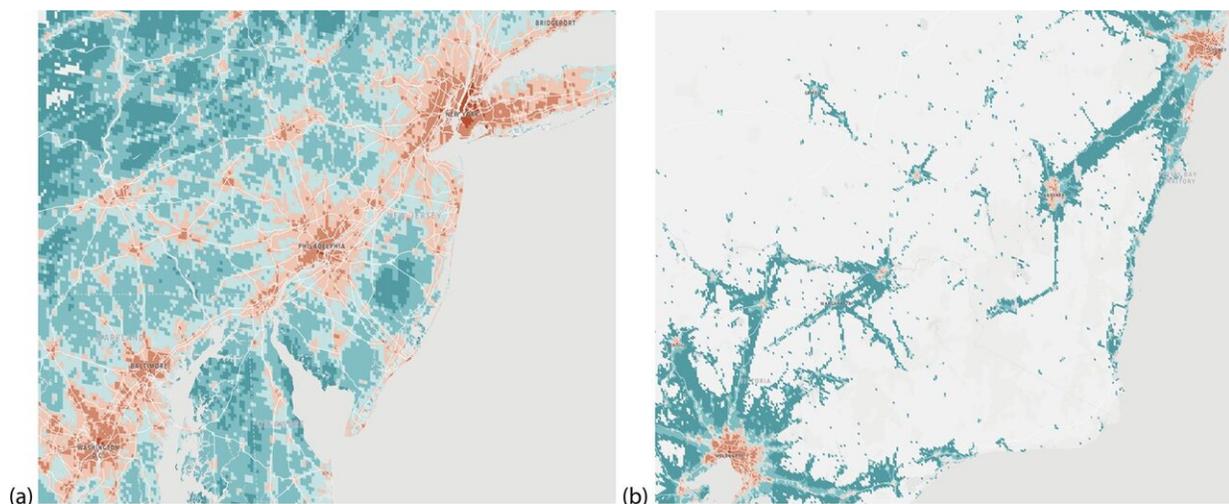


Combining machine learning with smartphone tracking data to forecast the spread of the flu

February 10 2021, by Bob Yirka



Snapshot of AMM. Credit: *Nature Communications* (2021). DOI: 10.1038/s41467-021-21018-5

A team of researchers affiliated with several institutions in the U.S. including Google Inc. and the CDC has found that it is possible to combine machine learning technology with smartphone tracking data to create an application that accurately estimates the spread of the flu. In their paper published in the journal *Nature Communications*, the group describes how they created their app and how well it tested against conventional viral spread estimation systems.

The ongoing pandemic has reawakened fears of a much worse scenario involving the spread of a much deadlier virus than SARS-CoV-2. So scientists have been looking at ways to slow the next one, and part of that effort would include using tools that better forecast how the spread escalates. In this new effort, the researchers sought to create a tool based on smartphone [data](#) and machine learning that would be as good or better than applications created using commuter data.

To build their application, the researchers gathered anonymized tracking data from Android phone users in New York City—Google stores the history of users who have chosen to allow such tracking to be recorded. They used that data to teach a machine-learning system to recognize human movement on a map of the city. The team then added data from models built to depict influenza transmission rates based on patient hospital visits and lab reports for the 2016 through 2017 influenza [season](#). They used the application to forecast the spread of the flu for the same season. Afterward, they compared the results against records of the actual flu season and found them to be as accurate as two out of three conventional systems based on commuter data and better than a third one.

The researchers then reproduced their efforts to predict the 2016 influenza season for all of Australia and found that it was able to predict the spread of the flu in that country with accuracy. The researchers note that using phone tracking data is significantly less expensive than using commuter data. They also noted that their system could also be used to track the spread of an outbreak as it crossed international lines, unlike commuter data-based systems. They also acknowledge that there are gaps in the data used in the system due to low smartphone use by young children and older adults.

More information: Srinivasan Venkatramanan et al. Forecasting influenza activity using machine-learned mobility map, *Nature*

Communications (2021). [DOI: 10.1038/s41467-021-21018-5](https://doi.org/10.1038/s41467-021-21018-5)

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