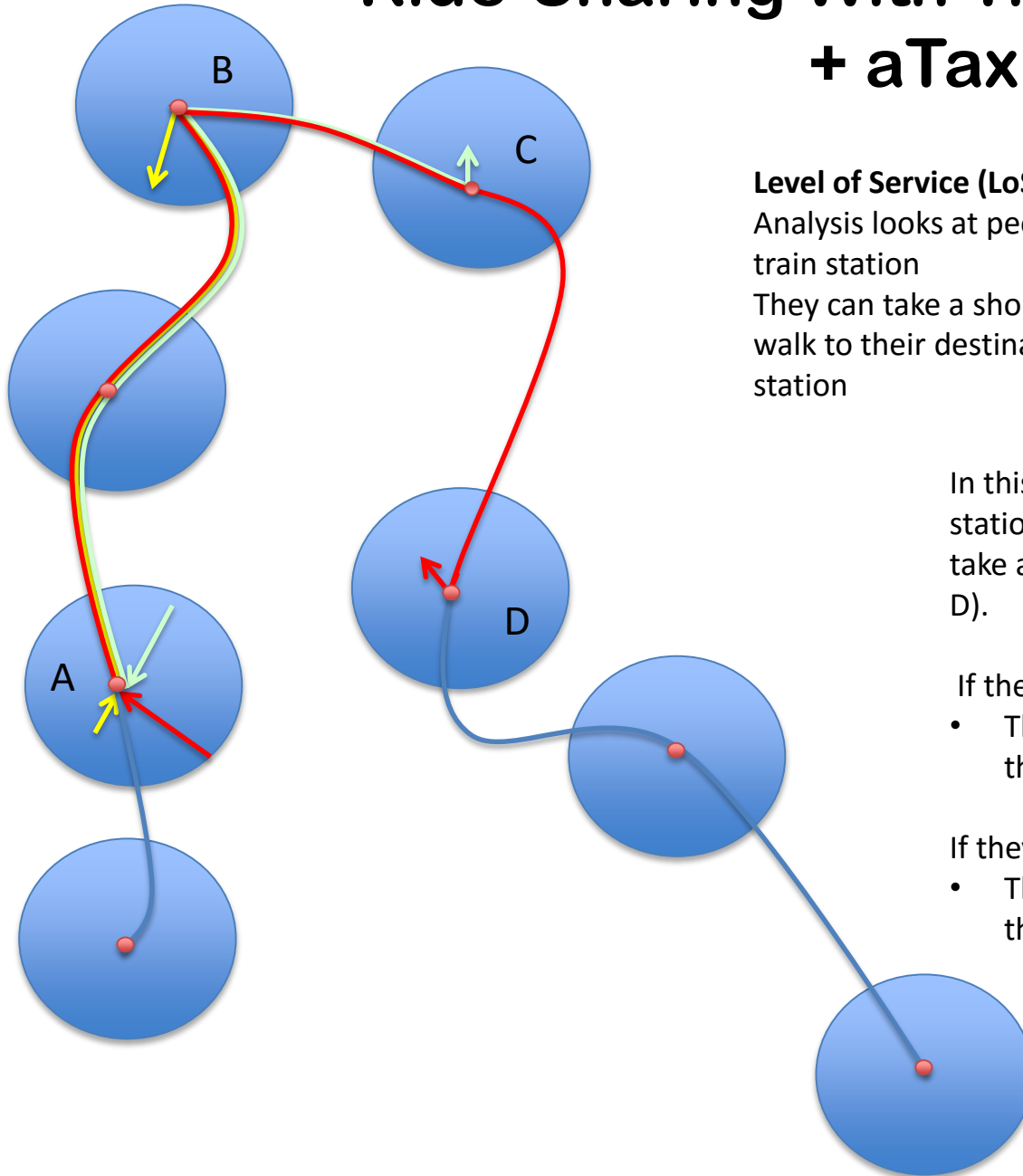# Transit Trips
West of Chicago

Elizabeth Haile '19 & Evan Wood '18

Professor Alain Kornhauser

Ride-Sharing With Transit System + aTaxi on One Ends

Level of Service (LoS)

Analysis looks at people who are located within 5 miles of a train station

They can take a short aTaxi ride to the nearest station, and walk to their destination if it is close to a different train station

In this image, 3 people within 5 miles of station A rideshare to the station, and then take a train to their respective stops (B,C, and D).

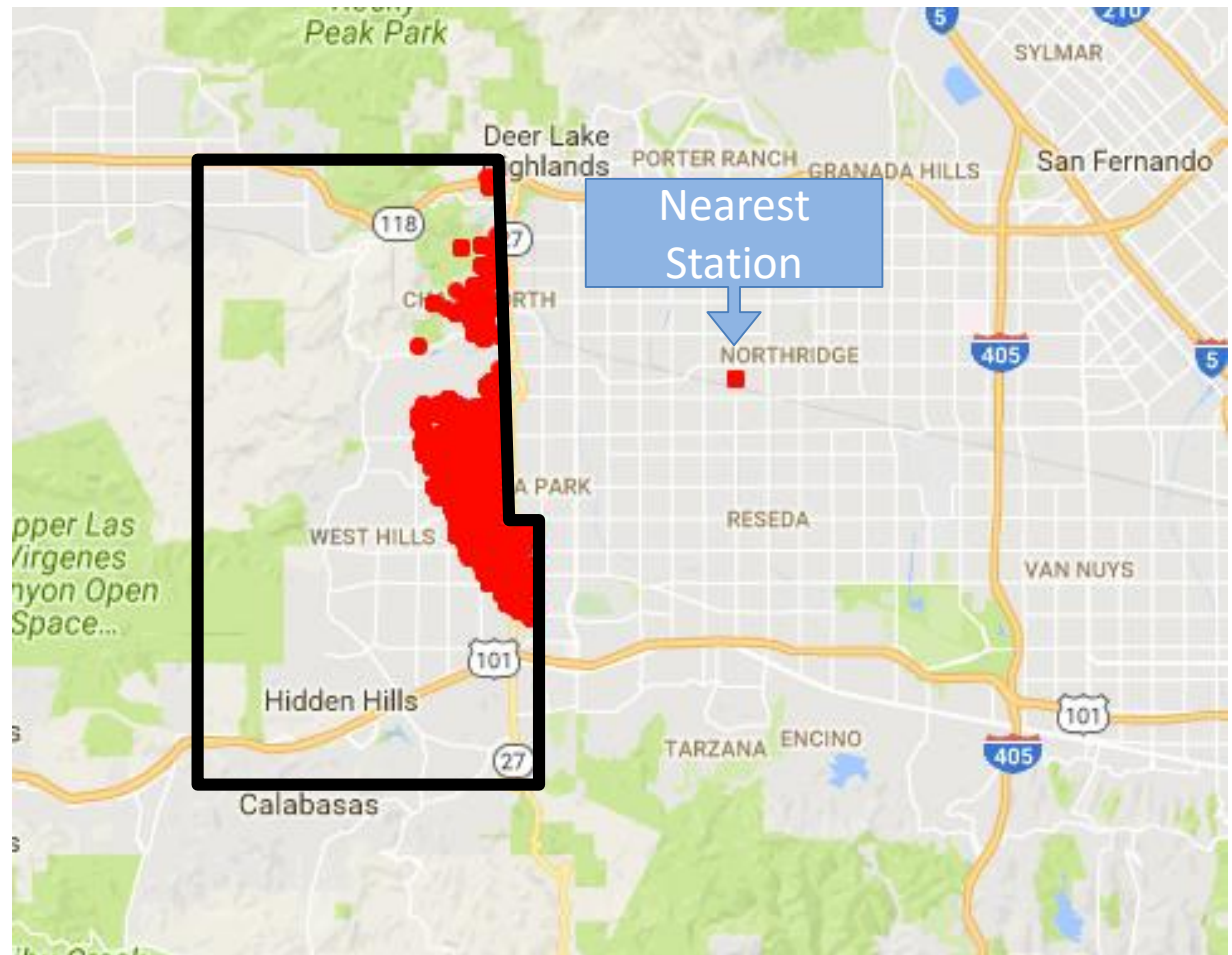If they took an aTaxi to station A:
- They must be within walking distance from their destination and the closest station.
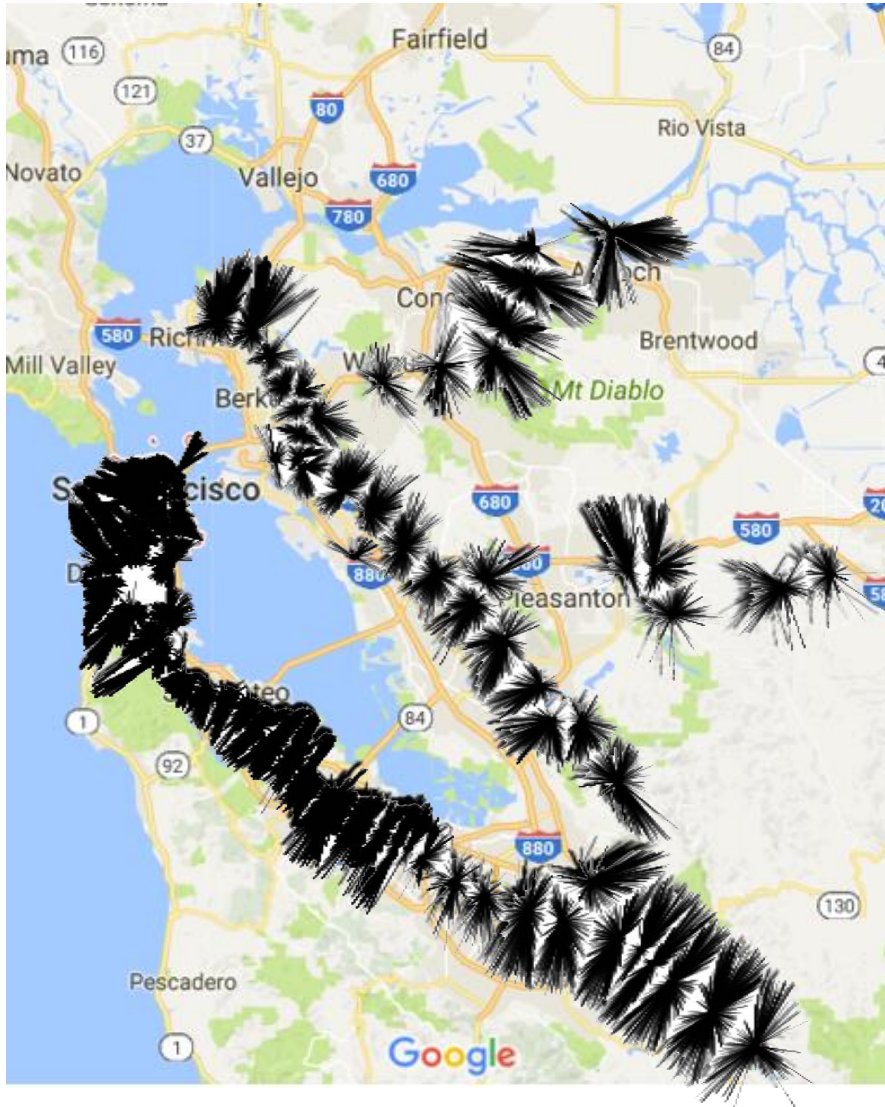
If they walked to station A:
- Their destination must be within 5 miles of the closest station.

Building the TransitTrips file

Only eligible origins in this county is within a 5 mile radius from the nearest station
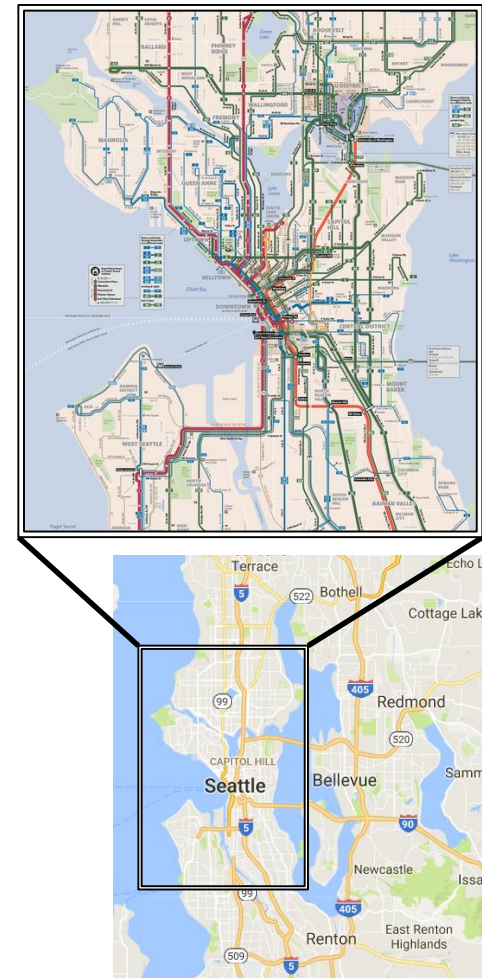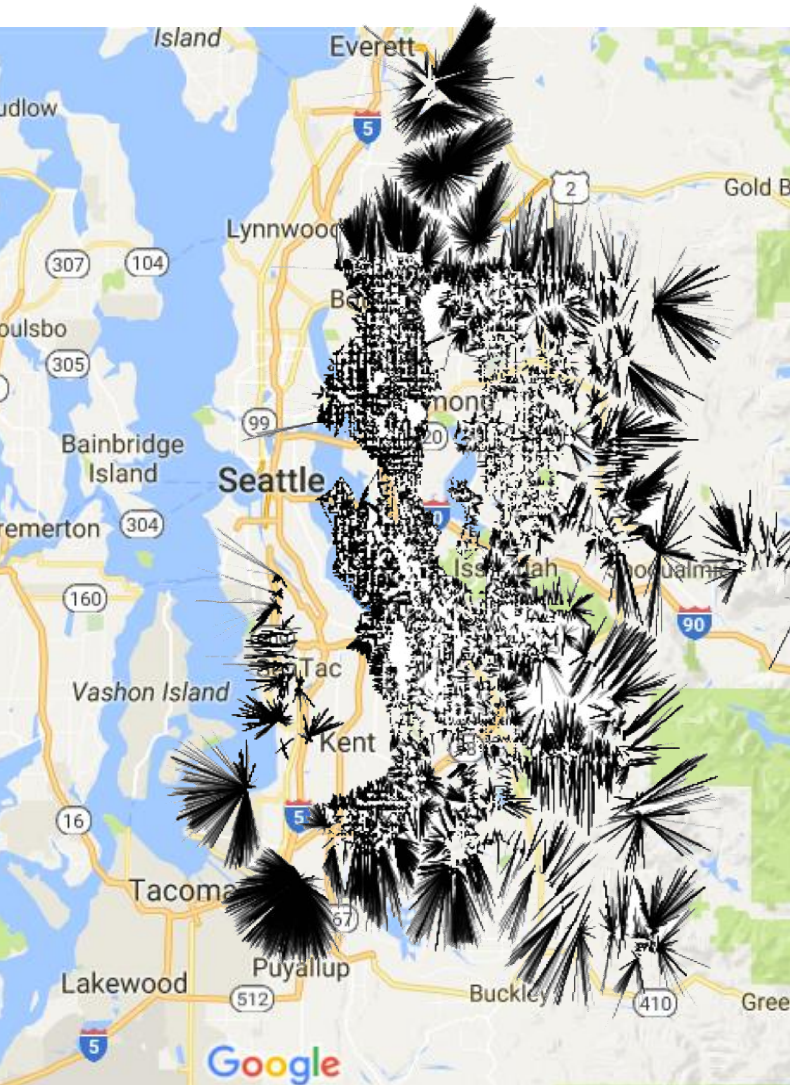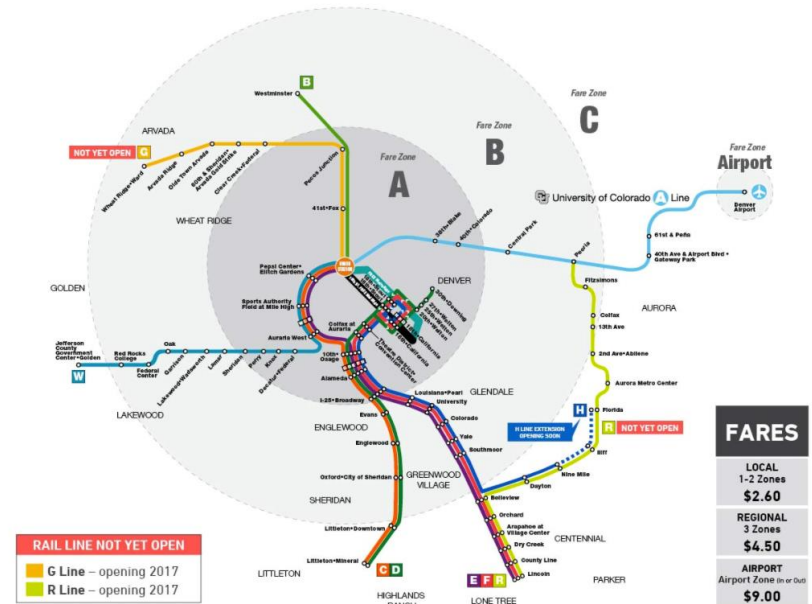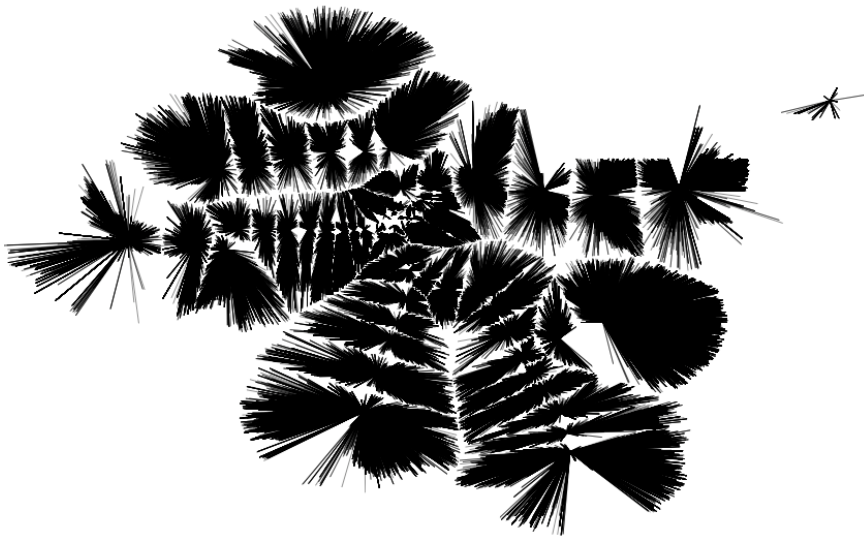
Bay Area
BART & Caltrain

Seattle
Sounder, King County Metro, Streetcar

Denver

Los Angeles
Metro

LA Metro Statistics

Ridership Statistics

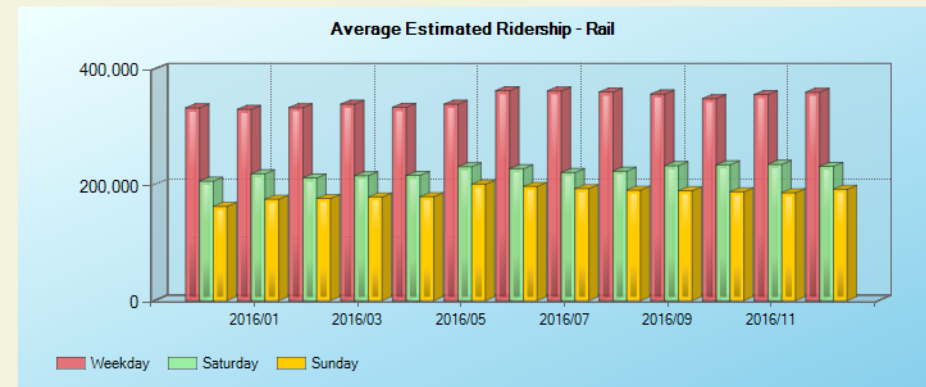Look at total number of people who use the Metro

In our ride-sharing simulation:

873,470 people ride the Metro

Compare with 2016 averages:

359,861 people ride the Metro (on a weekday)

This represents a ≈ 2.5x increase in ridership

Day Type	Estimated Ridership	Average Passenger Miles	Day Count	Total Estimated Ridership	Total Passenger Miles
Weekday	359,861	2,032,203	21	7,557,081	42,676,265
Saturday	231,897	1,301,368	5	1,159,485	6,506,842
Sunday	192,539	1,079,823	5	962,695	5,399,117
Total			31	9,679,261	54,582,223

Average Estimated Ridership - Rail

Period	Estimated Weekday Ridership	Estimated Saturday Ridership	Estimated Sunday Ridership
2015/12	332,836	206,198	162,803
2016/01	330,121	218,957	175,096
2016/02	333,287	211,913	176,494
2016/03	339,094	215,822	179,038
2016/04	333,745	216,207	179,604
2016/05	339,072	231,130	201,098
2016/06	362,501	227,754	197,230
2016/07	362,135	221,079	193,315
2016/08	360,004	223,678	190,949
2016/09	356,640	233,140	189,929
2016/10	348,782	234,629	188,057
2016/11	355,729	235,365	186,484
2016/12	359,861	231,897	192,539

Transit Analysis

Index:	0	1	2	3	4	5	6	7	8	9	10	11	12
	X-Coord (Origin)	Y-Coord (Origin)	Long (Origin)	Lat (Origin)	X-Coord (Dest)	Y-Coord (Dest)	Long (Dest)	Lat (Dest)	Departure Time	Trip Segment Dist	Arrival Time	Type of Trip	Trip Count
	-4647	-677	-118.266868	34.005234	-4648	-675	-118.27812	34.022123	288	1.332912682	447.949522	2	999
	-4648	-675	-118.278118	34.022123	-4654	-664	-118.32518	34.10163	747.9495219	6.118037499	1598.5729	0	999
	-4647	-677	-118.267055	34.002728	-4648	-675	-118.27812	34.022123	339	1.48223484	516.868181	1	999
	...	...	...	...	...	...	...	...	...	...	...	...	...

Indexes 0-7: Keep track of the segment origin and destination (lat/long & pixel coordinates)

Index 8, 10: Stores departure time and arrival time

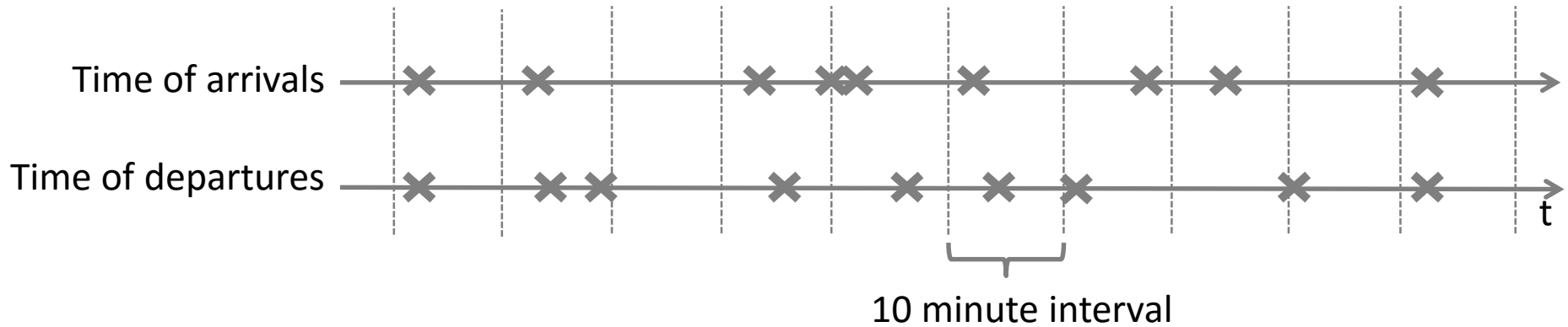Index 9: Stores the segment distance

Index 11: Specifies the type of trip

- Transit trip
- aTaxi trip to station
- aTaxi trip from station

Index 12: Has a counter to synthesize segments of individual trips together

Train Usage

For each train station, keep track of the people arriving and departing

10 minute interval

Count the nu... ...val
This is the nu... ...n

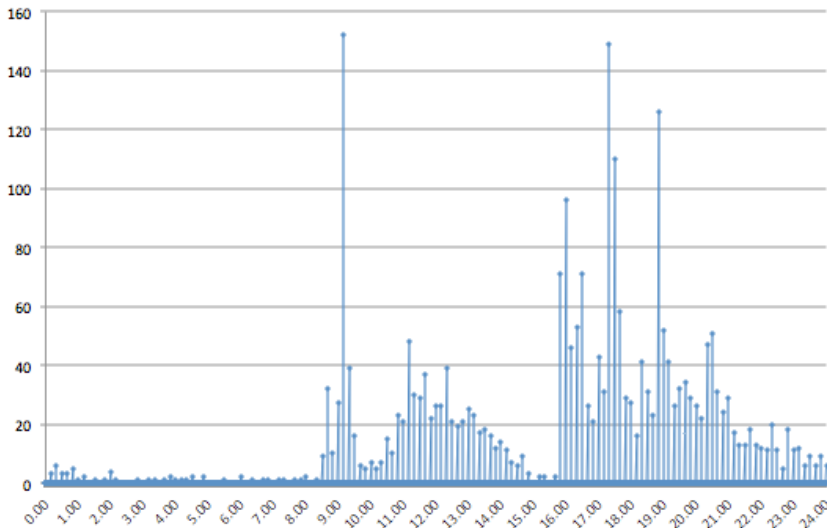| Time	Arriving	Departing
12:00am	1	3
12:10am	6	6
12:20am	1	3
12:30am	6	3
…	…	…
9:00am	3	152
9:10am	2	39

Pico Station

Traffic patterns of train system
-peak arrival into city at 9:00am
-peak departure from city at 5:30pm

Pico Station
Arrivals by Train

Pico Station
Departures by Train