

PROJECT BENSON

TEAM2

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9/23/16

Objectives



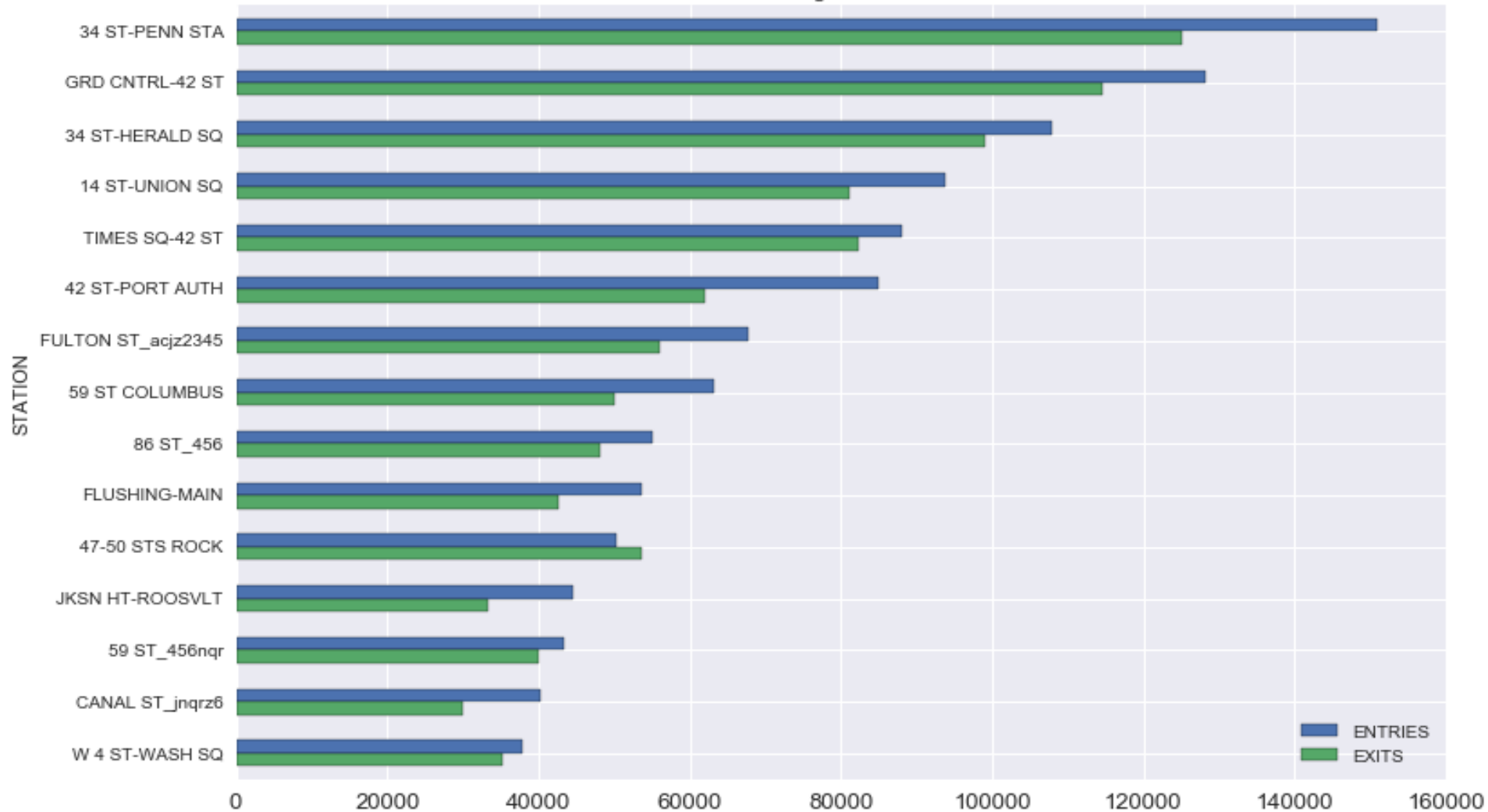
- WomenTechWomenYes (WTWY)
- Support
- Fundraising
- Recommendations from Team 2

Key Recommendations

- Consistent presence in Midtown
- Focus on large commuter stations during peak hours
- Take advantage of weekend life
 - Barclays
 - Bedford
 - Canal
 - W 4th St

Top 15 Stations

Stations With Highest Traffic Volumes



KonMari the Data

- Data Frames

- Filter

```
>>df.loc[df.ENTRIES<0, 'ENTRIES'] = np.nan
```

```
>>df.loc[df.EXITES<0, 'EXITES'] = np.nan
```

```
>>df.loc[df.ENTRIES>10000, 'ENTRIES'] = np.nan
```

```
>>df.loc[df.EXITES>10000, 'EXITES'] = np.nan
```

```
>>test_df = df.groupby('STATION').transform(lambda g : g.fillna(g.median()))
```

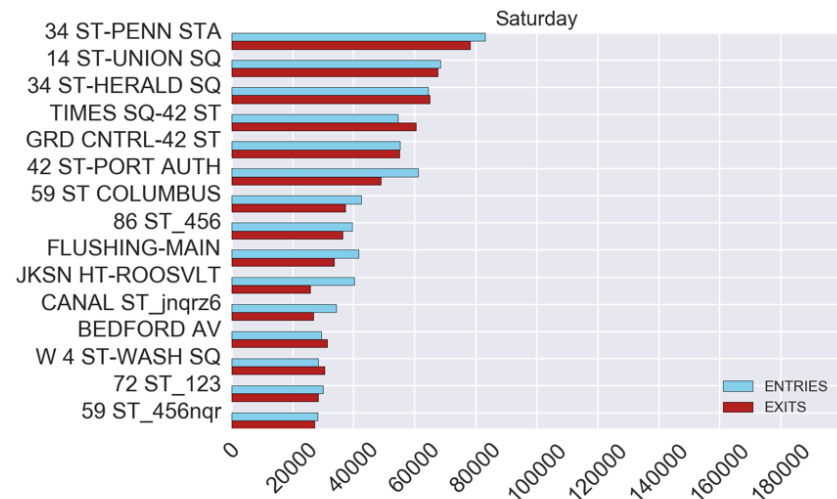
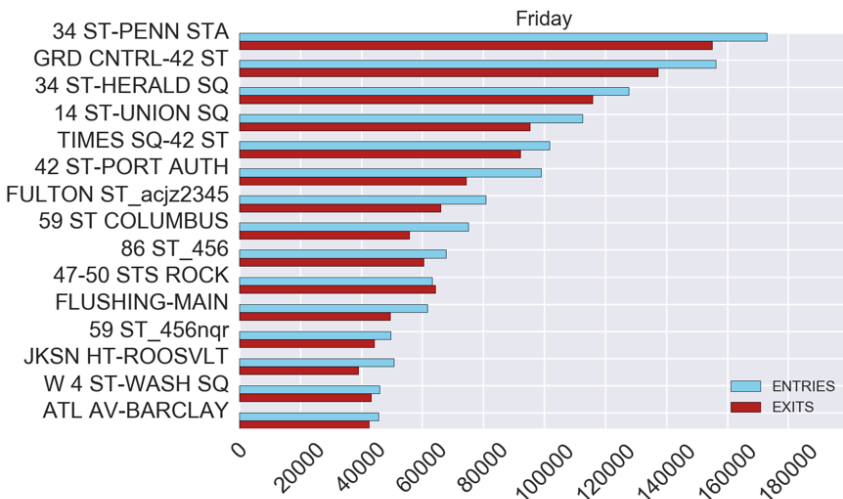
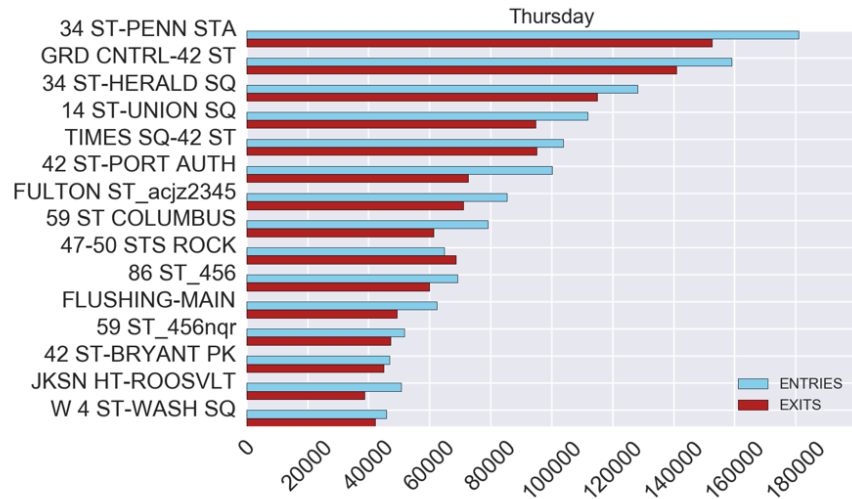
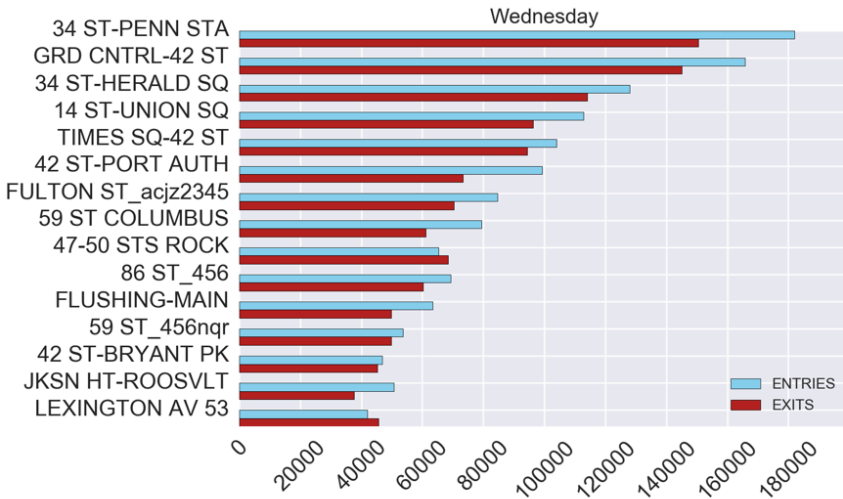
Stations by Day of the Week

```
>>stn_totals['DOW'] = stn_totals.DATE_TIME.dt.dayofweek
```

```
>>weekly_means =  
stn_totals.groupby(['DOW','STATION']).mean().reset_index()
```

```
>>weekly_means['Total'] = weekly_means.ENTRIES + weekly_means.EXITS
```

Flow Each Day of the Week



Busiest Stations by Hour of Day

- Create 4 hour time blocks

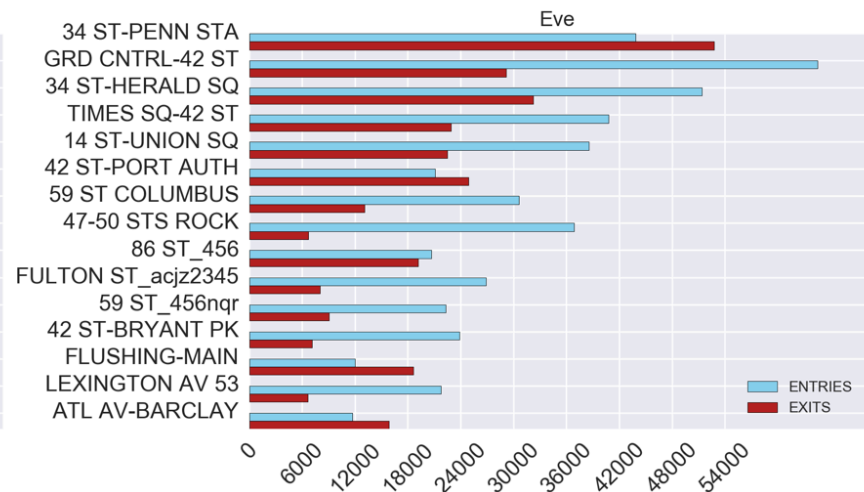
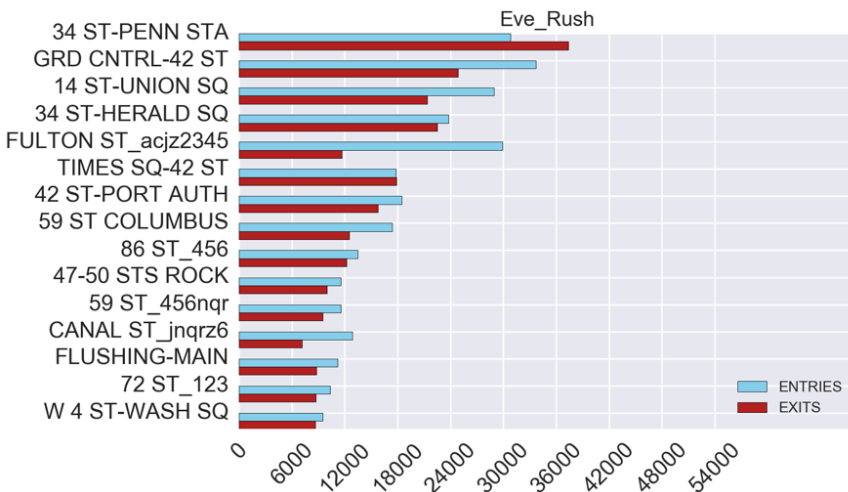
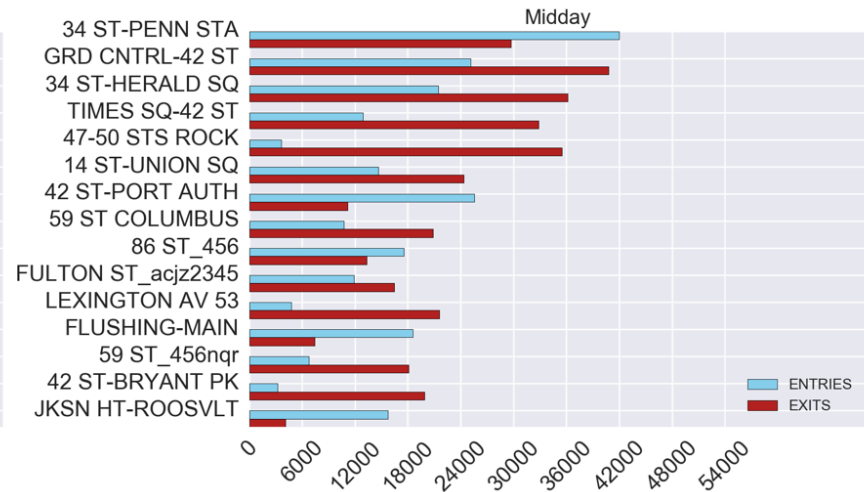
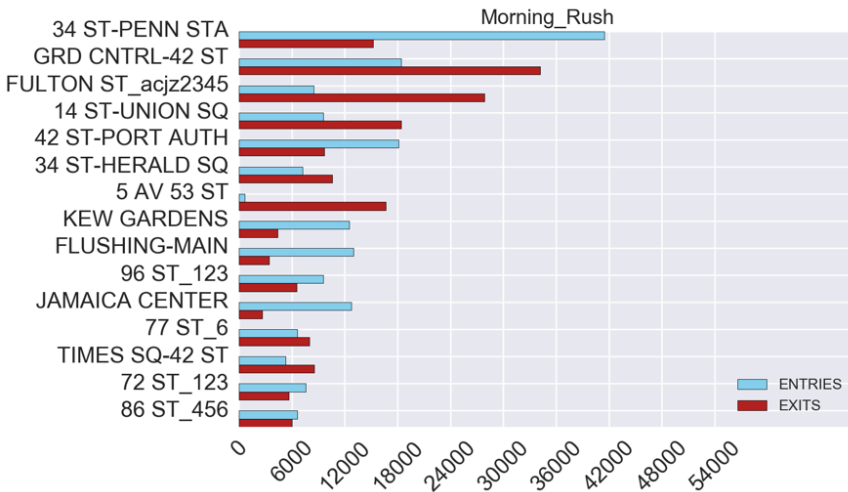
```
>>bins = [0,4,8,12,16,20,24]
```

- Separate into weekdays and weekends

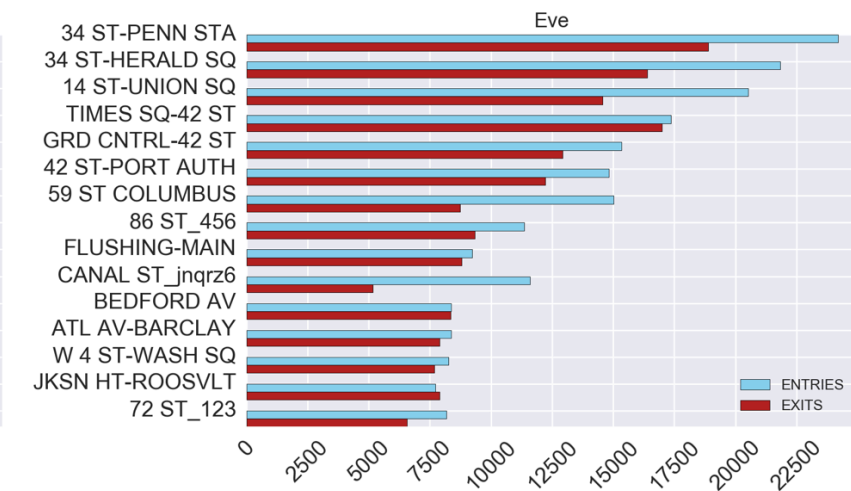
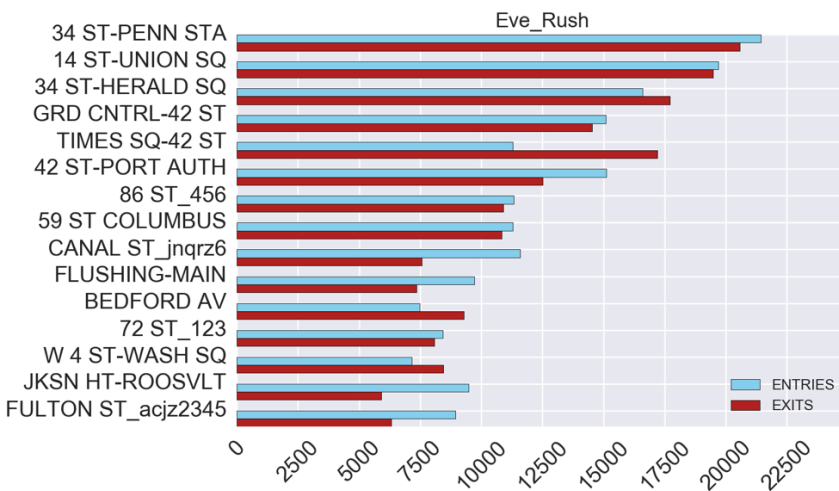
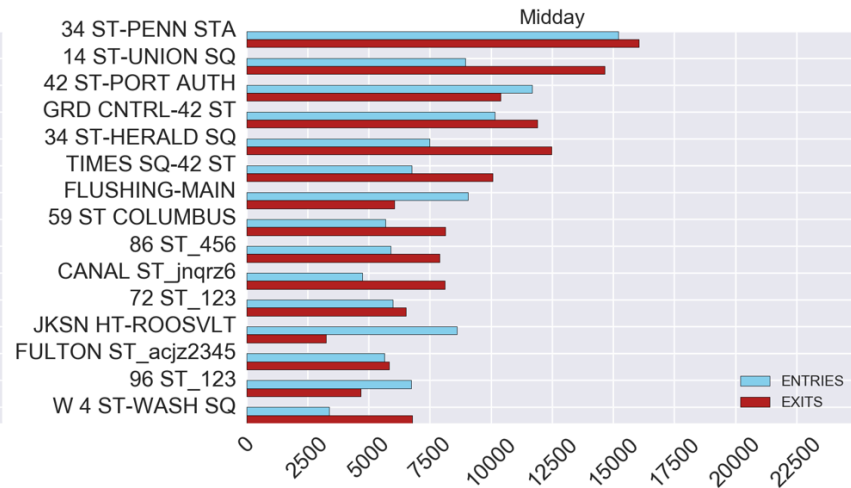
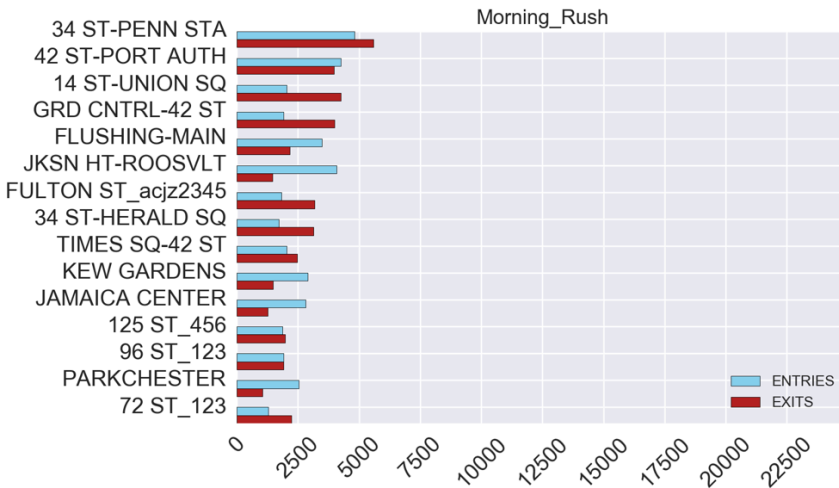
```
>>weekdays = df[df.DATE_TIME.dt.dayofweek <5]
```

```
>>weekends = df[df.DATE_TIME.dt.dayofweek >4]
```


Traffic on Weekdays



Traffic on Weekends

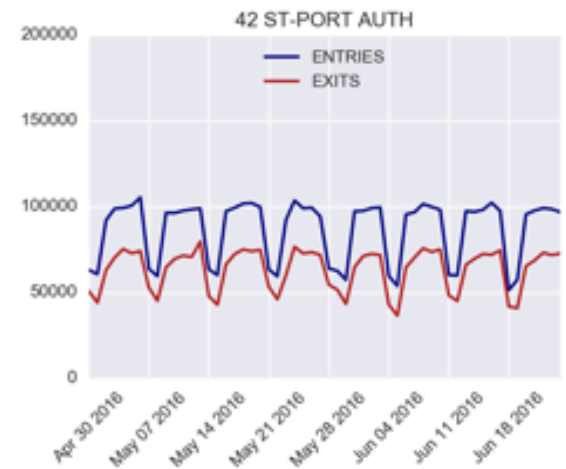
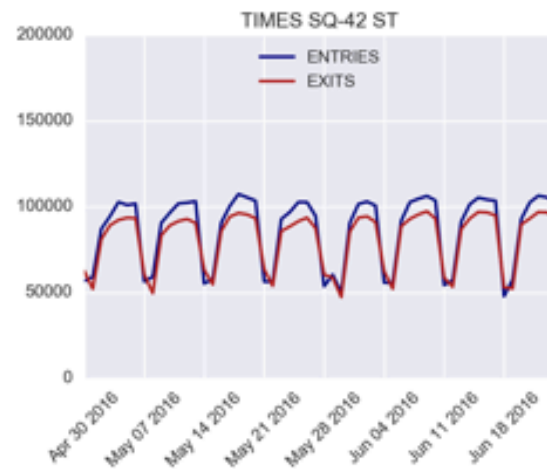
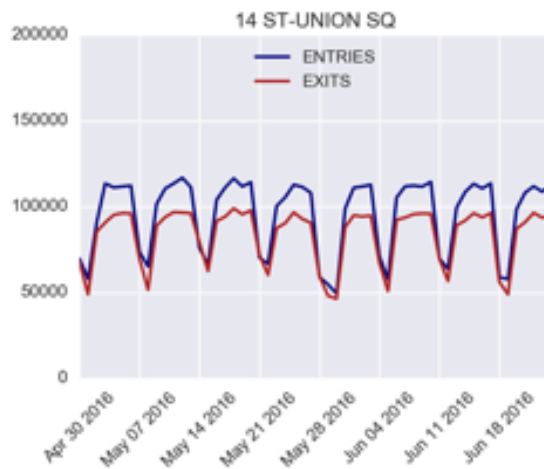
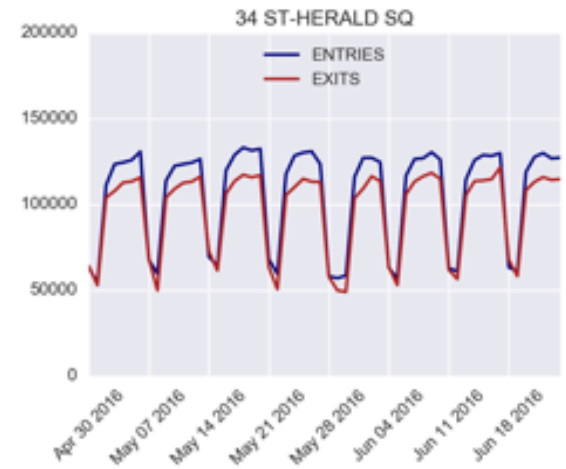
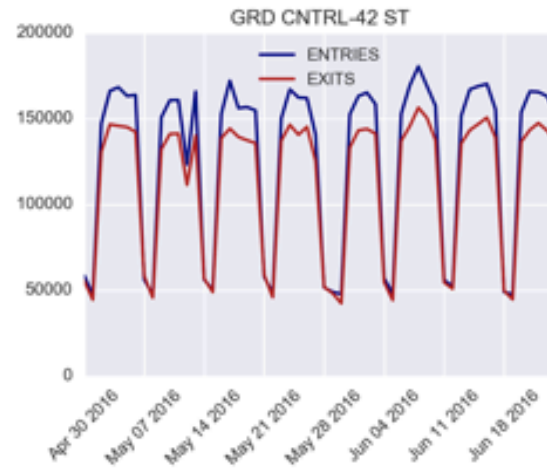
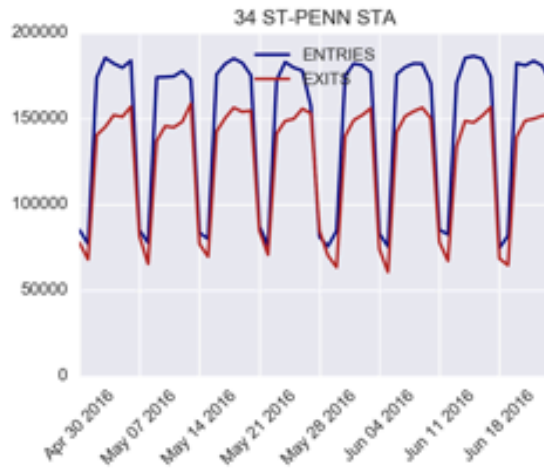


Closer Look at Top 15 Stations

- Busiest stations are consistent throughout the week
- Opportunities for WTWY
 - Check what are the busiest days/times at these stations

```
>>top_stations = weekly_means[weekly_means.DOW==1].sort_values('Total',  
ascending = False).STATION[:15]
```

Commuter Flow at Top 15 Stations



Best Days

```
>>busiest_days = {}
```

```
>>for s in top_stations:
```

```
>>    stn = stn_totals[stn_totals.STATION==s]
```

```
>>    stn['Total'] = stn.ENTRIES + stn.EXITES
```

- **Maximize exposure by placing team members at locations on their best day!**
 - Lexington Ave 53rd St is busiest on Tuesday
 - Columbus Circle is busiest on Wednesday
 - Fulton St is busiest on Thursday

Our Recommendations to WTWY

- Weekdays:
 - Midtown
 - Stations with many connections
 - Some "smaller" stations:
 - 5th Ave 53rd St
 - Kew Gardens, 96th St
 - 72nd St and Broadway
- Weekends:
 - Bedford Ave and Barclays during the evening
 - West 4th St and Canal Street

Future Work

- Evaluate stations by surrounding demographics
- Closures on subway traffic
- Subway delays
- Impact of inclement weather

THANK YOU

TEAM 2

Swati Sharma
Rick Shapiro
Marcus Carney

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