Learning about Wellington with open data and open source tools

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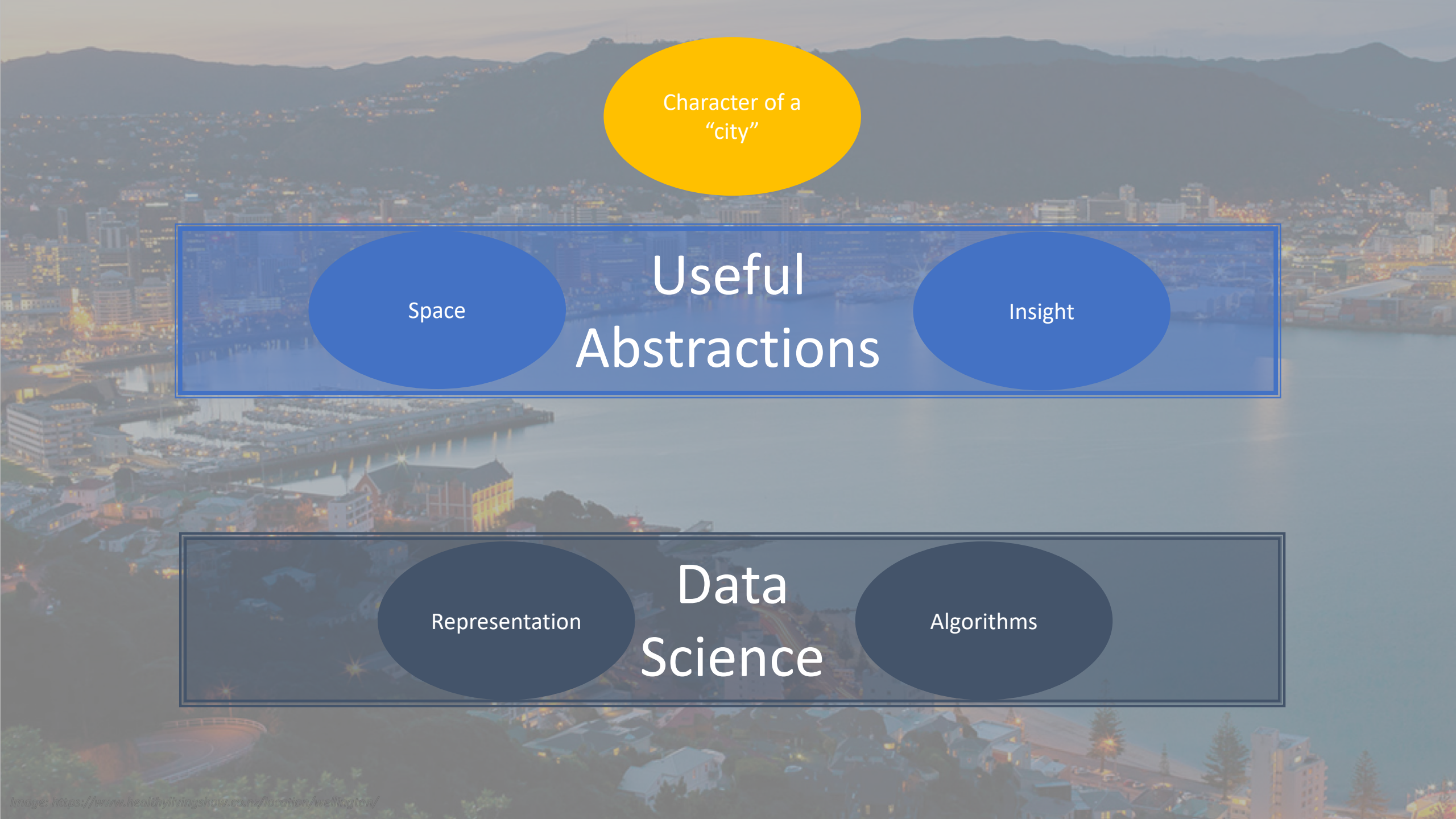
(Shriv)

Image: https://www.healthylivingshow.co.nz/location/wellington/



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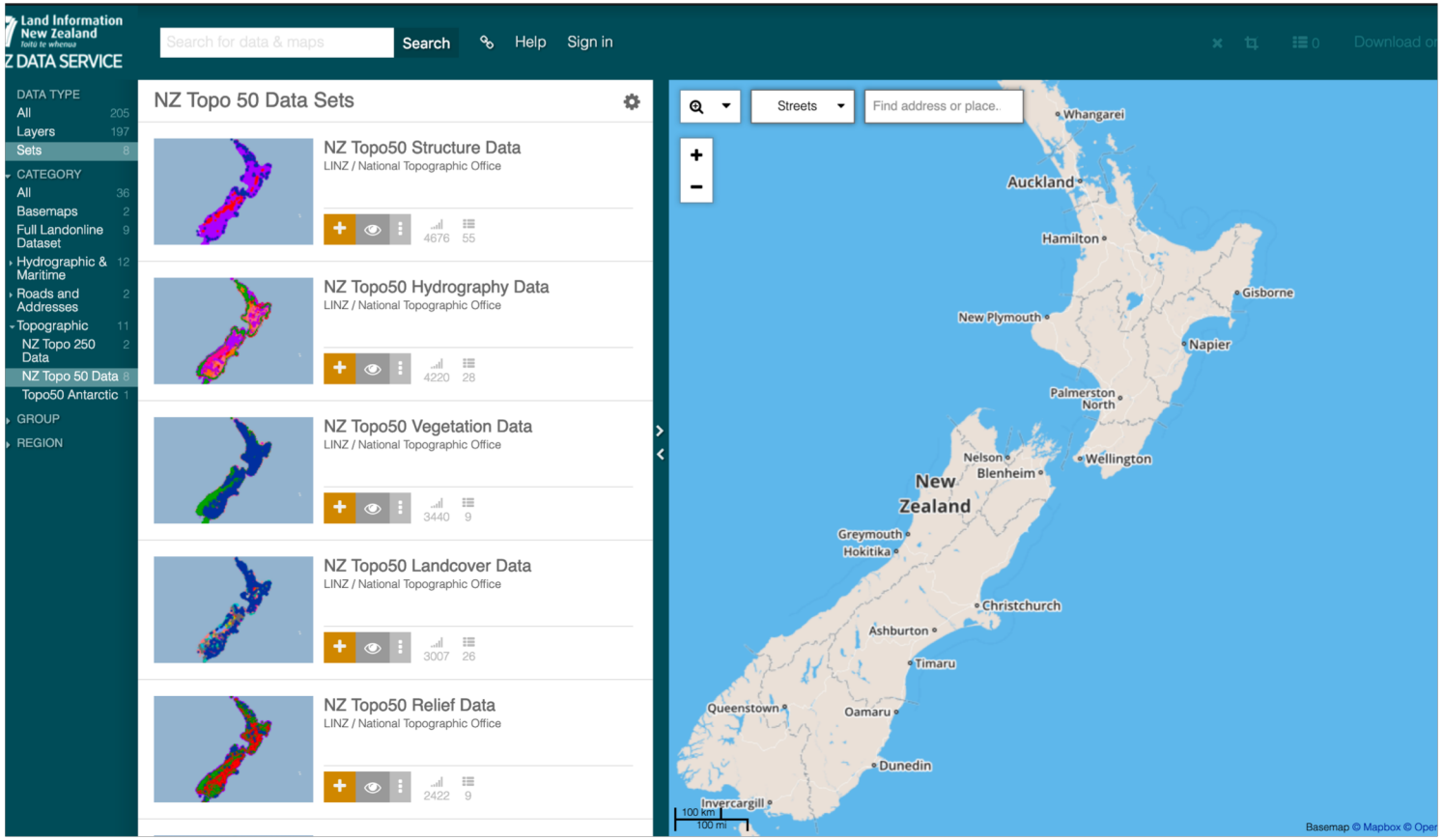
Spatial Data Science
with
Open Data
and
Open Source tools

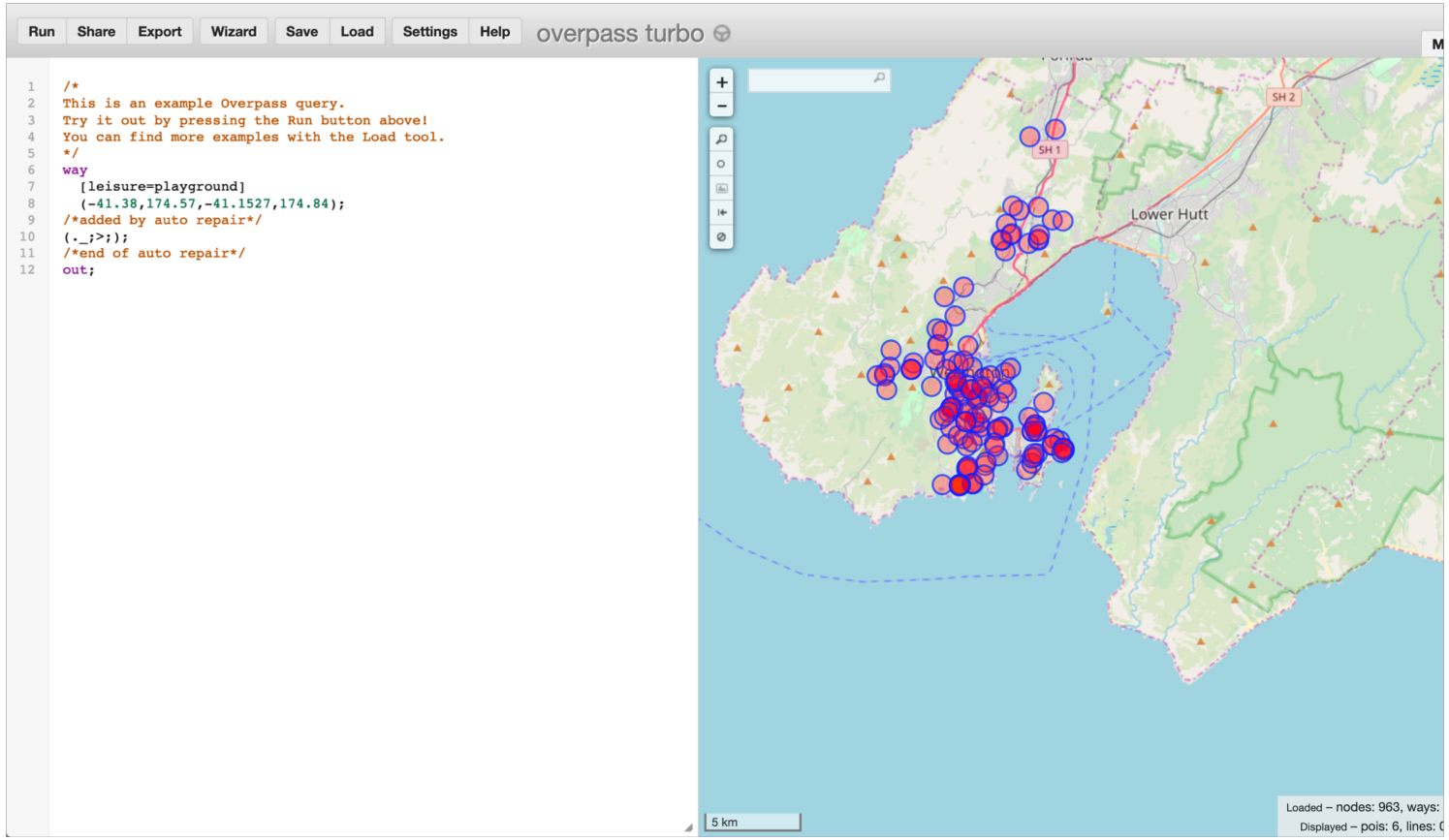


Land Information NZ

- Land parcels
- Building polygons
- Surfaces
- Multiple format downloads (zip, gdb etc.)

Wellington City Council

- Searchable interface for available spatial data
- Multiple format downloads (zip, gdb etc.)



OpenStreetMap

- An *open source* map
- Has API and query language
- Wrappers in Python

OSMNX for street networks
Retrieve, model, analyse, and visualize street networks from OpenStreetMap

PANDANA implements more general ***aggregations along the street network*** (or any network). [..] can be used to ***characterize the local neighbourhood*** around each street intersection.

PROJECT JUPYTER exists to develop open-source software, open-standards, and services for ***interactive computing*** across dozens of programming languages.

Open Source Tools

- Osmnx
- Pandana
- Jupyter

...

- *Matplotlib*
- *Geopandas*
- *Folium*

python™

Questions of (city) character

- Do I have the amenities I need nearby? Can I access them in more than one way?

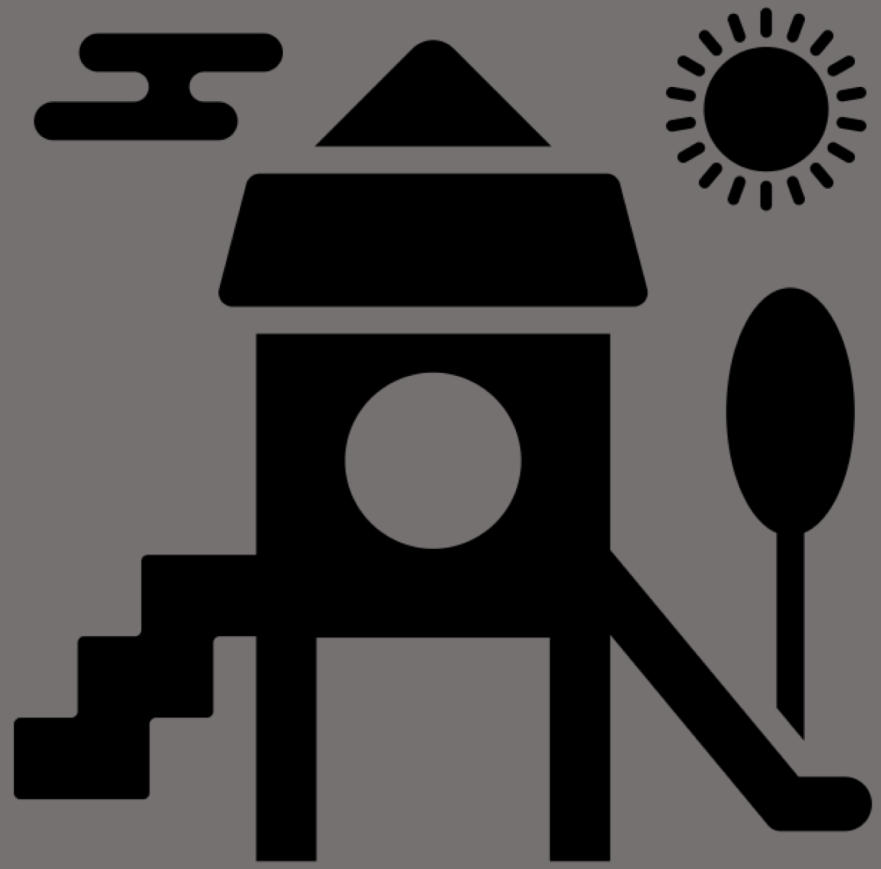
- Do my journeys allow for an active transport option?

Run Work by Adrien Coquet from the Noun Project
Businessman by Alexander Wiefel from the Noun Project
Late to Work on a Bicycle by Gan Khoon Lay from the Noun Project
path by Magicon from the Noun Project

Playground accessibility as proxy for walkability

- *Are playgrounds in Wellington accessible by foot?*

- *How prohibitive is Wellington's topology on pedestrian accessibility to playgrounds?*

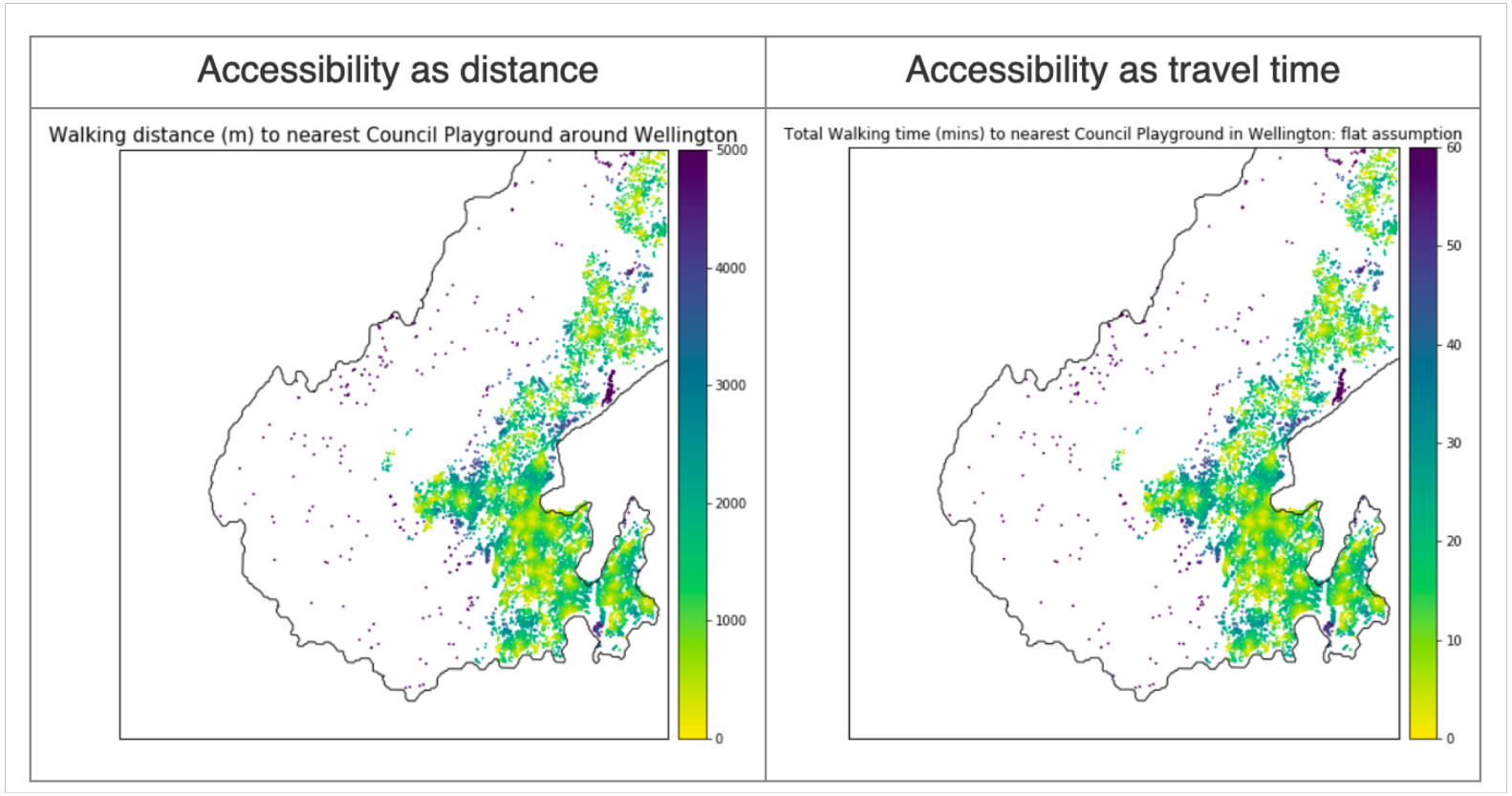


Playground by Vectors Market from the Noun Project

Accessibility to playgrounds

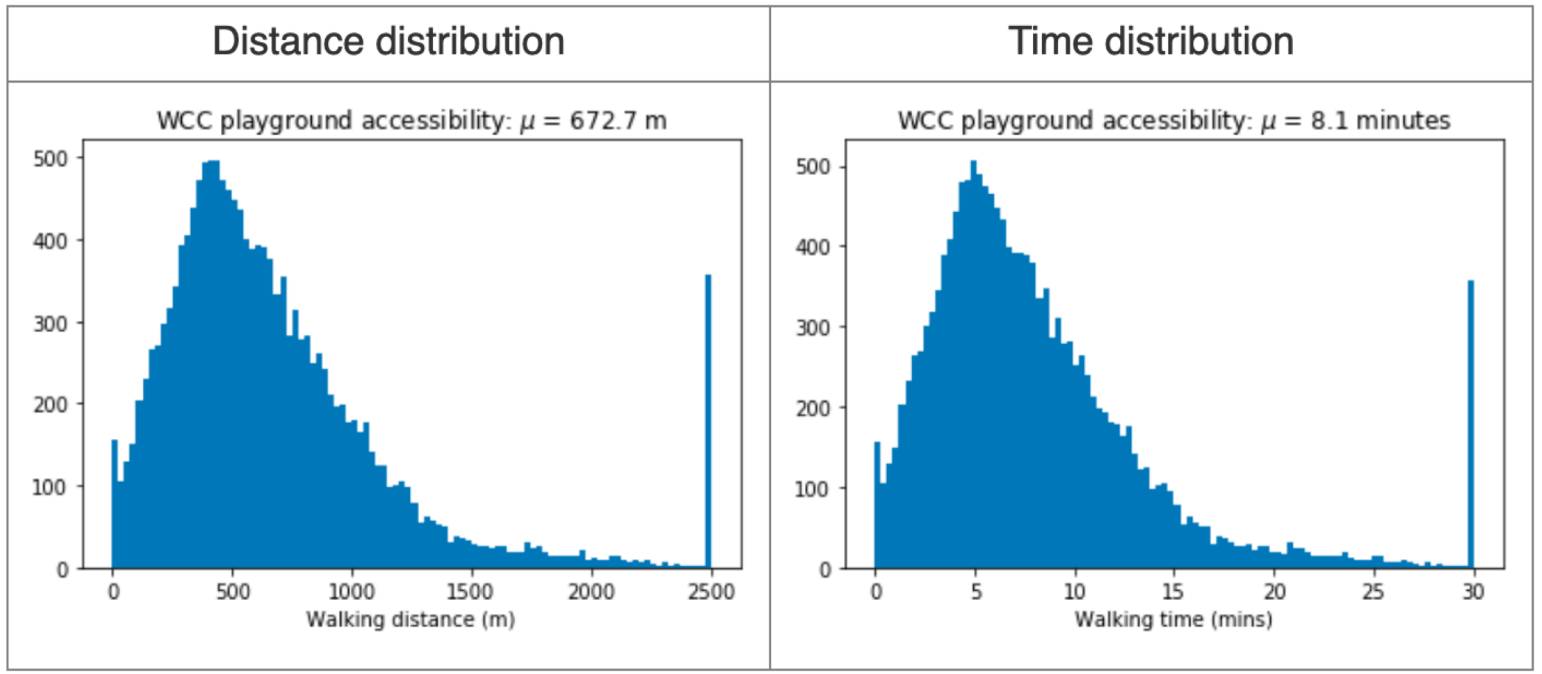
- We can calculate accessibility from any street in Wellington to the nearest playground with:
  - Walking distance
  - Travel time

- Here, we're looking at total distances and travel times - to and from a playground.

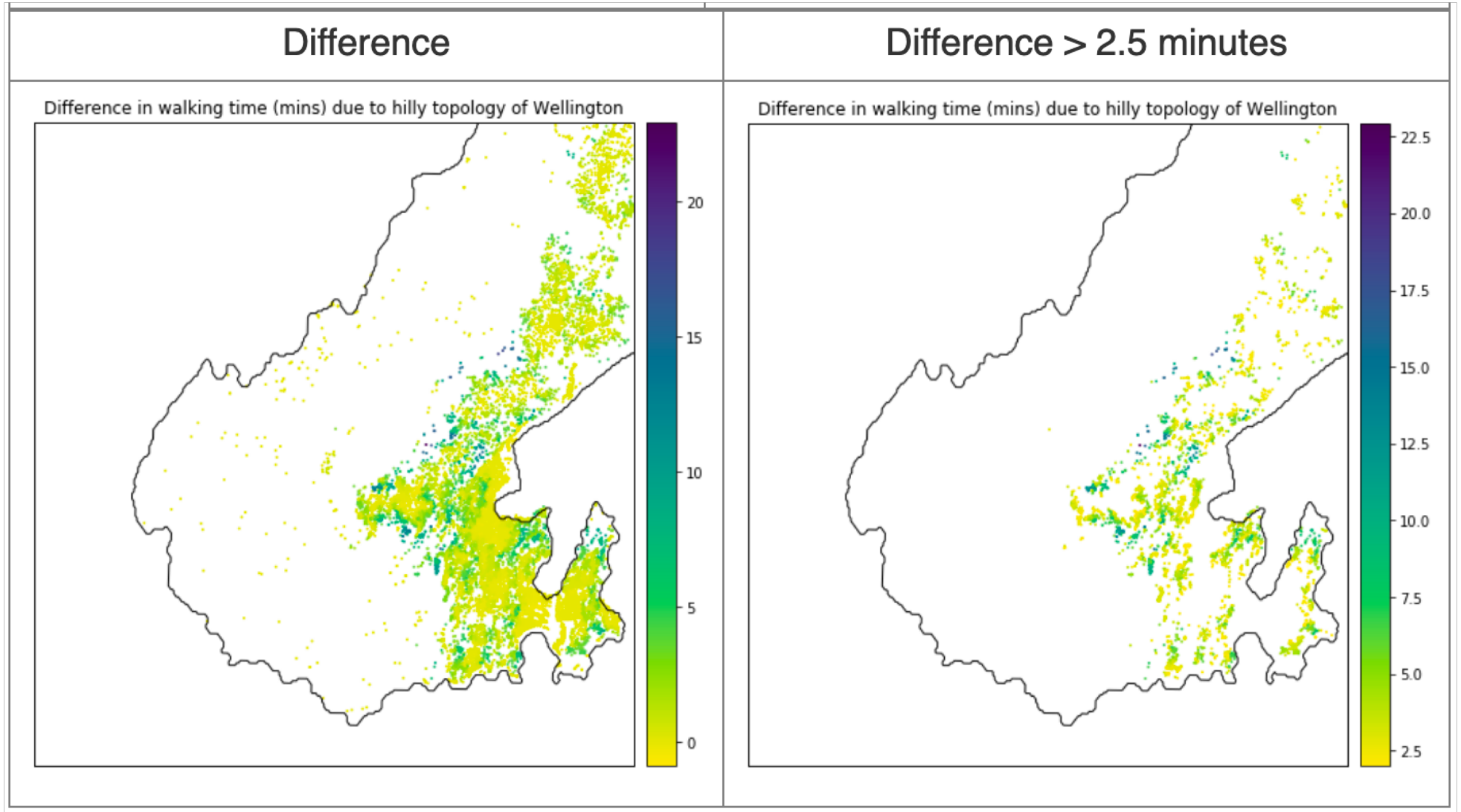


Accessibility to playgrounds

- On average, it appears that a typical playground is accessible within 10 minutes.
  - Assuming flat ground walking speed of 5km/h
  - One way trip values
- But, the distribution is quite wide!
- Some areas are more than 30 minutes away – though most are industrial areas like Kaiwharawhara, Ngauranga and Wellington Airport.

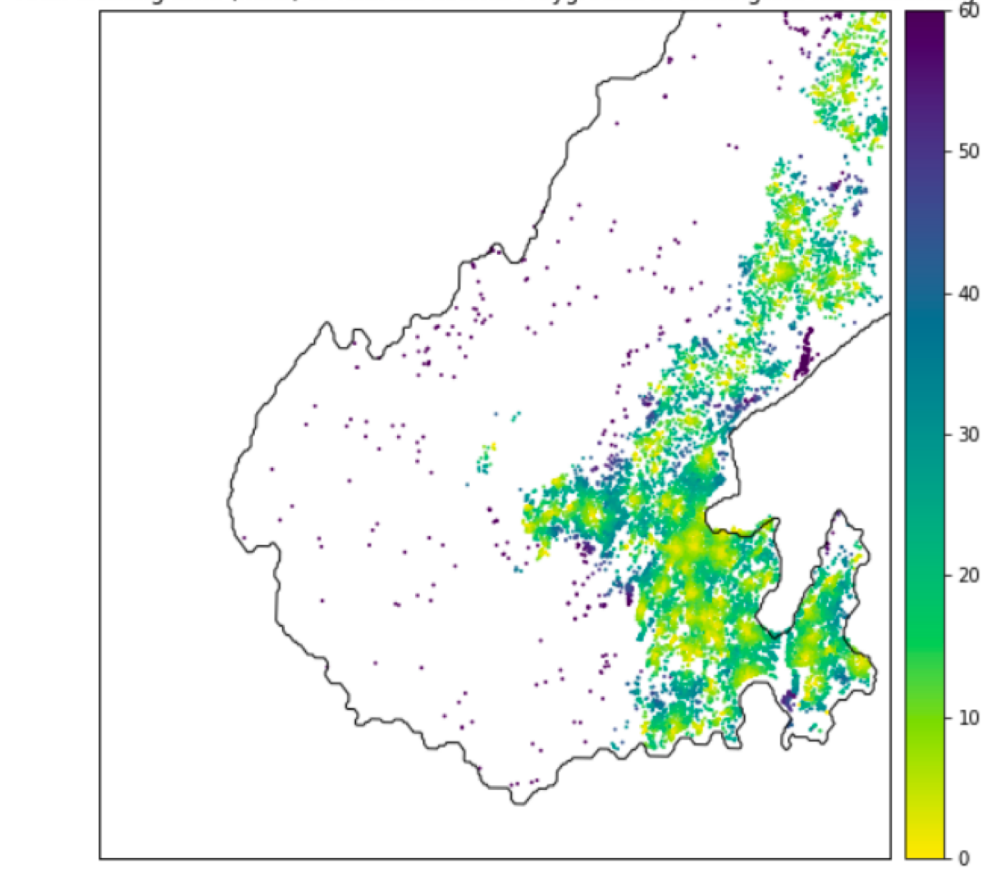


Impact of hills on travel time

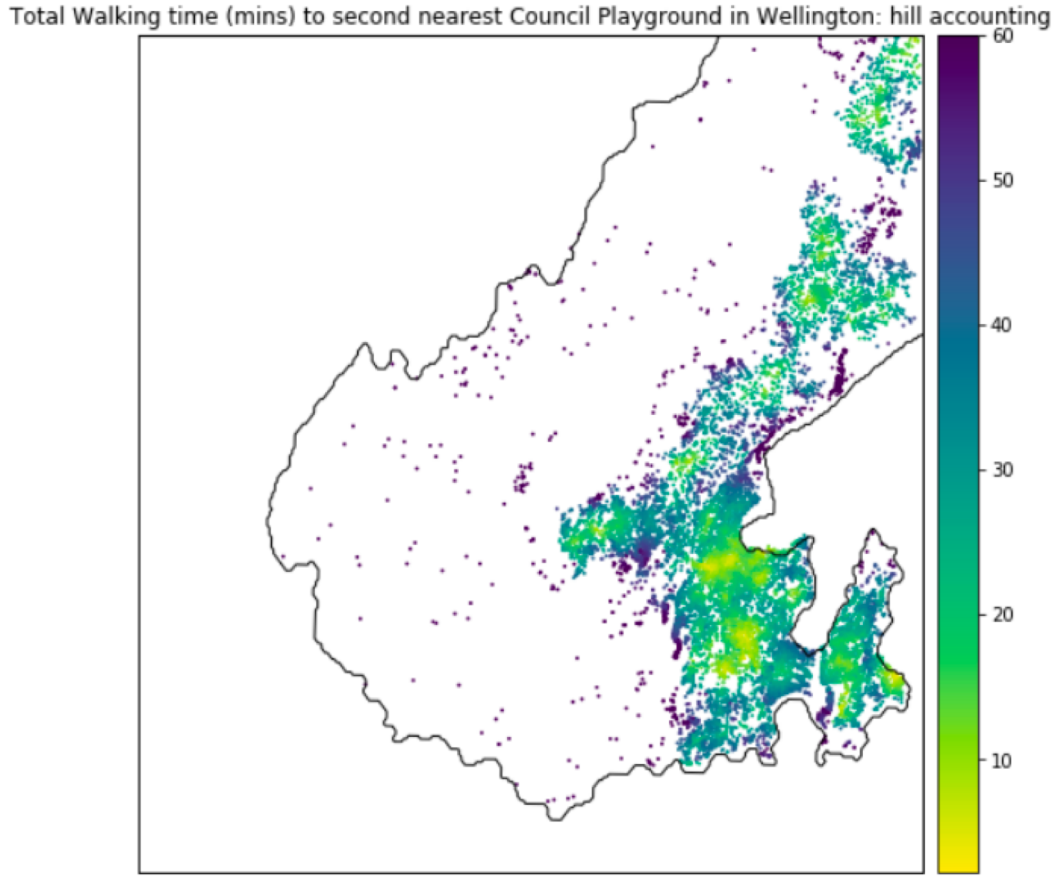


Travel time to different options

Nearest playground



Second nearest playground



Resources

- *Write up as a blog post*
- *Code to run the analysis*
- *Work that inspired me*