

Analysis of Travel Behavior Changes Caused by the State of Emergency as the Measures for COVID-19 in Japan

Y. Liu¹, K. Honma², Y. Arai³, Y. Niwa⁴, and T. Kusakabe⁵

¹Graduate School of Frontier Science, The University of Tokyo, ²Institute of Industrial Science, The University of Tokyo, ³School of Engineering, The University of Tokyo, ⁴Faculty of Environmental Studies, Tokyo City University

⁵Center for Spatial Information Science, The University of Tokyo

Contact: < t.kusakabe@csis.u-tokyo.ac.jp> Web: < https://home.csis.u-tokyo.ac.jp/~t.kusakabe/>

(1) Introduction: The COVID-19 pandemic has changed the world we take for granted in only a few months. Changes that occurred at the individual-behavior level lead to shifts in passenger transport demand radically. While Big Data such as GPS and cellular data can capture the overall trends in demand fluctuations, little is known about the latent information that which and to what extent various factors (individual socio-economic, etc.) affect people's travel behavior. Such information is crucial to a comprehensive and correct understanding of transportation demand for urban policymakers and planners. The aim of this study is to construct a dataset capturing the links between changes in travel behavior and social factors.

(2) Survey Design: A three wave online panel survey is designed and implemented it in the main cities of Tokyo Metropolitan Area including Tokyo 23 Districts, Yokohama City, Kawasaki City, Saitama City, and Chiba City (Table 1). The questionnaires consist of mainly four parts, namely (i) Basic socio-demographic characteristics, (ii) Activities involving travel from home, (iii) Activities at home, and (iv) Personal ranking regarding the safety of transportation modes. The attributes described in questions in (i)-(iii) are designed considering those of the Person Trip Survey conducted in 2018.

(3) Results: Figure 1, 2 depict the number of days PPPW (per person per week) of the activities by three target periods obtained from 1st and 2nd wave surveys.

Table 1: Summary of survey

Waves	1 st	2 nd	3 rd
Implementation Period	May, 1-6	Jul, 3-13	Oct, 1-
Target Activities	Before Feb.	Jun. 24-30	Sep. 24-30
	+Apr. 22-28		
Sample Size	300	243	-
Area	Tokyo 23 Districts, Yokohama City, Kawasaki City, Saitama City, and Chiba City		

During the State of Emergency, a significant drop in commuting to work or school. As for groceries and household item shopping, it remains almost the same. According to Figure 2, the commuting is replaced by working at Home. The number of days of commuting is recovered 80.67% after the declaration. However, the number of the days of working at home is not returned to the one before the declaration.

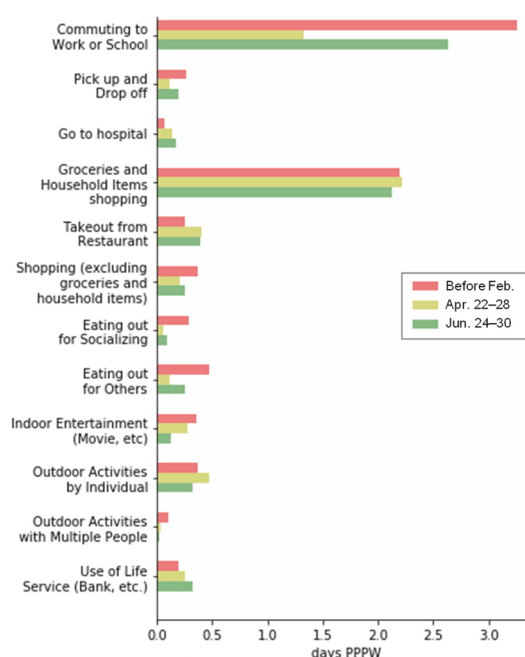


Figure1: Results of activities involving travels

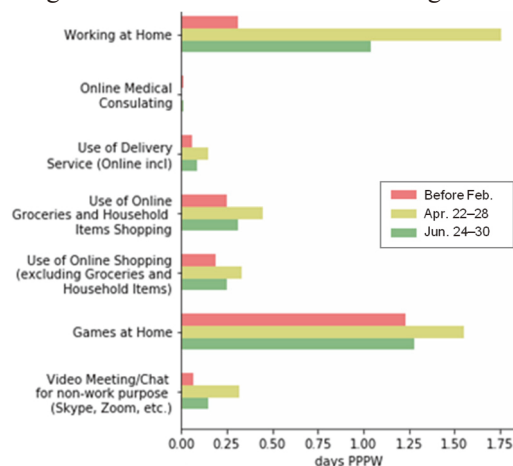


Figure2: Results of activities at home