The Problem We Wanted to Solve

written by Linus Vock

In recent years, more and more cities have been searching for ways to make urban mobility more sustainable, safer, and more pleasant. Fürstenfeldbruck, a medium-sized town in the Munich metropolitan area, joined this movement in 2022 by introducing a 20 km/h traffic-calming zone in its inner city. The goal was clear: reduce through traffic, improve road safety, and make public spaces more inviting. But how can we know if this kind of measure really works?

That's where things get complicated. While the idea of slowing cars down sounds good in theory, real-world impacts are often difficult to measure. Local governments are under pressure to deliver results, but lack the tools to simulate or predict the effects of such changes before implementing them. Decisions are often based on fragmented data, guesswork, or public sentiment rather than solid evidence. And even when some data is available – like traffic counts or accident statistics – it rarely tells the full story.

In Fürstenfeldbruck's case, traffic was counted before and after the introduction of the speed limit, and some citizen feedback was collected via email. But there were still big gaps: there's no reliable data on air quality or noise, and it's unclear how residents' perceptions of safety or quality of life have changed. The question we faced was both practical and fundamental: can we develop a better way to understand, test, and discuss the impact of traffic-calming measures – not just after they've been implemented, but before?

Fig. 1: Sign on a parklet in Fürstenfeldbruck inviting public feedback

So, our group set out to explore whether a digital simulation platform could help close this gap. We imagined a tool that lets people – whether city planners or local residents – try out different traffic interventions on a virtual map and instantly see their expected effects. We wanted to make the process of urban transformation more transparent, inclusive, and data-driven.

This challenge is not unique to Fürstenfeldbruck. Many towns of similar size across Europe are experimenting with ways to become more livable and climate-friendly, often without the digital or analytical resources of larger cities. That's why we believe this project could serve as a model – not just to evaluate a single pilot zone, but to rethink how cities plan and communicate changes to their streets.

Our Idea and How It Developed

written by Niels Duske

At the start of our project, we knew we were dealing with a complex and messy issue. Traffic, public space, safety, climate – everything is connected, and every change in the system seems to trigger new questions. What happens if you close off a street? Will traffic disappear – or just move somewhere else? Will people feel safer – or just more annoyed? We had the traffic data from Fürstenfeldbruck, and we had a clear goal from the city: understand whether the 20 km/h zone actually worked. But we quickly realized that analyzing the past alone wouldn't be enough.

Fig. 2: Field research conducted on Schöngeisinger Street in Fürstenfeldbruck

During our early discussions, we found ourselves coming back to the same frustration: even with good intentions, cities often struggle to predict the consequences of local measures. There's rarely one clear answer, and even when some data exists, it's difficult to use it in a meaningful way that includes the public. We started asking ourselves: what if people could test these ideas before they are implemented? What if we could create a space where different scenarios could be tried out, risks discussed, and outcomes visualized?

That's when the idea for an interactive simulation platform started to take shape. At first, it was just a sketch on paper: a map of Fürstenfeldbruck, clickable streets, a few toggle buttons for speed limits or bike lanes. But the more we talked about it – with other students, with people from the city, and with our supervisors – the more it made sense. It wouldn't be about predicting the future with 100% accuracy. It would be about making different outcomes visible, understandable, and debatable.

Our process wasn't linear. We explored different datasets, looked at examples from other cities, and struggled with questions around fairness, usability, and technical feasibility. We debated whether our model should be more analytical or more accessible. In the end, we decided to focus on creating a prototype that could demonstrate the core idea, even if some features were still in progress. The priority was to build something that could be tested, expanded, and improved – ideally with input from both citizens and experts.

We didn't set out with a fully formed plan. The idea evolved through trial, error, and many late-night conversations about what mobility means in real life. That process – messy, creative, and full of uncertainty – turned out to be just as important as the final result.

Our Solution: A Digital Tool for Simulating and Evaluating Traffic-Calming Measures

written by Simon Zass

To address the challenges we identified, we developed an interactive web-based platform that allows users to simulate and assess various traffic-calming measures in Fürstenfeldbruck. The platform is designed to be intuitive and accessible, enabling both residents and urban planners to engage with potential changes in the city's traffic infrastructure.

Key Features:
Interactive Map Interface: Users can select specific streets within Fürstenfeldbruck and apply different traffic-calming measures, such as speed limit reductions, road closures, or the addition of bike lanes. This hands-on approach helps users visualize the potential impact of these changes in a familiar context.

Simulation of Impacts: Once measures are applied, the platform provides immediate feedback on key indicators, including traffic volume, safety, environmental impact, and public space quality. These simulations are based on existing data and predictive models, offering a data-informed glimpse into possible outcomes.

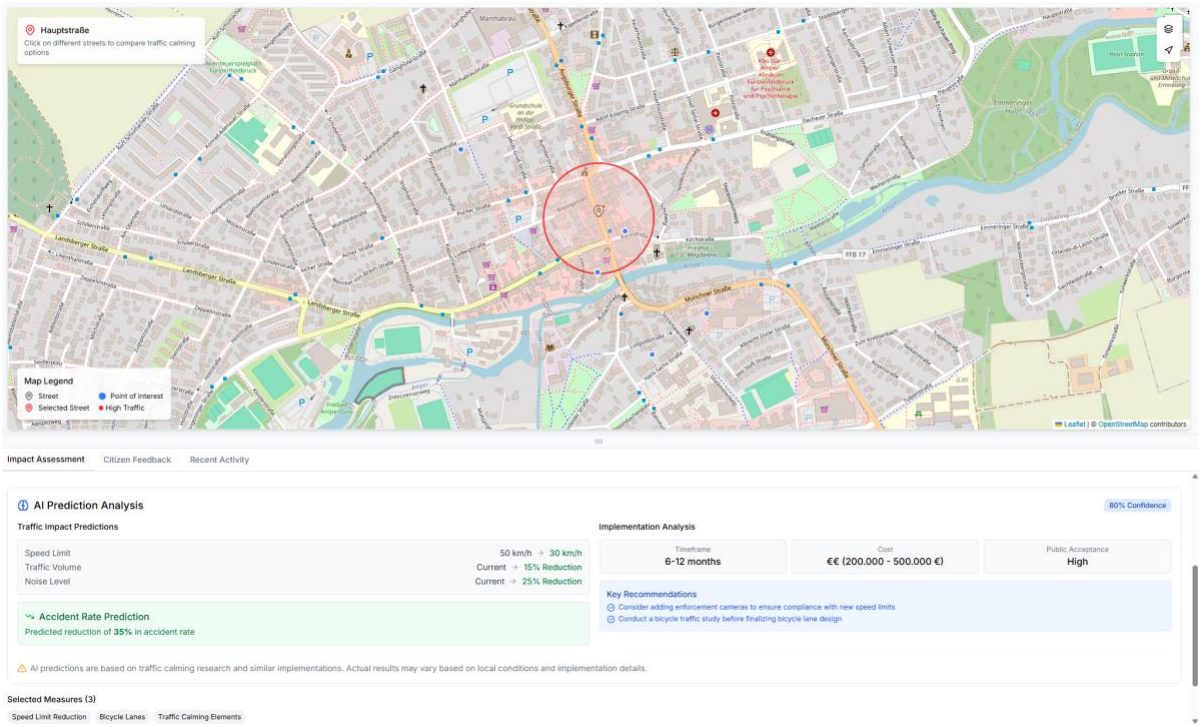

Fig. 3: AI prediction analysis of traffic calming measures on Fürstenfeldbruck's main street

Resident Feedback Integration: Recognizing the importance of community input, the platform includes a feature for users to rate the simulated scenarios. This feedback is crucial for understanding public sentiment and refining the models to better reflect the community's needs and preferences.

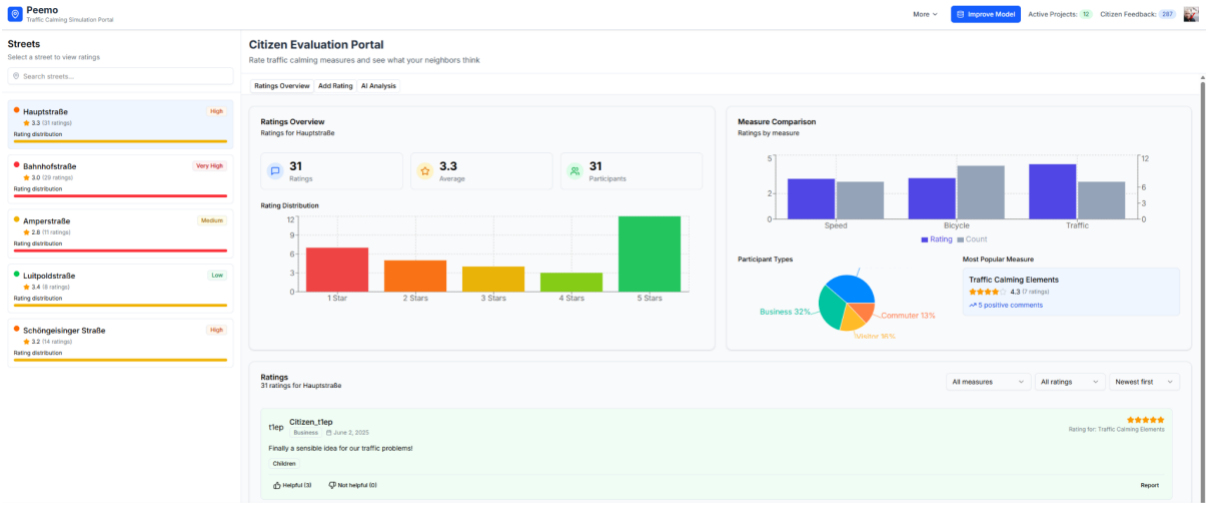

Fig. 4: Overview of user feedback on individual streets

Model Improvement Through Data: The platform is designed to evolve. As more users interact with it and provide feedback, the underlying models can be updated and improved, leading to more accurate simulations over time.

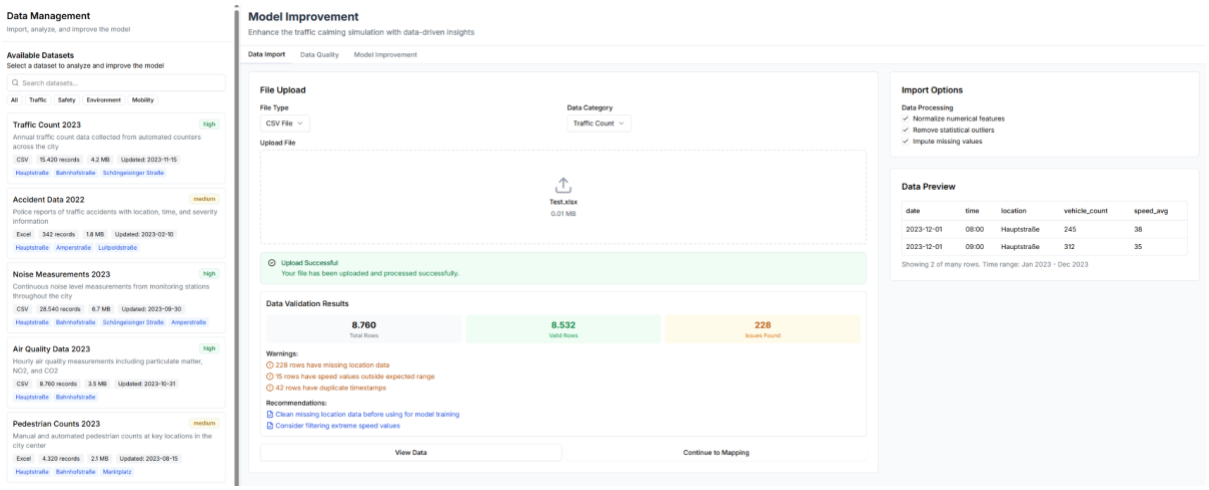

Fig. 5: Model enhancements enabled by individualized datasets

Our goal with this platform is not to provide definitive answers but to create a space for exploration and discussion. By allowing users to experiment with different scenarios and see potential outcomes, we hope

to facilitate a more informed and participatory approach to urban planning in Fürstenfeldbruck.

Looking Ahead: Potential Applications and Future Development

written by Sebastian Wiest

While our current platform is still in a prototypical phase, we see significant potential for its future use – not only in Fürstenfeldbruck but in many other towns and cities facing similar challenges. The idea behind our project is inherently scalable. Urban planning is complex, local, and deeply political – but that doesn't mean it should be inaccessible or static. Our tool opens up new possibilities for how cities can approach mobility transitions: with more transparency, participation, and adaptability.

Imagine this platform being used in other municipalities – not just to simulate a few speed limits, but to test entire planning strategies. From redesigning intersections to introducing new pedestrian zones or managing delivery traffic, the logic of the system can be applied to a broad range of urban interventions. With more data, especially on noise and emissions, the model could become even more precise and informative.

Beyond that, there’s a strong case for using the platform in citizen engagement. Often, people are skeptical about changes in their neighborhood because they don’t know what to expect. A tool like ours offers a visual, interactive way to explore different options and understand the reasoning behind them. It doesn’t just simulate numbers – it creates a shared space for imagining what kind of city we want to live in.

On the technical side, the feedback loops within the platform create the foundation for continuous learning. Every time someone interacts with a scenario and provides input, the model has the potential to become more accurate. Over time, this could evolve into a genuinely adaptive system – one that doesn’t just simulate urban futures but actively learns from the present.

For policymakers, this opens up a new kind of evidence base: one that combines hard data with lived experience. And for researchers, it offers a testbed for exploring how AI can support democratic decision-making in complex, real-world environments.

Ultimately, we believe this project shows that urban change doesn't have to be top-down or slow. With the right tools, transformation can be collective, transparent, and dynamic. Fürstenfeldbruck is just the beginning.