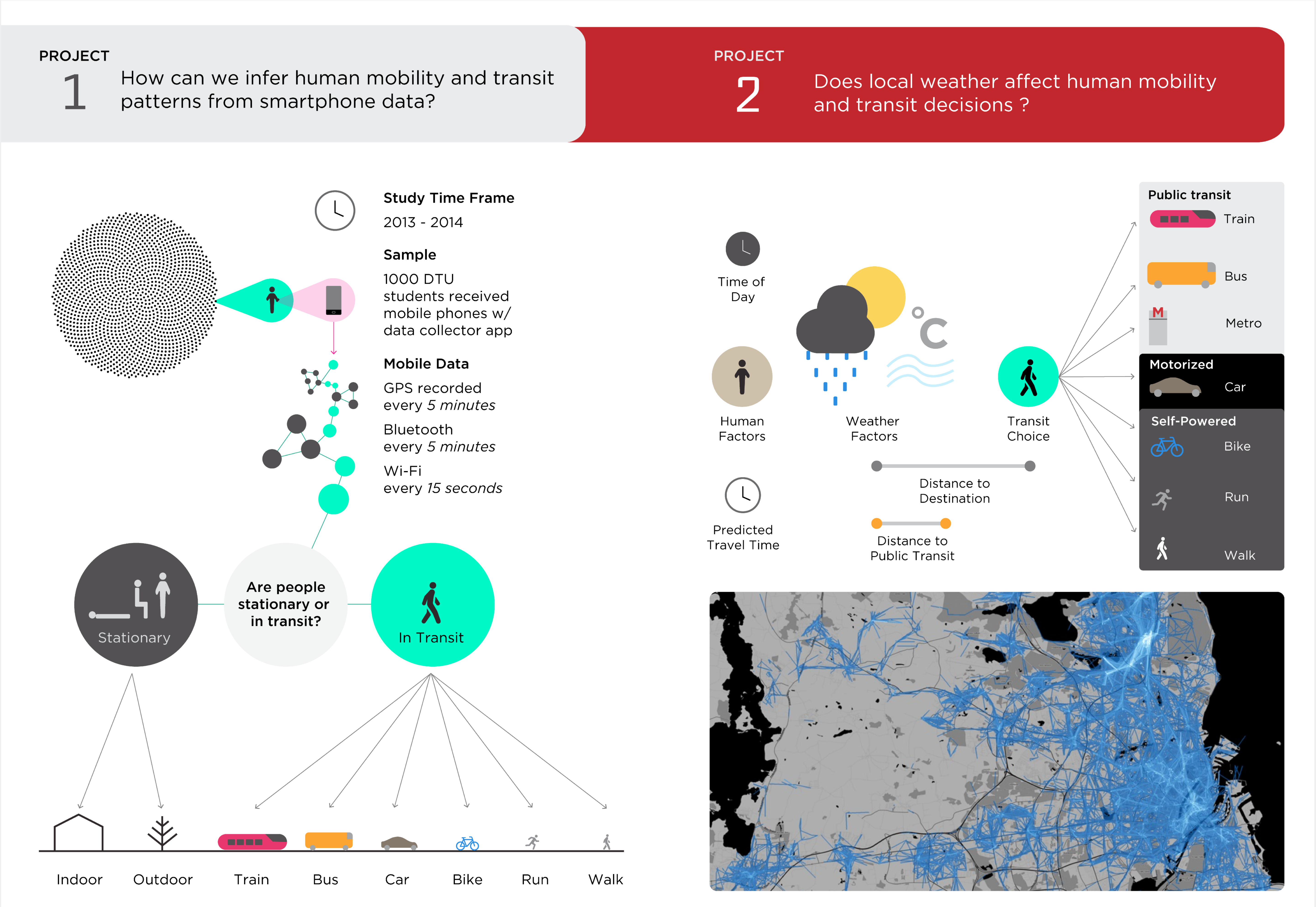


Cell Phones as Urban Sensors: Inferring Human Mobility and Its Relation to Changes in Weather

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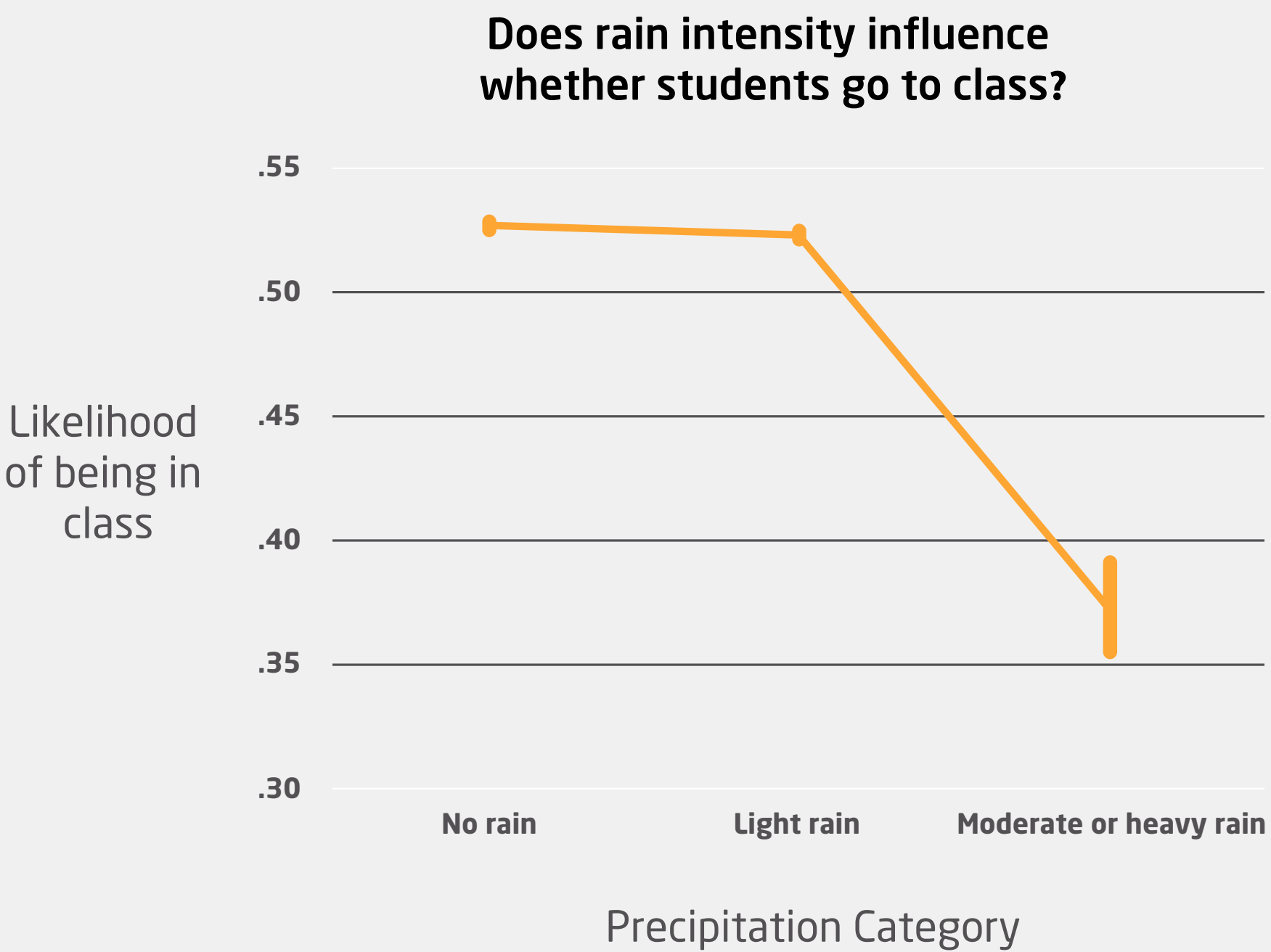


Weather or not to ride the bike

Congestion costs are increasing in urban settings worldwide, including in greater Copenhagen. The costs arise from money and time spent as well as adverse health effects. At the center of congestion is individual choice of transportation mode and public policies regarding transportation, from bike paths over public transport networks to road construction and tolls. Surprisingly little is known, however, about individual choice of transportation mode over longer time horizons, including which individual level factors determine mode of transportation and how such choices respond to exogenous shocks such as weather.

Our primary data collection is based on modern smartphones among a large student population. Smartphones include a wealth of sensors that can determine location and context. We've already used this system to record over 1 million trips across Copenhagen over two years.

By combining this body of data from the Copenhagen Networks Study (1) with exogenous weather shocks, we can estimate individual level responses in commuting behavior to adverse weather shocks.



1) Stopczynski, A., Sekara, V., Sapiezynski, P., Cuttone, A., Madsen, M. M., Larsen, J. E., & Lehmann, S. (2014). Measuring large-scale social networks with high resolution. *PloS one*, 9(4), e95978.