Econ 211

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Motivation

- Motivating question: how can we use nudges (and behavioral economics concepts more generally) at large scale?
    - Eg, entire neighborhoods, cities, countries?
    - Cost-effectiveness is key at this size, hence why nudges are so popular
- Often interested in promoting pro-social activities
    - Energy conservation
    - Organ donation
   - Voting
    - Public service

Nudges in Public Policy

Social Norms and Energy Conservation

- Suppose we want to encourage people to use less energy at home
- One solution: increase energy prices
- Problem with this approach?
    - Price increase hurts everyone
    - We really want to target just those people who are using a lot
- Alternate solution: social information nudges
    - OPOWER: company that tracks energy usage for many large utilities
    - Send home energy reports (HERs) to many households

Home Energy Reports

Last Month Neighborhood Comparison | Last month you used **15% LESS** electricity than your efficient neighbors.

YOU — 504 kWh*

EFFICIENT NEIGHBORS — 596

ALL NEIGHBORS — 1,092
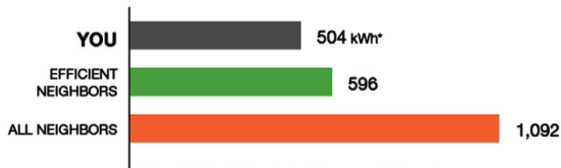
* kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

YOUR EFFICIENCY STANDING:

▶ **GREAT** ☺☺

GOOD ☺

BELOW AVERAGE

Study Details

- ▶ Paper by Allcott (2011)
- ▶ Data
  - ▶ Nearly 600,000 households
  - ▶ 12 different utility companies across United States
  - ▶ 24 different states
- ▶ Design
  - ▶ Collect 12 months of baseline energy consumption data
  - ▶ Treatment group: mailed HER (monthly, bimonthly, or quarterly)
  - ▶ Control group: no mailing
  - ▶ Collect monthly energy usage of each household
- ▶ Predictions?

Typical Results from A Single Utility

Connexus Treatment Effects Over Time
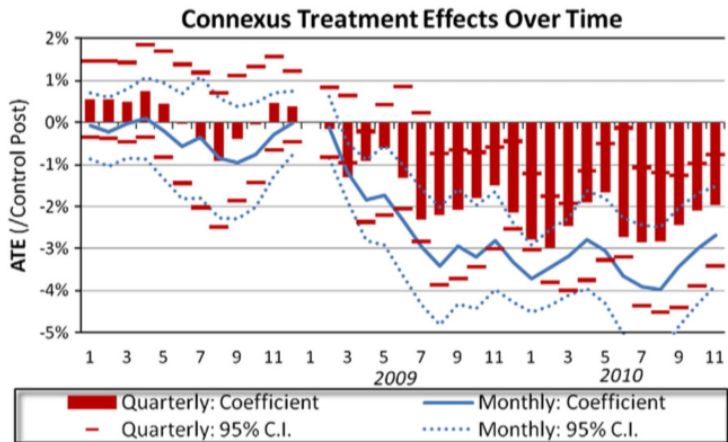
Overall Results

▶ Overall average treatment effect: 2% less consumption relative to control group
  ▶ Equivalent to turning off air conditioner for extra 30 minutes per day, or turning off 60W light bulb for additional 10 hours per day
  ▶ Equivalent to 10-20% spike in short-term energy prices or 5% increase in long term energy prices
▶ Program is incredibly cost-effective
  ▶ Define cost effectiveness as money spent (eg stamps and printing costs) per units of energy saved
  ▶ Cost-effectiveness of HER interventions: 3 cents per kWh saved
  ▶ At least twice as cost-effective as dynamic pricing programs

Background

- Demand for organ donors
  - Over 120,000 people in US are on organ waiting lists
  - About 10,000 added each year to list
  - About 6,000 die each year while on list
- Supply for organ donors
  - Organ donor share varies widely across states
  - Most donations come from deceased donors
  - Only about 1 in 100 donor deaths result in conditions for transplantation
  - Most donors sign up at state DMV while getting/renewing driver's license

Two Possible Dimensions to Nudge on

- ▶ Choice framing
  - ▶ Opt-in choice: check a box if want to be a donor, leave blank if don't want to be a donor
  - ▶ Mandated choice: must select "yes" or "no" option; leaving blank is not acceptable (also called active or forced choice)
- ▶ Information
  - ▶ How many lives can be saved
  - ▶ Which organs will be harvested
- ▶ Note that both dimensions are very low-cost: just change the text on a form that is already being produced

Why do an Experiment?

- Data on organ donation rates for each state is available
- Can also get form used in each stat
- Why not use this data to test which versions are better?
  - Main problem: *selection*
  - Form contents (choice framing and info content) are not randomly assigned, but chosen by states
  - States that choose opt-in framing may be systematically different than those that choose mandated choice framing
  - Thus simply comparing across states will not prove causality

Connecticut's Driver's License Application (detail)

	2. SEX	3. DATE OF BIRTH	4. HEIGHT	5. CO
	☐ M ☐ F		ft. in.	
	7. RESIDENCE ADDRESS (*If different*)			

...NECTICUT ...DENT?	10. DO YOU WANT TO BE IN THE ORGAN/TISSUE DONOR REGISTRY?		DAYTIME PHONE NO
...es ☐ No	☐ Yes ☐ No	If yes, you are agreeing to be a donor and the designation will be on your license.	( )

...HER NAMES EVER USED (*Alias, Maiden, etc*)

YES (✓)	NO (✓)		
		FAILED ☐ KNOWLEDGE ☐ VISION ☐ ROAD SKILLS	**LOCATION/DA...**
		IF YES, IN WHAT YEAR(S)?	**CONNECTICUT PERMIT, LICE...**

Kessler and Roth (2013)

- Lab experiment with Massachusetts residents
- Task: make a *real* decision about whether to join (or stay on) MA organ donor registry
- 2-by-2 design:
  - Vary whether opt-in or mandated choice frame
  - Vary how much information about organ donation is provided
    - Control: "It is estimated that one donor can save or enhance the lives of as many as 50 people by donating organs and tissues."
    - List of Organs: "It is estimated that one donor can save or enhance the lives of as many as 50 people by donating the following organs and tissues: bone and connective tissue, corneas, eyes, heart (for valves), heart with connective tissue, kidneys, liver or iliac vessels, lungs, pancreas, skin, small intestine, veins."

and from Massachusetts Registry of Motor Vehicles (Figure 5E)

ON THIS WEBSITE YOU CAN CHOOSE TO BE AN ORGAN AND TISSUE DONOR IN THE EVENT OF YOUR DEATH.
IT IS ESTIMATED THAT ONE DONOR CAN SAVE OR ENHANCE THE LIVES OF AS MANY AS 50 PEOPLE BY DONATING ORGANS AND TISSUES.
THOSE WHO REGISTER AS ORGAN DONORS AGREE TO DONATE ALL THEIR ORGANS AND TISSUES.

IF YOU CONTINUE WITHOUT CHECKING THE BOX, YOU WILL NOT BE REGISTERED AS AN ORGAN AND
TISSUE DONOR.

☐ I WANT TO REGISTER AS AN ORGAN AND TISSUE DONOR.

CONTINUE

Interface: Mandated + List Info

ON THIS WEBSITE YOU CAN CHOOSE TO BE AN ORGAN AND TISSUE DONOR IN THE EVENT OF YOUR DEATH.
IT IS ESTIMATED THAT ONE DONOR CAN SAVE OR ENHANCE THE LIVES OF AS MANY AS 50 PEOPLE BY DONATING THE FOLLOWING ORGANS AND TISSUES:

- BONE AND CONNECTIVE TISSUE
- CORNEAS
- EYES
- HEART (FOR VALVES)
- HEART WITH CONNECTIVE TISSUE
- KIDNEYS
- LIVER OR ILLIAC VESSELS
- LUNGS
- PANCREAS
- SKIN
- SMALL INTESTINE
- VEINS

THOSE WHO REGISTER AS ORGAN DONORS AGREE TO DONATE ALL THEIR ORGANS AND TISSUES.

PLEASE SELECT ONE OF THE FOLLOWING OPTIONS.

     ○ I WANT TO REGISTER AS AN ORGAN AND TISSUE DONOR.
     ○ I DO NOT WANT TO REGISTER AS AN ORGAN AND TISSUE DONOR.

CONTINUE

Results from Kessler and Roth

Table 3: Registration Rates by Treatment

2 x 2 Design		Choice Frame	
		Opt-In	Mandated Choice
Information Provided	Control	14/55 (25.5%) joined registry 37/37 (100%) remained on registry	10/51 (19.6%) joined registry 30/31 (96.8%) remained on registry
	List of Organs	22/55 (40%) joined registry 39/40 (97.5%) remained on registry	15/51 (29.4%) joined registry 48/48 (100%) remained on registry

▶ Summary of main results?
  ▶ Mandated choice decreases sign-up
  ▶ List information increases sign-up
▶ Open question: What explains the direction or magnitude of these results?

Coffman, Featherstone and Kessler (2014)

- ► Field experiment with Teach for America (TFA)
  - ► Non-profit which trains high-achieving college grads to be teachers
  - ► Places them in underperforming schools
  - ► Applicants rank which schools they would like to teach at
- ► Accepted applicants to program are sent an offer letter indicating which school they were assigned to
- ► Experimental design
  - ► Control: standard welcome email (N = 3337)
  - ► Social information condition: One sentence added: "Last year more than 84% of admitted applicants made the decision to join the corps, and I sincerely hope you join them" (N=3348)
- ► Outcome of interest: how many applicants make it to various stages of process (accept offer, show up for training, show up for first day of teaching)
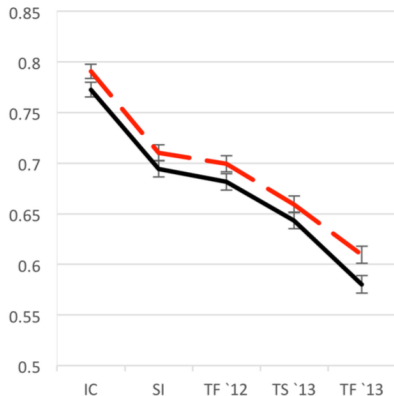- ► Predictions about outcome?

Timeline
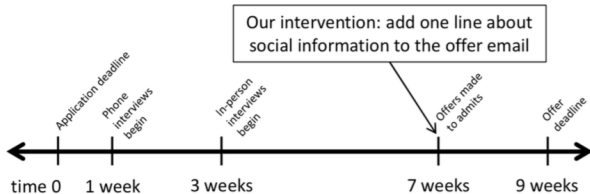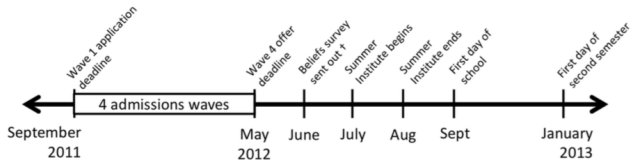
Main Results

In all panels:

Social Information is dashed (– – –),
*Control* is solid (——).

Abbreviations:
IC: Initial Commitment
SI: Showed to Institute
TF `12:   Teaching Fall 2011
TS `13:   Teaching Spring 2013
TF `13:   Teaching Fall 2013

▶ Social information treatment <u>increases</u> likelihood admitted applicants still in TFA at milestone by 1.5 to 3.1 percentage points

Subgroup Analysis

▶ Which applications do we expect to be particularly affected by social information nudge?

▶ Essentially, applicants that are on the margin of accepting and declining offer

  ▶ Applicants who got a *disappointing assignment*
  ▶ Applicants who have lower "fit" score assigned by TFA application committee (*moderately aligned* vs *highly aligned*)
  ▶ Applicants who indicate they were *not certain to join* at the time of receiving offer letter
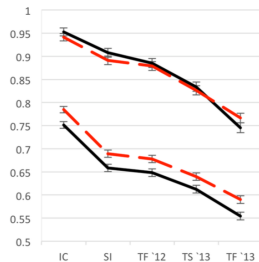
Results by Subgroup
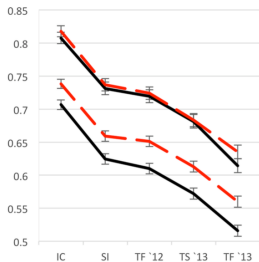
Panel B: Disappointing assignment
(Top 2 are Pleasing Assignment; Bottom 2 are Disappointing Assignment)
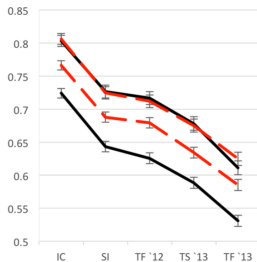
Panel C: Moderately aligned
(Top 2 are Highly Aligned; Bottom 2 are Moderately Aligned)

Panel D: Not certain to join
(Top 2 are Certain to Join; Bottom 2 are Not Certain to Join)