

# How payment innovations impact charitable giving. A field experiment in Denmark

– Application of the exclusion rules on the blinded data –

Toke R. Fosgaard\*  
University of Copenhagen

Adriaan R. Soetevent†  
University of Groningen  
Tinbergen Institute

October 10, 2017

## Abstract

The Pre-Analysis Plan (PAP) to this study (Fosgaard and Soetevent, 2016) outlined the *ex ante* rules in analysing the collected data. This report explains how these rules have been applied. Especially, it is explained how one of the authors (Soetevent) applied these exclusion rules on the blinded outcome data to arrive at the analysis set, i.e. the estimation sample used in the main analysis of the paper.

## 1 Method of randomization

Randomization in our design is at the solicitor level. For this study we are only interested in those donors who pay by cell phone. For this reason, we had to cast our net wide in order to get sufficient observations. Together with budgetary constraints this forced us to rely on the volunteers recruited by the DRC.<sup>1</sup> This necessitates paying careful attention to the following issues.

First, DRC solicitors will more heterogeneous than student recruits. We assume that differences in unobserved solicitor characteristics on which we have no information (looks, voice, etc.) will even out across treatments. We account for differences on which we do have information (gender, age) by including the relevant covariates in the regression analysis.<sup>2</sup> This will reduce noise, but still our treatment effect estimates will be less precise than with a more homogeneous set of solicitors.

---

\*University of Copenhagen, Department of Food and Resource Economics, Rolighedsvej 23, 1958 Frederiksberg C, Denmark, tf@ifro.ku.dk.

†Corresponding author: University of Groningen, EEF, P. O. Box 800, 9700 AV Groningen, The Netherlands, a.r.soetevent@rug.nl. This study is registered in the AEA RCT Registry and the unique identifying number is: “AEARCTR-0001759”.

<sup>1</sup>This in contrast to studies that can recruit a very homogenous set of (student-)solicitors, e.g. in Andreoni, Rao and Trachtman (2017) who only use 22 year-old white females as bell-ringers.

<sup>2</sup>The DRC could not provide this background information of their solicitors beforehand such that we could not use this to arrive at stratified randomized groups.

Second, we can only instruct the DRC-solicitors on the day of the campaign, that is, a training session prior to the study is not possible. Relatedly, unlike student recruits who sign up for a paid research assistantship, DRC solicitors go at a meeting point because they wish to collect donations for the DRC. The link with a research study is new to them and although the local DRC-manager stresses the importance of the study for the DRC, some volunteers may nevertheless decline. Also, volunteers who have been instructed may decide not to follow the procedure once they start soliciting.

For these reasons, the PAP to this study contained a number of exclusion/inclusion rules on when observations by a solicitor will (not) be included in the data to be analyzed. In this document, we justify how these rules have been followed in constructing the final data set. All decisions regarding in/exclusion discussed in this document have been made by one of the researchers [Soetevent] on the blinded outcome data.

The raw data generated in the study consists of the following three separate but related data files:

1. **MobilePay transaction data, MD** retrieved from the bank. This is an administrative list on which amount has been wired when to which solicitor-specific mobile phone number. This is the core data set for the empirical analysis in the paper.
2. **Solicitor data, SD** Upon arrival in their meeting point (there were three in total), DRC volunteers were asked by the student helpers to participate in the experimental set up. The helpers recorded some background information on the volunteers who agreed to act as a solicitor in the experiment. Also, upon their return, the student-helpers had a short interview with these solicitors in which they asked them whether they had followed the experimental procedure. We refer to this data file as the “solicitor data”.
3. **Donation data, DD** based on the record sheets handed in by the solicitors. This data set contains information on 9,976 individual donations (was someone home, which amount has been donated/promised, what has been the payment mode? etc.) as recorded by the solicitors. The donation data file is key to the empirical analysis since it contains the (blinded) outcome data.

The MD and SD data sets are matched using the phone number, address associated with the phone number and time stamp of the payment as the matching key. The SD and DD data sets are matched using the route number as matching key.

## 2 Application of the PAP exclusion/inclusion rules

The PAP formulated the following rules for inclusion in/exclusion of the analysis set:

1. Volunteers that leave the meeting point without being instructed will not be included in the trial;
2. For instructed volunteers, the following inclusion/exclusion rules will be applied:
  - (a) Solicitors of whom more than ten percent of the items on the record sheet is unreadable will be excluded from the analysis;
  - (b) Solicitors who return incomplete record sheets that make it impossible to determine the value of the key outcome variable for this solicitor (e.g. because the solicitor did not record which donors indicated a preference for postponing their mobile phone payment) will be excluded;
  - (c) Solicitors who themselves upon returning indicate to the helper that they did not follow the instructions in soliciting donations will be excluded.
  - (d) Solicitors of whom the number of households that opted for an “immediate mobile phone donation” on their record sheet differs with more than 20% from the number of immediate donations according to the MobilePay transaction records. For smaller differences, the MobilePay data will be leading;
  - (e) Solicitors who return record sheets that are incomplete but include all information necessary for the main analysis will be included (e.g. solicitors who only recorded data for the subset of households they found home or the subset of households that indicated a preference to pay by mobile phone).

The application of the pre-specified exclusion rules proceeded in a number of steps. First, the notes by the student-helpers in the solicitor data on whether the procedure had been followed and the notes by the research assistants on the consistency of observations in the donation data were scrutinized. Following rule [2c], a “Not OK”-score on any of these two checks led to the removal of the solicitor from the data. Second, it is checked whether individual records in the file with blinded donation data can be matched with a route and with solicitor background information from the SD file. Records that cannot be matched to a route are always dropped; records that can be matched to a route but not to a solicitor may be retained if they are complete and show no internal inconsistencies. Third, the records in the Donation Data are checked for missing observations. Following rule [2b], if at the solicitor level key information is missing in a structural way, all records for this solicitor will be dropped; if key information in an individual record is missing, that record is dropped. Fourth, it is checked whether

the records in the DD-file that involve a mobile payment can be matched with the actual bank records in the MD-file. Following rule [2d], significant discrepancies between the two files lead to dropping all records by the solicitors concerned. Finally, no observations are dropped because of rule [2a] because there are no solicitors with record sheets of which more than 10 per cent is unreadable.

## 2.1 Solicitor data

The target number of solicitors in advance of this study was set at 300 in total, 50 per treatment arm. However, as noticed in the PAP, we expected to end up with a lower number in case many volunteers showed up at about the same time to pick up their materials. This happened, with many arriving between 9 and 10 o'clock in the morning. In total, the details of 184 solicitors have been recorded, assigned to 188 different routes.<sup>3</sup> See Table 1 for a summary. The table shows that most volunteers are seasoned solicitors, 90 per cent have done this at least once. The majority of solicitors is female and the mean age is 40 years, with the age ranging from 11 to 78. It is rather common for solicitors to have children accompanying them, this happened in 29 per cent of the cases. Solicitors spend on average 192 minutes completing their route.

Table 1: Summary statistics interviewed DRC-solicitors [Initial set]

	obs.	mean	s.d.	min	max
Age	163	40.56	15.40	15	78
Accompanying children	136	0.29	0.46	0.00	1.00
Experienced	156	0.90	0.30	0.00	1.00
Start time	182	10h30	40m	9h00	12h10
End time	161	13h42	52m	11h37	15h44
males	68	36.17%			
females	120	63.83%			

## 2.2 Inclusion/Exclusion rules

The exclusion rules formulated in the PAP (see Section 2) have been followed up as follows (the number within brackets denotes the relevant exclusion rule). By definition, there is no information about volunteers who have not been in contact with one of our assistants. Given the procedure our assistants followed in instructing volunteers, we assume that the set of instructed volunteers is a

<sup>3</sup>Four solicitors completed two routes.

representative sample. Nine solicitors were instructed and assigned a route but did not take up the route; these have been dropped because of rule [1].

There are two checks on whether the solicitors did follow the prescribed procedure: *i*) their response to the question by the assistant whether they followed the procedure at the time they handed in the materials; *ii*) additional notes by the assistant, also about the consistency of the information written down by the solicitors on the record sheet. The data of all solicitors who scored “Not OK” on one of these two tests have been excluded. Examples of answers to question *i*) that lead to a “Not OK”-score are [translated from Danish]:

- “At the beginning.”
- “A couple of times.”
- “Not noted, thought it was too difficult”
- “Everyone who gave something is listed in the table.”

Examples of answers to question *ii*) that lead to a “Not OK”-score are [translated from Danish]:

- “There was only one who paid with mobilepay on the route and the collector only noted this one on the form.”
- “Failed to say much of the text. But reached the main points. So, therefore, they believed they had followed the procedure”
- “Did not always ask for amounts”

The records of a total of 59 solicitors who score “Not OK” on at least one item, the observations by these solicitors have been dropped following exclusion rule [2c].

### **2.3 Donation data**

The initial donation data contain 9,980 records from individual addresses visited. About 0.1 percent of these (11 in total) have no route number attached to them and therefore cannot be matched to a route and solicitor. These observations are dropped. The donation data contain the ID-number of 116 different solicitors. This implies that a sizeable number of solicitors on which the helpers collected background information did not record data. These mostly are the solicitors that indicated not to have followed the procedure (see Section 2.2).

Next, the donation records were matched with the solicitor data using “merge\_route” as the identifying key. This resulted in 8,462 matches with 129 unique solicitors. For 56 solicitors of whom the helpers recorded the personal details, this matching key did not result in a match with donation data.

Donation records that could not be matched with solicitor information using the “merge\_route” identifying key were matched using a second unique key: the cellphone number. In this way, 940 additional donation records have been matched with solicitor data, increasing the number of identified unique solicitors to 141. For 955 more observations (from eleven different routes) donation data and a cell phone number are available but the solicitor background information is missing. Because the presence of solicitor background information is not vital for the main analysis, these data have not been dropped from the sample at this point.

### 2.3.1 Exclusions

In sum, we have 9,980 records of individual donations from 132 unique identified solicitors plus 9 solicitors with an unique cell phone number. Following the implementation of exclusion rule [2c] (see above), 28 solicitors scored a “Not OK” on at least one item in the Solicitor Data file. The 1,664 observations by these solicitors are removed from the sample. This leaves us with 8,005 donation records for 114 unique routes.

For these routes, we next investigate whether the data have been registered in a manner that does not impede the analysis. This includes checks for missing data and inconsistencies and investigating the notes added to the solicitor data. Below an overview of the issues encountered and the action taken is given.

The following circumstances led to dropping all records by a solicitor following exclusion rule [2b] (Table 2 shows the number of observations affected):

- i The solicitor consistently did not record the amount of the donation.
- ii The solicitor consistently not record whether payment made in cash or via cell phone.
- iii The solicitor did not record whether payment has been made right away or not.
- iv The solicitor recorded a total of less than 15 visits.
- v The solicitor completed 20% or less of the total number of addresses on his/her route.
- vi The solicitor found 20% or less of all households approached home.

Table 2: Observations dropped per exclusion rule

Subcategory	Exclusion rule					Total
	.	2b	2c	2d	other	
.	11		1,664			1,675
i		62		301	122	485
ii		15			1	16
iii						
iv		58				58
v		15				15
vi		26				26
vii		31				31
viii		58				58
ix						
x		35				35
xi		194				194
xii		414				413
Total	11	908	1,664	301	123	3,007

vii The time stamps on the solicitor data show that the solicitor recorded donations only for 30 minutes or less.

viii The time stamps in DD indicate that the period for which data are recorded is much shorter than the period the solicitor has solicited according to the SD.

The following circumstances led to dropping individual records by a solicitor following exclusion rule [2b]:

ix Within record inconsistency between data elements.

x If notes by processor say “missing data”.

The following circumstances did not lead to dropping donation data collected by a solicitor:

- The solicitor did not write down road name.
- The solicitor only recorded donation information for households that opened the door;
- Occasions were the timing of the donation (now vs. later) seems to be missing at random [this possibly can be repaired when matching with time stamp Mobile Pay transfer] (6 solicitors, 9 observations).
- Occasions were the payment instrument (cash vs. cell phone) seems to be missing at random [this possibly can be repaired when matching with time stamp Mobile Pay transfer] (9 solicitors, 26 observations).

Table 3: MobilePay donations [matched observations]

	obs.	mean	s.d.	min.	max.
amount	343	68.86	44.81	5	250
address match	343	0.37	0.48	0	1
time stamp match	343	0.50	0.50	0	1
other match	343	0.29	0.46	0	1

## 2.4 MobilePay Data

The transactions made via MobilePay have been recorded including a time stamp, the receiving phone number (which is linked to a solicitor and a route) as well as information on the sending cell phone. These features makes this data source highly reliable and therefore the MobilePay information will be leading in the comparison and matching with the solicitor records. Information on the sending phone together with a public database on cell-phone ownership (`//kort.degulesider.dk`) helps us in the identification of sending addresses in the donation data.

A total of 712 donations were received via MobilePay, 343 of which could be one-to-one matched with a record in the Donation Data. The average MobilePay donation is about DKK 70 ( $\approx$ €9.40), with virtually no difference between matched and unmatched payment: For the matched payments, the average is DKK 68.86 (s.d. 44.81) and for the unmatched payments DKK 71.35 (s.d. 56.82). Table 3 summarizes how the matched observations have been linked. In 37% of all cases, we could identify an address associated with the sending cell phone and this address appeared in the donation data. In half of the cases, a match could be accomplished based on the receiving phone number in both the MobilePay and Donation Data combined with the time stamp of the cell phone payment. In 30% of the cases, a match could be made based on the information in the solicitor’s record sheet.<sup>4</sup>

The vast majority of all MobilePay donations (687) is made at the day of the fund raising drive. Only 25 donations arrive at a later day, with the final donation coming in after fourteen days.

### 2.4.1 Exclusions

A solicitor indicates whether a respondent donates by cell phone, and if so, whether she plans do donate now or later. Of course, promises of future payments may not materialize with the effect that the solicitor records of donations indicate a higher number of cell phone donations than the actual transaction data. This does not point to missing data. The other case – actually receiving more mobile donations than indicated by the solicitor – potentially is more problematic. However, our data

<sup>4</sup>The percentages add up to  $> 100\%$  because in a number of cases, the observation matched on address and time stamp.

show that some people who donate cash decide to add to this a cell phone payment. The following inconsistencies of the MD data on the one hand and the SD and DD on the other hand led to dropping all records of a solicitor because of exclusion rule [2b]:

- xi Identification immediate and delayed payments is not possible.
- xii No phone number or solicitor name could be linked to the route information in SD.

The following inconsistencies of the MD data on the one hand and the SD and DD on the other hand led to dropping all records of a solicitor because of rule [2d]:

- i The solicitor has recorded substantially less more mobile payments (now + later) than the number of transfers to the solicitor's phone number recorded in the MobilePay transaction data. (5 sol., 291 obs.)

The following inconsistencies of the MD data on the one hand and the SD and DD on the other hand led to dropping all records of a solicitor because of other reasons than the pre-specified exclusion rules:

- i Addresses are not in the final data.
- ii Drop duplicate observations.

In total 3,007 from the 9,980 observations are dropped from consideration: 11 observations simply cannot be matched with a route. In more than half (1,664) of the cases observations are dropped because the procedure has not been followed by the solicitor. 908 more are dropped because of exclusion 2b, 301 because of exclusion rule 2d and 123 for other reasons. The analysis set contains 6,973 observations from 81 different routes. The characteristics of the solicitors included in this set are given in Table 4.

## References

- Andreoni, James, Justin M. Rao, and Hannah Trachtman**, "Avoiding the Ask: A Field Experiment on Altruism, Empathy, and Charitable Giving," *Journal of Political Economy*, June 2017, 125 (3), 625–653.
- Fosgaard, Toke and Adriaan Soetevent**, "Pre-analysis plan: Does pledging increase charitable giving? A door-to-door mobile phone fund-raising field experiment," <https://www.socialscienceregistry.org/trials/1759/history/11635> 2016b.

Table 4: Summary statistics interviewed DRC-solicitors [Analysis Set]

	obs.	mean	s.d.	min	max
Age	69	42.30	16.57	15	78
Accompanying children	57	0.35	0.48	0.00	1.00
Experienced	70	0.91	0.28	0.00	1.00
Start time	73	10h22	38m	9h00	12h01
End time	71	13h45	49m	12h03	15h08
males	24	31.58			
females	52	68.42			