Motivation

- How can we analyze the current state of public transport (train, bus, bike) in house-level detail?
- Can we identify neighborhoods with good transport links and left-behind communities?
- Can we improve public transport with the help of simulations of the effects of changing lines and adapting existing schedules?

Design

- Design and implement a visual analytics system for public transport infrastructure analysis
- Merging of different data sources (modes of transportation, timetables, housing density, POIs)
- Apply agent-based scenario analysis on different user groups and scenarios and compare them

Use Cases

- Case study on the state of public transportation in the Landkreis Konstanz in close collaboration with county and city officials
- Evaluate the effect of integrated transport planning on existing transport infrastructure and its optimization potential for holistic approaches.

Data Sources

- The official House Coordinates of Germany (HK-DE), ZSHH (CSV format)
- Germany-wide planned timetable data from DELFI (NeTEX format)
- Germany-wide stop/station data (XML format)
- Germany-wide street map and categorical POIs (OpenStreetMap)
- Population age distribution & other factors (district level), ZENSUS, DESTATIS

Data-Driven Traffic Analysis

Combine, aggregate, and visualize

Agent-Based Simulation

Simulate, optimize, and recommend

Outlook

- Germany-wide street-level public transportation infrastructure atlas available online based on usage of federal open-source data in the future.
- Cost-effective data-driven approach for city officials to optimize their ÖPNV
- Increase capacity, availability, and acceptance of public transportation to leverage the 9-Euro-Ticket success and continue the energy transition.