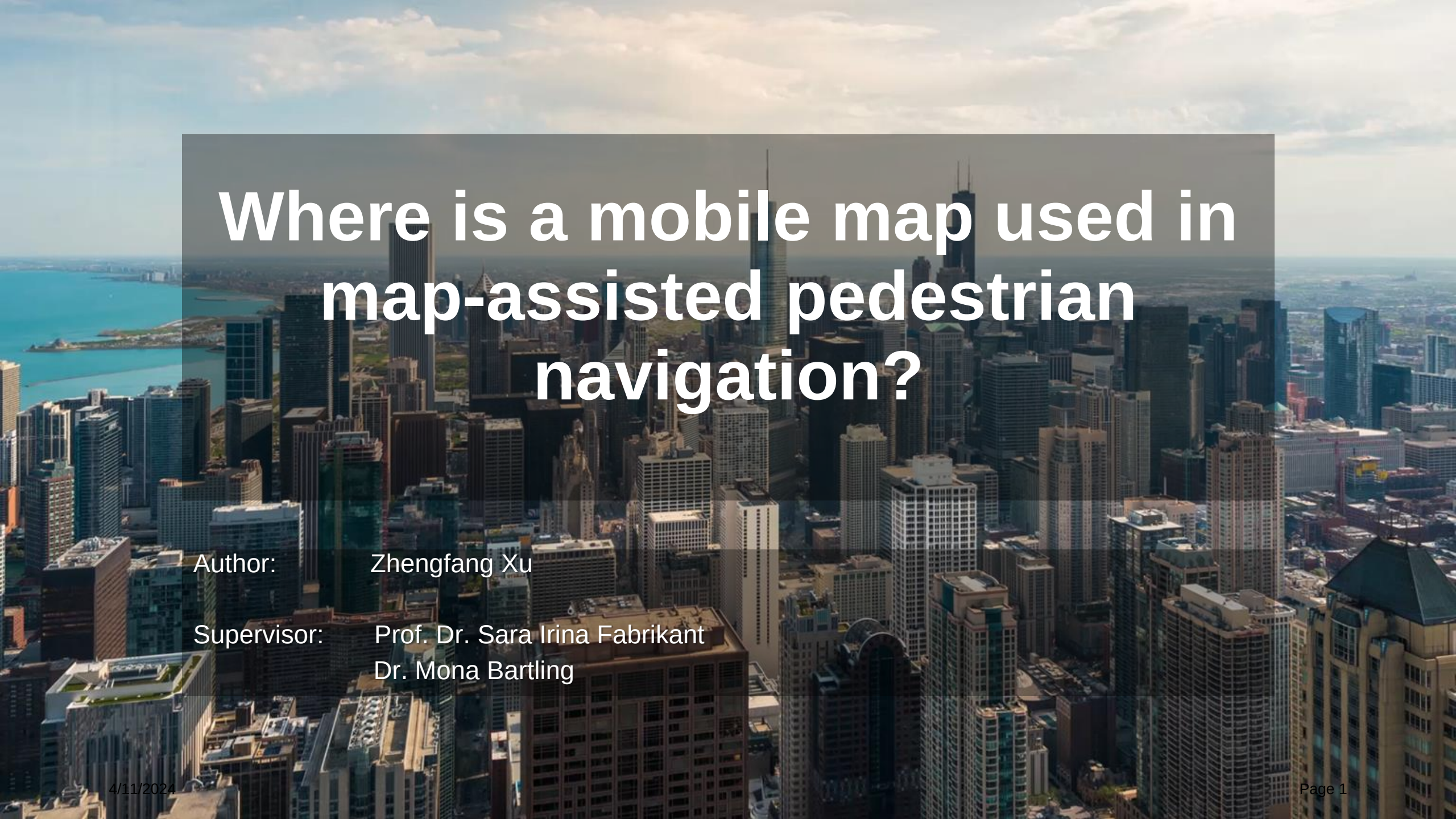


# Where is a mobile map used in map-assisted pedestrian navigation?


Author: Zhengfang Xu

Supervisor: Prof. Dr. Sara Irina Fabrikant
Dr. Mona Bartling

When using a mobile map to navigate to a new place, where do you need to unlock the phone screen and check the map?

? To understand where people check the map, we need to know why people check the map.

## Related research: motivations behind checking map

Wayfinding behavioral actions are those linked to

- ***orientation,***
- ***route decision,***
- ***route monitoring,***
- ***destination recognition***

(Carpman & Grant, 2002)

Checking map assists people in making decision during navigation.

## Related research: decision making during navigation

Pedestrians tend to make decisions **before** reaching intersections.

People with **higher** spatial ability, **earlier** to make decisions.

(Brunyé et al., 2018)

Map use strategies help us understand where people check map.

## Related research: types of map use strategies during navigation

constant support

independent and attentive

least effort and inattentive

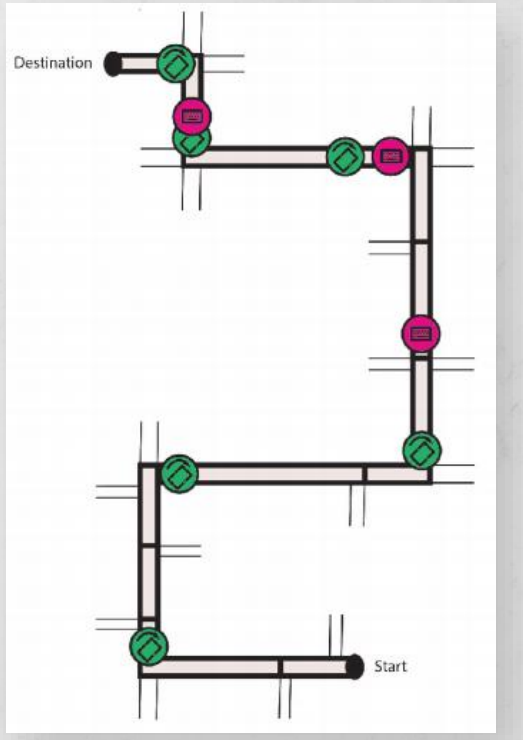
(Webber et al., 2012)

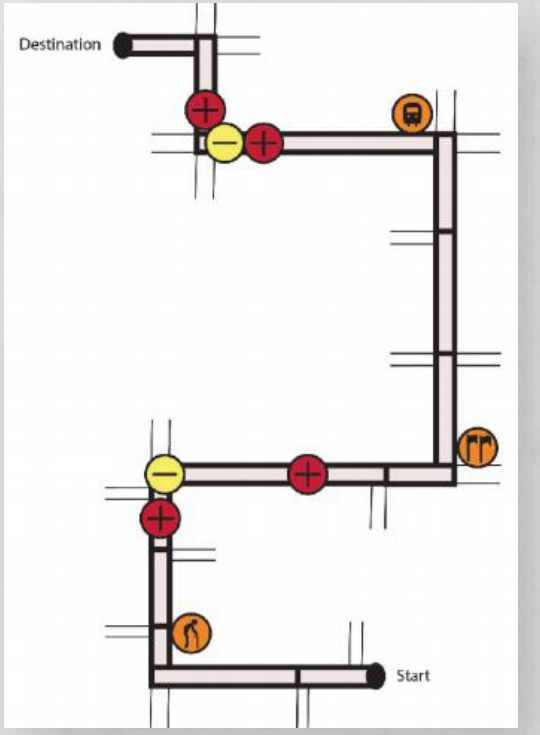
Map use strategies help us understand where people check map.

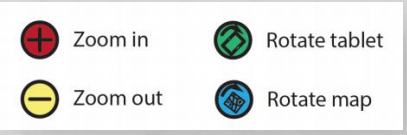
# Related research: types of map use strategies during navigation

Taking specific map interaction types into consideration.

(Brügger, 2020)



## Research Gap:

Little research has explored how people's map-checking behaviors change when the route varies (e.g., length, number of turns, whether shortcuts are used, etc.).

Little research has explored how environmental changes such as traffic density affect people's map-checking behavior.

# Research Question:

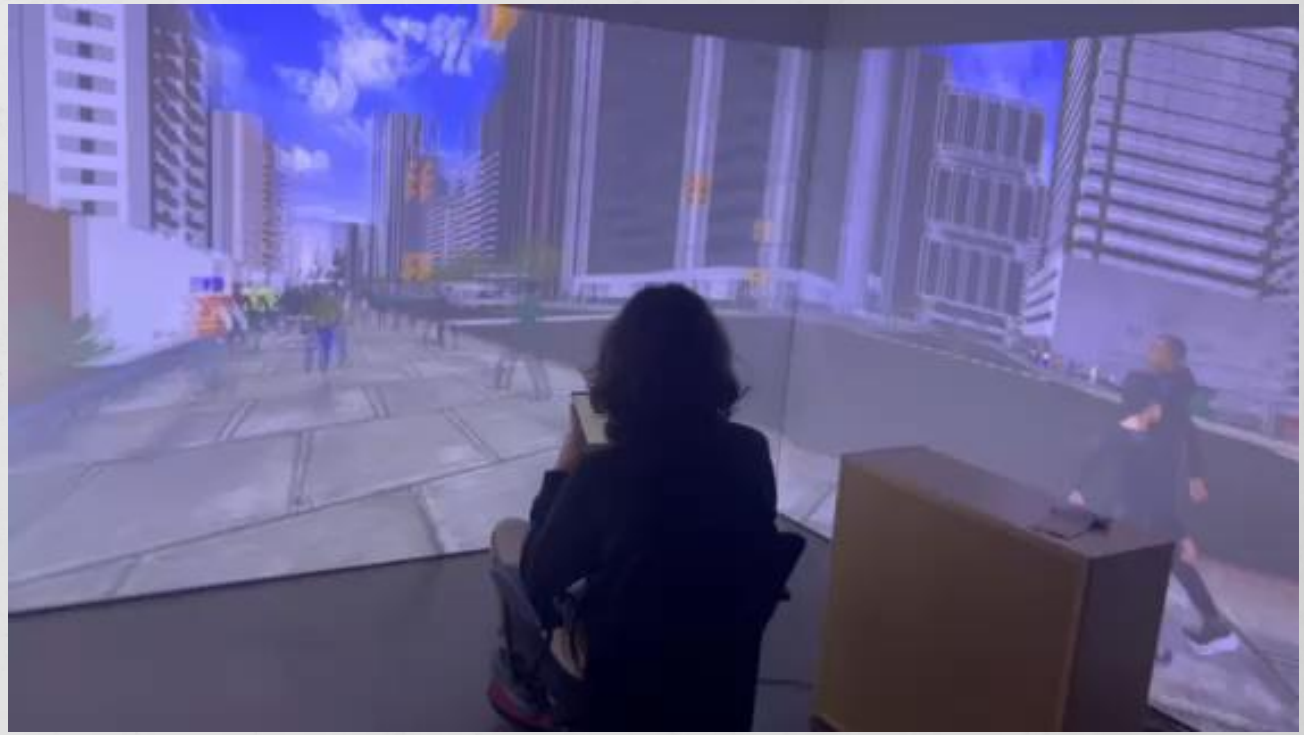
**1. What are the trajectory factors (e.g., length, number of turns, etc.) that influence where pedestrians check the mobile map during walking navigation?**

**2. What are the differences in map-checking behavior between heavy and light traffic density environments?**

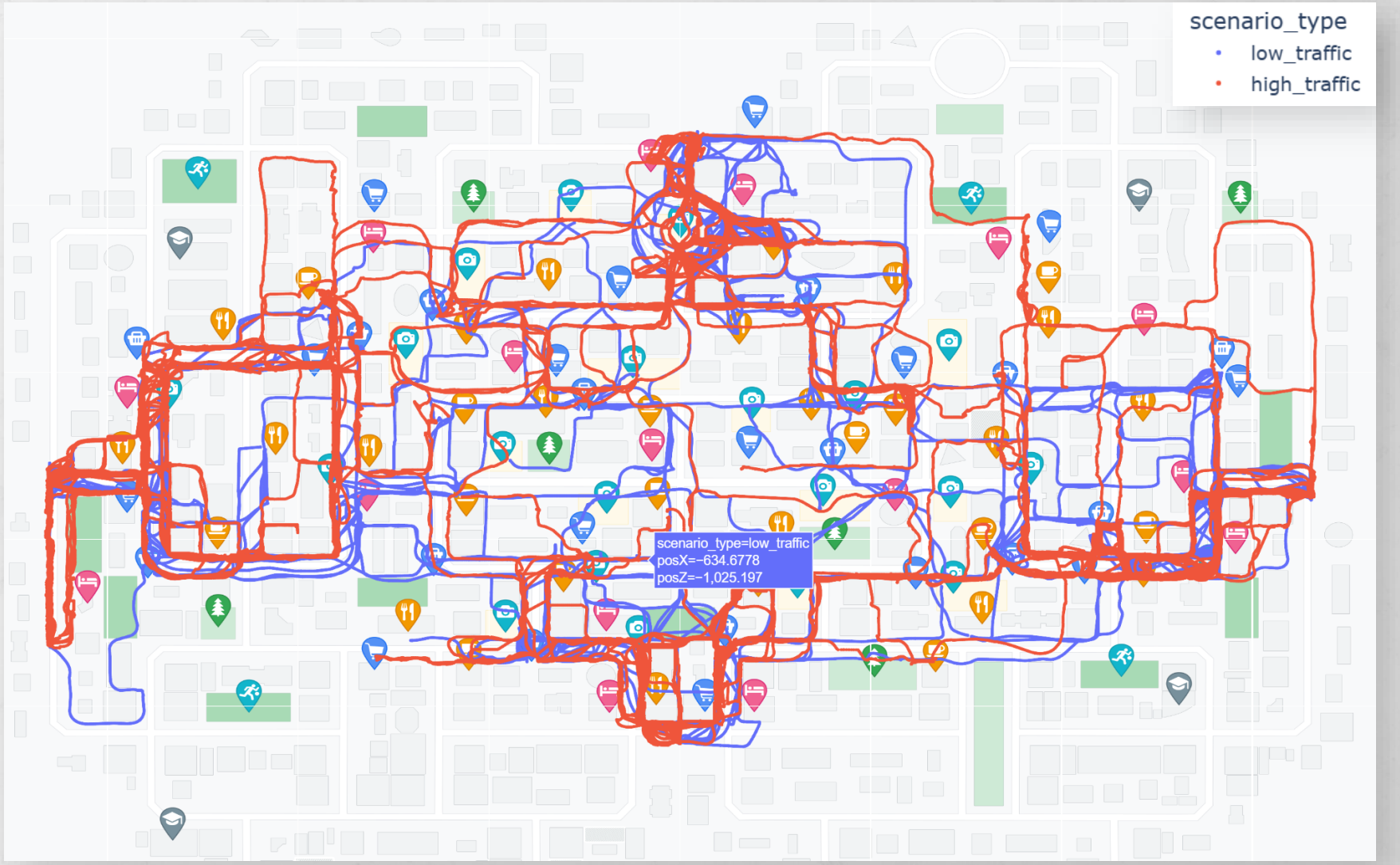
# Data Resource: VR Experiment

- Study on mobile map assisted wayfinding
- **Total study participants:** 54
- **Environmental conditions:**

  Light and heavy traffic density
- **Number of recorded wayfinding task trajectories:** 863



# Data Display:



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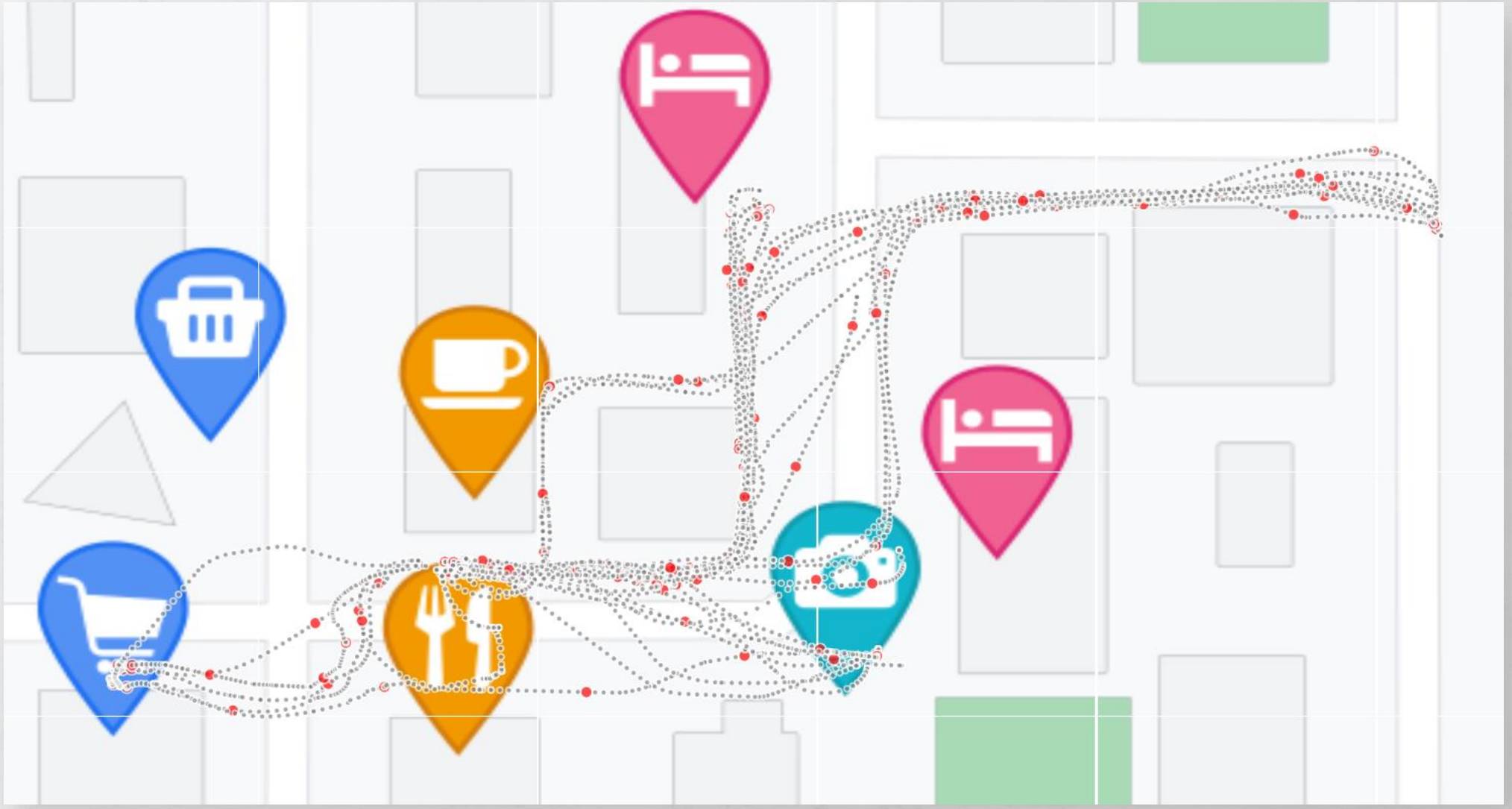
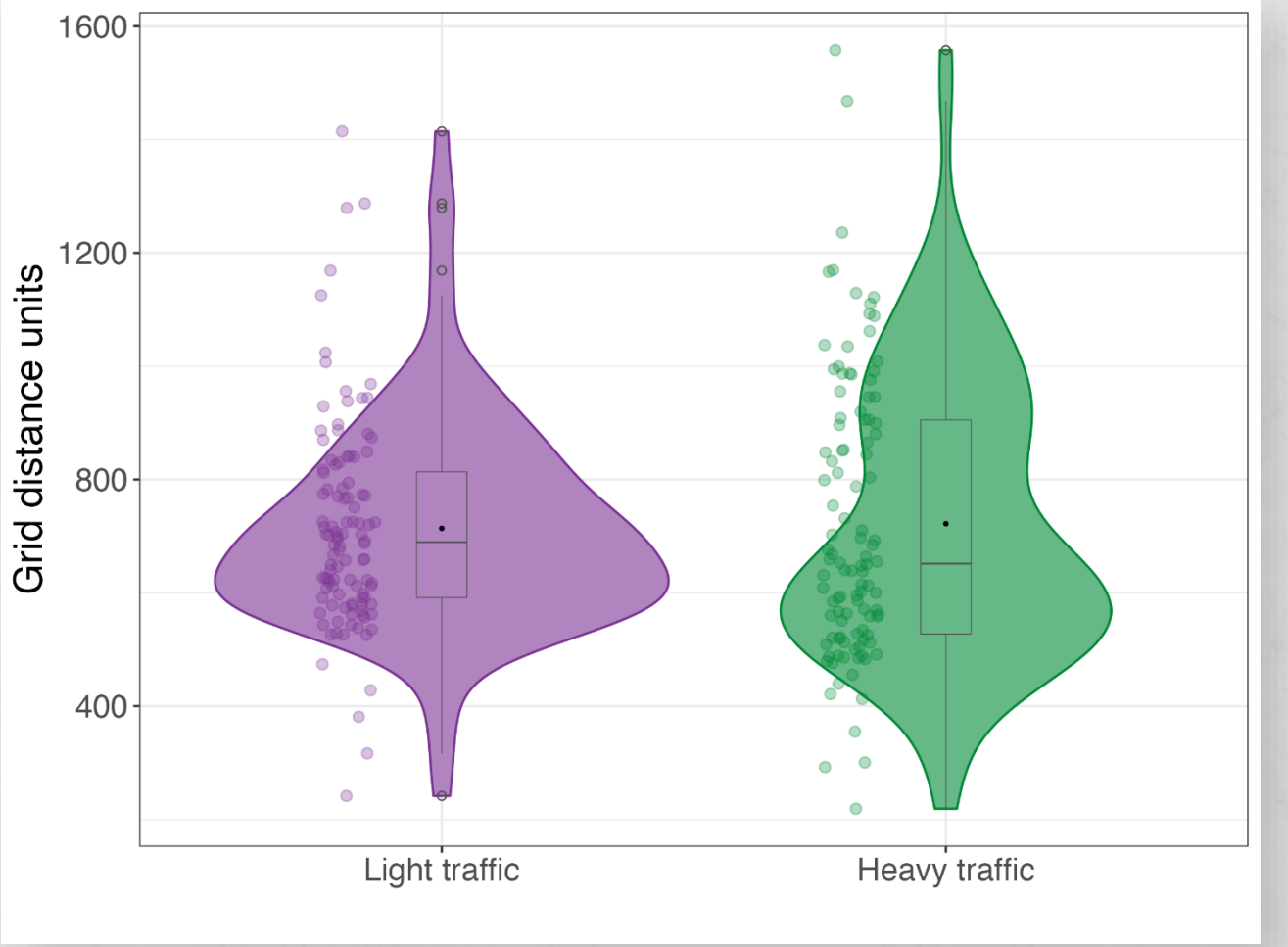
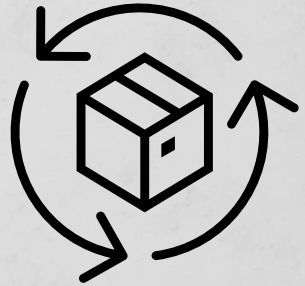


# Data Display(need to be adjusted later):



# Method :



- **Choose trajectory features**

E.g., length, number of turns, number of intersections, shortcut involvement, numbers of landmarks, etc.

- **Exploratory data analysis**

To determine which features are worth further investigation and to identify any additional features that have not been discovered.

- **Clustering**

Cluster trajectories based on the identified features.

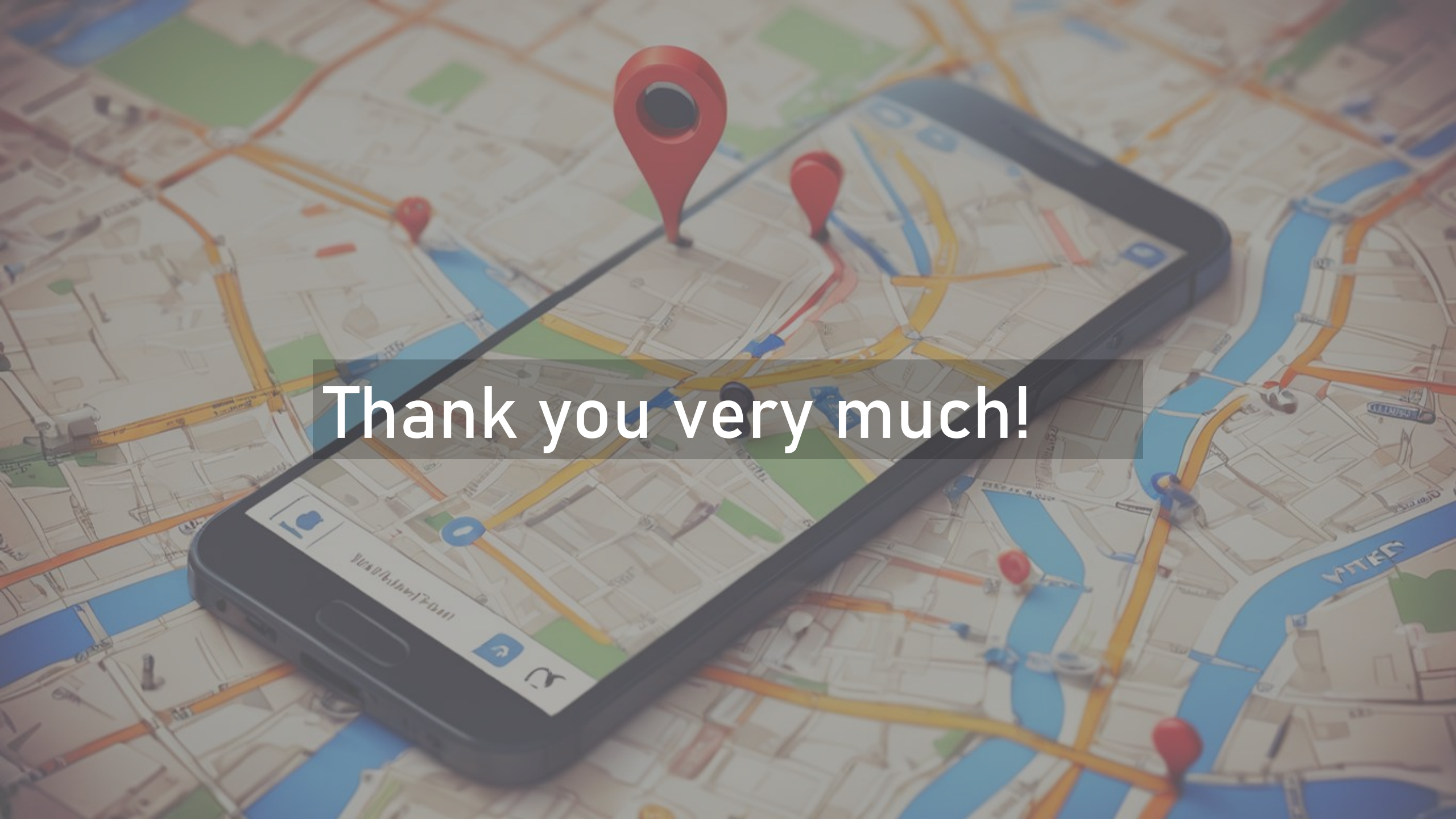
- **Comparative analysis**

Perform comparative analysis of map-checking behavior across trajectories with different features.

- **Iterative refinement**

Iterate on analysis approach based on initial findings and feedback.


Start of master thesis
Exploratory analysis
Comparative Analysis/
Iterative Refinement
Submission of the Master' s
Thesis
1 Feb. 2024
16 Apr. 2024
15 May 2024
15 June 2024
15 July 2024
31 Aug. 2024
30 Sep. 2024
1 Nov. 2024
Concept talk
Trajectory Clustering
Thesis writing
Master' s Exam


Thank you very much!