

HEALTHIER CITY NAVIGATION

measuring the world

Jorge // Oliver // Carlotta // Everardo // Marius // Núria

CONTENT

OBJECTIVES & HYPOTHESIS

TOOLS & STRATEGY

DATA

OUTCOMES

FUTURE EXPLORATIONS

objective

**WE WANT TO HAVE AN UNOBSTRUCTED
VIEW OF THE SKY IN BARCELONA.**

hypothesis

**THERE IS NOT ENOUGH CONNECTION TO
THE NATURAL SKY IN BARCELONA.**

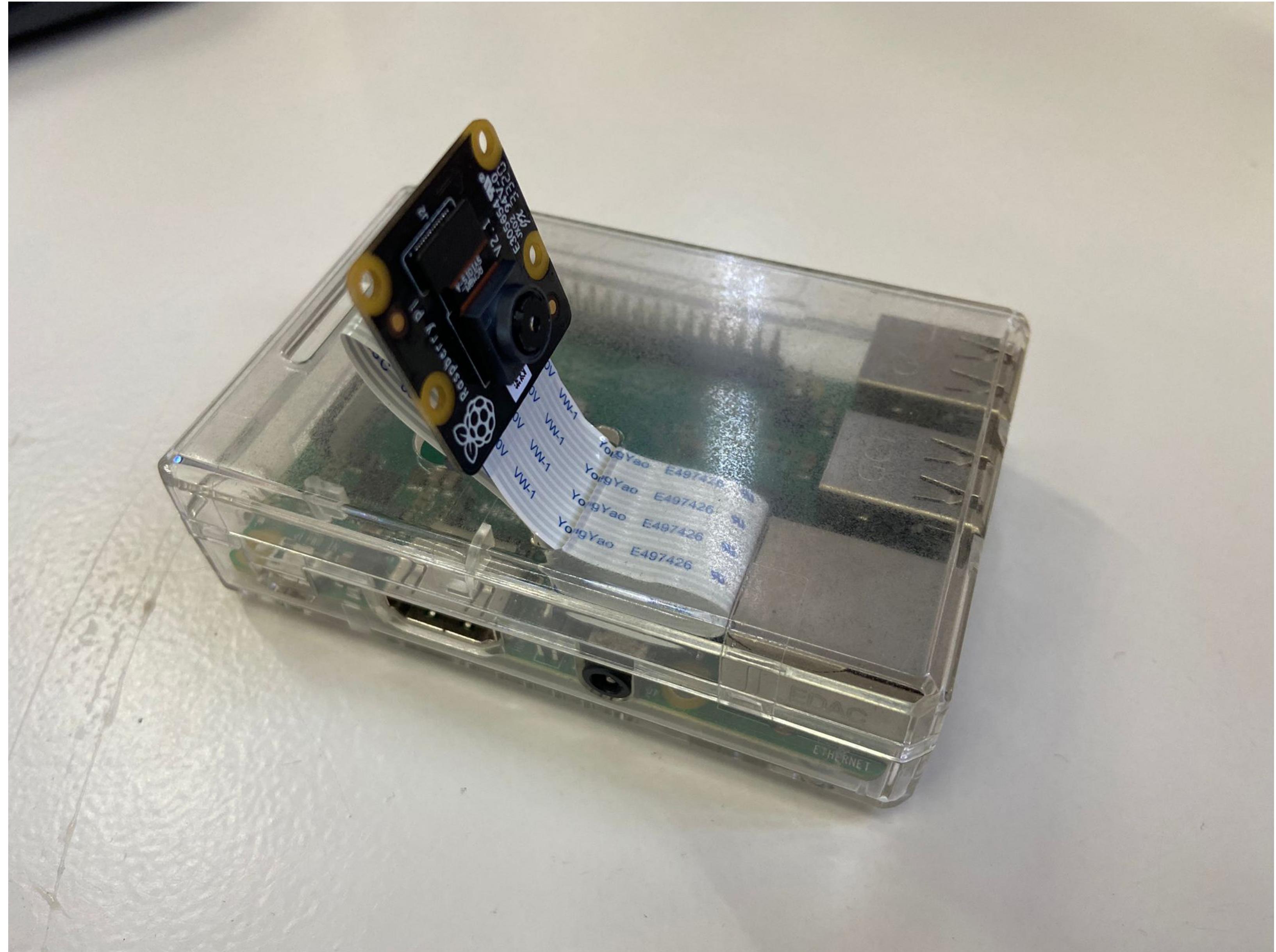
Tools & Strategy

We decided to take advantage of the little time we had to collect as much data as possible, but we only had a Raspberry Pi camera. To make the best use of the exercise, we decided to use the cameras of our phones, so we could capture more images simultaneously.

Each of us had to complete the following actions:

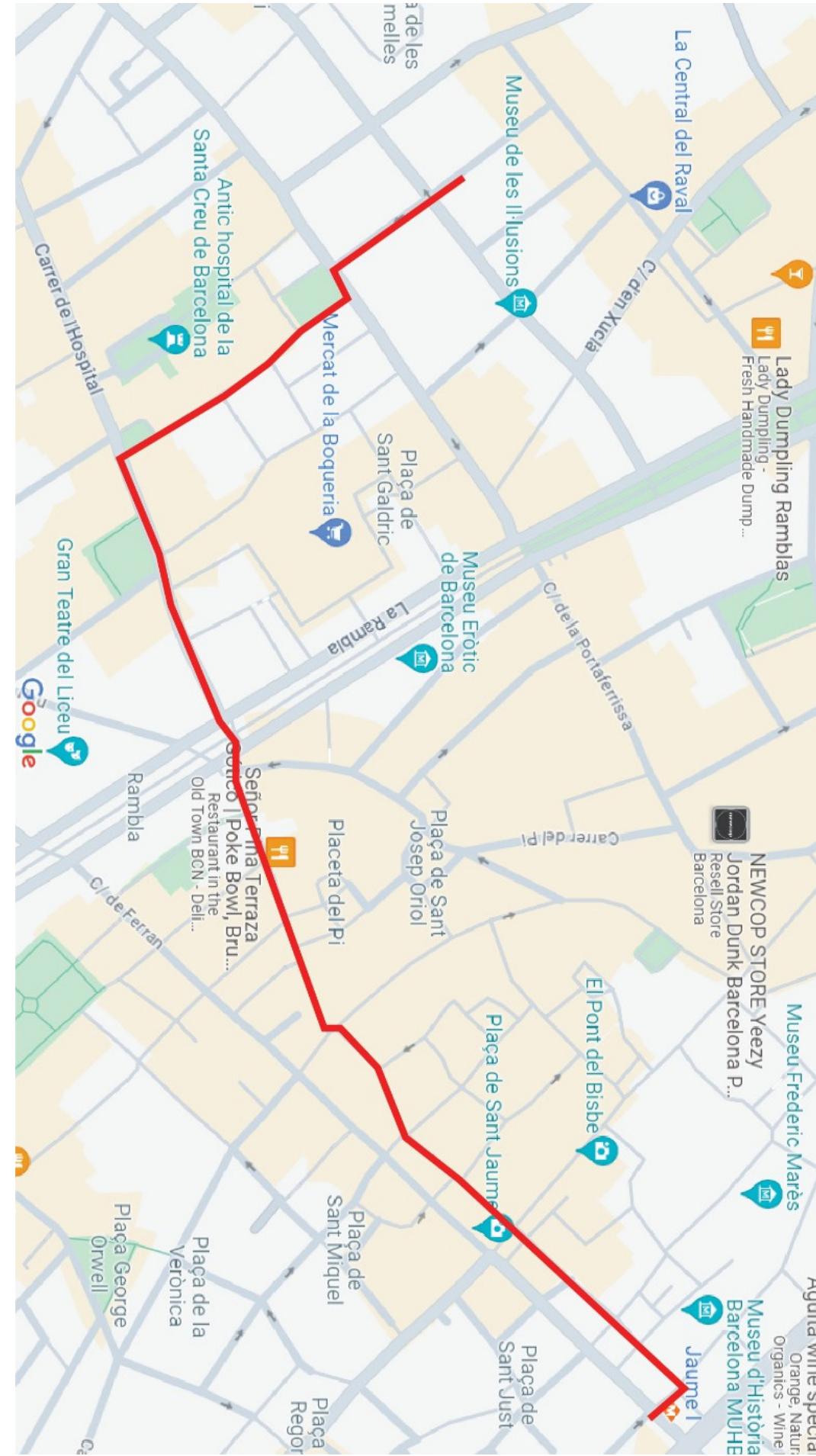
- Take 10 pictures of 10 different streets in our neighborhood during the day.
- Take 10 pictures of 10 different streets in our neighborhood during the night.

In this way, being 6 in the group, we managed to collect 120 images with relevant information for our exercise.

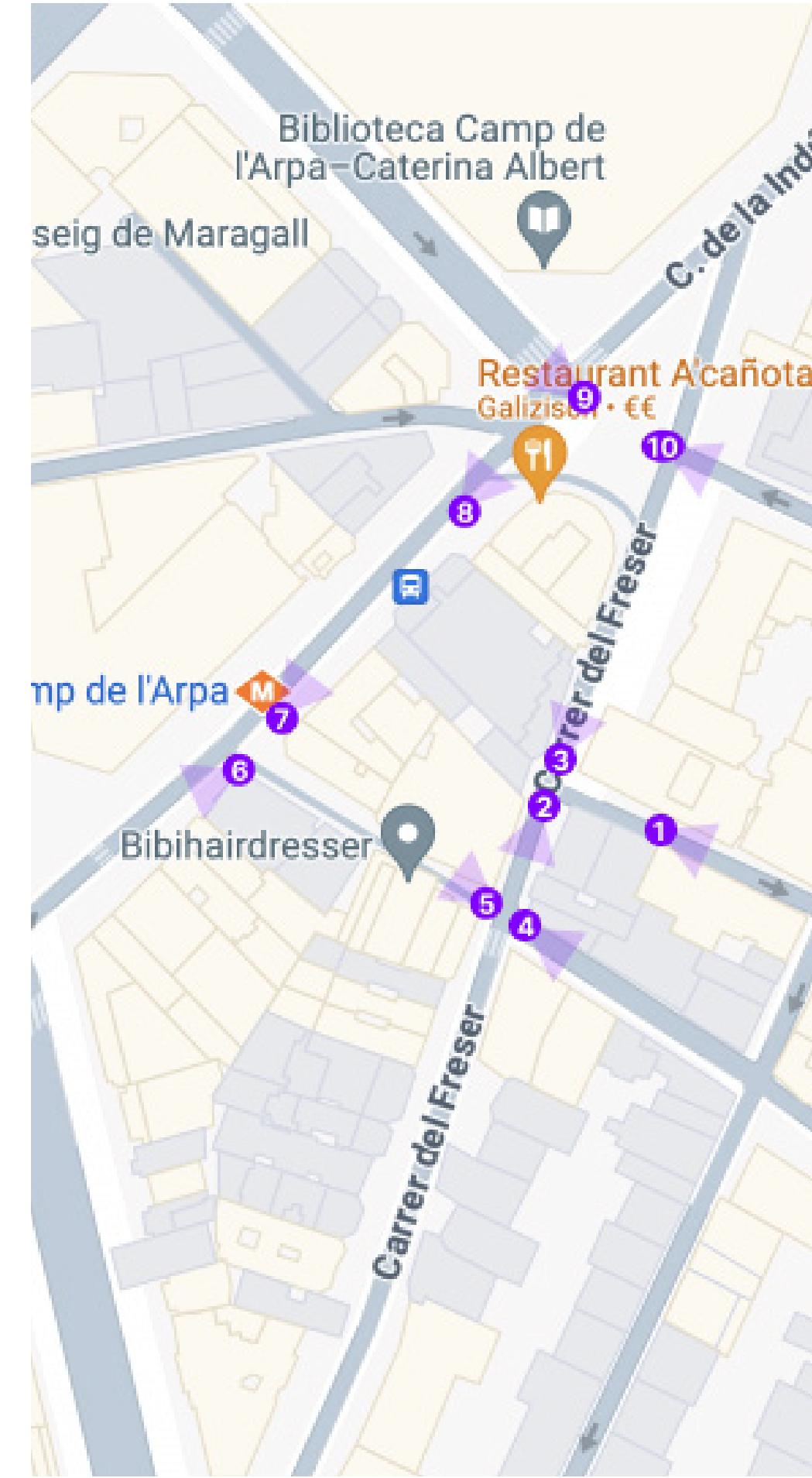


Tools & Strategy

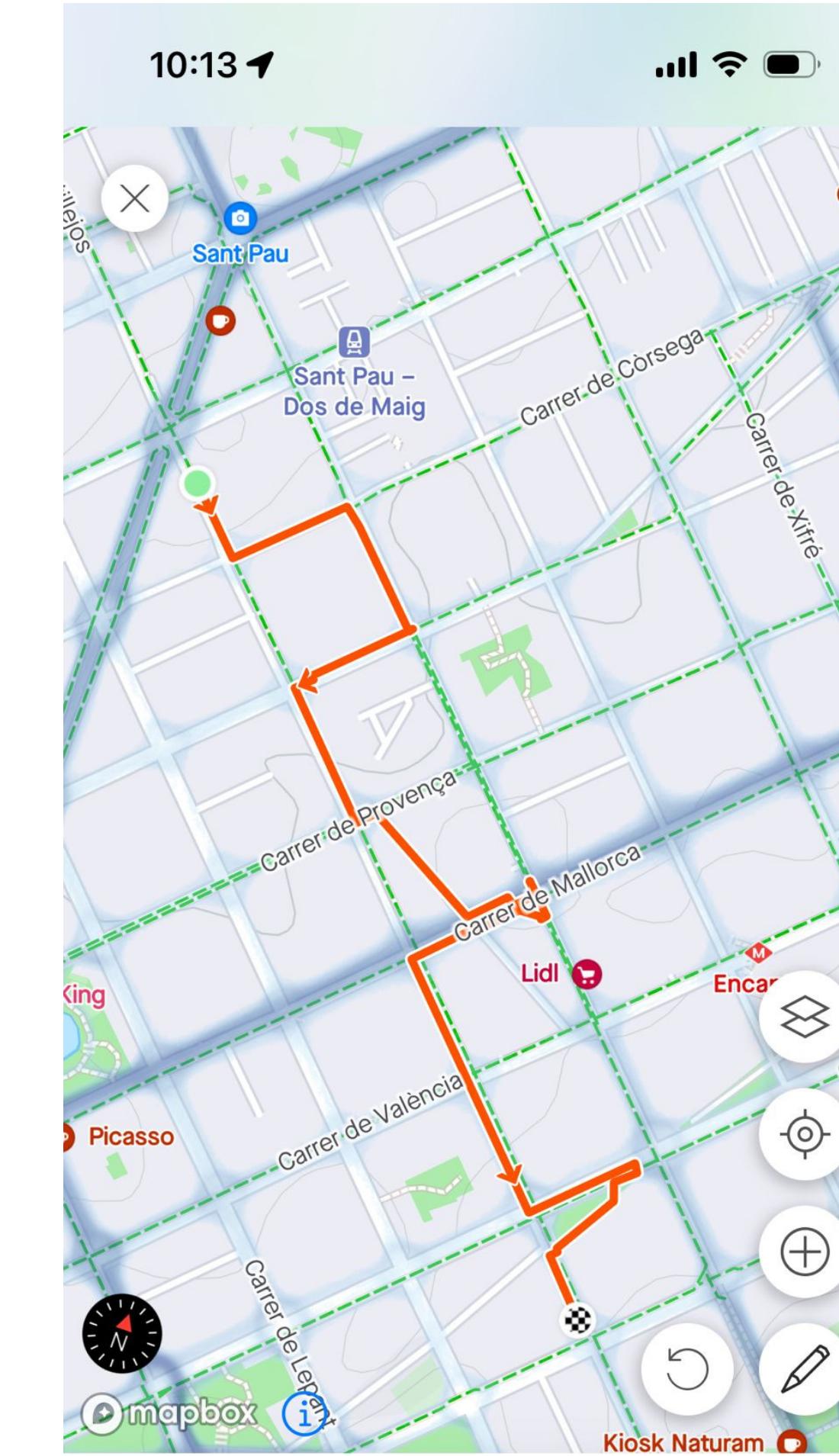
Everardo in Ciutat Vella



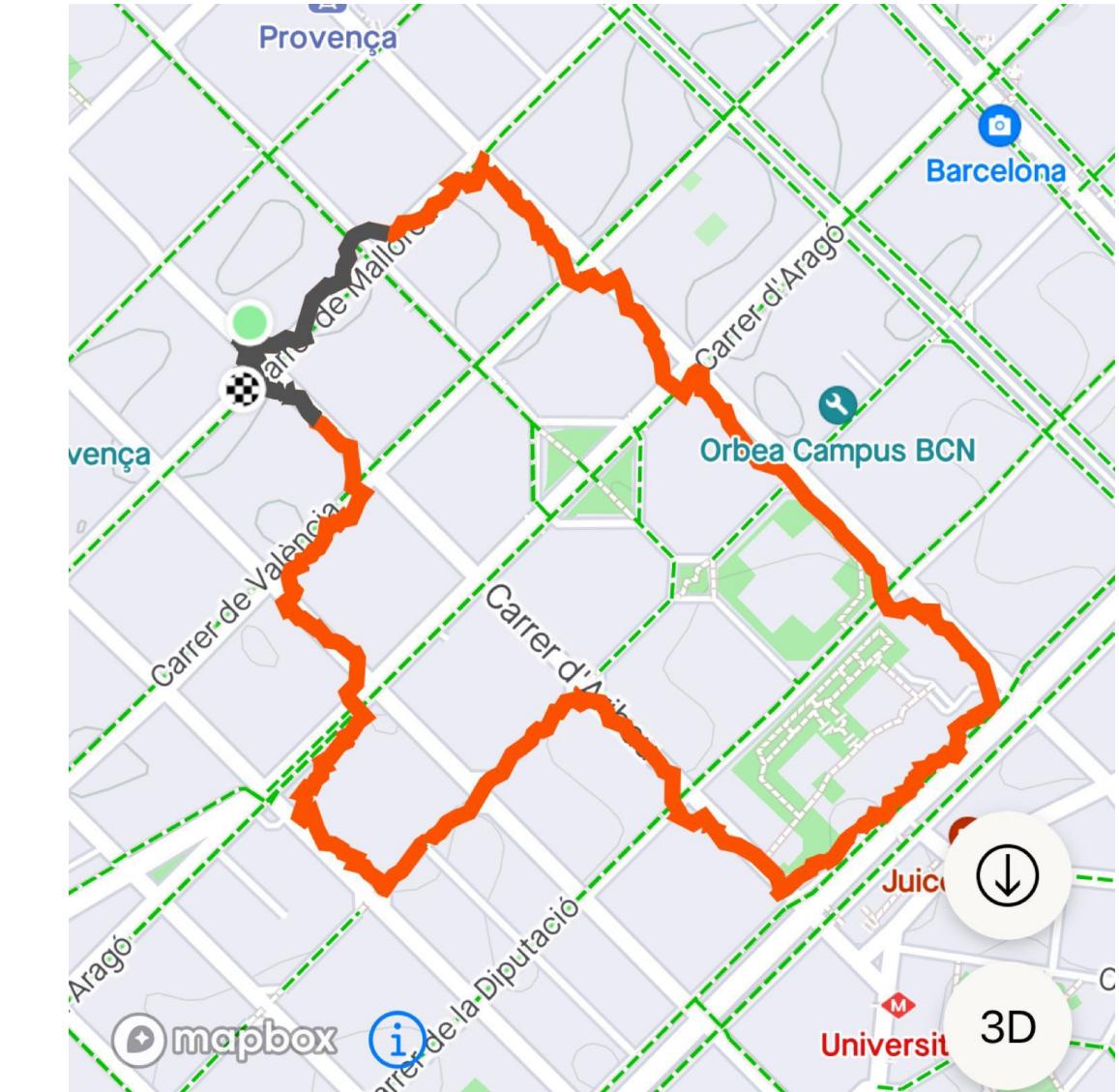
Marius in Camp de l'Arpa



Carlotta in Sagrada Familia



Oliver in Eixample Esquerra



Data collected

60 daylight photos



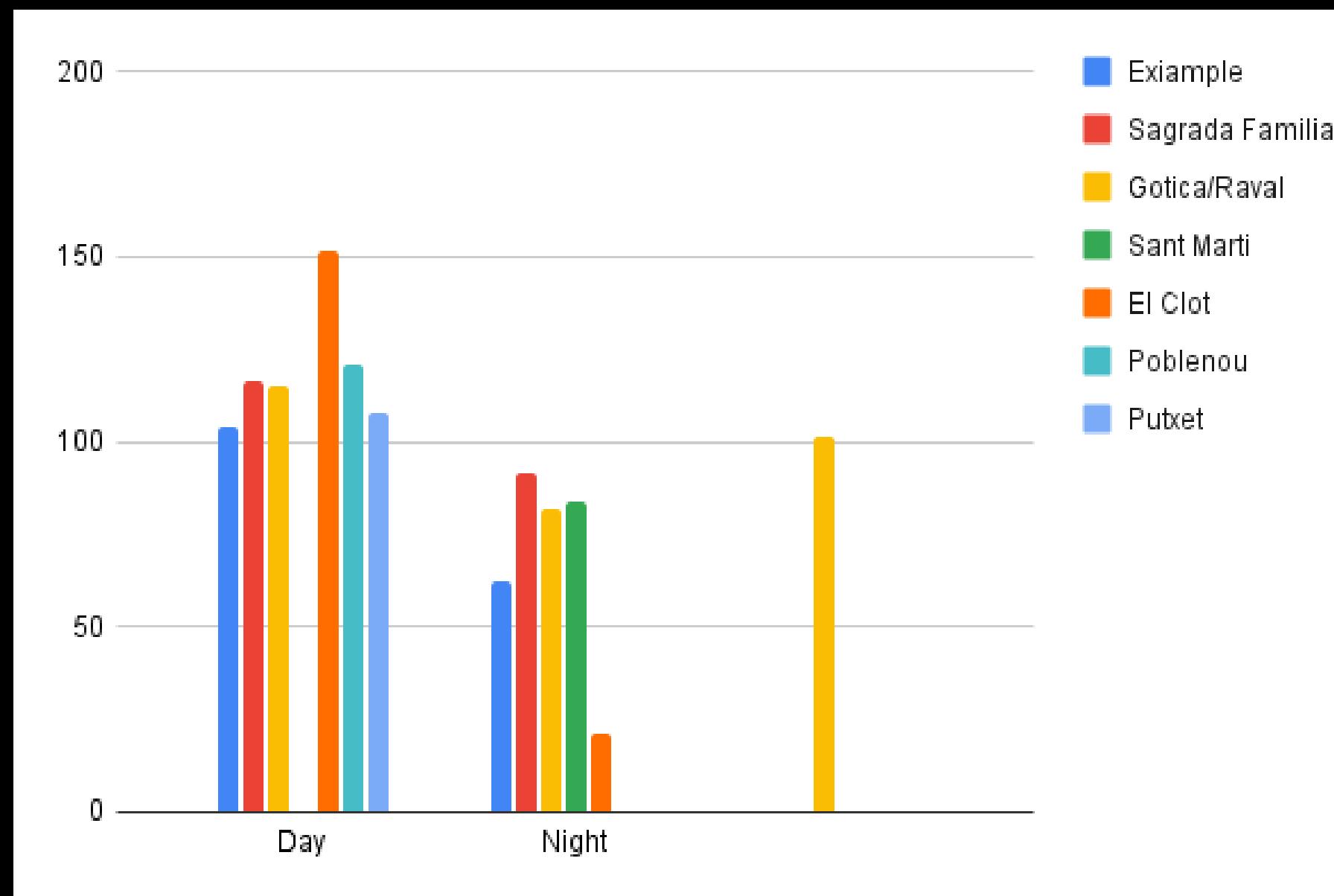
60 nighttime photos



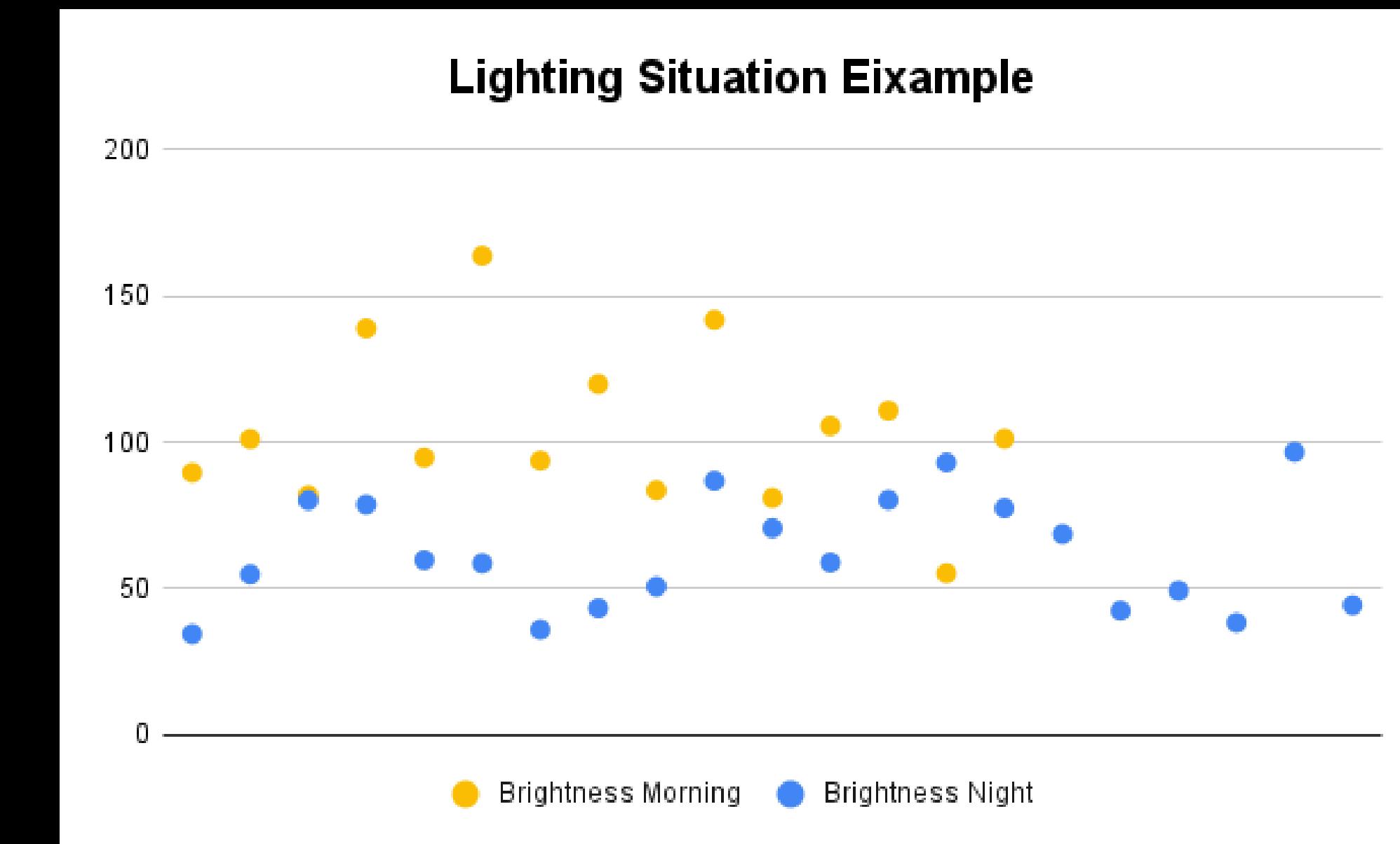
Processed data

Brightness levels depending on the neighbourhood

We used a python code to create grayscale images and then score the brightness between 0 (darkness) and 255 (ultimate brightness).



Average brightness in each neighbourhood at day and night

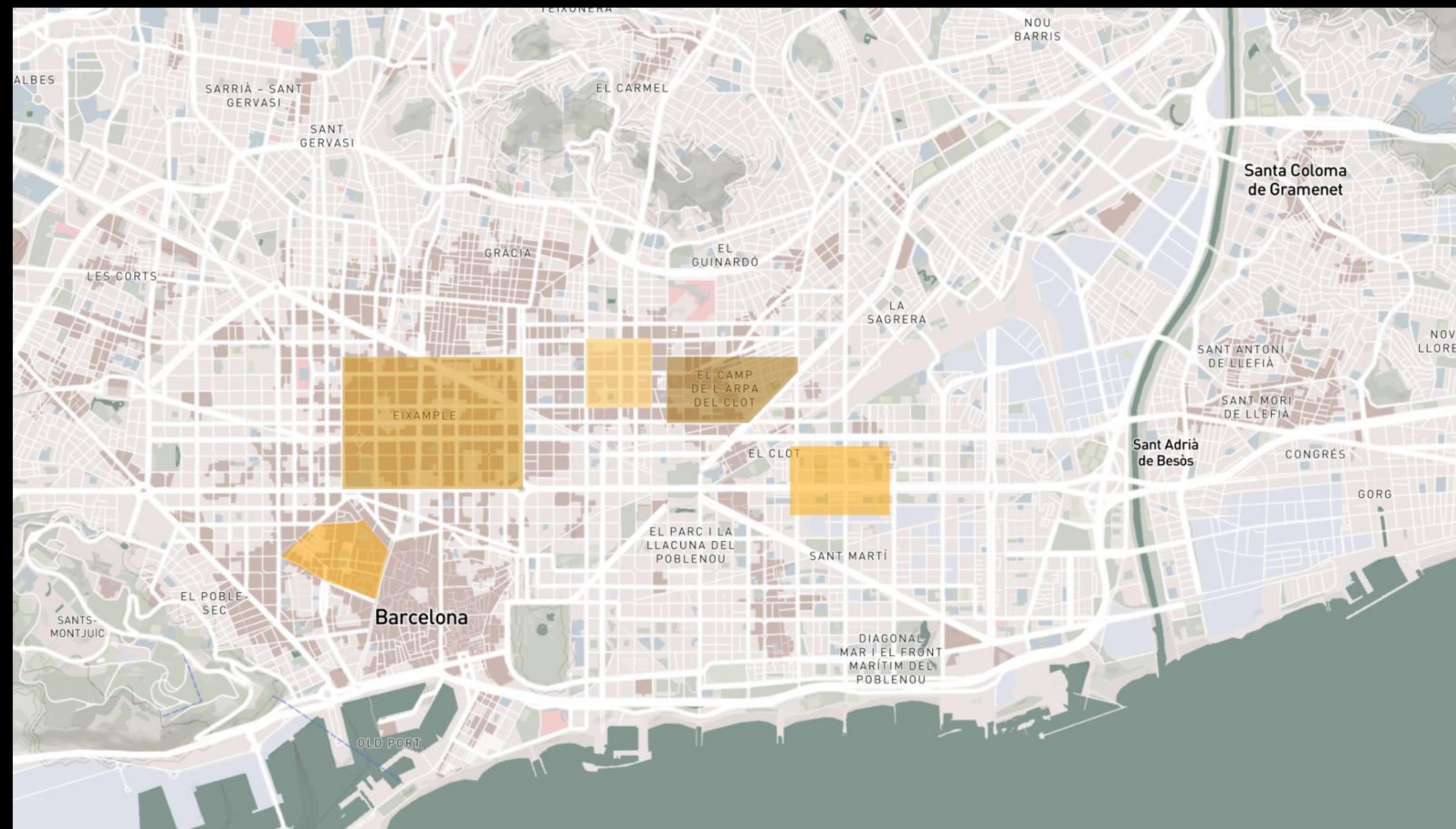


Lighting in each scenario in Eixample neighbourhood

Processed data

Lighting Maps Using Found Data vs Collected Data

Using the data we collected about the light at night and the average levels in each neighbourhood we mapped the level of light pollution that could be found.

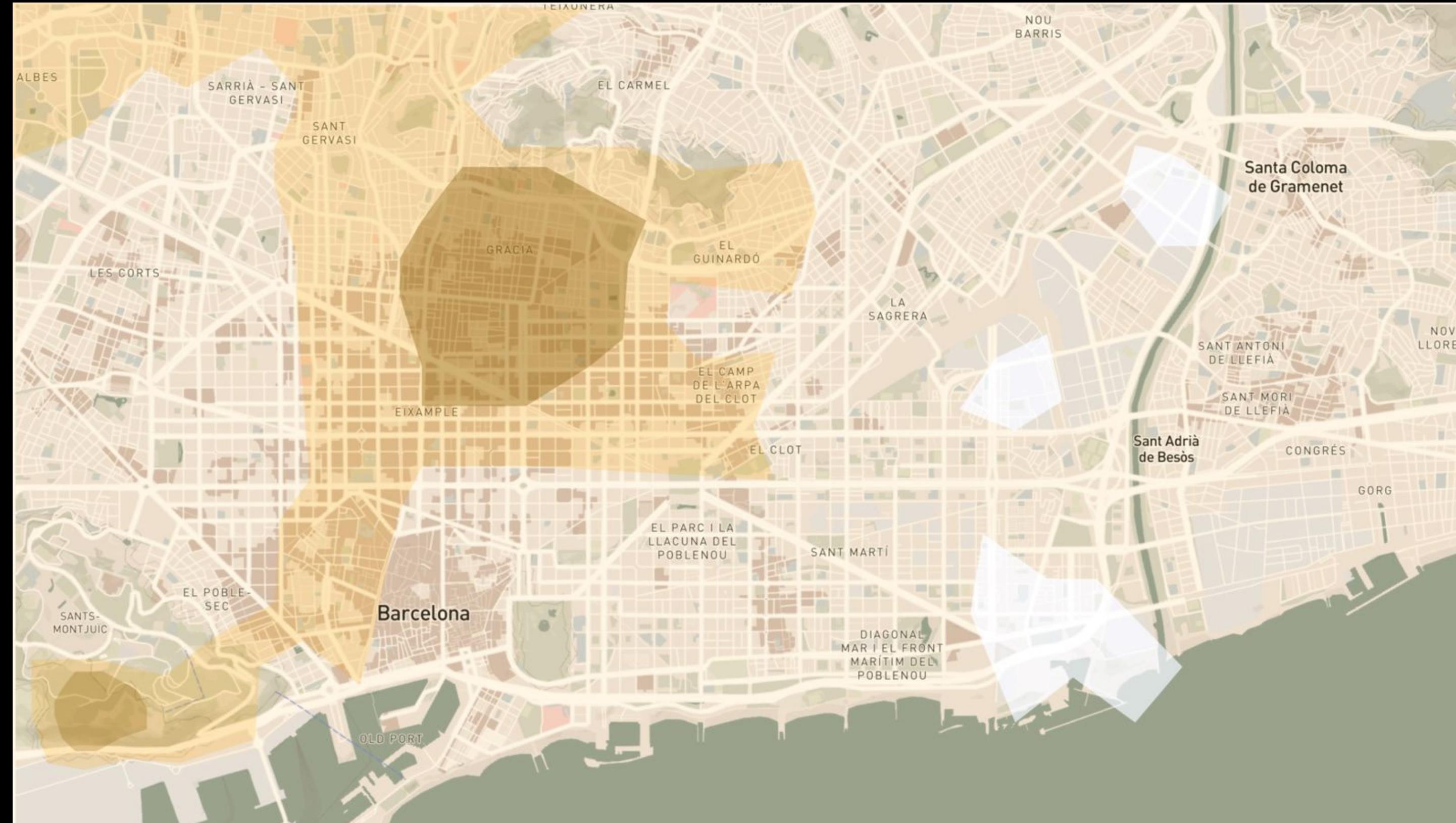


With this map the whiter the yellow, the more light pollution. Data collected by us.

Processed data

Lighting Maps Using Found Data vs Collected Data

We then went and looked for more opensource data that we could use to create a better map that takes more factors into account then just the small sample we had. The data we used was LightPollutionMap

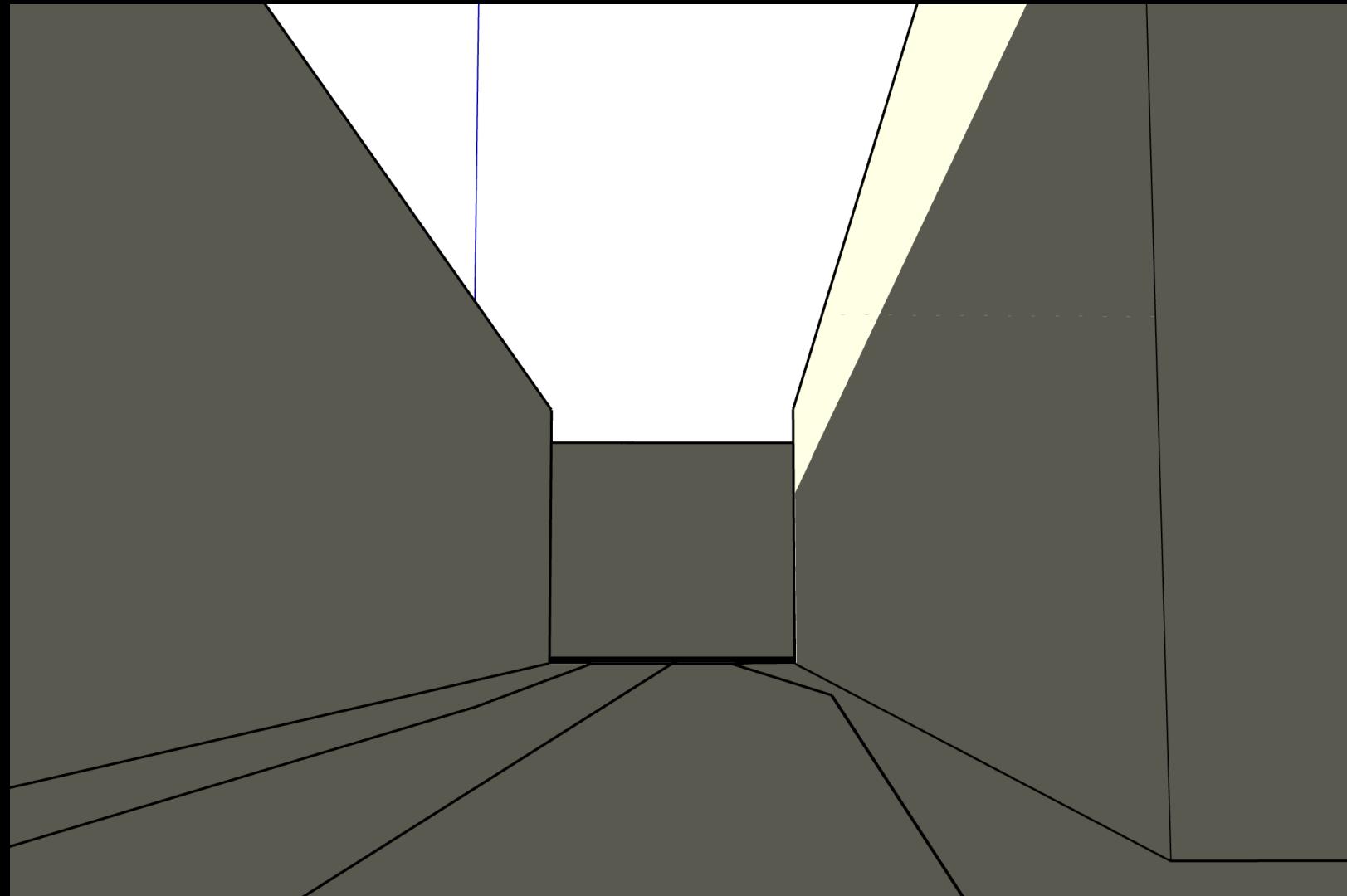
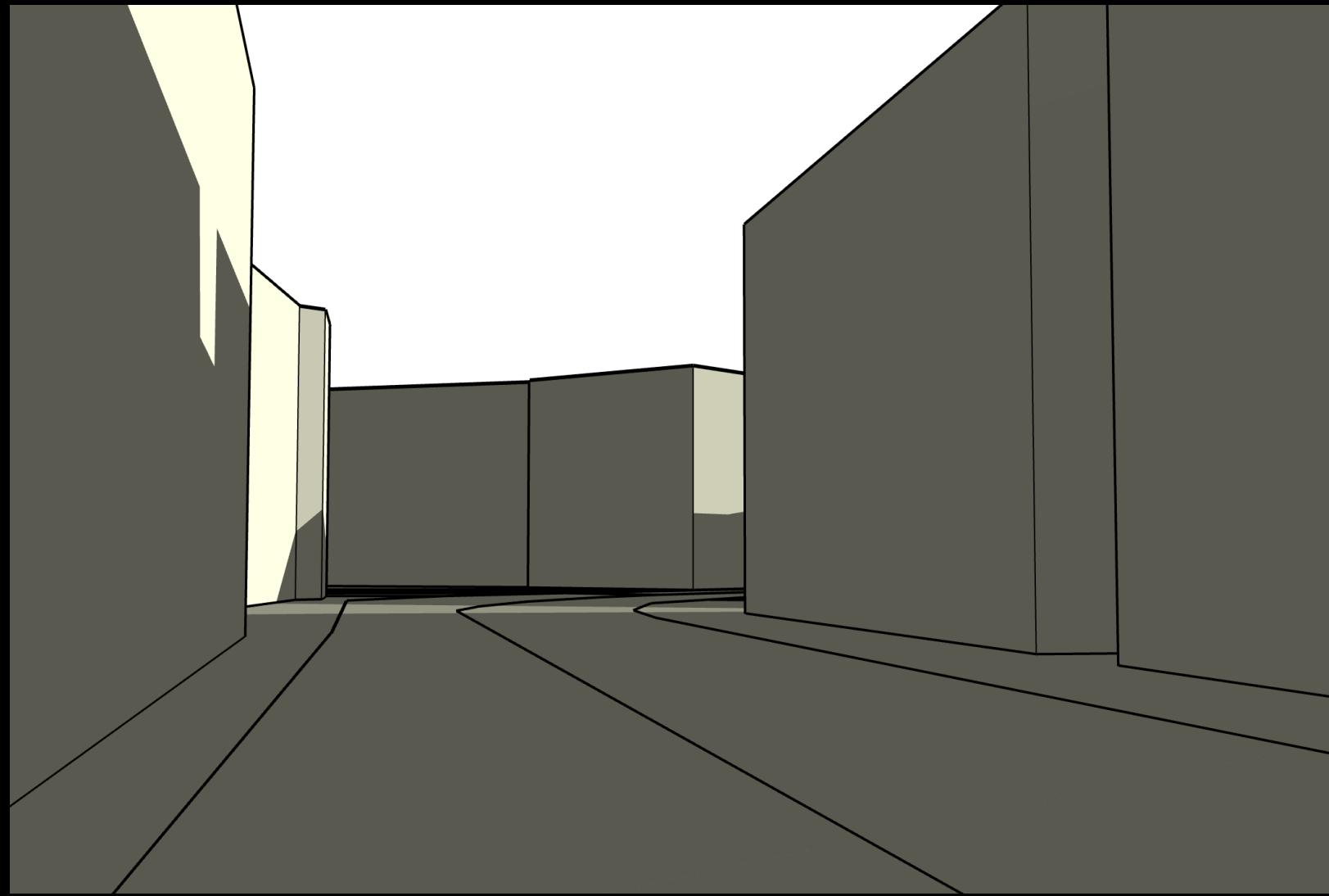


With this map the whiter the yellow, the more light pollution. Data found in LightPollutionMap.

Processed data

Comparison between real data recollected by us,
and SketchUp shadow plug in

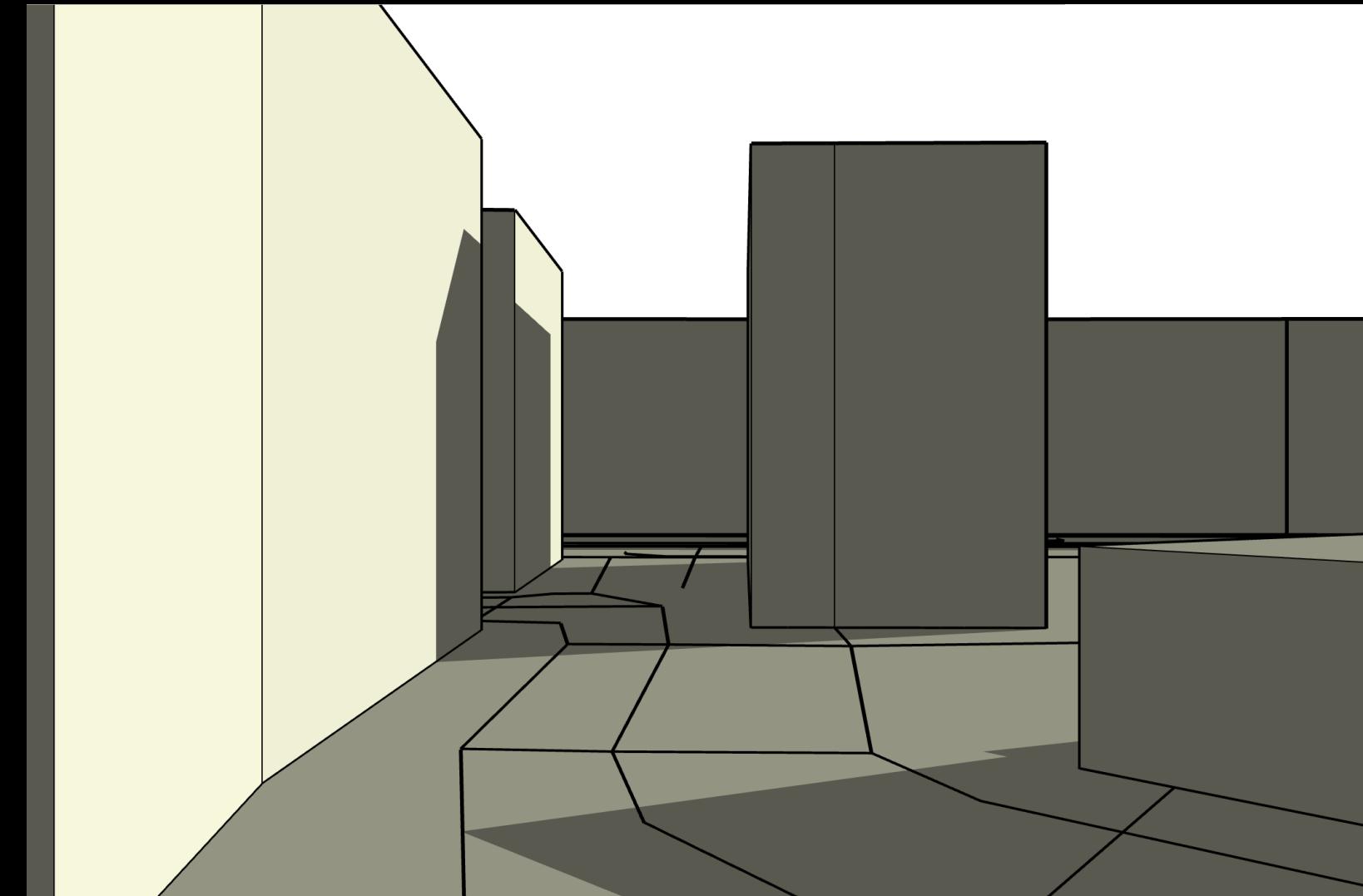
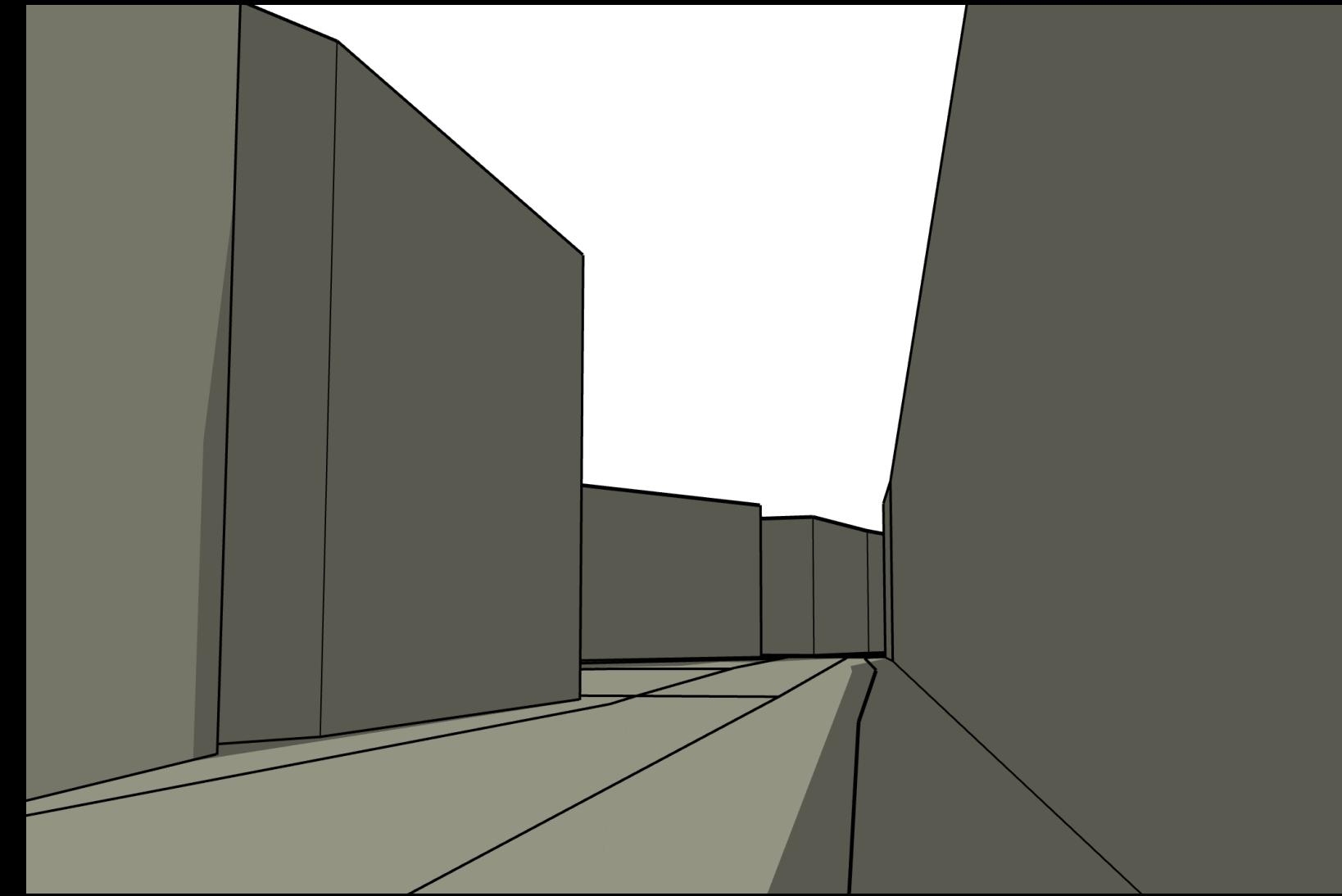
We compared the collected data with the data from a shadow plugin in SketchUp, to verify the found data was reliable.



Processed data

Comparison between real data recollected by us,
and SketchUp shadow plug in

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Outcomes

With the data we have recollected and the information already existing in the shadow SketchUp plug in (having previously compared and verified that they are true), we have designed a recommended route for people living in Ciutat Vella, Eixample and Sagrada Familia to have a healthy 20 minute walk in the sun.

Future explorations

Build an interface similar to Google Maps, that could recommend healthier routes for people navigating the city depending on:

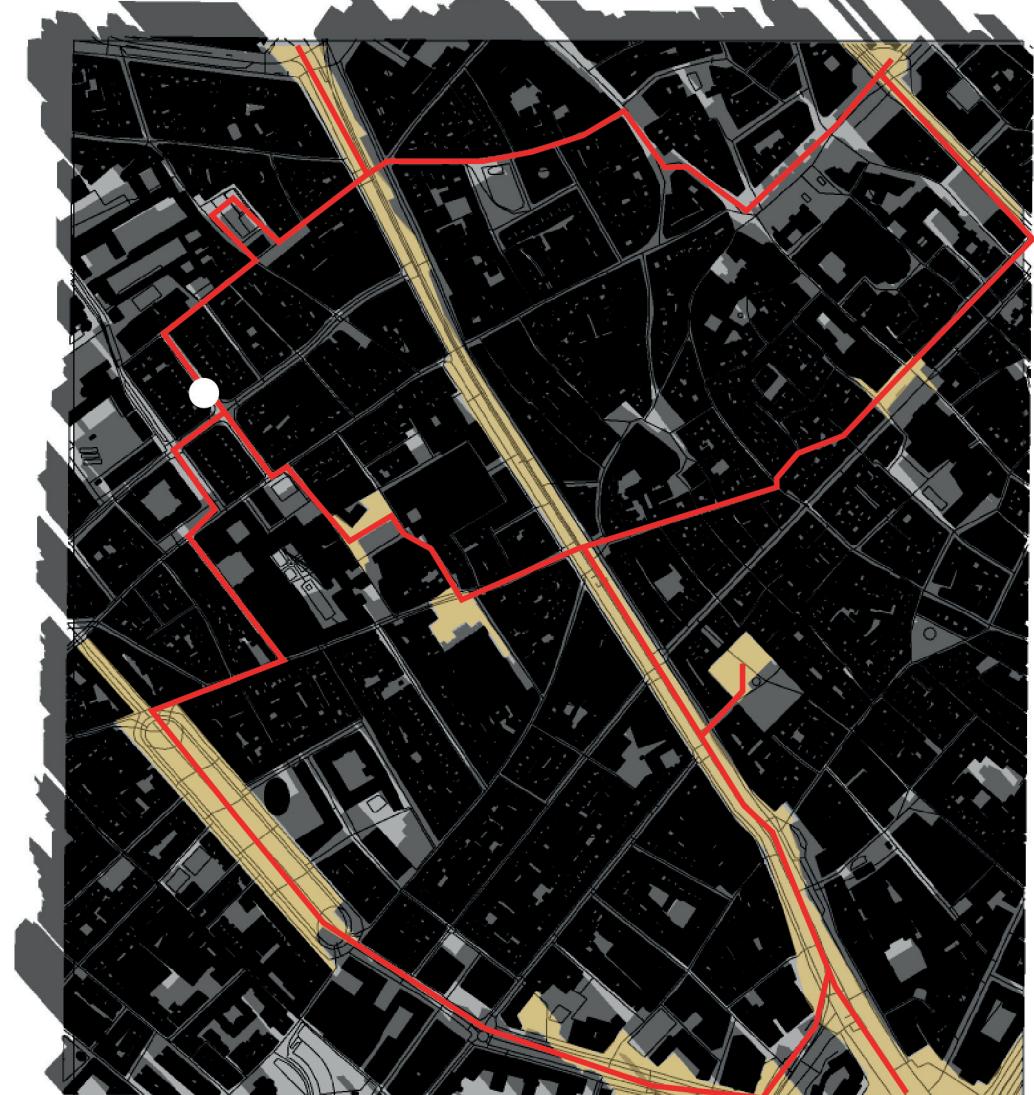
- Direct sunlight contact (the one we explored)
- Visibility of the sky
- Sound pollution levels
- Air pollution levels
- Street illumination and street safety
- Sensorly inclusivity

Taking data from already built networks in the city like Smart Citizen or other similar projects.

A healthy walk around
Ciutat Vella



● Sunny spot
○ Sunny route
○ Origin



Vitamin D Boost:
Sunlight aids in synthesizing vitamin D, essential for bone health and immune function.

Mood Enhancement:
Sunlight triggers serotonin production, improving mood and combating conditions like SAD.

Increased Energy:
Sunlight and fresh air during a walk can boost energy levels and reduce fatigue.

Better Sleep:
Sunlight and fresh air during a walk can boost energy levels and reduce fatigue.

Physical Activity:
The walk provides moderate exercise, supporting cardiovascular health and weight management.

Stress Reduction:
Outdoor time, especially in nature, contributes to stress reduction.

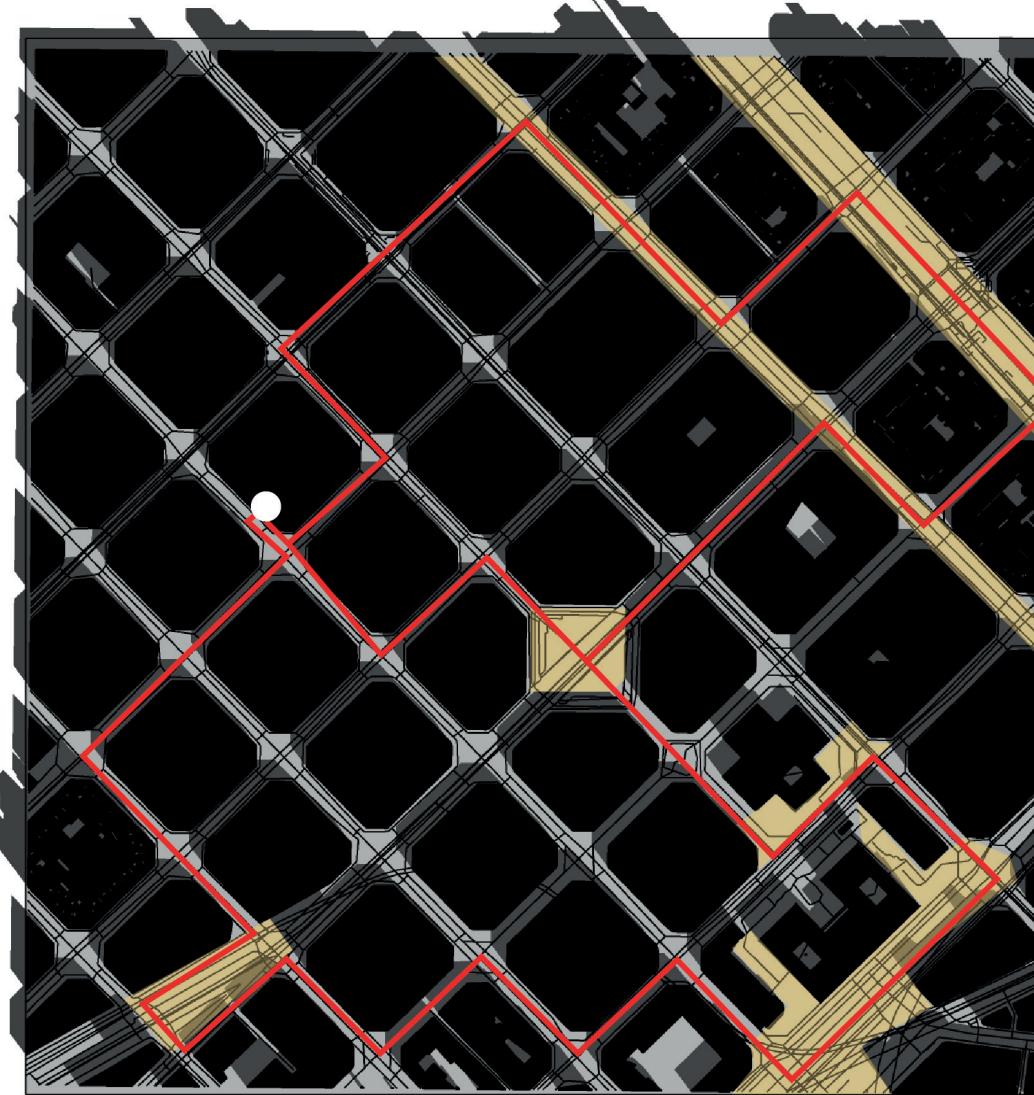
Improved Concentration:
Sunlight and activity enhance cognitive function, improving focus.

Enhanced Immunity:
Adequate vitamin D from sunlight supports a healthy immune system.

A healthy walk around
Eixample



● Sunny spot
○ Sunny route
○ Origin



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A healthy walk around
Sagrada Família



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○ Sunny route
○ Origin



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THANK YOU!