What is the best place to be? Location optimization with R and Google Maps

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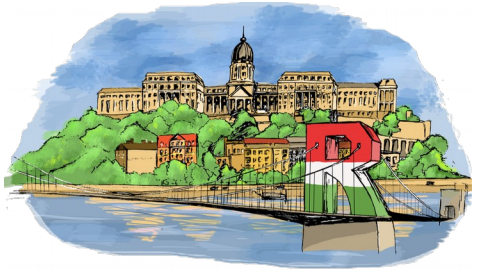
Motivation → (boring) decision making

The need to find a convient place to stay before every conference or business meeting in a new city



- **Nearby** the place of conference/business meeting
- With good public transportation facilities
- Affordable prices (or at least good quality/price ratio)
- Others: **close** to the downtown or any other attractive place to go in the evening, safe, etc..

How does it look in practice?

Finding a location of conference/meeting

Central European University

4.3 ★★★★½ · 80 reviews

University

Directions

SAVE NEARBY SEND TO YOUR PHONE SHARE

Budapest, Nádor u. 9, 1051 Hungary

ceu.edu

+36 1 327 3000

Add a label

SUGGEST AN EDIT

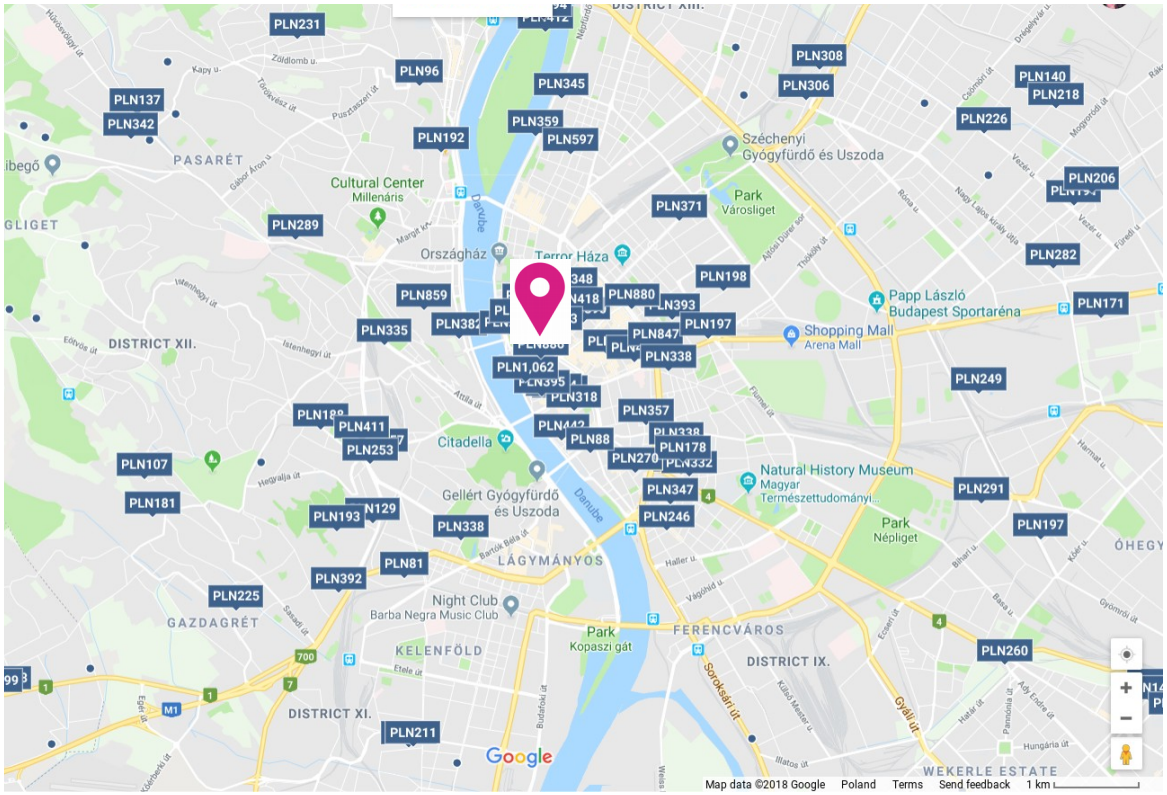
Add a photo

How does it look in practice?

Searching for hotels:

not too far away:

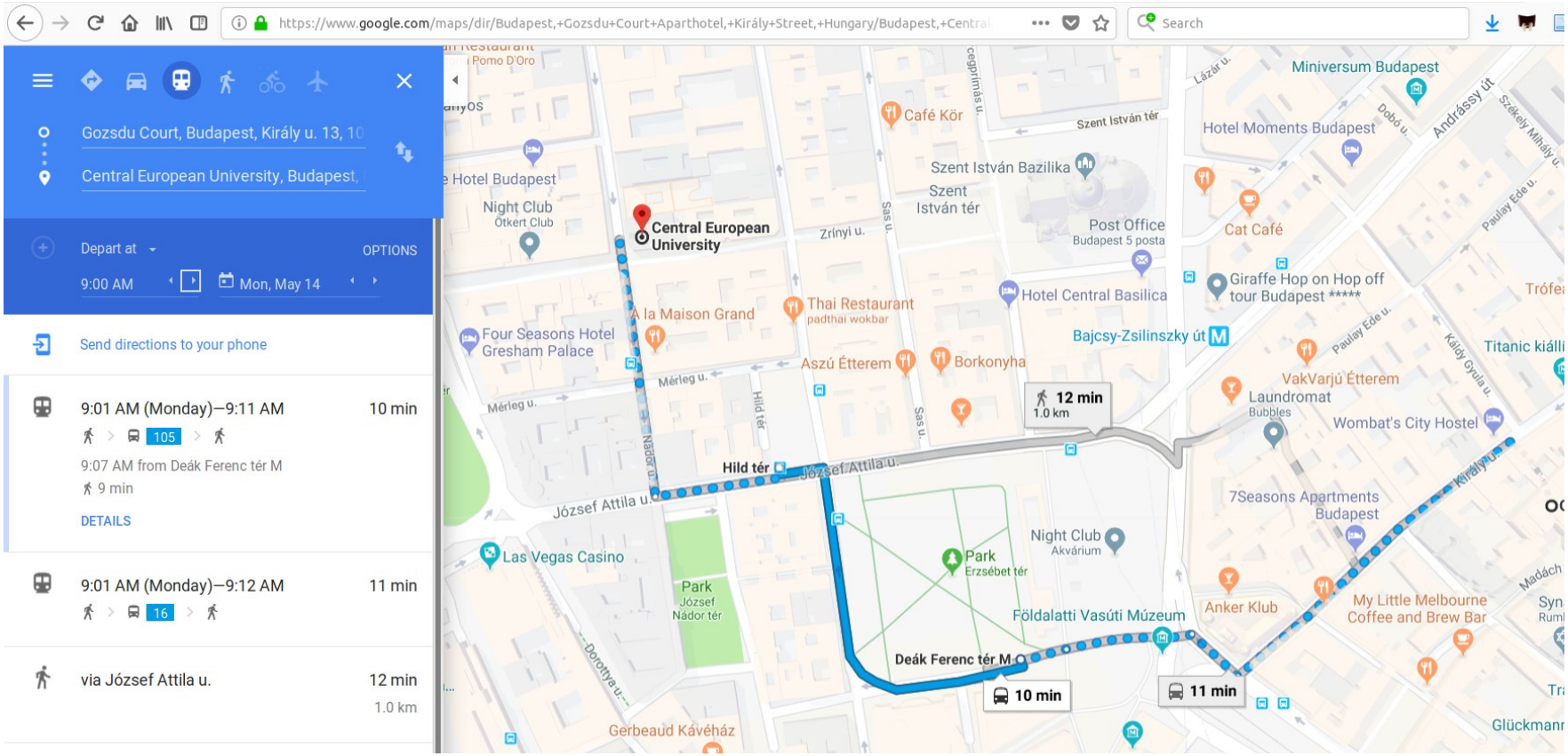
- a standard map with hotels *(booking.com, google maps, etc..) giving euclidean distance to the downtown or some historical places*
- Then filtering out ~70% (reason: price)
- Finding a set of hotels which gives us good distance/price ratio (+overall rating)



How does it look in practice?

~Top 10 desinations that need to be checked (in terms of traveling time)

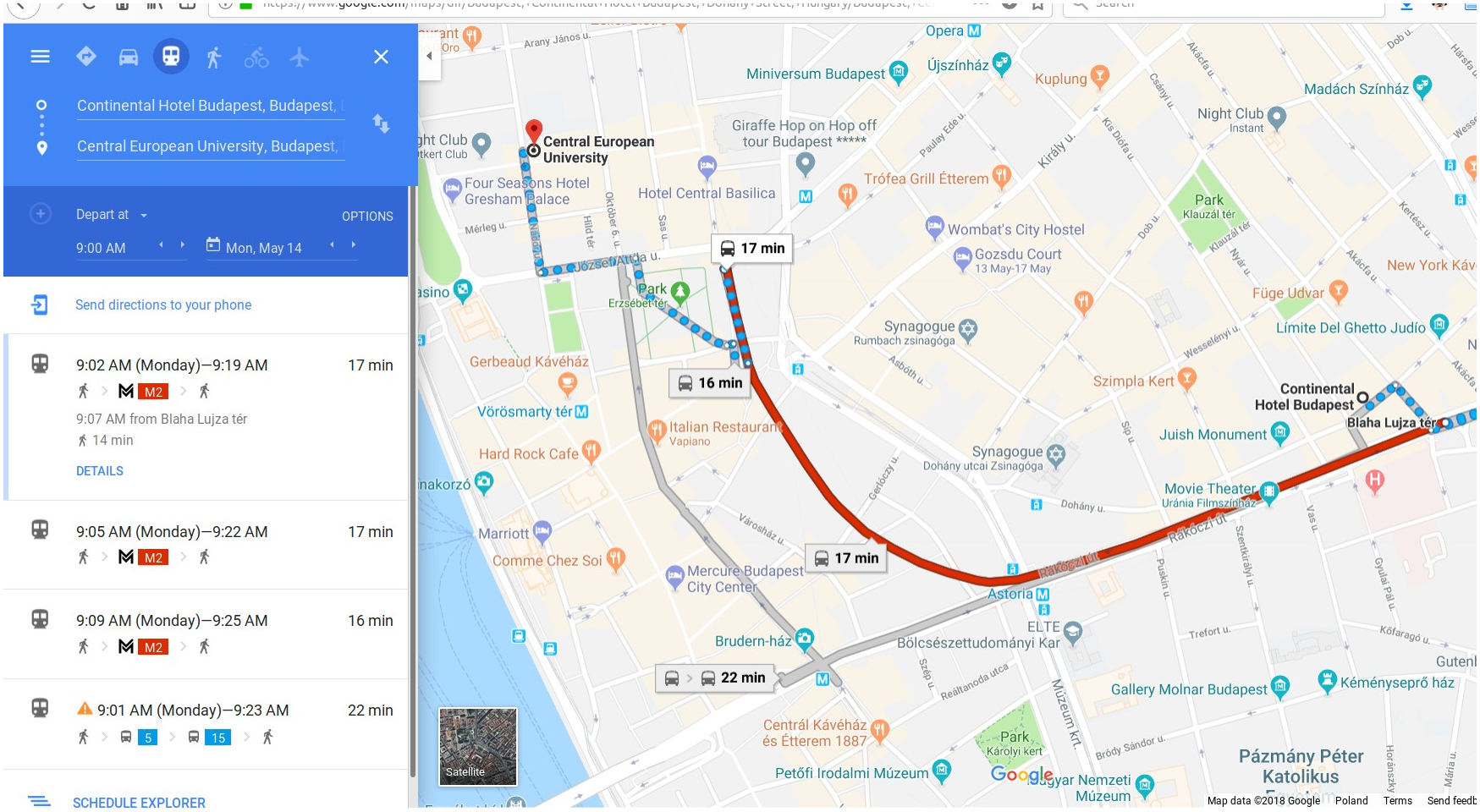
→ Hotel X1 → Walking 12 min., Public transport 10 min., Rating 6.6



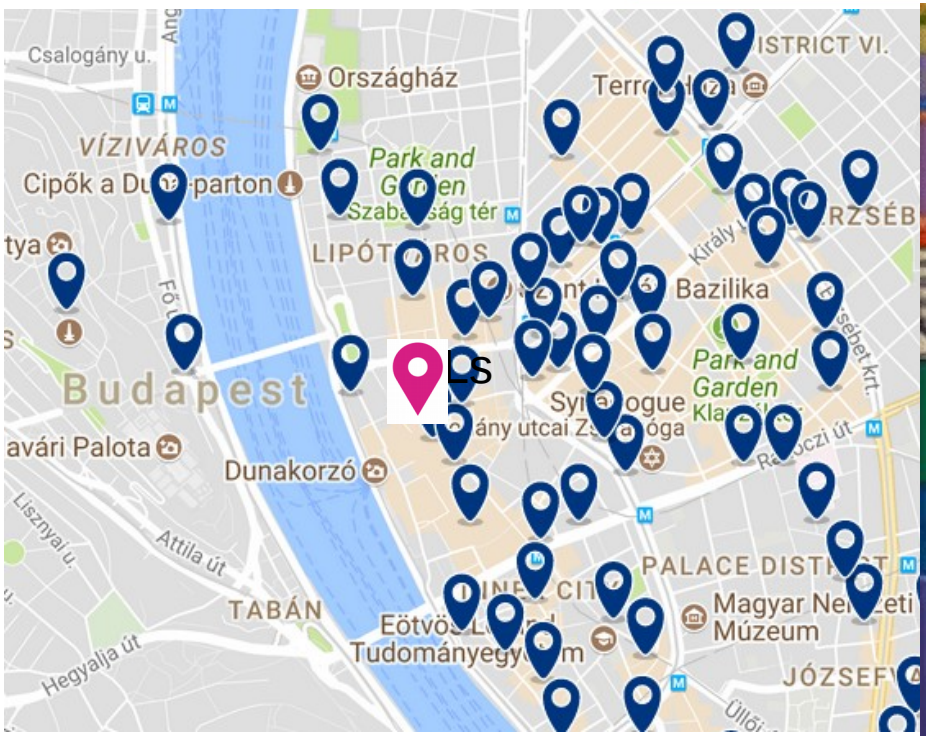
How does it look in practice?

~Top 10 desinations that need to be checked (in terms of traveling time)

→ Hotel X2 → Walking 25 min., Public transport 16-17 min., Rating 7.2



Time consuming process



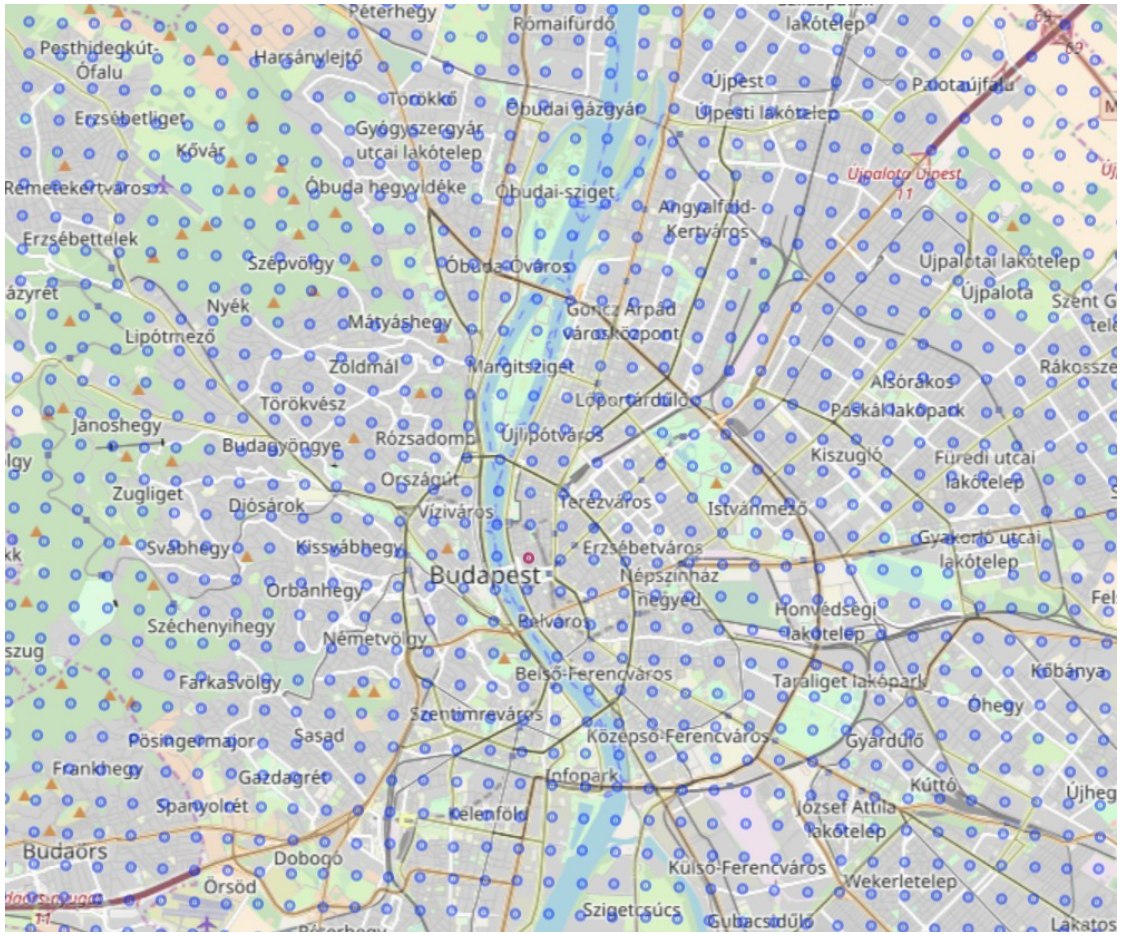
DISTANCE FROM A HOTEL TO THE VENUE
<u>DOES NOT ALWAYS</u> EQUAL TO TIME OF TRAVEL

IS IT REALLY THE BEST AND FASTEST WAY OF PROCEEDING?

How to make it automatic or at least semi-automatic with R and GIS?

Create a regular mesh around the conference/meeting's location:

- E.g. 1 x 1 km in UTM coordinates for 10-15 km in each direction (not too dense)
- Convert coordinates to lon-lat grid usable by the google services



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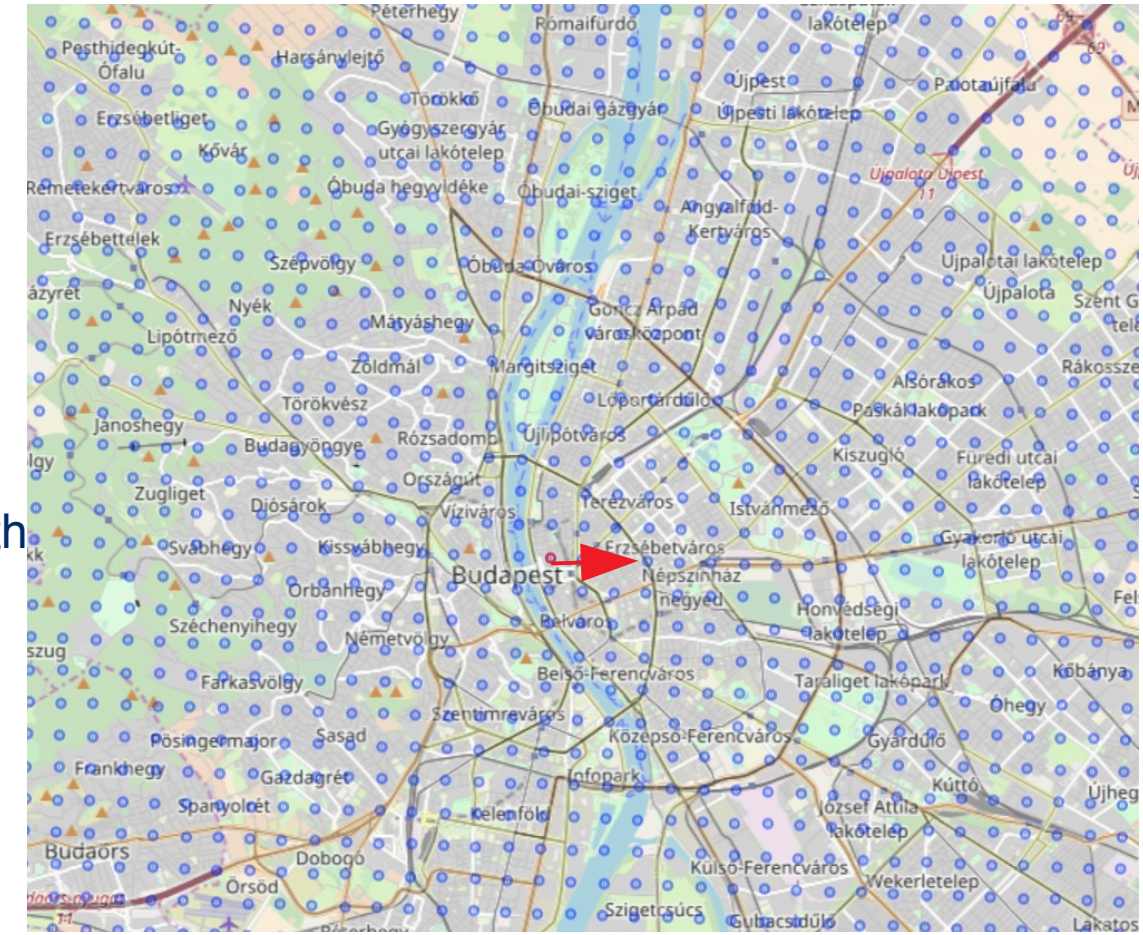

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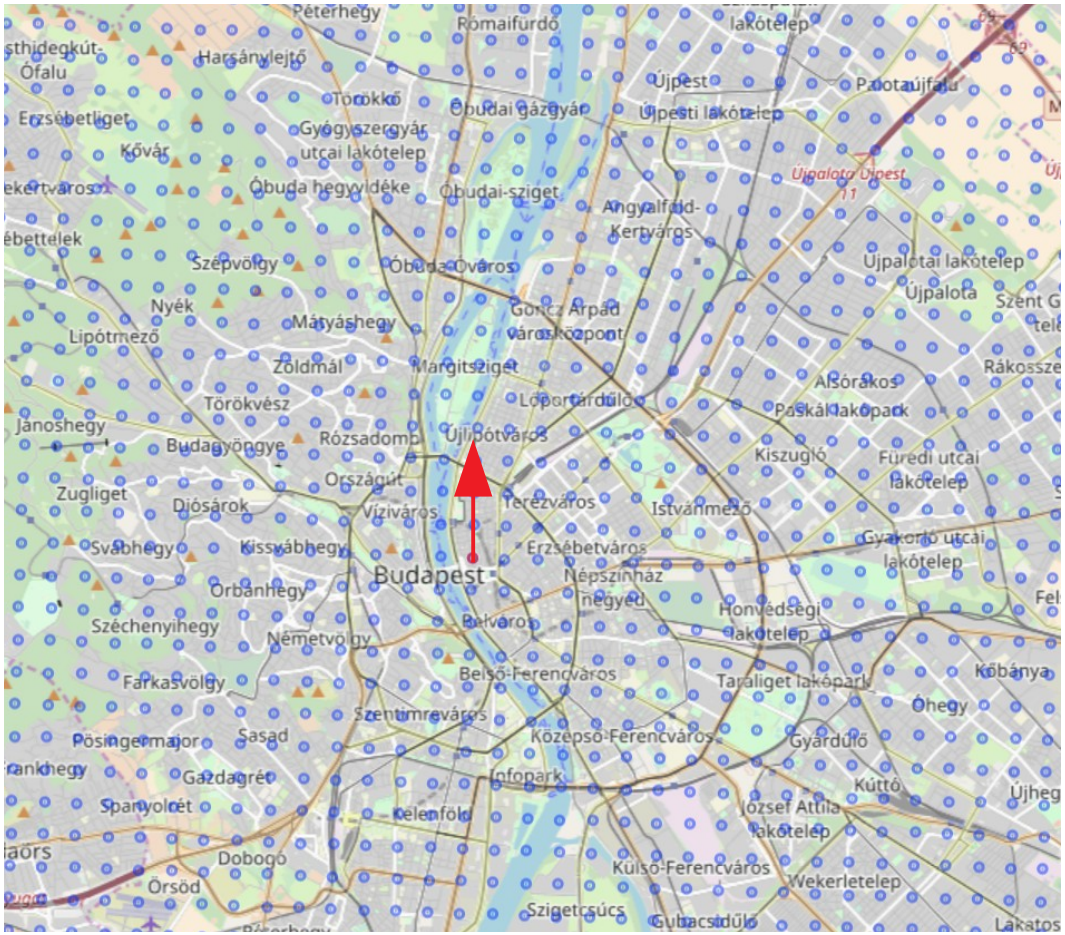
- Repeat this step for **walking, driving**, bicycling, **public transport**



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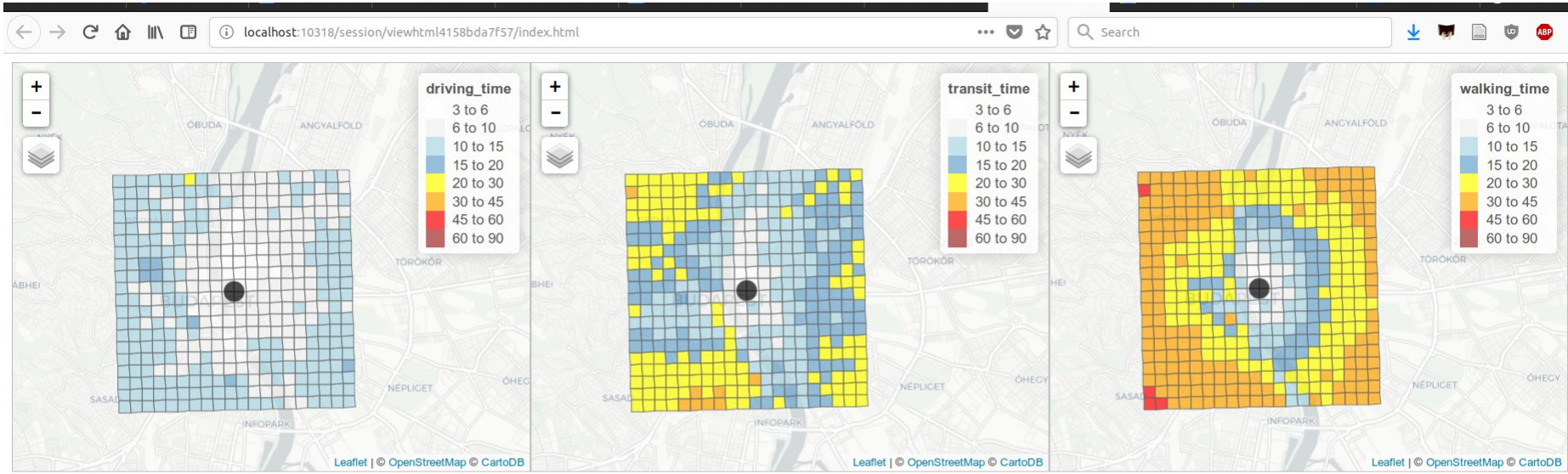

Taxi / Uber / etc…

Public transportation

Walking

(2) Improving readability:
Creating new layers with hotels' location (over 300!) and transport barriers (e.g. rivers) → **library:** `osmdata`

(3) Webscrapping of prices and hotel rates with `RSelenium`

How to make it automatic or at least semi-automatic with R and GIS?

(4) Interaction with `leaflet` clickable layers/features

→ strongly simplified version @rpubs: **http://rpubs.com/bczernecki/388489**

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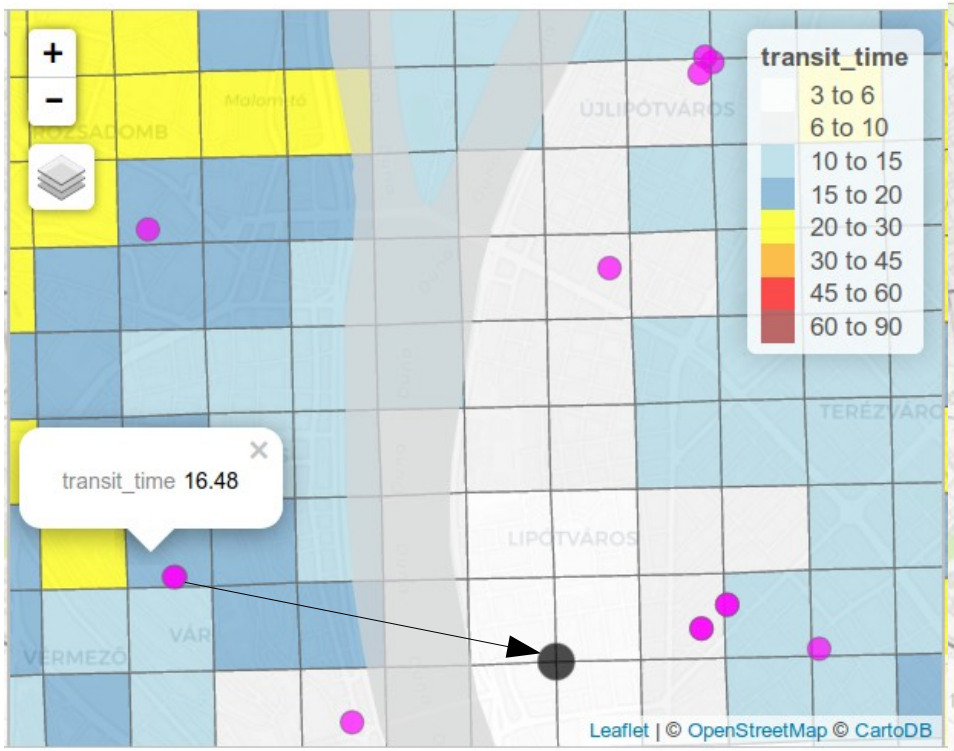
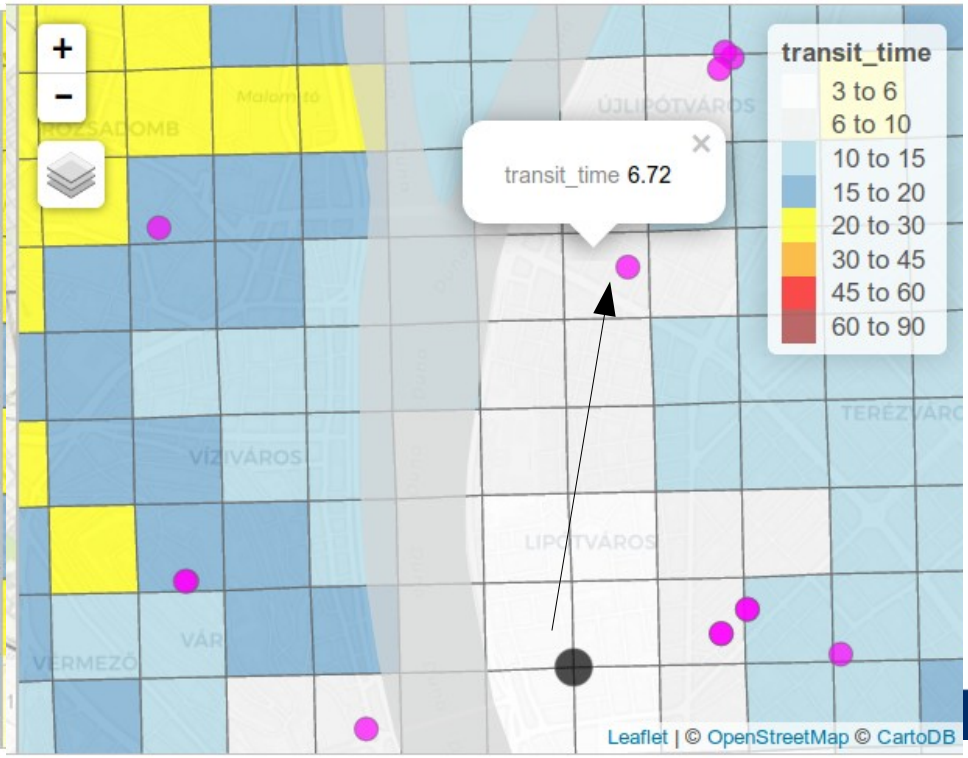
Confirmation: Distance != Time





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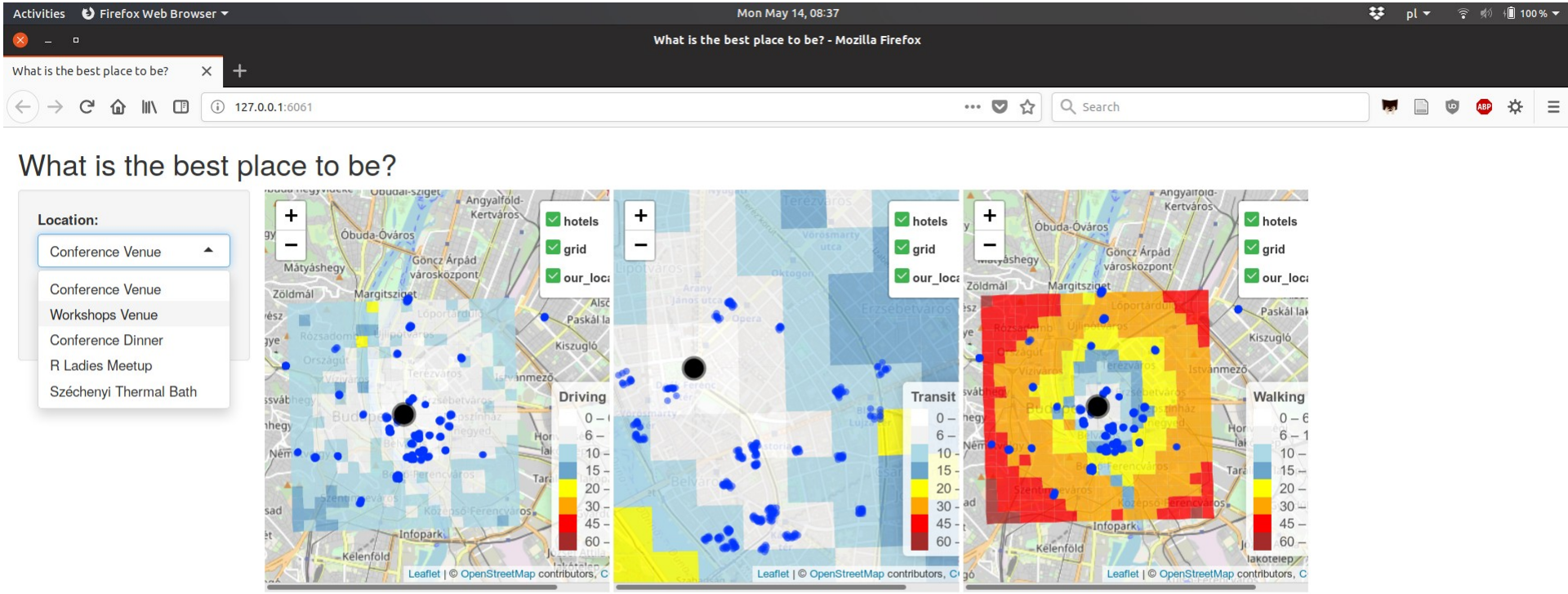
(5) Wrap up into Shiny (for non-nerdy people) and

sum it up into table with sorted results (for data scientist)

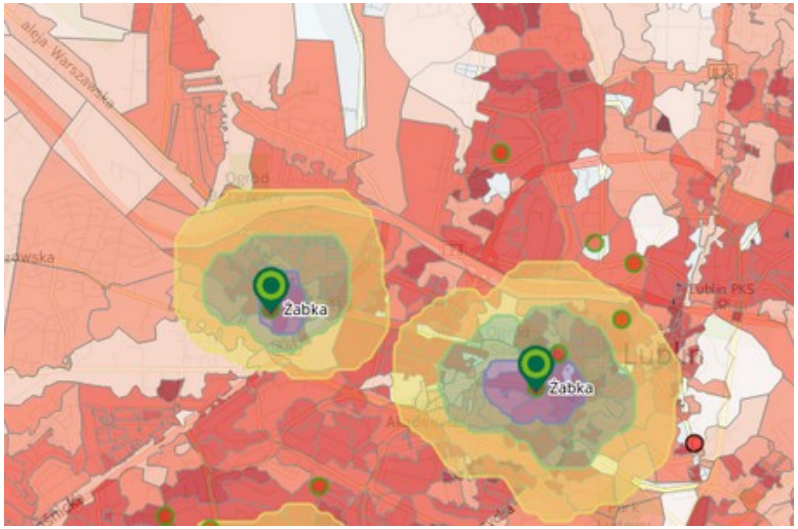


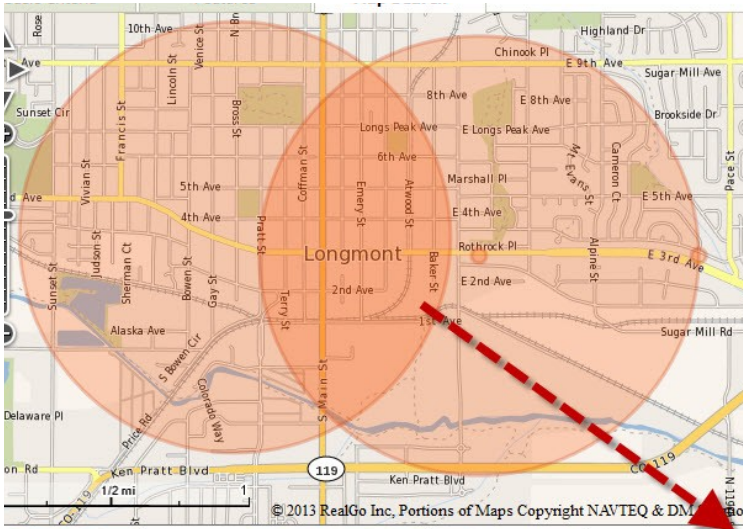
PlaceR → application elsewhere

Further ideas:

- Adding safety layer for districts
- Advanced filtering and broader statistics for particular locations
- Etc...

Location intelligence (business) | Let's meet halfway





Thank you for your attention

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University of Cincinnati

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