

# Tracking the global changes of human mobility behavior and resilience in the early and late stages of COVID-19 pandemic

*Friday, October 27, 2023 9:30 AM (20 minutes)*

The COVID-19 pandemic has created significant challenges for human mobility behavior worldwide. We investigated how to measure the resilience of human mobility behavior in 130 countries and regions based on multi-scale from February 15th to August 15th 2020 and from January 1st to June 30th 2021. The study demonstrates that: (1) On global scale, human mobility showed a significant decrease in the reaction period, and residential category accordingly was on the rise. However, in adaptation period, except for the behavior change of the residential category, the mobility of remaining five categories is on the rise in the adaptation period, especially in the increasing mobility of parks; (2) As for the regional scale, all the continents experienced sharp declines and fluctuations in the reaction period. However, the daily FI dynamic variations of human mobility behavior in Africa were more stable than others in adaptation period, and Asia is characterized by relatively low stability, with several sharp declines during the study period; (3) On the analysis of national level, different countries and regions have significant differences in the adaptation to the changes in human mobility behavior. 130 countries and regions were divided into five categories of resilience. This research aims to provide reference for formulating policies to deal with future unpredictable events.

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**Session Classification:** Paper Presentations

**Track Classification:** Population & Migration