

Abstract #: 1218**Estimating the causal effect of mobility on Dengue during the COVID-19 pandemic****Kirstin Roster¹, Colm Connaughton^{2,3}, Francisco A Rodrigues¹**¹University of São Paulo, São Carlos, Brazil, ²University of Warwick, Warwick, United Kingdom, ³ London Mathematical Laboratory, London, United Kingdom

Background: The COVID-19 pandemic led to a reduction in human mobility which occurred randomly (in time) and is not linked to any other Dengue risk factors. This gives rise to a quasi-experimental situation to assess the impact of mobility reduction on Dengue Fever in Brazilian cities using propensity score matching.

Methods: We match weeks during the peak pandemic period for 37 cities in São Paulo state with comparable prior periods based on instruments for mosquito population size and human susceptibility. By matching within cities, we also control for city-level characteristics, such as landscape or population density. We compute propensity scores using logistic regression and Random Forests and implement both one-to-one and one-to-many matching with calipers.

Results: We compare the Sample Average Treatment Effect on the Treated (SATT) across models and find variation in the direction of the causal effect. In 12 cities, mobility reductions are linked to more Dengue cases, while fewer cases are reported in 9 cities. The remaining cities are sensitive to the model chosen.

Conclusions: The SATT of mobility on Dengue varies across the cities in our sample, with more cities experiencing an increase in cases during the COVID-19 pandemic.

Key messages: A quasi-experimental analysis suggests that there is a causal effect of mobility on Dengue that varies across cities in São Paulo state.