

Understanding Social Dynamics using Big Data

Short presentation based on the following papers:

1. Horanont, T, Phithakkitnukoon, S, Leong, T.W., Sekimoto, Y., & Shibasaki, R (2013). Weather Effects on the Patterns of People's Everyday Activities: A study using GPS traces of mobile phone users. PLoS ONE. 8(12)
2. Phithakkitnukoon, S, Leong, T.W., Smoreda, Z, & Olivier, P (2012), Weather Effects in Mobile Social Interaction: A Case Study of Mobile Phone Users in Lisbon, Portugal, in PLoS ONE. 7(10)

Understanding Social Dynamics using Big Data

Mobile phones as proxy for individuals

Mining mobile phone data

- Strong ties vs Weak ties
- Movement and activities (patterns)

Findings

[22,696 mobile phone users; 53.2 million call logs in Lisbon, Portugal]

	FINDINGS
Temperature	During extreme temp (very cold/warm) ppl tend to talk to smaller number of social ties. Connection to strong ties > weak ties
Humidity	Very high/low humidity – likelihood for call time to be longer. Connection to strong ties > weak ties
Air Pressure	Very high/low air pressure – ppl tend to talk to smaller number of social ties. Connection to strong ties > weak ties
Wind Speed	When windy (stronger than 5km/h) connections to social ties begins to drop. Connections to strong ties > weak ties

Findings

[500,000 mobile phone users; in Greater Tokyo, Japan]

- Very cold (-5 to 5) or calm (wind speed < 2km/h) ppl more likely to stay longer and spend more time at areas of eateries and food outlets and less at shopping/retail
- Very cold (-5 to 5) more diverse activities during daytime esp 2pm-6pm.
- Rainy days or windier days [$>4\text{km/h}$] more diverse activities
- Western regions of Tokyo more disrupted by cold esp early mornings and before mid-day
- The further away the person lives from train station, the bigger effect weather has on choice of activities
- Being close to bus stops means weather patterns do not discernibly affect people's choice of activities

