Natural experiments and treatment effects

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A lot of effort (and money!) is directed towards increasing the participation rate.

As economists, we carefully study behaviour of people and rational behind their choice to develop policy implications.

Q: How can we increase the voter turnout?

- Post ads in newspapers?
- Make Oksana Fyodorova explain its importance during "Spokoinoi nochi, malyshi?" (so that kids will nudge you to do it)
- Make it mandatory?
- Allow to vote over the internet?
- Bribe with free cookies, drinks and concerts?
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Most importantly, we need to check whether the incentive will work and how its effect compares with the costs. This raises many questions.

- What kind of data do we need?
- What kind of people should we focus on?
- What other factors could affect the observed outcome?
- What statistical methods can we rely on?
- How far can we interpret our findings?

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- They reached only 25000.

The Vote 2002 campaign

"Hello, may I speak with Joe Iowa please? Hi. This is Marc Shotland calling from Vote 2002, a non-partisan effort working to encourage citizens to vote. We just wanted to remind you that elections are being held this Tuesday. The success of our democracy depends on whether we exercise our right to vote or not, so we hope you'll come out and vote this Tuesday. Can I count on you to vote next Tuesday?"

Voter turnout in the following elections

Estimated impact: +10.8%
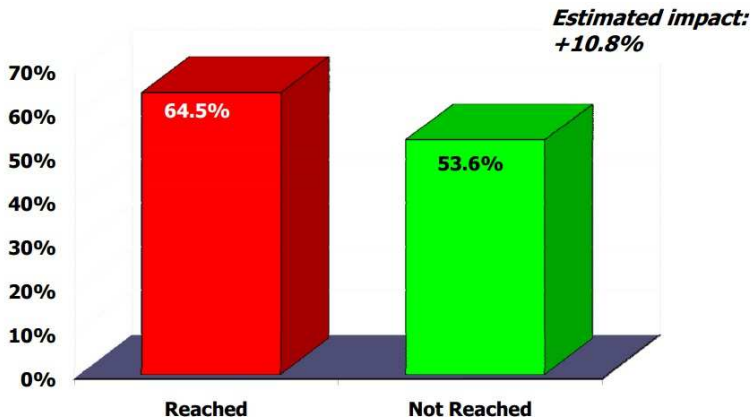
Q: How would you interpret these results?

Arceneaux, Gerber and Green (2006)

Treatment and control groups			
	Reached	Not reached	Difference
HH Size	1.56	1.50	0.06
Age	55.8	51.0	4.8
% Female	56.2%	53.8%	2.4%*
% Newly registered	7.3%	9.6%	-2.3%*
% Competitive	50.3%	49.8%	0.5%
% Iowa	54.7%	46.7%	8.0%*
Sample size	25,043	34,929	

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- Run a **regression** of the turnout on all these variables and a dummy for the call being received
- Estimated impact: **+6.4%**

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2000	71.7%	63.3%	8.3%
1998	46.6%	37.6 %	9.0%

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- What else could influence the results?

When in doubt, match them out!

Morgan and Harding (2006) *Matching estimators of causal effects*: estimate the impact conditional on **the same values of covariates**

Focus on people with a very similar set of characteristics (that is, except for whether they answered the call or not)

Still significant!

	Reached	Matched, but not reached	Difference
4 covariates	64.5%	60.8%	3.7%*
6 covariates	64.5%	61.5%	3.0%*
All covariates	65.9%	63.2%	2.8%*

Is this finally it, our causal effect on the voters turnover?

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60 000 people were *randomly* chosen from the overall population of 2 mln voters in Iowa.

We want to assess the effect of the programme as a whole. The real treatment group are **all those called by Vote 2002 (whether they answered or not)**, the control is the rest of the population. This is the nature of the random experiment: making sure the treatment assignment is totally exogenous to all the other characteristics, observed or not.

True treatment and control groups

Now both groups are very similar in all the dimensions

|	Treatment	Control	Difference
Voted in 1998	22.7%	23.1%	-0.5%
Voted in 2000	56.7%	56.4%	0.4%
HH Size	1.50	1.50	0.0
Age	52.0	52.2	-0.2
% Female	54.6%	55.2%	-0.6%*
% Newly registered	11.6%	11.7%	0.0%*
Sample size	14,972	1,153,072	

Casual and causal analysis

All the causal effect of the programme disappears

Randomized	Treatment	Control	Difference
Simple Difference	58.2%	58.0%	0.2%
Multiple regression			0.2%
IV regression			0.4%

Recap

Randomized experiment is the only to get around the selection bias, however, in this particular example, it implies that the treatment effect is negligeable.
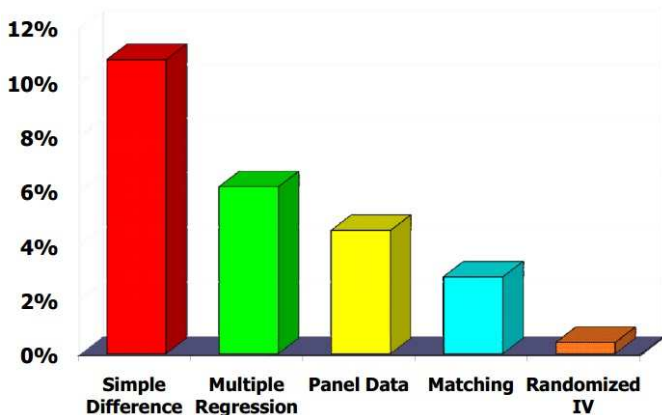
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Not going to vote is a dominat strategy for every $\epsilon > 0$.

Some explanations

Feddersen (2004): *Rational Choice Theory and the Paradox of Not Voting*

- Dynamic, strategic interaction
- Pivotal voting
- Asymmetric information
- Cooperation based on signals (pre-election polls, betting agencies data)
- Ethic voters, etc

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Well, it's all nice, but is there anything simple we could do empirically to boost voters turnout?

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- *Treatment 4*: "What if your neighbors knew whether you voted?", enclosing past history for the people in the neighborhood and a promise to send them all an updated version.

Neighbors mailing

3 0 4 2 3 - 3 ||| || || | |||

For more information: (517) 351-1975
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THE JACKSON FAMILY
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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		Aug 04	Nov 04	Aug 06
9995	JOSEPH JAMES SMITH	Voted	Voted	_____
9995	JENNIFER KAY SMITH		Voted	_____
9997	RICHARD B JACKSON		Voted	_____
9999	KATHY MARIE JACKSON		Voted	_____
9999	BRIAN JOSEPH JACKSON		Voted	_____
9991	JENNIFER KAY THOMPSON		Voted	_____
9991	BOB R THOMPSON		Voted	_____
9993	BILL S SMITH			_____
9989	WILLIAM LUKE CASPER		Voted	_____
9989	JENNIFER SUE CASPER		Voted	_____
9987	MARIA S JOHNSON	Voted	Voted	_____
9987	TOM JACK JOHNSON	Voted	Voted	_____
9987	RICHARD TOM JOHNSON		Voted	_____
9985	ROSEMARY S SUE		Voted	_____
9985	KATHRYN L SUE		Voted	_____
9985	HOWARD BEN SUE		Voted	_____
9983	NATHAN CHAD BERG		Voted	_____
9983	CARRIE ANN BERG		Voted	_____
9981	EARL JOEL SMITH			_____
9979	DEBORAH KAY WAYNE		Voted	_____
9979	JOEL R WAYNE		Voted	_____

Programme impact

Controlling for all the other things, the effect on the voter turnout was
- Treatment 1: $+1.8\%$

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What does that imply about people incentives?

- Internal vs external civic duty

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What does that imply about people incentives?

- Internal vs external civic duty
- A similar impact was achieved in other studies only when they sent people door-to-door to nudge people to come and vote
- This is a much cheaper alternative (roughly $ 1.93 per vote vs $20)!
- (though many called the contact number on the letter to complain about such hideous activities)

Nickerson (2008): *Is voting contagious?*

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GOTV group had a 9.8% higher turnout, and those who did not answer the door - higher by 6.0% compared to a placebo group.

The bottomline

- There are many reasons for people to vote or not
- Some of them are more robust features of our behaviour, and can be successfully identified using proper statistical tools
- Social pressure of voting (groupmates, family, colleagues) is notoriously hard to analyse, and many things still wait to be neatly done
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