

# Improving Cycling Infrastructure for Vulnerable Cyclists



BikeACCESS Summer school

Group 2

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## 1. Introduction

Nowadays, cycling has gained much importance because of its eco-friendliness, health benefits, and economic reasons. Not all regions are well-designed for cycling, with infrastructure highly needed to promote it for the protection of vulnerable cyclists, including children, elderly citizens, and people with disabilities. All these groups become more vulnerable to accidents and thus need secure, accessible, and dedicated cycling routes. The idea behind this report is to highlight areas that have less-than-ideal cycling infrastructure for these vulnerable cyclists and suggest proposals for improvement with a view to ensuring cycling becomes safer and accessible for all.

## 2. Methodology

The study involved a two-step process to identify and analyze problematic areas:

### Step 1: Fieldwork Exploration and Data Collection

Our team conducted fieldwork in two groups: to explore the route by bicycle and on foot. The cycling infrastructure connecting one home location to three important areas in Ljubljana-the open market, the health center, and an open public space-was analyzed with the aim of identifying the possible threats and challenges that a vulnerable cyclist may face. We did mapping, establishing problem areas using the QField application by pointing out some places and drawing lines to show critical locations. Photos were taken documenting problematic areas: missing cycle tracks, narrow paths, unsafe paths, and insufficient access to key locations.

### Step 2: Analysis and Problem Identification

Following fieldwork, we imported the data into QGIS software and made a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis.

STRENGTHS	WEAKNESSES
The existence of bicycle tracks that form a network	Narrow tracks
The existence of parking spaces for bicycles	Damaged tracks
Good traffic signage and lights	Possible conflicts with the motor traffic and pedestrians
Suitable terrain	Not friendly for vulnerable groups
Faster moving through the city in rush hours	Missing bicycle tracks in some areas
	Limited visibility
	Steep or challenging gradients
	Inappropriate use of materials (bricks)
	Neglect of people with disabilities in track planning

	No space for new/better tracks
<b>OPPORTUNITIES</b>	<b>THREATS</b>
Planned bicycle tracks by the authorities Possibility for easy bike renting Bike-friendly mindset Tourism potential Environmentally sustainable Educated and skilled users Event hosting Improvement of existing infrastructure Expansion of parking facilities	The inconsistent maintenance can reduce the use of bicycles Possible accidents Increasing popularity of e-scooters Dual use of tracks by bicycle and scooters can cause accidents Increasing maintenance costs due to improper use and life span of bicycles Ignorance among bicycle users

This approach allowed us to identify issues affecting our community, and more significantly the vulnerabilities that put the susceptible cyclist at risk.

The significant issues identified are listed below:

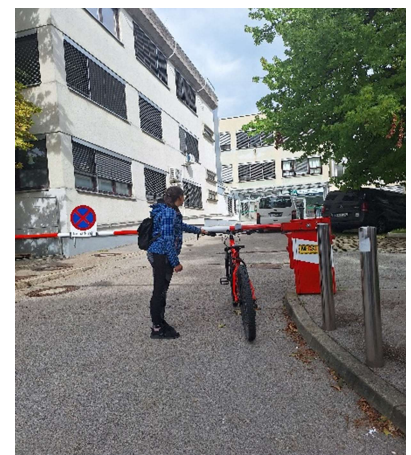
- Lack of cycling tracks on most paths forces the cyclist to share the lane with the motor vehicle or the pedestrian lanes.
- Almost all the available tracks are too narrow, close to the road, thus offering no free space for cyclists.
- Lack of appropriate parking spaces: Inadequate safe and accessible facilities for parking bicycles were highly noticed, especially for the vulnerable groups.
- Poor Access to Essential Points: Some points were hardly reachable. For instance, healthcare center Vič because of slopes and barriers, or Open Market due to crowding of areas.
- Bad Signaling: Improper signaling and demarcation for cycling in certain places would result in accidents in roundabouts.



Narrow cycling track

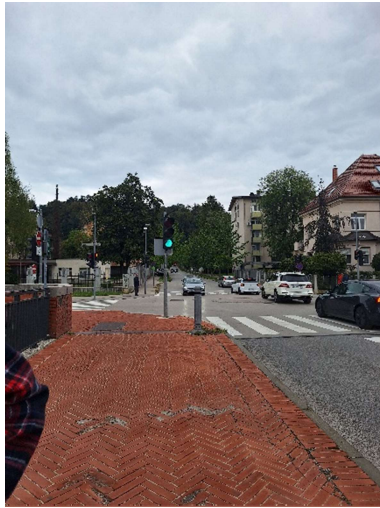


Inadequate parking spaces



Difficult access to healthcare center

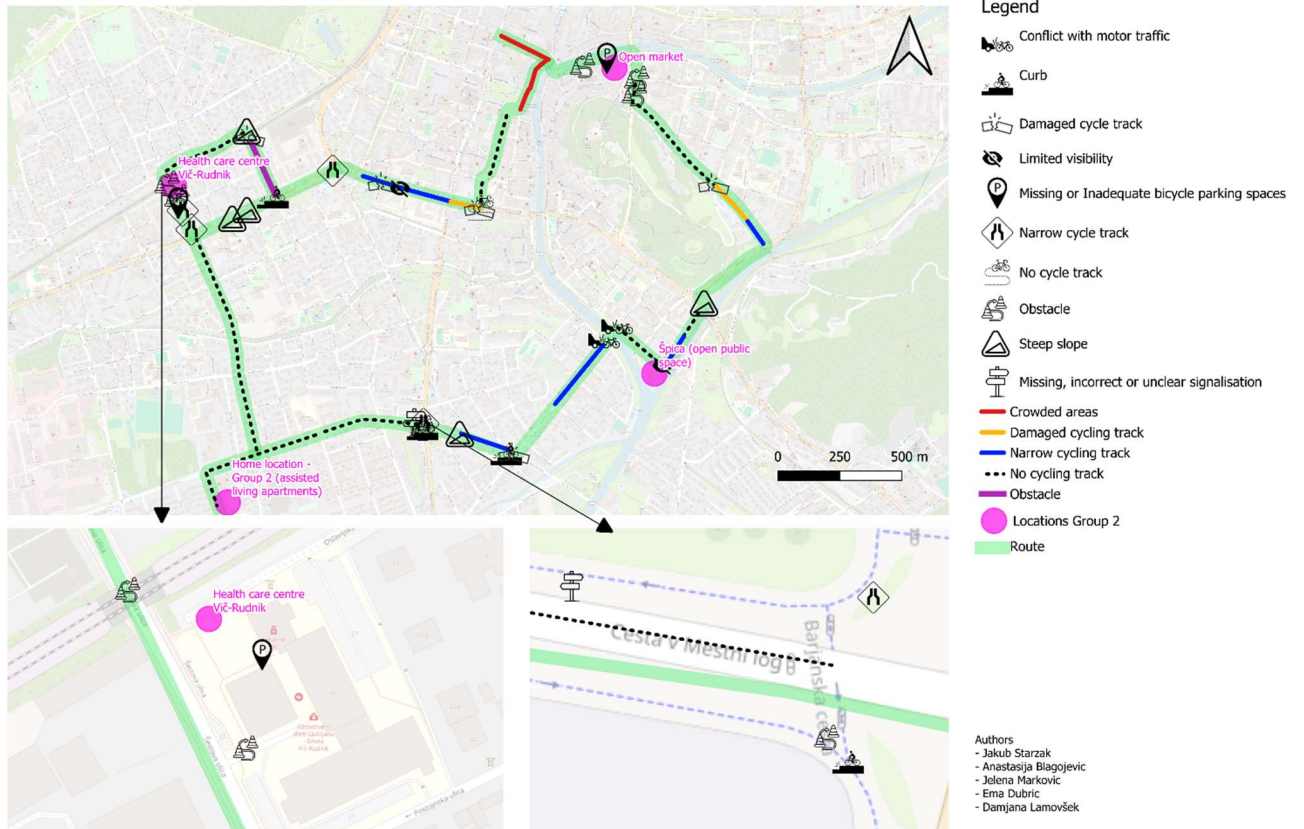




Improper signalization



Difficult passage

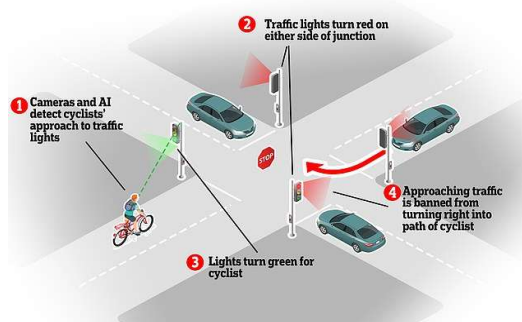


Map of the route with problematic areas

### 3. Solutions

We now propose the following, based on our field trip:

- 1. Building New Cycle Tracks:** New cycling tracks should be constructed in areas where they are currently missing, and they should be separated from motor traffic.
- 2. Widening of Existing Tracks:** In places where the tracks are too narrow and close to the road, these should be widened; there should be some physical barriers installed, such as curbs or green buffers.
- 3. Improved Bicycle Parking:** The bicycle parking stations at key points, such as an open market or a health center in Vič for example, are to be fitted with wider widths and with ramps.
- 4. Better Signalization and Signage:** Clear and visible cycling signs and signals should be installed in addition to traffic lights dedicated to cyclists to lessen misunderstandings at intersections and other high-risk areas.
- 5. Improvement of Route Conditions:** The routes should be regularly maintained in order to keep the routes in a good condition for cycling, obstacles removed, and surfaces improved.
- 6. Improving Sewage Drainage:** This eliminates potential dangers for cyclists and improves their riding comfort.
- 7. Organizing campaigns:** Organizing campaigns for vulnerable people.
- 8. Introducing regulations:** New regulations for electric scooters, which pose a particular risk to vulnerable groups.



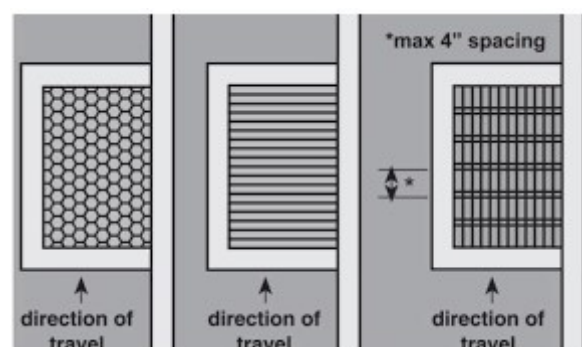
Bretter signalisation



Improved tracks



Campaigns



Improving sewage drainage

#### **4. Conclusion**

There is a lot of bicycle track already existing in Ljubljana, but many of them are in a bad condition, which make them unsafe and uncomfortable for daily use. Some issues we noticed were narrow tracks that are often not even 1,5 m wide. That makes them not only inaccessible to people with disabilities, but also dangerous to normal people.

In addition to track improvement, adequate and accessible bicycle parking is necessary. Many parking spaces nowadays are not big enough, while some of them are designed so badly that to reach them comfortably is really difficult and beyond the vulnerability of cyclists. The bicycle parking should be designed having flat surfaces, avoiding the raised platform, and highly accessible to all users. Ensuring enough space at these parking stations will also help avoid congestion and damage to bicycles.

Then again, sufficient signalization must be in place to enhance cyclist safety on the road. There should be better visual and clear signage as well as dedicated traffic lights for cyclists moving on those lanes so as to guide them and inform other road users of the highly accident-prone locations like roundabouts, crossroads, and other busy traffic points. Proper signalization will reduce confusion plus extremely enhance the overall safety of the cycling infrastructure.

These could include renovating these tracks, making them wider to accommodate more users, building adequate parking facilities, and enhancing overall signaling. In this aspect, safe, efficient, and inclusive cycling can be mentioned as the ways through which an enabling environment will be fostered to create a realistic, sustainable, and practical transportation option in particular for vulnerable road users.