지도 핸들링

- 관리자 권한으로 프롬프트 띄운 후 아래 패키지 설치
- pip install folium

In [1]:
```
!pip install folium
```

```
Requirement already satisfied: folium in c:₩python₩lib₩site-packages (0.10.0)
Requirement already satisfied: branca>=0.3.0 in c:₩python₩lib₩site-packages (from folium)
(0.3.1)
Requirement already satisfied: jinja2>=2.9 in c:₩python₩lib₩site-packages (from folium) (2.1
0.1)
Requirement already satisfied: numpy in c:₩python₩lib₩site-packages (from folium) (1.16.4)
Requirement already satisfied: requests in c:₩python₩lib₩site-packages (from folium) (2.22.
0)
Requirement already satisfied: six in c:₩python₩lib₩site-packages (from branca>=0.3.0->foliu
m) (1.12.0)
Requirement already satisfied: MarkupSafe>=0.23 in c:₩python₩lib₩site-packages (from jinja2>
=2.9->folium) (1.1.1)
Requirement already satisfied: certifi>=2017.4.17 in c:₩python₩lib₩site-packages (from reque
sts->folium) (2019.6.16)
Requirement already satisfied: idna<2.9,>=2.5 in c:₩python₩lib₩site-packages (from requests-
>folium) (2.8)
Requirement already satisfied: chardet<3.1.0,>=3.0.2 in c:₩python₩lib₩site-packages (from re
quests->folium) (3.0.4)
Requirement already satisfied: urllib3!=1.25.0,!=1.25.1,<1.26,>=1.21.1 in c:₩python₩lib₩site
-packages (from requests->folium) (1.24.2)
```

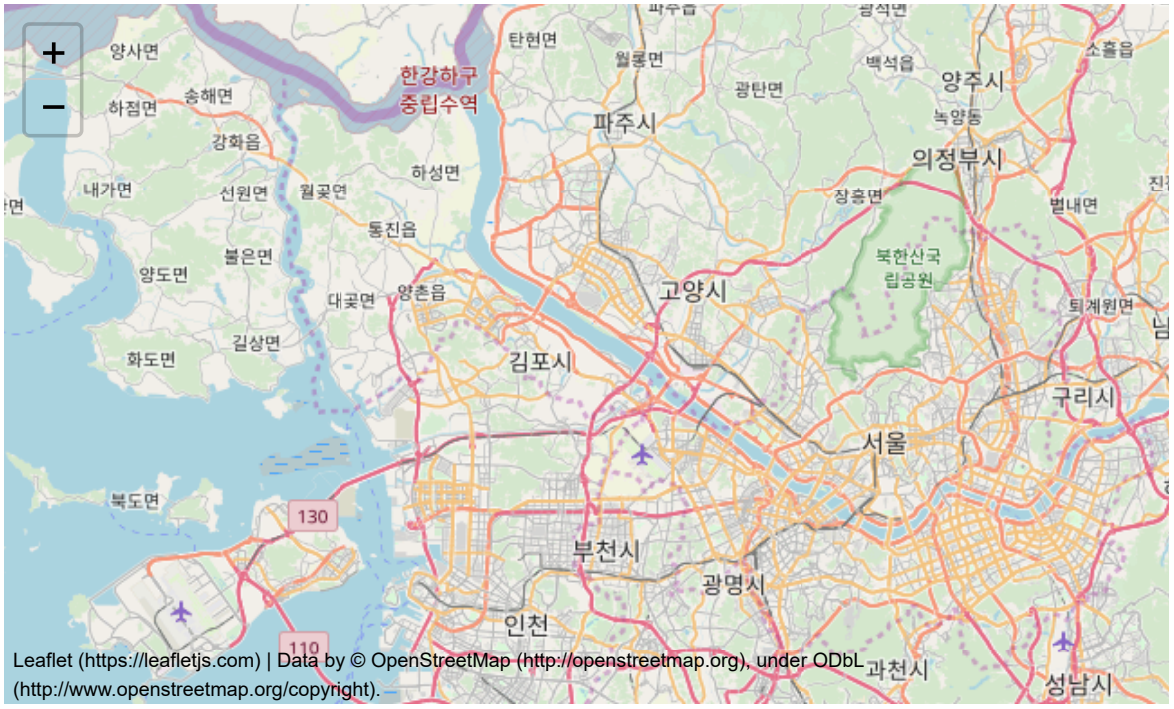
In [2]:
```
import folium
```

In [3]:
```
# 서울 위경도
latitude  = 37.5102
longitude = 126.982
loc_tuple = (latitude, longitude)
loc_tuple
```

Out[3]: (37.5102, 126.982)

In [4]:
```
# 서울 지도 표시
map_osm = folium.Map(location=[37.5102, 126.982])
map_osm
```

Out[4]:

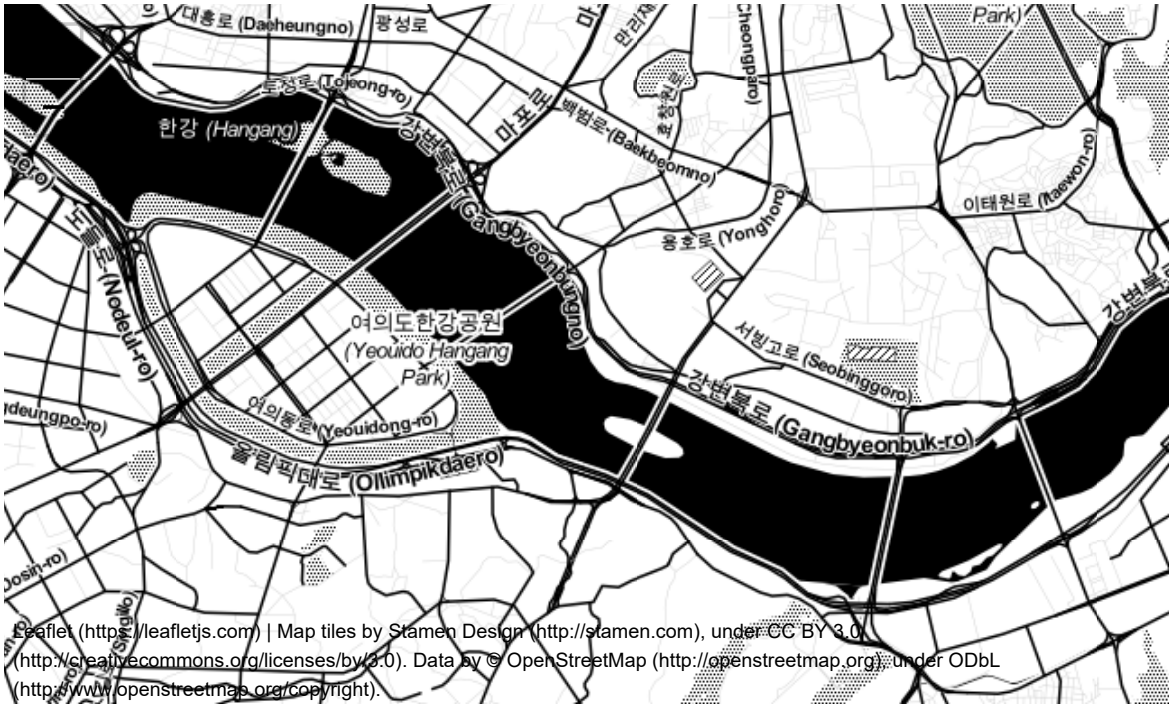


In [5]:
```
stamen = folium.Map(location=[37.5102, 126.982], zoom_start=13)
stamen
```

Out[5]:

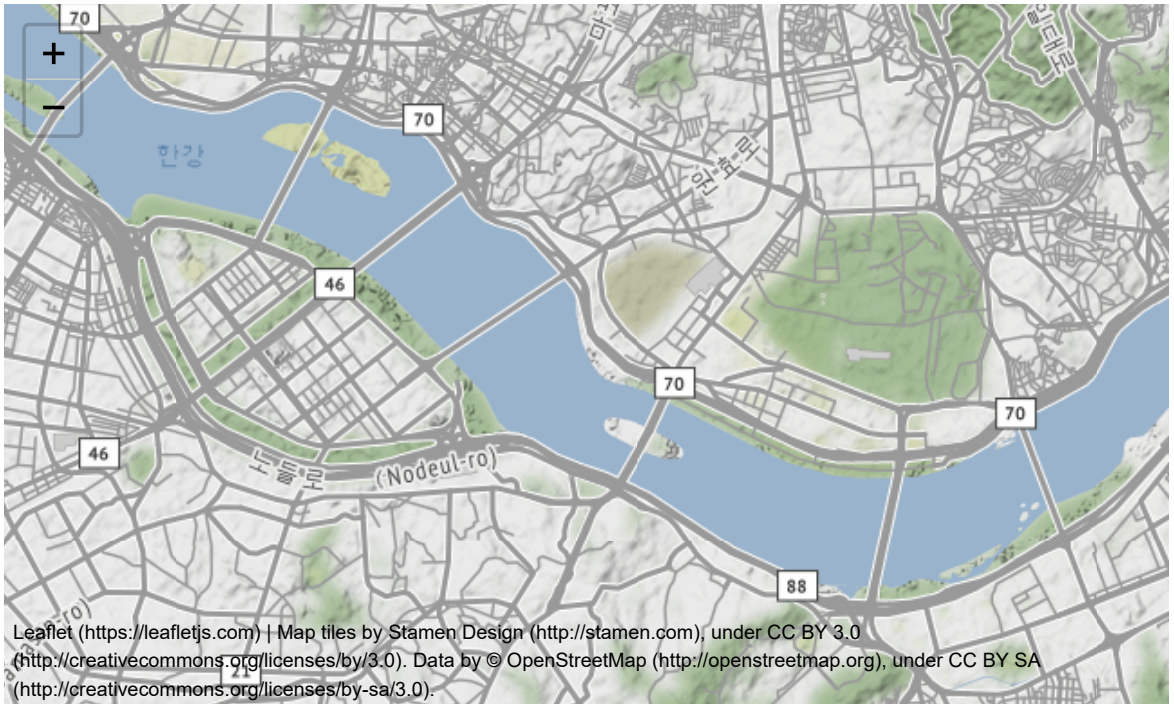
In [6]:
```
stamen = folium.Map(location=[37.5102, 126.982], tiles='Stamen Toner', zoom_start=13)
stamen
# 교각 등 강조
```

Out[6]:



In [7]:
```
stamen = folium.Map(location=[37.5102, 126.982], tiles='Stamen Terrain', zoom_start=13)
stamen
# 거리나 다리 강조
```

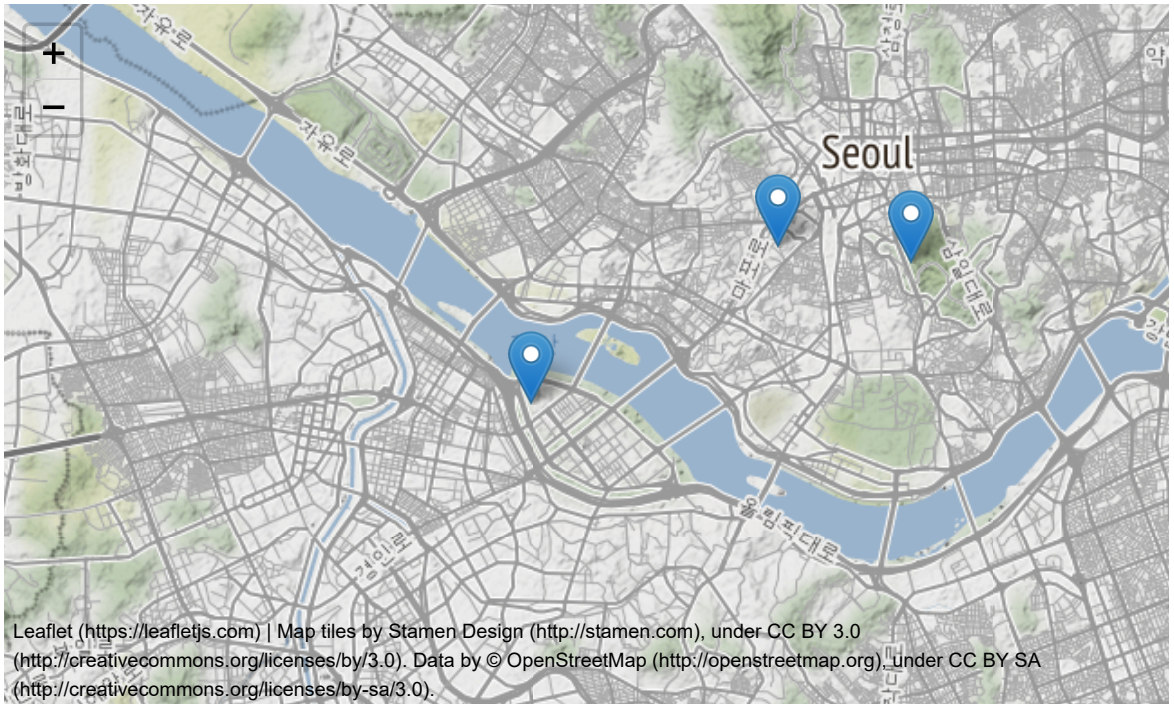
Out[7]:



In [12]:
```
?folium.Map
```

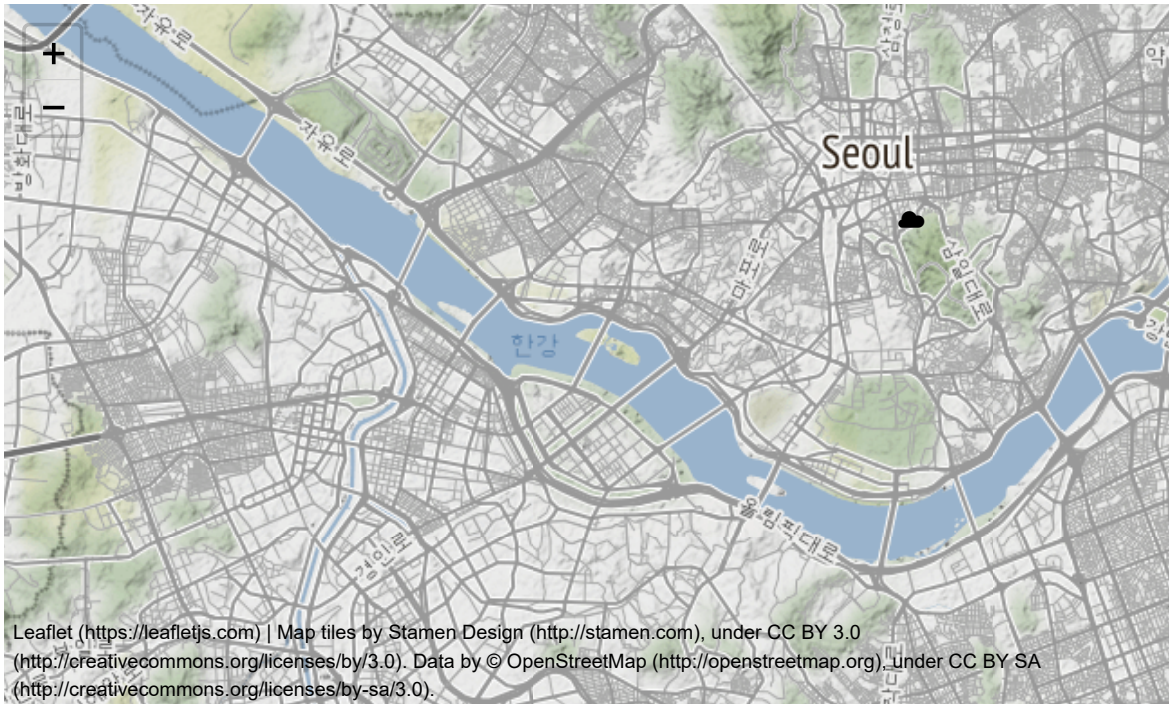
In [8]:
```
map_1 = folium.Map(location=[37.5102, 126.982], tiles='Stamen Terrain', zoom_start=12)
folium.Marker([37.5511, 126.9860], popup='남산타워').add_to(map_1)
folium.Marker([37.5536, 126.9608], popup='서울시청').add_to(map_1)
folium.Marker([37.5299, 126.9138], popup='국회의사당').add_to(map_1)
map_1
```

Out[8]:



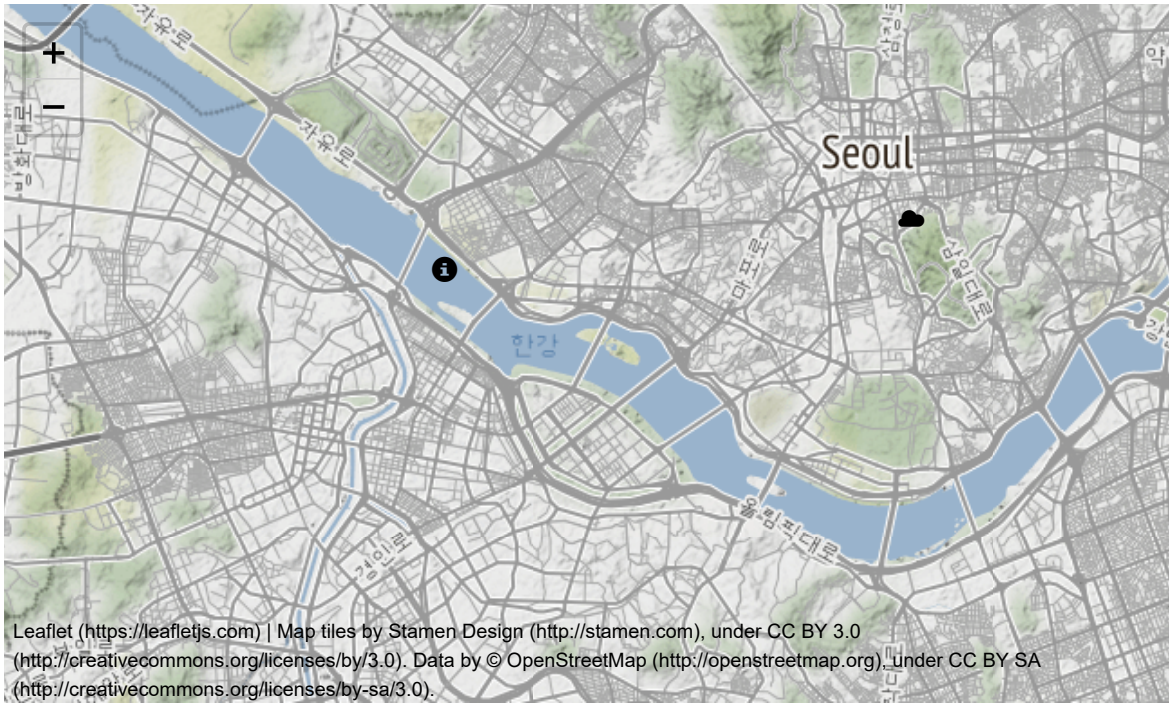
In [9]:
```
map_2 = folium.Map(location=[37.5102, 126.982], tiles='Stamen Terrain', zoom_start=12)
folium.Marker([37.5511, 126.9860], popup='남산타워',
              icon = folium.Icon(icon='cloud')).add_to(map_2)
folium.Marker([37.5129, 127.1005], popup='롯데월드타워',
              icon=folium.Icon(icon='cloud')).add_to(map_2)
map_2
```

Out[9]:



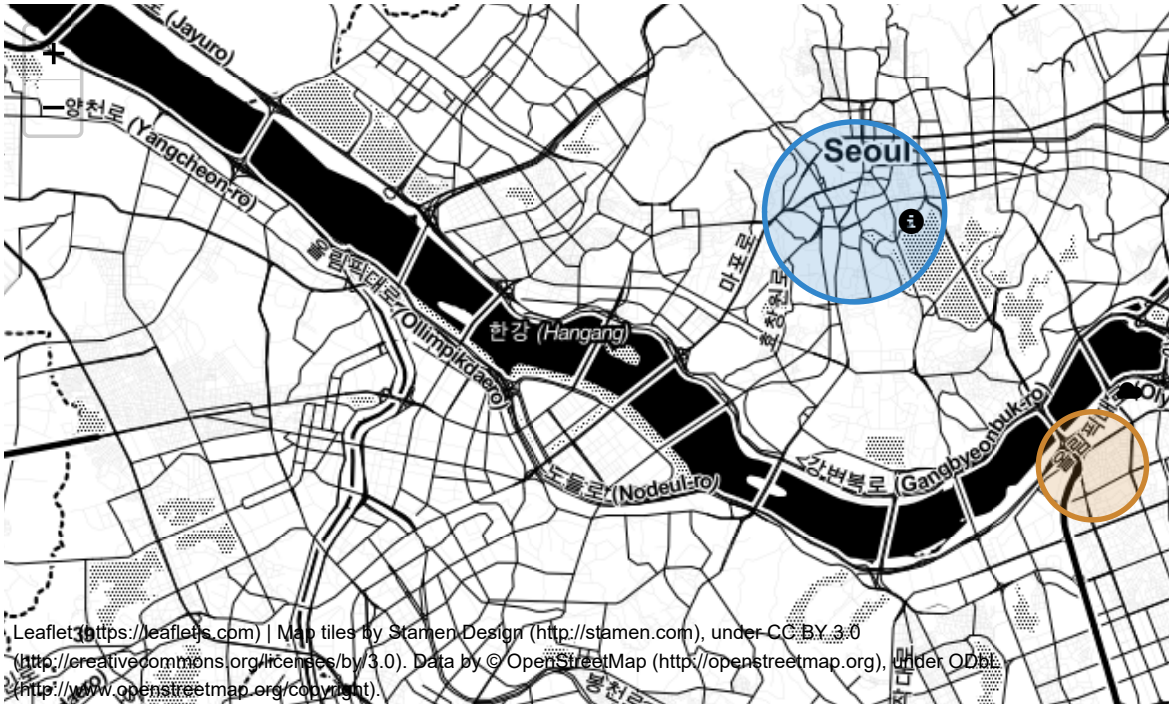
In [10]:
```
map_3 = folium.Map(location=[37.5102, 126.982], tiles='Stamen Terrain', zoom_start=12)
folium.Marker([37.5511, 126.9860], popup='남산타워',
              icon=folium.Icon(color='pink', icon='cloud')).add_to(map_3)
folium.Marker([37.5111, 127.0959], popup='롯데월드',
              icon=folium.Icon(color='orange', icon='cloud')).add_to(map_3)
folium.Marker([37.5493, 127.0770], popup='어린이대공원',
              icon=folium.Icon(color='green',icon='info-sign')).add_to(map_3)
folium.Marker([37.5437, 126.8974], popup='선유도공원',
              icon=folium.Icon(color='red',icon='info-sign')).add_to(map_3)
map_3
```

Out[10]:



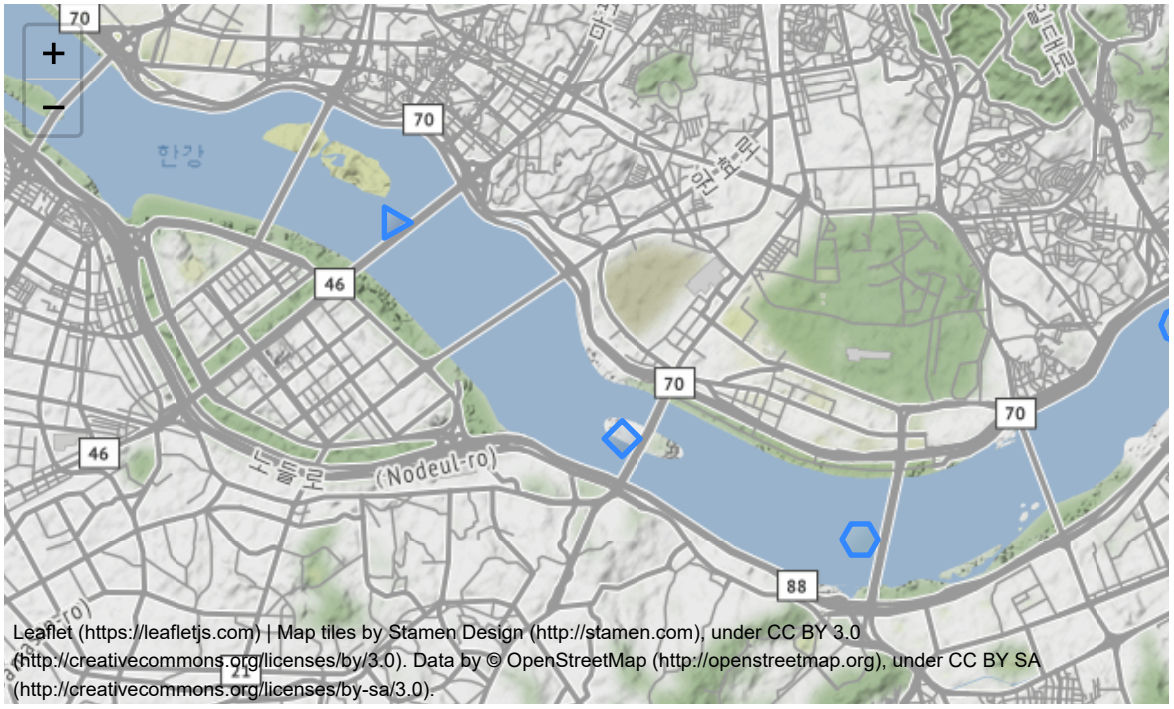
In [11]:
```
map_4 = folium.Map(location=[37.5102, 126.982], tiles='Stamen Toner', zoom_start=12)

folium.Marker([37.5511, 126.9860], popup='남산타워',
              icon=folium.Icon(color='blue') ).add_to(map_4)
folium.CircleMarker([37.5591, 126.9754], radius=50, popup='남대문 시장',
                    color='#3186cc', fill_color='#3186cc' ).add_to(map_4)

folium.Marker([37.5253, 127.0278], popup='압구정역',
              icon=folium.Icon(icon='cloud',color='orange')).add_to(map_4)
folium.CircleMarker([37.5205, 127.0207], radius=30, popup='가로수길상권',
                    color='#cc8631', fill_color='#cc8631' ).add_to(map_4)
map_4
```

Out[11]:



In [12]:
```
map_5 = folium.Map(location=[37.5102, 126.982], tiles='Stamen Terrain',
                   zoom_start=13)
folium.RegularPolygonMarker([37.5338, 126.9349],  popup='마포대교',
                            fill_color='#132b5e', number_of_sides=3, radius=10).add_to(map_
5)
folium.RegularPolygonMarker([37.5175, 126.9566],  popup='한강대교',
                            fill_color='#45647d', number_of_sides=4, radius=10).add_to(map_
5)
folium.RegularPolygonMarker([37.5098, 126.9793],  popup='동작대교',
                            fill_color='#769d96', number_of_sides=6, radius=10).add_to(map_
5)
folium.RegularPolygonMarker([37.5261, 127.0096],  popup='한남대교',
                            fill_color='#769d96', number_of_sides=8, radius=10).add_to(map_
5)
map_5
```

Out[12]:



In [13]:
```
map_6 = folium.Map(location=[37.552,126.9161], tiles='Stamen Terrain',
                   zoom_start=13)
folium.Marker([37.552016,126.9161693], icon= folium.Icon(icon='cloud',color='blue'),
              popup='학원').add_to(map_6)
folium.CircleMarker([37.552016,126.9161693], radius=30, popup='근처',
                    fill_color='#cf9314').add_to(map_6)
map_6
```

Out[13]:

서울시 구별 와아파이존 빈도수 시각화

In [14]:
```
import pandas as pd
import json
import warnings
warnings.simplefilter(action = "ignore", category = FutureWarning) #warning창 무시
```

In [16]:
```
geo_path = './seoul_data/skorea_municipalities_geo_simple.json'
geo_str  = json.load(open(geo_path, encoding='utf-8'))
```

In [17]:
```
df = pd.read_csv('./seoul_data/seoul_wifi_zone.csv')
df.head()
```

Out[17]:

	구명	유형	지역명	설치위치(X좌표)	설치위치(Y좌표)	설치기관(회사)
0	강남구	공공기관	(재)서울산업통상진흥원	127.071755	37.495582	LGU+
1	강남구	공공기관	(재)서울산업통상진흥원서울신기술창업센타	127.038054	37.497612	LGU+
2	강남구	공공기관	U강남도시관제센터	127.040992	37.508403	강남구
3	강남구	공공기관	강남구의회	127.064203	37.493938	강남구
4	강남구	공공기관	강남구청	127.047502	37.517305	강남구

In [18]:
```
df.columns = (['구', '유형', '위치명', '위도', '경도', '설치회사'])
df.head()
```

Out[18]:

	구	유형	위치명	위도	경도	설치회사
0	강남구	공공기관	(재)서울산업통상진흥원	127.071755	37.495582	LGU+
1	강남구	공공기관	(재)서울산업통상진흥원서울신기술창업센타	127.038054	37.497612	LGU+
2	강남구	공공기관	U강남도시관제센터	127.040992	37.508403	강남구
3	강남구	공공기관	강남구의회	127.064203	37.493938	강남구
4	강남구	공공기관	강남구청	127.047502	37.517305	강남구

In [19]:
```
freq_gu = df['구'].value_counts()
freq_gu
```

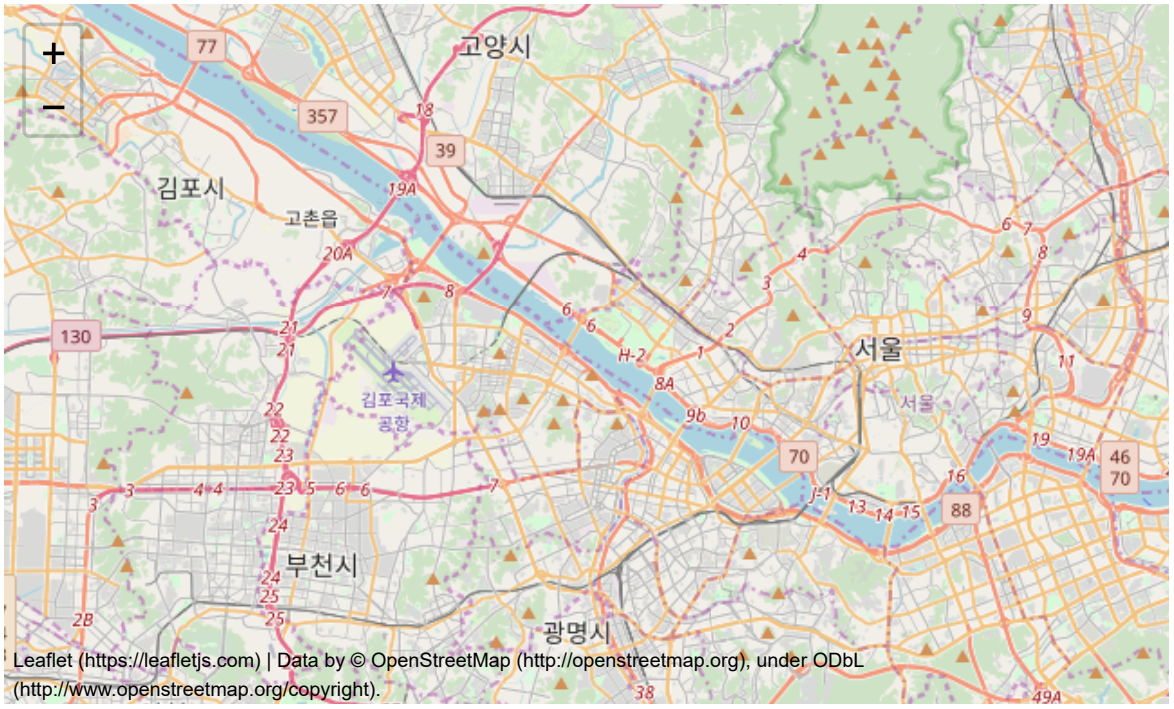
Out[19]:
```
강남구     282
종로구     184
중구      168
관악구     145
노원구     144
구로구     141
광진구     127
은평구     123
용산구     123
강서구     122
강북구     120
양천구     114
동대문구    111
서대문구    109
영등포구    106
성북구     104
마포구     103
송파구     100
서초구      96
성동구      94
동작구      86
강동구      79
중랑구      73
도봉구      66
금천구      58
경기도      16
Name: 구, dtype: int64
```

In [20]:
```
freq_gu.describe()
```

Out[20]:
```
count     26.000000
mean     115.153846
std       48.579578
min       16.000000
25%       94.500000
50%      110.000000
75%      126.000000
max      282.000000
Name: 구, dtype: float64
```

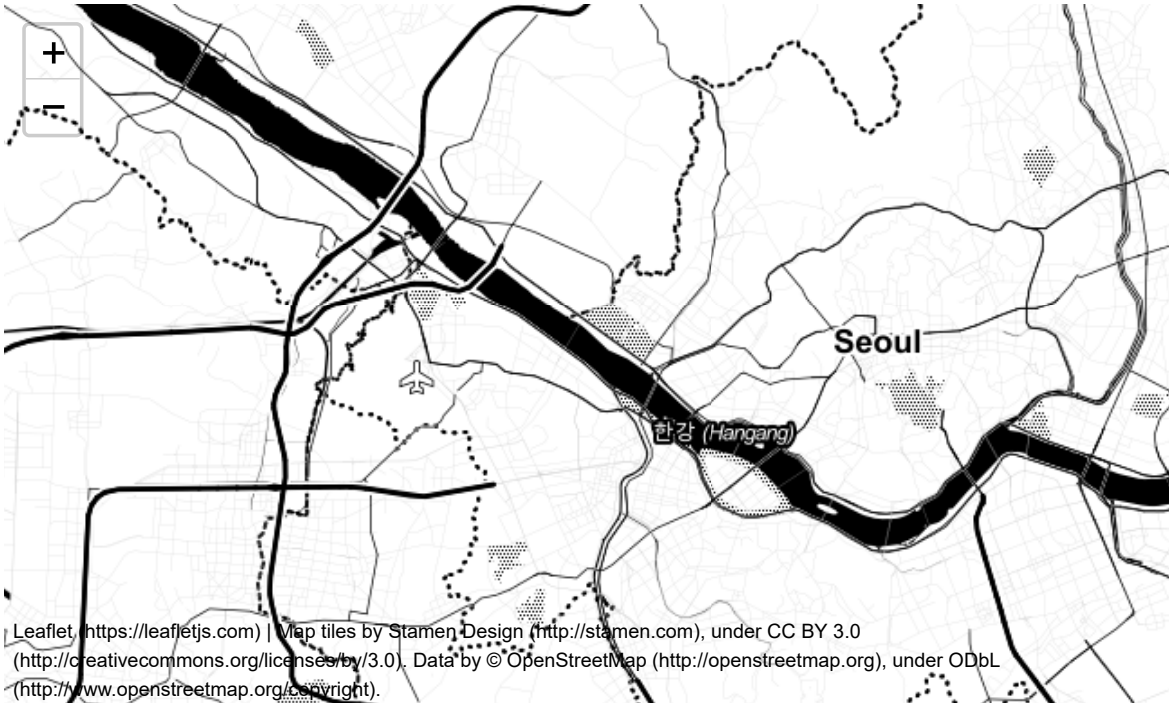
In [21]:
```
map = folium.Map(location = [37.5102, 126.982], zoom_start=11)
map
```

Out[21]:



In [23]:
```
map = folium.Map(location = [37.5102, 126.982], tiles='Stamen Toner',
                 zoom_start=11)
map
```

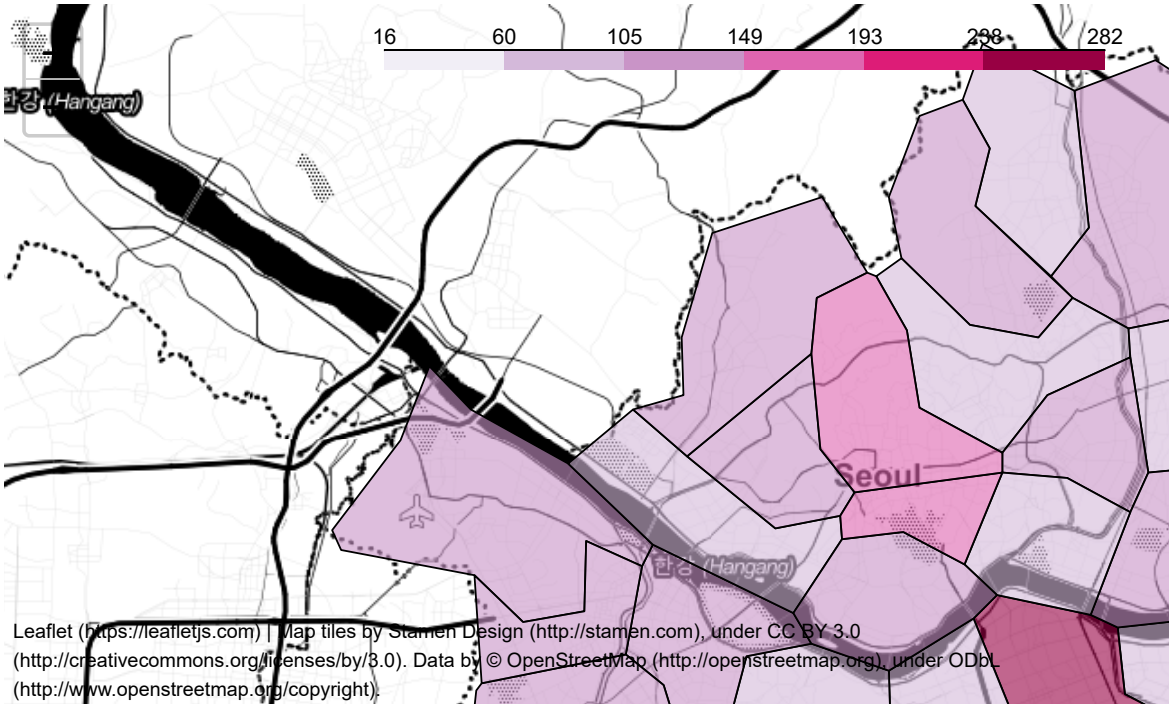
Out[23]:



In [24]:
```
geo_str
```

In [25]:
```
map = folium.Map(location=[37.5502, 126.982], tiles='Stamen Toner', zoom_start=11)

map.choropleth(geo_data=geo_str,
               data=freq_gu,
               columns=['gu','counts'],
               fill_color = 'PuRd',
               key_on = 'feature.id')
map
```

Out[25]:



In [ ]: