

Introduction to computational social science

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Summer Institutes in Computational Social Science
Day 1
2020

The Summer Institutes in Computational Social Science is supported by grants from the Russell Sage Foundation, Alfred P. Sloan Foundation, Facebook, and the Social Science Research Council.



What is computational social science?

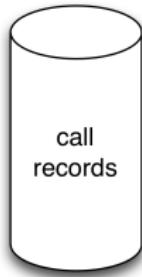
Anything that's cool

What is computational social science?

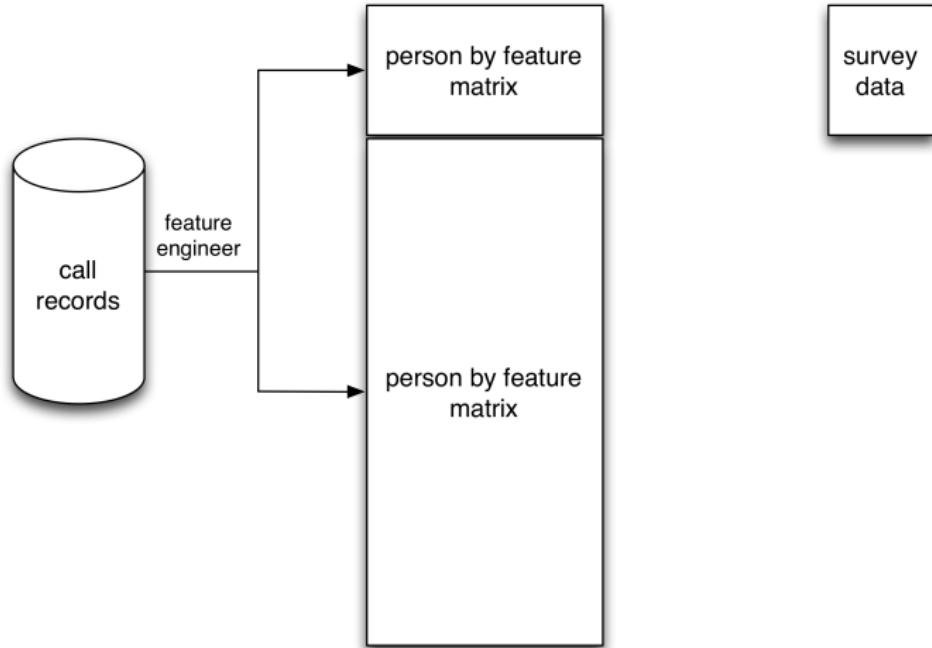
Predicting poverty and wealth from mobile phone metadata

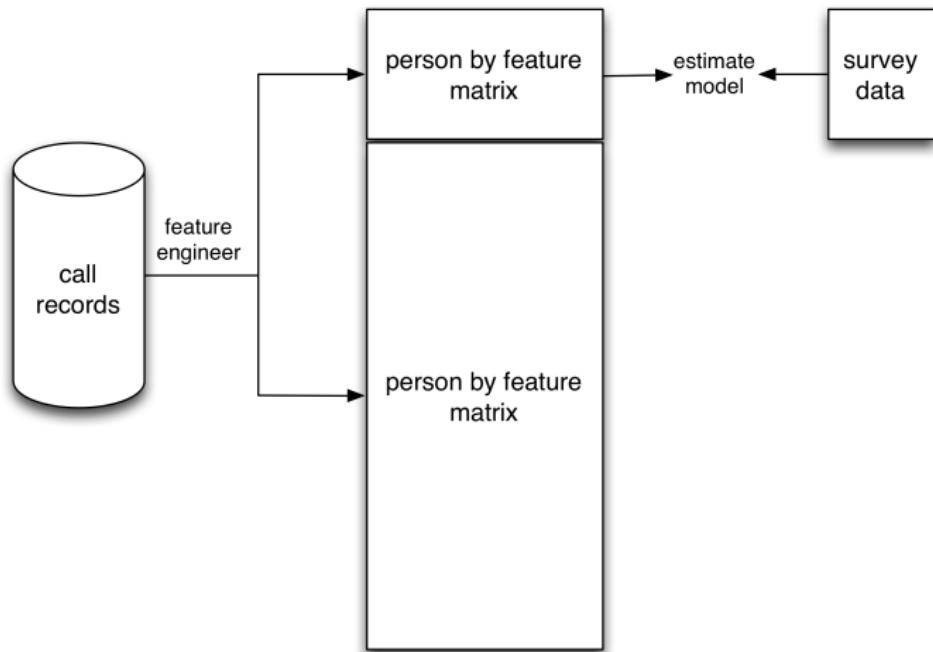
Joshua Blumenstock,^{1*} Gabriel Cadamuro,² Robert On³

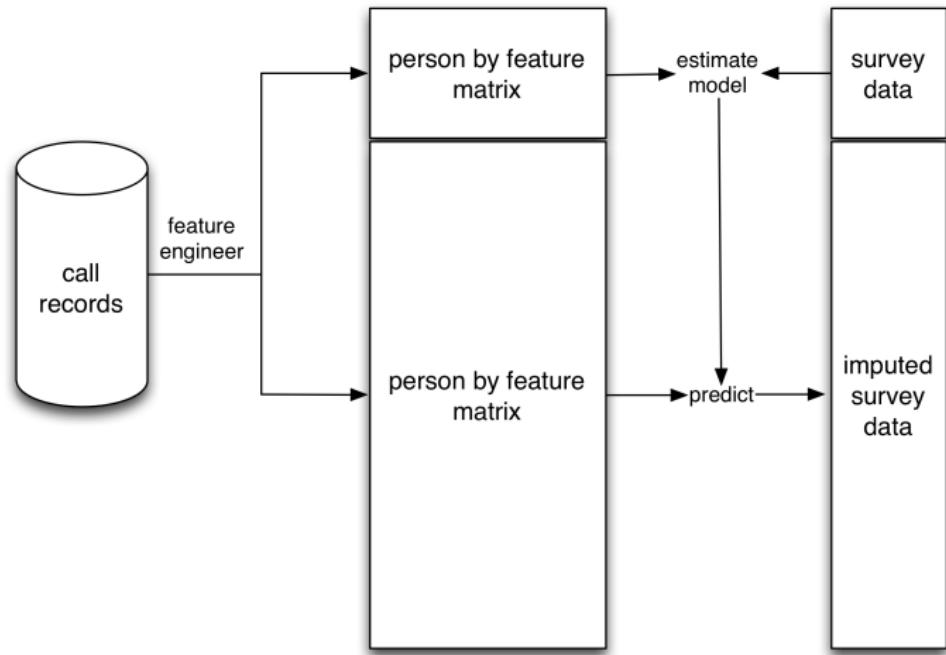
<http://dx.doi.org/10.1126/science.aac4420>

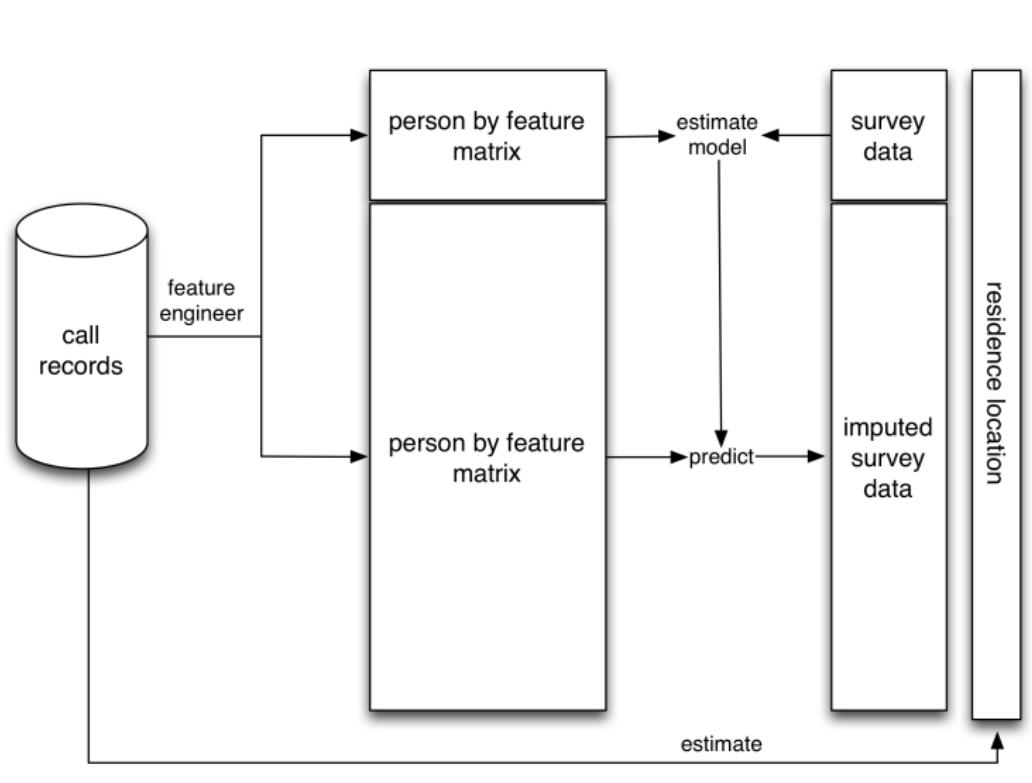


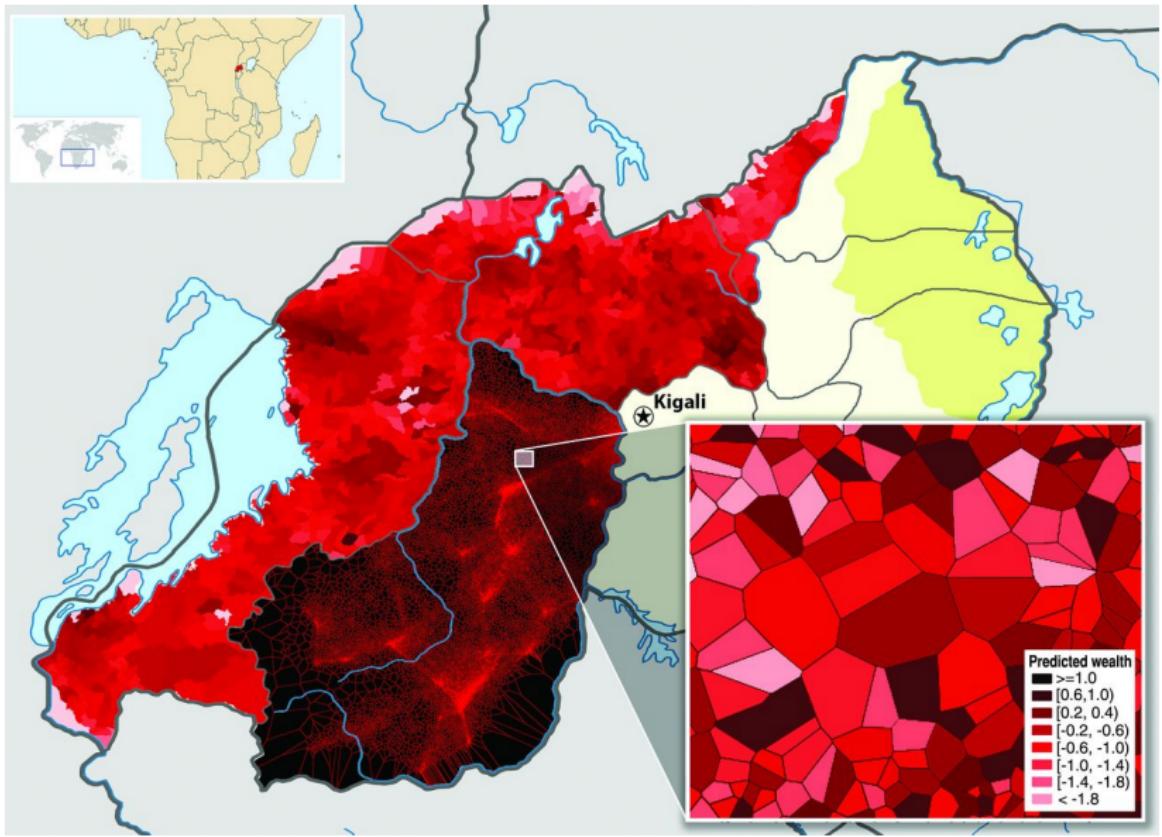




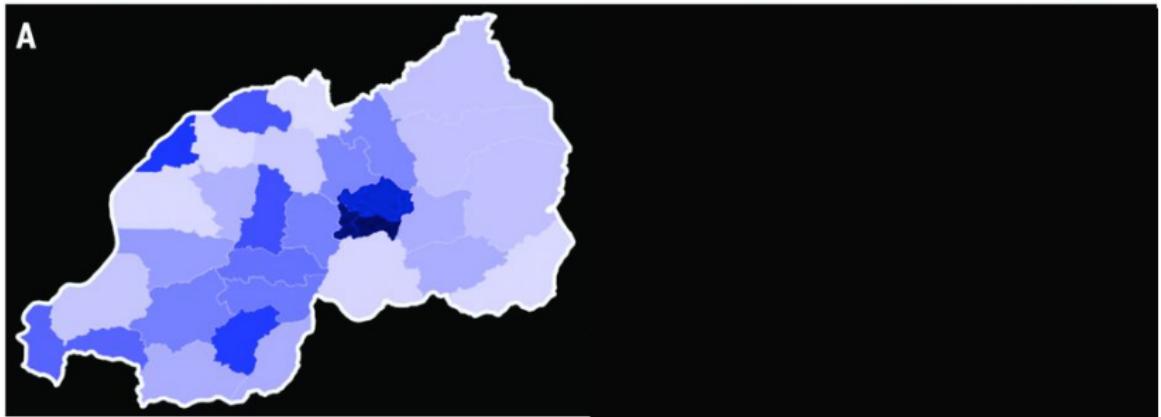




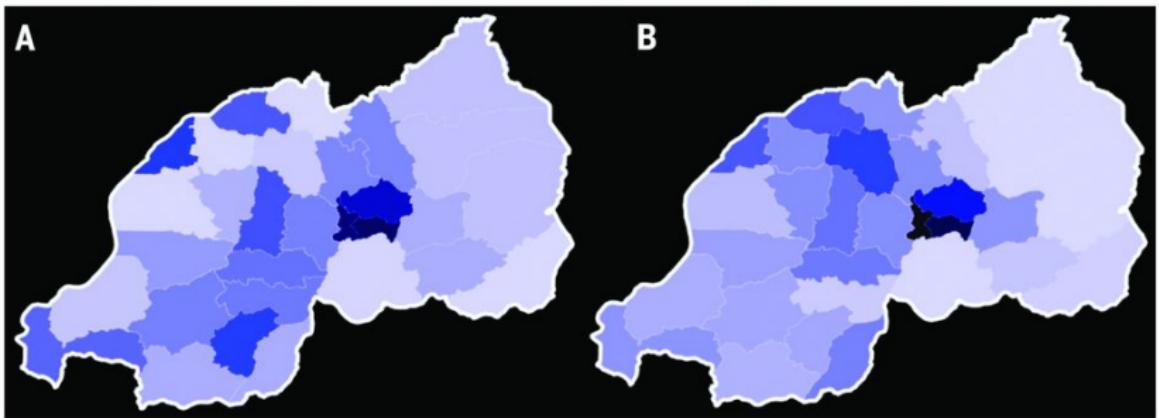




Blumenthal et al. (2015), Figure 2

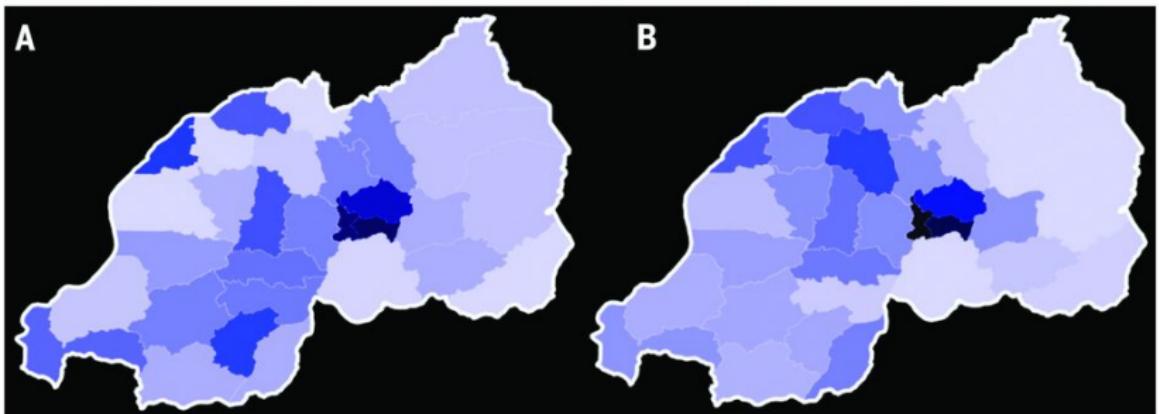


Blumenstock et al.



Blumenstock et al.
Survey

Demographic and Health



Blumenstock et al.
Survey

Demographic and Health
Survey

- ▶ 10 times faster
- ▶ 50 times cheaper

- ▶ *computational and social science*

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- ▶ combines readymades and custommades







readymades



custommades

https://commons.wikimedia.org/wiki/File:Duchamp_Fountainne.jpg

https://commons.wikimedia.org/wiki/File:%27David%27_by_Michelangelo_JBU0001.JPG

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- ▶ involves five key communities: social science, data science, business people, privacy advocates, policy makers

Balance between social science, data science, business people,
privacy advocates, and policy makers

Health Ecosystem vs Horrific Monoculture

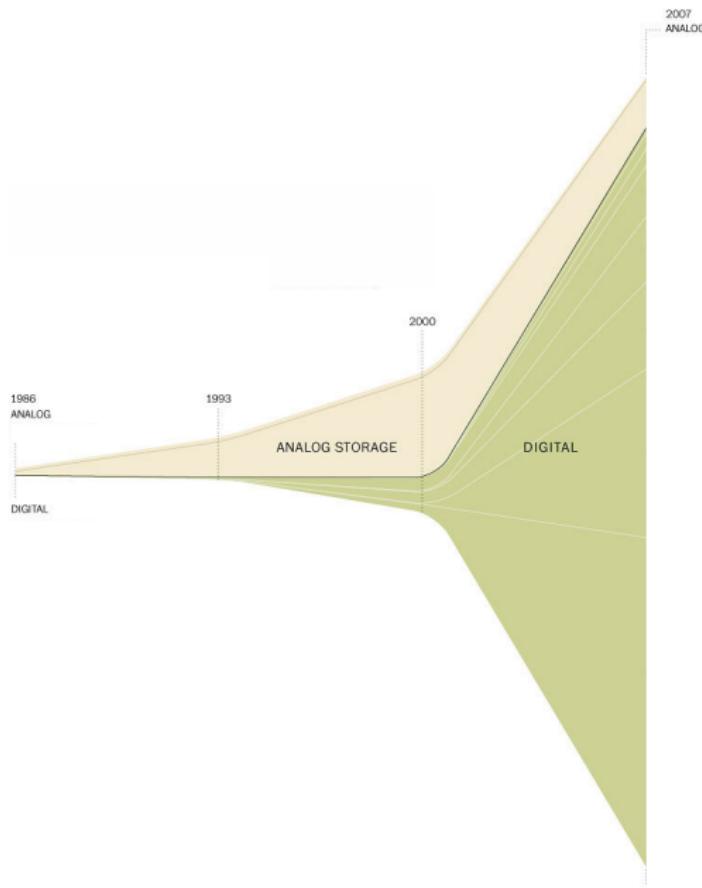
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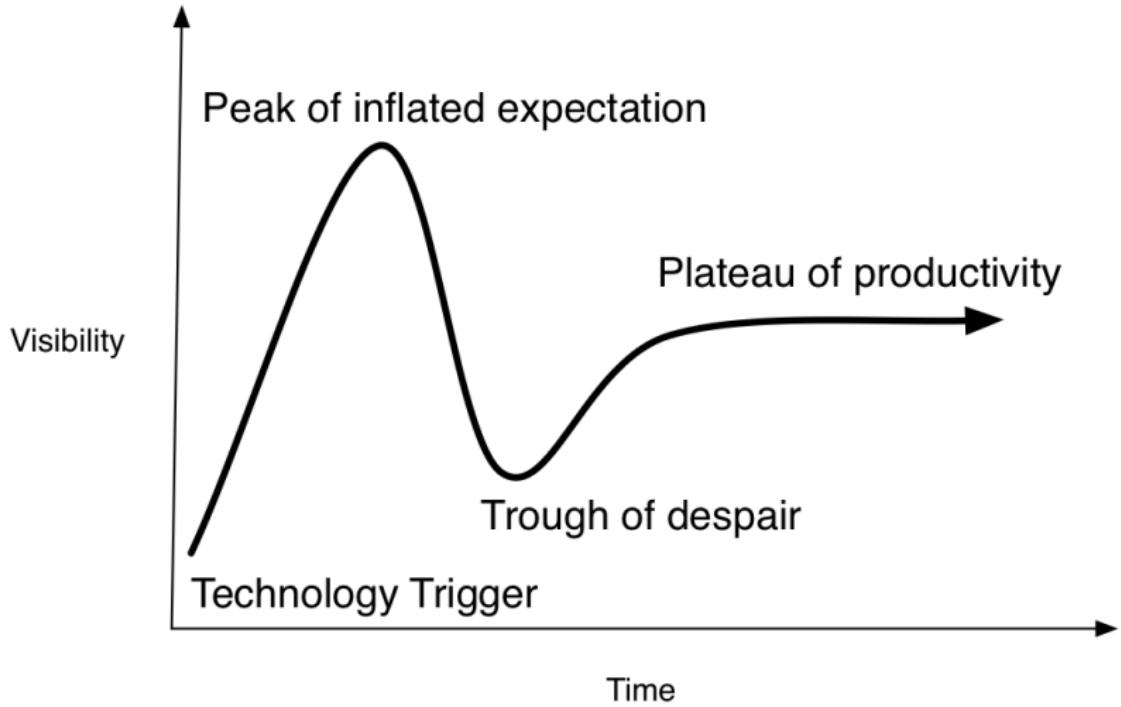
Isn't computational social science a fad?

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No



Bit by Bit, Fig 1.1, based on Hilbert and López (2011)



https://commons.wikimedia.org/wiki/File:Gartner_Hype_Cycle.svg

How do we create computational social science, individually and as a community?

Social Scientists ←→ Data Scientists

What is data science?

Anything that's cool

What is data science?

50 Years of Data Science

David Donoho

Department of Statistics, Stanford University, Standford, CA

<https://doi.org/10.1080/10618600.2017.1384734>

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- ▶ goes back to Tukey (1962)
- ▶ learning from data

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- ▶ goes back to Tukey (1962)
- ▶ learning from data
- ▶ it includes statistics and much more

Social Scientists ←→ Data Scientists

- ▶ Data science alone is not enough if we want to study social behavior

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- ▶ Social science alone is not enough if we want to use new data sources

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Computer science	Social science
Study anything	Study social things
Methods driven	Question driven
Large found data	Small designed data
Prediction	Explanation

http://videolectures.net/icml2015_wallach_social_science/

Another important difference between social science and data science:



Social Scientists ←→ Data Scientists

Let's get started . . .