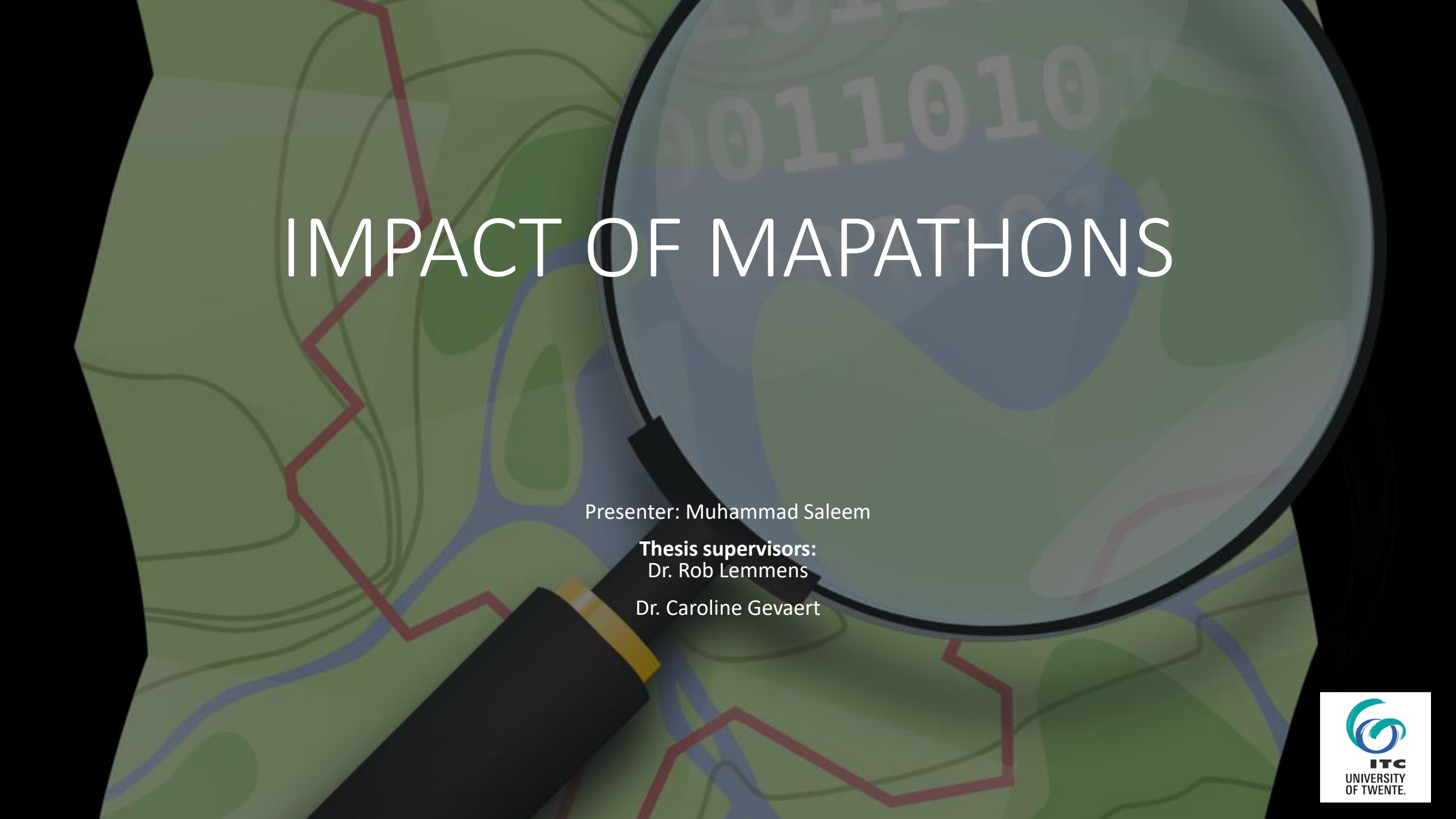


IMPACT OF MAPATHONS

Presenter: Muhammad Saleem

Thesis supervisors:
Dr. Rob Lemmens

Dr. Caroline Gevaert

ITC
UNIVERSITY
OF TWENTE.

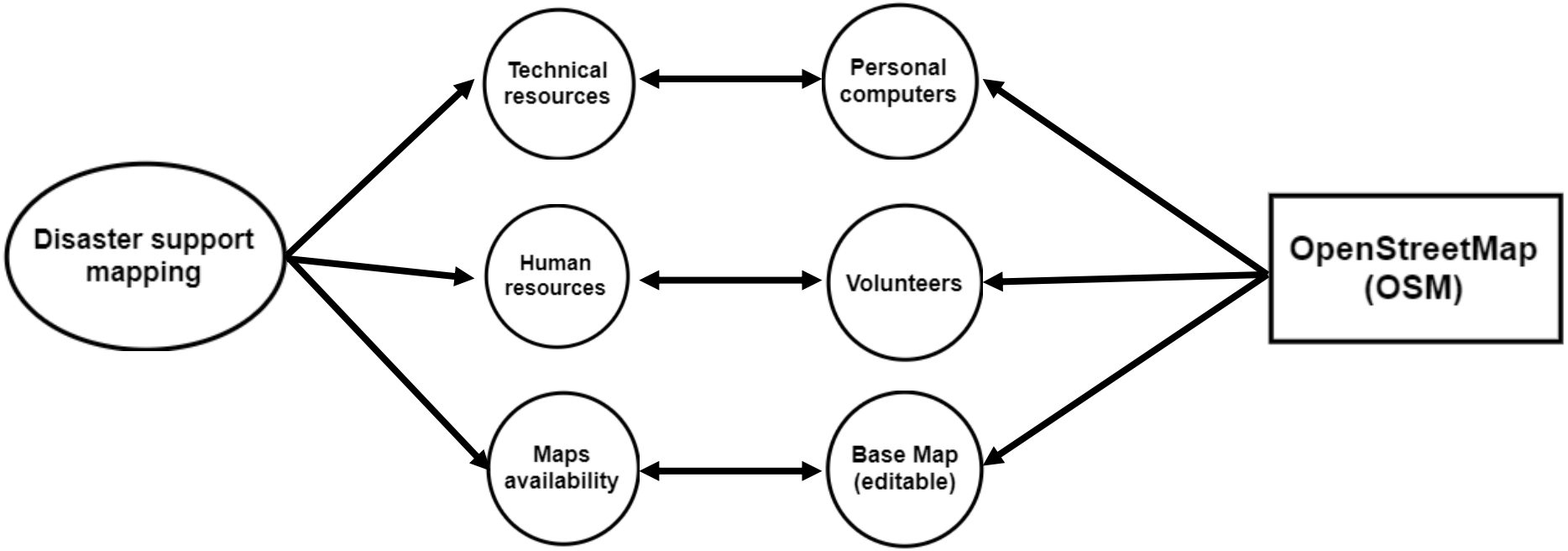
Introduction

- Spatial data is necessity for humanitarian response
- Numbers are very important
  - Number of people
  - Number of houses
  - Number of hospitals etc.
- How to reach hospitals

Why map?

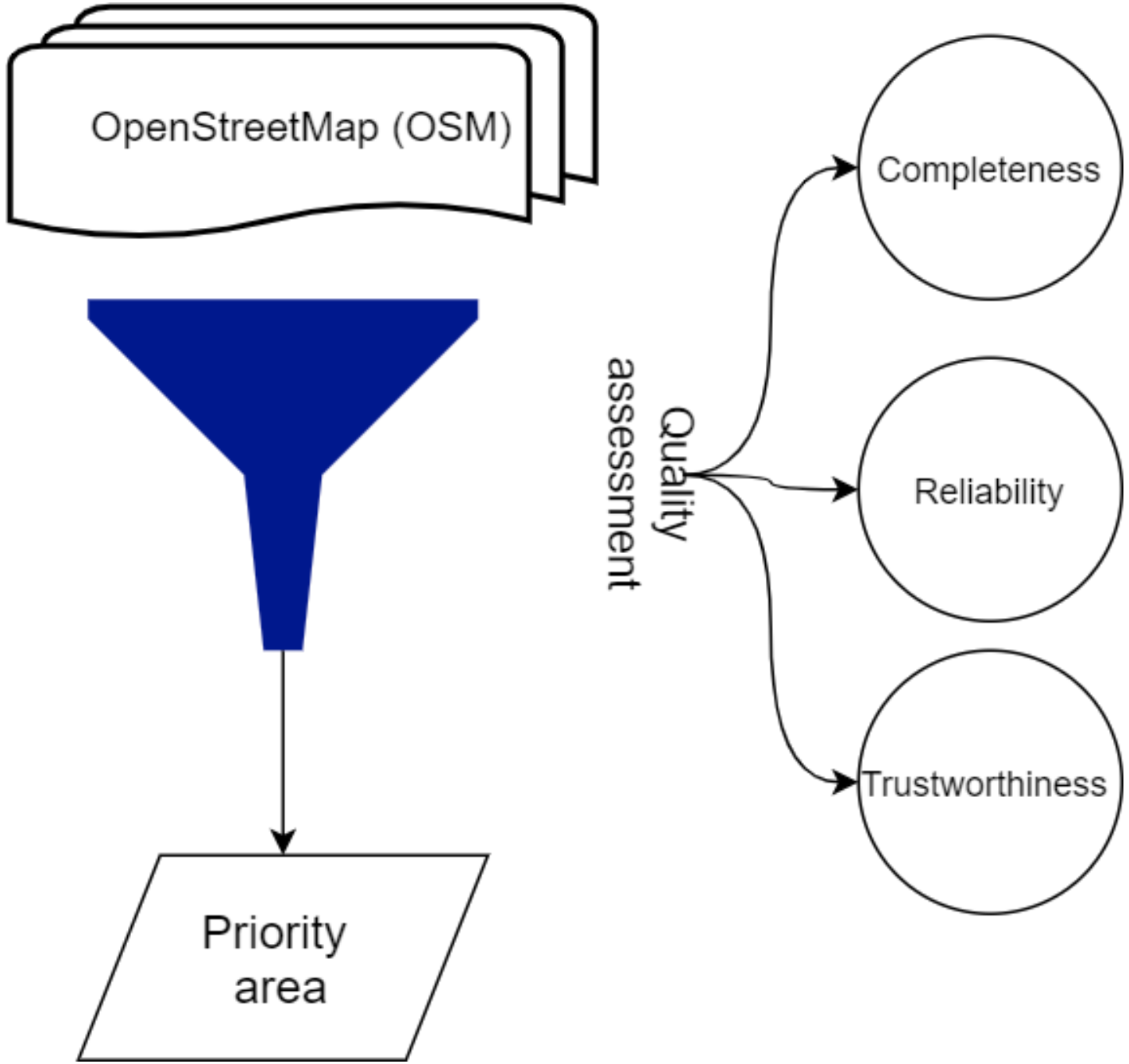
- Hundreds of requests by governmental organization
- After disaster requests
- Enthusiastic mappers
- Risk preparedness

Why OSM is important ?



What is missing?

- Purposeful mapping for humanitarian purposes
- Has an impact both physical and social
- Self-sufficient platform

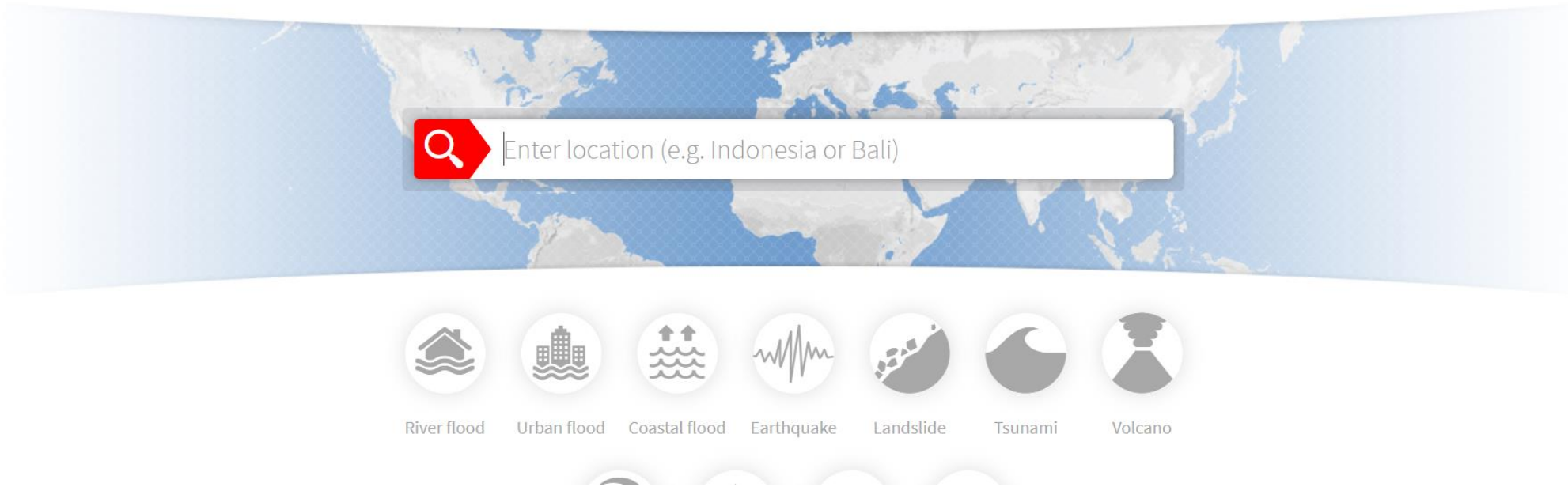

OpenStreetMap (OSM)
Quality assessment
Completeness
Reliability
Trustworthiness
Priority area

Mapathon

- 2 study area
- Divided into 2 groups

ThinkHazard!

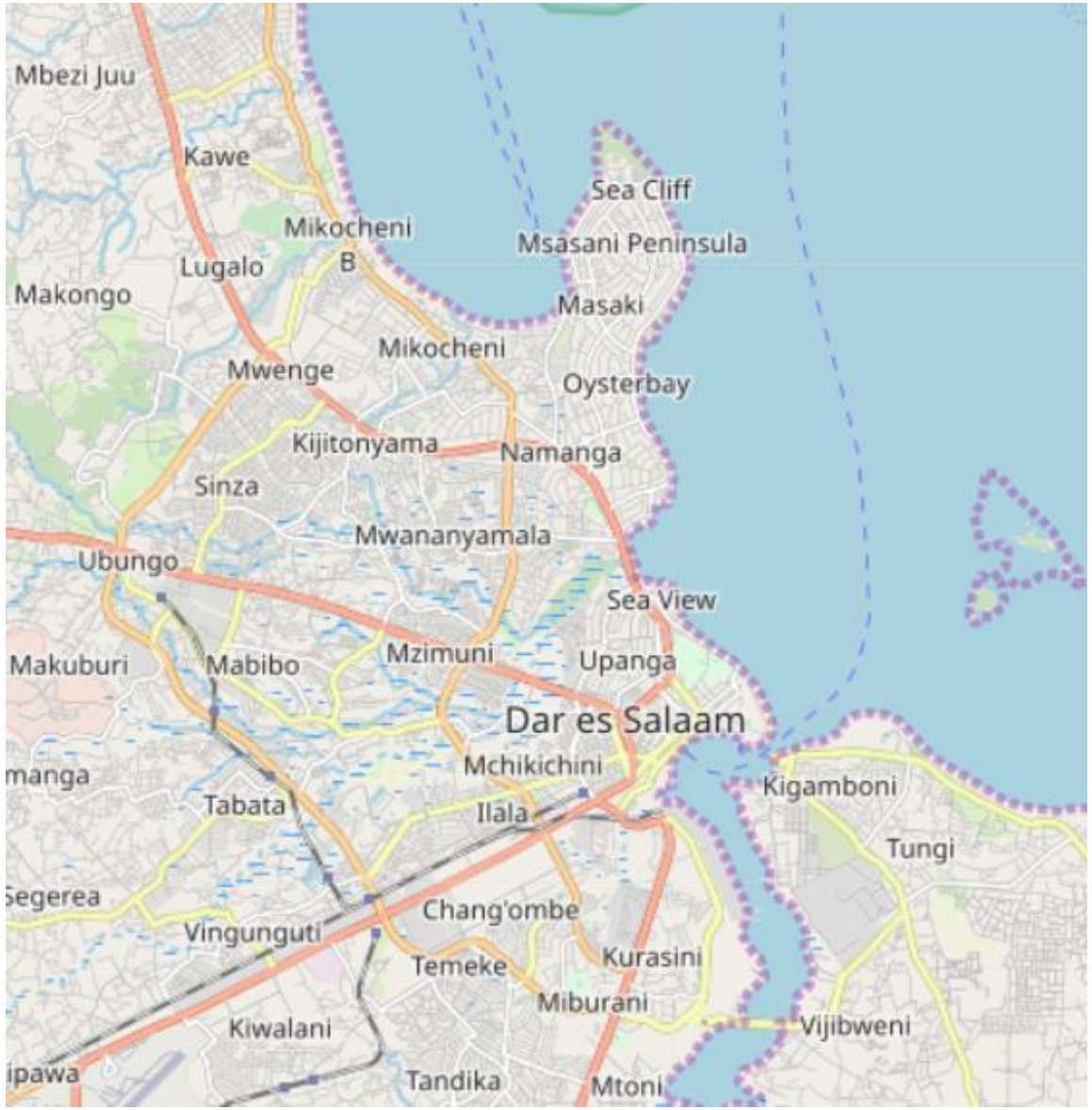
Identify natural hazards in your project area
and understand how to reduce their impact



Dar es Salaam, Tanzania

Background

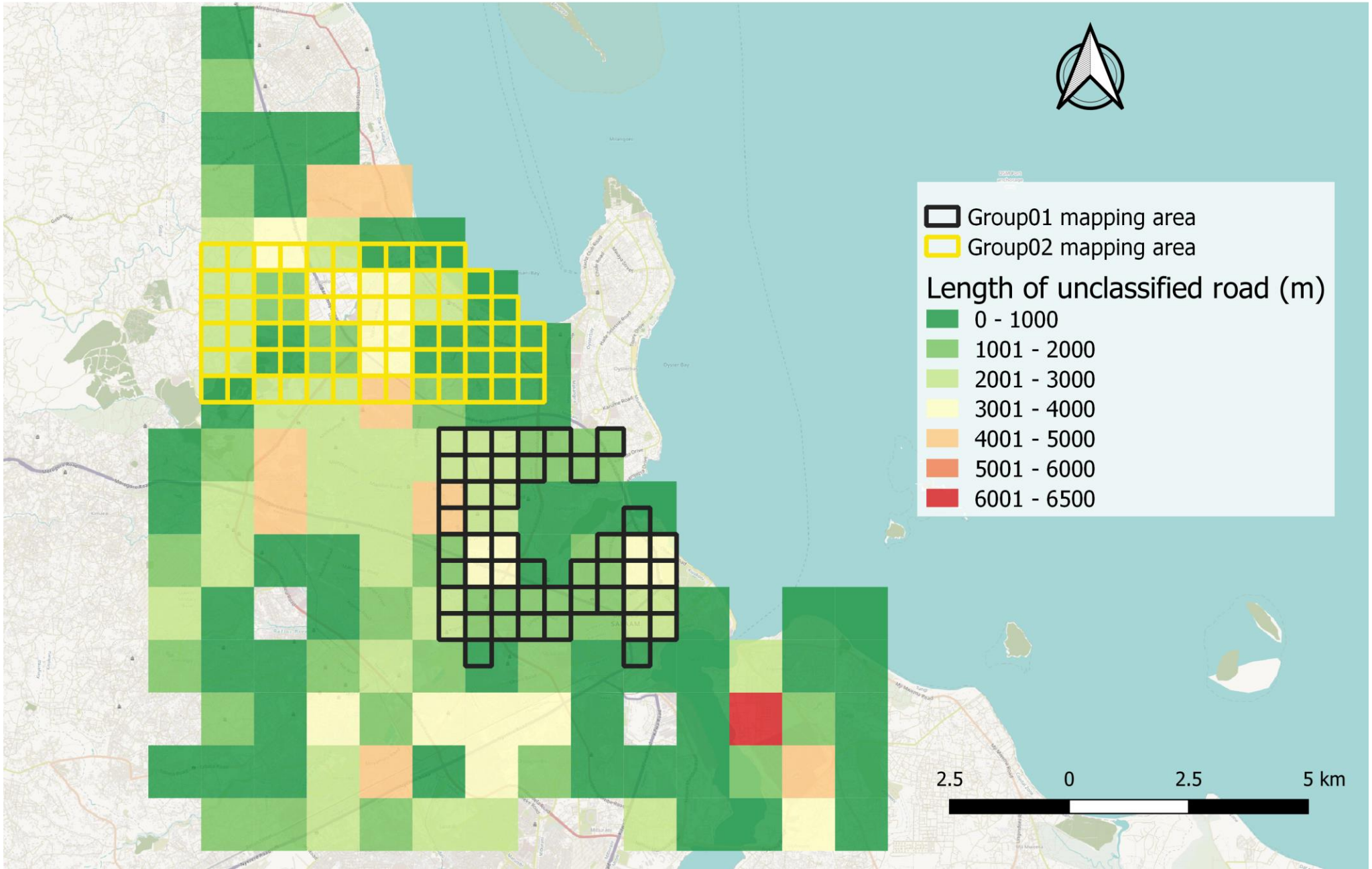
- Prone to floods
- In May 2019, uninterrupted rainfall caused serious flooding in Dar es Salaam, displacing over 1,200 households, destroying roads and bridges, and sweeping away 1560 dwellings (World Bank, 2019)

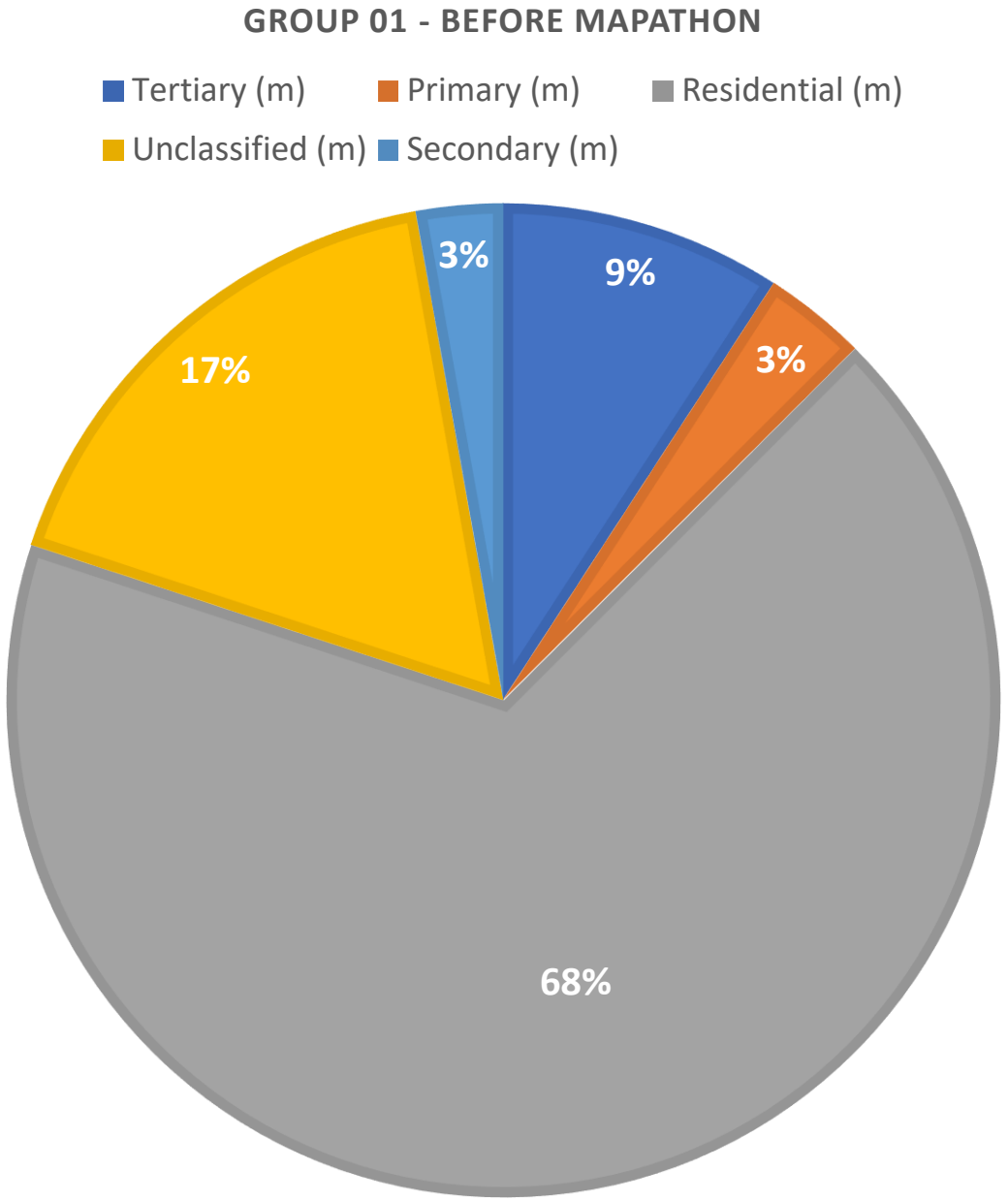


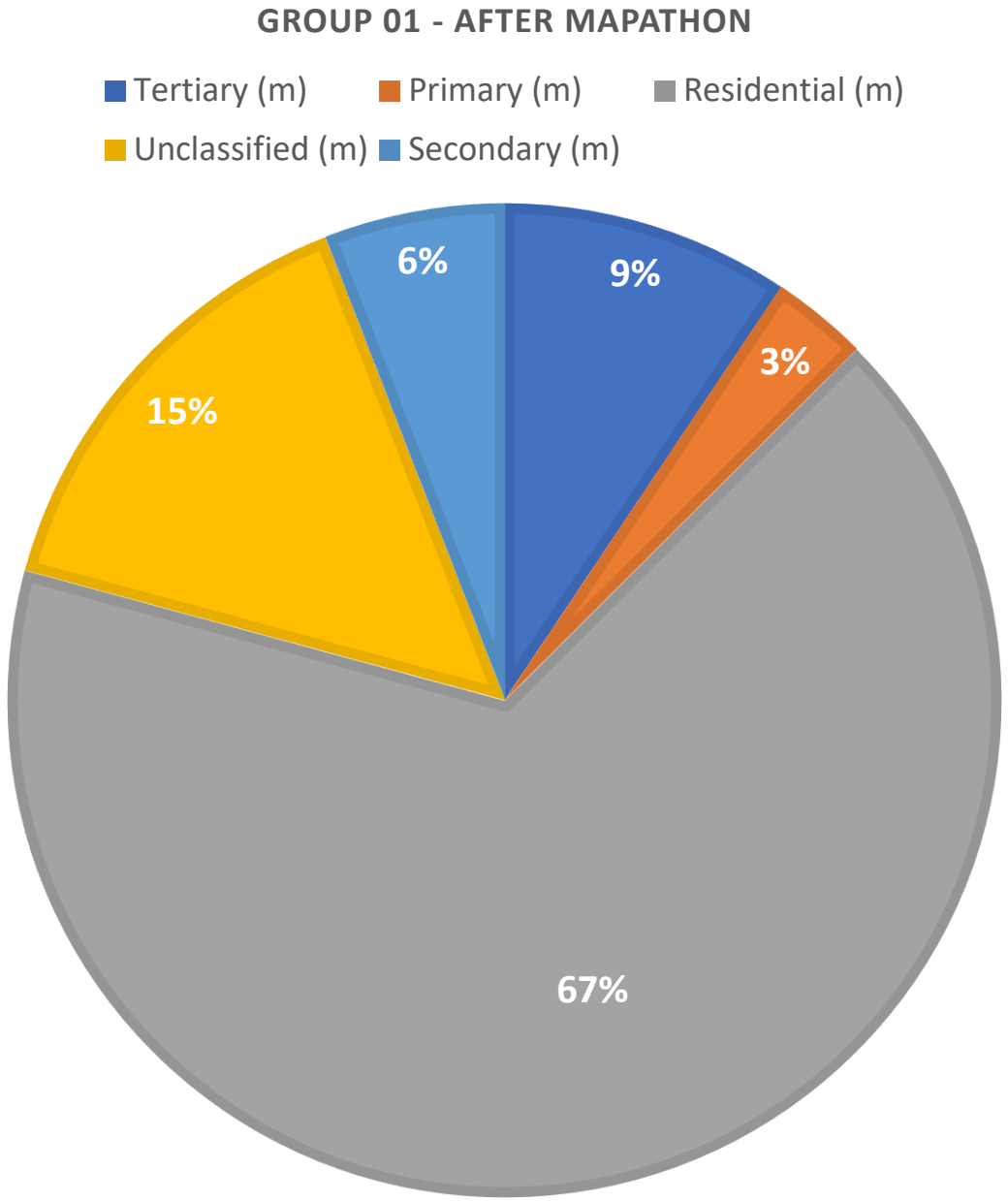
What we did ?

- Map the highway tags in hierarchical order
- Better reliable routing to and from hospitals and shelters

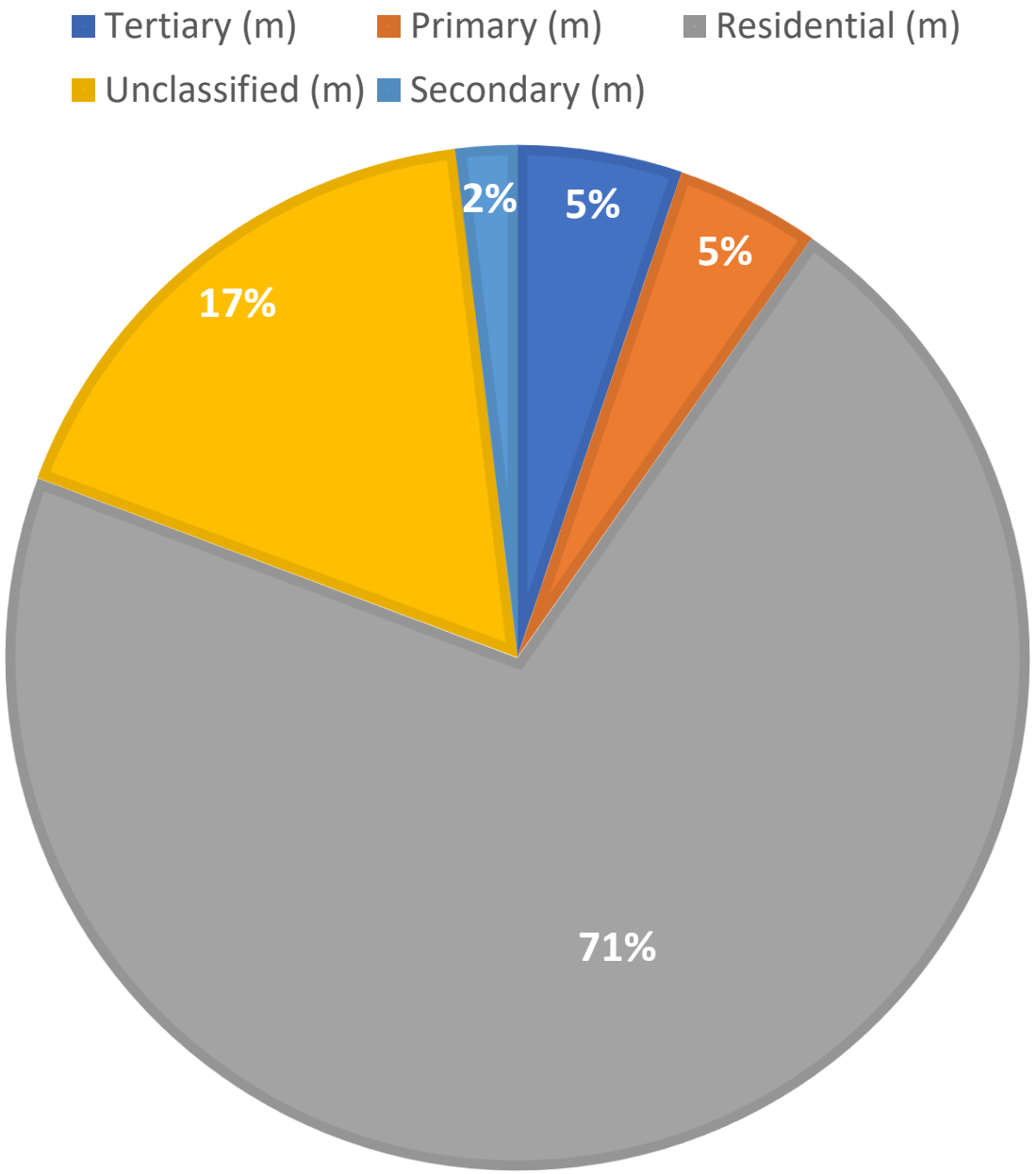
Quality index with respect to "unclassified roads" before mapathon



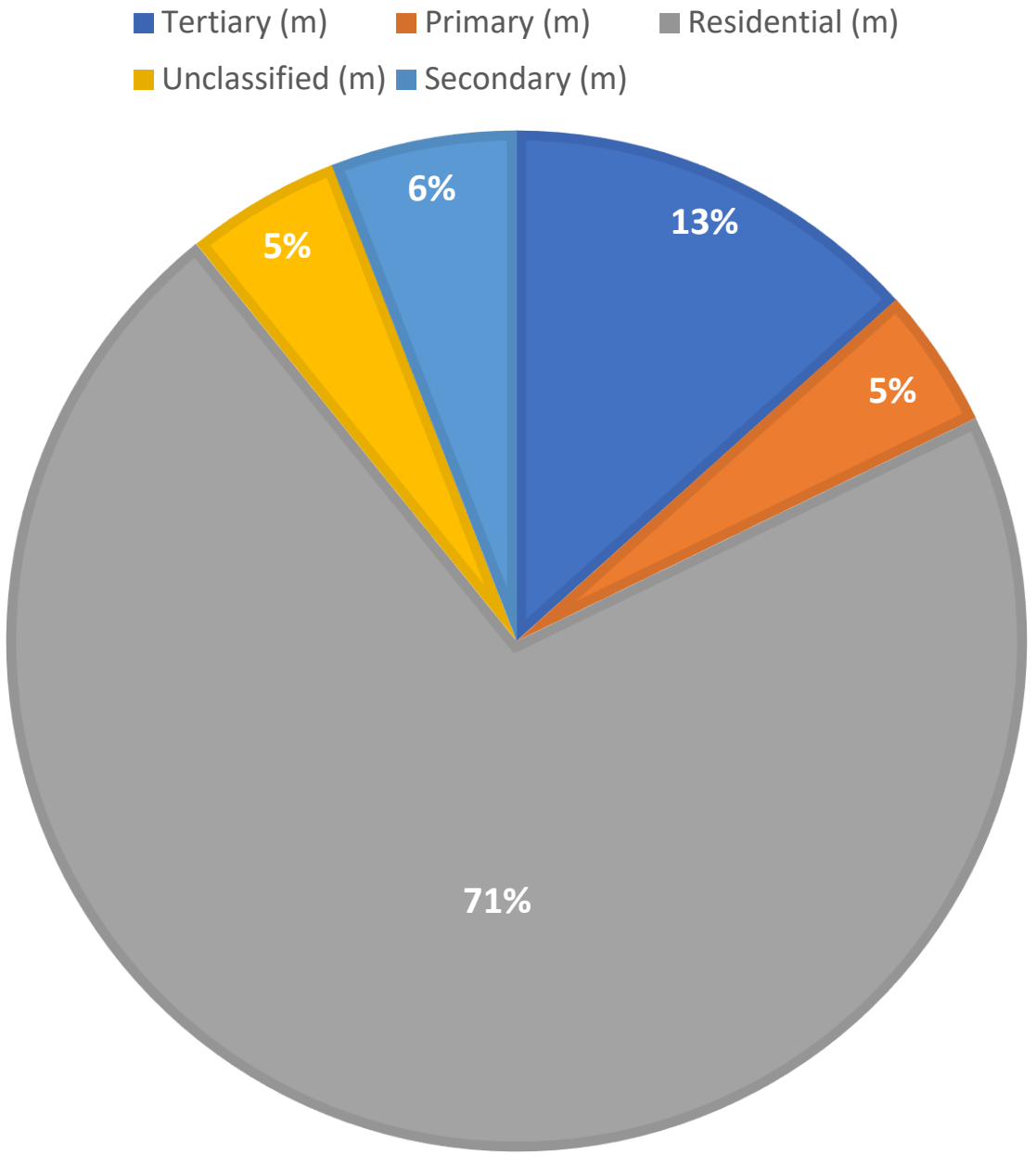

GROUP 01 - BEFORE MAPATHON
Tertiary (m)
Primary (m)
Residential (m)
Unclassified (m)
Secondary (m)
9%
3%
68%
17%
3%


GROUP 01 - AFTER MAPATHON
Tertiary (m)
Primary (m)
Residential (m)
Unclassified (m)
Secondary (m)
9%
3%
67%
15%
6%

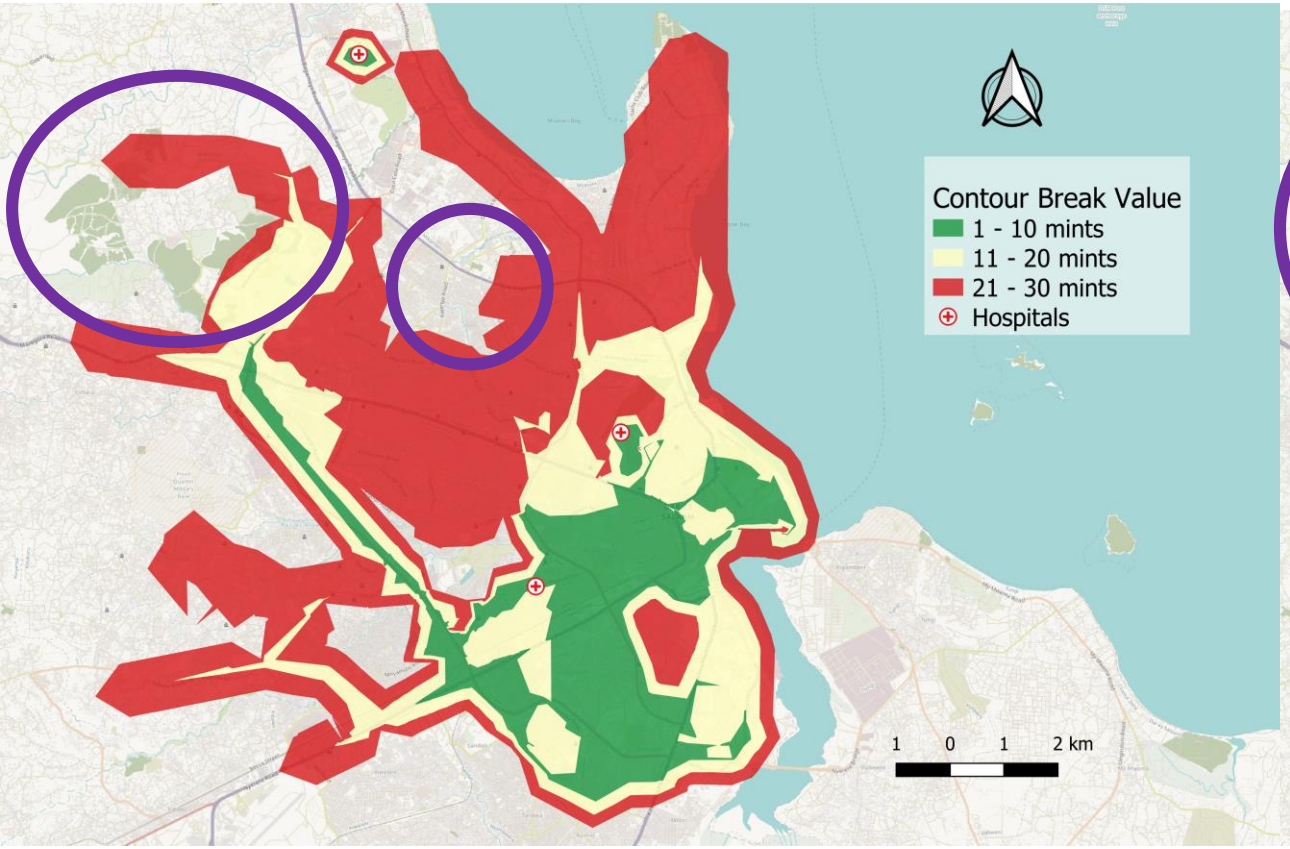
GROUP 02 - BEFORE MAPATHON



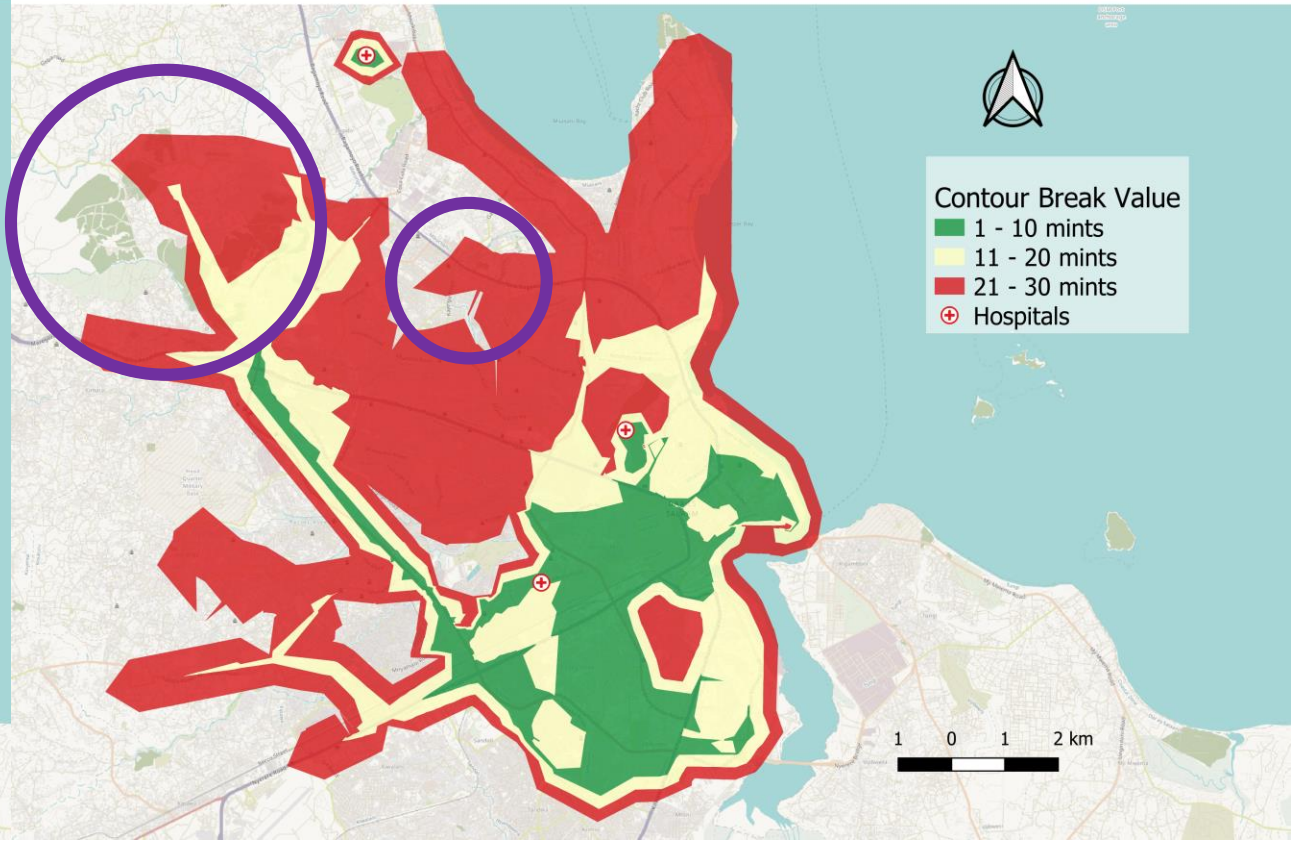
GROUP 02 - AFTER MAPATHON



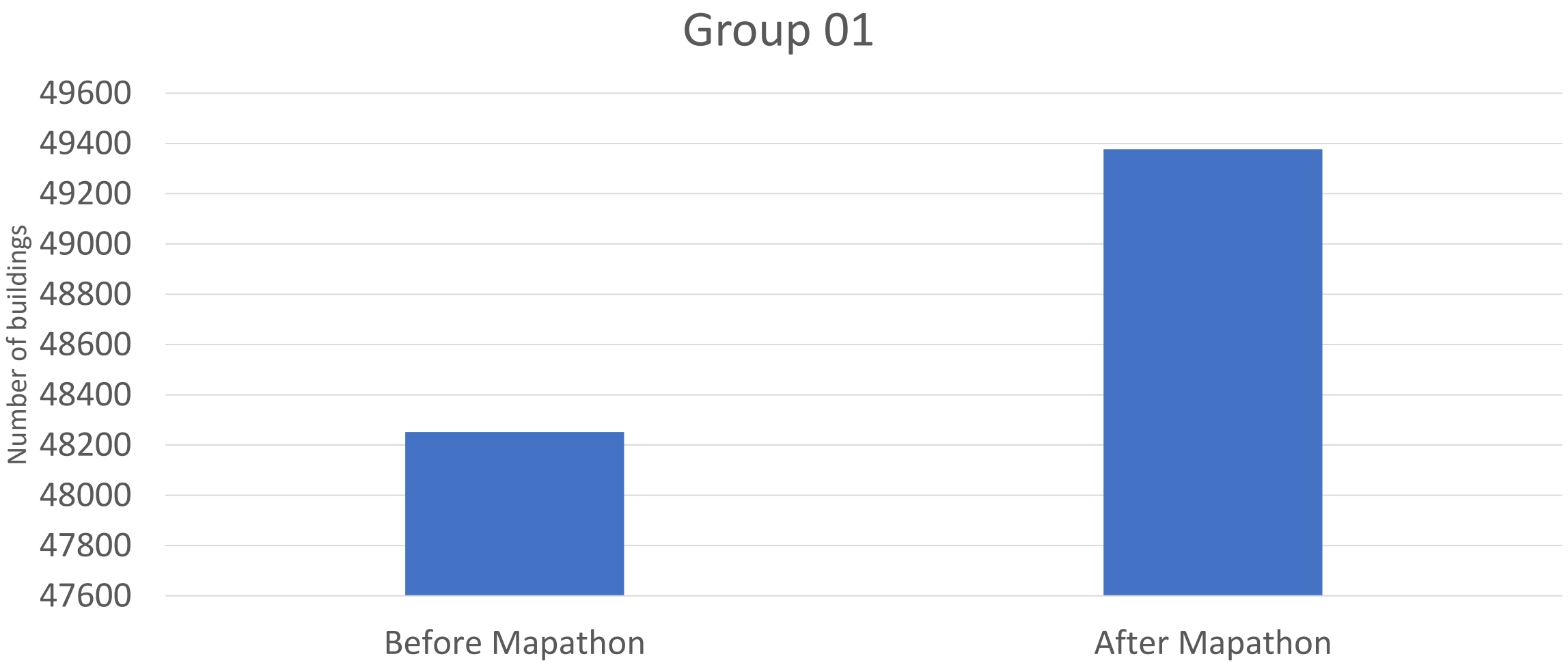
Service area analysis before Mapathon for 3 hospital



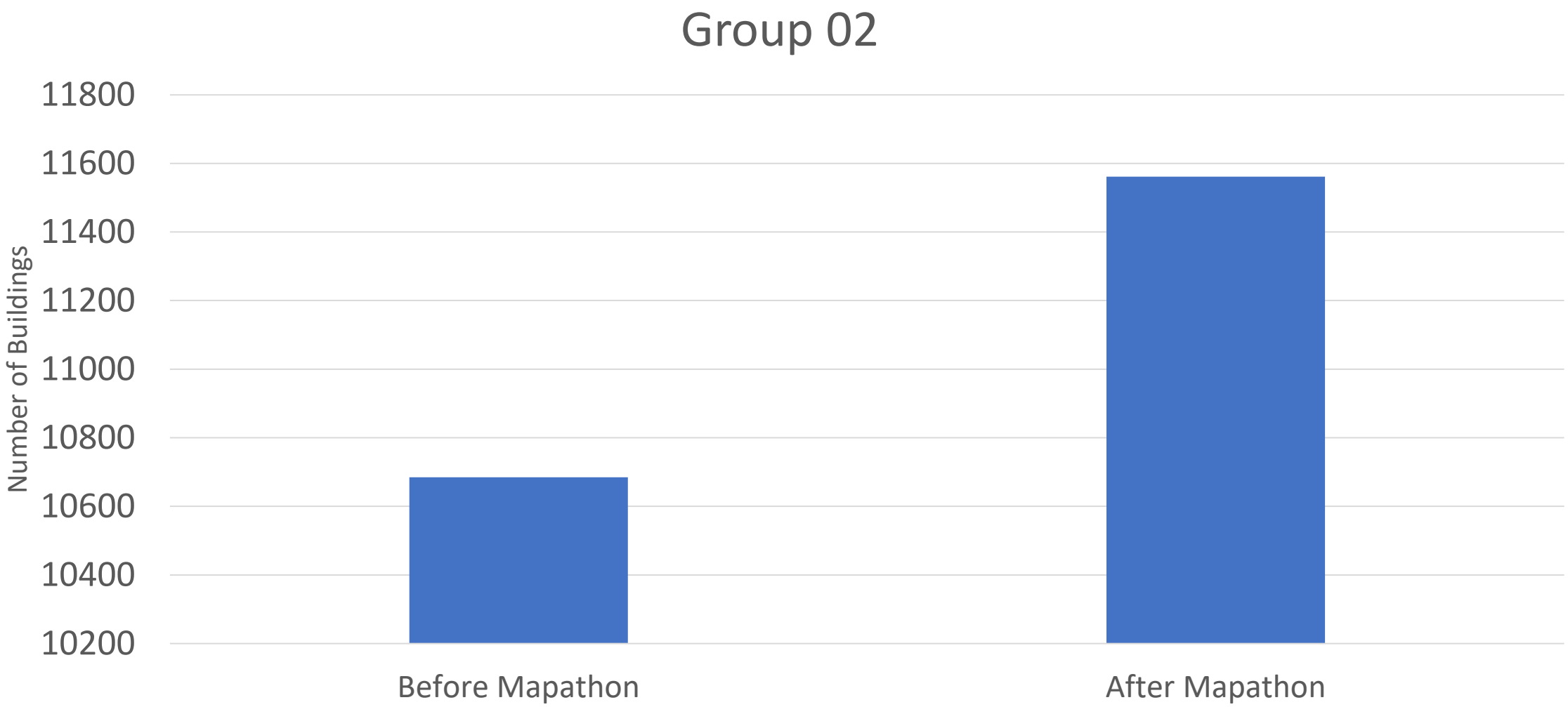
Service area analysis after Mapathon for 3 hospital



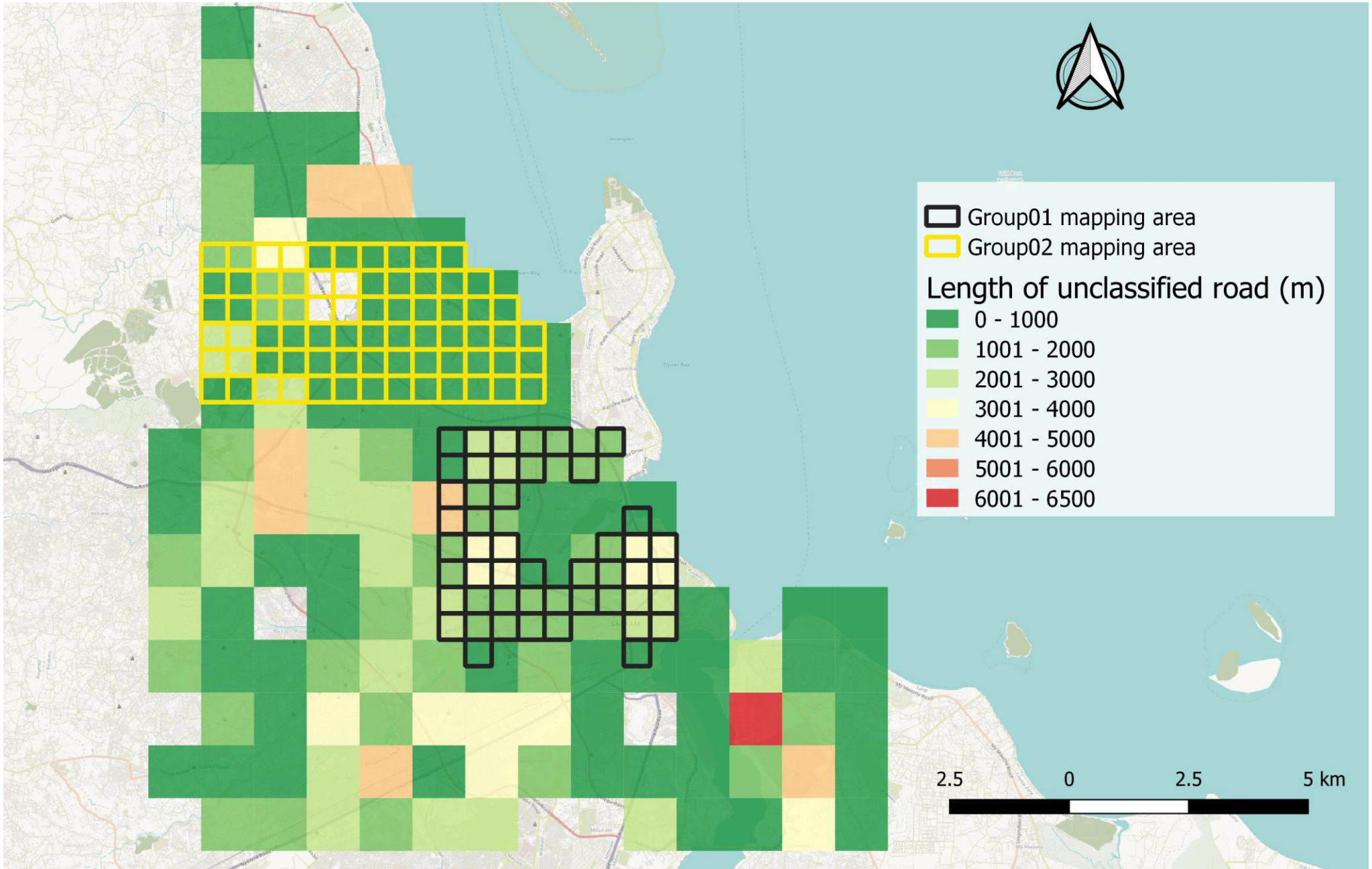
Number of buildings that have reliable accessibility information.



Number of buildings that have reliable accessibility information.

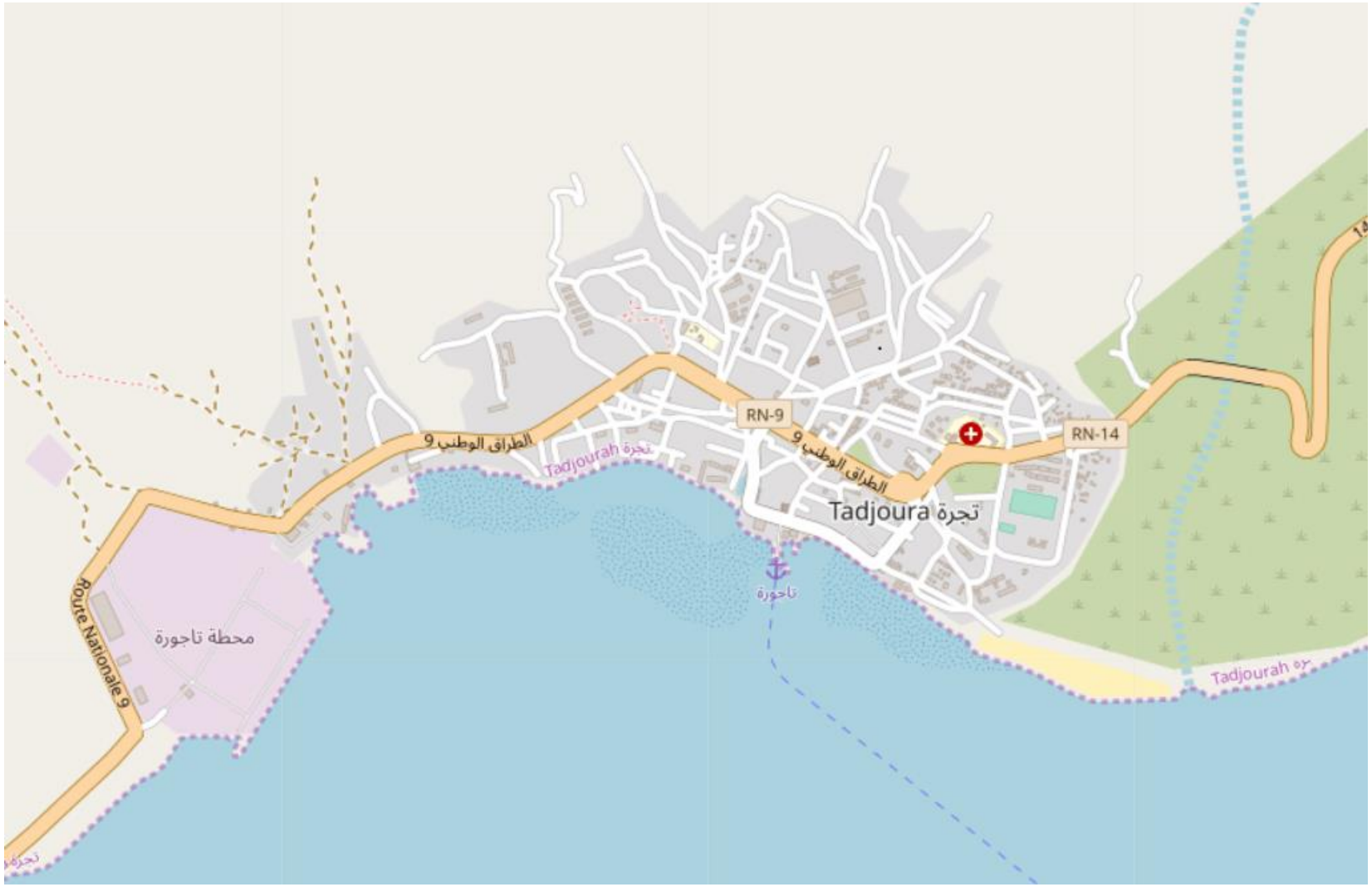


Quality index with respect to "unclassified roads" after mapathon



Tadjoura Djibouti

Background


RN-9
RN-14
الطراق الوطني 9
Tadjoura تجرة
Route Nationale 9
محطة تاجورة
تاجورة

Ministère de l'Intérieur
République de Djibouti

Djibouti Flash Update #1

Humanitarian impact of flooding | 24 November 2019

UNITED NATIONS DJIBOUTI

1. Situation Overview

Since 21 November, Djibouti has experienced heavy rains which triggered flash floods across the country.

In Djibouti city alone, initial estimates indicate that over 30,000-40,000 families (150,000-250,000 people) have been somewhat affected by the floods, and 9 people (7 children) have reportedly been killed. Reports indicate that between 21 and 24 November, almost 300mm of rain were recorded in Djibouti city alone, or over three times the annual average. Dwellings, shops, schools and infrastructure have been damaged. In some neighborhoods, access to electricity was also interrupted.

In other areas of the country, damages to roads and flash floods have affected access to several communities, and information available to date indicate that at least 300 families are now in

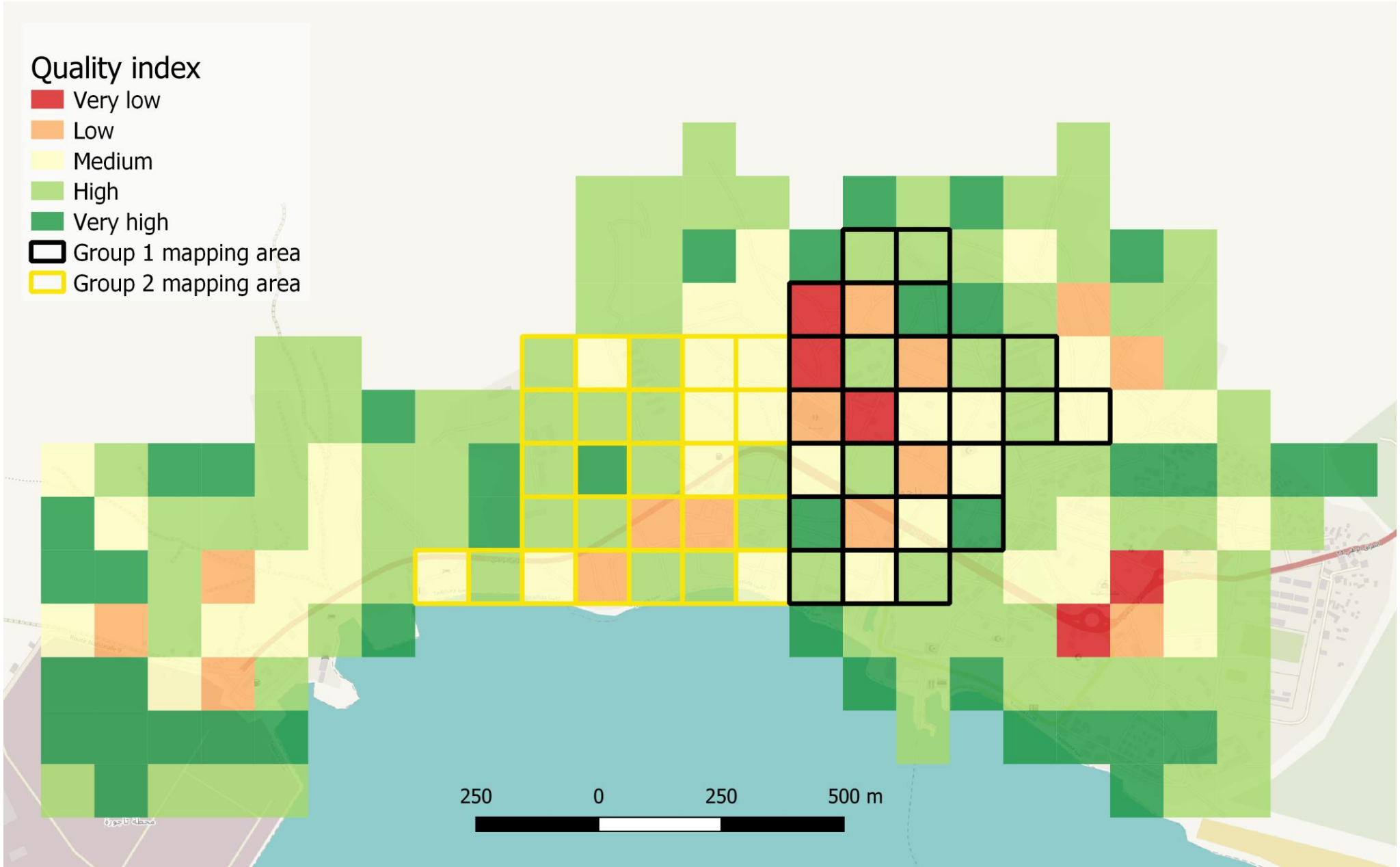
Table 1 – Rainfall 21-24 November (source: meteorological institute of Djibouti)

Locality	21/11	22/11	23/11
Djibouti	49mm	91mm	155mm
Arta	10mm	60mm	20mm
Damerjog	91mm	45mm	54mm
Goubeto	8mm	27mm	38mm
Tadjourah			100mm
Day			100mm

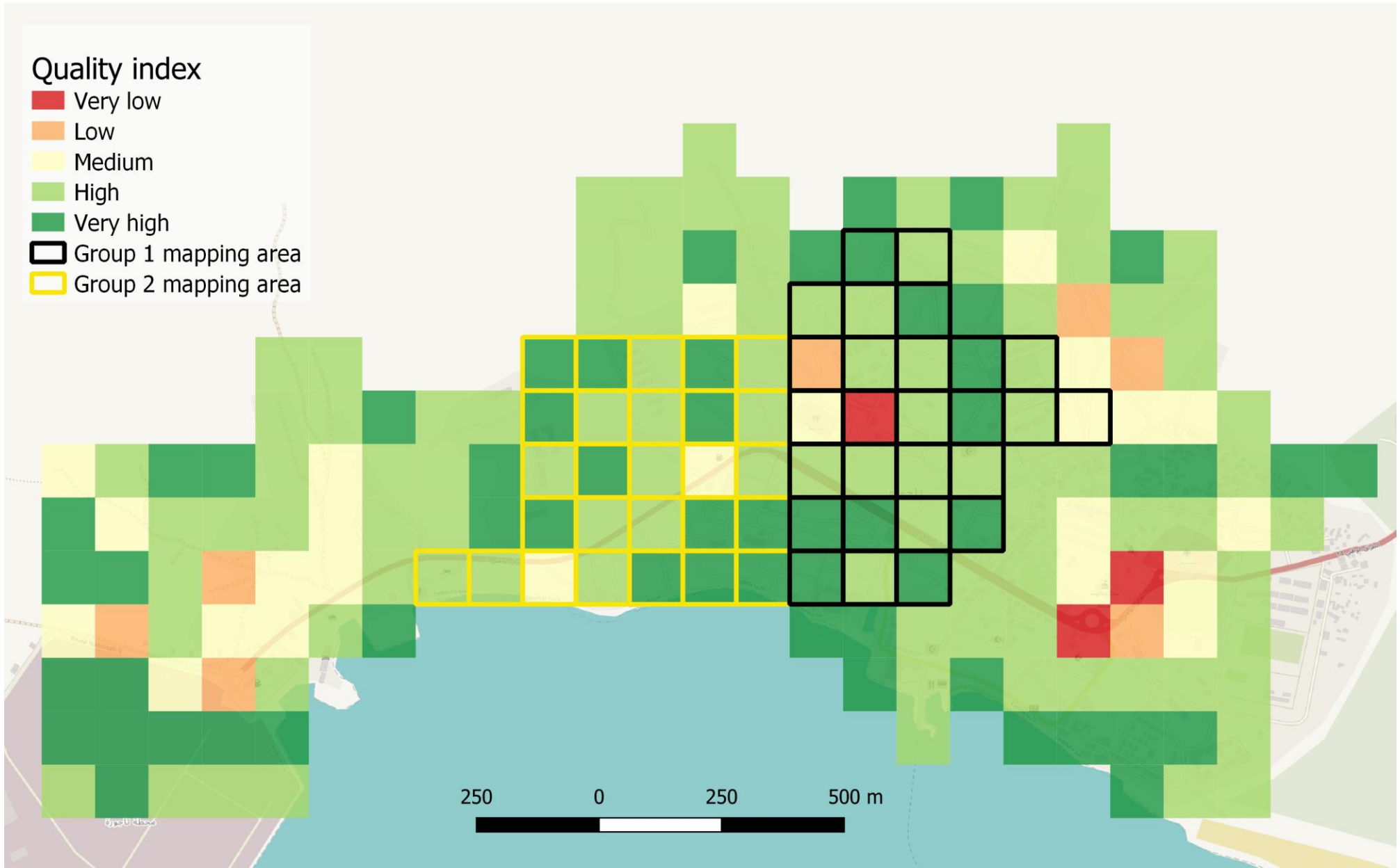
What we did ?

- Risk calculation requires numbers
- Numbers can be estimated by inhabitants there
- Inhabitants can be estimated by built-up area
- Built-up can be estimated by number of buildings
- So we mapped the buildings

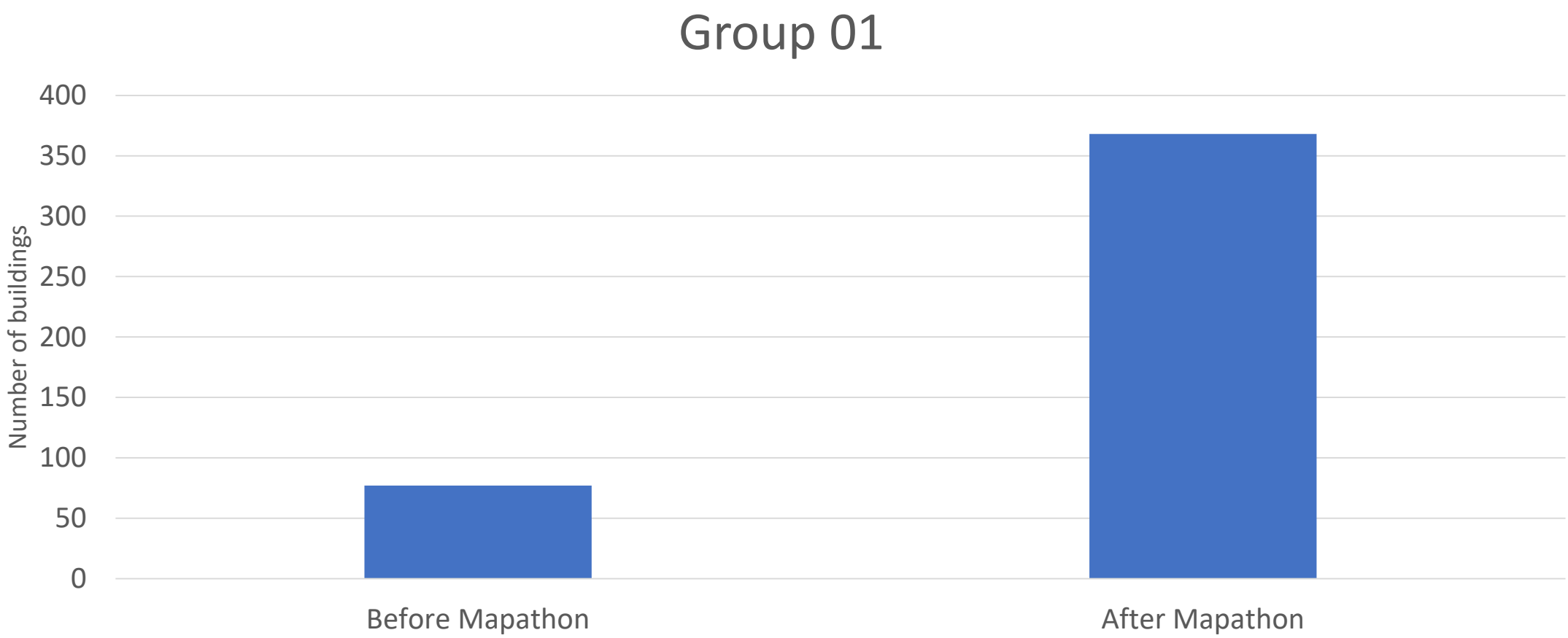
Quality of the map according to incompleteness and experienced mappers in Tadjoura, Djibouti before mapathon



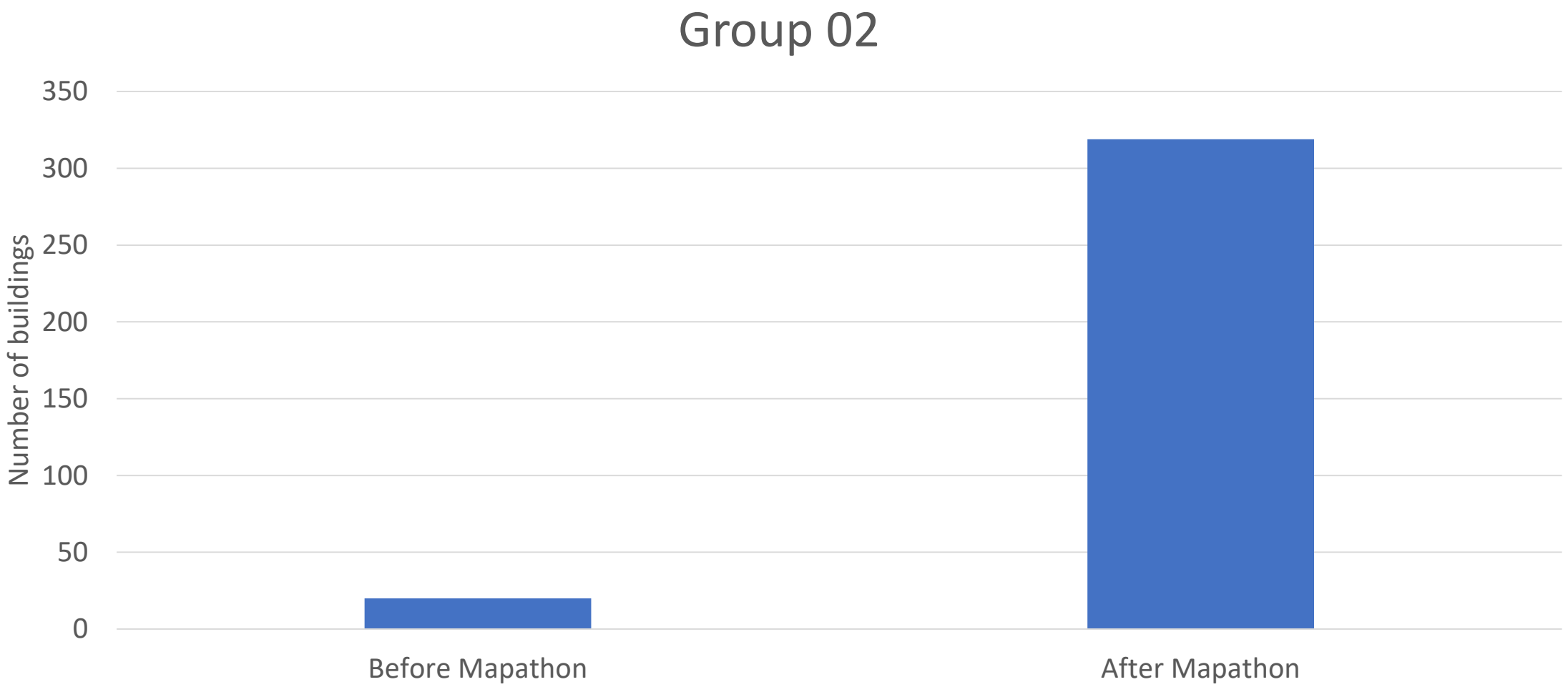
Quality of the map according to incompleteness and experienced mappers in Tadjoura, Djibouti after mapathon



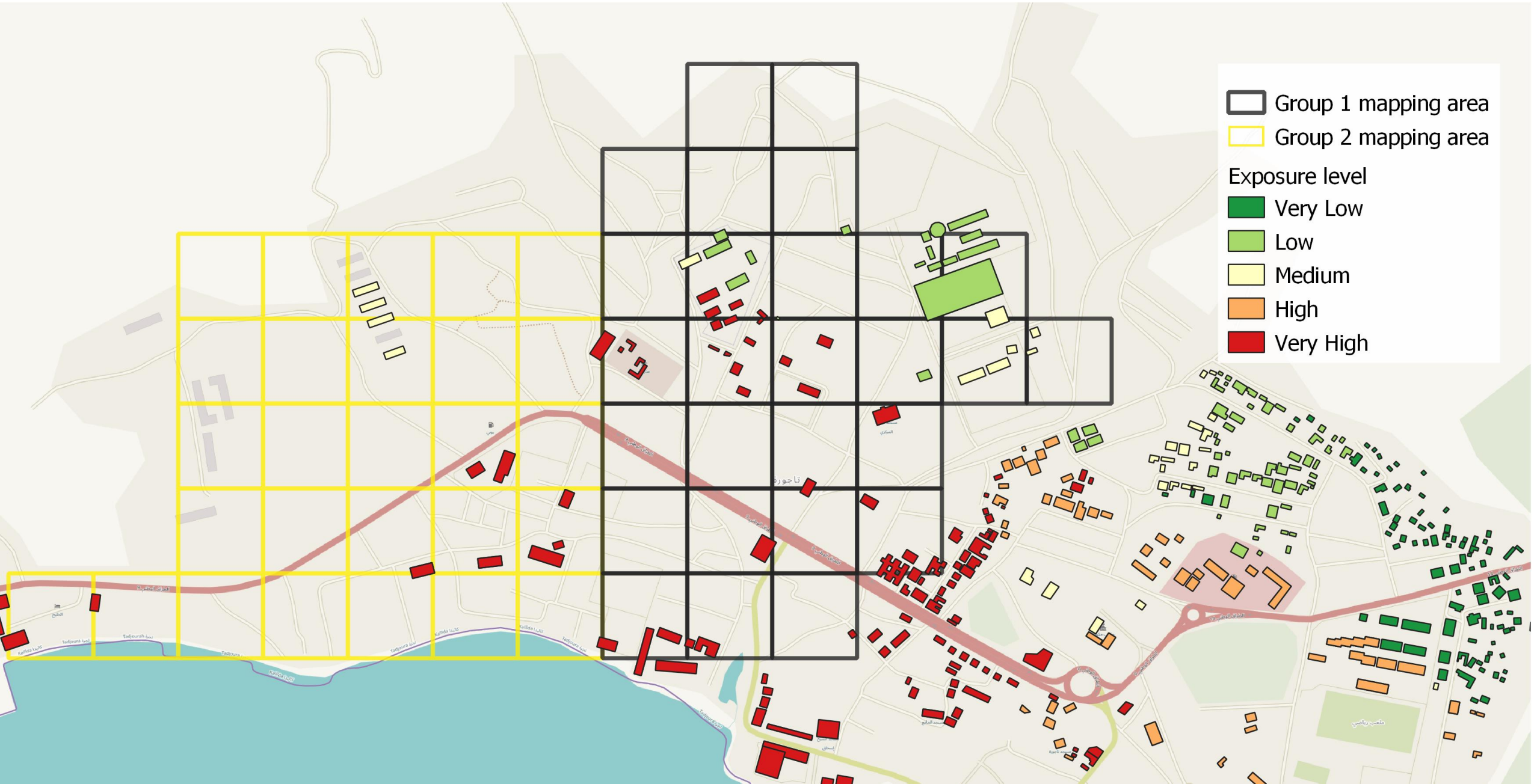
Number of buildings exposed to flood



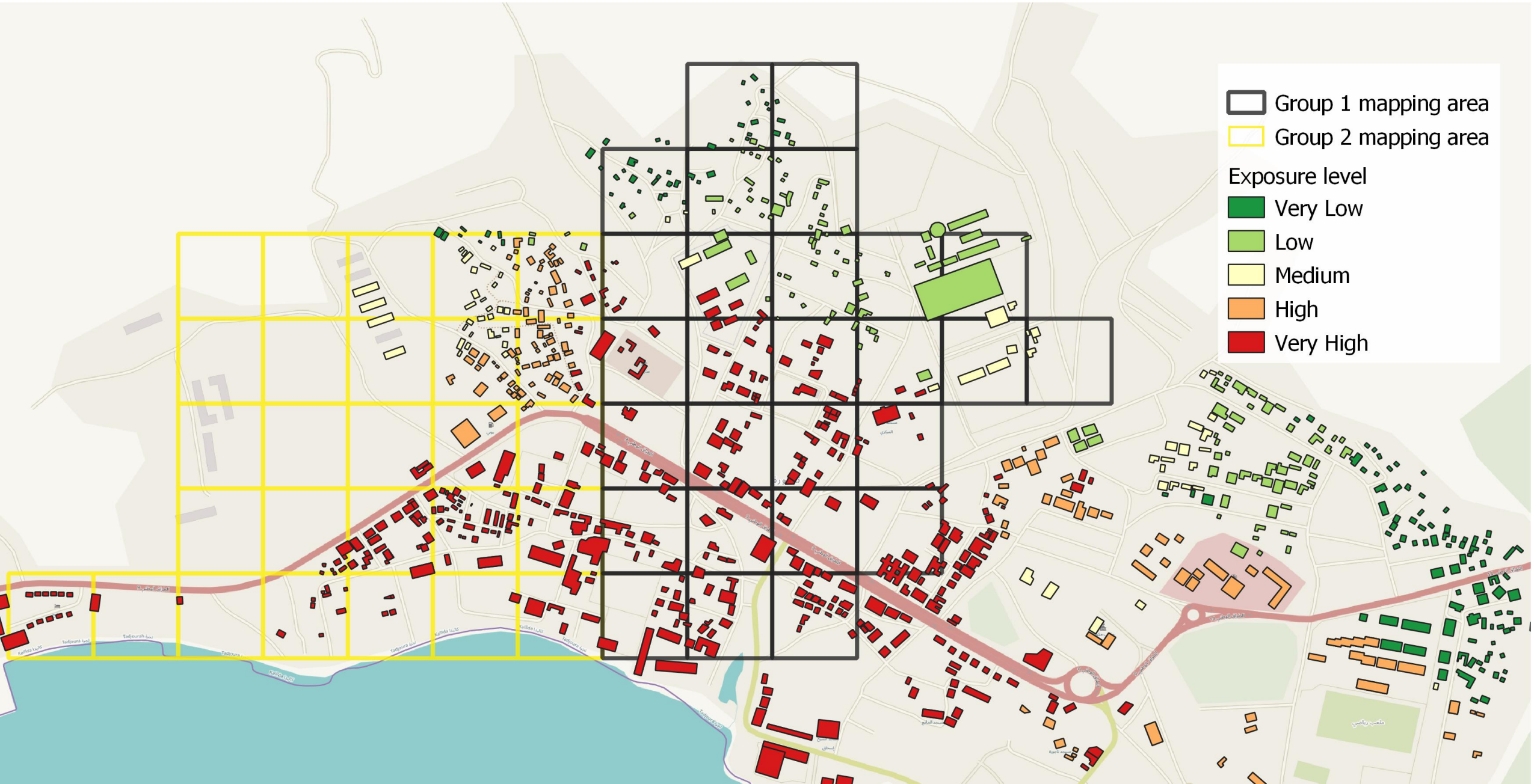
Number of buildings exposed to flood



Exposure map of Tadjoura, Djibouti before the mapathon



Exposure map of Tadjoura, Djibouti after the mapathon

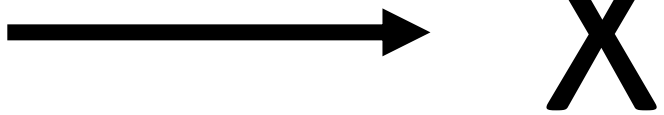


Mapping systematically is important for creating a valuable impact

1. Clear purpose
2. User requirements
3. Assess the available data
4. Improve or create data is reliable
5. Calculate the impact
6. Present to the users?

Lets practice

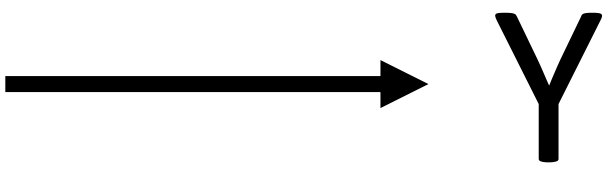
```
1. [out:json][timeout:3600];
2. // gather results
3. (
4.   nwr["building"="residential"]({{bbox}});
5.   nwr["building"="apartments"]({{bbox}});
6. );
7. // print results
8. out body;
9. >;
10. out skel qt;
```



X

Specify what tag you need to map ?

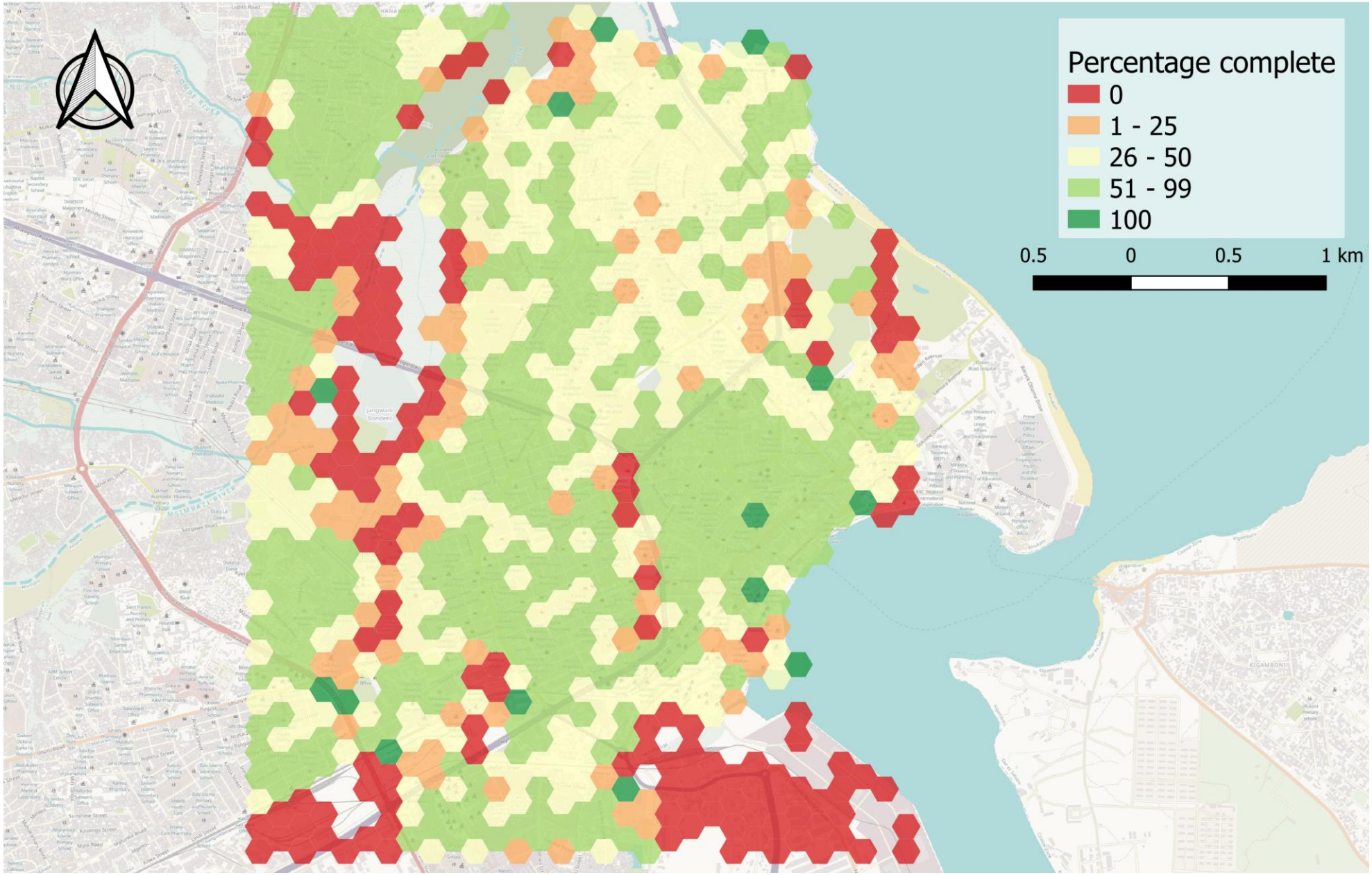
```
1. [out:json][timeout:3600];
2. // gather results
3. (
4.   nwr["building"="residential"] [“material”] ({{bbox}});
5.   nwr["building"="apartments"] [“material”] ({{bbox}});
6. );
7. // print results
8. out body;
9. >;
10. out skel qt
```



Create quality index

- QI = X / Y
- Lower the QI, Higher will be the priority for mapping.

Quality index with respect to tag completeness: building:material



Conclusion

- Mapping should be purposeful
- Mapping should create impact
- Must be useful before chaos
- Self sufficient platform such as OpenStreetMap (OSM)


Helping humanitarian
organisations with mapping
priorities

Thank you