

CP101 - Introduction to Urban Data Analytics

Instructor: Manuel Santana P.
with Rivka Batlan and Lauren Hom; UGSIs

Walking through the syllabus

Urban Data Analytics + Data Fundamentals for Planners

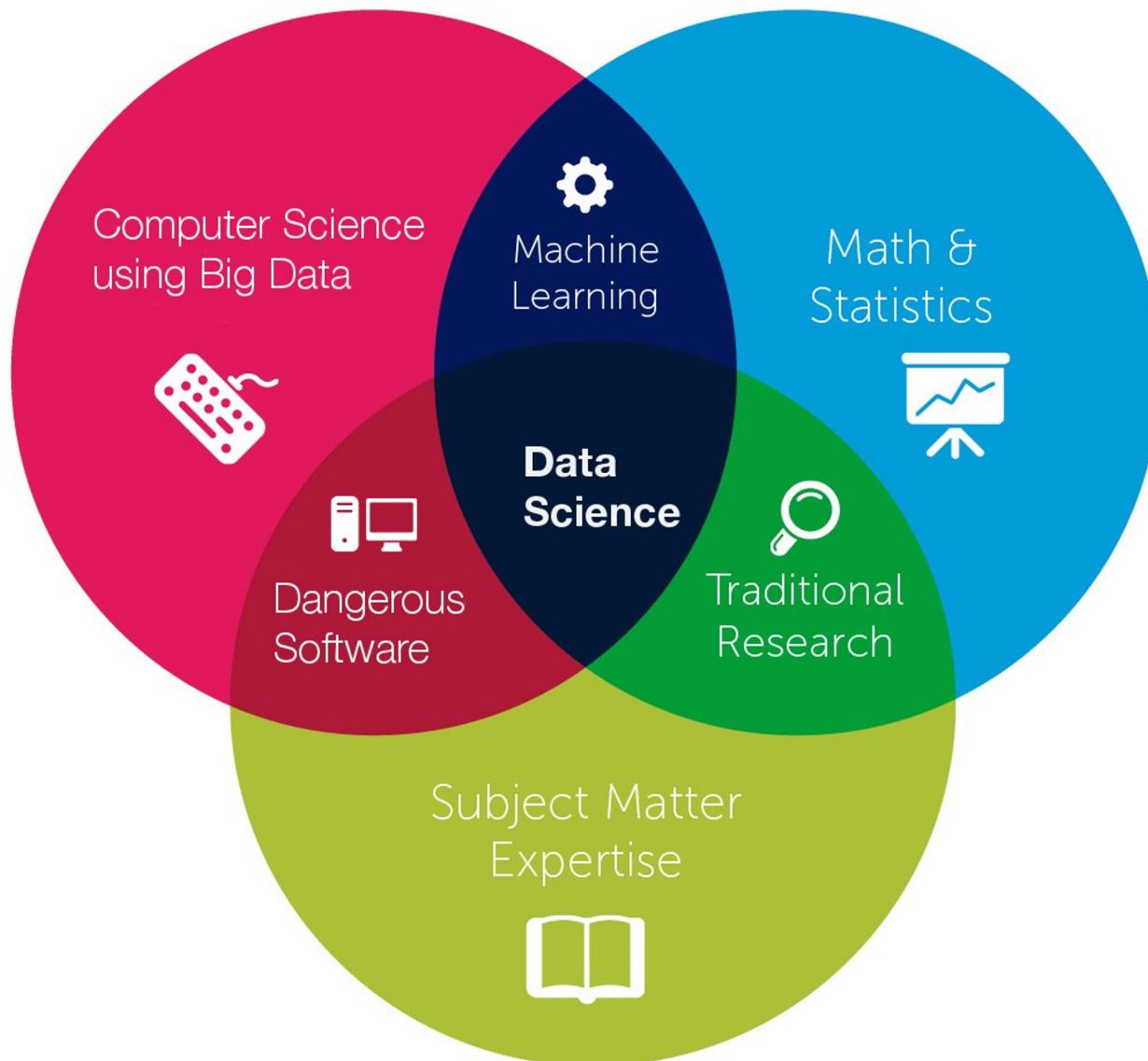
Defining Urban Analytics

“Urban analytics is the practice of using new forms of data in combination with computational approaches to gain insight into urban processes.” (Singleton, Spielman, and Folch, 2018; p. 15)

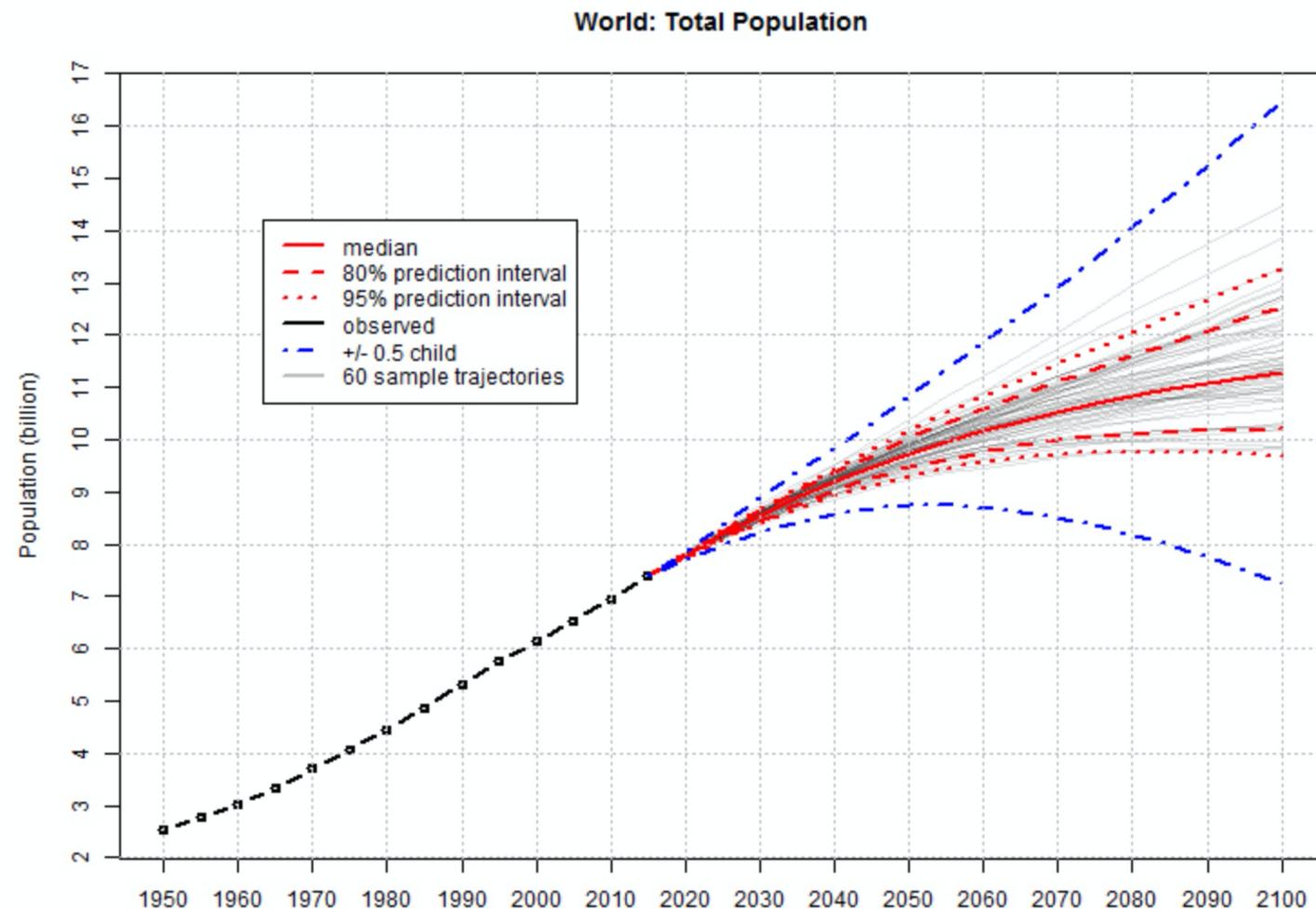
Defining Urban Analytics

“Urban analytics is the practice of using **new and traditional** forms of data in combination with **computational approaches** and to gain **some** insight into urban processes.”

Urban Analytics as [Urban] Data Science

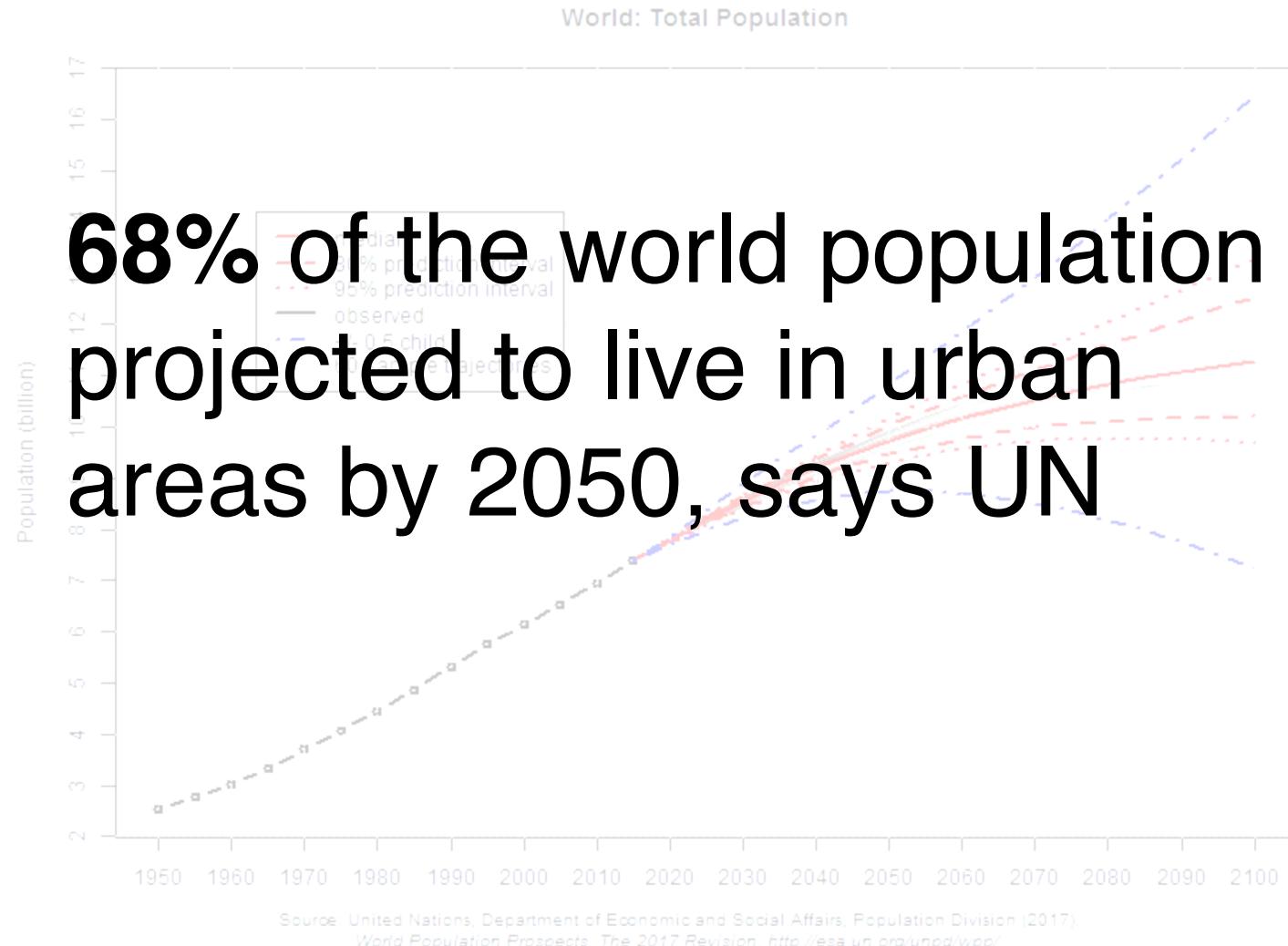


Why Cities?



Source: United Nations, Department of Economic and Social Affairs, Population Division (2017).
World Population Prospects: The 2017 Revision. <http://esa.un.org/unpd/wpp/>

Why Cities?



Cities are changing!

- How?
- Why?

Data: The Foundation of Research on Cities

Data used to be pretty simple
– there was the Census, and
a few specialized, federally
collected datasets



Data: The Foundation of Research on Cities

Data used to be pretty simple – there was the Census, and a few specialized, federally collected datasets

With the increased power and speed of computers, sources and access to data have increased exponentially



Smart trash can knows how fast you walk and which smartphone you use

By m4tt | Aug 9, 2013, 8:09am EDT

f t SHARE



MOST READ



What do Planners do with Data?

Describe

- Most of the times based on a sample

What do Planners do with Data?

Describe

- Most of the times based on a sample

Compare and contrast

- Across groups (static)
- Over time (longitudinal)
- Across places (cities, neighborhoods, population groups)

What do Planners do with Data?

Describe

- Most of the times based on a sample

Compare and contrast

- Across groups (static)
- Over time (longitudinal)
- Across places (cities, neighborhoods, population groups)

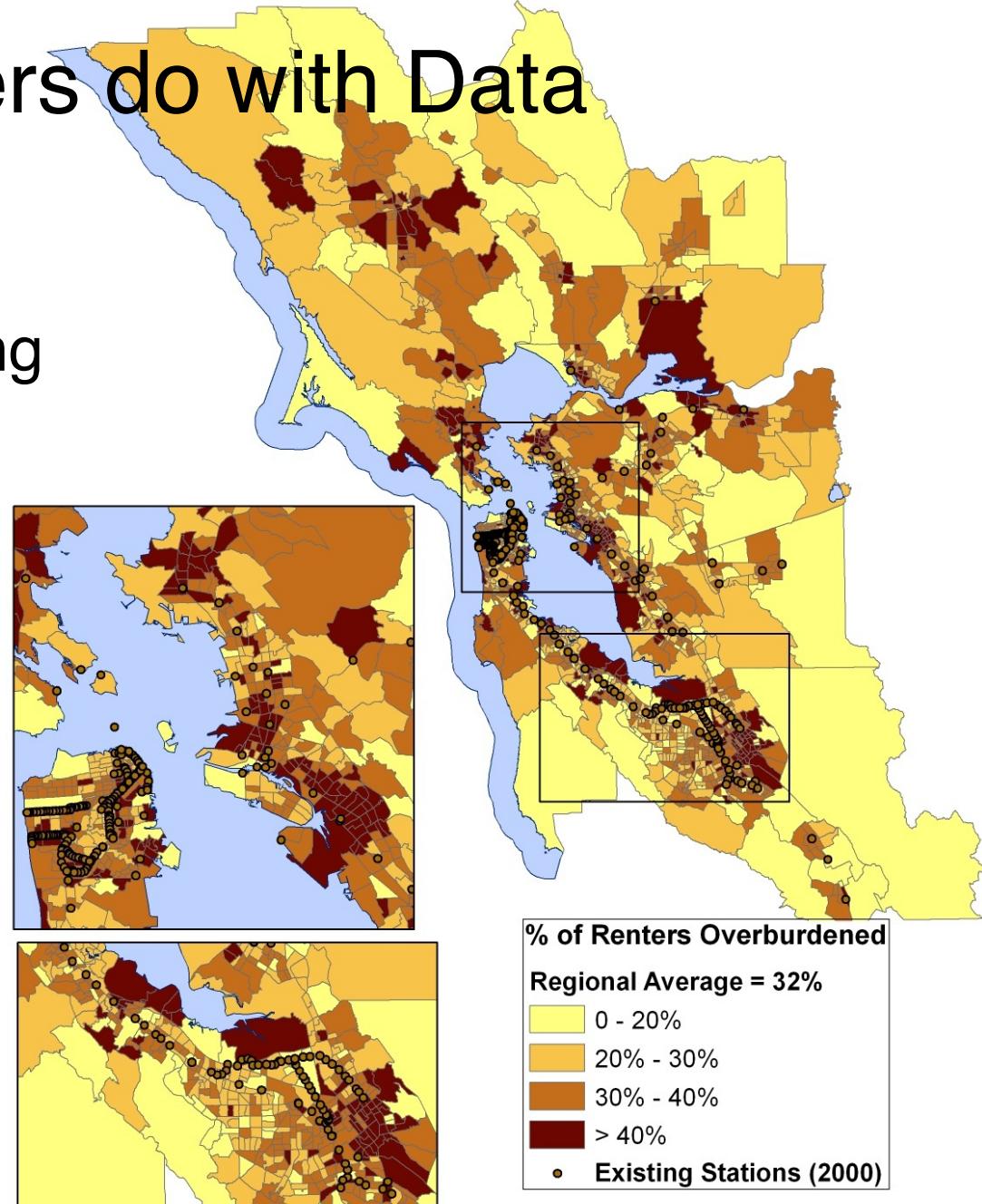
Infer and estimate

- Relationships between urban attributes
- Future values

What do Planners do with Data

Example

Share of renters paying
more than >30% of
income for rent

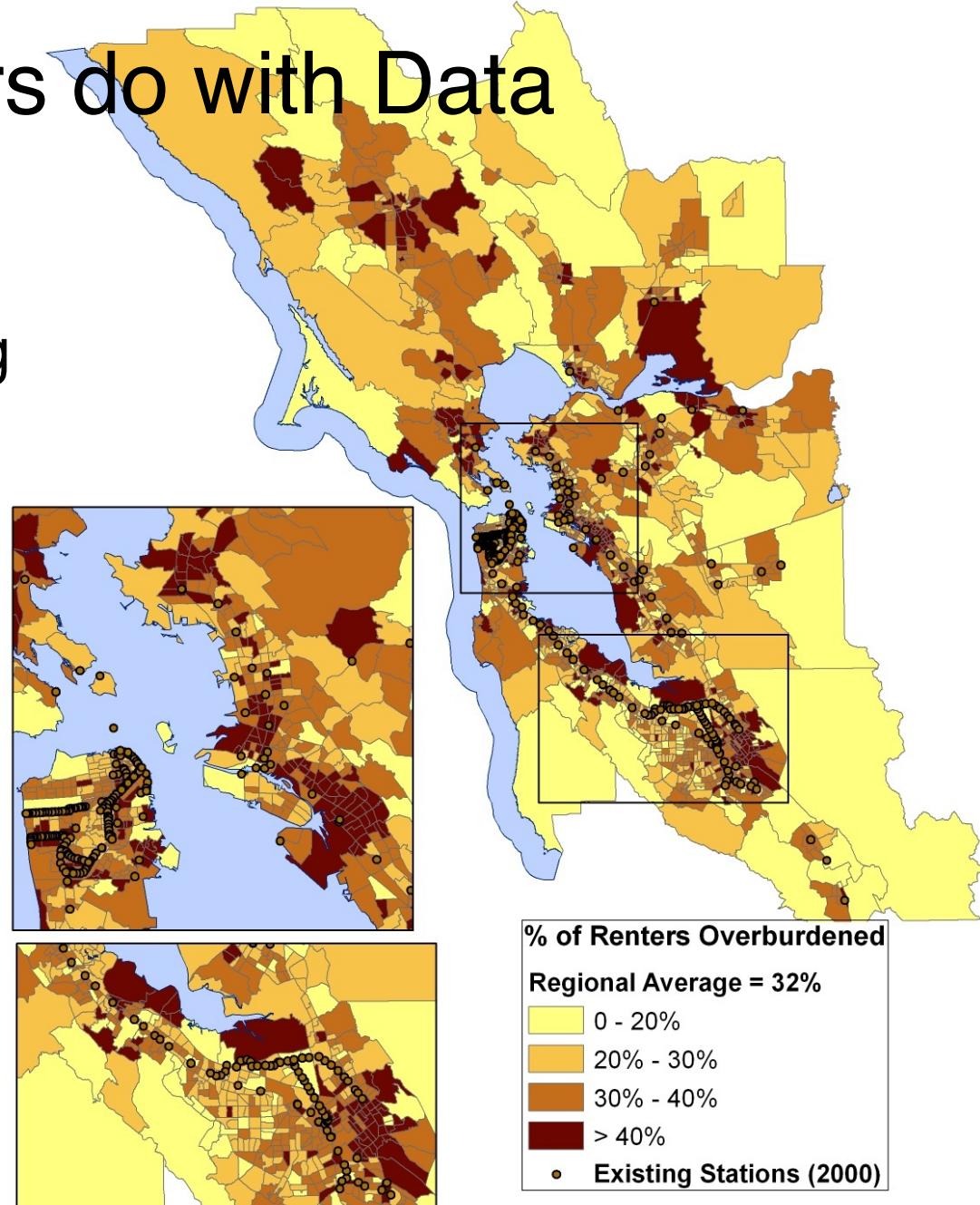


What do Planners do with Data

Example

Share of renters paying
more than >30% of
income for rent

- Unit of Analysis?
- Data sources?
- Do you observe any trend or relationship?



15-min break

Urban Data Types

Singleton, Spielman, and Folch, 2018

Designed



Organic



Smart trash can knows how fast you walk and which smartphone you use

By m4tt | Aug 9, 2013, 8:09am EDT

f t SHARE



Urban Data

Big Data?



Smart trash can knows how fast you walk
and which smartphone you use



Big Data

We define Big Data¹ as a cultural, technological, and scholarly phenomenon that rests on the interplay of:

- (1) *Technology*: maximizing computation power and algorithmic accuracy to gather, analyze, link, and compare large data sets.
- (2) *Analysis*: drawing on large data sets to identify patterns in order to make economic, social, technical, and legal claims.
- (3) *Mythology*: the widespread belief that large data sets offer a higher form of intelligence and knowledge that can generate insights that were previously impossible, with the aura of truth, objectivity, and accuracy.

Boyd & Crawford, 2012



“New forms of data ... can help to manage existing infrastructure more efficiently”

(Singleton, Spielman, and Folch, 2018; p. 15)



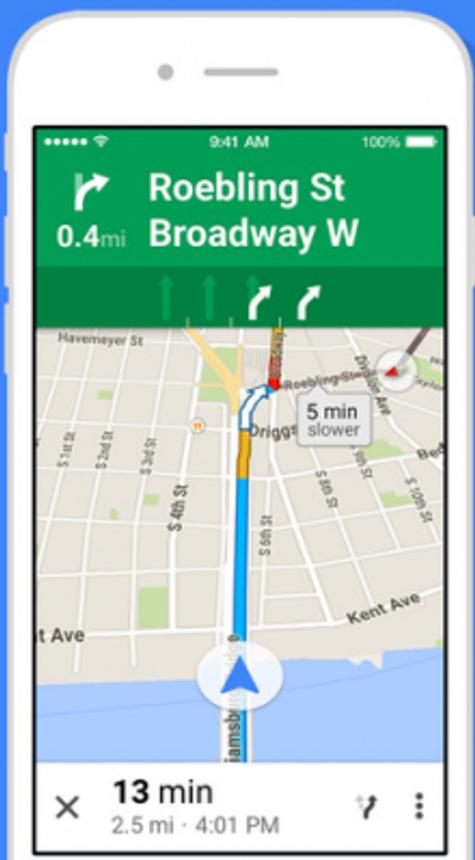


“Diverse groups argue about the potential benefits and costs of analyzing social media interactions, phone logs, and other digital traces left by people” (Boyd and Crawford, 2012)

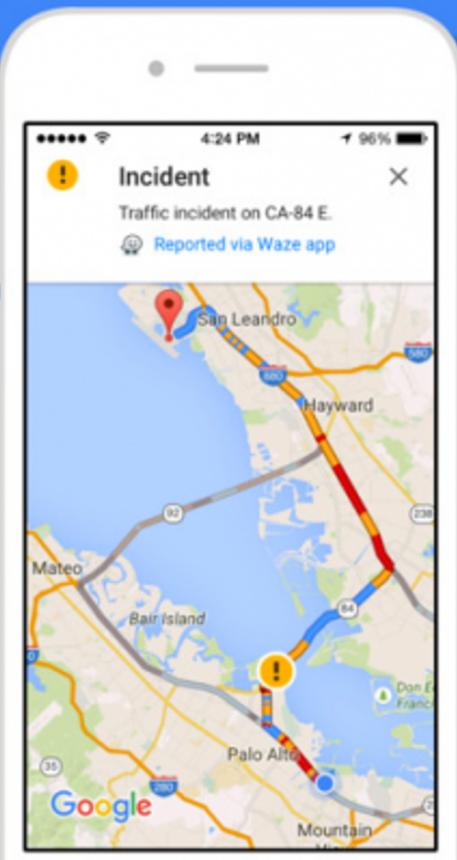


Urban Data Analytics

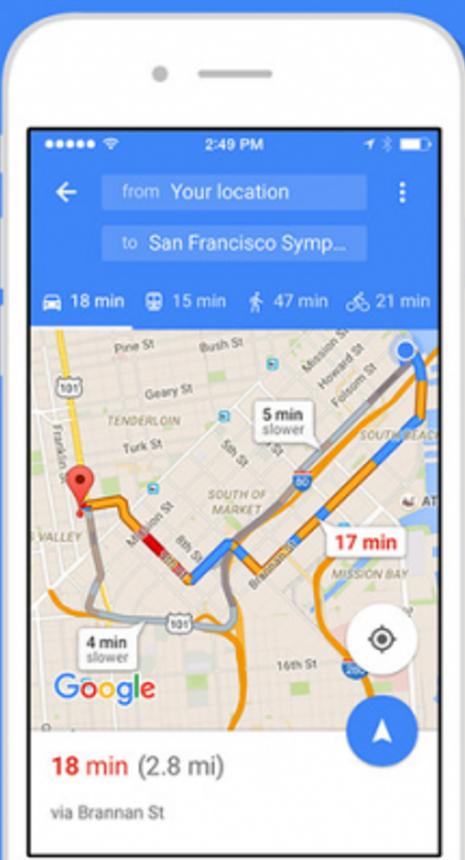
Navigate with ease



Outsmart traffic



Compare ETAs



Big Data: Who's involved?

-Data Collectors



Big Data: Who's involved?

- Data Collectors
- Data Utilizers/Consumes
 - Planners, Cities, Residents



Big Data: Who's involved?

- Data Collectors
- Data Utilizers
 - Planners, Cities, Residents
- Data Generators
 - In cities, this is often us



Big Data: Who's involved?

- Data Collectors

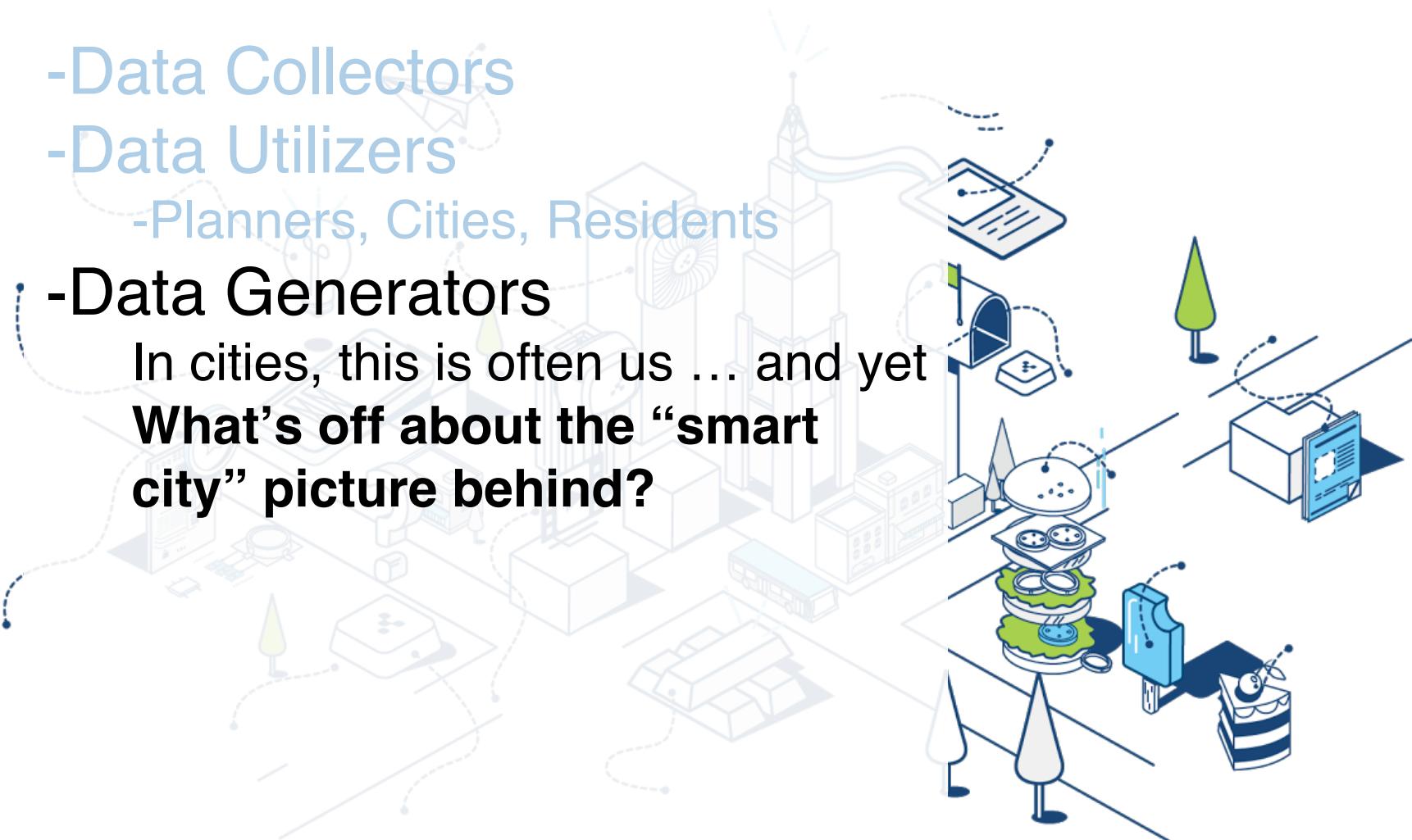
- Data Utilizers

- Planners, Cities, Residents

- Data Generators

In cities, this is often us ... and yet

What's off about the “smart city” picture behind?



Data: Who's involved?



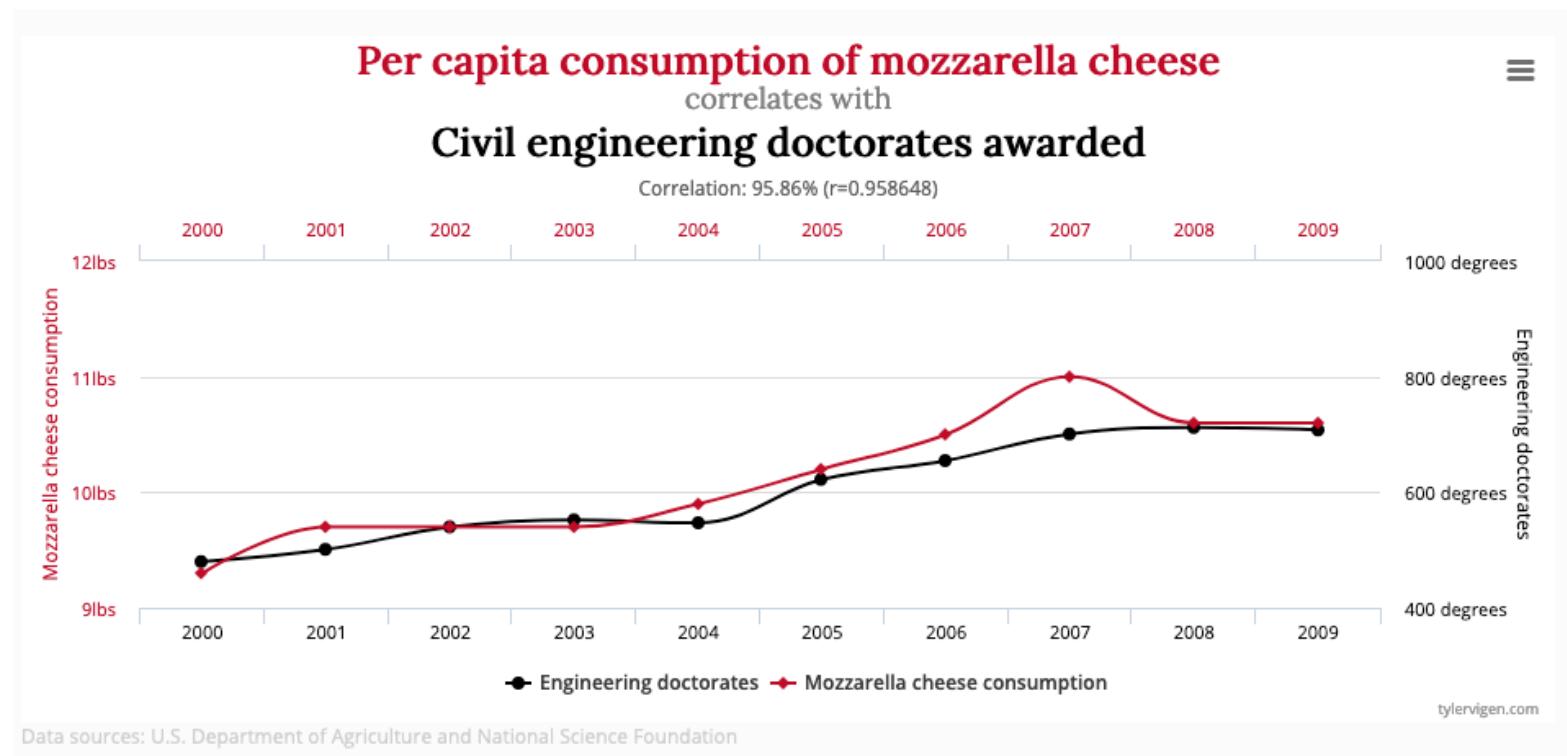
Critical Questions for Big Data

Boyd and Crawford, 2012

- Can sensed or crowdsourced data be used without data generators permissions?
- Do I own my data?
- What are the best practices to de-anonymize data?
- Who is responsible for making certain individuals and communities are not hurt if their data is used?
- How to deal with biases in Big Data
 - Sample bias (who generates the data)
 - The new digital divide (who uses the data)

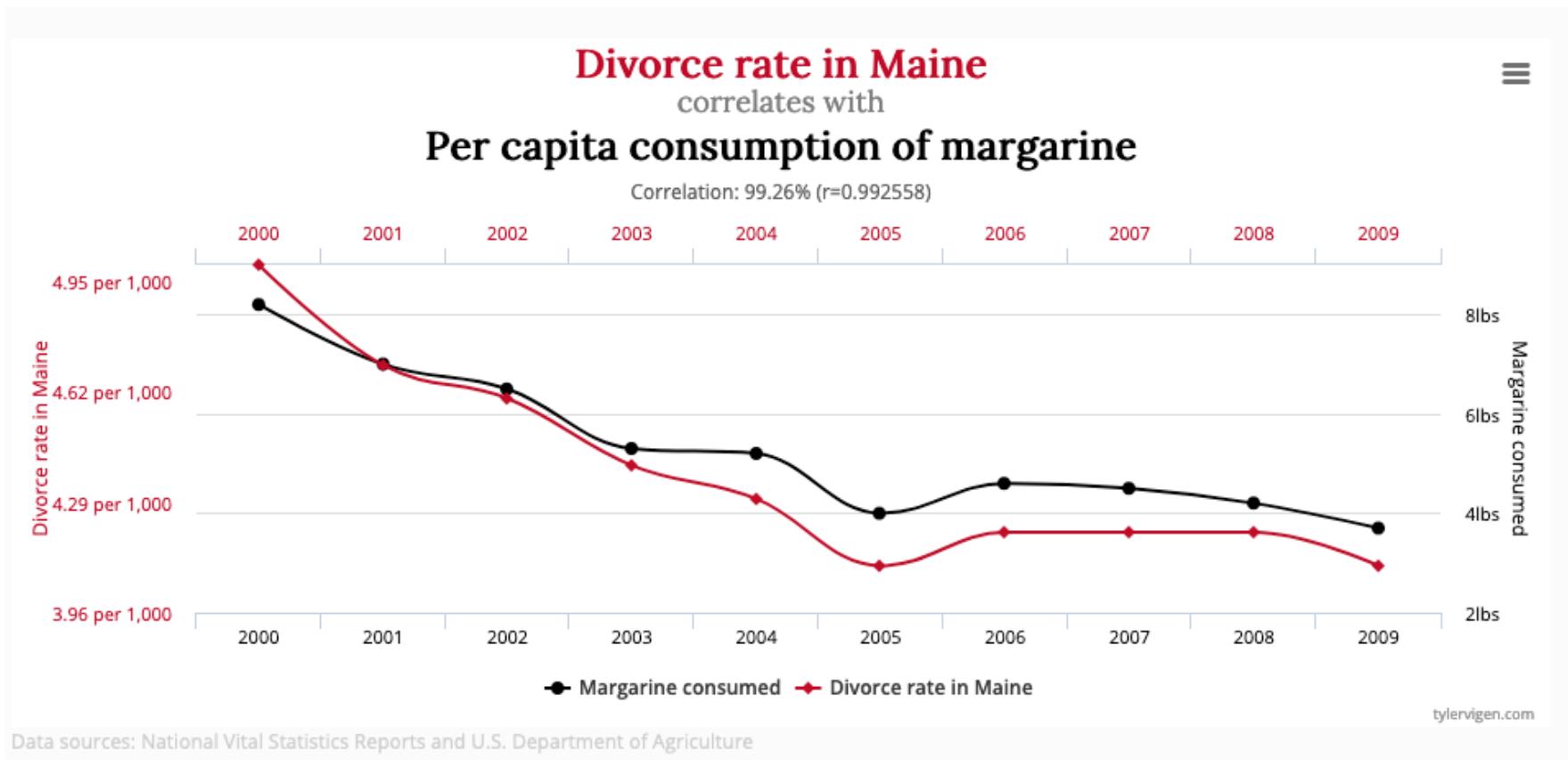
Critical Questions for Big Data

Does data speak for itself?



Critical Questions for Big Data

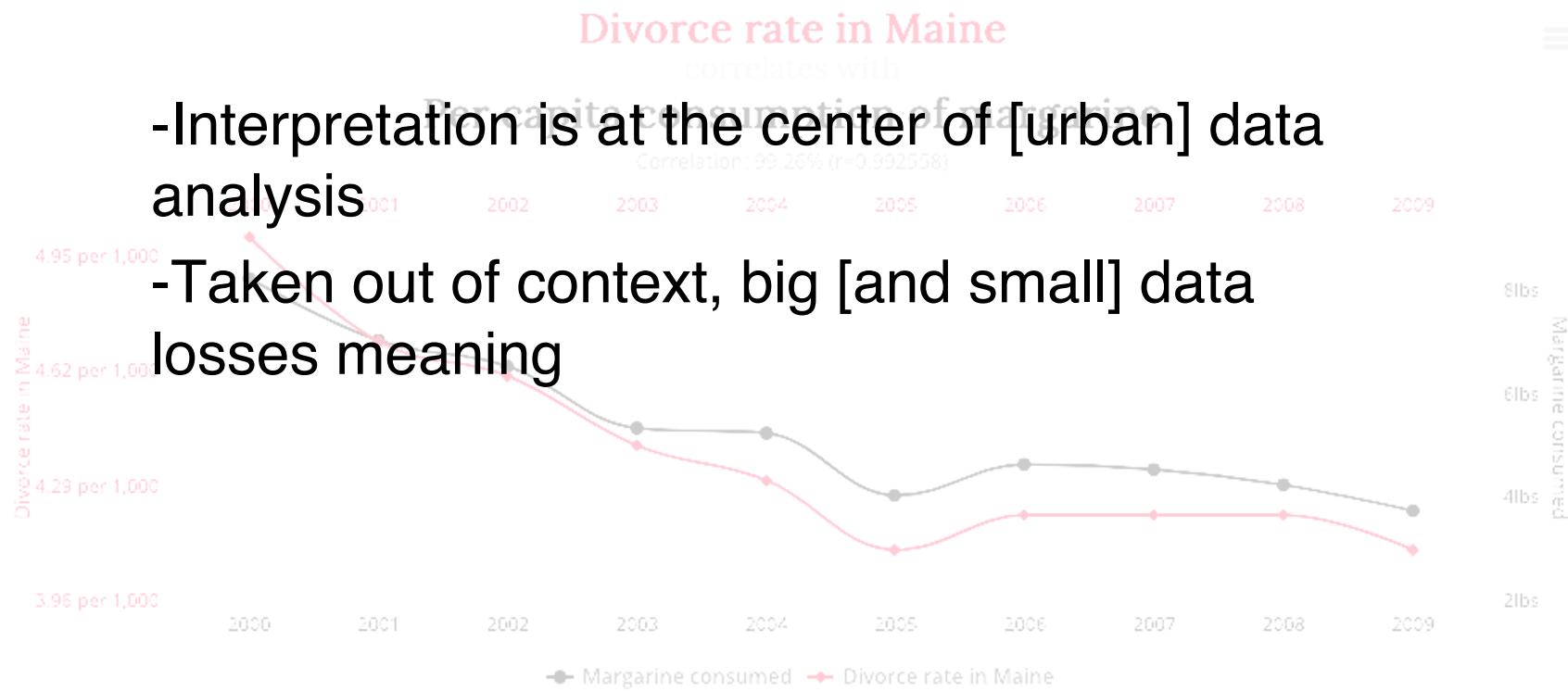
Does data speak for itself?



Data sources: National Vital Statistics Reports and U.S. Department of Agriculture

Critical Questions for Big Data

Does data speak for itself?



Also, we need to think ...

- Are we asking the right questions?
- **Do we have the right data?**
- **Are we using the right methods to analyze our data?**
- **Are we getting the “right” answer?**



“New forms of data ... can help to manage existing infrastructure more efficiently”

(Singleton, Spielman, and Folch, 2018; p. 15)



The Perfect Selfishness of Mapping Apps

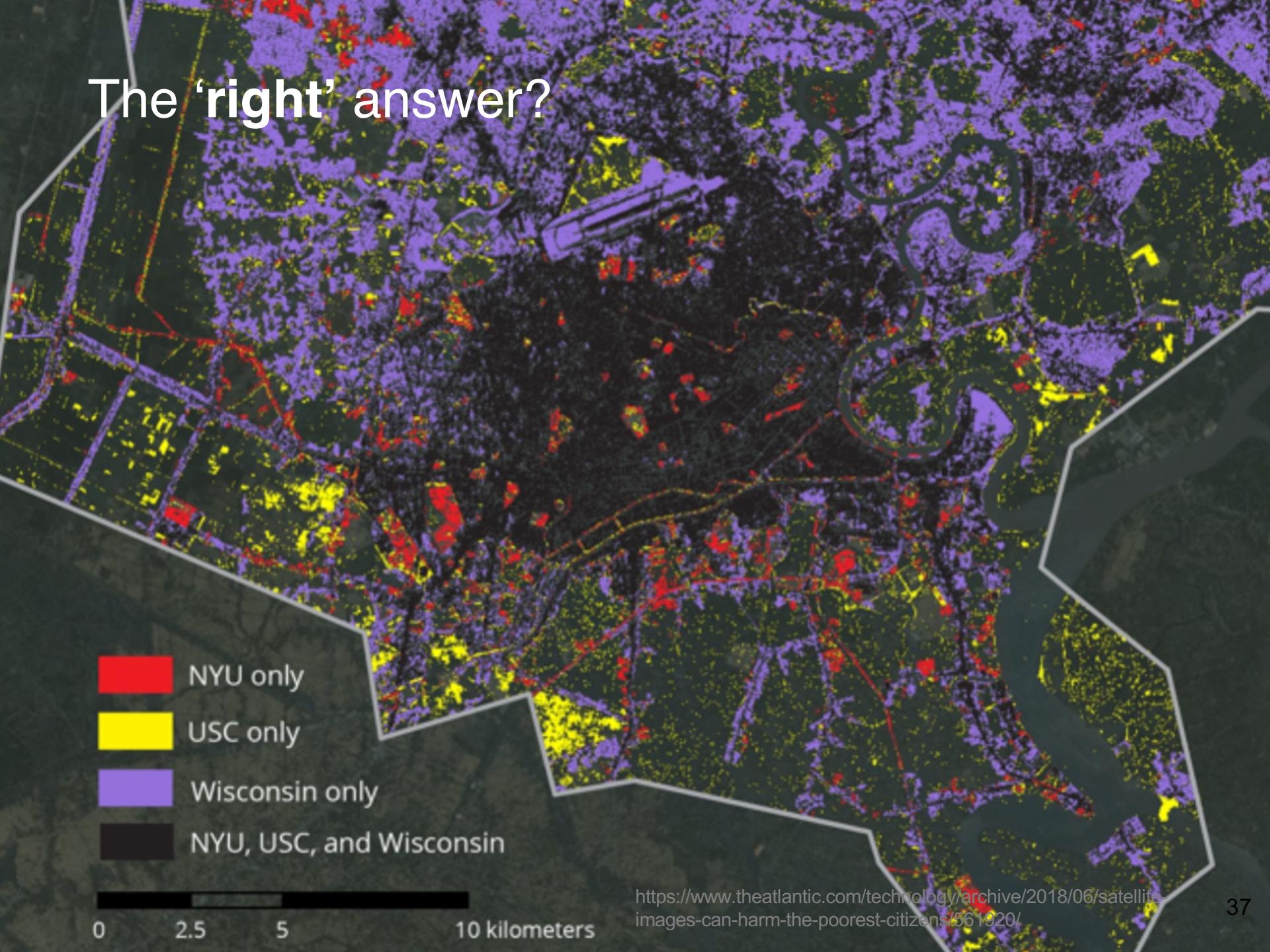
Apps like Waze, Google Maps, and Apple Maps may make traffic conditions worse in some areas, new research suggests.

ALEXIS C. MADRIGAL MAR 15, 2018



The ‘right’ answer?

The ‘right’ answer?



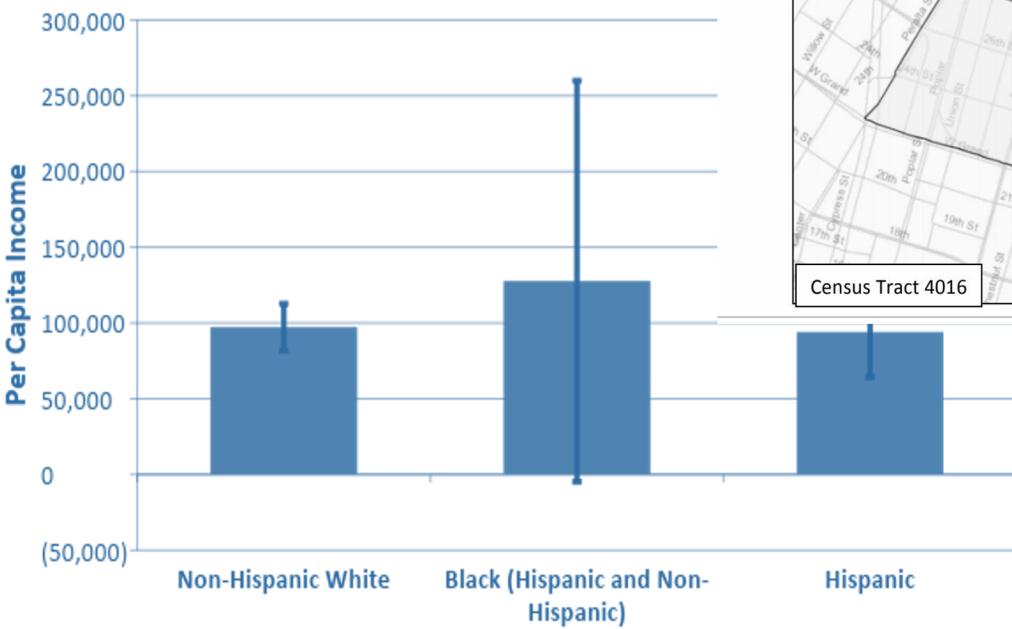
<https://www.theatlantic.com/technology/archive/2018/06/satellite-images-can-harm-the-poorest-citizens/561920/>

The end ...

Sample assignments

Assignment 1

Neighborhood Profile



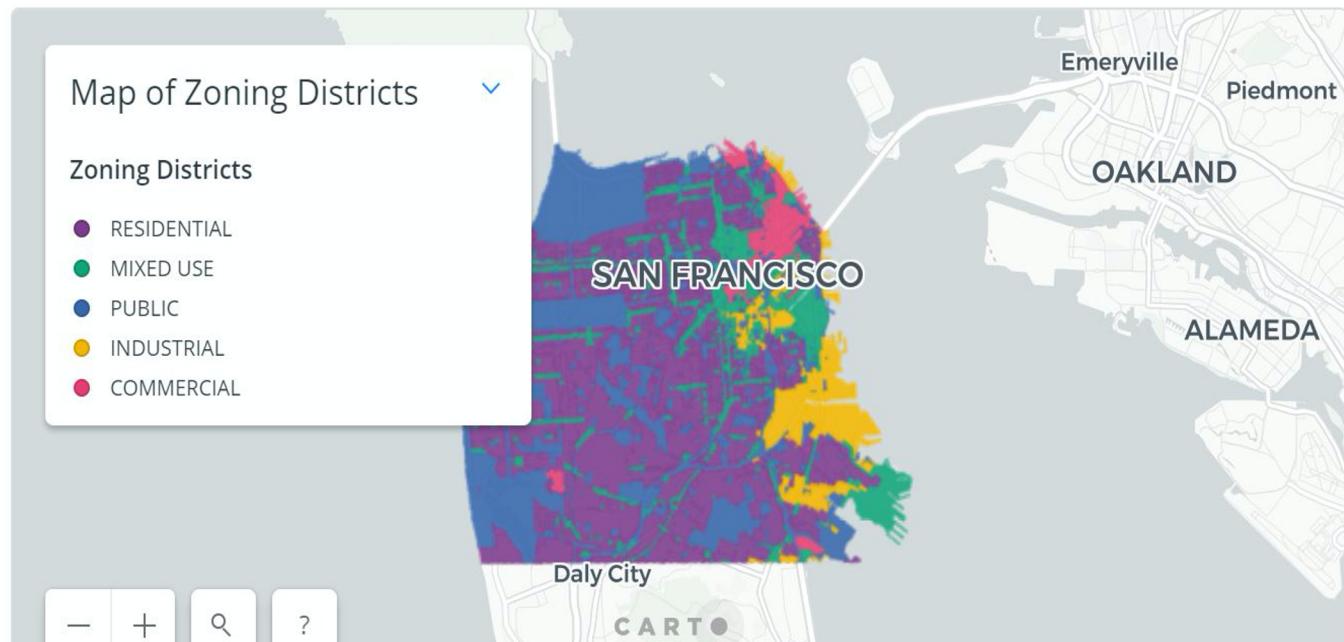
Assignment 2

A one-page project proposal with a research question, data sources, and analytical approach

Assignment 3

Story Map

4. **Where are bike parks most concentrated?** In this second map, zoning districts are labeled to see if there are any correlations between land use and bike parking areas. The largest concentration of bicycle parking in the northeast is surprisingly in an area that has a variety of zones. There is a combination of commercial, residential and mixed use zones. Perhaps this combination use brings many people together. Commercial use is likely what brings most people together.



Assignment 4

Bikes and Business: Data Analysis on the Temescal Neighborhood in North Oakland



Given the sentiment businesses generally have towards the installation of bike lanes, how close in proximity are bike lanes to businesses in the Temescal neighborhood of North Oakland? What can this imply about their relationship?

Assignment 4

Anti-Eviction Mapping Project

A look into the influence of tech buses
on SF neighborhood housing markets



Assignment 4

Site Title

[Home](#) [Blog](#) [About](#) [Contact](#)

Distribution of Farmers Markets in Queens



Farmers Market in New York City. Source: Timeout