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Pedaling Progress: Insights into the Acceptance and Consequences of Bicycle-Friendly Side Streets

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This work addresses the following topic(s) from the Call for Contributions:
(Please check at least one box)

- Placemaking to integrate urban spaces and mobility
- Promoting sustainable mobility choices in metropolitan regions
- Governing responsible mobility innovations
- Shaping the transition towards mobility justice
- System analysis, design, and evaluation
- other: _____

Extended Abstract

Problem statement

Promoting cycling is a crucial element in achieving the transition to sustainable transportation in urban areas. To this end, the city of Frankfurt has adopted the "Cycling City Resolution," which includes the redesign of eleven "bike-friendly side streets." This approach aims to promote walking and cycling by introducing features such as bike lanes, bicycle parking facilities on car parking spaces, and reduced car speeds. These projects entail significant changes to the current allocation of road space. However, this transformation is not without controversy, as it raises concerns and fears among some stakeholders. Therefore, the Research Lab for Urban Transport (ReLUT) was commissioned to scientifically evaluate the effects of the redesign and investigate the outcomes of the implemented measures. To achieve this, comprehensive surveys of various user groups on the respective streets and the surrounding areas were conducted. Additionally, qualitative interviews were held with local businesses. The surveys aimed to determine behaviours, as well as perceptions and usage of the redesigned public space. Different user groups and modes of transportation were differentiated in the survey, and significant differences were observed between these groups. For example, the group of cyclists differed in their assessments from car users. Furthermore, pedestrians and cyclists also exhibited differences in certain aspects, such as their evaluation of traffic safety following the introduction of a "Fahrradstraße" on Oeder Weg. The interviews aimed to capture individual impacts of the measures on local businesses, with a focus on comparing the before-and-after situation concerning economic and commercial factors. In total, 2,800 individuals and 60 business owners participated in the study on Oeder Weg alone, which was the first redesigned street. Observations were also conducted to assess usage patterns and potential conflict areas. Based on these observations and statements from the surveys, conclusions regarding traffic safety can be drawn. Objective traffic safety is further verified through traffic accident statistics provided by the city of Frankfurt. Additionally, changes in car, bicycle, and pedestrian traffic volumes before and after the implementation of the measures, as well as traffic shifts, especially of car traffic, in the surrounding streets, are analysed using counting data.

Research objectives

Within the framework of this project, the effects of individual redesign measures on three bicycle-friendly side street will be evaluated, with the aim of identifying successes and shortcomings resulting from the initiatives implemented by the city of Frankfurt am Main. The research objectives are aligned with the following research hypotheses, which will be systematically investigated throughout the project:

1. **Impact on Modal Shift:** Assess whether the redesign into bike-friendly side streets leads to increased bicycle numbers and reduced motor vehicle traffic in the affected streets.
2. **Parking Behavior:** Examine whether the redesign does not result in increased traffic for the purpose of searching for parking in the affected streets.
3. **Spillover Effects:** Investigate whether the redesign does not cause adverse traffic disruptions in the surrounding streets.
4. **Quality of Life:** Determine whether the redesign enhances the residential and recreational quality of life in the affected streets.
5. **Traffic Safety:** Analyse whether the redesign improves traffic safety for all road users in the affected streets.
6. **Enforcement of Traffic Rules:** Evaluate whether the redesign reduces illegal parking and stopping, especially by delivery vehicles.
7. **Business Impact:** Investigate whether the redesign has no negative impact on the operation of local businesses, including retail and hospitality establishments.

Methodological approach

The research employs a multifaceted approach, combining surveys, interviews, observations, and traffic counts to comprehensively assess the effects of bike-friendly side streets in Frankfurt. Surveys targeted different user groups and transportation modes to discern their behaviours and perceptions. Qualitative interviews with local businesses focused on the economic aspects of the transformation. Observations helped gauge usage patterns and identify potential conflicts. To evaluate traffic safety, both subjective assessments and objective traffic accident statistics were utilized. Additionally, changes in traffic volumes and traffic diversion were analysed through counting data.

(Expected) results

The results of the study indicate that the introduction of bike-friendly side streets in Frankfurt has led to significant differences in the perceptions and behaviours of various user groups. Cyclists and pedestrians, in particular, showed distinct responses, with variations in their assessments of traffic safety and usage patterns. Qualitative interviews with businesses revealed both positive and negative impacts on the local economy, depending on the specific circumstances of each establishment. Improvements in quality of life scores as well as road safety were observed, both subjectively and through objective accident statistics. Furthermore, changes in traffic volumes and diversion patterns were analysed to understand the broader effects of these measures on the surrounding streets. Overall, the study provides valuable insights into the acceptance and consequences of bike-friendly side streets, contributing to the ongoing efforts to promote sustainable urban transportation in Frankfurt.