Report

July 16, 2023

[1]:
```
import os.path
import click
import requests
from pathlib import Path
import pandas as pd
import geopandas as gpd
import json
import matplotlib.pyplot as plt

pd.set_option('display.max_rows', None)
reportsPath = 'C:\\Users\\wisam\\Desktop\\Report\\'
```

[2]:
```
def osm_fetch(url):
    filename = Path(url).name
    filepath = reportsPath + filename
    with requests.get(url, stream=True) as r:
        r.raise_for_status()

        size = int(r.headers["Content-Length"].strip())
        pbar = click.progressbar(length=size, label=f"Downloading {filename}")

        with open(filepath, "wb") as f:
            for chunk in r.iter_content(chunk_size=8192):
                f.write(chunk)
                pbar.update(len(chunk))

        pbar.render_finish()
    return filepath

def fetch_project_tasks(project_id):
    tasks_file = Path(reportsPath, f'{project_id}_tasks.geojson')
    with requests.get(f'http://tasks.opensidewalks.com/api/v2/projects/
 ↪{project_id}/tasks/') as resp:
        with open(tasks_file,'w',) as f:
            json.dump(resp.json(), f)
    return str(tasks_file)
```

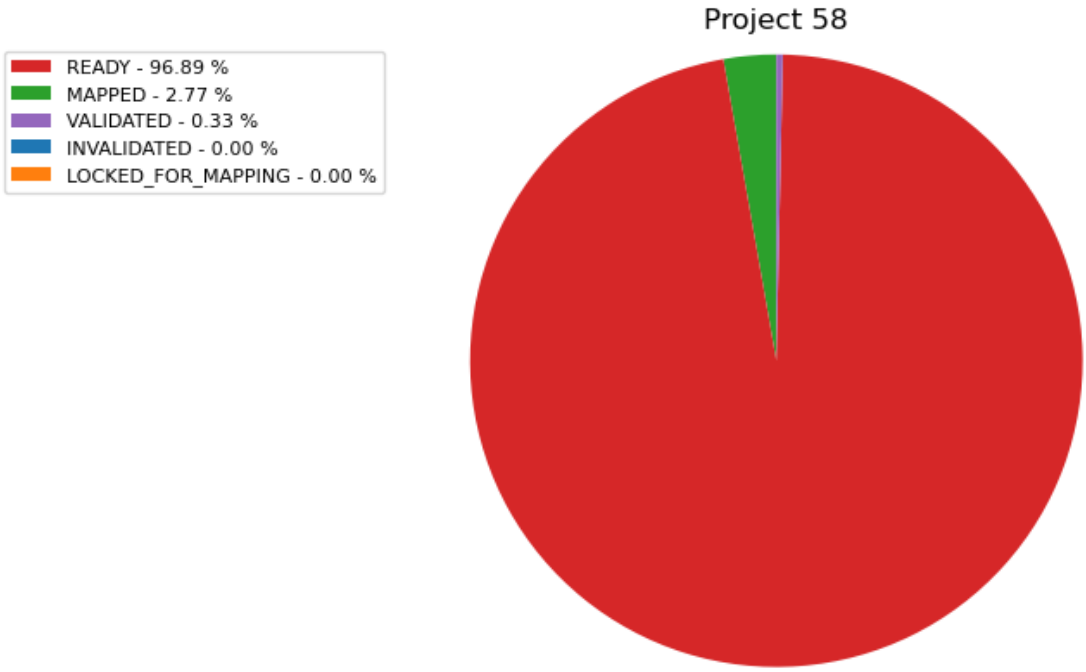
[3]:
```
downloadedOSM = set()
projectsFile = f'{reportsPath}projectIDs.csv'
projectIDs = pd.read_csv(projectsFile)

for index, row in projectIDs.iterrows():
    osm_url = row['osm_url']
    osm_file = reportsPath + Path(osm_url).name

    if not osm_url in downloadedOSM and not os.path.exists(osm_file):
        osm_file = osm_fetch(osm_url)
        print(f'\rDownloaded OSM file: {osm_file}\n')
        downloadedOSM.add(osm_url)
        !ogr2ogr -where "highway in␣
 ↪('trunk','primary','secondary','tertiary','unclassified','residential')" -f␣
 ↪GeoJSON {osm_file}.roads.geojson {osm_file} lines
        print(f'Generated GeoJSON roads file: {osm_file}.roads.geojson\n')

    tasks_file = fetch_project_tasks(row['project_id'])
    print(f'Downloaded tasks file: {tasks_file}\n')
    tasks = gpd.read_file(tasks_file)
    print(f'Total number of tasks by {tasks.groupby("taskStatus")["taskId"].
 ↪count()}\n')
    roads = gpd.read_file(Path(reportsPath, f'{osm_file}.roads.geojson'))
    relevant_roads = gpd.sjoin(roads, tasks, how="inner",␣
 ↪predicate="intersects", rsuffix="_proj")
    relevant_roads.crs = "EPSG:4326"
    relevant_roads = relevant_roads.to_crs(crs=3857)
    print(f'Total length of roads: {relevant_roads.length.sum():.2f}\n')
    total_relevant_length = relevant_roads.length.sum()
    task_status_list = tasks.groupby('taskStatus')['taskStatus'].first()
    plotValues = []
    for task_status in task_status_list:
        print(f'Processing: {task_status}\n')
        joined = relevant_roads[relevant_roads['taskStatus'] == task_status]
        #print(f'\tFeatures count ({task_status}): {joined.count()}\n')
        print(f'\tFeatures count ({task_status}): {joined["taskId"].count()}\n')
        print(f'\tTotal length of roads ({task_status}): {joined.length.sum():.
 ↪2f}\n')
        plotValues.append(joined.length.sum()/total_relevant_length*100.0)

    fig, ax = plt.subplots()
    ax.set_title(f'Project {row["project_id"]}')
    patches, texts = plt.pie(plotValues, startangle=90, radius=1.2)
    labels = ['{0} - {1:1.2f} %'.format(i,j) for i,j in zip(task_status_list,␣
 ↪plotValues)]
    patches, labels, dummy = zip(*sorted(zip(patches, labels,␣
 ↪plotValues),key=lambda x: x[2],reverse=True))
```

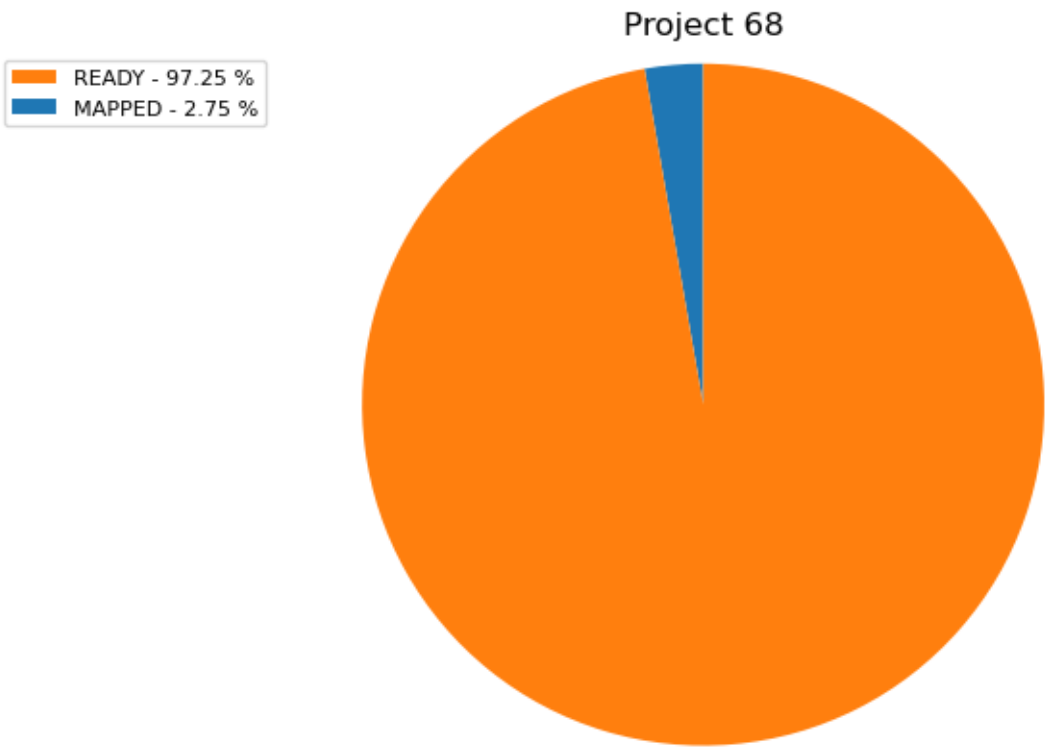
```
    plt.legend(patches, labels, loc='best', bbox_to_anchor=(-0.1, 1.
↪),fontsize=8)
```

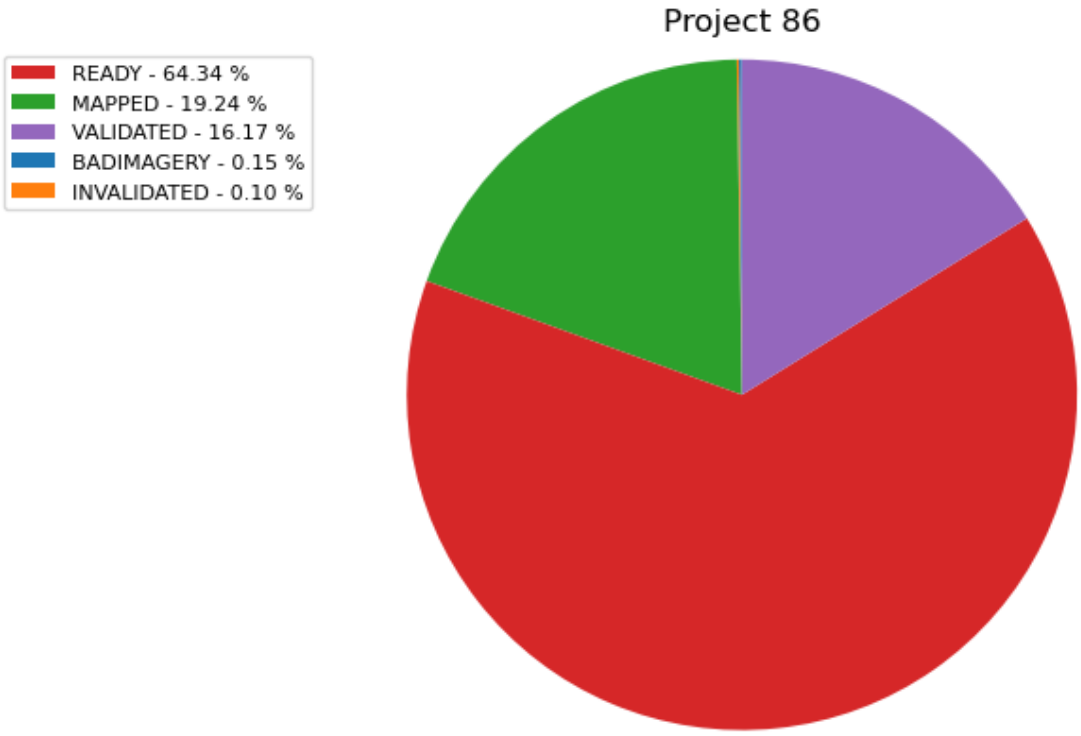
```
Downloading washington-latest.osm.pbf
Downloaded OSM file: C:\Users\wisam\Desktop\Report\washington-latest.osm.pbf

0…10…20…30…40…50…60…70…80…90…100 - done.
Generated GeoJSON roads file: C:\Users\wisam\Desktop\Report\washington-
latest.osm.pbf.roads.geojson

Downloaded tasks file: C:\Users\wisam\Desktop\Report\58_tasks.geojson

Total number of tasks by taskStatus
INVALIDATED               1
LOCKED_FOR_MAPPING        1
MAPPED                  751
READY                 31568
VALIDATED               112
Name: taskId, dtype: int64

Total length of roads: 26114191.27

Processing: INVALIDATED

        Features count (INVALIDATED): 4

        Total length of roads (INVALIDATED): 842.99

Processing: LOCKED_FOR_MAPPING

        Features count (LOCKED_FOR_MAPPING): 3

        Total length of roads (LOCKED_FOR_MAPPING): 558.47

Processing: MAPPED

        Features count (MAPPED): 2237

        Total length of roads (MAPPED): 722382.85

Processing: READY

        Features count (READY): 62621

        Total length of roads (READY): 25303102.84

Processing: VALIDATED
```

```
        Features count (VALIDATED): 240

        Total length of roads (VALIDATED): 87304.11

Downloaded tasks file: C:\Users\wisam\Desktop\Report\68_tasks.geojson

Total number of tasks by taskStatus
MAPPED      646
READY     12579
Name: taskId, dtype: int64

Total length of roads: 11626133.39

Processing: MAPPED

        Features count (MAPPED): 1081

        Total length of roads (MAPPED): 319912.37

Processing: READY

        Features count (READY): 22100

        Total length of roads (READY): 11306221.01

Downloading north-carolina-latest.osm.pbf
Downloaded OSM file: C:\Users\wisam\Desktop\Report\north-carolina-latest.osm.pbf

0…10…20…30…40…50…60…70…80…90…100 - done.
Generated GeoJSON roads file: C:\Users\wisam\Desktop\Report\north-carolina-
latest.osm.pbf.roads.geojson

Downloaded tasks file: C:\Users\wisam\Desktop\Report\86_tasks.geojson

Total number of tasks by taskStatus
BADIMAGERY       1
INVALIDATED      1
MAPPED         161
READY          437
VALIDATED       94
Name: taskId, dtype: int64

Total length of roads: 347578.82

Processing: BADIMAGERY

        Features count (BADIMAGERY): 3
```

```
        Total length of roads (BADIMAGERY): 514.84
Processing: INVALIDATED
        Features count (INVALIDATED): 1
        Total length of roads (INVALIDATED): 356.28
Processing: MAPPED
        Features count (MAPPED): 349
        Total length of roads (MAPPED): 66860.58
Processing: READY
        Features count (READY): 952
        Total length of roads (READY): 223629.70
Processing: VALIDATED
        Features count (VALIDATED): 238
        Total length of roads (VALIDATED): 56217.42
```




Project 68
READY - 97.25 %
MAPPED - 2.75 %


Project 86
READY - 64.34 %
MAPPED - 19.24 %
VALIDATED - 16.17 %
BADIMAGERY - 0.15 %
INVALIDATED - 0.10 %