



San Diego Traffic Analysis

Team 20

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Outline

- Motivation
- Tools for analysis
- Data scrapping
- Data analysis
- Visualization
- Solution
- Summary



Motivation



13th
Most Congested City

48 hours
in Peak Traffic Congestion



Tools for analysis

- Pulling data from San Diego government
- Using Pandas, Numpy, gmplot, matplotlib, pyplot, googlemaps to visualize data
- Transfer street intersections into longitude and latitude

Data

Original Data

- Primary Street name
- 1st Cross Street
- 2nd Cross Street
- traffic volumes

Primary Street	1st Cross Street	2nd Cross Street	2011	2012	2013	2014	2015
A ST	KETTNER BLVD	INDIA ST	6100	6100	6100	4200	4200
A ST	INDIA ST	COLUMBIA ST	6800	6800	6800	8300	8300
A ST	COLUMBIA ST	FRONT ST	10100	10100	8800	8600	8600
A ST	FRONT ST	1ST AVE	9300	9300	11400	12500	12500
A ST	1ST AVE	4TH AVE	10800	10800	10800	7900	7900
A ST	4TH AVE	5TH AVE	13100	13100	12800	12800	12800
A ST	5TH AVE	10TH AVE	11700	13600	13600	13600	13000
A ST	10TH AVE	11TH AVE	19200	19200	19200	17100	17100
A ST	11TH AVE	PARK BLVD	7100	7100	7100	9200	9200
ABBOTT ST	WEST POINT LOMA BLVD	VOLTAIRE ST	3900	3900	4400	5500	5500
ABBOTT ST	VOLTAIRE ST	NEWPORT AVE	4800	4800	4800	4800	4800
ACORN ST	62ND ST	COLLEGE AVE	4100	4100	4100	5800	5800
ACTIVITY RD	CAMINO RUIZ	BLACK MOUNTAIN RD	13200	13200	14200	14200	14200
ADAMS AVE	VAN DYKE AVE	MARLBOROUGH AVE	6300	6300	5500	5500	5500

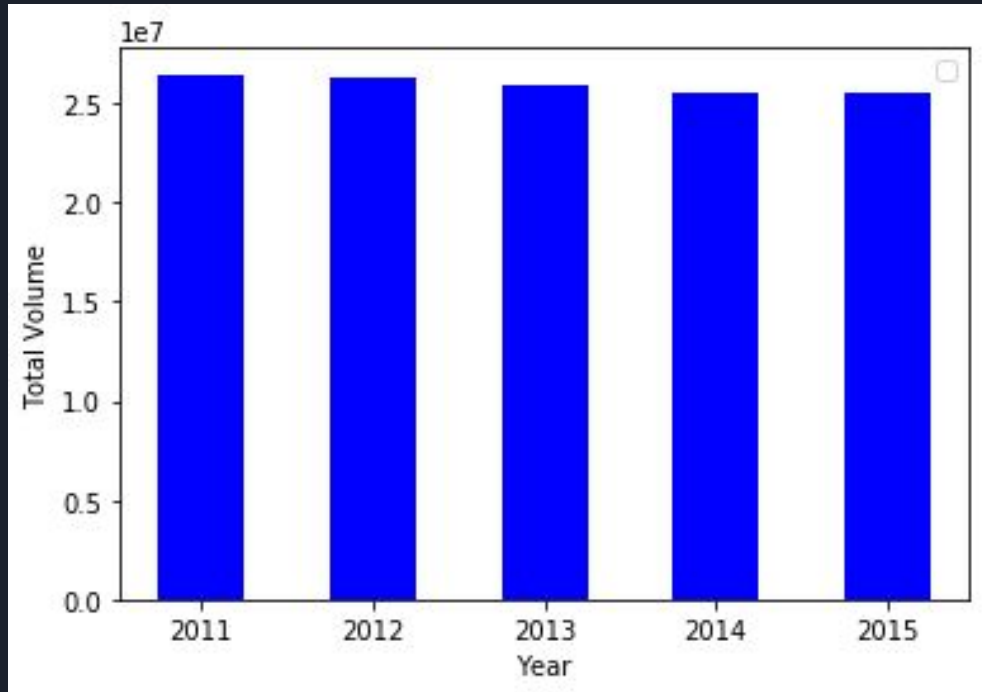
Data

Processing Data

- Combine primary street and 1st cross street
- Combine primary street and 2nd cross street
- Googlemaps, pandas, numpy, GoogleAPI
- Capture the coordinates of every intersection
- Form the new dataset
- Use gmplot, matplotlib, pandas, numpy, pyplot

Primary Street	1st Cross Street	2nd Cross Street	Co1	Co2
A ST	KENNER BLVD	INDIA ST	(32.7188077, -117.168291)	(32.7188077, -117.168291)
A ST	INDIA ST	COLUMBIA ST	(32.7188077, -117.168291)	(32.7188075, -117.167415)
A ST	COLUMBIA ST	FRONT ST	(32.7188075, -117.167415)	(32.7188165, -117.1647432)
A ST	FRONT ST	1ST AVE	(32.7188165, -117.1647432)	(32.7188324, -117.1638747)
A ST	1ST AVE	4TH AVE	(32.7188324, -117.1638747)	(32.7188361, -117.1610991)
A ST	4TH AVE	5TH AVE	(32.7188361, -117.1610991)	(32.7188393, -117.1601783)
A ST	5TH AVE	10TH AVE	(32.7188393, -117.1601783)	(32.7188763, -117.155663)
A ST	10TH AVE	11TH AVE	(32.7188763, -117.155663)	(32.7188659, -117.1547422)
A ST	11TH AVE	PARK BLVD	(32.7188659, -117.1547422)	(32.7188895, -117.1537168)
ABBOTT ST	WEST POINT LOMA BLVD	VOLTAIRE ST	(32.7541946, -117.2473809)	(32.753104, -117.2483515)
ABBOTT ST	VOLTAIRE ST	NEWPORT AVE	(32.753104, -117.2483515)	(32.747818, -117.252617)

Total Volume of Cars



2011: 26,469,900

2012: 26,309,500

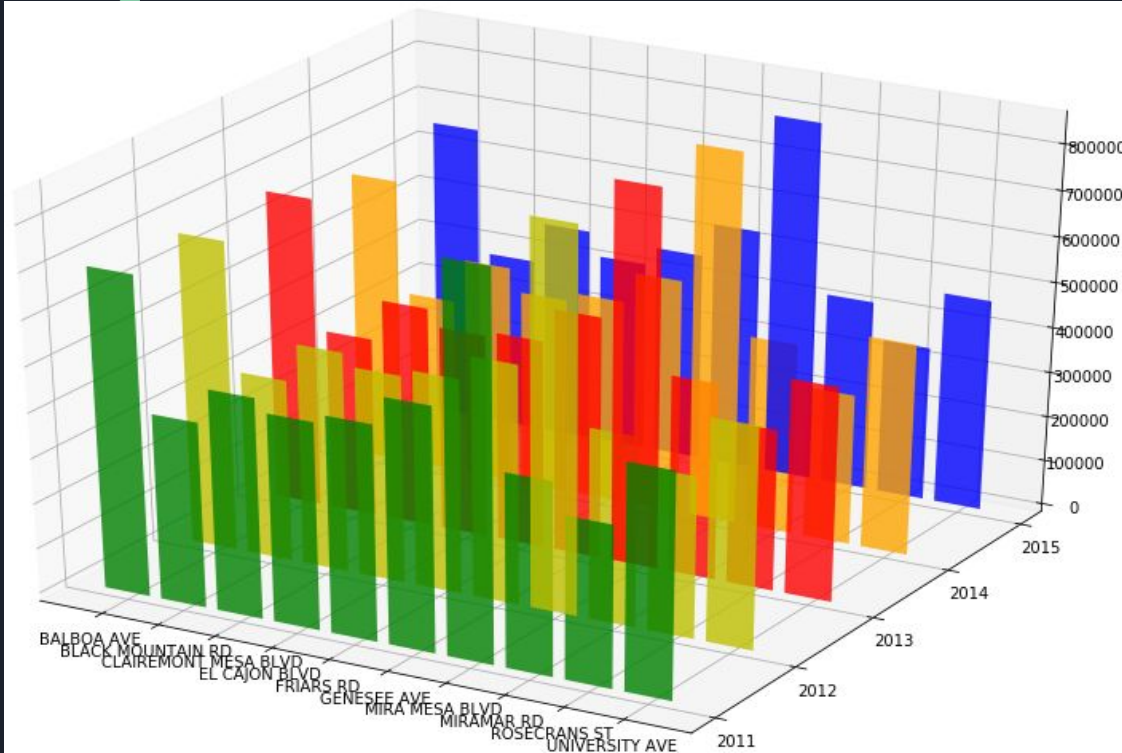
2013: 25,974,100

2014: 25,570,200

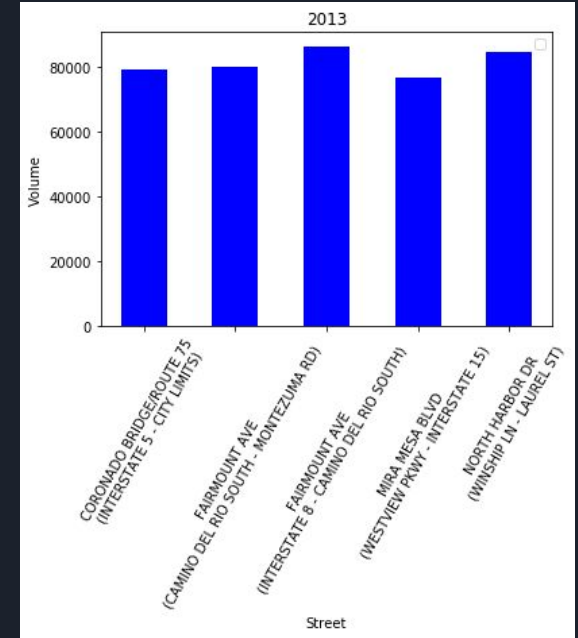
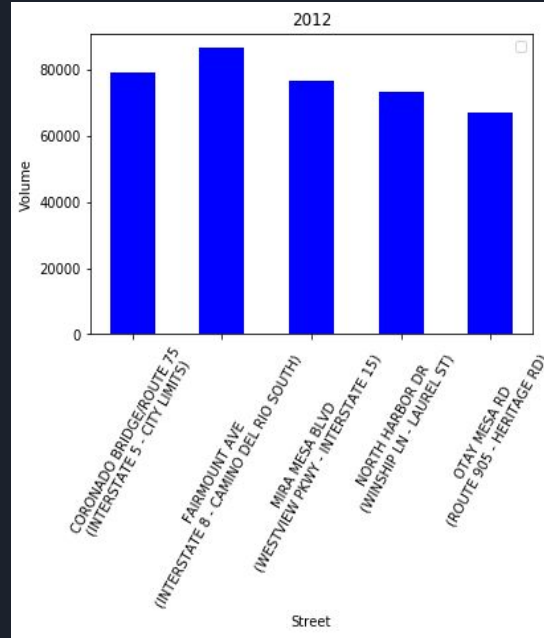
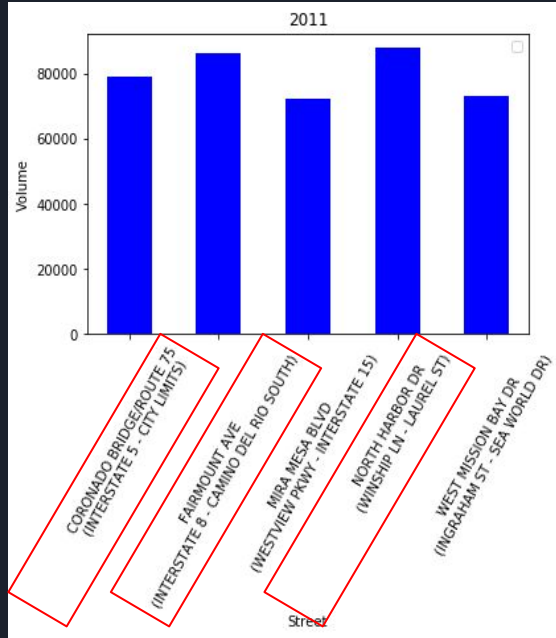
Traffic volume in 2015



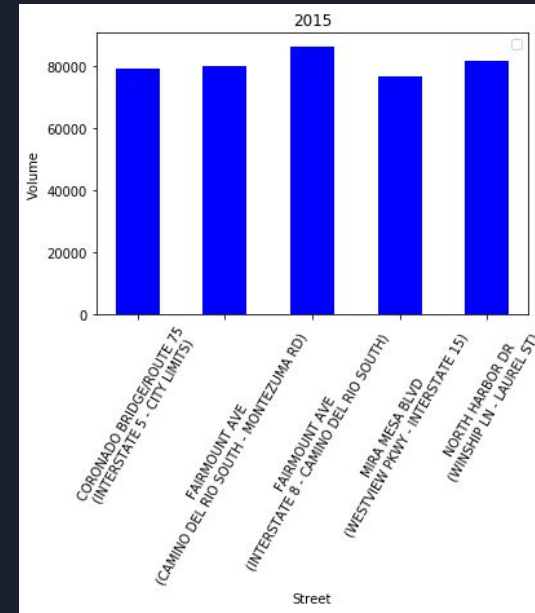
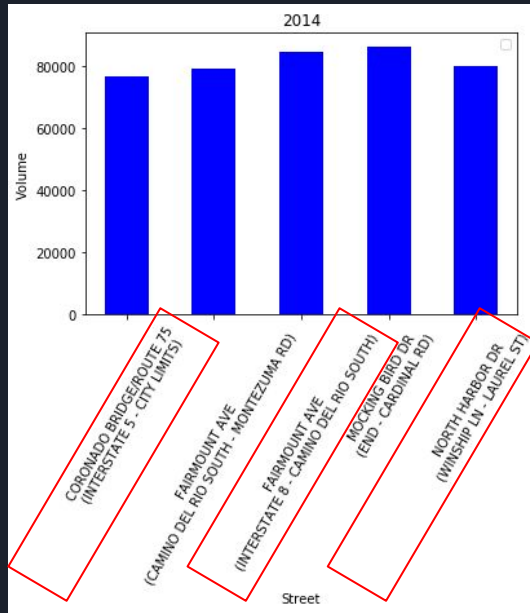
Volume Analysis



- ❖ Top 10 high volume Primary Street
- ❖ Mean:
 - 2011: 521,370
 - 2015: 496,490
- ❖ Significant high volume
 - Mira Mesa Blvd
 - Balboa Ave



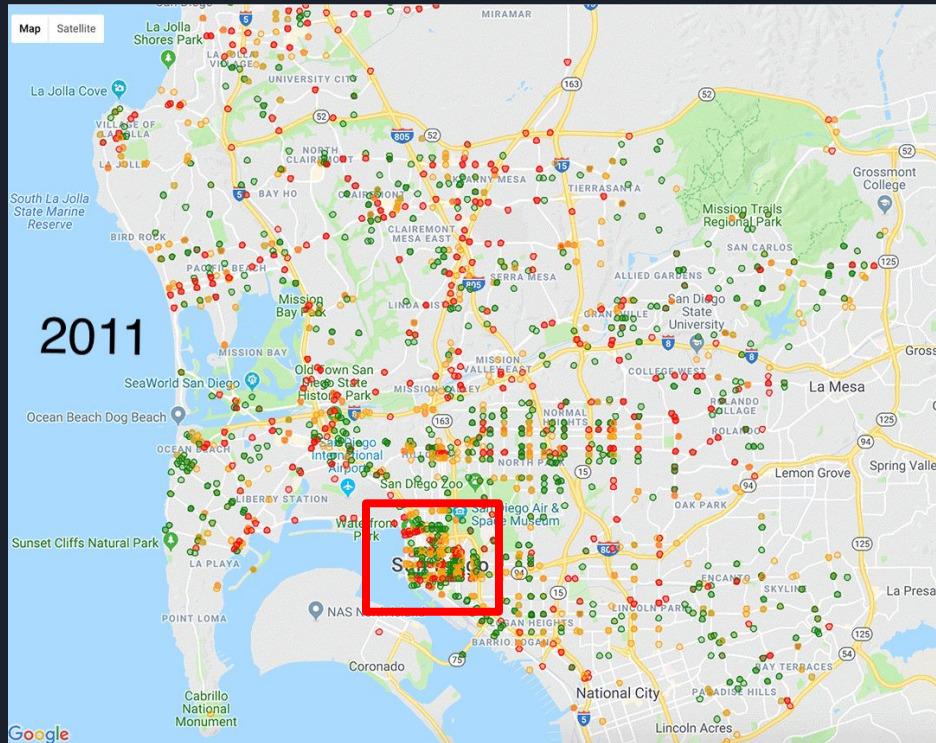
Top 5 sections with highest volumes in 2011 to 2013



Top 5 sections with highest volumes in 2014 and 2015

Streets appear in the figure	Year of appearance	Times
FAIRMOUNT AVE (INTERSTATE 8 - CAMINO DEL RIO SOUTH)	2011, 2012, 2013, 2014, 2015	5
MOCKING BIRD DR (END - CARDINAL RD)	2014	1
WEST MISSION BAY DR (INGRAHAM ST - SEA WORLD DR)	2011	1
MIRA MESA BLVD (WESTVIEW PKWY - INTERSTATE 15)	2011, 2012, 2013, 2015	4
CORONADO BRIDGE/ROUTE 75 (INTERSTATE 5 - CITY LIMITS)	2011, 2012, 2013, 2014, 2015	5
NORTH HARBOR DR (WINSHIP LN - LAUREL ST)	2011, 2012, 2013, 2014, 2015	5
FAIRMOUNT AVE (CAMINO DEL RIO SOUTH - MONTEZUMA RD)	2013, 2014, 2015	3
OTAY MESA RD (ROUTE 905 - HERITAGE RD)	2012	1

Visualization



Normalize the traffic volumes

$0.0 \leq \text{traffic volumes} \leq 0.3$

Smooth traffic (Green)

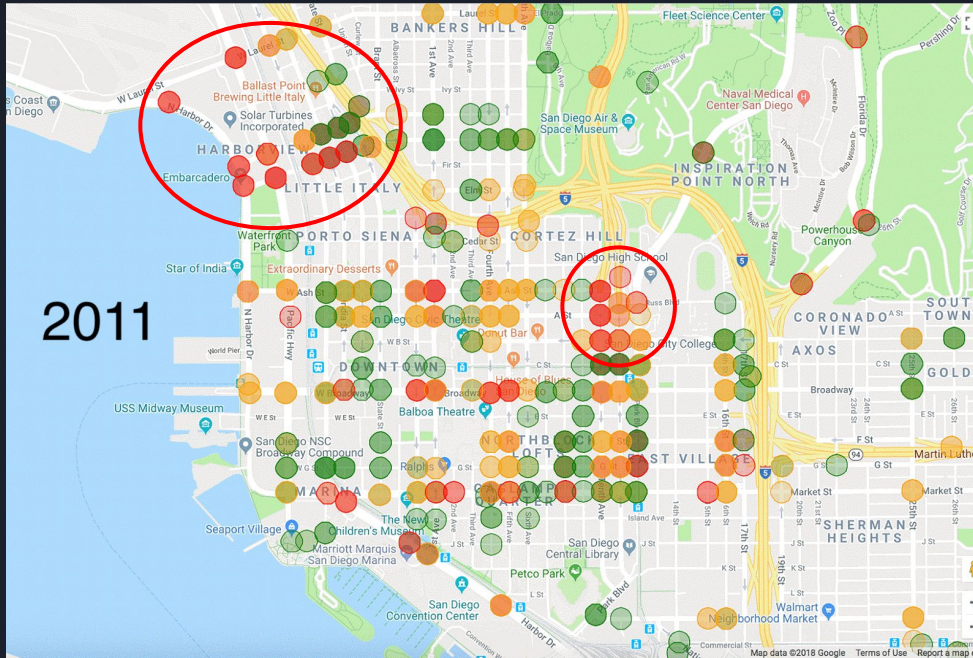
$0.3 < \text{traffic volumes} \leq 0.7$

Crowded traffic (Orange)

$0.7 < \text{traffic volumes} \leq 1.0$

Traffic congestion (Red)

Visualization



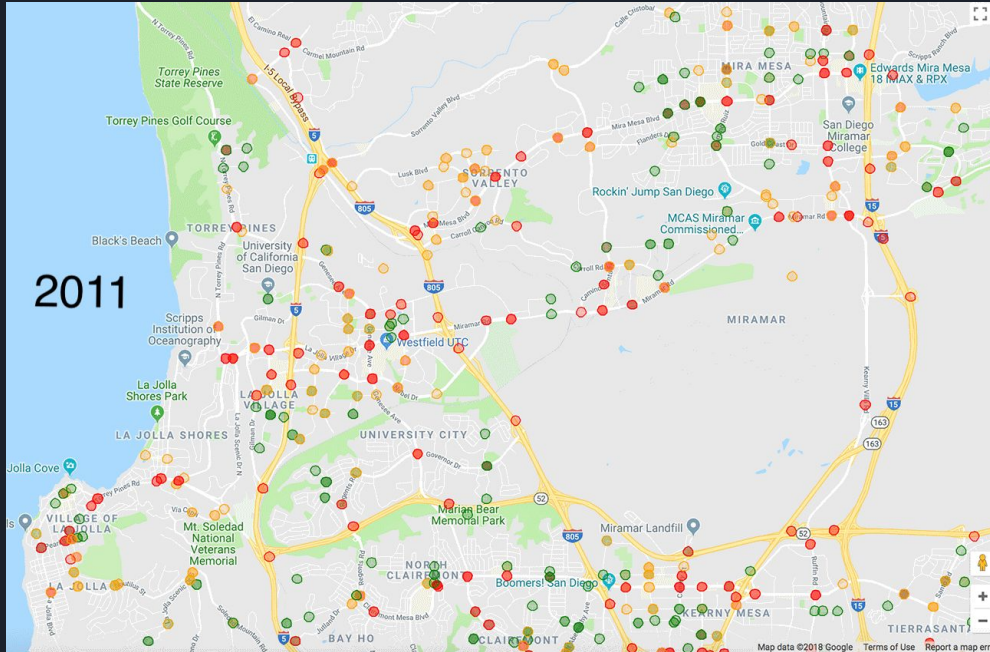
Focus on downtown

-Two area

-Large traffic volumes

-Need to improve the traffic condition

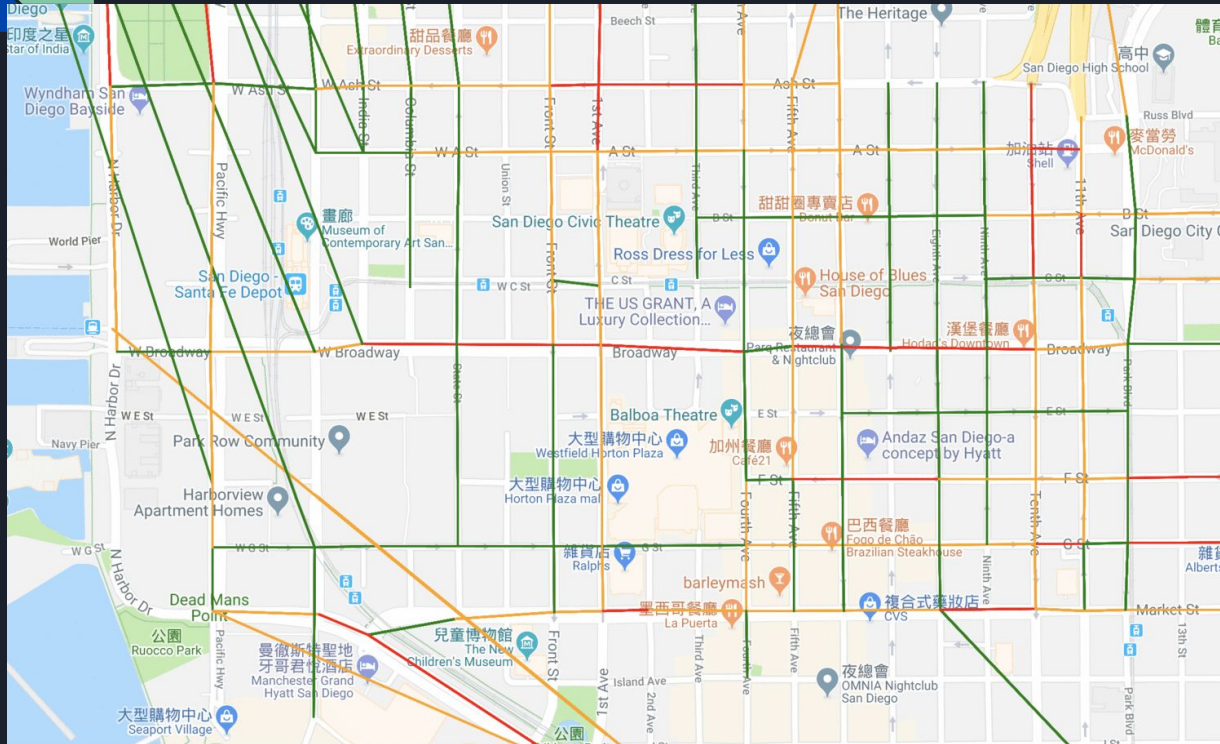
Visualization



Near UCSD

- Large traffic volumes
Interstate 5
& its intersection
- Public Transit
- Open more entrances

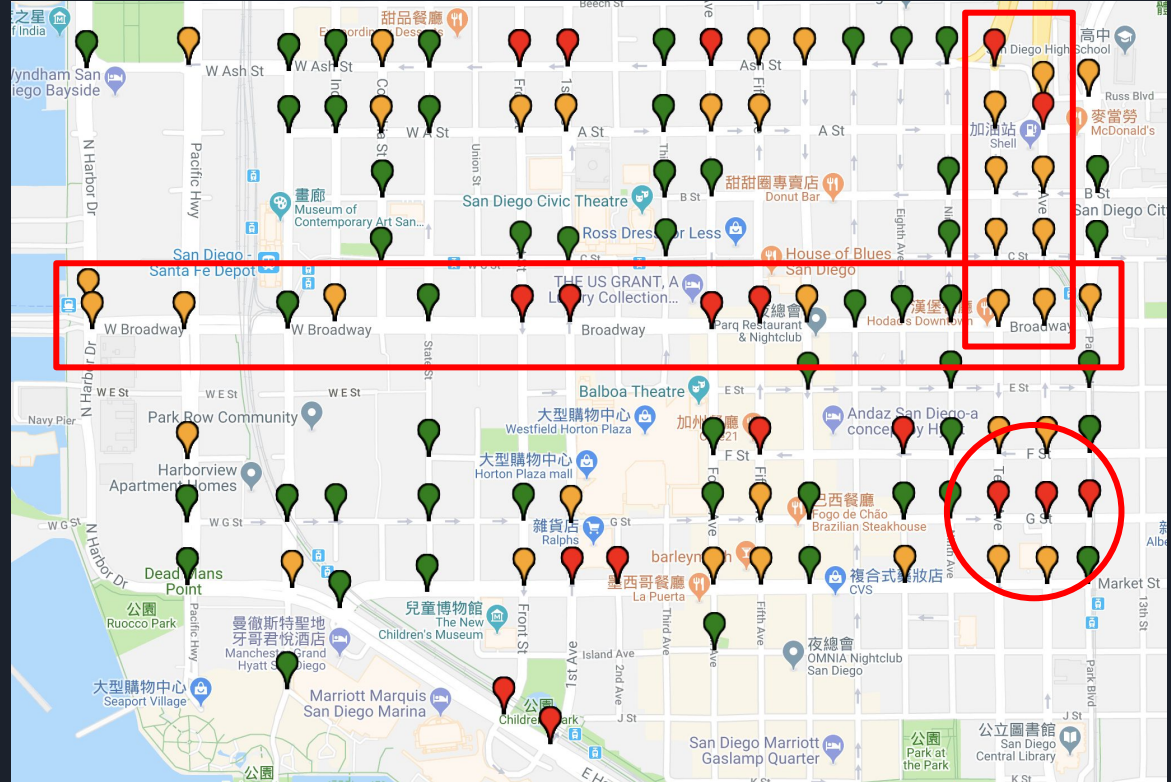
Visualization



Traffic line plot

Visualization

Traffic Marker Plot
(5 year average)



Solution

Transportation



2016 RTIP project



TransNet
Your tax dollars at work

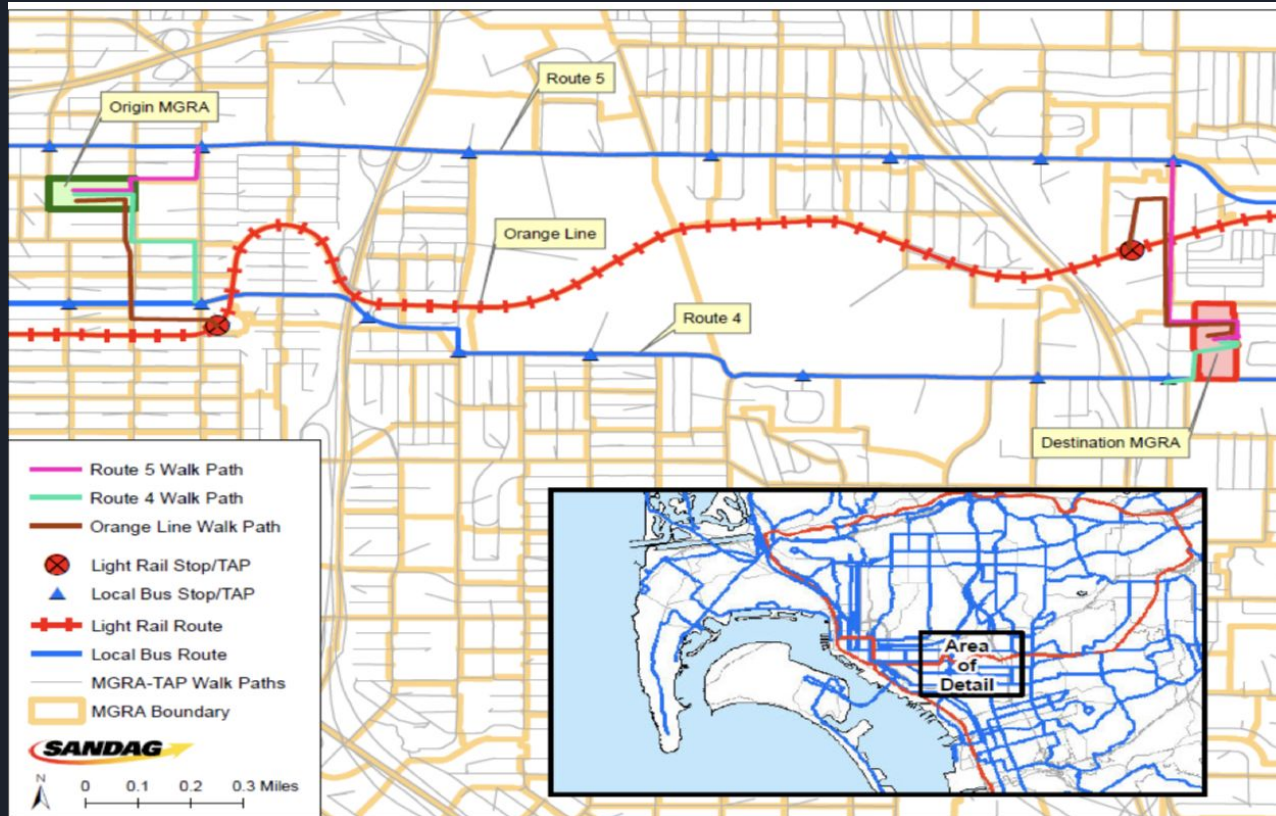
TRAFFIC RELIEF



KeepSanDiegoMoving.com



2016 RSIP program



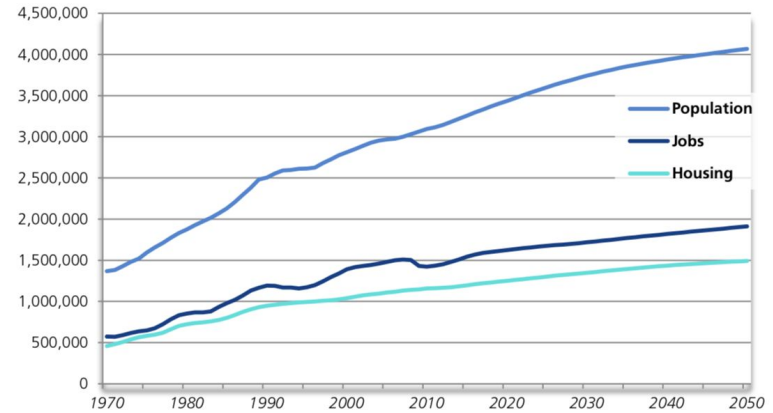
Summary

The transportation has not improve enough!

Government tries to improve it since 2016.

From the forecast, the increasing population still challenges the government!

Figure A-6.1: San Diego Regional Population, Jobs, and Housing Forecast



Source: 2050 Regional Growth Forecast, SANDAG, October 2015

Thank you

