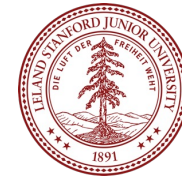


Supporting COVID-19 policy response with mobility networks and machine learning

Serina Chang

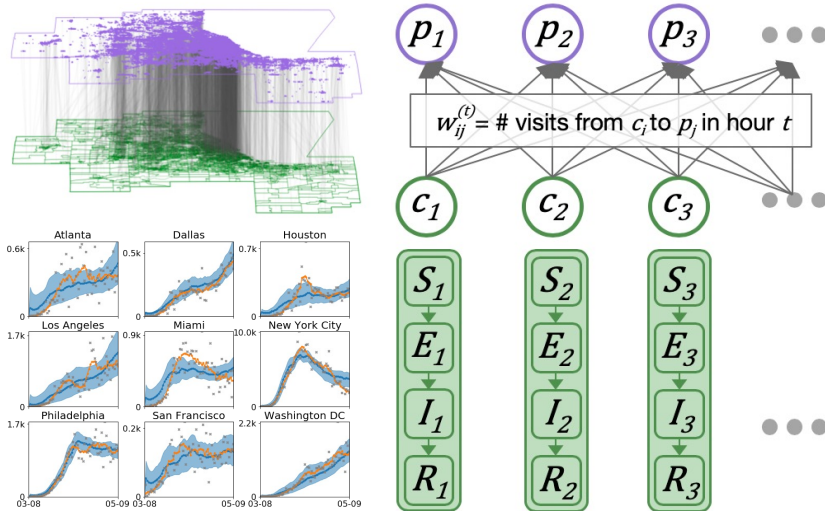
PhD Candidate, Computer Science, Stanford University | Advised by Jure Leskovec and Johan Ugander



Mobility network models of COVID-19 explain inequities and inform reopening

S. Chang*, E. Pierson*, P.W. Koh* et al., *Nature* 2021

[Project website](#) | [NYTimes interactive article](#) | [Nature News & Views](#)

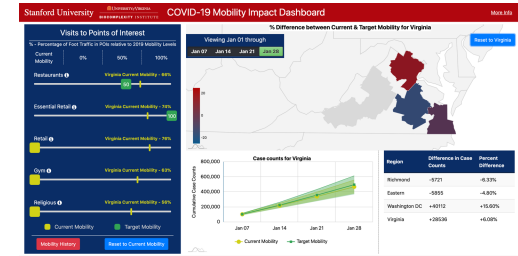


- We infer mobility networks for ten of the largest metro areas in the US → 553k POIs, 5.4B hourly edges
- Our networks + SEIR model enable accurate fits of COVID cases + deaths and capture its spread with unprecedented granularity: **who got infected where and when**
- Our model reveals how mobility patterns contribute to disparities and inform reopening strategies

Supporting COVID-19 policy response with large-scale mobility-based modeling

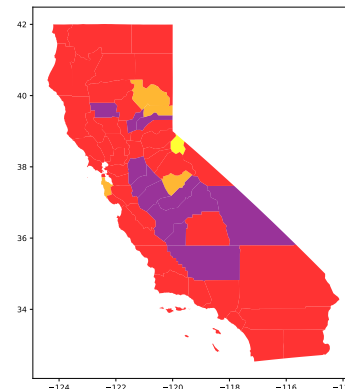
S. Chang, M. Wilson, B. Lewis, et al., *KDD* 2021

- KDD Best Paper Award (Applied Data Science)
- We transform our model into a decision support tool for the Virginia Department of Health



Estimating geographic spillover effects of COVID-19 policies from mobility networks

S. Chang, D. Vrabac, J. Leskovec, and J. Ugander



- Under review; presented at KDD 2022 workshop and IC²S² 2022
- Many COVID policies defined locally → are populations *spilling over* from more to less restricted areas?
- We develop a causal inference framework to make **unconfounded estimates of spillovers** from the California mobility network