

On the use of big data for public good purposes: challenges & opportunities

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May 13th, 2016



Mobile phone data



Call Detail Records (CDRs)

Caller_ID	Callee_ID	Cell_ID	Date	Time	Type (voice/SMS)	Duration
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Cell locations:

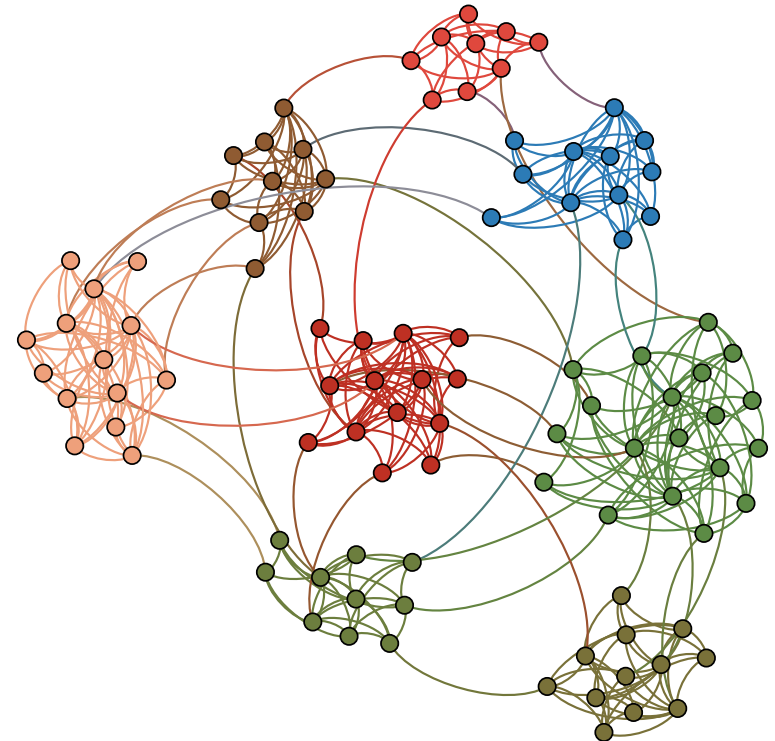
Cell_ID	Longitude	Lattitude	Region
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What can I do with CDRs?

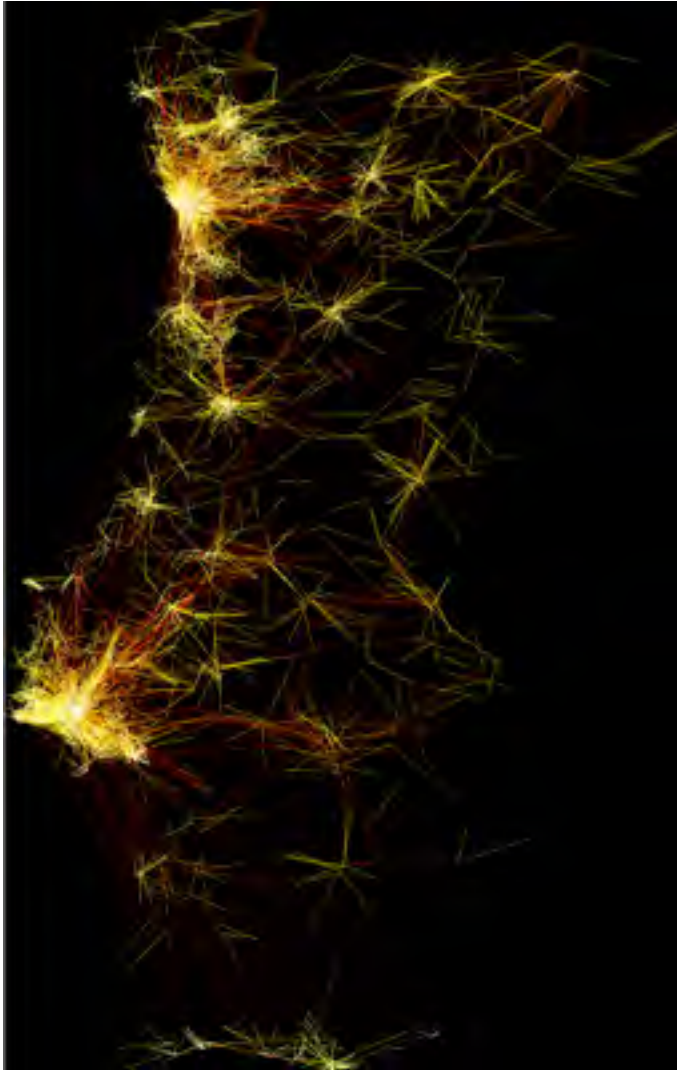
Build the network of communications



Detect communities and analyze social behavior



With information on space & time: mobility modeling



Commuting flows in Portugal

Coming soon...

Belgian geography
through the lens of big data

- transport and mobility
- commercial transactions
- communication data
- ...

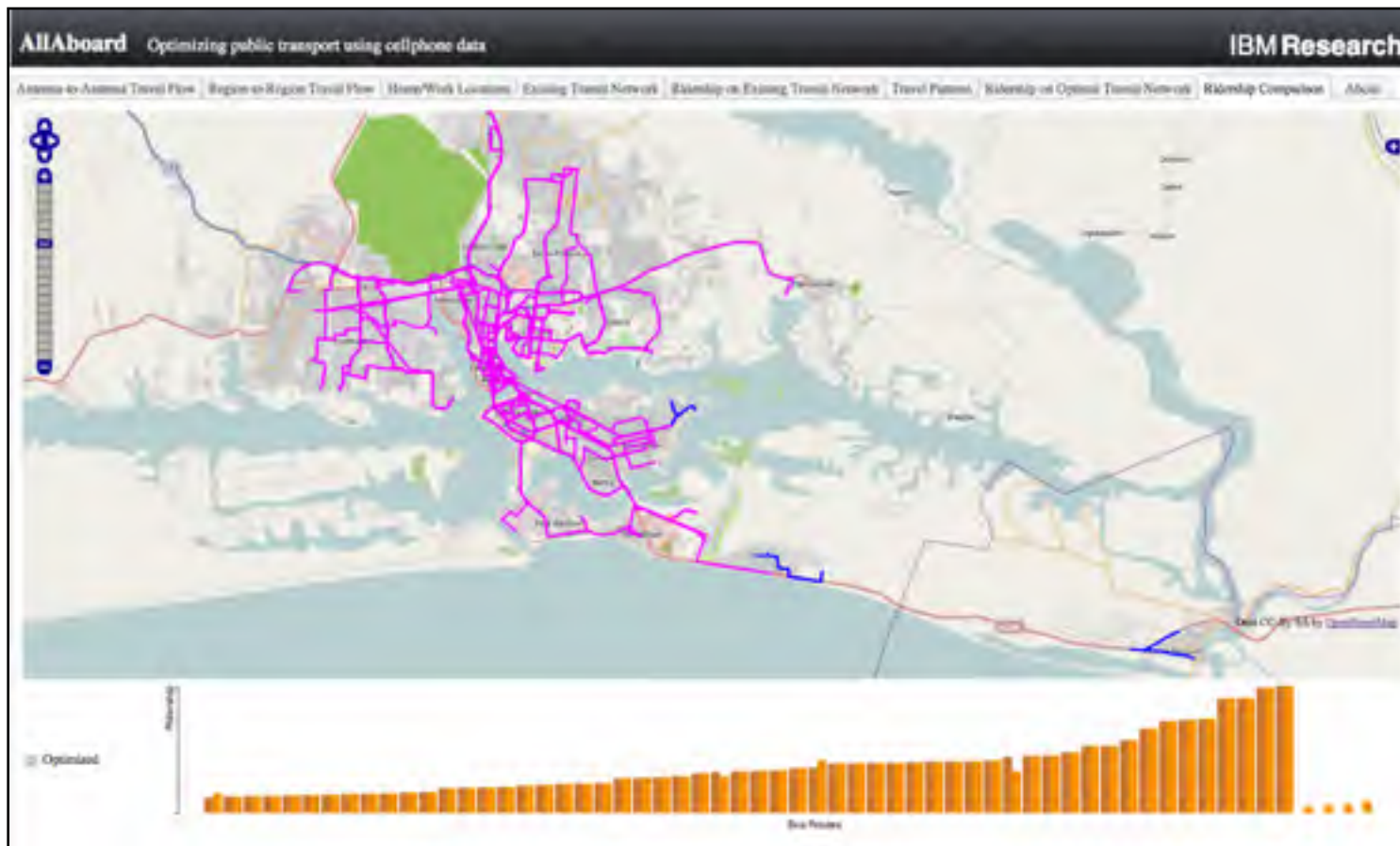


Mobile phone Data 4 Development



Mobile phone Data 4 Development

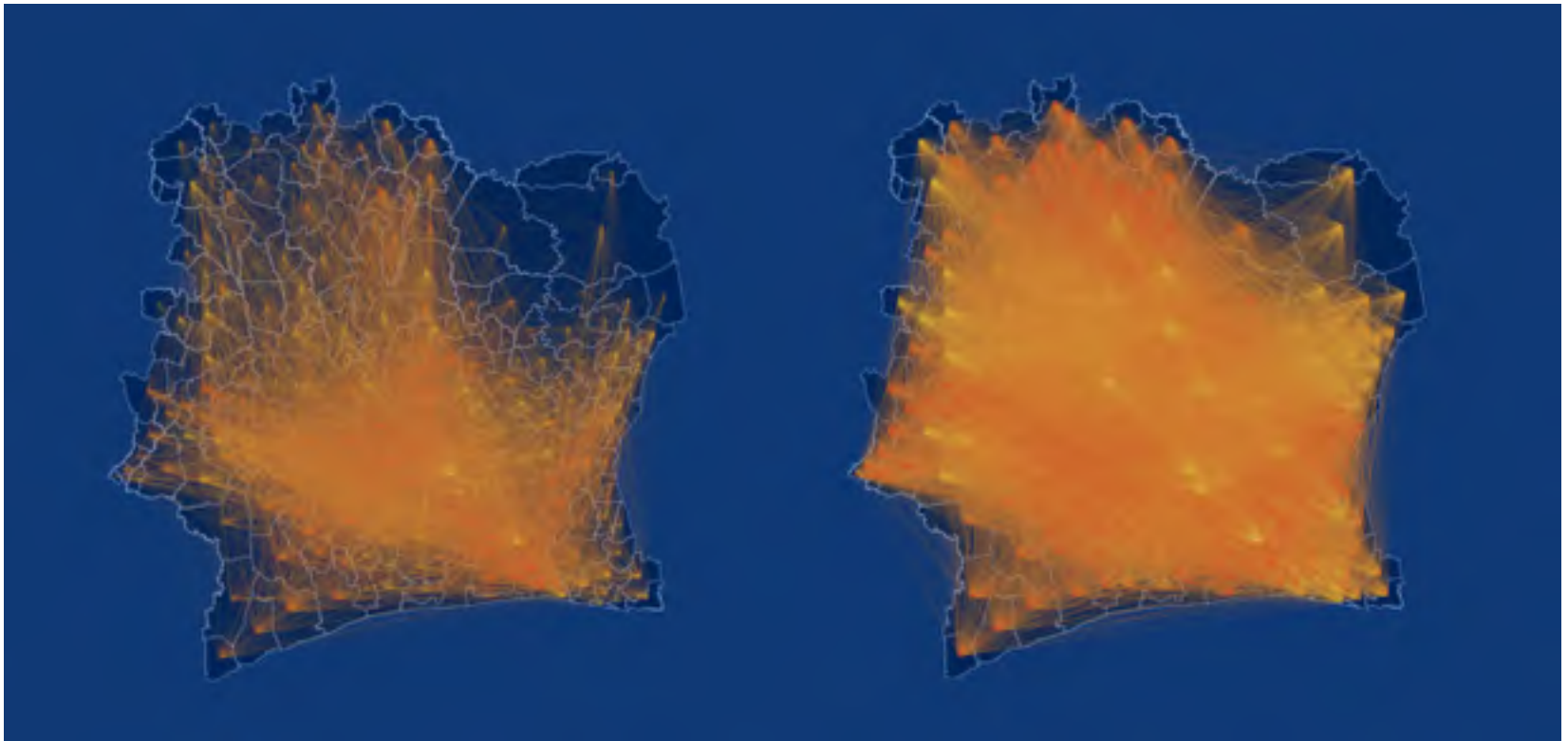
Transport optimization : local transport in Abidjan



Berlingerio et. al.: AllAboard: A system for exploring urban mobility and optimizing public transport using cellphone data (2013)

Mobile phone Data 4 Development

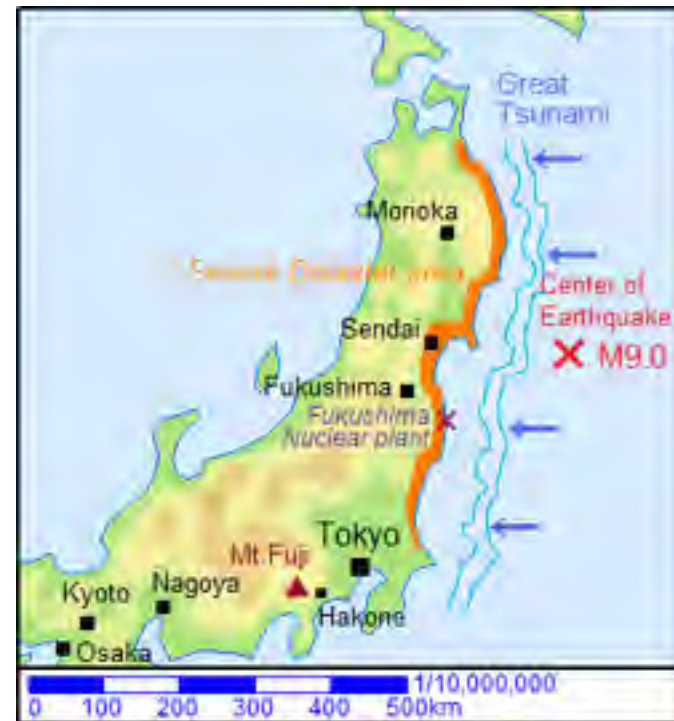
Monitoring Epidemics : information campaigns & infectious diseases diffusion



Lima et al., Exploiting cellular data for disease containment and information campaign strategies in country-wide epidemics (2013)

Big Data against natural disasters

Great East Japan earthquake, 2011



Food security in Africa



Can we estimate
food consumption indicators
from mobile phone data?

Mobile Phone Data



CDRs:

Caller_ID	Callee_ID	Cell_ID	Date	Time	Type (voice/SMS)	Duration
Cell_ID	Longitude	Latitude	Region			

Top-up data:

User_ID	Top-up amount	Date	Time
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~ 2M users

~ 15M communications per day

7 months of data

27M top-ups / month

Food Data

Survey on food consumption and nutrition

2012:

7500 households, answers to all questions

Household characteristics

Food consumption

Monetary

Food data and mobile phone expenses

Survey on food consumption and nutrition 2012:

7500 households, answers to all questions

Household characteristics

Food consumption

Monetary



0.82

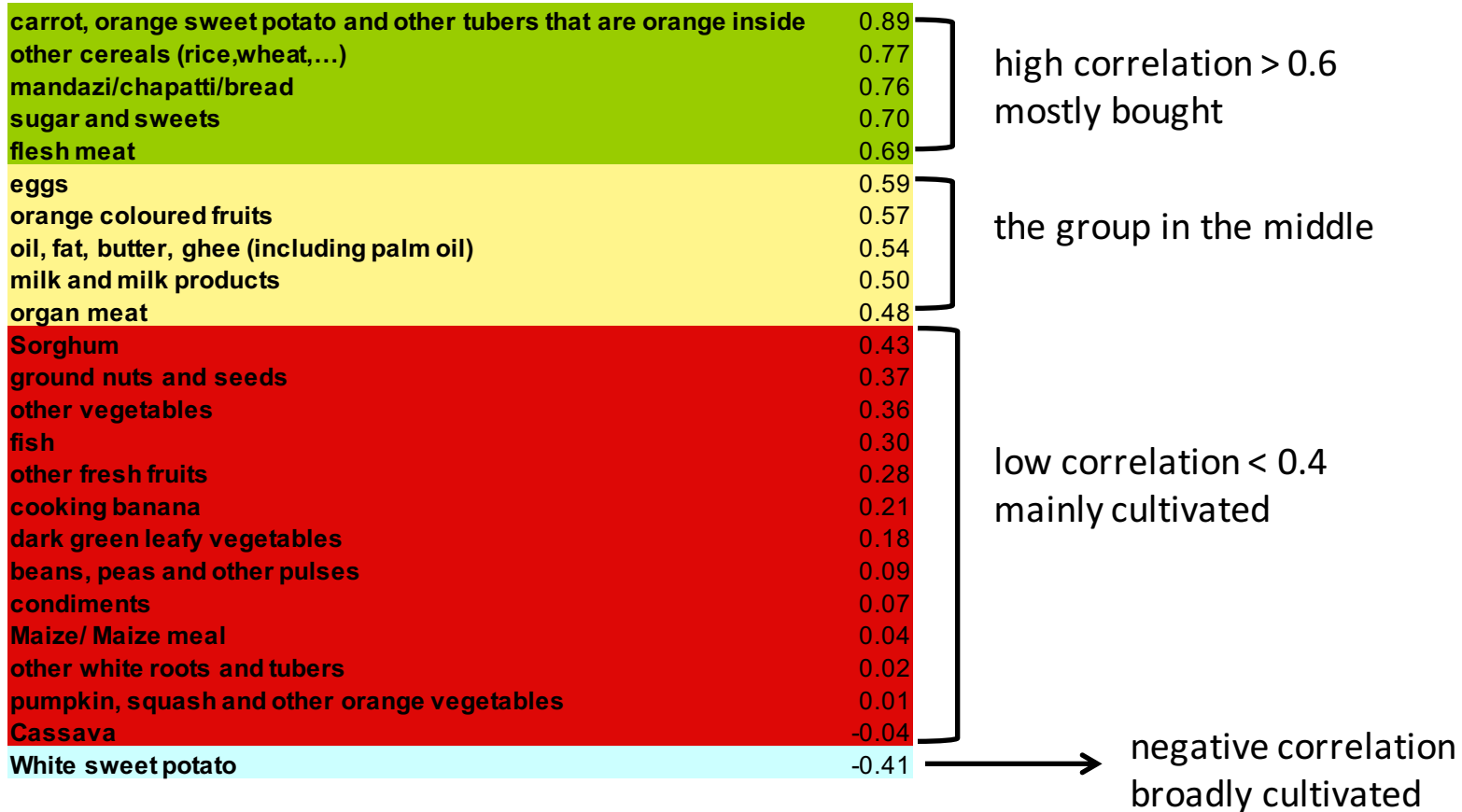


0.76



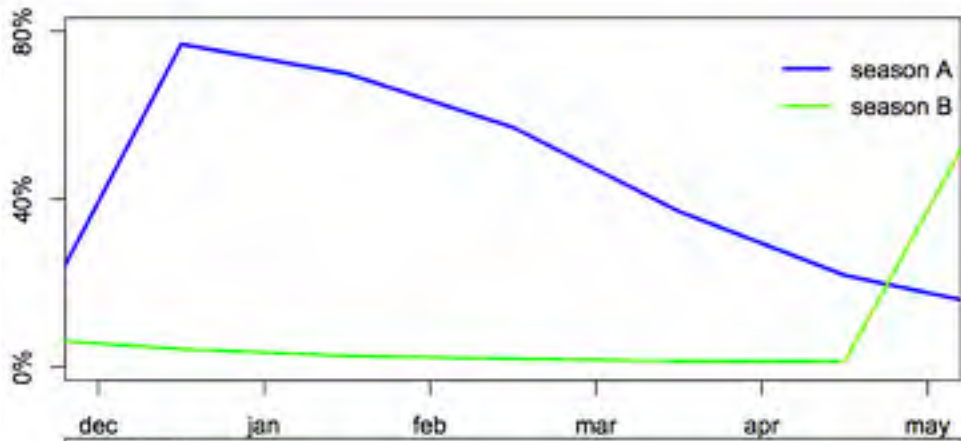
0.04

Mobile phone expenditure tells what people eat

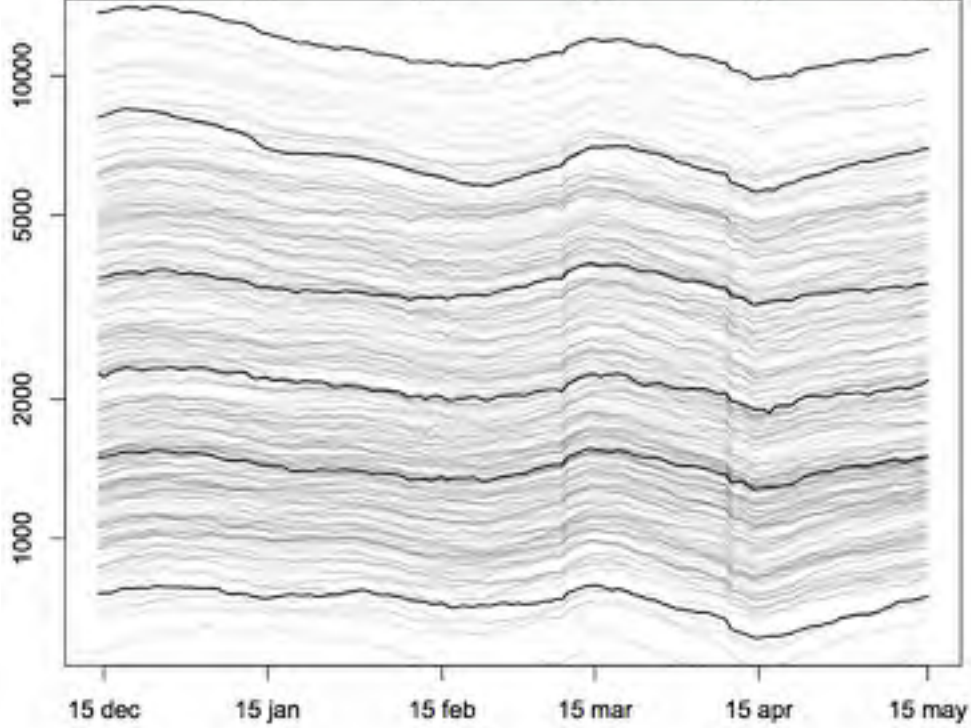


Monitor food stocks over time

Evolution of food stocks



Mobile expenses





...and save lives with Big Data!

