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IDCE 376  
Lab 1

***Introduction***

The purpose of this assignment is to learn how to do basic setup and analysis tasks for spatial data in PostgreSQL, and how to connect those data to QGIS. I chose to focus on Baltimore, the largest city in Maryland, USA. Code chunks referred to in this document are available in code.txt.

***Methods***

*Data*

Data were downloaded from bbbike.org, by searching Baltimore to center the polygon, then resizing the polygon to get the boundary polygon as well. Coordinates: -76.902,39.141 x -76.337,39.428

*Data Cleaning and Processing*

Open Street Maps (OSM) data were downloaded from the BBBike website in pbf format. This file was then imported into a posies-enabled PostgreSQL database using the osm2psql tool. A GitHub repo was created and connected to a local git project using git bash.

Following basic data exploration, a new table was created and parks with valid names were added. A table was also created and the city boundaries polygon was added.

A connection was made in QGIS with the database, and the greenspaces layer was clipped to the extent of the Baltimore boundary layer using the ‘Clip’ tool. Next, the ‘dissolve’ tool was used with name as the dissolve field. This created one entry for each park, rather than one entry for each polygon. The resulting vector layer was then exported to the database using the QGIS ‘Export to PostgreSQL’ tool.

In PostgreSQL, the area of the new polygons was re-calculated.

*Analysis*

With the data clipped to the correct extent and fully cleaned, analysis could be done. Summary statistics were calculated, as well as the 5 largest and 5 smallest parks.

***Results***

Table 1 : Summary statistics of parks

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Number of Parks | Total Park Area (sq km) | Average Park Area (sq m) | Largest Park Area (sq m) | Smallest Park Area (sq m) |
| 333 | 18.31 | 54,998 | 4,043,255 | 50 |

Table 2: Five Largest Parks

|  |  |
| --- | --- |
| Name | Area (sq m) |
| Gwynns Falls / Leakin Park | 4,043,255 |
| Druid Hill Park | 2,455,855 |
| Herring Run Park | 1,843,798 |
| Clifton Park | 1,039,146 |
| Cylburn Arboretum | 931,226 |

Table 3: Five Smallest Parks

|  |  |
| --- | --- |
| Name | Area (sq m) |
| Arundel Village Park | 50 |
| Jones Falls Greenway | 70 |
| Boone Street Park | 102 |
| Saint Helena Park | 114 |
| Miles Avenue Park | 139 |

Figure 1: Map of Baltimore Green Spaces, Highlighting 5 largest parks.

A map of baltimore green spaces

Description automatically generated