In [1]:
```
print 'Author: Connor Hennen'
```

```
Author: Connor Hennen
```

In [56]:
```
import plotly.plotly as py
from plotly.graph_objs import *
import pandas as pd
import os
os.chdir('/Users/connorvhennen/Desktop/Classes W18/Stat 141SL/Project')

newHousing = pd.read_csv('newhousing.csv')
rehabHousing = pd.read_csv('rehabhousing.csv')
```

In [57]:
```
rehabHousing.dropna(subset=['latitude'])
newHousing.dropna(subset=['latitude'])
rehabHousing = rehabHousing.reset_index(drop=True)
newHousing = newHousing.reset_index(drop=True)
```

In [58]:
```
newHousingPerms = set(newHousing['Permit.Sub.Type'])
rehabHousingPerms = set(rehabHousing['Permit.Sub.Type'])
```

In [59]:
```
rehabHousingPerms
```

Out[59]:
```
{'1 or 2 Family Dwelling', 'Apartment'}
```

In [60]:
```
newFamDwell = []
newApt = []

for i in range(len(list(newHousing['Permit.Sub.Type']))):
    if newHousing.ix[i,'Permit.Sub.Type'] == '1 or 2 Family Dwelling':
        newFamDwell.append(i)
    if newHousing.ix[i,'Permit.Sub.Type'] == 'Apartment':
        newApt.append(i)

rehabFamDwell = []
rehabApt = []
for i in range(len(list(rehabHousing['Permit.Sub.Type']))):
    if rehabHousing.ix[i,'Permit.Sub.Type'] == '1 or 2 Family Dwelling'
        rehabFamDwell.append(i)
    if rehabHousing.ix[i,'Permit.Sub.Type'] == 'Apartment':
        rehabApt.append(i)

```

```
/Users/connorvhennen/anaconda2/lib/python2.7/site-packages/ipykernel_laun
cher.py:5: DeprecationWarning:


.ix is deprecated. Please use
.loc for label based indexing or
.iloc for positional indexing

See the documentation here:
http://pandas.pydata.org/pandas-docs/stable/indexing.html#ix-indexer-is-d
eprecated (http://pandas.pydata.org/pandas-docs/stable/indexing.html#ix-i
ndexer-is-deprecated)

/Users/connorvhennen/anaconda2/lib/python2.7/site-packages/ipykernel_laun
cher.py:13: DeprecationWarning:


.ix is deprecated. Please use
.loc for label based indexing or
.iloc for positional indexing

See the documentation here:
http://pandas.pydata.org/pandas-docs/stable/indexing.html#ix-indexer-is-d
eprecated (http://pandas.pydata.org/pandas-docs/stable/indexing.html#ix-i
ndexer-is-deprecated)
```

In [61]:
```
newFamHousing = newHousing.drop(newHousing.index[newApt])
newAptHousing = newHousing.drop(newHousing.index[newFamDwell])

rehabFamHousing = rehabHousing.drop(rehabHousing.index[rehabApt])
rehabAptHousing = rehabHousing.drop(rehabHousing.index[rehabFamDwell])
```

In [62]:
```
print rehabAptHousing.shape[0]
print newAptHousing.shape[0]
print rehabFamHousing.shape[0]
print newFamHousing.shape[0]
```

```
27496
1221
106044
15243
```

In [63]:
```
106044/27496
```

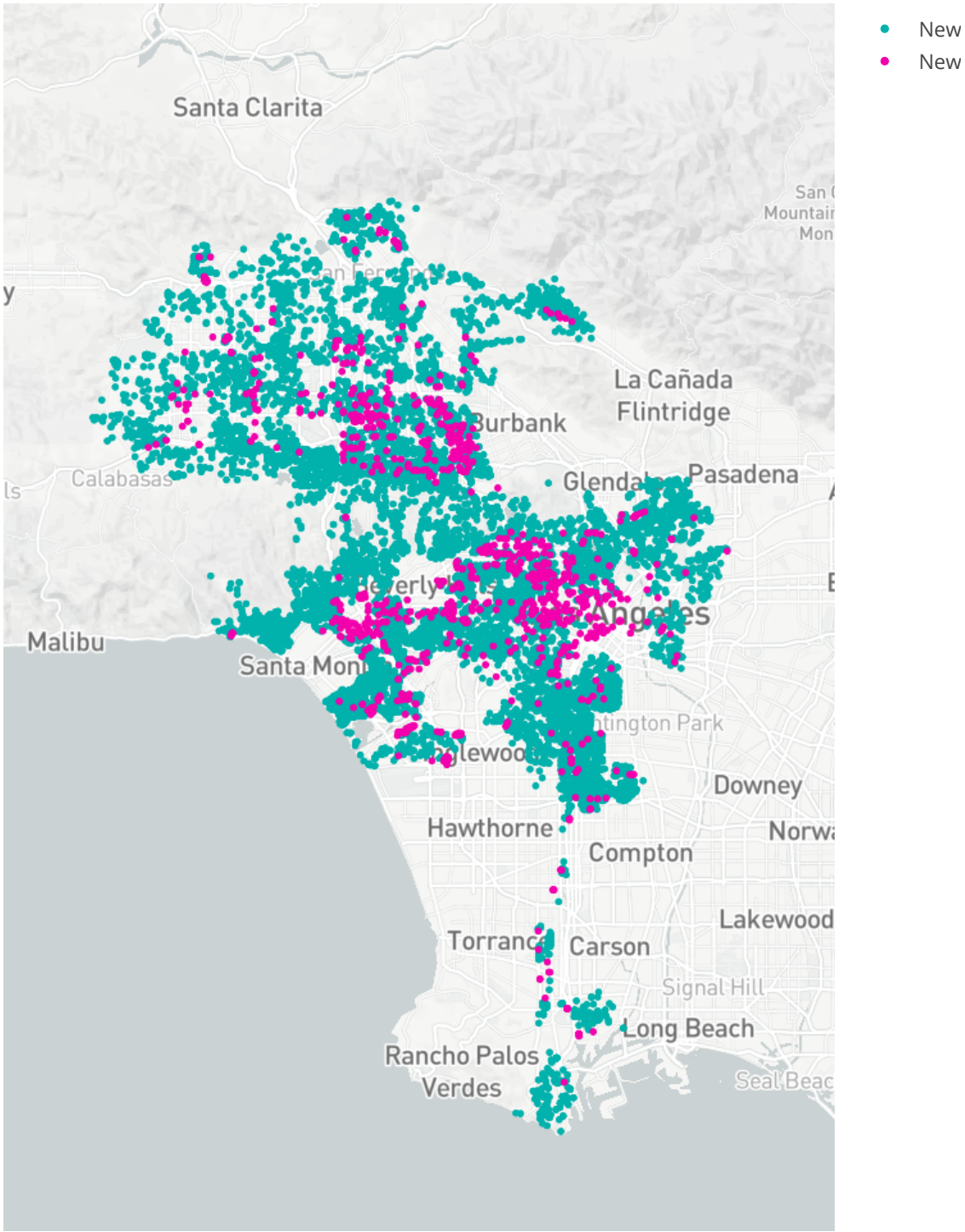
Out[63]: 3

In [64]:
```
import statistics as stats
l1 = list(rehabAptHousing['longitude'])
l2 = list(rehabFamHousing['longitude'])
joinedList = l1+ l2
medianLongRehab = stats.median(joinedList)

l1 = list(rehabAptHousing['latitude'])
l2 = list(rehabFamHousing['latitude'])
joinedList = l1+ l2
medianLatRehab = stats.median(joinedList)


l1 = list(newAptHousing['longitude'])
l2 = list(newFamHousing['longitude'])
joinedList = l1+ l2
medianLongNew = stats.median(joinedList)

l1 = list(newAptHousing['latitude'])
l2 = list(newFamHousing['latitude'])
joinedList = l1+ l2
medianLatNew = stats.median(joinedList)

```

In [65]:

```
mapbox_access_token ='pk.eyJ1IjoiY29ubm9ydmhlbm5lbiIsImEiOiJjamYyaWE0MnQ

newFamHousing['Text'] = newFamHousing['Permit.Sub.Type'] + '<br>Zip Code
newAptHousing['Text'] = newAptHousing['Permit.Sub.Type'] + '<br>Zip Code

data1 = Data([
    Scattermapbox(
        lat=newFamHousing['latitude'],
        lon=newFamHousing['longitude'],
        mode='markers',
        marker=Marker(
            size=5,
            color = 'rgb(0, 177, 172)'
        ),
        name = 'New 1 or 2 Family Dwelling',

        text=newFamHousing['Text'],
    ),
    Scattermapbox(
        lat=newAptHousing['latitude'],
        lon=newAptHousing['longitude'],
        mode='markers',
        marker=Marker(
            size=5,
            color = 'rgb(242, 0, 172)'
        ),
        name = 'New Apartment',

        text=newAptHousing['Text'],

    )

])
layout1 = Layout(
    width = 800,
    height = 900,
    hovermode='closest',
    showlegend=True,
    mapbox=dict(

        accesstoken=mapbox_access_token,
        bearing=0,
        center=dict(
            lat=medianLatNew,
            lon = medianLongNew
        ),
        pitch=0,
        zoom=9,
        style = 'light'
    ),
)

fig = dict(data=data1, layout=layout1)
py.iplot(fig, filename='New Housing Construction Subpermit Type Distribu
```

Out[65]:


New
New
Santa Clarita
La Cañada
Flintridge
Burbank
Calabasas
Pasadena
Malibu
Downey
Hawthorne
Compton
Lakewood
Torrance
Carson
Signal Hill
Long Beach
Rancho Palos
Verdes

In [ ]:
```
"Visit interactive map here:"
```

In [ ]:
```
"https://plot.ly/create/?fid=connorvhennen:16"
```

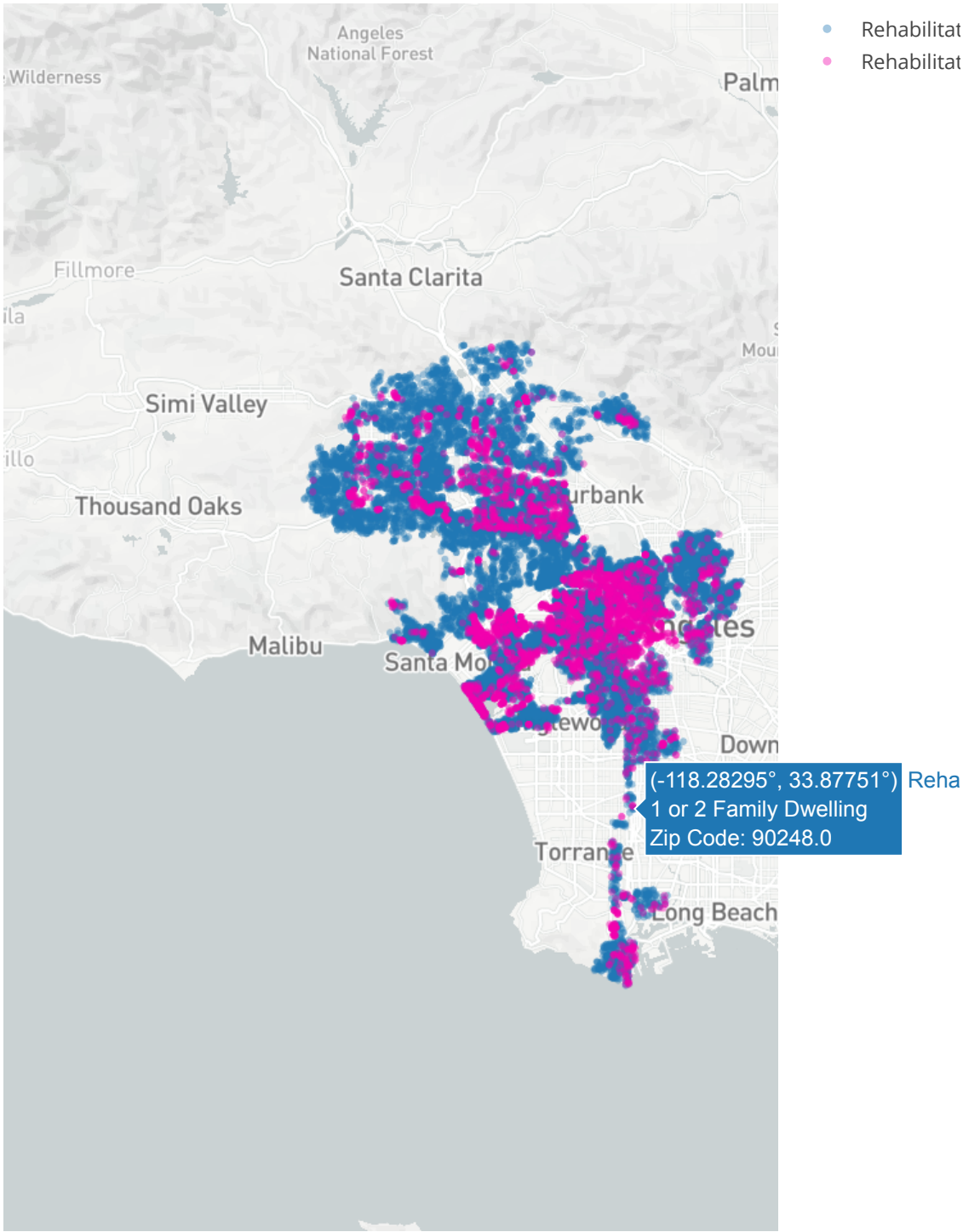
In [66]:
```
import random
#Scattermapbox is really lame in terms of how many data points it can t
random.seed(1)
rehabFamHousing = rehabFamHousing.reset_index(drop = True)
randInds = random.sample(range(0,len(rehabFamHousing)),int(len(rehabFam
rehabFamHousing = rehabFamHousing.drop(randInds)
rehabFamHousing = rehabFamHousing.reset_index(drop = True)

rehabAptHousing = rehabAptHousing.reset_index(drop = True)
randInds = random.sample(range(0,len(rehabAptHousing)),int(len(rehabApt
rehabAptHousing = rehabAptHousing.drop(randInds)
rehabAptHousing = rehabAptHousing.reset_index(drop = True)
```

In [67]:
```
len(rehabFamHousing)
```

Out[67]: 15907

In [70]:
```
pbox_access_token ='pk.eyJ1IjoiY29ubm9ydmhlbm5lbiIsImEiOiJjamYyaWE0MnQwMmplM
box_access_token ='pk.eyJ1IjoiY29ubm9ydmhlbm5lbiIsImEiOiJjamYyaTl4MG0xaHV0Mn

abFamHousing['Text'] = rehabFamHousing['Permit.Sub.Type'] + '<br>Zip Code: '
abAptHousing['Text'] = rehabAptHousing['Permit.Sub.Type'] + '<br>Zip Code: '

aRehabData = Data([
 Scattermapbox(
  lat=rehabFamHousing['latitude'],
  lon=rehabFamHousing['longitude'],
  mode='markers',
  marker=Marker(
      size=5,
      opacity = .4,
  ),
  name = 'Rehabilitated 1 or 2 Family Dwelling',
  text=rehabFamHousing['Text'],
 ),
 Scattermapbox(
  lat=rehabAptHousing['latitude'],
  lon=rehabAptHousing['longitude'],
  mode='markers',
  marker=Marker(
      size=5,
      color = 'rgb(242, 0, 172)',
      opacity = .4
  ),
  name = 'Rehabilitated Apartment',
  text=rehabAptHousing['Text'],
 )
])

out2 = Layout(
 width = 800,
 height = 900,
 hovermode='closest',
 showlegend=True,
 mapbox=dict(

  accesstoken=mapbox_access_token,
  bearing=0,
  center=dict(
      lat=medianLatRehab,
      lon = medianLongRehab
  ),
  pitch=0,
  zoom=8.5,
  style = 'light'
 )
)

fig7 = dict(data=dataRehabData, layout=layout2)
iplot(fig7,filename='Rehab Housing Construction Subpermit Type Distribution'
#image.save_as(fig, filename='rehabPermitDist.png')
```

Out[70]:


Rehabilitat
Rehabilitat
Angeles
National Forest
Wilderness
Palm
Fillmore
Santa Clarita
Simi Valley
Thousand Oaks
Malibu
Down
(-118.28295°, 33.87751°) Reha
1 or 2 Family Dwelling
Zip Code: 90248.0
Long Beach

In [ ]:
```
1 'Visit interactive map here:'
```

In [ ]:
```
1 "https://plot.ly/create/?fid=connorvhennen:18"
```