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Modeling trip generation before, during, and after Covid-19 using GPS data

Thesis description

Trip generation can be considered a first step in transport models. It explains how many trips the population generates at a given location and time. It has been widely studied in literature and applied in practice. The typical data used to study trip generation are travel diaries that collect information from respondents on their one week of travel. Therefore, the data is expensive to collect, can be biased, and it is hard to conduct longitudinal studies.

GPS mobility studies use GPS traces to follow individuals over longer periods of time. Such studies have been conducted at IVT and provide a large amount of data that can study the adaptation of individuals in Switzerland before, during, and after the pandemic.

The aim of this Thesis is to use the GPS data previously collected, processed, and map-matched to evaluate how trip generation changed over the last 3-5 years and how much various lifestyle changes have influenced it (i.e., home-office).

Specific Tasks

- Literature review on trip generation
- Familiarizing with the GPS data-sets
- Statistical analysis of the data
- Proposing the modeling approach for longitudinal trip generation
- Evaluation of impacts of pandemic and life/work-style changes on trip generation

Literature

<https://ivtmobis.ethz.ch/mobis/covid19/en/>

<https://timeuse.ethz.ch/>

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