

Use of Toll Transaction Data in OD Validation and Forecasting for Corridor Planning

- Proposed Managed Lanes PD&E Study on SR 826 / Palmetto Expressway

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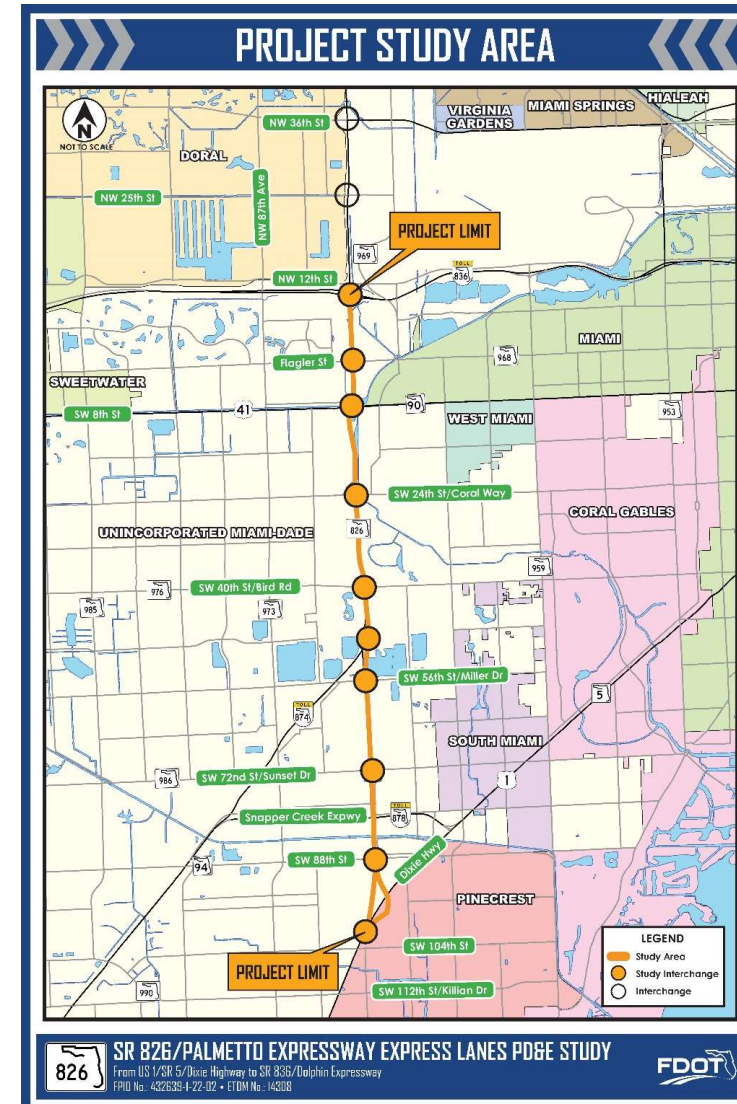
Overview

- Background
- Toll Transaction Data
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- OD comparison
- Reasonableness of OD Validation

Background

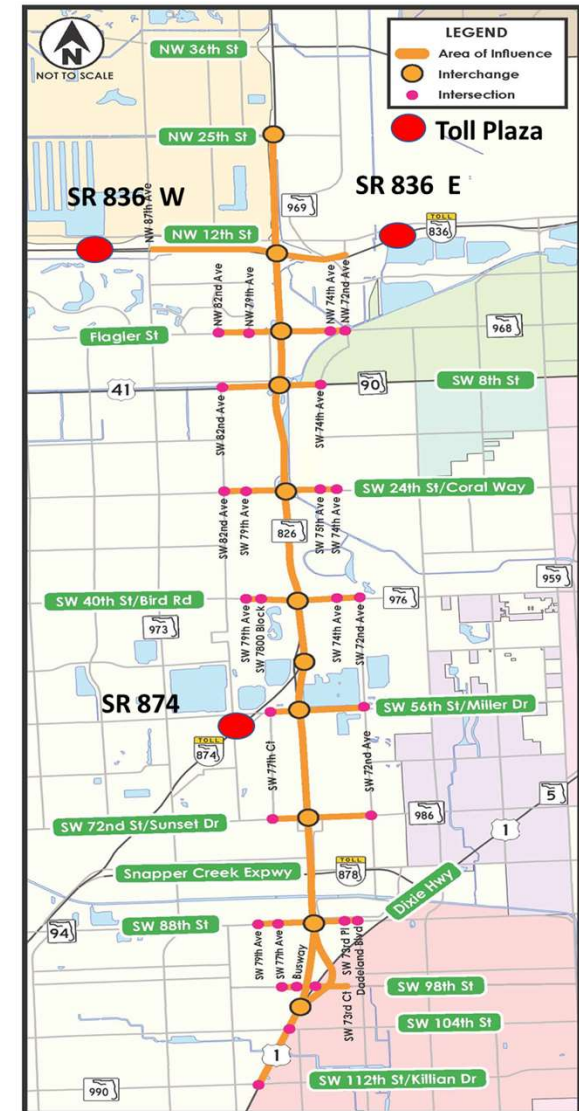
Traversing Traffic between SR 874/ Don Shula Expressway to
SR 836/ Dolphin Expressway
via SR 826 /Palmetto Expressway

- SR 826/ Palmetto Expressway, FDOT District 6
- SR 874/ Don Shula Expressway and SR 836 Dolphin Expressway, GMX (Greater Miami Expressway) formerly MDX



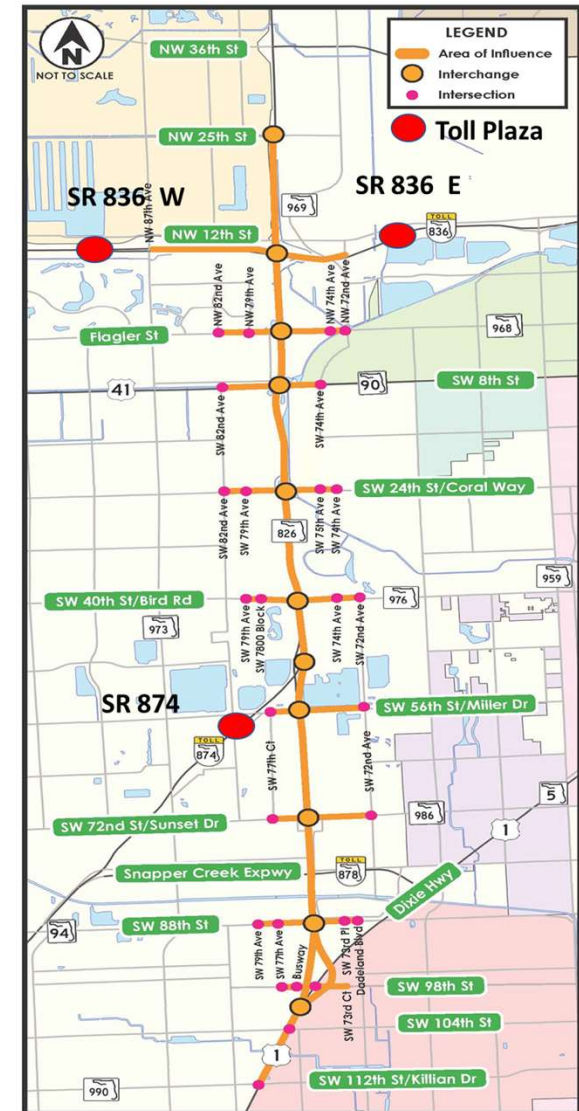
Toll Transaction Data

- 2019 February Toll Transaction data
- Toll gantry locations:
 - SR 836 Mainline at West of NW 57th Ave (westbound and eastbound)
 - SR 836 Mainline at West of NW 97th Ave (westbound and eastbound)
 - SR 874 Mainline at South of SR 826 and SR 874 interchange (northbound and southbound)
 - SR 836 Ramps to/from NW 87th Ave



Average Weekday Toll Transactions

Toll Plaza ID	Location	Average Weekday Toll Transactions
107230	SR 836 Eastbound (57th Ave)	76,185
107264	SR 836 Westbound (57th Ave)	82,771
107226	SR 836 Eastbound (at 97th Ave)	54,591
107275	SR 836 Westbound (at 97th Ave)	59,674
107340	SR 874 Northbound (at SR 826)	44,952
107360	SR 874 Southbound (at SR 826)	44,282



Raw Toll Transaction Data (SunPass)

	TransID	TransDate	OrigID	LaneNumber	ETCNumber	PlazaCode
1	6021180201050113116	2018-02-01 00:01:13.1170000	60	21	14722988	107227
2	6021180201050311117	2018-02-01 00:03:11.1170000	60	21	12595558	107227
3	6021180201050344118	2018-02-01 00:03:44.1170000	60	21	3549479	107227
4	6021180201050509119	2018-02-01 00:05:09.1200000	60	21	8942303	107227
5	6021180201050510120	2018-02-01 00:05:10.1200000	60	21		107227
6	6021180201050513121	2018-02-01 00:05:13.1200000	60	21		107227
7	6021180201050517122	2018-02-01 00:05:17.1230000	60	21	1118861	107227
8	6021180201050518123	2018-02-01 00:05:18.1230000	60	21		107227
9	6021180201050709124	2018-02-01 00:07:09.1230000	60	21		107227
10	6021180201050713125	2018-02-01 00:07:13.1270000	60	21	4944459	107227
11	6021180201050714126	2018-02-01 00:07:14.1270000	60	21	11435031	107227
12	6021180201050724127	2018-02-01 00:07:24.1270000	60	21		107227
13	6021180201050750128	2018-02-01 00:07:50.1270000	60	21	2255226	107227
14	6021180201050754129	2018-02-01 00:07:54.1300000	60	21	4531217	107227
15	6021180201050911130	2018-02-01 00:09:11.1300000	60	21	5051137	107227
16	6021180201050949131	2018-02-01 00:09:49.1300000	60	21		107227
17	6021180201050950132	2018-02-01 00:09:50.1300000	60	21	12393645	107227
18	6021180201051111133	2018-02-01 00:11:11.1330000	60	21		107227
19	6021180201051308134	2018-02-01 00:13:08.1330000	60	21	4665610	107227

	Loctn	Descp
1	107230	SR 836 East (57th Ave)
2	107264	SR 836 West (57th Ave)
3	107227	SR 836 East (87th Ave Ramp)
4	107226	SR 836 East (at 97th Ave)
5	107275	SR 836 West (at 97th Ave)
6	107270	SR 836 West (87th Ave Ramp)
7	107340	SR 874 North (at SR 826)
8	107360	SR 874 South (at SR 826)

Toll Transaction Data to OD data

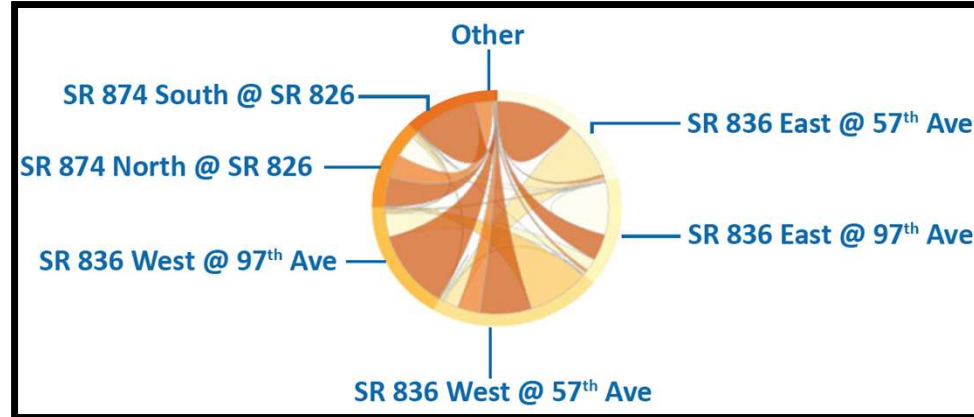
Data Processing

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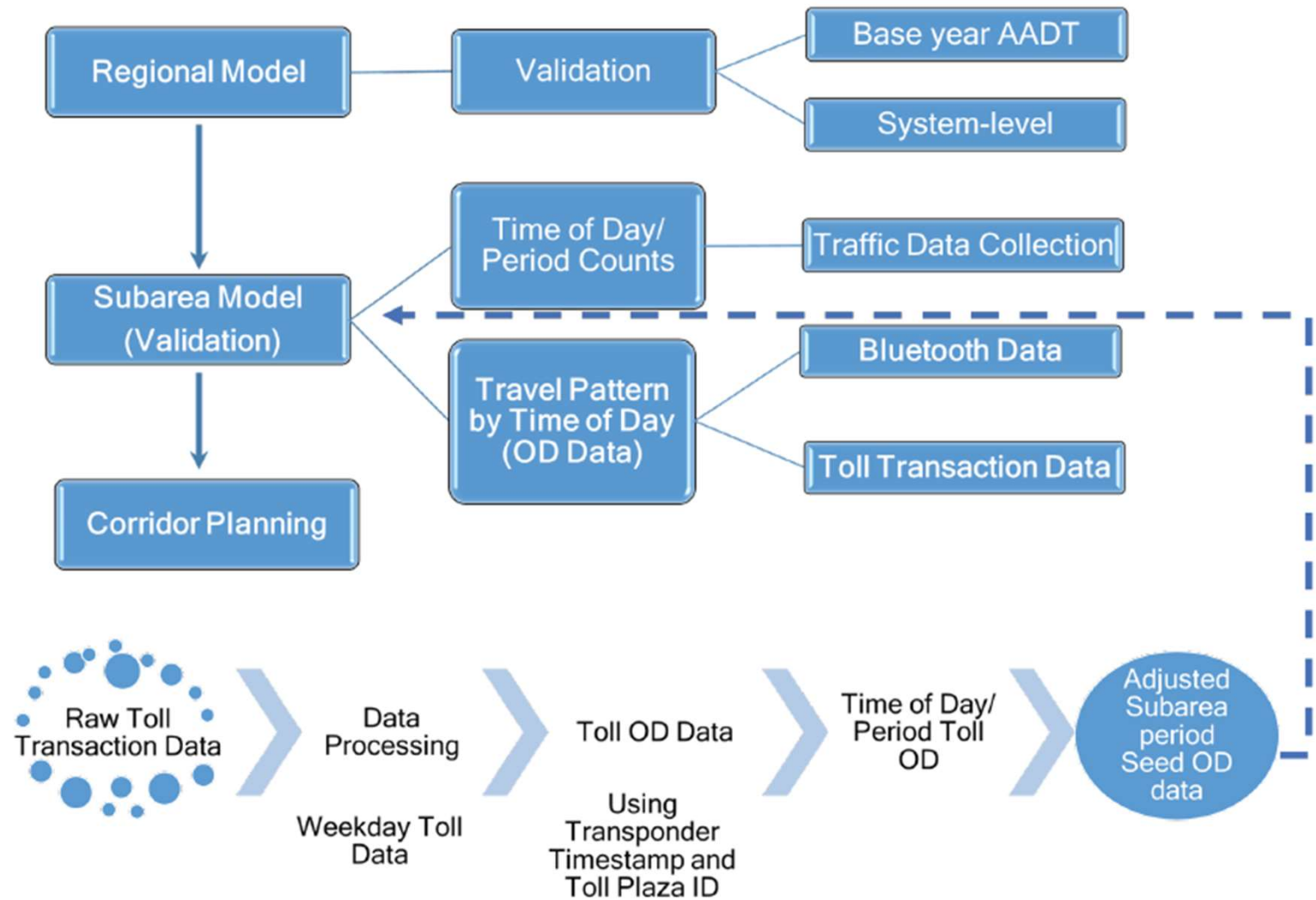
Data_Process.R
14#
15# newheaders<-c("TransID","TransDate","TimeStamp","OrigID","LnNo","ETC_ID","PlazaCode")
16#
17# CFmt<-c("character","date","character","integer","integer","integer","integer")
18#
19# MDX_DT1<-read.csv2(paste(input,"transponder_info_out/transponder_info_out.csv",sep=""),headers=FALSE,sep=";",col.names=newheaders,c
20#
21# MDX_DT2<-MDX_DT1
22#
23# MDX_DT1$TimeStamp1<-chron(times=MDX_DT1$TimeStamp)
24#
25# MDX_DT1$yday<-yday((MDX_DT1$TransDate))
26#
27# PlazaCnt<-MDX_DT1%>%
28#   group_by(TransDate,PlazaCode,yday)%>%
29#   count()
30#
31# #write.csv(PlazaCnt,paste(input,"PlazaCnt_Date.csv",sep=""))
32#
33#
34# MDX_DT_OD<- subset(MDX_DT1,(MDX_DT1$yday>=3 & MDX_DT1$yday<=5))
35#
36#
37# ## Excluding Holidays
38# MDX_DT_OD_NHDAY<- subset(MDX_DT_OD,as.Date(MDX_DT_OD$TransDate)!= "2018-02-14" &
39#   as.Date(MDX_DT_OD$TransDate)!= "2018-09-11" &
40#   as.Date(MDX_DT_OD$TransDate)!= "2018-10-31")
41#

```

Toll OD Data

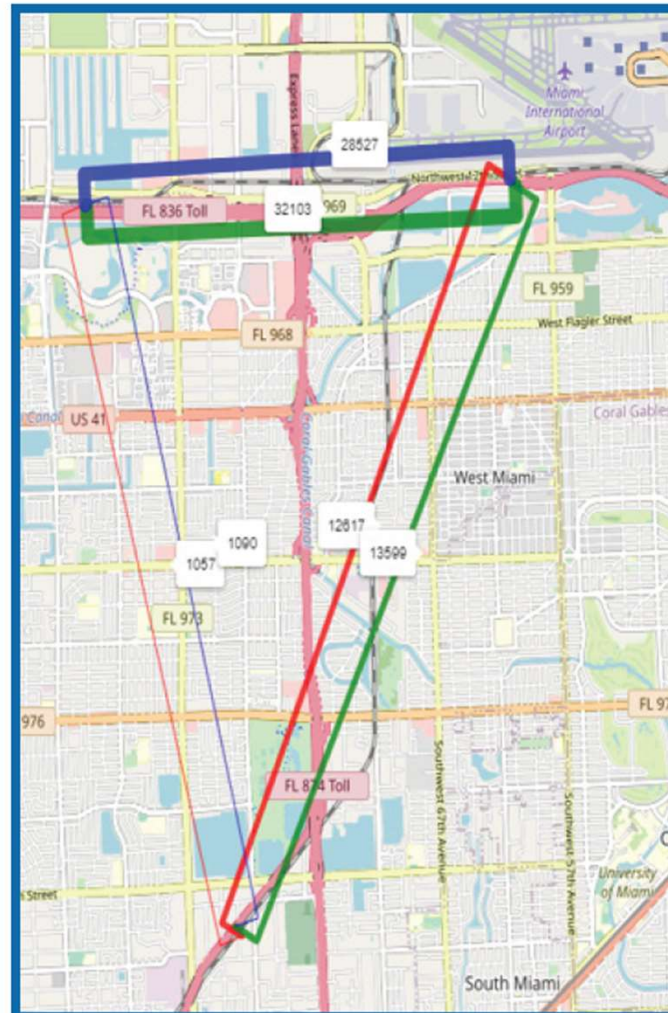


Methodology

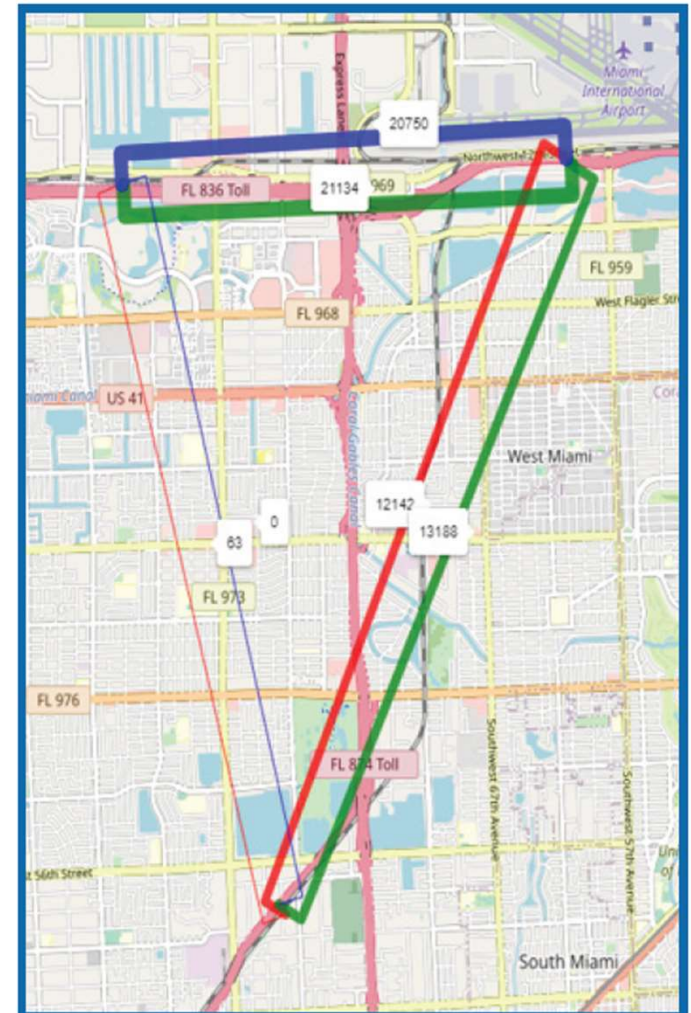


OD Comparison

TOLL DATA OD

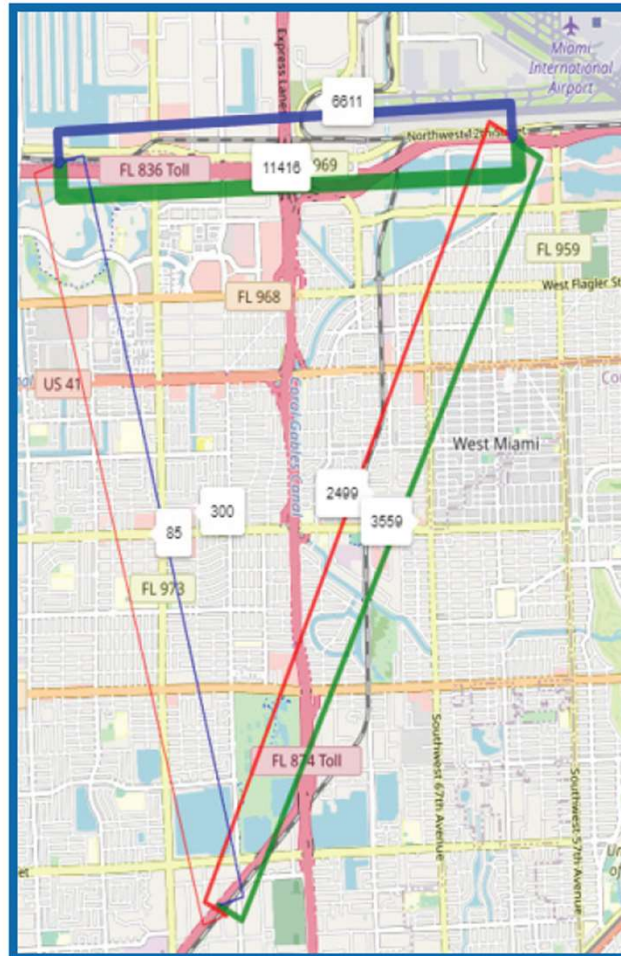


MODEL OD

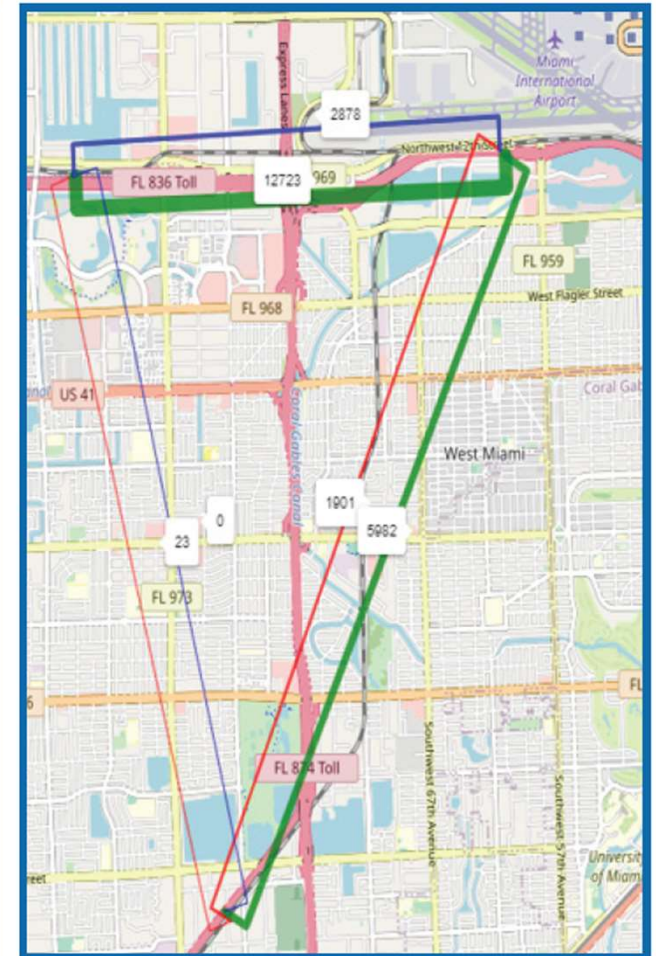


Time Of Day Granularity Comparison

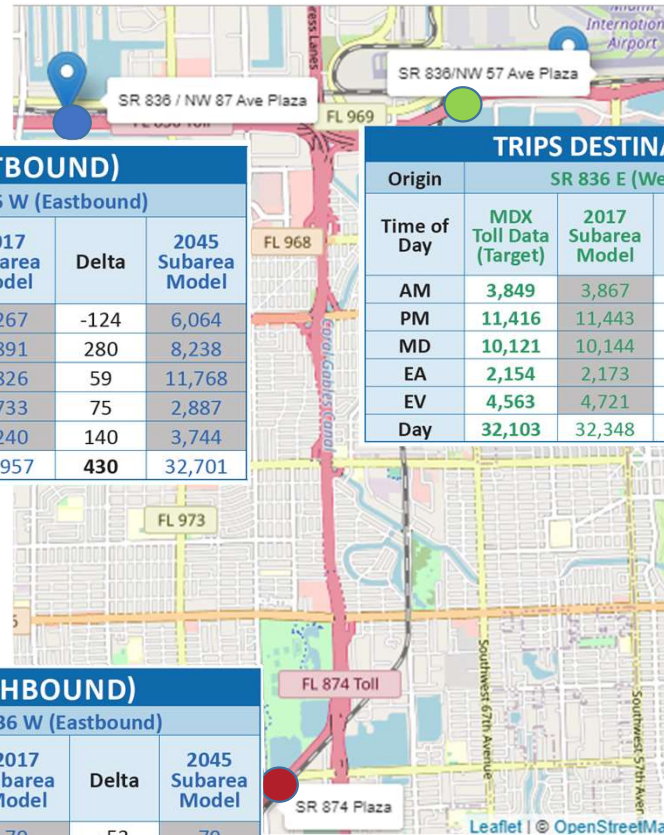
TOLL DATA OD PM PERIOD



MODEL OD PM PERIOD



Reasonableness of OD Trips Validation



TRIPS DESTINATING TO E SR 836 (EASTBOUND)								
Origin	SR 874 (Northbound)				SR 836 W (Eastbound)			
Time of Day	MDX Toll Data (Target)	2017 Subarea Model	Delta	2045 Subarea Model	MDX Toll Data (Target)	2017 Subarea Model	Delta	2045 Subarea Model
AM	2,617	2,450	-167	2,703	6,391	6,267	-124	6,064
PM	2,499	2,517	18	3,724	6,611	6,891	280	8,238
MD	4,510	4,534	24	5,893	9,767	9,826	59	11,768
EA	1,826	1,853	27	1,943	2,658	2,733	75	2,887
EV	1,165	1,217	52	1,845	3,100	3,240	140	3,744
Day	12,617	12,571	-46	16,108	28,527	28,957	430	32,701

TRIPS DESTINATING TO W SR 836 (WESTBOUND)								
Origin	SR 836 E (Westbound)				SR 874 (Northbound)			
Time of Day	MDX Toll Data (Target)	2017 Subarea Model	Delta	2045 Subarea Model	MDX Toll Data (Target)	2017 Subarea Model	Delta	2045 Subarea Model
AM	3,849	3,867	18	5,286	286	204	-82	196
PM	11,416	11,443	27	12,836	85	0	-85	0
MD	10,121	10,144	23	12,910	611	624	13	594
EA	2,154	2,173	19	2,431	41	56	15	61
EV	4,563	4,721	158	5,198	34	83	49	99
Day	32,103	32,348	245	38,661	1,057	967	-90	950

TRIPS DESTINATING TO SR 874 (SOUTHBOUND)								
Origin	SR 836 E (Westbound)				SR 836 W (Eastbound)			
Time of Day	MDX Toll Data (Target)	2017 Subarea Model	Delta	2045 Subarea Model	MDX Toll Data (Target)	2017 Subarea Model	Delta	2045 Subarea Model
AM	1,823	1,850	27	3,075	132	79	-53	79
PM	3,559	3,405	-154	2,441	300	163	-137	162
MD	4,399	4,351	-48	5,561	512	565	53	565
EA	1,565	1,647	82	1,873	54	147	93	147
EV	2,253	2,238	-15	2,449	92	100	8	119
Day	13,599	13,491	-108	15,399	1,090	1,054	-36	1,072

Thank You!