

# Big Data for Development in Sri Lanka

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Responsible use of mobile meta-data to support public purposes

Jetwing Lagoon, Negombo

8 August 2014



This work was carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada.

# LIRNEasia's Big Data for Development Research

- LIRNEasia has negotiated access to **historical and anonymized** telecom network meta-data from multiple operators in Sri Lanka
- In the current research cycle we are
  - conducting exploratory research on answering a few social science questions related to mobility and connectedness
  - developing a framework with privacy and self-regulatory guidelines for the collection, use and sharing of mobile phone data.
- <http://lirneasia.net/projects/bd4d/>

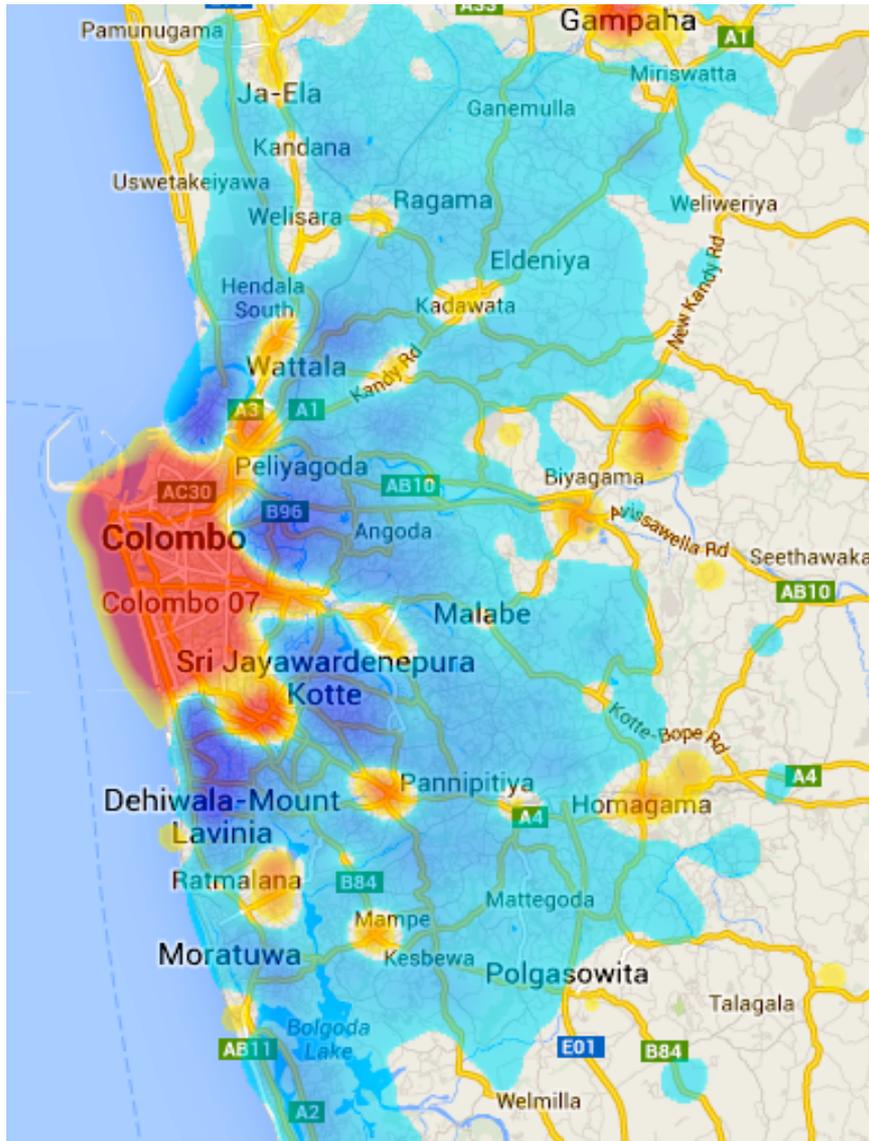
# The data sets

- Multiple mobile operators in Sri Lanka have provided LIRNEasia access to 4 different types of meta-data:
  - Call Detail Records (CDRs)
  - SMS detail records
  - Internet access records
  - Airtime top-up records
- Data sets do not include any Personally Identifiable Information (PII).
  - All phone numbers are anonymized and
  - LIRNEasia does not maintain any mappings of identifiers to original phone numbers

# Why are we doing this work?

- To bring timely evidence into the policy making process in developing economies

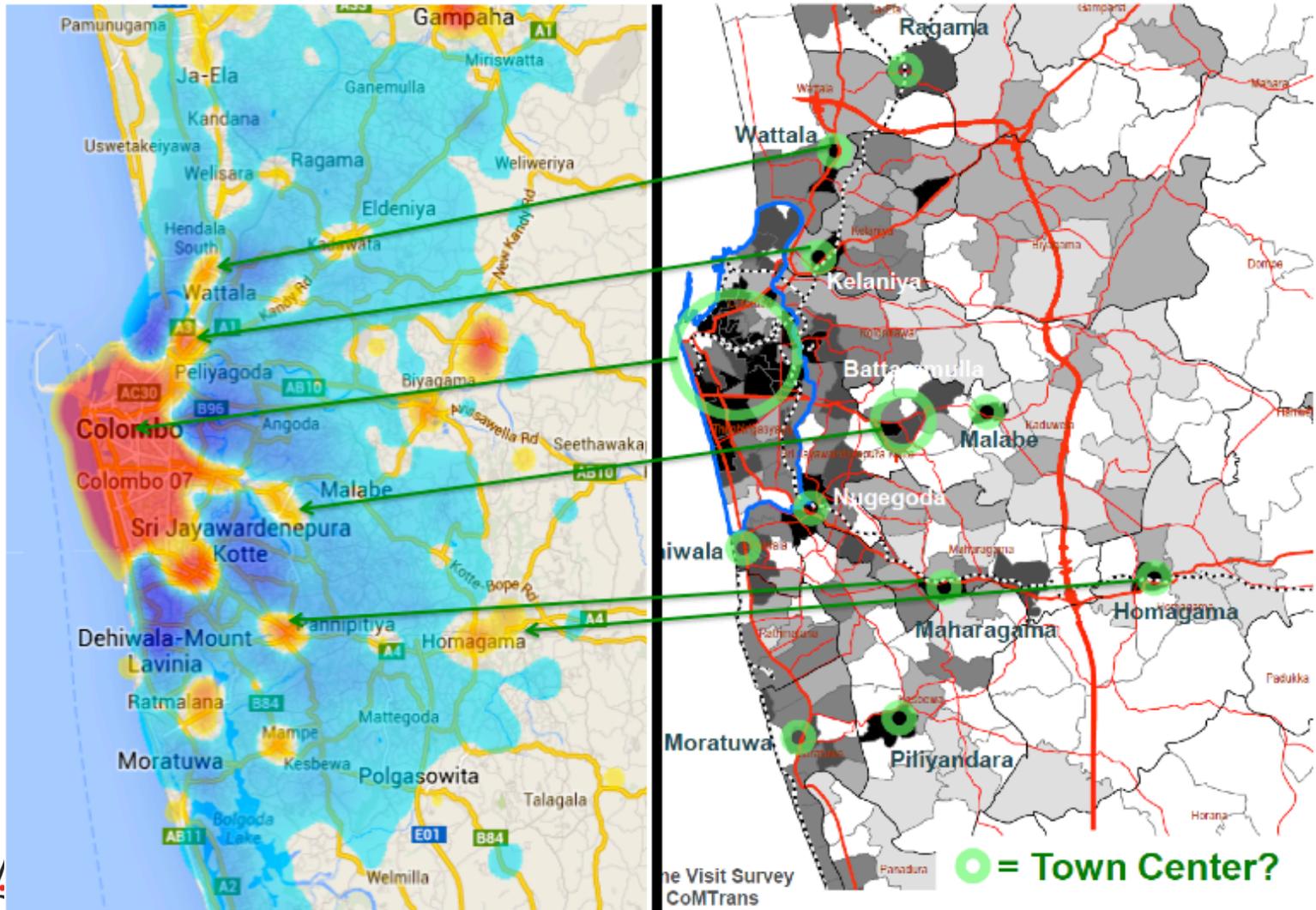
# An example of timely policy-relevant evidence



- The image on the left depicts relative density of people in Colombo city and the surrounding regions at 1300 compared to 0000 (midnight the previous day) on a normal weekday.
- The yellow to red colors depict areas whose density has increased relative to midnight. The blue color depicts areas whose density has decreased relative to midnight (the darker the blue, the greater the loss in density). The clear areas are those where the overall density has not changed.



Our findings closely match results from expensive & infrequent transportation surveys



# How did we get this work done?

# Answer: Collaborative inter-disciplinary teams

- *LIRNEasia*
  - Dedunu Dhananjaya
  - Nisansa de Silva
  - Kaushalya Madhawa
  - Danaja Maldeniya
  - Prof. Rohan Samarajiva
- *LIRNEasia/ MIT*
  - Gabriel Kreindler (Economics)
  - Yuhei Miyauchi (Economics)
- Technical partners:
  - WSO2 (Dr. Srinath Perara)
  - Auton Lab at Carnegie Mellon University

- University of Moratuwa
  - Prof. Amal Kumarage
    - Transport & Urban Planning
  - Dr. Amal Shehan Perara
    - Data Mining
- Others
  - Prof. Joshua Blumenstock (University of Washington)
    - Data Science
  - Saad Gulzar (NYU)
    - Political Science