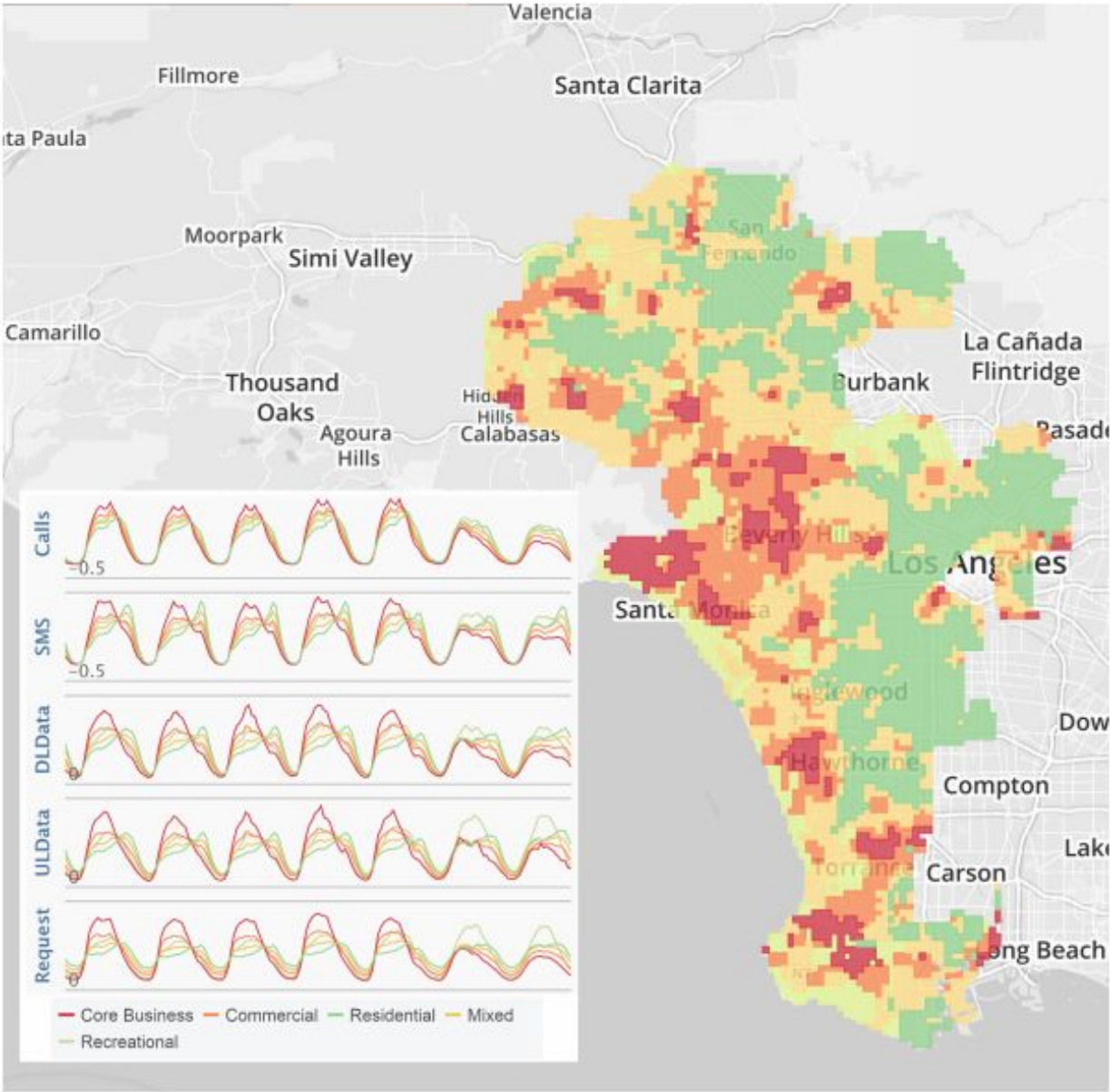# Mobile phone data useful for more confident grip on city planning

September 12 2015, by Nancy Owano

Functional clusters found in Los Angeles based on typical telecommunications activity, visualized on the interactive platform manycities.org. Credit: arXiv:1509.00459 [cs.SI]

Seven scientists from MIT and Ericsson Research have authored a study, appearing on arXiv, "Visualizing signatures of human activity in cities across the globe." In doing so, they offer a special window on the world of urban change and efforts for planning ahead. As they put it, "Increasing dynamics of urban transformation in a rapidly developing world calls for adaptive urban planning."

With the high penetration of mobile phones, nearly everyone is already carrying a high-precision sensor, they said, which has posed an opportunity to monitor the dynamics of human movement on unprecedented scales. Mobile phone data can reveal large-scale human activity otherwise hidden from view.

City planners have questions that might be answered by going to records, but mobile phone data can follow changes dynamically. Their paper presents a tool for doing so, and it was developed in collaboration between MIT SENSEable City Laboratory and Ericsson.

SENSEable City Laboratory is a research initiative at the Massachusetts Institute of Technology. "The increasing deployment of sensors and hand-held electronics in recent years is allowing a new approach to the study of the built environment," said the group. Their goal is "Studying these changes from a critical point of view and anticipating them."

This tool allows for a comparative analysis of city structure via aggregated mobile network activity data in four global cities: New York, London, Hong Kong and Los Angeles. The study reports on the

aggregated data which was collected between April 2013 and January 2014 in the four cities, provided by mobile network operators. The authors thanked Ericsson for providing the aggregated phone activity records.

What they found: "Apart from showing a high degree of similarity corresponding to the natural circadian rhythm of humans, there are notable differences, e.g. text message activity peaks in the morning in Hong Kong, in the evening in New York and midday in London or the abrupt decrease of data traffic in London when contrasting the evening peaks in the other two cities. We speculate that the latter observation is the effect of cellular data traffic being especially expensive in London, prompting people to switch to much cheaper wifi networks when at home."

MIT Technology Review, in assessing emerging technology from the arXiv, remarked that the scientists focused on activity going on in different cities—visualized and compared. "These guys have unveiled a powerful online tool that uses mobile phone data to visualize human activity in cities all over the world."

What is this tool? ManyCities is its name, and it comes out of the MIT SENSEable City Lab. With it, one can explore spatio-temporal patterns of mobile phone activity in cities across the world.

According to a press release last year, "The manycities.org opens up a new possibility to see patterns never seen before, and with this knowledge we may be able to improve the lives in the networked society, by providing a more accurate picture of the city."

MIT Technology Review said, "This kind of tool is clearly evolving into a real time analytics tool. It's not hard to imagine how people could use it to plan events such as conferences, sporting contests, or concerts or to

plan emergency city infrastructure. One day people may even tune in to a 'smartphone forecast' to find out if their phone will work when the big game kicks off that evening."

  More information: Visualizing signatures of human activity in cities across the globe, arXiv:1509.00459 [cs.SI] arxiv.org/abs/1509.00459

ManyCities is available at www.manycities.org

senseable.mit.edu/manycities/p … ies_pressrelease.pdf

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