Spatio-Temporal Analysis of Bicycle Commuting Behavior in the Greater Tokyo Area Using a Micro-Scale Persontrip Database

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Compared to other nations, the share of motorized individual traffic in the daily commuting flows in Japan is rather low. Instead, the share of railway transportation is significantly higher. In addition, this generates feeding traffic from homes and workplaces to and from the stations, which is done mostly on foot or by bike. This holds especially true for highly urbanized areas, such as the Greater Tokyo Metropolitan Area with its 34 million inhabitants, which we use as a study area in this paper.

Here we investigate the role and structure of the use of bicycles in the course of commuting traffic. This paper provides a thorough spatio-temporal analysis of bicycle behavior, since we analyze how bicycles are used in the daily commutes, by whom, and where. We investigate how bicycles are integrated in the commuting process and what spatial factors determine the use of bicycles.

For this paper we employ a massive micro scale person trip database provided by the Center for Spatial Information Science at the University of Tokyo. It contains sociodemographic data about approximately 600,000 sample individuals, as well as information about the purpose of each of their trips, their chosen means of transportation (e.g. car, bus, bike, etc.) and their location in 1-minute steps over all 24 hours of one sample day.

As the scientific discourse about bicycle traffic in Japan is scarce, we hope to be able to contribute by this study and provide valuable insights into this important mode of transportation.

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