Inter-city comparison of Households with Every Member Out-of-Home (HEMO) using National Person Trip Survey in Japan

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Abstract

Most existing studies using a household travel survey have focused on travel behavior, but this study demonstrates another use of it: identifying households with every member out-of-home (HEMO) at a given time. Because a household travel survey records all trips by every member of a household, the calculation of HEMO is not a difficult task, but a few studies have shown empirically the temporal rate of HEMOs. Takahashi et al. (2018) and Fukahori et al. (2019) explored the phenomenon of Households with Every Member Out-of-Home (HEMO) using Kumamoto person trip survey data. These studies calculated the HEMO rate as well as the individual out-of-home (IO) rate using a household travel survey, also known as the Person Trip (PT) survey in Japan. Their results showed that the HEMO rate has increased considerably, although there was no major IO rate change over years. However, these studies focused on only one city and other cities may exhibit different phenomena.

In this study, we made a comparative analysis of HEMO rates among Japanese cities. We used the data by 2015 National Person Trip survey. The survey was conducted in 130 municipalities in Japan and sample size is 69,524 person and 30,547 households.

The result indicates that the HEMO rate and IO rate were higher in urban areas. In particular, the differences of HEMO rates between urban areas are larger than those of IO rates. We also performed cluster analysis and classified cities based on the HEMO rates. The age composition and the number of households members in the city greatly influenced the classification.

As future prospects, it can be expected that it will be used for crime prevention in the area, more efficient visiting-survey, and application to the problem of redelivery of couriers. It will be also possible to predict the IO and HEMO rates in the future by clarifying the causes of the changes seen in the time series comparative analysis.