Extended abstract

Objectives and motivation
This paper analyzes the behavior of freight trucks in the Tokyo metropolitan area by analyzing the probe data obtained from the recent goods movement survey in the Tokyo Metropolitan Area conducted by the national government. With a variety of probe data the survey would have a large potential of analyzing detailed route choice behavior of commercial/freight trucks in the entire metropolitan region from various aspects.

The exact understanding of track behavior is quite important for mitigating congestion. In the Tokyo metropolitan area, traffic congestion occurs very often in the same manner as other urban areas. It is generally regarded that one of the main reasons of traffic congestion in Tokyo would be the fact that about 60% of traffic including trucks in the inner-city area is “through traffic” because the expected functions of the ring roads have not yet been fully revealed. Particularly, the outer one of the planned three toll ring expressways (“Ken-O express highway”) has been uncompleted yet. The national government has a plan to finish the construction of most stretches of these three ring expressways by 2020. With the completed ring expressways, the number of inner-city congestion will be expected to decrease significantly. We are fairly certain that understanding the behavior of freight trucks would make the policies like congestion pricing more plausible and more feasible.

General description
This paper studies three different types of probe data from the fifth goods movement survey in the Tokyo metropolitan area in 2014. The first one is the on-board equipment maker’s data that records approximately 22,000 tracks passing through the area including the downtown. This first dataset covers the entire of the metropolitan area but the GPS records are stored every 10 minutes. The second data is the trajectories of some specific freight vehicles provided by the specific carrier companies. The time interval of this data is between 1 to 60 seconds and the companies provide the two weeks probe data of one or two thousand trucks. The third probe data is originally obtained from the approximately 300 trucks in the Tokyo metropolitan area. The national government requested some carrier companies to install probe equipment for their trucks for one week and then the GPS records can be stored every two seconds.

Results and conclusions
With the enormous volume of these probe datasets and the differences in there characteristics, this paper hopefully will analyze the difference of route choice behavior, compares the behavior such as velocity in terms of the delivery time, and considers the characteristics of logistics transportation.

References

Keywords: route choice behavior; probe data; freight vehicle