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How Effective are Reminders and Frames in Incentivizing Blood Donations?*

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Abstract

This paper studies the effects of reminders, and frames used to invoke higher levels of empathy and altruistic motives on the willingness to donate blood. We have conducted a randomized field experiment with 3236 blood donors from Bosnia and Herzegovina, in order to test how effective frames were when used in letters soliciting blood donation. Further, we tested the effectiveness of the letter itself which served as a specific reminder, making the need for blood more salient. Our baseline group did not receive any letter. Another seven groups received letters which differed in terms of goal framing; whether a specific victim was identified; and the gender of a victim. We found that a reminder of the need for blood in the form of a simple letter increases the probability of coming to donate blood by 63% relative to the baseline group, suggesting that reminder letters may serve as a cost effective policy tool. At the same time, we found that the framing of the letter had relatively little effect when donors are allowed longer period to make their donation decision.

Keywords: field experiment, blood donation, reminders, goal framing, identifiable victim effect

JEL Classification: C93, D64, A13, I18

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1. Introduction

“However selfish man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though they derive nothing from it except the pleasure of seeing it”. (Smith, 1969, p. 9)

Neoclassical economics assumes economic agents to be self-interested. However, there are numerous everyday-life examples, such as volunteering, charity donations, and medical donations where economic agents behave in an altruistic manner. According to Batson (2010), behavior that is not governed by self-interested motives, but rather aims to increase the welfare of another is defined as altruism. One of the textbook examples of perfect altruism is voluntary non-remunerated blood donation, in which a blood donor increases the welfare of blood recipients, in spite of incurring personal costs (such as pain, anxiety, iron depletion, etc.) which are not compensated by any kind of material reward (Bruhin, Goette, Haenni, & Jiang, 2015; Piliavin & Callero, 1991). However, most countries still face a risk of blood shortages, and benevolent blood donors remain the only source of blood for those in need. Therefore, there is a high demand for identification of appropriate incentive interventions to foster increases in the number of blood donations.

A substantial stream of work has investigated the effectiveness of different incentives which aim to invoke selfish motives of donors¹. In most cases, these incentives are in the form of remuneration for blood donation. However, the World Health Organization (WHO) recommends that the mechanism of assuring a safe and sustainable blood supply should be based solely on voluntary non-remunerated blood donations (WHO, 1983)².

¹ Some incentives were: monetary incentives (Mellström & Johannesson, 2008; Lacetera & Macis, 2010), lottery tickets and free cholesterol tests (Goette & Stutzer, 2008), and legislative provision that guarantees a paid day off work to blood donors (Lacetera & Macis, 2008).

² There are several studies which support WHO's recommendation. There is a higher incidence of post-transfusion hepatitis for recipients in the case of remunerated blood donations (Kunin, 1959; Allen,

Taking into consideration the WHO's recommendation, combined with a lack of rigorous evidence of the effectiveness of incentives which aim to invoke solely altruistic motives among blood donors, we test the effectiveness of letters soliciting blood donation which aim to invoke higher levels of empathy and altruistic behavior.

Thus, grounded on previous research in behavior economics, we examine the effects of subtle changes in letters soliciting blood donation on the likelihood of donors responding by giving blood. By making subtle changes in letters sent to different groups, we also test the incidence of framing effects and identifiable victim effect when a longer time period is allowed for a donor to decide to donate. In addition, we test whether a reminder of the need for blood donations, in the form of a simple letter, can nudge more blood donors to come to donate blood.

Invoking altruism by inducing empathy rests on Batson's (1987) Empathy-Altruism hypothesis, which describes empathy as the main driver of altruism. In order to induce different levels of empathy, and therefore, more blood donations, we combined two distinct frameworks when framing letters soliciting blood donation.

The first framework contrasts the perception of loss and gain framing (goal framing) of the letters (Kahneman & Tversky, 1979). Chou and Murnighan (2013) found loss framing (prevent deaths) to be more effective than gain framing (save lives) when soliciting blood donations. They back up their finding on an Empathy-Prospect model by Lee & Murnighan (2001), which explains that loss framing is more powerful than gain framing in inducing higher levels of empathy and therefore increases helping behavior. In contrast to Chou and Murnighan's (2013) three days, we allowed a longer period (one month) for our donors to make their donation decisions.

In addition, we combined a goal framing with a framework which aims to invoke the identifiable victim effect (Schelling, 1968; Small & Loewenstein, 2003; Small, Loewenstein, & Slovic, 2007). The literature explains that identifiable victim effect arises when contrasting the perception of an identified unfortunate person (identified victim), and the perception of unidentified unfortunate people (statistical victims). Kogut & Ritov (2005) assert that mentioning an identified single victim

Dawson, Sayman, Humphreys, Benham, & Havens; 1959). Similarly, too frequent blood donations motivated primarily by the monetary reward can have negative consequences on donors' own health.

invokes more empathy than mentioning an unidentified group of victims, and generates an increase in helping behavior.

Finally, people in general might have certain altruistic goals, but need subtle nudges to fulfill them. Thus, letters soliciting blood donation might serve as a reminder of the ubiquitous need for blood and as a nudge for the donor to act in an altruistic manner.

We conducted our study in the summer of 2014 in partnership with the Federal Institute of Transfusion Medicine in Bosnia and Herzegovina (Institute). 3236 randomly chosen whole blood donors from the Institute's database were first randomized into August and September waves, and afterwards into control and treatment groups, which received a letter requesting them to give blood in the corresponding month. A schematic representation of the experimental design can be found in the Appendix.

The first group was the *No letter group* and donors who were allocated into this group (baseline) did not receive any letter. Seven other randomly chosen groups received different types of letters. The first of the seven treatment groups received a simple letter (*Simple letter group*) in which donors were given information about potential summer shortages accompanied by a request for blood donations. The second and third treatment groups received information on how many people need blood and what kind of illnesses cause people to require blood on a regular basis, in addition to the notice of potential summer blood shortages. Specific people were not mentioned in the letter. The difference between the aforementioned two groups is that one received a letter framed using gain framing and the other using loss framing.

The last four groups received additional information which consisted of a victim's name, why he or she needed blood, and his or her picture. Again, these four letters differed in terms of how they were framed (loss or gain) and by the gender of the victim.

We found that receiving a reminder of the need for blood in the form of a simple letter increased the probability of coming to donate blood by 63%, relative to the baseline group. The cost was approximately 13 EUR per additional donor (Table A1 and Table A2 in Appendix). This finding may serve as a policy recommendation for

blood donation centers and other health related services to utilize this cost effective policy tool.

In addition, we found that the framing of the letter had relatively little effect when a longer period was allowed for blood donors to make their donation decision. The longer time period of one month might have enabled activation of the controlled mode of generic function - System 2 rather than the intuitive mode - System 1 (Kahneman, 2002; Kahneman & Frederick, 2002; Slovic, Finucane, Peters, & MacGregor, 2004). When System 2 prevails over System 1 in making a donation decision, it decreases the chances of making cognition biases such as identifiable victim effect and framing effects (Small, Loewenstein, & Slovic, 2007).

Furthermore, the nonoccurrence of identifiable victim effect in the case of blood donors could be driven by the different nature of blood donors compared to other types of donors. Specifically, blood donation is considered to be more costly as it incurs “personal costs”, such as anxiety, fear, pain, and iron depletion (Piliavin & Calero, 1991), and more impersonal to the giver in relation to the receiver (Mathew, King, Glynn, Dietz, Caswell, & Schreiber, 2007).

Moreover, the research on the identifiable victim effect has usually been done in the laboratory. The results of Lesner and Rasmussen’s 2014 large scale field study coincide with ours, showing that mentioning an identifiable victim in letters soliciting charitable donations does not elicit more donations than mentioning statistical victims (Lesner & Rasmussen, 2014).

The remainder of this study is structured as follows: In the next section we briefly explain the theoretical background. Then, in Section 3 we describe the empirical setup: the institutional background, the experimental design, the empirical strategy, and the descriptive statistics. Next, Section 4 presents the results. The last section concludes.

2. Theoretical Background

Conceptually, our manipulations of the letter are grounded on several streams of literature in behavioral economics, with the main focus on understanding the following terms: empathy based altruism, framing effects (goal framing), identifiable victim effects, and reminders.

Inducing **altruism** in blood donors by invoking **empathy** rests on Batson's (1987) Empathy-Altruism hypothesis. Empathic concern (in shorthand, empathy) is defined as an "other defined emotional response elicited by and congruent with the perceived welfare of someone in need" (Batson, 2011, p.11). According to the Empathy-Altruism hypothesis, the person in need is more likely to receive help if he or she invokes more empathy from the helper³. Similarly, Singer and Fehr (2005) explain that "empathy renders our emotions other-regarding, which provides the motivational basis for other-regarding behavior" (p.2). In order to find the best type of nudge to induce the altruism of blood donors, our plan was to try invoking different levels of empathy by applying different frames to letters soliciting blood donation.

Specifically, economic agents tend to answer inconsistently and incoherently if asked to respond to equivalent descriptions of the same problem described using different frames. This illustrates a cognitive bias known as **framing effects**. According to Kahneman and Tversky (1979), framing effects refer to changes in risk preferences with regard to how different choices are framed. Levin, Schneider, & Gaeth (1998) explain different types of framing, including *goal framing*, which we apply in our study. According to Levin, Schneider, & Gaeth (1998), goal framing is used to identify the impact of two messages which differ in whether they stress the positive consequences of performing an act or the negative consequences of not performing the act. Thus, potential donation in the letters soliciting blood donation we sent to our donors was presented as an action taken to save lives or to prevent deaths (gain framing versus loss framing).

³ The Empathy-Altruism hypothesis has already received empirical support. Batson (1999) found that people who felt more empathy toward others cooperated more in prisoner's dilemma games. Similarly, empathy has induced students to share their class notes (Weiner, 1980) and to indicate that they would accept lesser monetary gains in order to benefit others (Lee & Murnighan, 2001).

The effects of goal framing in the case of blood donation have already been tested by Chou and Murnighan (2013), who found that over 60% more donors showed up when blood donations were framed as death-preventing rather than life-saving. In contrast to Chou and Murnighan's (2013) three days, we allowed for a longer period of one month for our donors to make their donation decision. This has enabled us to check whether the incidence of framing effects in the case of blood donation is independent of the time period allowed to make a donation decision. Further, we combined goal framing with another type of framing which contrasts the perception of an identified victim and statistical victims.

By mentioning a single person in need of blood (identified victim) as opposed to mentioning unidentified people in need of blood (statistical victims) in our letters soliciting blood donation, we allowed for testing of the occurrence of another cognitive bias known as the **identifiable victim effect** (Schelling, 1968). Laboratory experiments have shown that an identifiable victim is more likely to evoke empathy and incentivize people to donate than statistical victims (Jenni, & Loewenstein, 1997; Small & Loewenstein, 2003; Kogut & Ritov, 2005). To my knowledge, the presence of the identifiable victim effect has not yet been tested in the case of blood donations. Lee, Piliavin, & Call (1999) assert that the personal nature of what is given makes blood donations different from donating money to charity and volunteering. Thus, we test whether blood donors show inconsistencies in cognition, as other types of donors do

In addition, people might have certain altruistic goals, but need subtle nudges to fulfill them. Thus, sending a letter to a donor asking him/her to come to donate blood might serve as a reminder of the ubiquitous need for blood and as a nudge for the donor to act in an altruistic manner. The effectiveness of **reminders** has already been tested in the case of increasing commitment to one-shot antimalarial treatment programs (Raifman, Lanthorn, Rokicki, & Fink, 2014), as well as in increasing influenza vaccination rate (Maurer & Harris, 2014). However, most studies have been testing the influence of reminders on self-benefiting behavior, while we would like to test their influence on other-benefiting behavior.

Previous blood donors were primarily chosen as our target group because, when asked about their main motive for giving blood, altruism was the most frequent answer

(Drake, Finkelstein &, Sapolsky, 1982). Notably, this complies with our design and our hypotheses to be tested.

3. The Empirical Setup

We conducted the randomized field experiment in 2014 in two waves, the first in August and the second in September. The target group consisted of blood donors who had already been in contact with the Institute at least once. We excluded blood donors who were not eligible to donate due to the time that is required to elapse between donations (three months for men and four months for women).

1.1. Institutional Context

Bosnia and Herzegovina comprise two autonomous entities: the Federation of Bosnia and Herzegovina and the Republic of Srpska. Brcko District is an additional entity, officially belonging to both the Republic of Srpska and the Federation of Bosnia and Herzegovina. The transfusion services in Bosnia and Herzegovina are decentralized and divided into three parts: the Federation of Bosnia and Herzegovina, the Republic of Srpska and Brcko District. Therefore, each entity has its own independent transfusion institute.

The Federal Institute of Transfusion Medicine in Bosnia and Herzegovina (Institute) is a health institution which collects and supplies blood for use in transfusions. The Institute operates on the territory of the Federation of Bosnia and Herzegovina, and its blood collection process is based on 100 per cent voluntary non-remunerated blood donations. Notably, emergency replacement donations are minimal.

The most common activities in which the Institute engages in order to recruit and retain blood donors are: promoting voluntary blood donation, organizing and conducting blood drives, and gathering and managing voluntary blood donors. If an individual has ever visited the Institute, he or she has been registered as a blood donor in the database. In case of potential blood shortages of a certain type of blood, recruitment by phone calls is used. Our experimental intervention extended the standard

procedures to remind or motivate donors to donate blood, as sending a letters soliciting blood donation has never been used before for these purposes.

1.2. Experimental Design

After being distributed into August and September waves, eligible donors were distributed into control and treatment groups. In total, we had eight groups of blood donors in each month. The first group was a *No letter group* and donors who were randomized into the control group did not get any letter.

Each treatment group received the letter soliciting blood donations of different content. The examples of logo, letters, and their translation from Bosnian-Serbo-Croatian to English appear in the Appendix.

The first treatment group – *Simple letter group* received a very simple letter with the basic information about potential summer shortages accompanied by the request to come to donate blood.

The second and the third treatment groups received the same basic information as the first group. In addition, they received information about the demand for blood and what types of illnesses cause people to require blood on a regular basis. Those groups received more information about statistical victims and there were no specified victims mentioned in the letter. The difference between second and third treatment groups is that one of these two groups received the letter framed using gain framing and the other one using loss framing.

Instead of receiving the letter with statistical victims mentioned, the last four groups received additional information about a specific victim who needs blood regularly (identified victim). Again, the last four letters differed in terms of how they were framed (either described using loss or gain framing) and by the gender of the victim mentioned. The victims, Ruzdija (male) and Saliha (female), are real patients who agreed to participate in the study and to share the information about their health issues. Ruzdija and Saliha were identified using their name, surname and a picture. They are of the same religion (Muslim), same nationality (Bosniaks), similar age (50-60), and suffer from the same disease (myelodysplastic syndrome).

Importantly, blood donors were not aware that a study was being conducted. Finally, the fact that the blood donation letters were mailed privately to the donors ensured that public image concern was excluded from our experiment.

1.3. Empirical strategy

We use a linear probability model (LPM) with robust standard errors to estimate four types of effects.

First, we test **the effectiveness of the simple letter** as a reminder of the need for blood. Here, we compare the arrival of donors sampled into the *No letter group* and the *Simple letter group*.

$$Arrival_i = \beta_0 + \beta_1 SimpleLetter_i + \boldsymbol{\beta}^T \mathbf{X}_i + \varepsilon_i$$

where:

$$Arrival = \begin{cases} 1 & \text{if donor came to donate blood,} \\ 0 & \text{otherwise.} \end{cases}$$

$$SimpleLetter = \begin{cases} 1 & \text{if the letter was sent,} \\ 0 & \text{otherwise.} \end{cases}$$

$\boldsymbol{\beta}$ is the vector of coefficients of the following covariates: gender, age, the number of times a person has donated blood, dummy variables for each combination of ABO blood type and Rh status, dummy variables for education, and a dummy variable for proximity.

\mathbf{X}_i is the vector of the covariates.

ε_i = error term.

After extracting the effect of the letter per se, we did not use the *No letter group* anymore. Thus, we continue by analyzing the remaining seven treatment groups.

Second, we test **the effectiveness of gain and loss framing** in the case of blood donations,

$$Arrival_i = \gamma_0 + \gamma_1 Loss_i + \gamma_2 Gain_i + \boldsymbol{\gamma}^T \mathbf{X}_i + u_i,$$

where:

$$Loss = \begin{cases} 1 & \text{if the letter was formulated using loss framing,} \\ 0 & \text{otherwise.} \end{cases}$$

$$Gain = \begin{cases} 1 & \text{if the letter was formulated using gain framing,} \\ 0 & \text{otherwise.} \end{cases}$$

u_i = error term.

Here, the *Simple letter group* is a baseline.

Third, in a similar manner to previous testing, we test **the incidence of identifiable victim effect** in case of blood donations.

Lastly, we test **the effects of combining different frameworks** using the LPM again:

$$Arrival_i = \theta_0 + \theta_1 Loss_i + \theta_2 Gain_i + \theta_3 Identifiable_i + \theta_4 Statistical_i + \theta_5 Identifiable_i * Loss_i + \theta_6 Identifiable_i * Gain_i + \theta_7 Statistical_i * Loss_i + \theta_8 Statistical_i * Gain_i + \theta^T X_i + \omega_i,$$

Where ω_i = error term.

1.4. Descriptive Statistics

A few days before the beginning of each month, randomly chosen donors from seven treatment groups were sent a letter with a recommended period of one month to donate blood. 1654 (1582) donors were sampled for the August (September) wave and the letter was sent to 1246 (1195) of them. The others belonged to the *No letter group*. Table 1 gives an overview of the number of blood donors per treatment for both months together.

Table 1: Number of blood donors randomly sampled into groups

Treatment	Number of donors randomly sampled into groups	% of the whole sample
<i>No letter group</i>	795	24.57
<i>Simple letter group</i>	811	25.06
<i>Identifiable Male Victim/ Gain Framing</i>	221	6.83
<i>Identifiable Female Victim/ Gain Framing</i>	202	6.24
<i>Identifiable Male Victim/ Loss Framing</i>	200	6.18
<i>Identifiable Female Victim/ Loss Framing</i>	201	6.21
<i>Statistical victims/Gain Framing</i>	405	12.52
<i>Statistical victims/Loss Framing</i>	401	12.39
Total	3,236	100

Additional data about donors (i.e. gender, age, etc.) were collected using a simple questionnaire that is usually given prior to blood donation. Table A3 in the Appendix shows the demographic characteristics of blood donors sampled.

Further, randomization checks were performed in order to verify that randomization had produced balance on various characteristics across experimental groups (Tables A4 and A5 in the Appendix). Taking into consideration that some of the differences on specific variables might be significant “by chance”, the equivalence of experimental groups was satisfied for most of the variables. However, there is one exception and that is the variable for the B positive blood type which was not distributed equally across the experimental groups. Notably, Mutz & Pemantl (2011) argue that it is not necessary for experimental conditions to be identical in all possible respects. Furthermore, Thye (2007) considers that conditions which are important are those which are potentially valuable in explaining the outcome variable. In our case, the B positive distinction is not likely to play a significant role in explaining the outcome variable.

4. Results

13.16% of the sampled blood donors came to donate blood in the time frame of our study. Table 2 shows a raw comparison of the arrival of blood donors per group.

Table 2: The arrival of blood donors per group

Treatment	Number of donors randomly sampled into groups	Number of donors who arrived to donate	% of all the donors in a corresponding group
<i>No Letter Group</i>	795	77	9.69
<i>Simple Letter Group</i>	811	126	15.54
<i>Identifiable Male Victim/ Gain Framing</i>	221	39	17.65
<i>Identifiable Female Victim/ Gain Framing</i>	202	26	12.87
<i>Identifiable Male Victim/ Loss Framing</i>	200	24	12.00
<i>Identifiable Female Victim/ Loss Framing</i>	201	24	11.94
<i>Statistical victims/Gain Framing</i>	405	55	13.58
<i>Statistical victims/Loss Framing</i>	401	55	13.72
Total	3,236	426	100

Although not everyone met the criteria for donation, everyone who showed up was counted as a donor.

Due to changes of postal address, 5% of the blood donors who were invited to donate did not receive the letter. Further, 3% had given blood during the month that the experiment was in preparation before the experimental period began. The results that follow are not sensitive to the exclusion of the aforementioned donors.

The effect of a simple letter: We compared the arrival of the blood donors from the *No letter group* - baseline with the arrival of the blood donors from the *Simple letter group*. The results of the estimation are shown in Table 3.

Table 3: The effect of a simple letter (comparison of the *Simple Letter Group* with the *No Letter Group*)

Dependent variable=1 if donor came to donate blood

Linear probability models

VARIABLES	(1)	(2)
Simple Letter Group	0.0644*** (0.0176)	0.0645*** (0.0172)
No Letter Group	Reference category	Reference category
Control variables ^a	Not included	Included
Constant	0.102*** (0.0110)	0.0753 (0.0512)
Observations	1,496	1,496
R-squared	0.009	0.062

Notes: Robust standard errors are in parentheses. ^a control variables: four dummy variables for education (high school, university, in the process of obtaining a degree, and for missing data); nine dummy variables for each combination of ABO blood type and Rh factor, and for missing data; dummy variable for proximity to the Institute; the number of times donor has donated blood before. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

We estimated that receiving the simple letter led to a 6.44 percentage-points increase (6.45 percentage-points increase after including covariates) in the probability of coming to donate blood relative to the baseline. In other words, receiving a reminder of the need for blood in the form of a simple letter increased the probability of coming to donate blood by 63% relative to the baseline group. Notably, the estimation results

from our linear probability models and probit models provide qualitatively the same results for our data (see Table A6 in the Appendix).

In order to assess the cost-effectiveness of a reminder in the form of a simple letter, we have performed some back of the envelope calculations (Tables A1 and A2 in appendix).

To calculate the effect of the simple letter, we compared the arrival of donors from the *No Letter Group* with the arrival of donors from the *Simple Letter Group*. Randomization should ensure that the two groups are equal on average based on all other characteristics apart from those generated by treatment. Since we could never know how many donors from the *Simple Letter Group* would have come if they had not been invited with the simple letter, for this type of calculations we will use the *Adjusted No Letter Group* (the *No Letter Group* adjusted with the *Simple Letter Group* donors' responses).

The cost of sending one letter was 0.77EUR and the total cost of sending 795 letters was 612.15EUR. Since, out of 124 donors who came to donate blood, 77 donors would have come anyway, we need to associate the costs of the simple letter with the effect on the donors who came after receiving the letter. Hence, dividing the total cost of sending 795 letters by 46 (the number of donors who came after being invited by a letter), we find that the cost of a simple letter per donor who came to donate blood after being invited is 13.31EUR. The cost of 13.31 EUR is still smaller than monetary incentives offered in some countries. For example, in the Czech Republic, a blood donor receives tax relief in the amount of maximum 50-70 EUR annually (Abolghasemi, Hosseini-Divkalayi, & Seighali, 2010). According to same authors, blood donors in Germany are entitled to an expense allowance up to 25 EUR.

This finding may serve as a policy recommendation for blood donation centers and other health related service to use simple reminder letters as a cost effective policy tool.

Lastly, the letter effect result obtained by comparing the No letter Group with other groups which received some type of letter is shown in Table A7 in Appendix. Again, receiving a letter led to an increase in the probability that the donor will come to donate blood, relative to the baseline.

The effectiveness of gain and loss framing: The effectiveness of gain versus loss framing is shown in Table 4.

Table 4: The effectiveness of gain versus loss framing (comparison of the *Loss Framing Group* with the *Gain Framing Group*)

Dependent variable=1 if donor came to donate blood

Linear probability models

	(1)	(2)
Loss Framing Group	-0.0186 (0.0181)	-0.0241 (0.0177)
Gain Framing Group	Reference category	Reference category
Control variables ^a	Not included	Included
Constant	0.153*** (0.0130)	0.246*** (0.0631)
Observations	1,502	1,502
R-squared	0.001	0.067

Notes: Robust standard errors are in parentheses. ^a control variables: four dummy variables for education (high school, university, in the process of obtaining a degree, and for missing data); nine dummy variables for each combination of ABO blood type and Rh factor, and for missing data; dummy variable for proximity to the Institute; the number of times donor has donated blood before. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Loss framing was slightly less effective than gain framing. However, we found no significant difference in using gain or loss framing on the likelihood of donors responding by giving blood, in contrast to Chou and Murnighan (2013). This difference in our results might be due to the activation of a different generic mode of cognitive function when a longer time period has been allowed for making a blood donation decision. Kahneman & Frederick (2002) described two modes of cognitive function: System 1 (intuitive mode) and System 2 (controlled mode; reasoning) which are activated dependent on the time available for deliberation (Slovic, Finucane, Peters, & MacGregor, 2004). Longer deliberation time activates System 2 rather than System 1. In contrast to Chou and Murnighan's (2013) three days, our blood donors had one month to make their donation decision. Testing the effects of different time periods allowed for deliberation on the occurrence of cognition biases in the case of blood donation is left for further research.

The incidence of identifiable victim effect: Testing the incidence of identifiable victim effect in the case of blood donation is shown in Table 5.

Table 5: Testing the incidence of identifiable victim effect (comparison of the *Identifiable Victim Mentioned Group* with the *Statistical Victims Mentioned Group*)

Dependent variable=1 if donor came to donate blood

Linear probability models

	(1)	(2)
Identifiable Victim Mentioned	-0.00496 (0.0181)	-0.000426 (0.0177)
Statistical Victims Mentioned	Reference category	Reference category
Control variables ^a	Not included	Included
Constant	0.146*** (0.0130)	0.206*** (0.0667)
Observations	1,502	1,502
R-squared	0.000	0.067

Notes: Robust standard errors are in parentheses. ^a control variables: four dummy variables for education (high school, university, in the process of obtaining a degree, and for missing data); nine dummy variables for each combination of ABO blood type and Rh factor, and for missing data; dummy variable for proximity to the Institute; the number of times donor has donated blood before. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

There was no significant difference between identifying a single victim or mentioning statistical victims on the likelihood of donors responding by giving blood.

The aforementioned findings about identifiable victim effect are different than those found in the case of laboratory experiments in charitable donation literature (Small, & Loewenstein, 2003; Kogut, & Ritov, 2005). Similarly to the framing effects case, participants needed to react more promptly to the call in the aforementioned studies. Thus, we could use the same logic (dependence of System 1 or System 2 prevalence on the time period left for deliberation) in explaining the absence of identifiable victim effect in our study.

Furthermore, the difference of our findings to previous research might be also due to the fact that blood donors are different from other types of donors. This has already been observed in the literature. Specifically, Healy (2000) considers blood donation as a “perfect example of altruistic giving” which involves more than just

money or time (Healy, 2000). Similarly, Lee, Piliavin, & Call (1999) found blood donation to be less similar to the other two types of donation in the processes associated with giving. In addition, Mathew, King, Glynn, Dietz, Caswell, & Schreiber (2007) found donating blood to be perceived as more impersonal for the giver in relation to the receiver, which could explain the nonoccurrence of an identifiable victim effect in the case of blood donations.

Even though our findings differ from findings on identifiable victim effect done in laboratory settings, they coincide with a finding from the 2014 large scale field experiment by Lesner & Rasmussen. They showed that mentioning an identifiable victim in a letter with a call to donate to charity did not elicit more donations than mentioning statistical victims. It could be that this is another case of imbalance between the findings on social preferences from laboratory and field experiments (DellaVigna, 2007).

The first two columns of Table 6 contain the comparison of gain and loss treatments with a simple letter treatment.

We have already noted that there was no difference on the probability of donors coming to give blood if gain or loss framing was used in formulating the letters. However, when compared with a simple letter, the loss framing was less effective (by 3.19 percentage-points or 3.97 percentage-points when we include covariates) and the difference was significant at the 10% significance level. The effect of gain framing was less effective than a simple letter. However, the difference was not significant.

Similarly, the simple letter was more effective than mentioning a single identified victim or mentioning statistical victims (3rd and 4th column of Table 6). However, the difference was not significant.

Moreover, all the combinations (interaction) of the two aforementioned types of framing were less effective than the simple letter (last two columns of Table 6). However, the differences are significant only in the case when loss framing was combined with an identifiable victim. Combining loss framing with an identifiable victim decreased the probability that a donor would come to donate blood by 4.49 percentage-points at the 5% significance level (4.16 percentage-points at the 10% significance level when we include other covariates). Thus, using loss framing

significantly decreased the influence of the victim being identified on the likelihood of donors responding by giving blood.

Table 6: The effects of goal framing and mentioning the identified or statistical victims and the combination of those two frameworks in comparison to the simple letter
Dependent variable=1 if donor came to donate blood

Linear probability models						
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Gain Framing	-0.0133 (0.0189)	-0.00847 (0.0185)				
Loss Framing	-0.0319* (0.0186)	-0.0333* (0.0182)				
Ident. Vict.			-0.0249 (0.0187)	-0.0210 (0.0185)		
Stat. Vict.			-0.0199 (0.0189)	-0.0203 (0.0182)		
Ident. Vict./Gain					-0.00559 (0.0232)	-0.00114 (0.0229)
Ident. Vict./Loss					-0.0449** (0.0218)	-0.0416* (0.0215)
Stat. Vict./Gain					-0.0211 (0.0227)	-0.0159 (0.0220)
Stat. Vict./Loss					-0.0187 (0.0231)	-0.0248 (0.0223)
Simple Letter	Reference category Not included	Reference category Included	Reference category Not included	Reference category Included	Reference category Not included	Reference category Included
Control variables ^a						
Constant	0.166*** (0.0137)	0.207*** (0.0516)	0.166*** (0.0137)	0.207*** (0.0516)	0.166*** (0.0137)	0.206*** (0.0518)
Observations	2,242	2,242	2,242	2,242	2,242	2,242
R-squared	0.001	0.061	0.001	0.060	0.002	0.061

Notes: Robust standard errors are in parentheses. ^a control variables: four dummy variables for education (high school, university, in the process of obtaining a degree, and for missing data); nine dummy variables for each combination of ABO blood type and Rh factor, and for missing data; dummy variable for proximity to the Institute; the number of times donor has donated blood before. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

In addition, Table A8 in the Appendix shows the comparison of all treatment groups (including manipulations with the gender of the victim) with a *Simple Letter*

Group. Almost all the other treatments were less effective than a simple letter. Notably, loss framing significantly decreased (5.27 percentage-points at the 10% significance level) the influence of the identified *female* victim on the likelihood of donors responding by giving blood.

5. Conclusion

We investigate the effects of subtle changes in letters soliciting blood donation and the effect of the reminder of the need for blood donations in the form of a simple letter on the likelihood of donors responding by giving blood.

We find that receiving a reminder of the need for blood in the form of a simple letter increased the probability of coming to donate blood by 63%, relative to the baseline. Since the cost of a marginal donor coming to donate blood after receiving the letter was only around 13 EUR, we recommend the use of this policy tool by blood donation centers and other health related institutions.

Furthermore, we found that framing manipulations had relatively little effect when a longer period was allowed for donors to make their donation decision. This finding might serve as evidence that the occurrence of cognition biases such as framing effects and identifiable victim effects are impacted by time periods allowed for deliberation.

There is an important limitation to the current study. Two mechanisms are in place to facilitate the attainment of sustainable blood reserves. The first concentrates on attracting and motivating new blood donors, and the second on the retention of donors who have already given blood. Our study focuses on the second mechanism solely, and it is unclear whether our finding of the effectiveness of a reminder of the need for blood in the form of a simple letter could be generalized to the first mechanism as well.

Overall, our results indicate that the simple letter was effective, but a productive line of further research would be to investigate how to frame the most effective letter for eliciting concern and support among blood donors for people who need blood.

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Appendix

Experimental design

<p>First group: Control group (No Letter Group)</p>	<p>Second group: Simple Letter Group</p> 
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Other six groups	Statistical victims	Identifiable victim	
		Female victim	Male victim
Gain framing			
Loss framing			

*Letter sent to Simple Letter Group of blood donors
in Bosnian/Croatian/Serbian (left) and translation to English (right)*



NEKADIM SE POMOĆ POTREBNIH ODMIKH

Darujte krv

Poštovani darivaocē krvi,

tokom ljetnog perioda moguće je smanjenje dostupnih doza krvi. Smanjenje nastaje uslijed manjeg broja darivalaca koji dolaze darivati krv u periodu raspusta i godišnjih odmora.

Ukoliko možete i želite da darujete krv u ljetnom periodu, molimo Vas da dodete u Zavod za transfuzijsku medicinu Federacije BiH.

Uvođenjem novog animacionog postupka želimo da osiguramo dovoljne količine doza krvi.

Vidimo se u avgustu!



ZAVOD ZA TRANFUZIJSKU MEDICINU FEDERACIJE BIH
Čekaluša 86, Sarajevo
(u neposrednoj blizini Medicinskog fakulteta i Srednje Zubotehničke škole)
Telefon: 033 321 123

Radno vrijeme:
ponedjeljak - petak, od 8h do 19:30h / subota, od 8h do 15h.



Someone needs help urgently

Give blood

Dear blood donor,

The summer is known as a period of potential blood shortages that arise due to fewer donors donating blood during the summer holiday season.

Therefore, if you can and want to give blood in the summer period, please come to the Federal Institute of Transfusion Medicine.

By implementing a new recruitment strategy, we hope to manage sustainable blood reserves.

See you in August!

Federal Institute of Transfusion Medicine.

The other six types of letters had the same main design and logo, but different wording:

<u>Letter number 2: Gain Framing/Statistical</u>	<u>Letter number 3: Loss Framing/Statistical</u>
<u>Victims used in framing the letter</u>	<u>Victims used in framing the letter</u>
<p>The title: Let life win!</p> <p>Dear blood donor,</p> <p>We would like to again ask you to save lives by donating blood.</p> <p>The summer period is known as a period of potential blood shortages that arise due to fewer donors donating blood during the summer holiday season.</p> <p>There is an average need of 60-80 doses per day for people who suffer from MDS, anemia, leukemia, etc. If you can and want to give blood in the summer period, and thereby save lives, please come to the Federal Institute of Transfusion Medicine.</p> <p>By implementing a new recruitment strategy, we would like to assure sustainable blood reserves for all the people who need blood.</p> <p>See you in August (September¹)!</p> <p>Federal Institute of Transfusion Medicine</p>	<p>The title: Do not let death win!</p> <p>Dear blood donor,</p> <p>We would like to again ask you to prevent deaths by donating blood.</p> <p>The summer period is known as a period of potential blood shortages that arise due to fewer donors donating blood during the summer holiday season.</p> <p>There is an average need of 60-80 doses per day for people who suffer from MDS, anemia, leukemia, etc. If you can and want to give blood in the summer period, and thereby prevent deaths, please come to the Federal Institute of Transfusion Medicine.</p> <p>By implementing a new recruitment strategy, we would like to prevent blood shortages and situation where people who need blood would not be able to get it.</p> <p>See you in August (September)!</p> <p>Federal Institute of Transfusion Medicine</p>

¹ The first wave was conducted in August and the second wave in September. The same letters were used with the difference in the corresponding month stated in the last sentence.

<u>Letter number 4: Gain Framing/Identifiable</u> <u>Female Victim used in framing the letter</u>	<u>Letter number 5: Loss Framing/Identifiable</u> <u>Female Victim used in framing the letter</u>
<p>The title: Let Saliha’s life win!</p> <p>Dear blood donor,</p> <p>We would like to again ask you to donate blood.</p> <p>Saliha’s picture</p> <p>Saliha suffers from myelodysplastic syndrome (MDS) and she is alive thanks to blood donors’ benevolence.</p> <p>The summer period is known as a period of potential blood shortages that arise due to fewer donors donating blood during the summer holiday season.</p> <p>If you can and want to give blood in the summer period and thereby save lives of people like Saliha, please come to the Federal Institute of Transfusion Medicine.</p> <p>By implementing a new recruitment strategy, we would like to assure sustainable blood reserves for people like Saliha.</p> <p>See you in August (September)!</p> <p>Federal Institute of Transfusion Medicine</p>	<p>The title: Let Saliha beat death!</p> <p>Dear blood donor,</p> <p>We would like to again ask you to donate blood.</p> <p>Saliha’s picture</p> <p>Saliha suffers from myelodysplastic syndrome (MDS) and blood donors’ benevolence prevents her from dying.</p> <p>The summer period is known as a period of potential blood shortages that arise due to fewer donors donating blood during the summer holiday season.</p> <p>If you can and want to give blood in the summer period and thereby prevent deaths of people like Saliha, please come to the Federal Institute of Transfusion Medicine.</p> <p>By implementing a new recruitment strategy, we would like to prevent blood shortages and situations where people like Saliha would not be able to get the blood needed.</p> <p>See you in August (September)!</p> <p>Federal Institute of Transfusion Medicine</p>

<u>Letter number 6: Gain Framing/Identifiable</u> <u>Male Victim used in framing the letter</u>	<u>Letter number 7: Loss Framing/Identifiable</u> <u>Male Victim used in framing the letter</u>
<p>The title: Let Ruzdija’s life win!</p> <p>Dear blood donor,</p> <p>We would like to again ask you to donate blood.</p> <p>Ruzdija’ picture</p> <p>Ruzdija suffers from myelodysplastic syndrome (MDS) and he is alive thanks to blood donors’ benevolence.</p> <p>The summer period is known as a period of potential blood shortages that arise due to fewer donors donating blood during the summer holiday season.</p> <p>If you can and want to give blood in the summer period and thereby save lives of people like Ruzdija, please come to the Federal Institute of Transfusion Medicine.</p> <p>By implementing a new recruitment strategy, we would like to assure sustainable blood reserves for people like Ruzdija.</p> <p>See you in August (September)!</p> <p>Federal Institute of Transfusion Medicine</p>	<p>The title: Let Ruzdija beat death!</p> <p>Dear blood donor,</p> <p>We would like to again ask you to donate blood.</p> <p>Ruzdija’s picture</p> <p>Ruzdija suffers from myelodysplastic syndrome (MDS) and blood donors’ benevolence prevents him from dying.</p> <p>The summer period is known as a period of potential blood shortages that arise due to fewer donors donating blood during the summer holiday season.</p> <p>If you can and want to give blood in the summer period and thereby to prevent deaths of people like Ruzdija, please come to the Federal Institute of Transfusion Medicine.</p> <p>By implementing a new recruitment strategy, we would like to prevent blood shortages and situations where people like Ruzdija would not be able to get the blood needed.</p> <p>See you in August (September)!</p> <p>Federal Institute of Transfusion Medicine</p>

Table A1: The effect of the reminder in the form of a simple letter

Effects	Group	Number of donors sampled into groups	Number of donors who came to donate blood	% of the donors who came to donate blood in a corresponding group
A	No Letter Group	795	77	9.69
B	Simple Letter Group	811	126	15.54
C	No Letter Group Adjusted	795	124	15.54
	Difference C-A (“additional donors who came to donate after being nudged with a letter”)		47	60.37

Table A2: The cost of the reminder in the form of a simple letter

Costs	Total	Number of letters	Per unit	Per unit
Graphical solution	700.00 BAM ²	2700	0.26 BAM	0.13 EUR
Printing letters and envelopes	950.00 BAM		0.35 BAM	0.18 EUR
Sending letters	2,430.00 BAM		0.90 BAM	0.46 EUR
Total	4,080.00 BAM		1.51 BAM	0.77 EUR
The cost of sending 795 letters			612.15EUR	
The cost of sending the letter to the additional donor who came to donate blood: 612.15 / 47			13.31 EUR	

² BAM is abbreviation for Bosnian Mark, the Bosnia and Herzegovina’s currency. 1 EUR=1.95583 BAM.

Table A3: Descriptive statistics

	Freq.	Percent
Gender		
Female	1,324	40.91
Male	1,912	59.09
Age Intervals		
18-25	1,336	45.96
26-35	752	25.87
36-45	432	14.86
46-55	270	9.29
56-	117	4.02
Education		
High school	577	17.84
University	90	2.78
In the process of obtaining a degree	1,466	45.30
Missing	1,103	34.08
Blood type and RH factor		
O negative	170	5.25
O positive	842	26.02
A negative	176	5.44
A positive	861	26.61
B negative	72	2.22
B positive	382	11.8
AB negative	34	1.05
AB positive	136	4.2
Missing	563	17.40

Table A4: Randomization check: Demographic characteristics

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Male	Age_intervals	MunicipalityC	NMBDonations	Highschool	University	Intheprocess	Missingeduc
Simple letter	-0.00560 (0.0245)	0.00283 (0.0598)	-0.0157 (0.111)	-0.523 (0.606)	0.0188 (0.0193)	-0.0180** (0.00799)	0.0233 (0.0249)	-0.0241 (0.0236)
Ident. M. Vict./Gain	-0.0170 (0.0375)	0.267*** (0.0996)	0.0320 (0.169)	1.211 (1.199)	0.0300 (0.0303)	-0.00807 (0.0128)	-0.0504 (0.0373)	0.0284 (0.0367)
Ident. F. Vict./ Gain	-0.00217 (0.0387)	-0.0139 (0.0973)	-0.0521 (0.174)	-0.285 (0.925)	0.00463 (0.0301)	0.0143 (0.0166)	-0.0183 (0.0390)	-0.000635 (0.0375)
Ident. M. Vict./Loss	-0.00623 (0.0389)	-0.0999 (0.0960)	-0.0272 (0.175)	-1.169 (1.009)	-0.0136 (0.0292)	-0.000220 (0.0146)	0.0510 (0.0396)	-0.0372 (0.0369)
Ident. F. Vict./ Loss	-0.0141 (0.0389)	-0.0793 (0.0942)	0.0598 (0.173)	0.957 (1.316)	-0.0492* (0.0269)	-0.000394 (0.0145)	0.0286 (0.0394)	0.0210 (0.0380)
Stat. Vict./Gain	0.00377 (0.0300)	-0.00265 (0.0741)	-0.0311 (0.136)	-0.930 (0.698)	0.00666 (0.0234)	-0.0204** (0.00889)	0.0449 (0.0305)	-0.0311 (0.0287)
Stat. Vict./Loss	-0.0152 (0.0302)	0.0651 (0.0744)	0.0663 (0.135)	0.455 (0.871)	0.00597 (0.0234)	-0.00529 (0.0107)	-0.0226 (0.0303)	0.0219 (0.0295)
Constant	0.596*** (0.0174)	1.980*** (0.0422)	4.547*** (0.0786)	7.839*** (0.471)	0.174*** (0.0134)	0.0352*** (0.00655)	0.444*** (0.0176)	0.347*** (0.0169)
Observations	3,236	2,907	3,236	3,236	3,236	3,236	3,236	3,236

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A5: Randomization check: ABO Blood type and Rh factor

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Onegative	Opositive	Anegative	Apositive	Bnegative	Bpositive	ABnegative	ABpositive	MissingBT
Simple letter	0.00391 (0.0112)	0.0297 (0.0219)	0.00638 (0.0114)	0.00845 (0.0220)	0.000811 (0.00729)	-0.0436*** (0.0165)	0.00108 (0.00447)	0.0127 (0.0107)	-0.0207 (0.0186)
Ident. M. Vict./Gain	-0.00632 (0.0161)	0.00484 (0.0329)	0.00273 (0.0172)	-0.00573 (0.0332)	0.00577 (0.0121)	-0.0431* (0.0241)	0.0106 (0.00949)	-0.000785 (0.0151)	0.0320 (0.0305)
Ident. F. Vict./ Gain	0.0177 (0.0195)	0.00845 (0.0342)	0.00288 (0.0178)	0.00326 (0.0347)	-0.00158 (0.0111)	-0.0581** (0.0237)	0.0222* (0.0123)	-0.00686 (0.0147)	0.0120 (0.0307)
Ident. M. Vict./Loss	-0.00157 (0.0173)	0.0160 (0.0346)	0.00343 (0.0179)	0.0259 (0.0355)	0.00362 (0.0122)	-0.0672*** (0.0230)	0.00745 (0.00914)	-0.0165 (0.0131)	0.0289 (0.0316)
Ident. F. Vict./ Loss	-0.00680 (0.0166)	0.0644* (0.0360)	0.00315 (0.0179)	-0.0203 (0.0339)	-0.0164** (0.00715)	0.00208 (0.0281)	-0.00257 (0.00584)	-0.0166 (0.0131)	-0.00695 (0.0297)
Stat. Vict./Gain	0.00522 (0.0139)	-0.0366 (0.0253)	-0.00219 (0.0133)	0.0347 (0.0275)	0.0107 (0.0102)	-0.0188 (0.0209)	-0.00261 (0.00465)	-0.00941 (0.0113)	0.0165 (0.0238)
Stat. Vict./Loss	-0.00668 (0.0130)	0.0602** (0.0276)	0.00578 (0.0140)	0.00273 (0.0269)	-0.00143 (0.00868)	-0.0424** (0.0198)	0.00492 (0.00634)	0.00837 (0.0130)	-0.0315 (0.0222)
Constant	0.0516*** (0.00785)	0.244*** (0.0153)	0.0516*** (0.00785)	0.259*** (0.0156)	0.0214*** (0.00514)	0.147*** (0.0126)	0.00755** (0.00307)	0.0415*** (0.00708)	0.176*** (0.0135)
Observations	3,236	3,236	3,236	3,236	3,236	3,236	3,236	3,236	3,236

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A6: Marginal effects from probit estimates (main effects)

Dependent variable=1 if donor came to donate blood

	Marginal effects from probit estimates				
	(1)	(2)	(3)	(4)	(5)
Gain		-0.0128 (0.0182)			
Loss		-0.0320* (0.0187)			
Simple letter	0.0644*** (0.0176)				
Identifiable			-0.0246 (0.0184)		
Statistical			-0.0195 (0.0184)		
Ident. Vict./Gain				-0.00530 (0.0220)	
Ident. Vict./Loss				-0.0466** (0.0235)	
Stat. Vict./Gain				-0.0207 (0.0226)	-0.0211 (0.0227)
Stat. Vict./Loss				-0.0182 (0.0228)	-0.0187 (0.0231)
Ident. M. Vict./Gain					0.0197 (0.0308)
Ident. F. Vict./ Gain					-0.0325 (0.0284)
Ident. M. Vict./Loss					-0.0372 (0.0282)
Ident. F. Vict./ Loss					-0.0527* (0.0271)
Observations	1,496	2,242	2,242	2,242	2,242

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A7: The effect of the letter (comparison of all the groups which have received any type of letter with the No Letter Group)

Dependent variable=1 if donor came to donate blood

Linear probability models

VARIABLES	(1)	(2)
Letter Groups	0.0494*** (0.0134)	0.0499*** (0.0130)
No Letter Group	Reference category	Reference category
Control variables ^a	Not included	Included
Constant	0.102*** (0.0110)	0.111*** (0.0411)
Observations	2,998	2,998
R-squared	0.004	0.059

Notes: Robust standard errors are in parentheses. ^a control variables: four dummy variables for education (high school, university, in the process of obtaining a degree, and for missing data); nine dummy variables for each combination of ABO blood type and Rh factor, and for missing data; dummy variable for proximity to the Institute; the number of times donor has donated blood before. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table A8: The comparison of all treatments with the Simple Letter Group

Dependent variable=1 if donor came to donate blood

Linear probability models

VARIABLES	(1)	(2)
Ident. M. Vict./Gain	0.0197 (0.0308)	0.0276 (0.0305)
Ident. F. Vict./Gain	-0.0325 (0.0284)	-0.0255 (0.0280)
Ident. M. Vict./Loss	-0.0372 (0.0282)	-0.0293 (0.0279)
Ident. F. Vict./Loss	-0.0527* (0.0271)	-0.0486* (0.0265)
Stat. Vict./Gain	-0.0211 (0.0227)	-0.0166 (0.0223)
Stat. Vict./Loss	-0.0187 (0.0231)	-0.0239 (0.0227)
Simple Letter	Reference category	Reference category
Control variables ^a	Not included	Included
Constant	0.166*** (0.0137)	0.174*** (0.0522)
Observations	2,242	2,242
R-squared	0.003	0.050

Notes: Robust standard errors are in parentheses. ^a control variables: four dummy variables for education (high school, university, in the process of obtaining a degree, and for missing data); nine dummy variables for each combination of ABO blood type and Rh factor, and for missing data; dummy variable for proximity to the Institute; the number of times donor has donated blood before. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Abstrakt

Tento článek zkoumá efektivnost upomínek a formulací použitých k vyvolání empatie a altruistických motivů na ochotu darovat krev. Provedla jsme randomizovaný experiment v reálném prostředí s 3236 dárci krve z Bosny a Hercegoviny, a testovala efektivitu formulací v dopisech žádajících o darování krve. Dále jsem testovala účinnosti dopisu samotného, který sloužil jako upomínka důležitosti darovat krev. Moje základní skupina nedostala žádný dopis. Dalších sedm skupin dostalo dopisy, které se lišily formulací cíle darovat krev; zda byla identifikována konkrétní oběť; a pohlaví oběti. Zjistila jsme, že upomínka o potřebě darování krve v podobě jednoduchého dopisu zvyšuje pravděpodobnost darování krve o 63% ve srovnání se základní skupinou, což naznačuje, že upomínky jsou nákladově efektivní nástroj. Zároveň jsem zjistila, že formulace dopisu má relativně malý účinek, pokud potenciální dárci mají delší dobu se rozhodnout, zda darovat krev či ne.

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