

Large Social and Medical Data

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The Opportunity

- Explosion of data sources: administrative, electronic medical records, online behavior
- Population data is becoming more common and precise
- How can it be used?
- Policy makers/firms:
“let’s just use the big data to evaluate programs”
- Tension between identifying causal effects vs. prediction

Neighbors mailing

3 0 4 2 3 - 3



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ECRL0T **C050
THE JACKSON FAMILY
9999 MAPLE DR
FLINT MI 48507

Dear Registered Voter:

WHAT IF YOUR NEIGHBORS KNEW WHETHER YOU VOTED?

Why do so many people fail to vote? We've been talking about the problem for years, but it only seems to get worse. This year, we're taking a new approach. We're sending this mailing to you and your neighbors to publicize who does and does not vote.

The chart shows the names of some of your neighbors, showing which have voted in the past. After the August 8 election, we intend to mail an updated chart. You and your neighbors will all know who voted and who did not.

DO YOUR CIVIC DUTY — VOTE!

MAPLE DR
9995 JOSEPH JAMES SMITH
9995 JENNIFER KAY SMITH

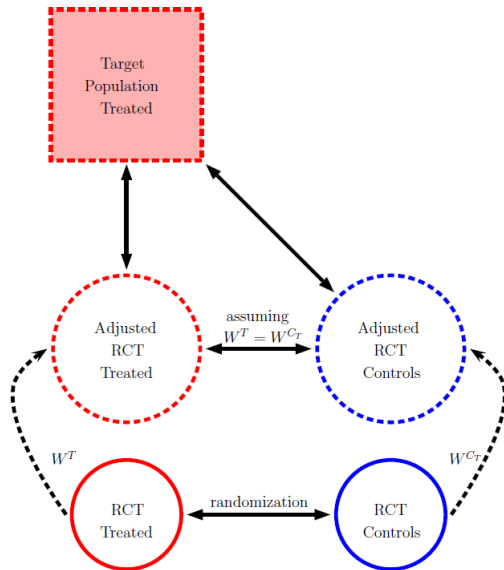
Aug 04
Voted

Nov 04
Voted
Voted

Aug 06

The Problem

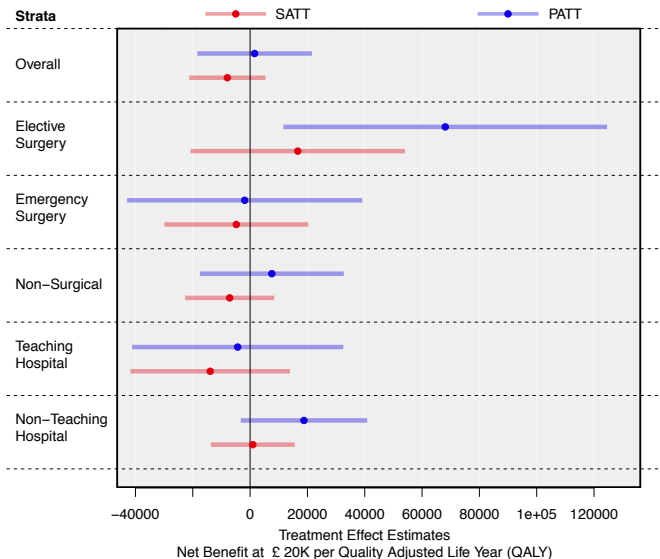
- Most Randomized Controlled Trials (RCTs) are small, especially a problem with medical experiments
- RCTs are usually not conducted on the population
- We can now combine information from both RCTs and population data to estimate treatment effects in the population
- Goal: precision medicine, precise targeting of treatments



Pulmonary Artery Catheterization (PAC)

- PAC is an invasive cardiac monitoring device for critical ill patients (ICU)—e.g., myocardial infarction (ischaemic heart disease)
- Widely used for the past 30 years: spend \$2 billion in U.S. per year

Population Treatment Effects on Cost-Effectiveness



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Ford Motor Company

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Ford Motor Company is a multinational automobile manufacturer headquartered in Dearborn, Michigan, founded by Henry Ford on June 16, 1903. Wik

CEO: [Alan Mulally](#)

Headquarters: Dearborn, Michigan

Founder: [Henry Ford](#)

Founded: June 16, 1903

Awards: Car and Driver's "Most Reliable" award

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Oct 4, 4:00 PM EDT

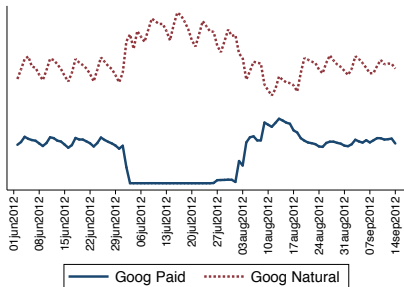
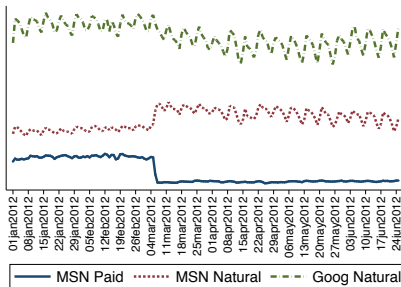
Founder: [Pierre Omidyar](#)

Founded: September 1995

Headquarters: San Jose, California

CEO: [John Donahoe](#)

A Modest Experiment



From: Blake, Nosko, and Tadelis (2013)