27.862
	AvgTTL4			0.006	41.8368

Table 5. ANOVA Results Peak-Hour Export/Import.

Intersection	DepVar	ExportFilter (6am 8pm)		ImportFilter (6am 8pm)	
		Bon/Sid/Sch	MeanDiff	Bon/Sid/Sch	MeanDiff
US90_I10 EB	**AvgTTL-4**			0.02	106.5267
US90_I10 WB	**AvgTTL-1**	0.008	157.368		
	AvgTTL3	0.008	158.4681		
TX380SPUR_I10 NB	**AvgTTL-1**	0.008	34.3188		
	AvgTTL1	0.042	24.11424		
	AvgTTL3	0.007	34.7673		
US90_SMLK EB	**AvgTTL-2**	0.001	106.986		
	AvgTTL4	0.001	107.5827		
US90_SMLK WB	**AvgTTL1**			0.039	-35.0379
TX380SPUR_US90 NB	**AvgTTL**			0.032	-24.266
Washington WB	**AvgTTL-2**	0.02	102.3906		
	AvgTTL4	0.02	102.6666		
TX380SPUR_Wash NB	**AvgTTL-5**			0.026	14.79357
	AvgTTL			0.04	-8.59287
TX380SPUR_Wash SB	**AvgTTL-5**			0.029	15.77262
	AvgTTL-1	-1.86331	-5.58993		

The ANOVA focuses on estimating significant differences of mean values between groups rather than proving correlation. In our case, the mean values pertain to travel time on specific roads between two groups: not related to vessel calls and related to vessel calls. Significant ANOVA results suggest—but do not prove—that there may be an influence of vessel calls on travel time in select road segments at specific lags. For instance, from these results, we can see that on highway US90_I10 WB (TMC 112-07484), there is a travel time increase of 157 minutes 1 day before a vessel visit and of 158 minutes three days after.

Impacts/Benefits of Implementation

This study expands the analysis of the relationship between multimodal flows (trucks and vessels) by exploring the relation of travel time with vessel call tonnage at the Port of Beaumont. Although the analysis could not confirm causality, it does find statistically significant differences in travel time between truck flows with no relation to maritime flows, and truck flows related to vessel calls in specific road segments surrounding the Port of Beaumont at specific times. These findings suggest—but do not prove—a likely correlation between vessel call tonnage and truck travel time in those highways and truck flow lags.

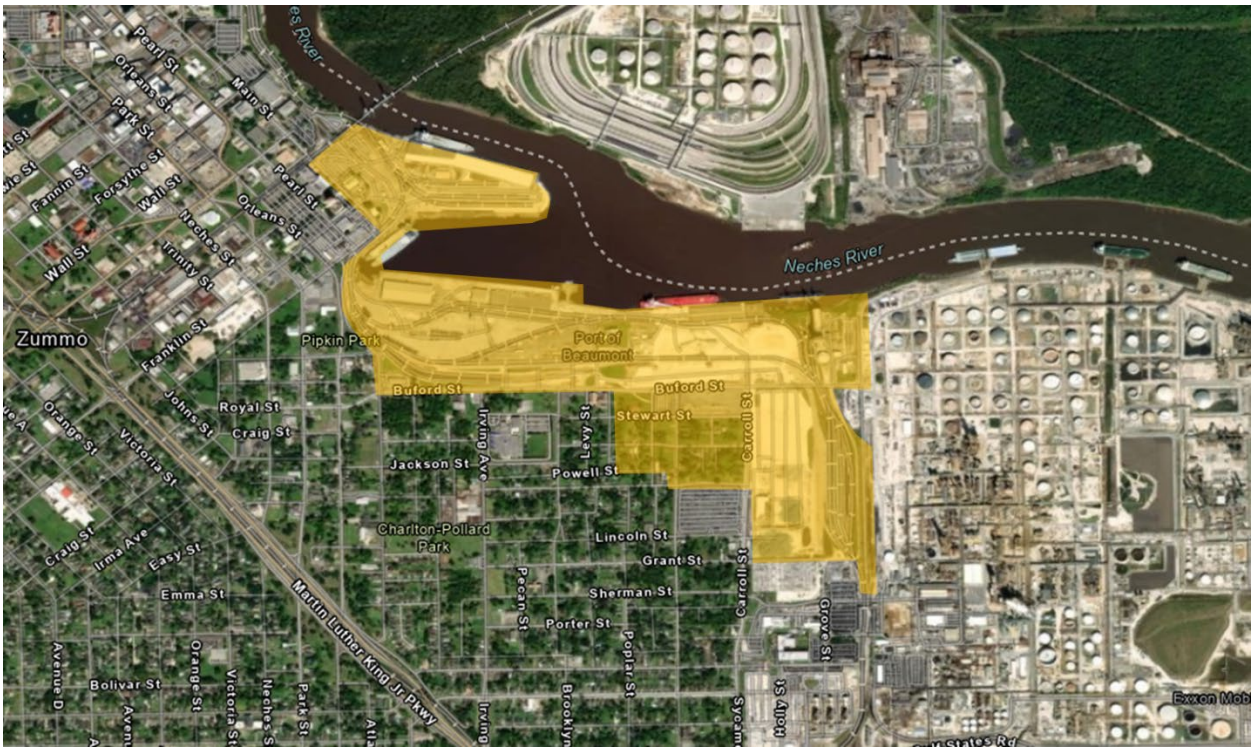
The outcomes of this work could complement findings from previous analyses of the relation between truck counts and import-export flows, and the role that port terminals play in these relations. To be specific, because the magnitude of impact and delay of ground and maritime transportation flows may not be obtained by simple observation, the outcomes of this analysis not only suggest the existence of such relation, but also provides an initial quantitative estimate of such impacts on specific roads, and the time when those changes could be expected. This could enable agencies and organizations to increase efficiency--and thus competitiveness--for industry, while minimizing negative impacts on a region.

Results from this analysis, could benefit public sector and private sector decision makers in activities such as investment planning, resource allocation, and operations management in general by providing insights and initial estimates of travel time changes when vessel calls occur, in road segments surrounding a port—in this case, the Port of Beaumont.

Recommendations and Conclusions

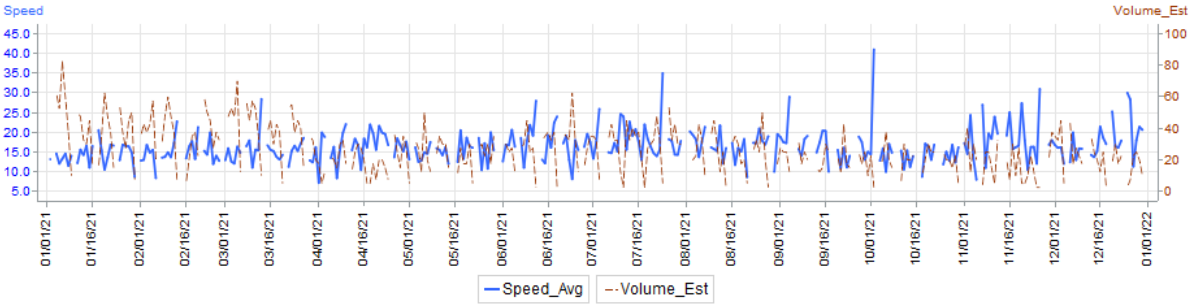
As previously mentioned in the last paragraph of the data section, and in the description of the final data set used for the statistical analysis, this study found data availability to be an important constraint. More specifically, one of the main factors hindering the causal inference analysis from lagged linear and non-linear regressions was intermittent and sparse data of vessel calls. The latter was due to the size and level of vessel activity in Port of Beaumont, which provided very few observations of vessel calls. Despite this limitation, by using ANOVA this work could find some evidence of relations between travel time and vessel visit tonnage. Therefore, a deeper analysis, with a larger maritime data set, is recommended to determine the impacts of sea flows on ground flows more precisely. In future research, while it might make the analysis more complicated, a maritime port with significantly higher vessel activity should be selected.

Appendix A – Port of Beaumont Cargo Handling Area

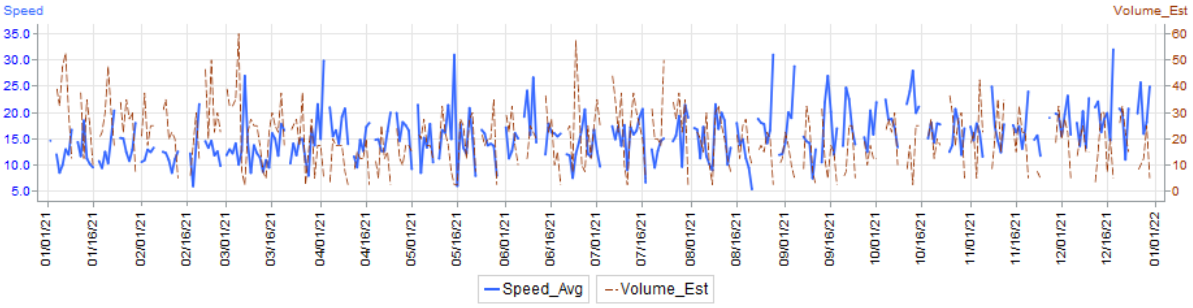


Appendix B – Daily Average Truck Speed and Volume Plots During Business Hours

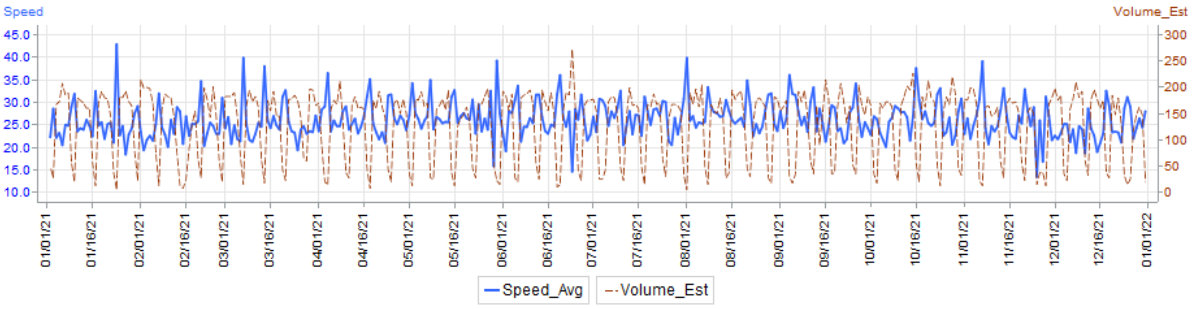
Calder_SMLK_EB



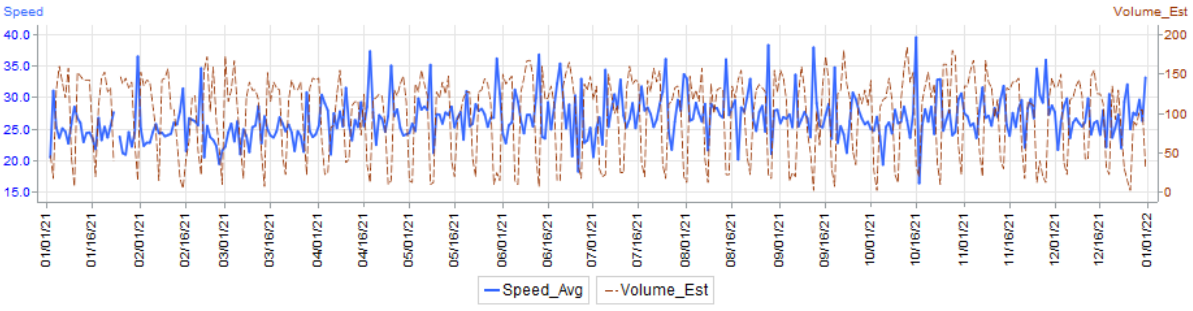
Calder_SMLK_WB



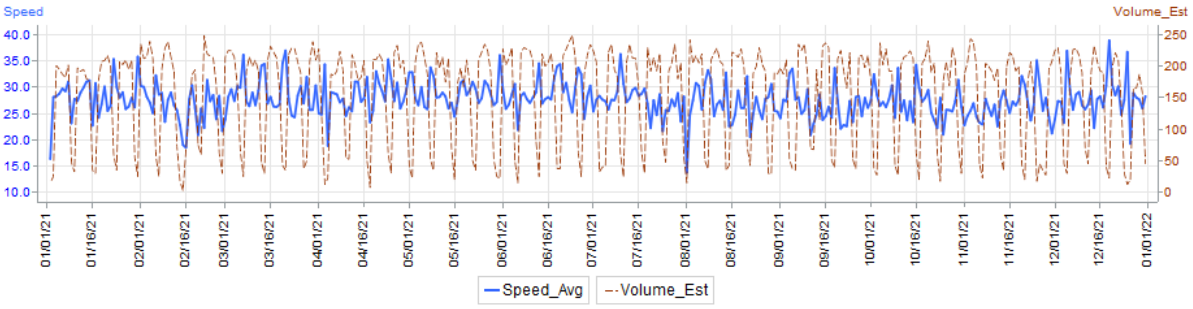
TX380SPUR_I10_NB



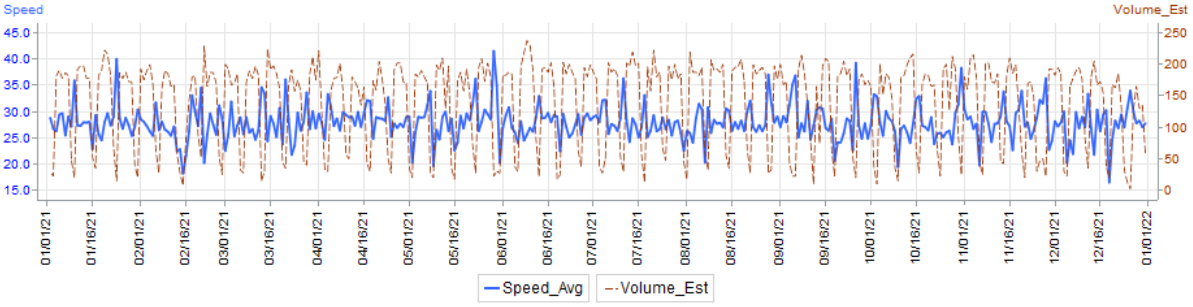
TX380SPUR_I10_SB



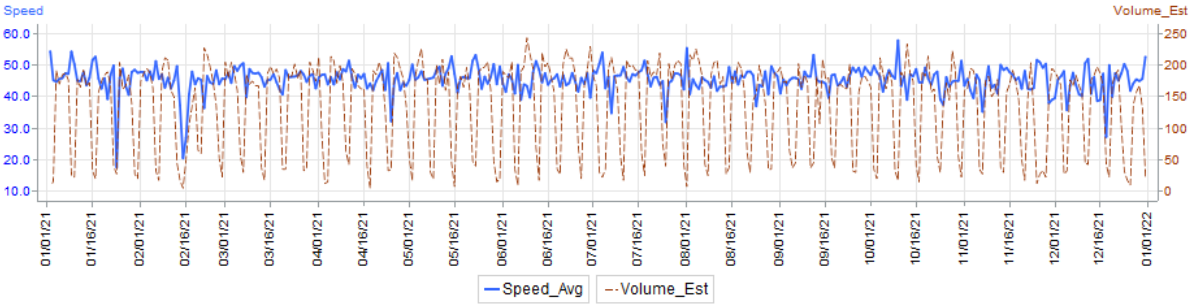
TX380SPUR_US90_NB



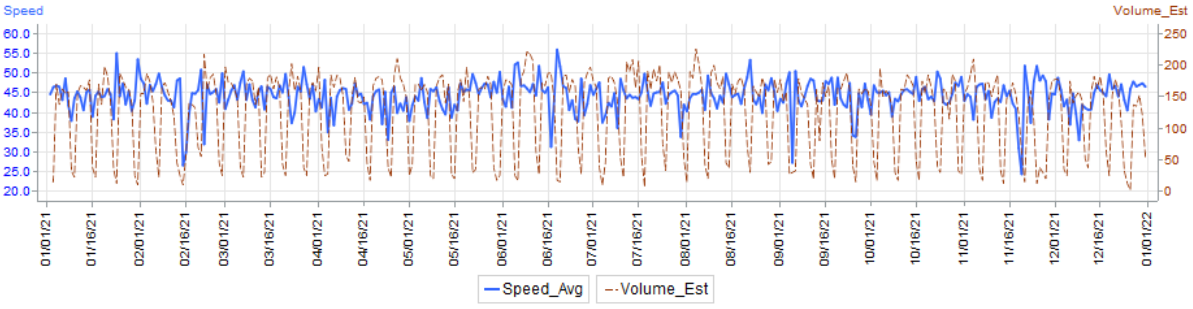
TX380SPUR_US90_SB



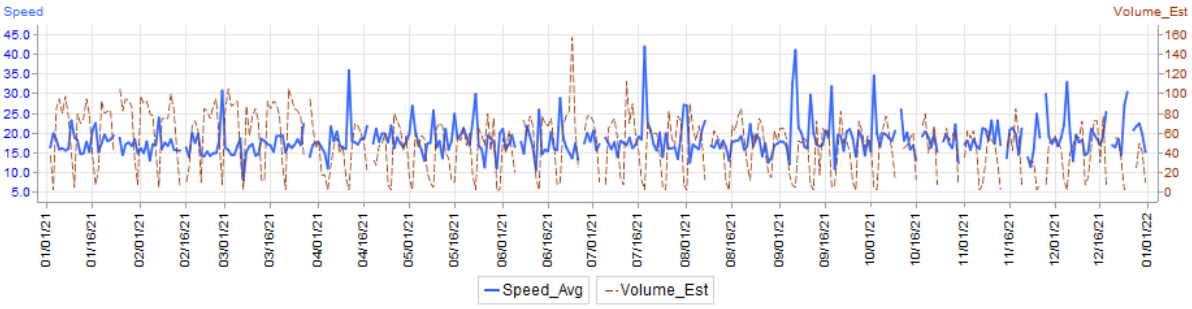
TX380SPUR_Washington_NB



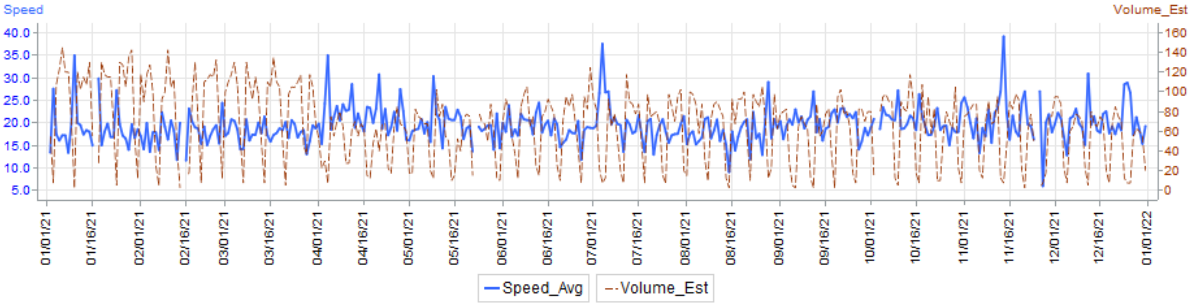
TX380SPUR_Washington_SB



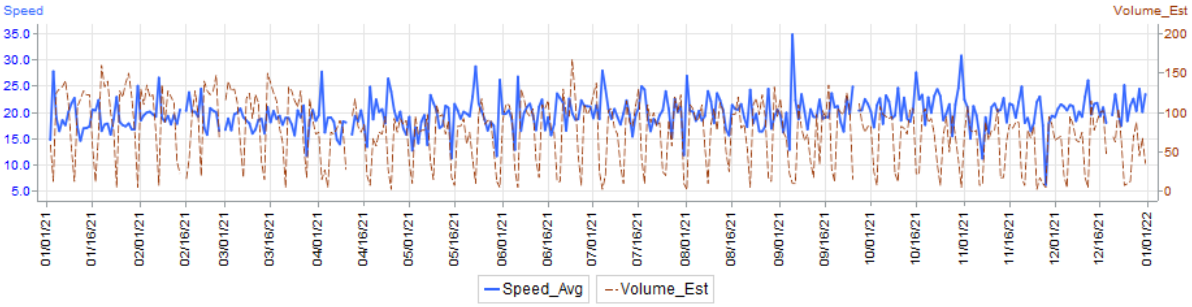
US90_I10_EB



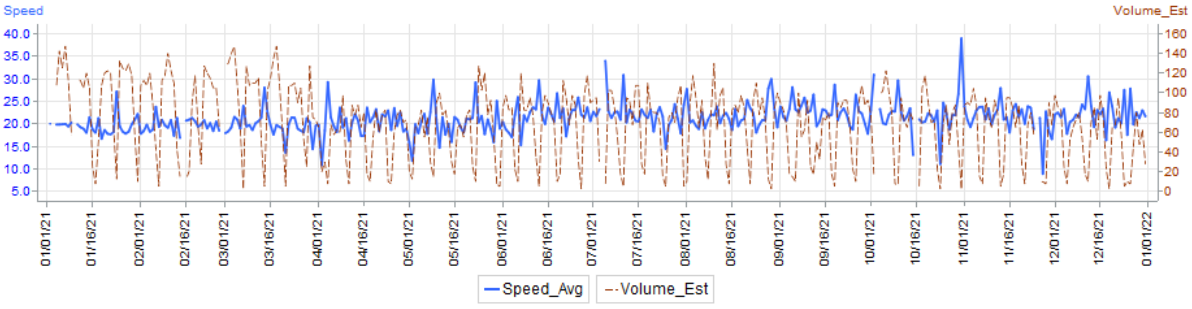
US90_I10_WB



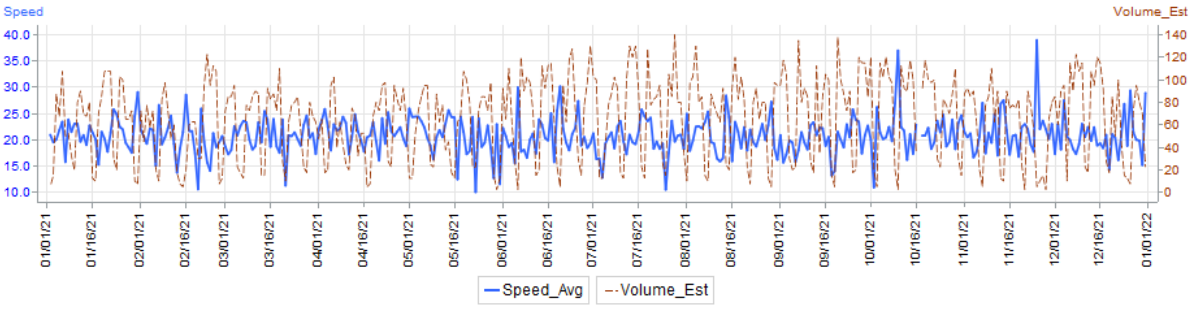
US90_SMLK_EB



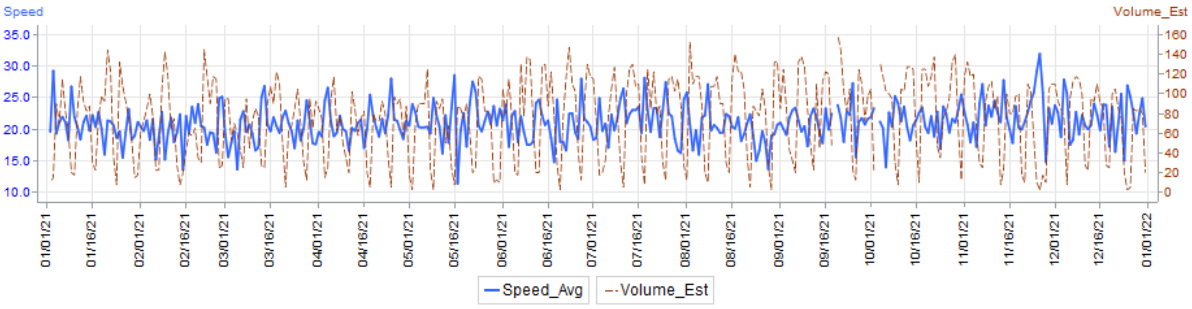
US90_SMLK_WB



Washington_EB



Washington_WB



Appendix C – Regression Summary Table

Table 6 . Regression for All Observations.

Intersection	DepVar	Predictor	R2	AR2	Coefficients		p values
					a	Constant	a
US90_I10 EB	**AvgTTL-5**	Volume_Est	0.001	-0.0018	-0.16933	331.3523	0.553
	AvgTTL-4	Volume_Est	0.003	0.0003	-0.29287	335.9671	0.295
	AvgTTL-3	Volume_Est	0	-0.0028	-0.00392	328.4746	0.989
	AvgTTL-2	Volume_Est	0.0023	-0.0005	0.24357	322.0306	0.364
	AvgTTL-1	Volume_Est	0.0382	0.0356	0.97688	301.5466	0
	AvgTTL	Volume_Est	0.12	0.1176	1.694038	281.1255	0
	AvgTTL1	Volume_Est	0.0345	0.0319	0.930404	302.5023	0
	AvgTTL2	Volume_Est	0.0001	-0.0027	-0.05036	330.4863	0.851
	AvgTTL3	Volume_Est	0.0056	0.0028	-0.38992	339.6603	0.155
	AvgTTL4	Volume_Est	0.0013	-0.0015	-0.0015	332.9681	0.498
	AvgTTL5	Volume_Est	0	-0.0028	-0.00022	326.6183	0.999
US90_I10 WB	**AvgTTL-5**	Volume_Est	0.0046	0.0018	0.205103	0.205103	0.197
	AvgTTL-4	Volume_Est	0.0041	0.0014	0.189987	276.8021	0.222
	AvgTTL-3	Volume_Est	0.0033	0.0005	0.165347	278.8142	0.277
	AvgTTL-2	Volume_Est	0.0079	0.0052	0.252299	275.2471	0.09
	AvgTTL-1	Volume_Est	0.0034	0.0007	0.162941	280.3781	0.263
	AvgTTL	Volume_Est	0.0073	0.0045	0.236786	276.939	0.104
	AvgTTL1	Volume_Est	0.0091	0.0063	0.27098	274.54	0.069
	AvgTTL2	Volume_Est	0.0205	0.0178	0.415034	266.6961	0.006
	AvgTTL3	Volume_Est	0.0092	0.0065	0.285239	271.8609	0.066
	AvgTTL4	Volume_Est	0.0024	-0.0003	0.149828	277.4998	0.346
	AvgTTL5	Volume_Est	0	-0.0027	-0.02119	284.66	0.896
Calder_SMLK_EB	**AvgTTL-5**	Volume_Est	0.008	0.0053	-0.38993	103.927	0.088
	AvgTTL-4	Volume_Est	0.0261	0.0234	-0.702	109.6345	0.002
	AvgTTL-3	Volume_Est	0.0243	0.0216	-0.67403	109.5032	0.003
	AvgTTL-2	Volume_Est	0.0096	0.0069	-0.42323	105.2671	0.062
	AvgTTL-1	Volume_Est	0.0544	0.0518	1.004639	81.53907	0
	AvgTTL	Volume_Est	0.395	0.3934	2.706055	52.80147	0
	AvgTTL1	Volume_Est	0.0022	-0.0005	0.203269	95.07454	0.368
	AvgTTL2	Volume_Est	0.0108	0.008	-0.44886	105.8272	0.048
	AvgTTL3	Volume_Est	0.039	0.0364	-0.85938	112.4867	0
	AvgTTL4	Volume_Est	0.0263	0.0236	-0.70919	109.6642	0.002
	AvgTTL5	Volume_Est	0.018	0.0153	-0.58809	107.1786	0.01

Intersection	DepVar	Predictor	R2	AR2	Coefficients		p values
					a	Constant	a
Calder_SMLK_WB	**AvgTTL-5**	Volume_Est	0	-0.0028	0.004826	110.9483	0.988
	AvgTTL-4	Volume_Est	0	-0.0027	-0.0346	112.0703	0.913
	AvgTTL-3	Volume_Est	0.0039	0.0012	-0.37471	117.3769	0.233
	AvgTTL-2	Volume_Est	0.0059	0.0031	0.458718	105.5388	0.144
	AvgTTL-1	Volume_Est	0.0898	0.0873	1.78977	87.11693	0
	AvgTTL	Volume_Est	0.2666	0.2646	3.084095	68.73219	0
	AvgTTL1	Volume_Est	0.0265	0.0238	0.972587	98.72428	0.002
	AvgTTL2	Volume_Est	0.003	0.0002	0.327005	107.6913	0.299
	AvgTTL3	Volume_Est	0.0001	-0.0027	-0.06074	112.9108	0.848
	AvgTTL4	Volume_Est	0.0027	-0.0001	-0.3125	116.1507	0.326
	AvgTTL5	Volume_Est	0.0003	-0.0024	0.10815	109.9744	0.735
TX380SPUR_I10 NB	**AvgTTL-5**	Volume_Est	0.004	0.0013	-0.03122	91.2457	0.227
	AvgTTL-4	Volume_Est	0.0236	0.0209	-0.07225	94.5203	0.003
	AvgTTL-3	Volume_Est	0.0242	0.0216	-0.06955	94.59576	0.003
	AvgTTL-2	Volume_Est	0.0105	0.0078	-0.04317	92.88766	0.051
	AvgTTL-1	Volume_Est	0.0313	0.0287	0.069996	84.87143	0.001
	AvgTTL	Volume_Est	0.1772	0.1749	0.154287	78.94807	0
	AvgTTL1	Volume_Est	0.026	0.0233	0.063751	85.35468	0.002
	AvgTTL2	Volume_Est	0.0002	-0.0026	-0.00577	90.19261	0.795
	AvgTTL3	Volume_Est	0.006	0.0033	-0.03472	92.07861	0.139
	AvgTTL4	Volume_Est	0.0052	0.0025	-0.03409	91.76648	0.167
	AvgTTL5	Volume_Est	0.0002	-0.0026	-0.00608	89.45139	0.814
TX380SPUR_I10 SB	**AvgTTL-5**	Volume_Est	0.0008	-0.0019	0.015704	88.43769	0.581
	AvgTTL-4	Volume_Est	0.0001	-0.0026	-0.00603	90.02891	0.823
	AvgTTL-3	Volume_Est	0.0019	-0.0008	-0.02098	91.19663	0.405
	AvgTTL-2	Volume_Est	0.0007	-0.002	-0.01196	90.86349	0.609
	AvgTTL-1	Volume_Est	0.0099	0.0072	0.04118	87.9863	0.057
	AvgTTL	Volume_Est	0.1457	0.1433	0.142126	82.09627	0
	AvgTTL1	Volume_Est	0.0299	0.0272	0.071363	86.17162	0.001
	AvgTTL2	Volume_Est	0.004	0.0012	0.028314	88.49993	0.23
	AvgTTL3	Volume_Est	0.004	0.0012	0.030536	88.13657	0.229
	AvgTTL4	Volume_Est	0.0007	-0.0021	-0.01349	90.56337	0.619
	AvgTTL5	Volume_Est	0.0016	-0.0011	-0.02195	90.8332	0.444

Intersection	DepVar	Predictor	R2	AR2	Coefficients		p values
					a	Constant	a
US90_SMLK EB	**AvgTTL-5**	Volume_Est	0.0009	-0.0018	0.043149	160.2821	0.558
	AvgTTL-4	Volume_Est	0.0001	-0.0027	-0.01056	163.1674	0.882
	AvgTTL-3	Volume_Est	0.0006	-0.0022	-0.03039	164.5235	0.655
	AvgTTL-2	Volume_Est	0.0001	-0.0026	-0.01401	164.1563	0.829
	AvgTTL-1	Volume_Est	0.0119	0.0092	0.131137	158.4996	0.037
	AvgTTL	Volume_Est	0.0593	0.0567	0.292323	151.4103	0
	AvgTTL1	Volume_Est	0.0035	0.0007	0.07419	160.6227	0.262
	AvgTTL2	Volume_Est	0.01	0.0073	0.132182	157.6448	0.056
	AvgTTL3	Volume_Est	0.0021	-0.0007	0.062414	160.3333	0.387
	AvgTTL4	Volume_Est	0.0016	-0.0012	-0.05671	165.0896	0.449
	AvgTTL5	Volume_Est	0.0011	-0.0016	-0.04993	164.397	0.52
US90_SMLK WB	**AvgTTL-5**	Volume_Est	0.0127	0.01	0.187465	155.8381	0.031
	AvgTTL-4	Volume_Est	0.0064	0.0037	0.129419	158.6755	0.126
	AvgTTL-3	Volume_Est	0.0013	-0.0014	0.056625	162.0684	0.489
	AvgTTL-2	Volume_Est	0.0079	0.0051	0.134333	159.2067	0.09
	AvgTTL-1	Volume_Est	0.009	0.0063	0.138409	159.4908	0.07
	AvgTTL	Volume_Est	0.016	0.0132	0.183924	157.6517	0.016
	AvgTTL1	Volume_Est	0.0032	0.0005	0.085549	161.0946	0.281
	AvgTTL2	Volume_Est	0.0206	0.018	0.224948	155.0747	0.006
	AvgTTL3	Volume_Est	0.0107	0.008	0.167196	156.995	0.049
	AvgTTL4	Volume_Est	0.0003	-0.0025	-0.0281	164.4667	0.749
	AvgTTL5	Volume_Est	0.0007	-0.0021	0.045503	161.0636	0.614
TX380SPUR_US90 NB	**AvgTTL-5**	Volume_Est	0.0002	-0.0026	-0.00992	182.7586	0.814
	AvgTTL-4	Volume_Est	0.0038	0.0011	-0.04703	186.4848	0.239
	AvgTTL-3	Volume_Est	0.0048	0.0021	-0.04996	187.2105	0.185
	AvgTTL-2	Volume_Est	0.0014	-0.0014	-0.02494	185.6592	0.483
	AvgTTL-1	Volume_Est	0.0002	-0.0025	-0.00993	185.396	0.782
	AvgTTL	Volume_Est	0.0014	-0.0013	0.024299	182.7592	0.469
	AvgTTL1	Volume_Est	0.0084	0.0057	0.063054	178.8024	0.08
	AvgTTL2	Volume_Est	0.0049	0.0022	0.051284	179.2874	0.182
	AvgTTL3	Volume_Est	0.0011	-0.0016	0.025856	181.0406	0.525
	AvgTTL4	Volume_Est	0	-0.0027	0.001989	182.5979	0.963
	AvgTTL5	Volume_Est	0.0048	0.0021	0.059172	177.1408	0.186

Intersection	DepVar	Predictor	R2	AR2	Coefficients		p values
					a	Constant	a
TX380SPUR_US90 SB	**AvgTTL-5**	Volume_Est	0.0019	-0.0008	0.036666	180.3459	0.404
	AvgTTL-4	Volume_Est	0.0071	0.0044	0.06691	178.3594	0.108
	AvgTTL-3	Volume_Est	0.0003	-0.0024	0.013927	183.2001	0.722
	AvgTTL-2	Volume_Est	0.0117	0.009	-0.07562	191.1149	0.039
	AvgTTL-1	Volume_Est	0.0005	-0.0023	0.014379	184.4067	0.672
	AvgTTL	Volume_Est	0.017	0.0143	0.077313	179.6418	0.013
	AvgTTL1	Volume_Est	0.0048	0.002	0.044861	181.6699	0.188
	AvgTTL2	Volume_Est	0.0065	0.0038	0.05676	180.2154	0.124
	AvgTTL3	Volume_Est	0.0178	0.0151	0.100518	176.1905	0.011
	AvgTTL4	Volume_Est	0.0007	-0.0021	0.020473	182.2341	0.626
	AvgTTL5	Volume_Est	0.0022	-0.0006	-0.03922	186.6269	0.375
Washington EB	**AvgTTL-5**	Volume_Est	0.0017	-0.001	-0.13199	303.2006	0.427
	AvgTTL-4	Volume_Est	0.0008	-0.002	-0.08487	302.1665	0.598
	AvgTTL-3	Volume_Est	0.0009	-0.0018	-0.08945	303.3337	0.566
	AvgTTL-2	Volume_Est	0.0006	-0.0021	-0.07285	303.4943	0.628
	AvgTTL-1	Volume_Est	0.0052	0.0025	0.199336	293.1415	0.168
	AvgTTL	Volume_Est	0.0344	0.0318	0.511202	280.4294	0
	AvgTTL1	Volume_Est	0.0051	0.0024	0.204386	292.3043	0.173
	AvgTTL2	Volume_Est	0	-0.0027	0.008068	299.2467	0.959
	AvgTTL3	Volume_Est	0.0013	-0.0014	0.110792	294.2604	0.49
	AvgTTL4	Volume_Est	0.0006	-0.0021	0.078119	294.5514	0.637
	AvgTTL5	Volume_Est	0	-0.0027	-0.01438	297.5799	0.933
Washington WB	**AvgTTL-5**	Volume_Est	0.0023	-0.0004	-0.1384	294.7917	0.36
	AvgTTL-4	Volume_Est	0.0037	0.001	-0.16948	296.8578	0.246
	AvgTTL-3	Volume_Est	0.0101	0.0074	-0.26994	302.0089	0.055
	AvgTTL-2	Volume_Est	0.0024	-0.0003	-0.12695	296.5984	0.348
	AvgTTL-1	Volume_Est	0.0114	0.0087	0.263392	280.8199	0.041
	AvgTTL	Volume_Est	0.044	0.0413	0.495709	271.4489	0
	AvgTTL1	Volume_Est	0.0003	-0.0025	0.040947	289.9696	0.753
	AvgTTL2	Volume_Est	0.0002	-0.0025	-0.03981	292.7101	0.77
	AvgTTL3	Volume_Est	0	-0.0027	-0.01702	291.0475	0.904
	AvgTTL4	Volume_Est	0	-0.0027	-0.00629	289.8252	0.966
	AvgTTL5	Volume_Est	0.0005	-0.0023	0.062176	286.2369	0.683

Intersection	DepVar	Predictor	R2	AR2	Coefficients		p values
					a	Constant	a
TX380SPUR_Wash NB	**AvgTTL-5**	Volume_Est	0.0031	0.0004	0.020095	80.19094	0.285
	AvgTTL-4	Volume_Est	0.0015	-0.0013	-0.01302	83.06078	0.461
	AvgTTL-3	Volume_Est	0.0019	-0.0008	-0.01368	83.33395	0.406
	AvgTTL-2	Volume_Est	0.0033	0.0005	-0.01651	83.75805	0.277
	AvgTTL-1	Volume_Est	0.0014	-0.0014	-0.00964	83.42384	0.483
	AvgTTL	Volume_Est	0.0072	0.0045	0.019591	81.30874	0.106
	AvgTTL1	Volume_Est	0.0253	0.0226	0.041583	79.34434	0.002
	AvgTTL2	Volume_Est	0.0125	0.0098	0.032313	79.86652	0.033
	AvgTTL3	Volume_Est	0.004	0.0013	0.019973	80.63199	0.225
	AvgTTL4	Volume_Est	0.0021	-0.0006	0.015585	80.76281	0.378
	AvgTTL5	Volume_Est	0.0008	-0.0019	0.010322	80.94934	0.583
TX380SPUR_Wash SB	**AvgTTL-5**	Volume_Est	0.0001	-0.0026	-0.00414	84.00402	0.846
	AvgTTL-4	Volume_Est	0.0002	-0.0026	0.005212	83.56599	0.794
	AvgTTL-3	Volume_Est	0	-0.0028	-0.00017	84.20275	0.993
	AvgTTL-2	Volume_Est	0.0003	-0.0024	0.005668	84.02013	0.738
	AvgTTL-1	Volume_Est	0.0018	-0.001	0.012189	83.8133	0.422
	AvgTTL	Volume_Est	0.0042	0.0015	0.01632	83.73695	0.216
	AvgTTL1	Volume_Est	0.0002	-0.0026	-0.00364	84.9362	0.811
	AvgTTL2	Volume_Est	0.0003	-0.0024	0.005964	84.02508	0.725
	AvgTTL3	Volume_Est	0.0129	0.0102	0.040019	81.37865	0.03
	AvgTTL4	Volume_Est	0.0096	0.0069	0.037245	81.36695	0.061
	AvgTTL5	Volume_Est	0.0015	-0.0012	0.015712	82.69239	0.46

Appendix D – ANOVA Summary Tables

Table 7. ANOVA Results for All Observations.

Intersection	DepVar	Bon	Sid	Sch
US90_I10 EB	**AvgTTL-5**	0.205	0.205	0.205
	AvgTTL-4	0.407	0.407	0.407
	AvgTTL-3	0.62	0.62	0.62
	AvgTTL-2	0.607	0.607	0.607
	AvgTTL-1	0.675	0.675	0.675
	AvgTTL	0.511	0.511	0.511
	AvgTTL1	0.81	0.81	0.81
	AvgTTL2	0.293	0.293	0.293
	AvgTTL3	0.275	0.275	0.275
	AvgTTL4	0.013	0.013	0.013
	AvgTTL5	0.824	0.824	0.824
US90_I10 WB	**AvgTTL-5**	0.082	0.082	0.082
	AvgTTL-4	0.37	0.37	0.37
	AvgTTL-3	0.97	0.97	0.97
	AvgTTL-2	0.484	0.484	0.484
	AvgTTL-1	0.054	0.054	0.054
	AvgTTL	0.036	0.036	0.036
	AvgTTL1	0.8	0.8	0.8
	AvgTTL2	0.238	0.238	0.238
	AvgTTL3	0.344	0.344	0.344
	AvgTTL4	0.121	0.121	0.121
	AvgTTL5	0.98	0.98	0.98
Calder_SMLK_EB	**AvgTTL-5**	0.227	0.227	0.227
	AvgTTL-4	0.894	0.894	0.894
	AvgTTL-3	0.149	0.149	0.149
	AvgTTL-2	0.807	0.807	0.807
	AvgTTL-1	0.617	0.617	0.617
	AvgTTL	0.854	0.854	0.854
	AvgTTL1	0.475	0.475	0.475
	AvgTTL2	0.544	0.544	0.544
	AvgTTL3	0.646	0.646	0.646
	AvgTTL4	0.196	0.196	0.196
	AvgTTL5	0.436	0.436	0.436

Intersection	DepVar	Bon	Sid	Sch
Calder_SMLK_WB	**AvgTTL-5**	0.764	0.764	0.764
	AvgTTL-4	0.526	0.526	0.526
	AvgTTL-3	0.281	0.281	0.281
	AvgTTL-2	0.172	0.172	0.172
	AvgTTL-1	0.337	0.337	0.337
	AvgTTL	0.221	0.221	0.221
	AvgTTL1	0.062	0.062	0.062
	AvgTTL2	0.392	0.392	0.392
	AvgTTL3	0.832	0.832	0.832
	AvgTTL4	0.291	0.291	0.291
	AvgTTL5	0.599	0.599	0.599
TX380SPUR_I10 NB	**AvgTTL-5**	0.377	0.377	0.377
	AvgTTL-4	0.233	0.233	0.233
	AvgTTL-3	0.233	0.233	0.233
	AvgTTL-2	0.812	0.812	0.812
	AvgTTL-1	0.432	0.432	0.432
	AvgTTL	0.305	0.305	0.305
	AvgTTL1	0.241	0.241	0.241
	AvgTTL2	0.687	0.687	0.687
	AvgTTL3	0.144	0.144	0.144
	AvgTTL4	0.03	0.03	0.03
	AvgTTL5	0.16	0.16	0.16
TX380SPUR_I10 SB	**AvgTTL-5**	0.81	0.81	0.81
	AvgTTL-4	0.777	0.777	0.777
	AvgTTL-3	0.49	0.49	0.49
	AvgTTL-2	0.882	0.882	0.882
	AvgTTL-1	0.438	0.438	0.438
	AvgTTL	0.092	0.092	0.092
	AvgTTL1	0.047	0.047	0.047
	AvgTTL2	0.474	0.474	0.474
	AvgTTL3	0.559	0.559	0.559
	AvgTTL4	0.405	0.405	0.405
	AvgTTL5	0.803	0.803	0.803

Intersection	DepVar	Bon	Sid	Sch
US90_SMLK EB	AvgTTL-5	0.612	0.612	0.612
	AvgTTL-4	0.618	0.618	0.618
	AvgTTL-3	0.384	0.384	0.384
	AvgTTL-2	0.449	0.449	0.449
	AvgTTL-1	0.983	0.983	0.983
	AvgTTL	0.648	0.648	0.648
	AvgTTL1	0.474	0.474	0.474
	AvgTTL2	0.121	0.121	0.121
	AvgTTL3	0.131	0.131	0.131
	AvgTTL4	0.47	0.47	0.47
	AvgTTL5	0.827	0.827	0.827
US90_SMLK WB	AvgTTL-5	0.174	0.174	0.174
	AvgTTL-4	0.655	0.655	0.655
	AvgTTL-3	0.466	0.466	0.466
	AvgTTL-2	0.98	0.98	0.98
	AvgTTL-1	0.04	0.04	0.04
	AvgTTL	0.067	0.067	0.067
	AvgTTL1	0.106	0.106	0.106
	AvgTTL2	0.669	0.669	0.669
	AvgTTL3	0.13	0.13	0.13
	AvgTTL4	0.024	0.024	0.024
	AvgTTL5	0.842	0.842	0.842
TX380SPUR_US90 NB	AvgTTL-5	0.864	0.864	0.864
	AvgTTL-4	0.133	0.133	0.133
	AvgTTL-3	0.725	0.725	0.725
	AvgTTL-2	0.729	0.729	0.729
	AvgTTL-1	0.196	0.196	0.196
	AvgTTL	0.348	0.348	0.348
	AvgTTL1	0.705	0.705	0.705
	AvgTTL2	0.955	0.955	0.955
	AvgTTL3	0.82	0.82	0.82
	AvgTTL4	0.788	0.788	0.788
	AvgTTL5	0.712	0.712	0.712

Intersection	DepVar	Bon	Sid	Sch
TX380SPUR_US90 SB	AvgTTL-5	0.105	0.105	0.105
	AvgTTL-4	0.292	0.292	0.292
	AvgTTL-3	0.767	0.767	0.767
	AvgTTL-2	0.342	0.342	0.342
	AvgTTL-1	0.149	0.149	0.149
	AvgTTL	0.975	0.975	0.975
	AvgTTL1	0.338	0.338	0.338
	AvgTTL2	0.728	0.728	0.728
	AvgTTL3	0.628	0.628	0.628
	AvgTTL4	0.419	0.419	0.419
	AvgTTL5	0.742	0.742	0.742
Washington EB	AvgTTL-5	0.487	0.487	0.487
	AvgTTL-4	0.694	0.694	0.694
	AvgTTL-3	0.824	0.824	0.824
	AvgTTL-2	0.954	0.954	0.954
	AvgTTL-1	0.207	0.207	0.207
	AvgTTL	0.909	0.909	0.909
	AvgTTL1	0.023	0.023	0.023
	AvgTTL2	0.367	0.367	0.367
	AvgTTL3	0.823	0.823	0.823
	AvgTTL4	0.889	0.889	0.889
	AvgTTL5	0.138	0.138	0.138
Washington WB	AvgTTL-5	0.266	0.266	0.266
	AvgTTL-4	0.426	0.426	0.426
	AvgTTL-3	0.758	0.758	0.758
	AvgTTL-2	0.954	0.954	0.954
	AvgTTL-1	0.398	0.398	0.398
	AvgTTL	0.125	0.125	0.125
	AvgTTL1	0.869	0.869	0.869
	AvgTTL2	0.443	0.443	0.443
	AvgTTL3	0.72	0.72	0.72
	AvgTTL4	0.862	0.862	0.862
	AvgTTL5	0.195	0.195	0.195

Intersection	DepVar	Bon	Sid	Sch
TX380SPUR_Wash NB	**AvgTTL-5**	0.446	0.446	0.446
	AvgTTL-4	0.217	0.217	0.217
	AvgTTL-3	0.713	0.713	0.713
	AvgTTL-2	0.925	0.925	0.925
	AvgTTL-1	0.501	0.501	0.501
	AvgTTL	0.434	0.434	0.434
	AvgTTL1	0.767	0.767	0.767
	AvgTTL2	0.952	0.952	0.952
	AvgTTL3	0.283	0.283	0.283
	AvgTTL4	0.868	0.868	0.868
	AvgTTL5	0.965	0.965	0.965
TX380SPUR_Wash SB	**AvgTTL-5**	0.58	0.58	0.58
	AvgTTL-4	0.546	0.546	0.546
	AvgTTL-3	0.464	0.464	0.464
	AvgTTL-2	0.655	0.655	0.655
	AvgTTL-1	0.847	0.847	0.847
	AvgTTL	0.273	0.273	0.273
	AvgTTL1	0.382	0.382	0.382
	AvgTTL2	0.539	0.539	0.539
	AvgTTL3	0.396	0.396	0.396
	AvgTTL4	0.901	0.901	0.901
	AvgTTL5	0.897	0.897	0.897

Table 8. ANOVA Results Peak Hours.

Intersection	Predictor	Bon	Sid	Sch
Calder_SMLK_EB	**AvgTTL_5**	0.238	0.238	0.238
	AvgTTL_4	0.389	0.389	0.389
	AvgTTL_3	0.201	0.201	0.201
	AvgTTL_2	0.948	0.948	0.948
	AvgTTL_1	0.309	0.309	0.309
	AvgTTL	0.982	0.982	0.982
	AvgTTL1	0.695	0.695	0.695
	AvgTTL2	1	1	1
	AvgTTL3	0.282	0.282	0.282
	AvgTTL4	0.98	0.98	0.98
	AvgTTL5	0.212	0.212	0.212
Calder_SMLK_WB	**AvgTTL_5**	0.14		
	AvgTTL_4	0.196	0.196	0.196
	AvgTTL_3	0.457	0.457	0.457
	AvgTTL_2	0.45	0.45	0.45
	AvgTTL_1	0.84	0.84	0.84
	AvgTTL	0.47	0.47	0.47
	AvgTTL1	0.482	0.482	0.482
	AvgTTL2	0.187	0.187	0.187
	AvgTTL3	0.915	0.915	0.915
	AvgTTL4	0.518	0.518	0.518
	AvgTTL5	0.472	0.472	0.472
TX380SPUR_I10_NB	**AvgTTL_5**	0.904	0.904	0.904
	AvgTTL_4	0.637	0.637	0.637
	AvgTTL_3	0.591	0.591	0.591
	AvgTTL_2	0.056	0.056	0.056
	AvgTTL_1	0.015	0.015	0.015
	AvgTTL	0.936	0.936	0.936
	AvgTTL1	0.311	0.311	0.311
	AvgTTL2	0.831	0.831	0.831
	AvgTTL3	0.012	0.012	0.012
	AvgTTL4	0.049	0.049	0.049
	AvgTTL5	0.588	0.588	0.588

Intersection	Predictor	Bon	Sid	Sch
TX380SPUR_I10_SB	AvgTTL_5	0.566	0.566	0.566
	AvgTTL_4	0.211	0.211	0.211
	AvgTTL_3	0.461	0.461	0.461
	AvgTTL_2	0.293	0.293	0.293
	AvgTTL_1	0.753	0.753	0.753
	AvgTTL	0.291	0.291	0.291
	AvgTTL1	0.834	0.834	0.834
	AvgTTL2	0.769	0.769	0.769
	AvgTTL3	0.772	0.772	0.772
	AvgTTL4	0.314	0.314	0.314
	AvgTTL5	0.467	0.467	0.467
TX380SPUR_US90_NB	AvgTTL_5	0.566	0.566	0.566
	AvgTTL_4	0.211	0.211	0.211
	AvgTTL_3	0.461	0.461	0.461
	AvgTTL_2	0.293	0.293	0.293
	AvgTTL_1	0.753	0.753	0.753
	AvgTTL	0.291	0.291	0.291
	AvgTTL1	0.834	0.834	0.834
	AvgTTL2	0.769	0.769	0.769
	AvgTTL3	0.772	0.772	0.772
	AvgTTL4	0.314	0.314	0.314
	AvgTTL5	0.467	0.467	0.467
TX380SPUR_US90_SB	AvgTTL_5	0.229	0.229	0.229
	AvgTTL_4	0.656	0.656	0.656
	AvgTTL_3	0.159	0.159	0.159
	AvgTTL_2	0.688	0.688	0.688
	AvgTTL_1	0.485	0.485	0.485
	AvgTTL	0.98	0.98	0.98
	AvgTTL1	0.628	0.628	0.628
	AvgTTL2	0.616	0.616	0.616
	AvgTTL3	0.493	0.493	0.493
	AvgTTL4	0.695	0.695	0.695
	AvgTTL5	0.168	0.168	0.168

Intersection	Predictor	Bon	Sid	Sch
TX380SPUR_Wash_NB	AvgTTL_5	0.041	0.041	0.041
	AvgTTL_4	0.445	0.445	0.445
	AvgTTL_3	0.446	0.446	0.446
	AvgTTL_2	0.886	0.886	0.886
	AvgTTL_1	0.901	0.901	0.901
	AvgTTL	0.291	0.291	0.291
	AvgTTL1	0.834	0.834	0.834
	AvgTTL2	0.769	0.769	0.769
	AvgTTL3	0.772	0.772	0.772
	AvgTTL4	0.314	0.314	0.314
	AvgTTL5	0.467	0.467	0.467
TX380SPUR_Wash_SB	AvgTTL_5	0.059	0.059	0.059
	AvgTTL_4	0.707	0.707	0.707
	AvgTTL_3	0.295	0.295	0.295
	AvgTTL_2	0.345	0.345	0.345
	AvgTTL_1	0.914	0.914	0.914
	AvgTTL	0.051	0.051	0.051
	AvgTTL1	0.821	0.821	0.821
	AvgTTL2	0.901	0.901	0.901
	AvgTTL3	0.902	0.902	0.902
	AvgTTL4	0.352	0.352	0.352
	AvgTTL5	0.283	0.283	0.283
US90_I10_EB	AvgTTL_5	0.329	0.329	0.329
	AvgTTL_4	0.017	0.017	0.017
	AvgTTL_3	0.715	0.715	0.715
	AvgTTL_2	0.488	0.488	0.488
	AvgTTL_1	0.856	0.856	0.856
	AvgTTL	0.328	0.328	0.328
	AvgTTL1	0.06	0.06	0.06
	AvgTTL2	0.685	0.685	0.685
	AvgTTL3	0.877	0.877	0.877
	AvgTTL4	0.523	0.523	0.523
	AvgTTL5	0.698	0.698	0.698

Intersection	Predictor	Bon	Sid	Sch
US90_I10_WB	AvgTTL_5	0.948	0.948	0.948
	AvgTTL_4	0.15	0.15	0.15
	AvgTTL_3	0.179	0.179	0.179
	AvgTTL_2	0.984	0.984	0.984
	AvgTTL_1	0.384	0.384	0.384
	AvgTTL	0.009	0.009	0.009
	AvgTTL1	0.215	0.215	0.215
	AvgTTL2	0.811	0.811	0.811
	AvgTTL3	0.364	0.364	0.364
	AvgTTL4	0.92	0.92	0.92
	AvgTTL5	0.172	0.172	0.172
US90_SMLK_EB	AvgTTL_5	0.859	0.859	0.859
	AvgTTL_4	0.173	0.173	0.173
	AvgTTL_3	0.871	0.871	0.871
	AvgTTL_2	0.243	0.243	0.243
	AvgTTL_1	0.639	0.639	0.639
	AvgTTL	0.714	0.714	0.714
	AvgTTL1	0.887	0.887	0.887
	AvgTTL2	0.746	0.746	0.746
	AvgTTL3	0.661	0.661	0.661
	AvgTTL4	0.229	0.229	0.229
	AvgTTL5	0.875	0.875	0.875
US90_SMLK_WB	AvgTTL_5	0.817	0.817	0.817
	AvgTTL_4	0.754	0.754	0.754
	AvgTTL_3	0.142	0.142	0.142
	AvgTTL_2	0.905	0.905	0.905
	AvgTTL_1	0.373	0.373	0.373
	AvgTTL	0.067	0.067	0.067
	AvgTTL1	0.026	0.026	0.026
	AvgTTL2	0.817	0.817	0.817
	AvgTTL3	0.363	0.363	0.363
	AvgTTL4	0.88	0.88	0.88
	AvgTTL5	0.155	0.155	0.155

Intersection	Predictor	Bon	Sid	Sch
Washington_EB	**AvgTTL_5**	0.103	0.103	0.103
	AvgTTL_4	0.999	0.999	0.999
	AvgTTL_3	0.257	0.257	0.257
	AvgTTL_2	0.302	0.302	0.302
	AvgTTL_1	0.696	0.696	0.696
	AvgTTL	0.77	0.77	0.77
	AvgTTL1	0.881	0.881	0.881
	AvgTTL2	0.786	0.786	0.786
	AvgTTL3	0.712	0.712	0.712
	AvgTTL4	0.305	0.305	0.305
	AvgTTL5	0.264	0.264	0.264
Washington_WB	**AvgTTL_5**	0.775	0.775	0.775
	AvgTTL_4	0.464	0.464	0.464
	AvgTTL_3	0.119	0.119	0.119
	AvgTTL_2	0.592	0.592	0.592
	AvgTTL_1	0.959	0.959	0.959
	AvgTTL	0.257	0.257	0.257
	AvgTTL1	0.128	0.128	0.128
	AvgTTL2	0.565	0.565	0.565
	AvgTTL3	0.957	0.957	0.957
	AvgTTL4	0.586	0.586	0.586
	AvgTTL5	0.115	0.115	0.115

Table 9. ANOVA Results for All Observations Exports.

Intersection	DepVar	Bon	Sid	Sch
US90_I10 EB	AvgTTL-5	0.106	0.106	0.106
	AvgTTL-4	0.242	0.242	0.242
	AvgTTL-3	0.874	0.874	0.874
	AvgTTL-2	0.819	0.819	0.819
	AvgTTL-1	0.455	0.455	0.455
	AvgTTL	0.318	0.318	0.318
	AvgTTL1	0.304	0.304	0.304
	AvgTTL2	0.541	0.541	0.541
	AvgTTL3	0.694	0.694	0.694
	AvgTTL4	0.023	0.023	0.023
	AvgTTL5	0.428	0.428	0.428
US90_I10 WB	AvgTTL-5	0.724	0.724	0.724
	AvgTTL-4	0.865	0.865	0.865
	AvgTTL-3	0.08	0.08	0.08
	AvgTTL-2	0.696	0.696	0.696
	AvgTTL-1	0.436	0.436	0.436
	AvgTTL	0.177	0.177	0.177
	AvgTTL1	0.983	0.983	0.983
	AvgTTL2	0.318	0.318	0.318
	AvgTTL3	0.947	0.947	0.947
	AvgTTL4	0.544	0.544	0.544
	AvgTTL5	0.621	0.621	0.621
Calder_SMLK_EB	AvgTTL-5	0.201	0.201	0.201
	AvgTTL-4	0.777	0.777	0.777
	AvgTTL-3	0.919	0.919	0.919
	AvgTTL-2	0.97	0.97	0.97
	AvgTTL-1	0.605	0.605	0.605
	AvgTTL	0.949	0.949	0.949
	AvgTTL1	0.539	0.539	0.539
	AvgTTL2	0.1	0.1	0.1
	AvgTTL3	0.188	0.188	0.188
	AvgTTL4	0.053	0.053	0.053
	AvgTTL5	0.938	0.938	0.938

Intersection	DepVar	Bon	Sid	Sch
Calder_SMLK_WB	**AvgTTL-5**	0.426	0.426	0.426
	AvgTTL-4	0.491	0.491	0.491
	AvgTTL-3	0.107	0.107	0.107
	AvgTTL-2	0.327	0.327	0.327
	AvgTTL-1	0.493	0.493	0.493
	AvgTTL	0.397	0.397	0.397
	AvgTTL1	0.266	0.266	0.266
	AvgTTL2	0.432	0.432	0.432
	AvgTTL3	0.38	0.38	0.38
	AvgTTL4	0.88	0.88	0.88
	AvgTTL5	0.151	0.151	0.151
TX380SPUR_I10 NB	**AvgTTL-5**	0.05	0.05	0.05
	AvgTTL-4	0.87	0.87	0.87
	AvgTTL-3	0.03	0.03	0.03
	AvgTTL-2	0.709	0.709	0.709
	AvgTTL-1	0.536	0.536	0.536
	AvgTTL	0.896	0.896	0.896
	AvgTTL1	0.107	0.107	0.107
	AvgTTL2	0.088	0.088	0.088
	AvgTTL3	0.958	0.958	0.958
	AvgTTL4	0.605	0.605	0.605
	AvgTTL5	0.633	0.633	0.633
TX380SPUR_I10 SB	**AvgTTL-5**	0.63	0.63	0.63
	AvgTTL-4	0.803	0.803	0.803
	AvgTTL-3	0.737	0.737	0.737
	AvgTTL-2	0.654	0.654	0.654
	AvgTTL-1	0.708	0.708	0.708
	AvgTTL	0.24	0.24	0.24
	AvgTTL1	0.353	0.353	0.353
	AvgTTL2	0.442	0.442	0.442
	AvgTTL3	0.782	0.782	0.782
	AvgTTL4	0.715	0.715	0.715
	AvgTTL5	0.721	0.721	0.721

Intersection	DepVar	Bon	Sid	Sch
US90_SMLK EB	AvgTTL-5	0.973	0.973	0.973
	AvgTTL-4	0.035	0.035	0.035
	AvgTTL-3	0.994	0.994	0.994
	AvgTTL-2	0.893	0.893	0.893
	AvgTTL-1	0.577	0.577	0.577
	AvgTTL	0.879	0.879	0.879
	AvgTTL1	0.44	0.44	0.44
	AvgTTL2	0.579	0.579	0.579
	AvgTTL3	0.795	0.795	0.795
	AvgTTL4	0.739	0.739	0.739
	AvgTTL5	0.977	0.977	0.977
US90_SMLK WB	AvgTTL-5	0.626	0.626	0.626
	AvgTTL-4	0.99	0.99	0.99
	AvgTTL-3	0.227	0.227	0.227
	AvgTTL-2	0.898	0.898	0.898
	AvgTTL-1	0.07	0.07	0.07
	AvgTTL	0.472	0.472	0.472
	AvgTTL1	0.302	0.302	0.302
	AvgTTL2	0.749	0.749	0.749
	AvgTTL3	0.926	0.926	0.926
	AvgTTL4	0.533	0.533	0.533
	AvgTTL5	0.647	0.647	0.647
TX380SPUR_US90 NB	AvgTTL-5	0.251	0.251	0.251
	AvgTTL-4	0.96	0.96	0.96
	AvgTTL-3	0.165	0.165	0.165
	AvgTTL-2	0.784	0.784	0.784
	AvgTTL-1	0.306	0.306	0.306
	AvgTTL	0.987	0.987	0.987
	AvgTTL1	0.927	0.927	0.927
	AvgTTL2	0.894	0.894	0.894
	AvgTTL3	0.912	0.912	0.912
	AvgTTL4	0.854	0.854	0.854
	AvgTTL5	0.992	0.992	0.992

Intersection	DepVar	Bon	Sid	Sch
TX380SPUR_US90 SB	AvgTTL-5	0.31	0.31	0.31
	AvgTTL-4	0.295	0.295	0.295
	AvgTTL-3	0.534	0.534	0.534
	AvgTTL-2	0.433	0.433	0.433
	AvgTTL-1	0.098	0.098	0.098
	AvgTTL	0.771	0.771	0.771
	AvgTTL1	0.522	0.522	0.522
	AvgTTL2	0.696	0.696	0.696
	AvgTTL3	0.598	0.598	0.598
	AvgTTL4	0.7	0.7	0.7
	AvgTTL5	0.326	0.326	0.326
Washington EB	AvgTTL-5	0.927	0.927	0.927
	AvgTTL-4	0.841	0.841	0.841
	AvgTTL-3	0.318	0.318	0.318
	AvgTTL-2	0.414	0.414	0.414
	AvgTTL-1	0.287	0.287	0.287
	AvgTTL	0.486	0.486	0.486
	AvgTTL1	0.516	0.516	0.516
	AvgTTL2	0.362	0.362	0.362
	AvgTTL3	0.266	0.266	0.266
	AvgTTL4	0.231	0.231	0.231
	AvgTTL5	0.646	0.646	0.646
Washington WB	AvgTTL-5	0.942	0.942	0.942
	AvgTTL-4	0.321	0.321	0.321
	AvgTTL-3	0.741	0.741	0.741
	AvgTTL-2	0.899	0.899	0.899
	AvgTTL-1	0.991	0.991	0.991
	AvgTTL	0.651	0.651	0.651
	AvgTTL1	0.993	0.993	0.993
	AvgTTL2	0.425	0.425	0.425
	AvgTTL3	0.766	0.766	0.766
	AvgTTL4	0.351	0.351	0.351
	AvgTTL5	0.586	0.586	0.586

Intersection	DepVar	Bon	Sid	Sch
TX380SPUR_Wash NB	AvgTTL-5	0.625	0.625	0.625
	AvgTTL-4	0.849	0.849	0.849
	AvgTTL-3	0.568	0.568	0.568
	AvgTTL-2	0.787	0.787	0.787
	AvgTTL-1	0.488	0.488	0.488
	AvgTTL	0.529	0.529	0.529
	AvgTTL1	0.805	0.805	0.805
	AvgTTL2	0.927	0.927	0.927
	AvgTTL3	0.567	0.567	0.567
	AvgTTL4	0.487	0.487	0.487
	AvgTTL5	0.983	0.983	0.983
TX380SPUR_Wash SB	AvgTTL-5	0.872	0.872	0.872
	AvgTTL-4	0.5	0.5	0.5
	AvgTTL-3	0.784	0.784	0.784
	AvgTTL-2	0.37	0.37	0.37
	AvgTTL-1	0.846	0.846	0.846
	AvgTTL	0.633	0.633	0.633
	AvgTTL1	0.809	0.809	0.809
	AvgTTL2	0.247	0.247	0.247
	AvgTTL3	0.82	0.82	0.82
	AvgTTL4	0.235	0.235	0.235
	AvgTTL5	0.521	0.521	0.521

Table 10. ANOVA Results for All Observation Imports.

Intersection	DepVar	Bon	Sid	Sch
US90_I10 EB	**AvgTTL-5**	0.67	0.67	0.67
	AvgTTL-4	0.593	0.593	0.593
	AvgTTL-3	0.582	0.582	0.582
	AvgTTL-2	0.615	0.615	0.615
	AvgTTL-1	0.839	0.839	0.839
	AvgTTL	0.854	0.854	0.854
	AvgTTL1	0.935	0.935	0.935
	AvgTTL2	0.211	0.211	0.211
	AvgTTL3	0.352	0.352	0.352
	AvgTTL4	0.196	0.196	0.196
	AvgTTL5	0.912	0.912	0.912
US90_I10 WB	**AvgTTL-5**	0.119	0.119	0.119
	AvgTTL-4	0.351	0.351	0.351
	AvgTTL-3	0.885	0.885	0.885
	AvgTTL-2	0.224	0.224	0.224
	AvgTTL-1	0.076	0.076	0.076
	AvgTTL	0.161	0.161	0.161
	AvgTTL1	0.933	0.933	0.933
	AvgTTL2	0.377	0.377	0.377
	AvgTTL3	0.325	0.325	0.325
	AvgTTL4	0.05	0.05	0.05
	AvgTTL5	0.714	0.714	0.714
Calder_SMLK_EB	**AvgTTL-5**	0.568	0.568	0.568
	AvgTTL-4	0.556	0.556	0.556
	AvgTTL-3	0.219	0.219	0.219
	AvgTTL-2	0.799	0.799	0.799
	AvgTTL-1	0.562	0.562	0.562
	AvgTTL	0.635	0.635	0.635
	AvgTTL1	0.687	0.687	0.687
	AvgTTL2	0.066	0.066	0.066
	AvgTTL3	0.794	0.794	0.794
	AvgTTL4	0.738	0.738	0.738
	AvgTTL5	0.349	0.349	0.349

Intersection	DepVar	Bon	Sid	Sch
Calder_SMLK_WB	**AvgTTL-5**	0.427	0.427	0.427
	AvgTTL-4	0.554	0.554	0.554
	AvgTTL-3	0.789	0.789	0.789
	AvgTTL-2	0.218	0.218	0.218
	AvgTTL-1	0.384	0.384	0.384
	AvgTTL	0.151	0.151	0.151
	AvgTTL1	0.097	0.097	0.097
	AvgTTL2	0.731	0.731	0.731
	AvgTTL3	0.271	0.271	0.271
	AvgTTL4	0.241	0.241	0.241
	AvgTTL5	0.806	0.806	0.806
TX380SPUR_I10 NB	**AvgTTL-5**	0.038	0.038	0.038
	AvgTTL-4	0.315	0.315	0.315
	AvgTTL-3	0.58	0.58	0.58
	AvgTTL-2	0.662	0.662	0.662
	AvgTTL-1	0.436	0.436	0.436
	AvgTTL	0.464	0.464	0.464
	AvgTTL1	0.673	0.673	0.673
	AvgTTL2	0.696	0.696	0.696
	AvgTTL3	0.098	0.098	0.098
	AvgTTL4	0.035	0.035	0.035
	AvgTTL5	0.212	0.212	0.212
TX380SPUR_I10 SB	**AvgTTL-5**	0.681	0.681	0.681
	AvgTTL-4	0.951	0.951	0.951
	AvgTTL-3	0.429	0.429	0.429
	AvgTTL-2	0.693	0.693	0.693
	AvgTTL-1	0.439	0.439	0.439
	AvgTTL	0.132	0.132	0.132
	AvgTTL1	0.071	0.071	0.071
	AvgTTL2	0.251	0.251	0.251
	AvgTTL3	0.728	0.728	0.728
	AvgTTL4	0.492	0.492	0.492
	AvgTTL5	0.945	0.945	0.945

Intersection	DepVar	Bon	Sid	Sch
US90_SMLK EB	AvgTTL-5	0.328	0.328	0.328
	AvgTTL-4	0.769	0.769	0.769
	AvgTTL-3	0.344	0.344	0.344
	AvgTTL-2	0.349	0.349	0.349
	AvgTTL-1	0.582	0.582	0.582
	AvgTTL	0.469	0.469	0.469
	AvgTTL1	0.576	0.576	0.576
	AvgTTL2	0.048	0.048	0.048
	AvgTTL3	0.167	0.167	0.167
	AvgTTL4	0.422	0.422	0.422
	AvgTTL5	0.848	0.848	0.848
US90_SMLK WB	AvgTTL-5	0.065	0.065	0.065
	AvgTTL-4	0.541	0.541	0.541
	AvgTTL-3	0.307	0.307	0.307
	AvgTTL-2	0.944	0.944	0.944
	AvgTTL-1	0.037	0.037	0.037
	AvgTTL	0.095	0.095	0.095
	AvgTTL1	0.296	0.296	0.296
	AvgTTL2	0.413	0.413	0.413
	AvgTTL3	0.136	0.136	0.136
	AvgTTL4	0.006	0.006	0.006
	AvgTTL5	0.957	0.957	0.957
TX380SPUR_US90 NB	AvgTTL-5	0.487	0.487	0.487
	AvgTTL-4	0.088	0.088	0.088
	AvgTTL-3	0.788	0.788	0.788
	AvgTTL-2	0.469	0.469	0.469
	AvgTTL-1	0.237	0.237	0.237
	AvgTTL	0.225	0.225	0.225
	AvgTTL1	0.631	0.631	0.631
	AvgTTL2	0.986	0.986	0.986
	AvgTTL3	0.986	0.986	0.986
	AvgTTL4	0.975	0.975	0.975
	AvgTTL5	0.714	0.714	0.714

Intersection	DepVar	Bon	Sid	Sch
TX380SPUR_US90 SB	AvgTTL-5	0.233	0.233	0.233
	AvgTTL-4	0.681	0.681	0.681
	AvgTTL-3	0.783	0.783	0.783
	AvgTTL-2	0.218	0.218	0.218
	AvgTTL-1	0.4	0.4	0.4
	AvgTTL	0.876	0.876	0.876
	AvgTTL1	0.475	0.475	0.475
	AvgTTL2	0.952	0.952	0.952
	AvgTTL3	0.825	0.825	0.825
	AvgTTL4	0.234	0.234	0.234
	AvgTTL5	0.855	0.855	0.855
Washington EB	AvgTTL-5	0.363	0.363	0.363
	AvgTTL-4	0.949	0.949	0.949
	AvgTTL-3	0.457	0.457	0.457
	AvgTTL-2	0.664	0.664	0.664
	AvgTTL-1	0.234	0.234	0.234
	AvgTTL	0.656	0.656	0.656
	AvgTTL1	0.058	0.058	0.058
	AvgTTL2	0.175	0.175	0.175
	AvgTTL3	0.679	0.679	0.679
	AvgTTL4	0.589	0.589	0.589
	AvgTTL5	0.271	0.271	0.271
Washington WB	AvgTTL-5	0.274	0.274	0.274
	AvgTTL-4	0.406	0.406	0.406
	AvgTTL-3	0.489	0.489	0.489
	AvgTTL-2	0.694	0.694	0.694
	AvgTTL-1	0.436	0.436	0.436
	AvgTTL	0.08	0.08	0.08
	AvgTTL1	0.942	0.942	0.942
	AvgTTL2	0.211	0.211	0.211
	AvgTTL3	0.772	0.772	0.772
	AvgTTL4	0.846	0.846	0.846
	AvgTTL5	0.271	0.271	0.271

Intersection	DepVar	Bon	Sid	Sch
TX380SPUR_Wash NB	AvgTTL-5	0.237	0.237	0.237
	AvgTTL-4	0.192	0.192	0.192
	AvgTTL-3	0.936	0.936	0.936
	AvgTTL-2	0.923	0.923	0.923
	AvgTTL-1	0.582	0.582	0.582
	AvgTTL	0.264	0.264	0.264
	AvgTTL1	0.761	0.761	0.761
	AvgTTL2	0.912	0.912	0.912
	AvgTTL3	0.131	0.131	0.131
	AvgTTL4	0.931	0.931	0.931
	AvgTTL5	0.938	0.938	0.938
TX380SPUR_Wash SB	AvgTTL-5	0.603	0.603	0.603
	AvgTTL-4	0.642	0.642	0.642
	AvgTTL-3	0.478	0.478	0.478
	AvgTTL-2	0.901	0.901	0.901
	AvgTTL-1	0.831	0.831	0.831
	AvgTTL	0.233	0.233	0.233
	AvgTTL1	0.317	0.317	0.317
	AvgTTL2	0.203	0.203	0.203
	AvgTTL3	0.45	0.45	0.45
	AvgTTL4	0.819	0.819	0.819
	AvgTTL5	0.852	0.852	0.852

Table 11. ANOVA Results for Peak-Hour Exports.

Intersection	DepVar	Bon	Sid	Sch
US90_I10 EB	**AvgTTL-5**	0.927	0.927	0.927
	AvgTTL-4	0.948	0.948	0.948
	AvgTTL-3	0.34	0.34	0.34
	AvgTTL-2	0.543	0.543	0.543
	AvgTTL-1	0.854	0.854	0.854
	AvgTTL	0.8	0.8	0.8
	AvgTTL1	0.241	0.241	0.241
	AvgTTL2	0.807	0.807	0.807
	AvgTTL3	0.864	0.864	0.864
	AvgTTL4	0.561	0.561	0.561
	AvgTTL5	0.337	0.337	0.337
US90_I10 WB	**AvgTTL-5**	0.525	0.525	0.525
	AvgTTL-4	0.183	0.183	0.183
	AvgTTL-3	0.403	0.403	0.403
	AvgTTL-2	0.57	0.57	0.57
	AvgTTL-1	0.008	0.008	0.008
	AvgTTL	0.133	0.133	0.133
	AvgTTL1	0.493	0.493	0.493
	AvgTTL2	0.116	0.116	0.116
	AvgTTL3	0.008	0.008	0.008
	AvgTTL4	0.546	0.546	0.546
	AvgTTL5	0.397	0.397	0.397
Calder_SMLK_EB	**AvgTTL-5**	0.725	0.725	0.725
	AvgTTL-4	0.897	0.897	0.897
	AvgTTL-3	0.094	0.094	0.094
	AvgTTL-2	0.984	0.984	0.984
	AvgTTL-1	0.81	0.81	0.81
	AvgTTL	0.545	0.545	0.545
	AvgTTL1	0.598	0.598	0.598
	AvgTTL2	0.747	0.747	0.747
	AvgTTL3	0.789	0.789	0.789
	AvgTTL4	0.983	0.983	0.983
	AvgTTL5	0.097	0.097	0.097

Intersection	DepVar	Bon	Sid	Sch
Calder_SMLK_WB	**AvgTTL-5**	0.908	0.908	0.908
	AvgTTL-4	0.928	0.928	0.928
	AvgTTL-3	0.413	0.413	0.413
	AvgTTL-2	0.674	0.674	0.674
	AvgTTL-1	0.25	0.25	0.25
	AvgTTL	0.918	0.918	0.918
	AvgTTL1	0.985	0.985	0.985
	AvgTTL2	0.301	0.301	0.301
	AvgTTL3	0.231	0.231	0.231
	AvgTTL4	0.711	0.711	0.711
	AvgTTL5	0.405	0.405	0.405
TX380SPUR_I10 NB	**AvgTTL-5**	0.926	0.926	0.926
	AvgTTL-4	0.94	0.94	0.94
	AvgTTL-3	0.064	0.064	0.064
	AvgTTL-2	0.634	0.634	0.634
	AvgTTL-1	0.008	0.008	0.008
	AvgTTL	0.986	0.986	0.986
	AvgTTL1	0.042	0.042	0.042
	AvgTTL2	0.729	0.729	0.729
	AvgTTL3	0.007	0.007	0.007
	AvgTTL4	0.616	0.616	0.616
	AvgTTL5	0.065	0.065	0.065
TX380SPUR_I10 SB	**AvgTTL-5**	0.829	0.829	0.829
	AvgTTL-4	0.347	0.347	0.347
	AvgTTL-3	0.876	0.876	0.876
	AvgTTL-2	0.659	0.659	0.659
	AvgTTL-1	0.98	0.98	0.98
	AvgTTL	0.243	0.243	0.243
	AvgTTL1	0.699	0.699	0.699
	AvgTTL2	0.576	0.576	0.576
	AvgTTL3	0.966	0.966	0.966
	AvgTTL4	0.682	0.682	0.682
	AvgTTL5	0.892	0.892	0.892

Intersection	DepVar	Bon	Sid	Sch
US90_SMLK EB	AvgTTL-5	0.947	0.947	0.947
	AvgTTL-4	0.538	0.538	0.538
	AvgTTL-3	0.448	0.448	0.448
	AvgTTL-2	0.001	0.001	0.001
	AvgTTL-1	0.796	0.796	0.796
	AvgTTL	0.974	0.974	0.974
	AvgTTL1	0.261	0.261	0.261
	AvgTTL2	0.844	0.844	0.844
	AvgTTL3	0.786	0.786	0.786
	AvgTTL4	0.001	0.001	0.001
	AvgTTL5	0.45	0.45	0.45
US90_SMLK WB	AvgTTL-5	0.54	0.54	0.54
	AvgTTL-4	0.436	0.436	0.436
	AvgTTL-3	0.758	0.758	0.758
	AvgTTL-2	0.935	0.935	0.935
	AvgTTL-1	0.209	0.209	0.209
	AvgTTL	0.924	0.924	0.924
	AvgTTL1	0.111	0.111	0.111
	AvgTTL2	0.542	0.542	0.542
	AvgTTL3	0.207	0.207	0.207
	AvgTTL4	0.924	0.924	0.924
	AvgTTL5	0.78	0.78	0.78
TX380SPUR_US90 NB	AvgTTL-5	0.466	0.466	0.466
	AvgTTL-4	0.75	0.75	0.75
	AvgTTL-3	0.589	0.589	0.589
	AvgTTL-2	0.718	0.718	0.718
	AvgTTL-1	0.616	0.616	0.616
	AvgTTL	0.261	0.261	0.261
	AvgTTL1	0.582	0.582	0.582
	AvgTTL2	0.834	0.834	0.834
	AvgTTL3	0.625	0.625	0.625
	AvgTTL4	0.734	0.734	0.734
	AvgTTL5	0.588	0.588	0.588

Intersection	DepVar	Bon	Sid	Sch
TX380SPUR_US90 SB	**AvgTTL-5**	0.804	0.804	0.804
	AvgTTL-4	0.963	0.963	0.963
	AvgTTL-3	0.444	0.444	0.444
	AvgTTL-2	0.95	0.95	0.95
	AvgTTL-1	0.733	0.733	0.733
	AvgTTL	0.77	0.77	0.77
	AvgTTL1	0.683	0.683	0.683
	AvgTTL2	0.963	0.963	0.963
	AvgTTL3	0.738	0.738	0.738
	AvgTTL4	0.947	0.947	0.947
	AvgTTL5	0.454	0.454	0.454
Washington EB	**AvgTTL-5**	0.568	0.568	0.568
	AvgTTL-4	0.961	0.961	0.961
	AvgTTL-3	0.984	0.984	0.984
	AvgTTL-2	0.582	0.582	0.582
	AvgTTL-1	0.276	0.276	0.276
	AvgTTL	0.709	0.709	0.709
	AvgTTL1	0.259	0.259	0.259
	AvgTTL2	0.575	0.575	0.575
	AvgTTL3	0.273	0.273	0.273
	AvgTTL4	0.581	0.581	0.581
	AvgTTL5	0.979	0.979	0.979
Washington WB	**AvgTTL-5**	0.76	0.76	0.76
	AvgTTL-4	0.452	0.452	0.452
	AvgTTL-3	0.841	0.841	0.841
	AvgTTL-2	0.02	0.02	0.02
	AvgTTL-1	0.957	0.957	0.957
	AvgTTL	0.583	0.583	0.583
	AvgTTL1	0.431	0.431	0.431
	AvgTTL2	0.446	0.446	0.446
	AvgTTL3	0.956	0.956	0.956
	AvgTTL4	0.02	0.02	0.02
	AvgTTL5	0.835	0.835	0.835

Intersection	DepVar	Bon	Sid	Sch
TX380SPUR_Wash NB	**AvgTTL-5**	0.676	0.676	0.676
	AvgTTL-4	0.333	0.333	0.333
	AvgTTL-3	0.702	0.702	0.702
	AvgTTL-2	0.764	0.764	0.764
	AvgTTL-1	0.705	0.705	0.705
	AvgTTL	0.777	0.777	0.777
	AvgTTL1	0.474	0.474	0.474
	AvgTTL2	0.974	0.974	0.974
	AvgTTL3	0.706	0.706	0.706
	AvgTTL4	0.76	0.76	0.76
	AvgTTL5	0.688	0.688	0.688
TX380SPUR_Wash SB	**AvgTTL-5**	0.581	0.581	0.581
	AvgTTL-4	0.755	0.755	0.755
	AvgTTL-3	0.476	0.476	0.476
	AvgTTL-2	0.983479	0.983479	0.983479
	AvgTTL-1	-1.86331	-1.86331	-1.86331
	AvgTTL	0.432	0.432	0.432
	AvgTTL1	0.64	0.64	0.64
	AvgTTL2	0.636	0.636	0.636
	AvgTTL3	0.539	0.539	0.539
	AvgTTL4	0.767	0.767	0.767
	AvgTTL5	0.47	0.47	0.47

Table 12. ANOVA Results Peak-Hour Imports.

Intersection	DepVar	Bon	Sid	Sch
US90_I10 EB	**AvgTTL-5**	0.189	0.189	0.189
	AvgTTL-4	0.02	0.02	0.02
	AvgTTL-3	0.786	0.786	0.786
	AvgTTL-2	0.452	0.452	0.452
	AvgTTL-1	0.746	0.746	0.746
	AvgTTL	0.167	0.167	0.167
	AvgTTL1	0.154	0.154	0.154
	AvgTTL2	0.512	0.512	0.512
	AvgTTL3	0.764	0.764	0.764
	AvgTTL4	0.482	0.482	0.482
	AvgTTL5	0.803	0.803	0.803
US90_I10 WB	**AvgTTL-5**	0.933	0.933	0.933
	AvgTTL-4	0.369	0.369	0.369
	AvgTTL-3	0.484	0.484	0.484
	AvgTTL-2	0.657	0.657	0.657
	AvgTTL-1	0.544	0.544	0.544
	AvgTTL	0.058	0.058	0.058
	AvgTTL1	0.155	0.155	0.155
	AvgTTL2	0.167	0.167	0.167
	AvgTTL3	0.523	0.523	0.523
	AvgTTL4	0.708	0.708	0.708
	AvgTTL5	0.473	0.473	0.473
Calder_SMLK_EB	**AvgTTL-5**	0.262	0.262	0.262
	AvgTTL-4	0.323	0.323	0.323
	AvgTTL-3	0.606	0.606	0.606
	AvgTTL-2	0.59	0.59	0.59
	AvgTTL-1	0.476	0.476	0.476
	AvgTTL	0.514	0.514	0.514
	AvgTTL1	0.671	0.671	0.671
	AvgTTL2	0.919	0.919	0.919
	AvgTTL3	0.444	0.444	0.444
	AvgTTL4	0.645	0.645	0.645
	AvgTTL5	0.626	0.626	0.626

Intersection	DepVar	Bon	Sid	Sch
Calder_SMLK_WB	**AvgTTL-5**	0.067	0.067	0.067
	AvgTTL-4	0.166	0.166	0.166
	AvgTTL-3	0.125	0.125	0.125
	AvgTTL-2	0.296	0.296	0.296
	AvgTTL-1	0.348	0.348	0.348
	AvgTTL	0.428	0.428	0.428
	AvgTTL1	0.342	0.342	0.342
	AvgTTL2	0.346	0.346	0.346
	AvgTTL3	0.39	0.39	0.39
	AvgTTL4	0.342	0.342	0.342
	AvgTTL5	0.13	0.13	0.13
TX380SPUR_I10 NB	**AvgTTL-5**	0.905	0.905	0.905
	AvgTTL-4	0.615	0.615	0.615
	AvgTTL-3	0.119	0.119	0.119
	AvgTTL-2	0.105	0.105	0.105
	AvgTTL-1	0.074	0.074	0.074
	AvgTTL	0.916	0.916	0.916
	AvgTTL1	0.457	0.457	0.457
	AvgTTL2	0.561	0.561	0.561
	AvgTTL3	0.064	0.064	0.064
	AvgTTL4	0.095	0.095	0.095
	AvgTTL5	0.118	0.118	0.118
TX380SPUR_I10 SB	**AvgTTL-5**	0.66	0.66	0.66
	AvgTTL-4	0.785	0.785	0.785
	AvgTTL-3	0.906	0.906	0.906
	AvgTTL-2	0.739	0.739	0.739
	AvgTTL-1	0.64	0.64	0.64
	AvgTTL	0.106	0.106	0.106
	AvgTTL1	0.305	0.305	0.305
	AvgTTL2	0.374	0.374	0.374
	AvgTTL3	0.664	0.664	0.664
	AvgTTL4	0.697	0.697	0.697
	AvgTTL5	0.878	0.878	0.878

Intersection	DepVar	Bon	Sid	Sch
US90_SMLK EB	AvgTTL-5	0.963	0.963	0.963
	AvgTTL-4	0.082	0.082	0.082
	AvgTTL-3	0.431	0.431	0.431
	AvgTTL-2	0.57	0.57	0.57
	AvgTTL-1	0.615	0.615	0.615
	AvgTTL	0.691	0.691	0.691
	AvgTTL1	0.799	0.799	0.799
	AvgTTL2	0.8	0.8	0.8
	AvgTTL3	0.634	0.634	0.634
	AvgTTL4	0.55	0.55	0.55
	AvgTTL5	0.435	0.435	0.435
US90_SMLK WB	AvgTTL-5	0.514	0.514	0.514
	AvgTTL-4	0.967	0.967	0.967
	AvgTTL-3	0.094	0.094	0.094
	AvgTTL-2	0.912	0.912	0.912
	AvgTTL-1	0.293	0.293	0.293
	AvgTTL	0.076	0.076	0.076
	AvgTTL1	0.039	0.039	0.039
	AvgTTL2	0.563	0.563	0.563
	AvgTTL3	6.20537	6.20537	6.20537
	AvgTTL4	0.935	0.935	0.935
	AvgTTL5	0.101	0.101	0.101
TX380SPUR_US90 NB	AvgTTL-5	0.887	0.887	0.887
	AvgTTL-4	0.105	0.105	0.105
	AvgTTL-3	0.354	0.354	0.354
	AvgTTL-2	0.356	0.356	0.356
	AvgTTL-1	0.837	0.837	0.837
	AvgTTL	0.032	0.032	0.032
	AvgTTL1	0.885	0.885	0.885
	AvgTTL2	0.693	0.693	0.693
	AvgTTL3	0.853	0.853	0.853
	AvgTTL4	0.377	0.377	0.377
	AvgTTL5	0.359	0.359	0.359

Intersection	DepVar	Bon	Sid	Sch
TX380SPUR_US90 SB	AvgTTL-5	0.191	0.191	0.191
	AvgTTL-4	0.647	0.647	0.647
	AvgTTL-3	0.242	0.242	0.242
	AvgTTL-2	0.772	0.772	0.772
	AvgTTL-1	0.738	0.738	0.738
	AvgTTL	0.872	0.872	0.872
	AvgTTL1	0.684	0.684	0.684
	AvgTTL2	0.67	0.67	0.67
	AvgTTL3	0.746	0.746	0.746
	AvgTTL4	0.778	0.778	0.778
	AvgTTL5	0.253	0.253	0.253
Washington EB	AvgTTL-5	0.177	0.177	0.177
	AvgTTL-4	0.735	0.735	0.735
	AvgTTL-3	0.132	0.132	0.132
	AvgTTL-2	0.256	0.256	0.256
	AvgTTL-1	0.328	0.328	0.328
	AvgTTL	0.621	0.621	0.621
	AvgTTL1	0.937	0.937	0.937
	AvgTTL2	0.875	0.875	0.875
	AvgTTL3	0.338	0.338	0.338
	AvgTTL4	0.258	0.258	0.258
	AvgTTL5	0.136	0.136	0.136
Washington WB	AvgTTL-5	0.898	0.898	0.898
	AvgTTL-4	0.3	0.3	0.3
	AvgTTL-3	0.129	0.129	0.129
	AvgTTL-2	0.925	0.925	0.925
	AvgTTL-1	0.779	0.779	0.779
	AvgTTL	0.162	0.162	0.162
	AvgTTL1	0.26	0.26	0.26
	AvgTTL2	0.924	0.924	0.924
	AvgTTL3	0.782	0.782	0.782
	AvgTTL4	0.933	0.933	0.933
	AvgTTL5	0.126	0.126	0.126

Intersection	DepVar	Bon	Sid	Sch
TX380SPUR_Wash NB	**AvgTTL-5**	0.026	0.026	0.026
	AvgTTL-4	0.699	0.699	0.699
	AvgTTL-3	0.326	0.326	0.326
	AvgTTL-2	0.229	0.229	0.229
	AvgTTL-1	0.986	0.986	0.986
	AvgTTL	0.04	0.04	0.04
	AvgTTL1	0.407	0.407	0.407
	AvgTTL2	0.978	0.978	0.978
	AvgTTL3	0.996	0.996	0.996
	AvgTTL4	0.234	0.234	0.234
	AvgTTL5	0.315	0.315	0.315
TX380SPUR_Wash SB	**AvgTTL-5**	0.029	0.029	0.029
	AvgTTL-4	0.66	0.66	0.66
	AvgTTL-3	0.242	0.242	0.242
	AvgTTL-2	0.866	0.866	0.866
	AvgTTL-1	0.772	0.772	0.772
	AvgTTL	0.349	0.349	0.349
	AvgTTL1	0.518	0.518	0.518
	AvgTTL2	0.764	0.764	0.764
	AvgTTL3	0.774	0.774	0.774
	AvgTTL4	0.876	0.876	0.876
	AvgTTL5	0.261	0.261	0.261