

# More than meets the eye – Wider economic benefits of bicycle infrastructure (WEBBI)

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## 1 Introduction

- Wider economic benefits for car and high-speed rail infrastructure widely researched and sporadically in official appraisals (e.g., change in the implicit benefit in the German Federal Transport Infrastructure Plan or UK Guidelines [1]).
- Similar considerations for cycling infrastructure lacking which may lead to incomplete appraisals in policy-making decisions **underestimating cycling benefits and thus, limiting cycling infrastructure from wide-spread implementation** and its climate crisis mitigating potential.
- This PhD aims to answer **which wider economic benefits of bicycle infrastructure exist, how they can relate to urban policy decision-making**, who profits from them and accordingly could or should pay for it.

## 2 Method Overview

### 1. Analysis

- (Wider economic) benefits in transport
- Their role in existing appraisal processes and policy decisions
- Selected Sustainable Development Goals (SDGs) as indicators

### 2. Solution Framework WEBBI

- Prioritization of benefits regarding their mechanisms, relevance, and impact into the solution framework WEBBI
- Details on how the benefits can be measured and quantified, which data is needed and how they impact calculation

### 3. Application of WEBBI

- Use of existing Street Network Manipulator (SNMan) to simulate a cycling city with open street map data and additionally city-specific survey data
- Analysis of classical transport indicators in Visum or MatSim
- Application of WEBBI to estimate the wider economic benefits
- Evaluation and discussion on the impacts regarding selected SDGs, cost considerations, stakeholder involvement & policy implications.



Fig 1: Example application of SNMan to the city of Zurich [2]. Left side before, right side after re-structuring.

Public Transport Car Parking Motorized Traffic Cycling and micromobility

## 3 Preliminary Results

Simplified summary of cycling infrastructure benefits and their influence on each other and the urban environment

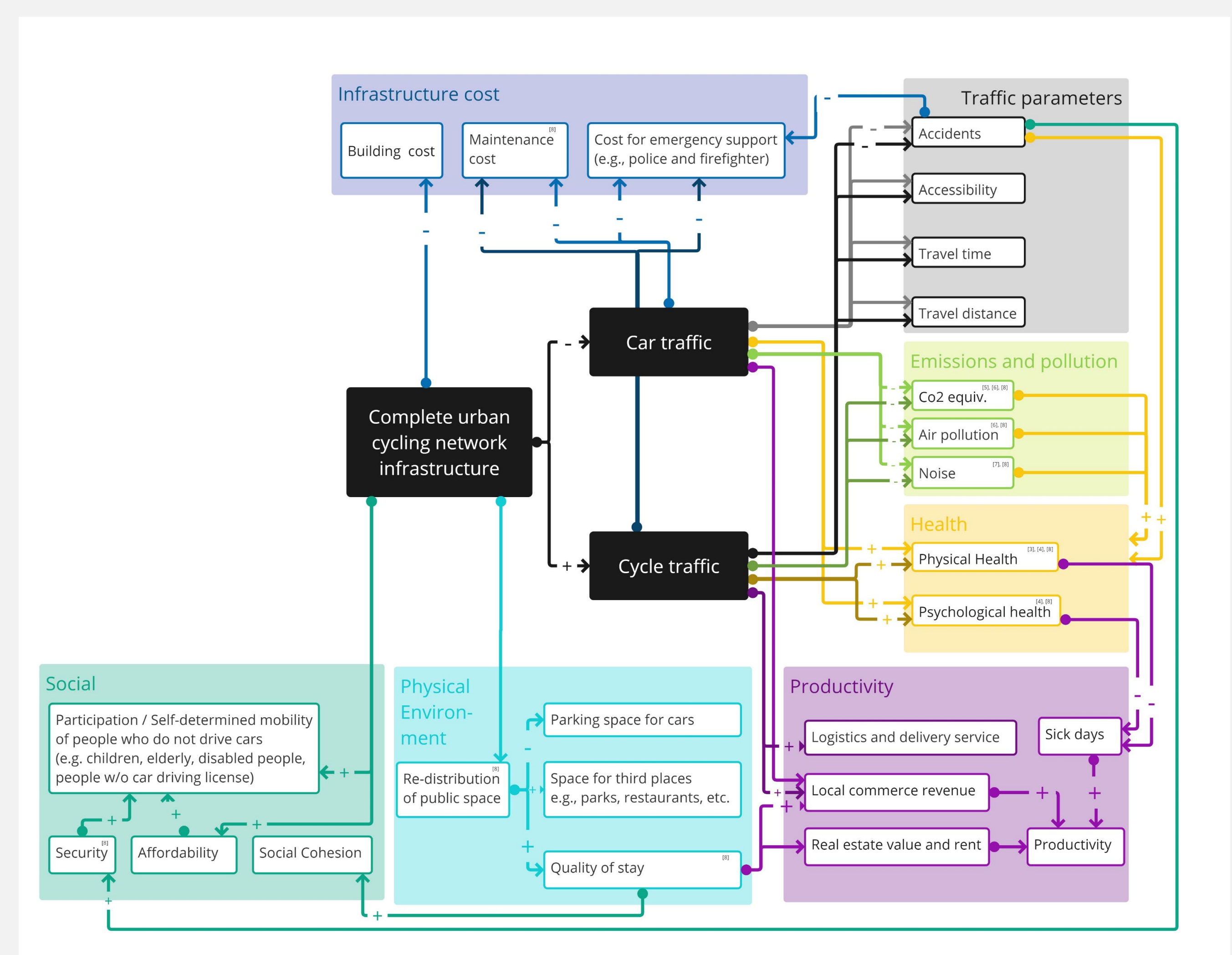


Fig 2: Impact flow diagram of cycling infrastructure regarding infrastructure cost, traffic parameters, emissions and pollution, health, productivity, physical environment and social factors.

## 4 Discussion and Conclusion

- Important factors identified which are only partly represented in official governmental appraisal methods
- Further evaluation on their quantification, data basis and influence needed
- Framework may provide a beneficial support for more complete appraisal methods regarding cycling infrastructure projects

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