Behavioural Economics, RCTs and Policy: Improving Blood Supply

BETA
25 November, 2016

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The University of Sydney
Introduction

• Behavioural Economics

• RCTs and Policy

• Examples of key points
Behavioural Economics

• Economics:
  – People try to do the best they can
    • (The principle of maximization)
  – People make the best choices given their goals
    • (The principle of rationality)
  – However, limits (especially to cognitive ability and time) result in short cuts in decision-making, including using simple heuristics, which cause systematic biases in choices away from making the best choices for oneself.

• Behavioural Economics:
  – Maintains the principle of people trying to do the best they can, recognizes these limits, and considers how best to improve outcomes given these limitations.
Randomized Control Trials (RCTs) & Policy

• Many approaches to design and test policy:
  – Theory
  – Lab Experimentation and Surveys
  – Administrative data analysis
  – Randomized Control Trials (“Natural field experiments”)

• RCTs are the “Gold Standard for testing policy”
Randomized Control Trials (RCTs) & Policy

• RCTs are “Gold Standard for testing policy” because:
  – Cleanly measures the causal Impact of policy
    • E.g., Does deferring a blood donor affect future donations
  – Examines the people you care about
  – Examines the context you care about
  – Provides meaningful magnitudes for the policy impact
  – Provides the “potential” to measure a very broad range of additional impacts (intended or unintended)
Randomized Control Trials (RCTs) & Policy

• RCTs are “Gold Standard for testing policy” because:
  – Cleanly measures the causal Impact of policy
  – Examines the people you care about
    • A) Actually measuring the effects on the people you want to help
    • B) Looking at the “Marginal” people (those that can be affected)
  – Examines the context you care about
  – Provides meaningful magnitudes for the policy impact
  – Provides the “potential” to measure a very broad range of additional impacts (intended or unintended)
Randomized Control Trials (RCTs) & Policy

- RCTs are “Gold Standard for testing policy” because:
  - Cleanly measures the causal Impact of policy
  - Examines the people you care about
  - Examines the context you care about
    - E.g., factors that motivate charitable behaviour to give time might be quite distinct from motives to volunteer time
  - Provides meaningful magnitudes for the policy impact
  - Provides the “potential” to measure a very broad range of additional impacts (intended or unintended)
Randomized Control Trials (RCTs) & Policy

- RCTs are “Gold Standard for testing policy” because:
  - Cleanly measures *the causal Impact* of policy
  - Examines the *people* you care about
  - Examines the *context* you care about
  - Provides *meaningful magnitudes* for the policy impact

  - A), theory, surveys and lab studies may confidently tell us the direction of the impact, but not the magnitude – for instance, imagine changing the default on savings behaviour or becoming an organ donor; will the effect be a 1%, 5%, 10%, ... 90% change in behaviour.

  - B) Distinguishing Statistical Significance & Policy Effectiveness
    - Provides the “potential” to measure a very broad range of *additional impacts* (intended or unintended)
Randomized Control Trials (RCTs) & Policy

• RCTs are “Gold Standard for testing policy” because:
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  – Provides *meaningful magnitudes* for the policy impact
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  • E.g., Suppose we offer an incentive to lose weight over three months. Besides the immediate effect on weight, we may also want to consider (a) the longer term impact on weight, (b) on alternative health outcomes (blood pressure, stress, mental illness, smoking, ...), (c) impact on others (are they encouraged to lose weight also, etc.)
Outline

Behavioural Economics, RCTs and Policy
• A major success story
• Sometimes the obvious
  – A cautionary tale for the importance of RCTs
• Looking at the bigger picture
  – Examining additional impacts
• Meaningful magnitudes
Many Potential Solutions

• Two major problems:
  – Inadequate supply
  – Coordinating supply

• Many Solutions (to skin the cat)
  – Obvious (economic) Ideas
    • Increase extrinsic benefits; lower extrinsic costs
  – Behavioural Economics Ideas
    • Reciprocity, Present Bias, Altruism, Ask Avoidance
    • Not today: Loss Aversion, Status Quo, Defaults, Status, Peer Effects
  – Message: Evidence
Many co-authors (and RAs and others)


The authors are greatly indebted to the American Red Cross (Brent Bertran and Barbara Thiel) and Australian Red Cross Blood Service (Perfecto Diaz, Bianca Folber, David Irving, Anita Smith, Geoff Smith and Dan Waller) for their assistance, knowledge and patience. Note, we acknowledge the Australian Red Cross Blood Service and Australian governments that fully fund the Blood Service for the provision of blood products and services to the Australian community.
The big questions:
1. How to motivate volunteer supply?
2. How to do so during shortages?

Background:
• Over 50% of survey respondents indicate intention and importance of donating blood
• Yet less than 10% (of those eligible) ever donate

Behavioural Economics Explanations:
• Present (over time) biased preferences
• Unsure of value of donating
• Dis-utility of solicitations
Donor Registry


Working with the ARCBS, we developed a national whole blood donor registry with the following features

Motivated by Behavioural Economics Ideas:

• Present (over time) biased preferences
  • Asked to join, but not donate initially (implicit commitment device – i.e., raises the “cost” to not donate)

• Unsure of value of donating
  • Promised to ask for donations only when a (critical) shortage in their blood type

• Dis-utility of solicitations
  • Promised to ask for donations once or twice per year, never more than four times
Donor Registry

Slonim, Wang Garbarino 2014 *Journal of Economic Perspectives*

• **Policy Effectiveness: Identifying the appropriate population:**

• For any policy or study, who is the *“Marginal”* target population
  
  • With volunteer supply and charitable donations, if never donated before, then very low response rates, so targeting new donors could be prohibitively expensive.

  • On the other hand, motivating regular donors to give more is challenging (given limits), is much riskier if negative effects, and likely do not need a commitment device, already think donating is important, and do not mind the solicitations.

• The “marginal” donors are the population who can be identified in advance as those who are close to the boundary of donating.
Policy Effectiveness: Identifying the appropriate population:

- For any policy or study, who is the “Marginal” target population
  - With volunteer supply and charitable donations, if never donated before, very low response rates, so targeting new donors could be prohibitively expensive.
  - On the other hand, motivating regular donors to give more is challenging (given limits) and is much riskier if negative effects
  - The “marginal” donors are the population who can be identified in advance as those who are close to the boundary of donating.

- Population: Long-Lapsed Donors (over 500,000 in Australia)
Donor Registry


Study Design (N=~13,400):

Compare those invited to join the registry (Registry conditions) to those not invited to join the registry (Control conditions), ALL ELSE EQUAL

Results:

1) 73% Joined the Registry!

2) Donations during shortages:
Donor Registry

Slonim, Wang, Garbarino 2014 *Journal of Economic Perspectives*

**Long-lapsed Australian Red Cross Blood Donors**

<table>
<thead>
<tr>
<th></th>
<th>Registry</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>of Attempted Calls</td>
<td>9.0%</td>
<td>5.5%</td>
</tr>
<tr>
<td>of Eligible Donors Reached</td>
<td>32.1%</td>
<td>20.8%</td>
</tr>
</tbody>
</table>

Nearly identical results one year later
Donor Registry
Slonim, Wang Garbarino 2014 *Journal of Economic Perspectives*

For Academic Interest:

- Present (over time) biased preferences
  - Strong support
- Unsure of value of donating
  - Strong support
- Dis-utility of solicitations
  - No support

For Policy Interest:

**Consider needing to collect 100 Additional units of blood:**
Registry Members: Need to attempt 769 calls: Expect 100 donations
Non-registry Calls: Need to attempt 1,667 calls: Expect 100 donations
Consider needing to collect 100 Additional units of blood:
Registry Members: Need to attempt 769 calls: Expect 100 donations
Non-registry Calls: Need to attempt 1,667 calls: Expect 100 donations
Sometimes the obvious:

Once upon a time ...


Argued that rewards for donating blood will:

1. Decrease donations (by crowding out intrinsic motivations)

2. Increase unsafe blood donations (by attracting the ‘wrong’ people to donate)

Many surveys, lab experiments, confirmed, and then many theories developed.

**Conclusion:** (Increasing) Rewards will decrease supply, (Increasing) Costs will increase supply
Sometimes the obvious: 
The importance of RCTs

Once upon a time …


Argued that rewards for donating blood will:

1. Decrease donations (by crowding out intrinsic motivations)
2. Increase unsafe blood donations (by attracting the ‘wrong’ people to donate)

Many surveys and lab experiments confirmed his conjecture, and then many theories were developed.

But this was never tested in the field with actual blood donors making actual donations! No RCTs …

Until very recently!
Increase Donor Benefits

The American Red Cross occasionally offered small rewards (e.g., t-shirts, raffle tickets, coupons for donuts, coffee mugs) Provided a “safe” way to test a policy that could have negative effects.
Results:
ARC donors offered small gift items valued $1.74 to $9.50

Donors presenting (left axis)
Units collected (left axis)
Share deferred (right axis)

Lowest cost item: Mugs $1.74
Highest cost item: Jackets $9.50
Increase Donor Benefits

Example 2: Lacetera, Macis and Slonim (2014 Management Science)

Donors recruited in Northern Ohio through flyers:

Control: Standard Flyers

Treatment: Rewards Indicated on Flyer for one of the blood drives

Rewards: $5 or $10 or $15 Gift cards
# Blood Drive Schedule – December 2009

If you are interested in donating Double Red Cells, please call 1-800-GIVE-LIFE to find a site near you.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every Wednesday</td>
<td>10:00 AM to 3:30 PM</td>
<td>Location not specified</td>
</tr>
<tr>
<td>Sunday, December 6</td>
<td>9:00 AM – 1:00 PM</td>
<td>Light Refreshments will be served!</td>
</tr>
<tr>
<td>Friday, December 18</td>
<td>11:00 AM – 3:00 PM</td>
<td><strong>Come to donate and choose $15 worth of gift cards for Target, Giant Eagle, or BP Gas Stations.</strong></td>
</tr>
<tr>
<td>December 3, 10, &amp; 17</td>
<td>December 31</td>
<td>New Hours - 1:00 PM to 6:00 PM</td>
</tr>
<tr>
<td></td>
<td>Special Holiday Hours</td>
<td>9:00 AM – 2:00 PM</td>
</tr>
<tr>
<td>Wednesday, December 9</td>
<td>12:30 PM – 5:30 PM</td>
<td>You can make the difference by adding one more gift to your holiday list this year. Please schedule your blood or platelet donation this month and give the gift of life!</td>
</tr>
<tr>
<td>Saturday, December 5</td>
<td>9:00 AM – 2:00 PM</td>
<td>All that come to the blood drive will receive a continental breakfast or lunch and a special treat bag courtesy of the Center for Pastoral Leadership.</td>
</tr>
<tr>
<td>Friday, December 11</td>
<td>1:00 PM – 7:00 PM</td>
<td></td>
</tr>
</tbody>
</table>

**Join us for a variety of gifts and raffle prizes!**

*Pound for a Pint – Come to donate blood and receive a pound of coffee and a coupon for a free donut from Dunkin' Donuts.*

If you would like more information on sponsoring a blood drive, please call 1-800-GIVE-LIFE.

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Individuals who are 17 years of age (16 with parental permission in some states), meet weight and height requirements (110 pounds or more, depending on their height) and are in general good health may be eligible to donate blood. Please bring your Red Cross blood donor card or other form of positive ID when you come to donate. For more information call 1-800-GIVE-LIFE (1-800-448-3543) or visit GiveLife.org.
Incentive Effects

Lacetera, Macis, Slonim 2014 *Management Science*

ARC donors who had donated at the locations in the past

![Graph showing incentive effects](image)
Incentive Effects
Lacetera, Macis, Slonim 2014 *Management Science*

ARC donors *who had donated at the locations in the past*

$22 per extra unit
Incentive Effects

Lacetera, Macis, Slonim 2014 *Management Science*

ARC Donors **who had not donated at the locations in the past**

![Graph showing incentive effects](image)
Other Impacts

Example 2: Lacetera, Macis and Slonim (2014 Management Science)

• No longer term effects, positive or negative

• Positive spill-overs
  – Informed of reward donors were getting others to donate with them

• More new donors were also attracted by the rewards
• Field evidence robustly supports positive effects of rewards on donations:
  – Summary of the literature: Lacetera, Macis and Slonim (2013 *Science*):
  – Argentina, Germany (cash), Italy (paid day off work), Switzerland, United States
  – 18 of 19 items offered have led to positive significant increases in donations;
  – No study has found an increase in deferrals or more blood testing positive for transmittable diseases

• What went wrong before the RCTs? Or Why the vastly different results?
  – Scrutiny-desirability bias, reputation, non-representative samples, non-random samples, ...
Reducing Costs & Measuring Magnitudes
Craig, Garbarino, Heger, Slonim 2014

In 2009, the time from arrival to needle in:

Mean: 42 Minutes
Median: 39 Minutes
Standard Deviation: 20 Minutes
Range: 10 Minutes to 2 Hours

Extensive survey evidence of people stating they are less satisfied and less likely to return after longer wait times.

But quite surprisingly, not a single study has looked at whether wait times actually affect return behaviour more or less how big of an effect it would have.

Will Waiting Longer Affect Donor Re-patronage?
Reducing Costs
Craig, Garbarino, Heger, Slonim 2014

Whole Blood Donations
Number of Days Delayed Return for a One Standard Deviation in Wait Time

Number of Donations in Past Year
Reducing Costs
Craig, Garbarino, Heger, Slonim 2014

Whole Blood Donations
Number of Days Delayed Return for a One Standard Deviation in Wait Time

- 4+ days: 0 donations
- 2-3 days: 10 donations
- ≤1 day: 60 donations

Implies about 78,000 donations per year (about 7% of annual donations)

In 2014 Blood Service policies had reduced average wait time to 29 minutes
Meaningful Magnitudes

Behavioural Economics: Reciprocity

Positive reciprocity: A preference to help others who have helped you

Negative reciprocity: A preference to harm others who have harmed you

Extensive Laboratory Evidence that Unconditional Gifts Are Reciprocated

... But mixed evidence in field experiments - and rarely cost effective (Kim & Slonim 2012)

Can a small gift successfully increase blood donations?
Behavioural Economics: Reciprocity
Can unconditional gifts increase donations?

Extensive Laboratory Evidence that Unconditional Gifts Are Reciprocated

... But mixed evidence in field experiments - and rarely cost effective (Kim & Slonim 2012)

Can a small gift successfully increase blood donations?
Simple 2 X 2 Design

- Mailed invitation to 12,000 long lapsed donors

<table>
<thead>
<tr>
<th>Survey</th>
<th>No Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Pen Given</td>
<td></td>
</tr>
<tr>
<td>Pen Given</td>
<td></td>
</tr>
</tbody>
</table>

- Examined Donations Over Following 4 Weeks
- Examined Surveys Returned
Reciprocity
Slonim, Wang, Garbarino 2014 Economics Letters
Long-lapsed Australian Red Cross Blood Donors
Key Points

• Behavioural Economics
  – (Established) ideas that can help form policy

• RCTs and Policy
  – Gold standard method to test policy

Thank you

And Give 😊