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Working Paper 14941
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Charitable Memberships, Volunteering, and Discounts: Evidence from a Large-Scale Online Field Experiment

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ABSTRACT

Despite the increasing use by charities, significant uncertainty exists about optimal online fundraising mechanisms, especially when large donor pools show substantial heterogeneities. We use an online natural field experiment with over 700,000 subjects to test theory on price discounts and show large differences in donation behavior between donors who have previously given money and/or volunteered. For example, framing the charity's membership price as a discount increases response rates and decreases conditional contributions from former volunteers, but not from past money donors. Our study thereby demonstrates the importance of conditioning fundraising strategies on the specifics of past donation dimensions.

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Introduction

The year 2007 marked the first time that more than $300 billion were donated to charity with individual donations accounting for more than 80% of this total (Giving USA, 2008). To solicit these donations, charities are aggressively turning to the internet due to its low marginal cost of use and rapid implementation time[1] (COP, 2008). However, there remains significant uncertainty within the fundraising community as to which rules from offline fundraising translate online and how to incorporate new features enabled by the internet into the charity's optimal fundraising strategy. Recent empirical publications on the determinants of giving have studied mail, phone, and door-to-door solicitation.[2] There are almost no studies, however, that consider the internet as a means of solicitation.[3] For economists, the internet provides a unique opportunity to actively contribute to a rapidly growing industry using field experiments that can be easily, inexpensively, and identically implemented across large populations. As such, in this paper we conduct a natural field experiment with a sample of over 700,000 subjects, including donors and volunteers, to better understand the role of discounts and memberships in charitable fundraising.

Fundraisers generally believe that an individual who has donated money in the past, regardless the amount, is much more likely to donate money in the future. This effect, commonly called the "warm list" effect, has been recently discussed in the empirical literature with respect to offline donations (Landry et al. 2008). There is much less known, however, about anticipated money donations from those who have volunteered in the past, i.e., donated time. One unique feature of the internet is the ease with which charities can solicit and use individual time donations to accomplish their legislative, policy or other communication objectives. While it might be expected that past volunteers are also more likely to donate money in the future, to the best of the authors' knowledge, this topic is unstudied in the empirical or experimental economics literature.

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[1] Notably, Barack Obama raised roughly $450 million dollars during his 2008 Presidential campaign with a large fraction of that coming online. In January 2008, the Obama campaign raised $32 million total with $28 million coming from online sources.

[2] For example, Falk (2007) uses postal mailings, Shang and Croson (2006) use phone solicitation, while Landry et al. (2006) employ a door-to-door strategy.

[3] Chen et al. (2006) is a notable exception. They conduct an online experiment soliciting visitors to a charity's website using a pop-up. This experiment yielded 24 donors who contributed a total of $1,128. Here we actively solicit potential donors via email instead of passively waiting for them to visit a particular website.

Understanding how donation dimension affects the propensity to give, charities can optimize their solicitation appeals by targeting different donor types with specific mechanisms. We therefore define an "augmented warm list" which includes both the magnitude and the dimension of past donations. We demonstrate its beneficial use for targeted fundraising using the example of different pricing schemes for membership offers. In particular, we study the role of price discounts.

The analysis of linking donations with charitable memberships represents a unique contribution to the economic literature and complements a rich literature that links public good contributions with private benefits (see e.g., Cornes and Sandler, 1984). Andreoni (1989, 1990) introduced a model of impure altruism to the public goods model where donors receive some extra utility (i.e., warm glow) from their donations. Building on this, the recent economic literature considers a variety of specific private incentives to motivate contributions to public goods.[4] For example, gifts may lead to increased donations if they trigger reciprocity from the potential donors, or if their receipt is conditioned on donations exceeding a certain threshold, gifts may induce agents to contribute in order to obtain (or buy) the offered good. The ideal gift or conditional good would be one that (i) has no or low costs to the charity,[5] (ii) is difficult to obtain without making a contribution to the charity; (iii) has a high consumption value for the agent such that, if charged, agents are willing to pay a high price, (iv) triggers a large increase in warm-glow or reciprocity. Charitable membership and its associated benefits, potentially meet all of these criteria.

The use of price discounts has been well-studied in the marketing literature with respect to for-profit applications (e.g., Thaler 1985; Blattberg and Neslin 1989; Folkes and Wheat 1995, Gupta and Cooper 1992, Crewal et al. 1998). Discounts are observed to work via different mechanisms: (i) announcing the undiscounted higher price may serve as a quality signal and thus

[4] Morgan (2000), Morgan and Sefton (2000), Landry et al. (2006), Lange et al. (2007) show the potential welfare-enhancing effects from introducing fixed-price lotteries to charitable fundraising. Falk (2007) and Landry et al. (2008) consider the role of gifts in triggering increased donations.

[5] This includes opportunity costs: even if goods are donated to the charity, the nonprofit might have alternative ways to sell the good and thereby to generate income to the charity. In order to be beneficial to the charity, the good must induce increases in giving in excess of those opportunity costs. Vesterlund (2003) discusses an additional mechanism by which this may occur: seed money or goods and prices which are donated to the charity may serve as a signal to subsequent donors about the quality of the charity.

may enhance demand;[6] (ii) offering the discounts may create some perception of savings; (iii) lowering the price may increase demand due to a downward sloping demand curve. The first two mechanisms are primarily short run in nature because consumers are expected to update their beliefs and reference-points.[7] The authors were unable to identify, however, any peer-reviewed literature that connects discounts with charitable giving or charitable memberships despite the increased use of these two mechanisms by charities.

Returning to our initial premise, we combine these two mechanisms to determine the effect of offering the charitable membership with and without a price discount on 1) response rate (i.e., growth of the warm list) and 2) profitability (i.e., total dollars raised). We do this by making identical membership offers to two treatment groups except that one group must make a donation of at least $35 to receive the membership and the second need only make a donation of at least $25 which was said to represent "a special $10 discount" from the standard membership level. The literature suggests that there may be price effects related to the private benefits from donations. Harbaugh (1998) shows the potential benefits from selling reputation signals at different price points and Landry et al. (2008) consider gifts that are only given if donations exceed a minimum donation threshold. To disentangle the effect of the discount from possible unrelated price effects, we include a third treatment group that is offered an identical membership for a minimum donation of $25 without the mention of the special discount. We also develop a theoretical model in Section II that allows us to derive hypotheses as to the results.

Our online field experiment was conducted on an unprecedented scale and raised a total of $77,026 from 1,691 donors. Framing a $25 threshold price to become a member as a *special discount* from a standard $35 level induces a significantly larger proportion of people to donate and become members without reducing the total dollars raised. Thus the discount increased the size of the charity's warm list without compromising profitability. Without the discount framing, we find that $25 and $35 minimum donation levels for a membership induce a similar proportion of people to donate; however, the overall donation amount was 17% less with the

[6] Milgrom and Roberts (1986) and Bagwell and Riordan (1991) discuss prices as quality signals.

[7] That is, in the short run unexpected price discounts may provide demand boosts due to reference-dependent preferences (e.g., Heidhus and Köszegi 2008), while in the long-run these effects might be smaller as the quality signal may be diluted by continuous price discounts (Folkes and Wheat 1995, Gupta and Cooper 1992,), and references may shift (Köszegi and Rabin 2006).

lower membership threshold. Interestingly, this price effect suggests that a charity could therefore exploit the relatively inelastic demand for membership by requiring a larger minimum contribution to receive membership benefits. These results conform to our theory.

This is not, however, the entire story. We believe that our study is the first to explicitly consider the interaction between fundraising mechanism and mode of previous contributions to the charity. Volunteering or the donation of time accounts for roughly 55% of total giving in the United States (Salamon et al. 2007) to combine with financial contributions to represent 5.1% of US GDP. Using a complete history of the treatment pool's online contributions of time and money to the charity, we analyze the heterogeneity of response with respect to the above treatments. We show that previous time and money donors respond to the discount treatment quite differently. Past financial donors contribute at a conditional level consistent with the undiscounted $35 minimum membership threshold; whereas, past time donors contribute at a conditional level consistent with the undiscounted $25 minimum membership threshold. Those who have only given money in the past donate at an unconditional level that is higher than the undiscounted $35 threshold; those who have given both money and time donate at an unconditional level equal to the $25 threshold. These differences within the discount treatment do not appear when presented with the $25 minimum threshold without the discount. This demonstrates differences in the perception of charitable discounts by past time or money donors. Furthermore, it demonstrates the importance of studying the effectiveness of charity fundraising mechanisms along different modes of giving.

The remainder of our study proceeds as follows. The next section provides the theoretical framework, which illustrates behavioral motivations for giving. Section III introduces our field experimental design. Section IV describes our findings and we conclude in Section V.

II. Theoretical Model

We provide a simple model to illustrate the most important determinants of giving behavior. We use a variant of Andreoni's (1989, 1990) impure altruism model and include consumption utility from a private good which in this case is the membership in the organization.

Agent $i \in \Omega$ receives utility from consuming a numeraire good, y_i, a private good (membership) at expected value m_i, a public good provided at level G, and (possibly) some extra utility (*warm-glow*) $f_i(g_i)$ from her own contribution to the public good g_i. Agents might also perceive the membership as a gift from the organization, depending on the way the membership is offered (e.g., with a discount). We model the resulting reciprocity component of utility as a function of both the contribution level and the perceived consumption value of the membership: $r_i(g_i, m_i)$. Importantly, the extent to which membership offers trigger reciprocal actions might depend on the historical interaction between donors and organization as will be described below.

Assuming additive separability of these different utility components, agent i's utility facing a budget constraint $y_i + g_i \leq w_i$ and receiving expected membership benefits m_i is defined as:

$$U_i(g_i, m_i) = w_i - g_i + m_i + h_i(g_i + G_{-i}) + f_i(g_i) + r_i(g_i, m_i) \tag{1}$$

where $h_i(\bullet)$ and $f_i(\bullet)$ are twice continuously differentiable, non-decreasing and concave, and $\partial^2 r_i / \partial g^2 \leq 0$, $\partial^2 r_i / \partial g \partial m \geq 0$, and $G_{-i} = \sum_{j \neq i} g_j$. The optimal solution to maximizing (1) for a given m_i is denoted by $\hat{g}_i(m_i)$. The assumptions ensure that $\partial \hat{g}_i(m_i) / \partial m_i \geq 0$.

We assume that the membership is awarded if contributions exceed a threshold T. Taking this threshold into account, the agent's optimal contribution level is denoted by $g_i^*(m_i, T)$. This optimal contribution may fall into three regions: (I) the threshold is not binding and the agent chooses to contribute at a higher level ($\hat{g}_i(m_i)$), (II) the minimum donation threshold is binding and the agent contributes at the threshold, (III) the agent is not willing to contribute at the threshold level and therefore does not receive membership benefits. The agent's willingness-to-pay for the membership is then given by:

$$WTP_i(m_i) = \max \left\{ g_i \mid U^i(g_i, m_i) \geq U^i(\hat{g}_i(0), 0) \right\} \tag{2}$$

Note that $WTP_i(m_i) \geq \hat{g}_i(m_i)$. We can now formally state the optimal donation when offering a membership of quality m_i at a threshold of T:

$$g_i^*(m_i, T) = \begin{cases} \hat{g}_i(m_i) & \text{if} \quad T \leq \hat{g}_i(m_i) \\ T & \text{if} \quad \hat{g}_i(m_i) < T \leq WTP_i(m_i) \\ \hat{g}_i(0) & \text{if} \quad WTP(m_i) < T \end{cases} \tag{3}$$

We illustrate the effect of the threshold level T on contributions $g_i^*(m_i, T)$ in Figure 1 for a representative individual. If the threshold level is below the contribution level $\hat{g}_i(m_i)$, a marginal increase in T naturally has no effect (Region I). In Region II, the threshold exceeds the unconditional contribution level, but falls short of the willingness-to-pay such that the agent decides to contribute exactly the minimum donation level. If T exceeds the willingness-to-pay (Region III), contributions fall to the voluntary contribution level without being a member ($\hat{g}_i(0)$) which may be zero.

For a given perceived membership value m_i, we would therefore expect the number of donors (i.e., response rate) to be downward sloping in the required minimum donation level (*price effect*). The impact of this price effect on average conditional contributions, however, is less clear: (i) donors whose WTP now is less than the threshold T may still contribute (if $\hat{g}_i(0) > 0$), but at a lower level; (ii) other subjects whose WTP still is larger than the required threshold increase their contributions in order to obtain the membership.

In addition to this price effect, the threshold price for membership may serve as a quality signal. This link between prices and perceived product quality has been established in several economic studies (e.g., Milgrom and Roberts 1986; Bagwell and Riordan 1991; Gerstner 1985). We therefore assume that the expected value of membership benefits to the individual will depend on the announcement of the threshold (T): $m_i = M_i(T) > 0$.[8]

A higher (expected) quality of membership may increase donations via two distinct channels: it may trigger increased donations via the reciprocity term of equation (1) as $\hat{g}_i(m_i)$ is

[8] Similarly, treatment relevant information like the announcement of a threshold for the membership might influence the perceived quality of the charity and thereby the utility from the public good or from the own contributions. To simplify the presentation, we abstain from modeling those effects explicitly.

non-decreasing in m_i (*quality-reciprocity effect*).[9] Furthermore, a higher (expected) quality increases the consumption value m_i of the membership and therefore the willingness-to-pay to consume the product (*quality-consumption effect*).

With our experimental design we attempt to provide insights into the price and quality effects. For this we will compare donations at a high threshold level ($g_i^*(M_i(T^{high}),T^{high})$) with those at a reduced threshold level ($g_i^*(M_i(T^{low}),T^{low})$), as well as consider a discount treatment where a threshold of T^{low} is announced as a price discount from T^{high} ($g_i^*(M_i(T^{high}),T^{low})$).

When comparing individual contributions at a high vs. a low threshold level, i.e.

$$g_i^*(M_i(T^{high}),T^{high}) \quad \text{vs.} \quad g_i^*(M_i(T^{low}),T^{low}).$$

the quality effect and the price effect interact (see Figure 1). An increased threshold ($m_i' \equiv M_i(T^{high}) > m_i$) increases $\hat{g}_i(m_i')$ and may also increase the willingness-to-pay (T_2'). As a result, the higher threshold generates larger contributions for subjects contributing above the threshold (quality-reciprocity effect), or at the threshold (price effect or quality-consumption effect). A negative net effect might prevail if the threshold T^{high} exceeds the corresponding willingness-to-pay for membership. (i.e., if T becomes so high that the charity moves into Region III of Figure 1 for a large fraction of the potential donors despite the possible shifting of Region III to the right). These predictions are summarized in Hypothesis 1:

Hypothesis 1: ***Due to the interaction of quality and price effect, an increase in the minimum donation level (threshold) required for membership has an ambiguous effect on the number of donors and conditional contributions. Conditional on contributing above the threshold, conditional contributions increase in the minimum donation level if this minimum level provides a quality signal.***

We now turn to the role of discounts and compare the contribution level where the lower threshold (T^{low}) is framed as a discount $g_i^*(M_i(T^{high}),T^{low})$ to the contribution level without the discount $g_i^*(M_i(T^{high}),T^{high})$. The former should result in a higher participation rate as more people are acquiring the membership (price effect). The effects on conditional contributions are

[9] Falk (2007) shows a positive correlation between the size of a gift and the response rate.

ambiguous as some agents may move down along the threshold if a discount is offered (stay within Region II in Figure 1)), while others start contributing at the (lower) threshold level (move from Region III into Region II).

A similar effect occurs when a price T^{low} is announced as a price discount from T^{high}: that is $g_i^*(M_i(T^{high}),T^{low})$ vs. $g_i^*(M_i(T^{low}),T^{low})$. The increased quality may induce more people to be willing to pay the minimum contribution level such that participation should increase. The effect on individual contributions is predicted to be positive, while the conditional contributions are ambiguous as newly entering agents may drive down the average. We therefore can formulate the following hypothesis:

Hypothesis 2: ***Formulating a minimum contribution level for membership as a price discount from a standard higher level increases participation compared to the higher threshold (due to price effect), but also compared to a lower threshold not announced as a discount (due to quality effect). The effect on conditional contribution levels is ambiguous.***

Complementary to these main treatment effects which are the focus of the current study, we are interested in the heterogeneous treatment affects based on certain donor characteristics. We use the remainder of this section to discuss additional predictions based on donor specifics.

Heterogeneity of the donor pool – Money vs. time donors

While much of the fundraising literature focuses on financial contributions, donors are also often requested to contribute time. In the following, we discuss how previous money or time donors may differ in their reaction to a (money) fundraising attempt.

Subjects who make money or time contributions in the past should be more likely to give than non-donors as their valuation of the public good ($h_i'(\bullet)$) and/or their warm glow from giving is larger ($f_i'(\bullet)$). This effect is well-known in the fundraising literature as a reason to value warm-lists.[10] Subjects who previously donated money might also be anchored by their previous donation such that their reaction to price changes is less elastic. For example, a donor

[10] Landry et al. (2008) identify warm-list benefits in a field experimental setting. They show that the warm-list value depends on how donors are solicited: warm list value is significant when charities ask for voluntary contributions, but is reduced when additional gifts/incentives are offered to induce contributions.

who always contributed $40 in response to donation requests might not change her contributions if membership benefits are given at $25 or $35; whereas, a donor who has never donated money in the past is not anchored by their first gift. As such, past money and time donors may differ in their reaction to manipulations in the price required for membership benefits. In terms of our model, previous money donors may be more likely to have $\hat{g}_i(m_i) > T^{high}$. Similar differences between subjects may occur with respect to the price effect when framing a lower threshold as a discount.

Price discounts might, however, also work through the reciprocity channel. That is, the discount might be interpreted as a nice offer from the charity such that an individual agent might reciprocate gifts by increasing donations. In aggregate, this could result in a higher response rate and in larger conditional donations. This type of reciprocal gift exchange has been demonstrated in the field (e.g. giving post cards in exchange for money donations as in Falk (2007)) as well as in the lab (gift exchange game).

If the interaction between donors and the charity is repeated, however, actions by the charity may also be interpreted as a reaction to past donor behavior. That is, a price discount could potentially also be seen as a "thank you" by past donors. As such, a discount may trigger less reciprocal action among previous donors than non-donors. We argue that this "thank you" effect is also more likely to occur for previous time donors than for those who previously gave money. As argued above, donations from money donors may react less elastically to price changes. Furthermore, giving a *money* discount as a "thank-you" for a *money* donation may seem illogical to money donors who view the donor/charity relationship as one of raising money. Conversely, past time donors might be expected to interpret the discount as an indication of value placed on their time-donations by the charity and thus a reasonable "thank-you" for volunteering. Consequently, price discounts may trigger a stronger reciprocity reaction from past money donors and "thank-you" reaction from past time donors. We therefore formulate the following hypothesis:

Hypothesis 3: ***Former time donors are more likely to reduce their conditional contributions as a reaction to price discounts than past non-donors and former money donors are.***

With the establishment of these hypotheses, we now turn to the experiment design and results.

III Experimental Design

Following our theory, we designed a large scale natural field experiment with the goal of understanding how discounting a charitable membership affects the response rate, the unconditional donation level and the conditional donation level. The study was conducted online with 702,890 individuals. In addition to the experimental data, we obtained information on previous time and money donations from the individuals to the charitable organization.

The charitable organization is a large left-leaning advocacy organization that fights for civil liberties in the United States. The organization qualifies as a 501c(4) under IRS tax code which means donations to the organization cannot be deducted from income for federal tax purposes. It possesses an online email list with more than 1 million subscribers. This list serves as the basis for all of the organization's online fundraising efforts as well as other communications between the charitable organization and the individual.

Our experimental pool consisted of the 702,890 individuals who have not been a member of the charitable organization in the past and are thus referred to as Prospects by the organization. Some of these Prospects (10,077) have made financial donations in the past to the organization, but these individuals were not considered members because their donation was either a) to an affiliated entity such as the organization's PAC or 527[11]; or b) too small to be considered a member. Membership to the organization in 2008 usually requires a donation of at least $35. Donors making gifts below this level are not considered members for fundraising purposes. During typical membership drives, these non-donors and sub-$35 donors are requested to become a "member" of the organization by giving a gift of at least $35. The only additional tangible benefit to "membership" for the individual is the receipt of a quarterly magazine which is not emphasized during the membership process. The organization mainly promotes the psychic or altruistic benefits of membership.

The usual communications between the organization and their email list consist of three primary types of activities: 1) fundraising appeals which request financial contributions and

[11] A PAC (political action committee) or 527 represent two different legal representations of the nonprofit that allow for different activities, mostly related to electioneering, for the nonprofit. Each legal entity is considered separate and must perform their own fundraising and email list building activities.

emanate from the fundraising department; 2) action alerts, surveys, and event invitations which request non-financial contributions of time and emanate from the policy department; and 3) education or other general notifications which are informational in purpose and come from the policy or communications department. Requests for contributions of time to support the lobbying efforts of the organization represent a large majority of the communications. These emails notify the list subscribers of some situation that the charitable organization believes is important to their constituency and ask the subscribers to take "action." Typically "action" involves a 10-15 minute process whereby the member visits a page on the charitable organization's website and personalizes a letter for emailing or faxing to one or more of their elected officials. Approximately 268,504 list subscribers had donated time in the 12 months prior to the experiment.

In our experiment, we therefore carefully take the donation history of individuals into account and differentiate between time-donors (alternatively referred to as activists in the language of the organization) and money-donors.

Our experiment involved three treatments for which we divided the pool of Prospects into three equally-sized groups. Table 1 describes the demographic breakdown of the three groups based on information collected from a subset of the sample during previous surveys.[12] Table 2 summarizes the past behavior of the three prospect groups. All characteristics balance across the three treatments. For example, past money donors are evenly divided across the three groups in terms of number (1.35%), average conditional donations ($88.30), and number of past donations (1.37). The "Messaging and Time-Donation (Action) Behavior" rows describe the communication relationship between the charitable organization and the individual. On average the organizations sends 62 messages per year to list subscribers and members make on average 1.6 time donations in the form of actions. Finally, the table describes the activist (time donor) breakdown of the three groups. Activists are described within the organization as being 1) Super Activist if they made more than 4 time donations in the last 12 months; 2) Active if they made 1-3 time donations in the last 12 months, joined the email list within the past 6 months, or attended an offline event for the organization in the past year; or 3) Inactive if they do not meet either the

[12] While the demographic makeup of the list based on survey participation may be biased due to survey selection issues, it can be used to demonstrate the identical nature of the three groups since selection into the three groups was done orthogonally to any survey participation variable.

criteria for Super Activist or Active. As Table 2 shows, the three activist groups are evenly divided across the three treatment groups. For the remainder of this analysis we will combine the Super Activist and Active groups into a single group of time donors.

The experiment consisted of sending three sequential fundraising emails to the experimental pool. Each email consisted of identical language with the exception of the treatment language, which appeared in three different places in the email. If an email recipient clicked on any of the links in the email, they were taken to an online donation page that reinforced the treatment language. At this point in the process, the individuals decided whether to enter their donation amount, credit card information, and submit a donation or abandon the process and not make a financial contribution. The general theme of the appeal was to ask Prospects to become a member within the next few days to support the organizations general outreach and education work in the 2008 general election (approximately 90 days in the future).

The first email was sent on a Sunday (day 1), the second email was sent on the following Thursday (day 4), and the third email a week later on the next Thursday (day 11). The first two emails urged members to become a member by day 4 midnight. The third email extended the deadline to midnight on day 12. Prospects who donated any positive amount were removed from subsequent mailings. Treatment language did not vary across the three messages within each treatment or control group. Results are aggregated across the three messages for the treatment and control groups.

The three groups of Prospects were approached with the following donation requests:

- Control: "Become an [*organization*] member with a gift of $35 or more."
- Treatment 1: "Become an [*organization*] member with a gift of $25 or more."
- Treatment 2: "Become an [*organization*] member with a gift of $25 or more – that's a $10 discount off our normal membership."

Given that none of these Prospects had been members before, it is reasonable to assume that those who were offered the $25 membership were not aware that the price was normally $35. The donation landing page reinforced this by stating "Minimum membership" next to the $35 or $25 donation level for the Control and Treatment 1 group, respectively. In Treatment 2,

the phrase “Special $10 Discount on Minimum Membership” appeared next to the $25 donation level.

In all treatments, the webpage included radio buttons from among which donors could select when making a donation. The ask strings for the treatments were as follows:

- Control: $35, $50, $75, $100, $250, $500, Other
- Treatment 1 and 2: $25, $50, $75, $100, $250, $500, Other

The “Other” radio button had a text box into which donors could write any number they wanted above $10. These ask strings mimic the strings typically used by the organization in fundraising.[13]

Finally, all donors in any group who made a gift of $20 or more were given the option to receive a branded picture frame. The language for the second sequential email stated “If you donate before midnight, we'll send you a magnetic picture frame as our gift.” The language for the other two messages was similar. Donors who did not want the frame could check a box at the bottom of the donation page stating: “Please don’t send a frame: use my full donation to fight for [cause].”

IV. Experimental Results

Table 3 provides summary statistics for our experimental treatments. Throughout this section, we discuss four different indicators: 1) “Response Rate” is the total number of donors conditional on being solicited (in %); 2) “Dollars given, unconditional” are the average dollars of all gifts for all solicited Prospects; 3) “Dollars given, conditional on giving” are the average dollars of all contributions conditional on giving; 4) “% who said “no frame” is the percent of donors who checked the box at the bottom of the donation page to not receive the picture frame. For example, Table 3 shows that we contacted 231,183 subjects in the control treatment, of

[13] Ideally, we would have liked to offer identical ask strings for all treatments. However, the charity did not want to have a $25 ask in the $35 membership treatment (Control), as this was thought to confuse potential donors. Donors who wanted to make a contribution less than indicated by the minimum radio button, therefore had to choose the “other” option. This option to make a donation less than the minimum threshold was used by 3.8% of donors in the control (where the minimum button was $35), while 1.1% (1.7%) used this option in Treatment 1 (Treatment 2) where the minimum button was $25. Overall, the “Other” box was used 5%, 4.5% and 3.9% in the Control, Treatment 1, and Treatment 2, respectively.

which 521 decided to give which corresponds to a response rate of 0.23%. Those donors contributed an average of $45.21 and 62.2% (324 donors) requested not to receive the picture frame. In total, our study raised $77,026 from 1,691 individuals across the three treatments.[14]

Decreasing Minimum Donation Level

As stated in the introduction, we establish a baseline for the effect on membership demand from dropping the membership minimum threshold without announcing a discount. This will allow us later to disentangle the price and quality effects in the discount treatment. Comparing the Control and Treatment 1 in Table 3 shows that a reduction of the minimum level from $35 to $25 leaves the response rate unchanged at 0.23%, while the conditional contributions decrease from $45.21 to $36.32. This immediately leads to the following result:

Result 1: A change in the donation threshold for obtaining membership decreases average unconditional and conditional contributions, while the participation rate remains unaffected.

Further evidence for this result can be seen in regression 1 from Tables 4, 5, and 6. Table 4 (regression 1) shows that the difference in the participation rate for donors in Treatment 1 relative to the Control is statistically insignificant. However, the conditional donation amount was approximately $9 lower (Table 5 regression 1) and thus the unconditional contribution amount was statistically significantly lower by $0.02/Prospect (Table 6).

These results provide an empirical answer to the theoretically ambiguous effects described in Hypothesis 1: conditional contributions decrease with a decrease in the threshold. A $10 decrease in the threshold produces a $9 drop in the conditional donation. Mapped to the theory, this suggests that many donors are operating in Region II of their demand curve (as illustrated in Figure 1), i.e. contribute at the threshold level. However, given that the conditional donation averages approximately $10 above the threshold, there are also donors in both treatment groups donating above this threshold and thus operating in Region I of their demand curve.[15]

[14] In the empirical analysis, we exclude one donor in Treatment 1 who made a donation of $10,000. Given that it is unlikely that this gift resulted from the specifics of Treatment 1, the gift was eliminated. The largest gift after this was a $1000 gift in Treatment 1; 3 $500 gifts in Treatment 2; and a $365 gift in the Control. All other gifts were at or below $250.

[15] In the Control (Treatment1, Treatment2), 36.7% (26.5%, 25.4%) of donors give above the threshold; the differences between the Control and Treatment 1/Treatment 2 are statistically significant at the 0.5% level.

These results already suggest an interaction between price and perceived quality of the charity. Changing the donation threshold does not change the response rate between the two treatments. As described by the theory, this could be because (i) the willingness-to-pay for membership is greater than either of the thresholds used in this study for most of the treatment group; or (ii) lowering the minimum donation threshold does not induce more subjects to give because it simultaneously reduces the willingness-to-pay. This later effect would indicate an interaction between price and perceived quality (i.e., willingness-to-pay). A second observation that supports the presence of a price-quality interaction as described in Hypothesis 1 is shown by the fact that a significantly larger fraction of donations are above the threshold in the Control treatment (36.7% above $35) than in Treatment 1 (26.5% above $25). If there were no interaction effect, this relationship should be reversed.

In terms of the theoretical model, this suggests that – for some subjects – the higher threshold resulted in an increase in their utility-maximizing donation amount, or $g_i^*(M_i(T^{high}), T^{high}) > g_i^*(M_i(T^{low}), T^{low})$.

Effect of a Special Discount

With this impact of a price change now characterized, we can consider the role of a price discount as implemented in Treatment 2. A comparison with the Control corresponds to the pure price effect of our theory, a comparison with Treatment 1 to the quality effect. Table 3 supports Hypothesis 2 by showing that under the discount treatment we observed an increased response rate compared to both Control and Treatment 1 (0.27% in Treatment 2 vs. 0.23% in Control and Treatment 1). The conditional donations in Treatment 2, however, are smaller than in the Control treatment ($37.94 vs. $45.21), but almost identical to those in Treatment 1 ($36.32). This leads us to formulate the following result on the pure price effect:

Result 2: Framing a lower membership threshold as a discount from a given standard level decreases conditional donations, but increases the participation rate such that average unconditional donations are stable.

Unconditionally, 0.083% (0.060%, 0.068%) gave above the threshold in the Control (Treatment 1, Treatment 2). The difference between the Control and Treatment 1 (Treatment 2) is statistically significant at the 0.5% (10%) level; whereas, the difference between Treatment 1 and Treatment 2 is not statistically different.

Further evidence for Result 2 can be found in the first regression in Tables 4, 5 and 6. The response rate for Treatment 2 is statistically significantly greater than for either the Control or Treatment 1 (1% level of significance). Specifically, introducing the discount causes the response rate to increase by 0.04 percentage points above a baseline of 0.24% (see baseline observed probability in Table 4). That is, discounting the charitable membership price by 29% triggered an increase in participation of 18%. However, the reduction in conditional donations (significant at 1%), leads to an insignificant change in average unconditional contributions (Table 6).

This result is consistent with our theoretical model: the response rate is predicted to increase if the utility-maximizing gift for many Prospects at the high threshold is zero (i.e., $g_i^*(M_i(T^{high}), T^{high}) = 0$ at $T^{high} = \$35$), but positive with a \$10 discount (i.e., $g_i^*(M_i(T^{high}), T^{low}) > 0$ at $T^{low} = \$25$). That is, the result indicates that the quality signal in the discount treatment maybe determined by $T^{high} = \$35$.

Comparing the discount Treatment 2 to Treatment 1 (i.e. considering the quality effect), we see that the unconditional amount raised per Prospect in Treatment 2 is statistically larger as more donors give (significant at 5% in Table 4 and 6, respectively) while conditional contributions are equivalent between these two treatments.

The results, therefore, suggest that it is beneficial to frame a given minimum donation level as a discount from a higher level. Going to the lower minimum level without framing it as a discount may decrease conditional donations, but does not increase the participation rate. Alternatively, a price discount appears to increase the participation rate while showing no effect on the unconditional donation rate, thus making their use beneficial. In the long-term, the relative benefits (Control vs. Treatment 2) depend on the future donation behavior of the additionally attracted donors which is beyond the scope of the current paper.

Heterogeneous Treatment Effects

We now explore the potential benefits from using discounts in charitable fundraising at a deeper level, that is, if this mechanism has particular benefits for specific *subsets* of prospects. For this, we differentiate our subject pool by means of their previous interaction with the charity;

in particular, if they have donated time or money in the past. We denote past time donors as Active/Activists with Inactive being those who did not donate time in the past. Past money donors are denoted by M-Donor while NoM-Donor describes those who did not donate money in the past.[16]

Our analysis thus far has not shown a significant change in gross income (unconditional contributions) to the charity from using a price discount (Treatment 2 vs. control). Splitting the sample based on previous interactions, Table 6, regression (4) shows important differences for the treatment effect: while unconditional donations do not change for NoM-Donors, they do decrease for donors who gave time *and* money in the past ($0.39 lower), but increase for money donors who were inactive ($0.30 higher).

A charity could therefore profit by differentiating its fundraising strategy based on knowledge of previous Prospect interactions. That is, while money donors who did not give time should be contacted via the discount treatment, the charity could lose money by contacting money donors who had given time with the discount treatment.

Result 3: An optimal fundraising strategy differentiates fundraising mechanisms by donor types. That is, the charity should exploit information on if and how (money or time) subjects have contributed in the past.

Result 3 establishes the benefits from targeted fundraising. We now study the causes of the differences across donor types in a more detailed way. For this, we again consider the effects on participation (Table 4) and conditional contributions (Table 5). We first consider former time donors (activists) regardless their previous money donations. Regression 2 from Tables 4 and 5 show that former time donors contribute under the discount treatment at a higher rate (0.035 percentage points higher), but with a lower conditional donation amount ($9.77 lower). This effect is primarily driven by those time donors who did not give money in the past (Active*NoM-Donor). This can be seen from regression 4 in Tables 4 and 5. While the conditional donation results for activists appear invariant to subdividing them by past money donations ($8.04 and $9.78 lower for Active*M-Donor and Active*NoM-Donor, respectively) only activists who have not donated money exhibit a statistically significant increase in response

[16] As a sensitivity analysis, we also considered using actual past donation amount instead of the binary M-Donor/NoM-Donor and found the results robust to either specification.

rate for the discount offer (0.039 percentage point increase). As a result, the unconditional donation amount (regression 4 from Table 6) for the discount offer is statistically indistinguishable for activists who are not money donors and statistically lower ($0.39 lower) for activists who are money donors.

Different results prevail for subjects who did not donate time in the past (Inactive). These Prospects do not exhibit an elevated participation rate for Treatment 2 like their active counterparts. Also unlike their active counterparts, the conditional contribution of inactives is higher in Treatment 2 than Treatment 1 and statistically indistinguishable from the Control (regression 2, Table 5). This is consistent with the discussion above regarding repeated interaction between charity and donor. Whereas activists may consider the discount to be a "thank you" for previous action, inactives have done nothing to warrant a "thank you" from the charity and thus may view the discount as a gift that should be reciprocated. As a result, inactives donate at a higher conditional contribution level than actives when presented with the discount. This inactive effect with respect to the response rate and conditional donation is invariant across both subgroups of inactive past money donors and inactives who have not donated in the past.

Turning to past money donors, we focus on those who have only interacted with the charity along the single dimension of money (i.e., no time donations). Relative to the Control treatment, we observe an increase in the response rate (0.021 percentage point) and conditional contribution amount ($12.20 increase) for these inactive M-donors in Treatment 2, though neither are statistically significant. As a consequence, inactive M-Donors were the only group to donate unconditionally more at a significant level in the discount treatment relative to the control ($0.30/prospect more).

We summarize these results as follows:

Result 4: The effect of framing a lower threshold level on participation and donation levels differs depending on the dimension of past donations (time or money). Specifically,

(i) Past time-donors who had not given money before respond to the discount at a higher rate and lower conditional gift leaving the unconditional donation level unchanged.

(ii) Time-donors who also gave money in the past react to a discount on membership with a marginally lower conditional gift, but no change in response rate relative to the control, such that unconditional contributions decrease.

(iii) Past money-donors who did not give time respond to a discount with positive (but insignificant) increases in both participation and conditional contributions such that unconditional gift are significantly increased.

(iv) Prospects who had interacted with the charity along neither a time nor money dimension are unaffected by the discount treatment relative to the control.

Taken together, Result 3 and 4 suggests that a charity can benefit from offering the discount treatment to those prospects who have interacted with the charity in only one dimension, i.e., past inactive money donors and past active non-money donors. For the former an immediate increase in contributions results while for the latter the benefit potentially is given by an enlarged donor pool. The charity would do no harm to offer the discount to those prospects who had never interacted with the charity.

These differences in behavior are consistent with Hypothesis 3: time-donors may see the discount as a "thank you" for previous actions and therefore decrease their (conditional) contributions, while this "thank you" interpretation does not apply to non-donors. Furthermore, past money-donors react differently to the discount which uses the same (monetary) dimension as the initial donation.

These findings indicate that for the analysis of repeated reciprocal relationships it is necessary to comprehensively analyze exchanges in the different dimensions of the commodity space (money, time, consumption goods). It is therefore important for charities to keep track of all former interactions with potential donors: the value of "warm-lists" to a charity stems from the potential to discriminate future solicitation attempts based on the whole history of interactions. Traditionally, a "warm list" is defined as a group of people who have made at least one past contribution to the charity, agnostic to the specifics of the past contribution. Given the results described above, we therefore formulate the following definition of an "augmented warm list":

Definition: An "augmented warm list" is a list of the contact information for those who have agreed to accept communications from the charity along with their historical time and/or money contributions to the charity.

The benefits of an augmented warm list to a nonprofit are clearly delineated in the above discussion. Table 7 summarizes these effects for all treatments. From Table 4, we see that on average past time-donors contribute at a rate that is 2.6 times (0.41 percentage points above) the contribution rate of inactive donors. Past money-donors contribute at a rate that is 14.5 times (3.05 percentage points above) the contribution rate of non-money donors. The average unconditional donation of past time-donors is $0.18 greater than that of inactive donors (Table 6). Similarly, the average unconditional donation of past donors was $1.45 greater than that of non-donors. Overall, we obtain the following result:

Result 5: Subjects on a warm list are more likely to contribute and give – on average – larger donations per contact than those not on the warm list. Past money donors are more likely to donate money relative to past time donors.

The analyses conducted here do not consider any temporal dimension to the augmented "warm list". Intuition suggests that a donor whose last money or time donation lies more in the past is not as "warm" as a more current donor. Exploring the lapse rate of a "warm list" is a subject of future research.

Donor Quality

The previous results provide strong evidence for the value that past donors to the charity have for future fundraising drives. For the long-run analysis, it is therefore important to see if the marginal donors attracted by the price discount will make future contributions at a frequency and magnitude relative to donors attracted in the Control treatment. Intuitively, enlarging the donor pool must come at a cost for the charity as individual motivations to give must be lower for the marginal donor.

While a full analysis of donor quality can only be done through the long term analysis of donor behavior, we can gain insights into the "cost" and possible motivation of a donor based on their acceptance or rejection of the donation-conditional picture frame. Table 3 indicates that the

fraction of donors who reject the gift is smaller in the discount treatment (56.2% compared to 62.2% in the Control and 59.3% in Treatment 1). Table 7 further indicates a larger rejection rate among past money and time donors in all treatments but one. We formulate the following result:

Result 6: Warm list subjects do not only generate larger revenues to the charity by contributing more, but also generate less fundraising costs: the additional gift is the more likely to be turned down the more past donations (money/time) a subject has made. The rejection rate of the gift is smaller if membership is framed as a discount.

For all donors, the rejection rate of the frame averaged 59.1%. Table 8 displays the marginal effects from a probit regression on the binary decision to accept the picture frame for various groups and treatments. When the $25 minimum membership is framed as a discount, there is a statistically significant increase in the frame acceptance rate by 6.0 percentage points relative to the 41% acceptance level for the control. Past activists were 7.1 percentage points more likely to accept the frame under the discount treatment relative to the control. Similarly, those who had not donated money in the past were 6.5 percentage points more likely to accept the frame under the discount treatment. Both of these results are statistically significant. These results suggest that former time-donors joining the charity under the discount treatment might be of lower value to the charity. In the short run, sending more gifts is costly to the charity. In the long run, their future contributions will be decisive.

Past money-donors are most beneficial to the charity. Not only do they contribute at a higher rate, they are also less likely to accept the additional gift. Consistent with intuition, they are high quality donors as their motivation to help the charity (e.g., their public good utility or warm-glow) is manifested in the same dimension (money) as is requested by the charity. As the charity attracts an increasing number of donors, the marginal donor has an increasingly lower intrinsic motivation to give and needs increasingly greater extrinsic incentives to give.

The Effect of Political Environment

Having established that fundraising mechanisms work different depending on time and money donation history, it is natural to check differences due to political environments since time donations are largely linked to actions addressing elected officials. A link between political

voting patterns and the effectiveness of fundraising mechanisms was suggested by Karlan and List (2007). They find that a matching grant treatment was ineffective in Blue states, but quite effective in Red states.[17]

We therefore finally study the links between donation behavior and voting outcomes in the 2008 Presidential Elections. That is, Blue refers to states won by Barack Obama, while Red states are those won by John McCain.[18] The results of this analysis are presented in Table 9-11 and show no significant difference in donation behavior linked to the political outcome if controlling for the specific donor types. That is, the donor types react similarly to the respective treatments in Blue and in Red states.

These results indicate that observed differences in reactions to specific fundraising mechanisms at the state level could be driven by different compositions of donor types at the state level. While donor type characteristics are balanced for our study as shown in Table 12, any analysis of fundraising mechanisms with other charities might involve a different composition of donor types across states.[19] Our results call for a careful interpretation of aggregated effects in the literature, in particular when relying on smaller samples.

V. Conclusion

We conducted an online natural field experiment with 702,890 subjects designed to analyze the charity membership as a fundraising instrument. Due to the low cost and ease of use which allow for a much larger pool of experimental subjects than other experimental settings, we thereby propose using online fundraising platforms as a new and extremely beneficial way to conduct natural field experiments.

We found that donation behavior is affected by the minimum donation level required for membership. Reducing the minimum donation threshold did not lead to more subjects donating,

[17] They defined Blue and Red states relative to the 2004 Presidential Election outcome. Following popular terminology, Blue states are those won by the Democrat (here, John Kerry) and Red states are those won by the Republican (George W. Bush).

[18] Our results are invariant to defining Blue and Red according to the 2004 Presidential Election outcome. Similarly our results do not change when we use actual vote percentages for the two candidates in lieu of blue/red dummy variables.

[19] For example, a charity may do political organizing in particular states to combat ballot measures which might result in a higher percentage of Actives in some subset of states.

but to lower average donations. While such a reduction is thereby extremely costly to the charity, we showed that by framing the reduction as a special discount the reduction in conditional contributions can be offset by attracting more donors.

These general findings suggest that the use of discounts as a charitable organization marketing instrument can be beneficial. Our results are consistent with the economic literature relating prices to quality: a charity that requires a larger donation to become a member appears to be signaling that it is a higher quality charity and thus membership has a higher value to the individual. In addition, our results suggest that there is a range of thresholds such that the charity can increase the threshold without reducing the response rate. Identifying the optimal threshold and whether that threshold is specific to a particular charity is beyond the scope of this experiment but appears to be warranted given our results.

This analysis also highlights for the first time the important distinction between donor types (financial or volunteer) and their differing reaction to fundraising mechanisms. This suggests that not only is there value in having a warm-list of previous donors, but also in denoting the nature of past donations as either money and/or time donors. Our results show that charities could benefit from differentiating fundraising mechanism across donor types. The differing effects of discounts on past time vs. money donors furthermore indicate that it is important to understand fundraising as a multi-dimensional activity. A full understanding of the economics of charities can only be achieved if different modes of giving as well as their interaction with fundraising mechanisms are studied. This paper provides a first step in this direction.

References

Andreoni, James. 1989. "Giving with Impure Altruism: Applications to Charity and Ricardian Equivalence," *Journal of Political Economy* 97: 1147-1458.

Andreoni, James. 1990. "Impure Altruism, and Donations to Public Goods: A Theory of Warm-Glow Giving," *The Economic Journal* 100: 464-477.

Bagwell, Kyle & Riordan, Michael H, 1991. "High and Declining Prices Signal Product Quality," *American Economic Review* 81(1), 224-39.

Blattberg, Robert C. and Scott A. Neslin. 1989, "Sales Promotion: The Long and the Short of it," *Marketing Letters* 1(1), 81-97.

Chen, Yan, Xin Li and Jeffrey MacKie-Mason. 2006. Online Fund-raising Mechanisms: A Field Experiment. *Contributions to Economic Analysis & Policy*. 5(2): Article 4.

COP (Chronicle of Philanthropy). 2008. After the Flood: Online gifts still flow to charities, but the stream slowed in 2007. http://philanthropy.com/premium/articles/v20/i17/17000701.htm

Cornes, Richard and Todd Sandler. 1984. "Easy Riders, Joint Production, and Public Goods," *Economic Journal* 94: 580-598.

Crewal, Dhruv, R. Krishnan, Julie Baker, and Norm Borin. 1998.. "The Effect of Store Name, Brand Name and Price Discounts on Consumers' Evaluations and Purchase Intentions", *Journal of Retailing* 74(3): 331-352.

Falk, Armin. 2007. "Gift Exchange in the Field," *Econometrica* 75(5): 1501-1511.

Folkes, Valerie and Rita D. Wheat. 1995. "Consumers' Price Perceptions of Promoted Products," *Journal of Retailing* 71(3): 317-328.

Gerstner, Eitan. 1985. "Do Higher Prices Signal Higher Quality?" *Journal of Marketing Research* 22(2): 209-215.

Giving USA. 2008: http://nonprofit.about.com/od/trendsissuesstatistics/a/giving2008.htm

Gupta, Sunil and Lee G. Cooper. 1992. "The Discounting of Discounts and Promotion Thresholds", *Journal of Consumer Research* 19: 410-411.

Harbaugh, W. 1998. "What do Donations buy? A model of philanthropy based on prestige and warm-glow," *Journal of Public Economics*: 269-284.

Heidhus, Paul and Botond Köszegi. 2008. "Competition and Price Variation when Consumers Are Loss Averse," *American Economic Review* 98(4): 1245-1268.

Karlan, Dean and John A. List. 2008. "Does Price matter in Charitable Giving? Evidence from a Large-Scale Natural Field Experiment." *American Economic Review* 97(5): 1774-1793.

Köszegi, Botond and Matthew Rabin. 2006. "A Model of Reference-Dependent Preferences." *Quarterly Journal of Economics*, 121(4): 1133-1166.

Landry, Craig, Andreas Lange, John List, Michael Price, and Nicholas Rupp. 2006. "Toward an Understanding of the Economics of Charity: Evidence from a Field Experiment", *Quarterly Journal of Economics* 121: 747-782.

Landry, Craig, Andreas Lange, John List, Michael Price, and Nicholas Rupp. 2008, "Is a Donor in Hand Better Than Two in the Bush? Evidence from a Natural Field Experiment," NBER Working Paper 14319.

Lange, Andreas, John A. List, and Michael Price. 2007. "Using Lotteries to Finance Public Goods: Theory and Experimental Evidence," *International Economic Review*, 48(3): 901-927.

Milgrom,. Paul and John Roberts. 1986. "Price and Advertising Signals of Product Quality," *Journal of Political Economy* 94(4): 796-821.

Morgan, John. (2000). "Financing Public Goods by Means of Lotteries". *Review of Economic Studies*, 67: 761-784.

Morgan, John and Martin Sefton. (2000). "Funding Public Goods with Lotteries: Experimental Evidence". *Review of Economic Studies*, 67: 785-810.

Salamon, Lester M., Megan A. Haddock, S. Wojciech Sokolowski, and Helen S. Tice. 2007. "Measuring Civil Society and Volunteering: Initial Findings from Implementation of the UN Handbook on Nonprofit Institutions." Working Paper No. 23. Baltimore: Johns Hopkins Center for Civil Society Studies.

Shang, Jen and Rachel Croson. 2006. "The Impact of Social Comparisons on Nonprofit Fundraising," Research in Experimental Economics, Vol 11: 143-156.

Thaler, Richard. 1985, "Mental Accounting and Consumer Choice," Marketing Science 4(3): 199- 214.

Vesterlund, Lise. 2003. "The Informational Value of Sequential Fundraising." *Journal of Public Economics*. 87(3-4): 627-57.

Tables and Figures

Table 1. Demographic Comparison of Control and Treatment Groups

	Demographics	All	Control ($35)	Treatment 1 ($25)	Treatment 2 ($25 w/SD)
	All	702,890	231,183	236,234	235,473
1	Gender (% Female)	60.9%	61.1%	60.9%	60.8%
2	Age	42.7 (14.6)	42.7 (14.6)	42.7 (14.5)	42.8 (14.6)
	>25	10.3%	10.4%	10.3%	10.3%
	25-35	35.4%	35.5%	35.3%	35.5%
	35-50	21.3%	21.3%	21.4%	21.3%
	50+	32.9%	32.8%	32.9%	32.9%
3	Party Affiliation				
	Democrat	73.5%	73.5%	73.2%	73.8%
	Republican	3.6%	3.3%	4.0%	3.4%
	Other	22.9%	23.2%	22.8%	22.7%
4	Ethnicity				
	White	84.7%	84.1%	84.9%	84.9%
	African American	2.6%	2.6%	2.4%	2.6%
	Hispanic	5.1%	5.1%	5.1%	5.2%
	Other	7.7%	8.2%	7.6%	7.2%
5	Relationship Status				
	Single	37.6%	38.2%	37.0%	37.7%
	Married	11.5%	11.3%	11.4%	11.7%
	Partnered / Civil Unions	48.2%	47.9%	48.7%	48.1%
	Other	2.7%	2.6%	2.9%	2.5%
6	Region				
	Midwest	21.4%	21.3%	21.5%	21.5%
	Northeast	21.4%	21.5%	21.5%	21.2%
	South	29.2%	29.1%	29.1%	29.3%
	West	28.0%	28.2%	27.9%	28.0%
7	2004 Election (% Living in Blue State)	57.4%	57.6%	57.4%	57.3%
	2008 Election (% Living in Blue State)	78.2%	78.3%	78.1%	78.1%

Note: not all information reported above is available for every prospect. Specifically Gender is available for 54% of file; Age 28.2%; Party Affiliation 1.5%; Ethnicity 1%; Relationship Status 1.5%; Region 77%. Numbers in parentheses are standard deviation.

Table 2. Behavioral Comparison of Control and Treatment Groups

	Psychographics	All	Control ($35)	Treatment 1 ($25)	Treatment 2 ($25 w/SD)
1	Time on File (yrs)	2.38 (1.73)	2.37 (1.73)	2.38 (1.73)	2.38 (1.73)
	Money Donor Behavior				
2	% Previous Money Donors	1.35%	1.35%	1.36%	1.34%
3	Average M-Donation, cond on giving	88.3 (248.5)	91.2 (287.5)	85.9 (210.7)	87.8 (242.4)
4	No. of M-Donations, cond on giving	1.37 (0.954)	1.36 (0.873)	1.37 (1.01)	1.37 (0.976)
5	Months Since Last M-Donation, cond on giving	18.8 (17.9)	18.3 (17.5)	18.9 (17.9)	19.2 (18.2)
6	No. of M-Donations, unconditional	0.0184 (0.192)	0.0182 (0.186)	0.0186 (0.197)	0.0183 (0.193)
7	Average M-Donation, unconditional	1.19 (30.6)	1.23 (35.0)	1.16 (26.5)	1.17 (29.8)
	Messaging and Time-Donation (Action) Behavior				
8	No. of Msgs/yr	62.2 (32.5)	62.2 (32.4)	62.3 (32.7)	62.1 (32.3)
9	No. of Time-Donations (Actions)/yr	1.64 (2.90)	1.64 (2.88)	1.64 (2.92)	1.65 (2.90)
10	No. Msgs/yr, cond on 1+ Action	66.06 (27.1)	66.0 (26.8)	66.1 (27.4)	66.0 (27.1)
11	No. T-Donations/yr, cond on 1+ Action	2.36 (3.22)	2.35 (3.20)	2.36 (3.24)	2.37 (3.22)
12	No. Msgs to M-Donors/yr	81.8 (44.0)	82.0 (45.4)	82.1 (44.0)	81.2 (42.8)
13	No. Actions from M-Donors/yr	2.89 (3.73)	2.85 (3.68)	3.00 (3.84)	2.83 (3.66)
14	Activist (T-Donor) Category				
	Super Active (4+ time donations/yr)	4.0%	4.0%	4.0%	4.0%
	Active (1-3 time donations/yr)	34.2%	34.3%	34.3%	34.1%
	Inactive (0 time donations/yr)	61.8%	61.7%	61.7%	61.9%

Note: Activist Category is available for 100% of prospect file.

Table 3. Summary of results for the three treatments (means shown)

	Control ($35)	Treatment 1 ($25)	Treatment 2 ($25 w/SD)
Combined 3 Messages			
Response rate	0.23%	0.23%	0.27%
Dollars given, unconditional	0.10	0.08	0.10
Dollars given, conditional on giving	45.21	36.30	37.94
% who said "no frame"	62.2%	59.3%	56.2%
observations	231,183	236,234	235,473
donors	521	536	633

Table 4: Probit, marginal effects (dependent variable=donated (binary))

		(1)	(2)	(3)	(4)	Add'l Tests
1	T1 (d)	1.616e-05				(1) ≠ (2)***
		[1.468e-04]				
2	T2 (d)	4.355e-04***				
		[1.497e-04]				
3	T1*Active (d)		7.417e-05			(3) ≠ (4)**
			[1.250e-04]			
4	T2*Active (d)		3.514e-04***			
			[1.363e-04]			
5	T1*Inactive (d)		-2.205e-04			(5) ≠ (6)**
			[1.980e-04]			
6	T2*Inactive (d)		2.684e-04			
			[2.176e-04]			
7	Active (d)		4.111e-03***			
			[2.986e-04]			
8	T1*M-Donor (d)			6.640e-06		(8) = (9)
				[4.146e-04]		
9	T2*M-Donor (d)			-3.252e-05		
				[4.103e-04]		
10	T1*NoM-Donor (d)			1.313e-05		(10) ≠ (11)***
				[1.414e-04]		
11	T2*NoM-Donor (d)			4.669e-04***		
				[1.451e-04]		
12	M-Donor (d)			3.049e-02***		
				[3.329e-03]		
13	Active*M-Donor (d)				6.576e-02***	
					[7.596e-03]	
14	Active*NoM-Donor (d)				3.697e-03***	
					[2.973e-04]	
15	Inactive*M-Donor (d)				2.742e-02***	
					[6.065e-03]	
16	T1*Active*M-Donor (d)				2.898e-04	(16) = (17)
					[3.934e-04]	
17	T2*Active*M-Donor (d)				-7.706e-05	
					[3.256e-04]	
18	T1*Inactive*M-Donor (d)				-7.868e-04**	(18) ≠ (19)**
					[3.082e-04]	
19	T2*Inactive*M-Donor (d)				2.124e-04	
					[6.369e-04]	
20	T1*Active*NoM-Donor (d)				3.411e-05	(20) ≠ (21)***
					[1.191e-04]	
21	T2*Active*NoM-Donor (d)				3.899e-04***	
					[1.350e-04]	
22	T1*Inactive*NoM-Donor (d)				-8.828e-05	(22) ≠ (23)*
					[1.970e-04]	
23	T2*Inactive*NoM-Donor (d)				2.520e-04	
					[2.123e-04]	
	Baseline Obs Prob	2.40E-03	1.60E-03	2.10E-03	1.40E-03	
	Observations	702,890	702,890	702,890	702,890	
	Psuedo R-squared	4.922e-04	5.542e-02	4.272e-02	9.165e-02	
	Marginal effects; (d) for discrete change of dummy variable from 0 to 1					
	Standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%					

Table 5: OLS (dependent variable=conditional contribution)

		(1)	(2)	(3)	(4)	Add'l Tests
1	T1 (d)	-8.914***				(1) = (2)
		[2.455]				
2	T2 (d)	-7.271***				
		[2.361]				
3	T1*Active (d)		-9.295***			(3) = (4)
			[2.716]			
4	T2*Active (d)		-9.765***			
			[2.634]			
5	T1*Inactive (d)		-7.225			(5) ≠ (6)*
			[5.719]			
6	T2*Inactive (d)		2.759			
			[5.279]			
7	Active (d)		0.985			
			[4.367]			
8	T1*M-Donor (d)			-13.01**		(8) ≠ (9)*
				[5.711]		
9	T2*M-Donor (d)			-3.312		
				[5.755]		
10	T1*NoM-Donor (d)			-7.990***		(10) = (11)
				[2.716]		
11	T2*NoM-Donor (d)			-7.773***		
				[2.589]		
12	M-Donor (d)			5.347		
				[4.505]		
13	Active*M-Donor (d)				6.453	
					[6.307]	
14	Active*NoM-Donor (d)				0.371	
					[4.853]	
15	Inactive*M-Donor (d)				2.571	
					[9.913]	
16	T1*Active*M-Donor (d)				-13.90**	(16) = (17)
					[6.239]	
17	T2*Active*M-Donor (d)				-8.039	
					[6.529]	
18	T1*Inactive*M-Donor (d)				-9.227	(18) = (19)
					[14.96]	
19	T2*Inactive*M-Donor (d)				12.20	
					[12.18]	
20	T1*Active*NoM-Donor (d)				-8.277***	(20) = (21)
					[3.017]	
21	T2*Active*NoM-Donor (d)				-9.783***	
					[2.883]	
22	T1*Inactive*NoM-Donor (d)				-6.741	(22) = (23)
					[6.224]	
23	T2*Inactive*NoM-Donor (d)				0.683	
					[5.857]	
24	Constant	45.21***	44.42***	44.23***	43.93***	
		[1.748]	[3.907]	[1.934]	[4.347]	
	Observations	1690	1690	1690	1690	
	R-squared	0.00767	0.0109	0.00964	0.0111	
	(d) for discrete change of dummy variable from 0 to 1					
	Standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%					

Table 6: OLS (dependent variable=unconditional contribution amount)

		(1)	(2)	(3)	(4)	Add'l Tests
1	T1 (d)	-0.0195**				(1) ≠ (2)**
		[0.00808]				
2	T2 (d)	0.000101				
		[0.00809]				
3	T1*Active (d)		-0.0367***			(3) ≠ (4)*
			[0.0131]			
4	T2*Active (d)		-0.0124			
			[0.0131]			
5	T1*Inactive (d)		-0.00912			(5) ≠ (6)*
			[0.0103]			
6	T2*Inactive (d)		0.00839			
			[0.0103]			
7	Active (d)		0.182***			
			[0.0118]			
8	T1*M-Donor (d)			-0.399***		(8) ≠ (9)***
				[0.0694]		
9	T2*M-Donor (d)			-0.118*		
				[0.0697]		
10	T1*NoM-Donor (d)			-0.0145*		(10) ≠ (11)**
				[0.00812]		
11	T2*NoM-Donor (d)			0.00184		
				[0.00813]		
12	M-Donor (d)			1.447***		
				[0.0498]		
13	Active*M-Donor (d)				2.038***	
					[0.0644]	
14	Active*NoM-Donor (d)				0.148***	
					[0.0119]	
15	Inactive*M-Donor (d)				0.714***	
					[0.0781]	
16	T1*Active*M-Donor (d)				-0.375***	(16) = (17)
					[0.0900]	
17	T2*Active*M-Donor (d)				-0.392***	
					[0.0906]	
18	T1*Inactive*M-Donor (d)				-0.425***	(18) ≠ (19)***
					[0.109]	
19	T2*Inactive*M-Donor (d)				0.300***	
					[0.109]	
20	T1*Active*NoM-Donor (d)				-0.0295**	(20) ≠ (21)*
					[0.0132]	
21	T2*Active*NoM-Donor (d)				-0.00377	
					[0.0132]	
22	T1*Inactive*NoM-Donor (d)				-0.00547	(22) = (23)
					[0.0103]	
23	T2*Inactive*NoM-Donor (d)				0.00570	
					[0.0103]	
24	Constant	0.102***	0.0324***	0.0824***	0.0261***	
		[0.00574]	[0.00731]	[0.00578]	[0.00733]	
	Observations	702890	702890	702890	702890	
	R-squared	8.3E-06	8.5E-04	0.00289	0.00403	
	(d) for discrete change of dummy variable from 0 to 1					
	Standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%					

Table 7. Results by Activist Type (means shown)

	Control ($35)	Treatment 1 ($25)	Treatment 2 ($25 w/SD)
Cross Section A: Past Time-Donors (Activists)			
Response rate	0.47%	0.49%	0.57%
Dollars given, unconditional	0.21	0.18	0.20
Dollars given, conditional on giving	45.41	36.11	35.64
% who said "no frame"	62.8%	59.8%	55.8%
observations	88,444	90,595	89,614
donors	417	445	507
Cross Section B: No past time donation (Inactives)			
Response rate	0.07%	0.06%	0.09%
Dollars given, unconditional	0.03	0.02	0.04
Dollars given, conditional on giving	44.42	37.20	47.18
% who said "no frame"	59.6%	57.1%	57.9%
observations	142,739	145,639	145,859
donors	104	91	126
Cross Section C: Past Money-Donors			
Response rate	3.08%	3.09%	3.05%
Dollars given, unconditional	1.53	1.13	1.41
Dollars given, conditional on giving	49.57	36.57	46.26
% who said "no frame"	65.6%	65.7%	63.5%
observations	3,112	3,202	3,147
donors	96	99	96
Cross Section D: Not Past Money-Donors			
Response rate	0.19%	0.19%	0.23%
Dollars given, unconditional	0.08	0.07	0.08
Dollars given, conditional on giving	44.23	36.24	36.45
% who said "no frame"	61.4%	57.9%	54.9%
observations	228,071	233,032	232,326
donors	425	437	537

Table 8. Probit, mfx (dependent variable=accept conditional gift (picture frame))

		(1)	(2)	(3)	Add'l Tests
1	T1 (d)	2.900e-02			(1) = (2)
		[3.054e-02]			
2	T2 (d)	5.979e-02**			
		[2.931e-02]			
3	T1*Active (d)		3.113e-02		(3) = (4)
			[3.396e-02]		
4	T2*Active (d)		7.077e-02**		
			[3.295e-02]		
5	T1*Inactive (d)		2.478e-02		(5) = (6)
			[7.128e-02]		
6	T2*Inactive (d)		1.683e-02		
			[6.562e-02]		
7	Active		-3.279e-02		
			[5.460e-02]		
8	T1*M-Donor (d)			-3.334e-04	(8) = (9)
				[7.183e-02]	
9	T2*M-Donor (d)			2.188e-02	
				[7.285e-02]	
10	T1*NoDonor (d)			3.546e-02	(10) = (11)
				[3.383e-02]	
11	T2*NoDonor (d)			6.487e-02**	
				[3.222e-02]	
12	PastM-Donor (d)			-4.317e-02	
				[5.538e-02]	
	Baseline Obs Prob	4.09E-01	4.09E-01	4.09E-01	
	Observations	1690	1690	1690	
	Pseudo R-squared	1.841e-03	2.175e-03	4.083e-03	
	Marginal effects; (d) for discrete change of dummy variable from 0 to 1				
	Standard errors in brackets; * sig at 10%; ** sig at 5%; *** sig at 1%				

Table 9. Probit, marginal effects (dependent variable=donated (binary))

	(1) Active M-Donor	(2) Active*NoM-Donor	(3) InActive*M-Donor	(4) InActive*NonM-Donor
T1 (d)	7.193e-03	-7.528e-05	-8.529e-03*	-4.323e-05
	[7.549e-03]	[3.891e-04]	[4.686e-03]	[1.469e-04]
T2 (d)	-1.138e-03	1.007e-03**	1.509e-03	1.394e-04
	[7.436e-03]	[4.002e-04]	[4.840e-03]	[1.503e-04]
C*Red (d)	4.808e-04	-8.837e-04*	-2.738e-04	1.079e-04
	[1.196e-02]	[5.303e-04]	[7.544e-03]	[2.428e-04]
T1*Red (d)	-8.655e-03	-1.339e-04	3.638e-03	2.807e-05
	[9.927e-03]	[5.698e-04]	[1.039e-02]	[2.350e-04]
T2*Red (d)	-1.695e-03	-6.231e-04	-4.315e-04	1.198e-04
	[1.176e-02]	[4.960e-04]	[7.452e-03]	[2.243e-04]
Baseline Obs Prob	4.22E-02	4.58E-03	1.35E-02	7.89E-04
Observations	5595	240655	3826	290946
R-squared	9.479e-04	1.120e-03	8.906e-03	8.458e-04
Test T1=T2	T1 = T2	T1 ≠ T2***	T1 ≠ T2**	T1 = T2
Marginal effects; (d) for discrete change of dummy variable from 0 to 1				
Standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%				

Table 10. OLS (dependent variable=conditional contribution amount)

	(1) Active M-Donor	(2) Active*NoM-Donor	(3) InActive*M-Donor	(4) InActive*NonM-Donor
T1 (d)	-14.31***	-8.021**	-6.562	-8.767
	[4.320]	[3.280]	[30.03]	[10.02]
T2 (d)	-7.408	-10.02***	-7.648	-3.083
	[4.547]	[3.115]	[23.54]	[9.477]
C*Red (d)	-0.475	-4.496	-9.687	-4.921
	[7.177]	[5.309]	[38.77]	[14.54]
T1*Red (d)	1.836	-5.411	-16.88	2.963
	[7.060]	[4.904]	[46.96]	[15.33]
T2*Red (d)	-3.782	-3.730	103.0***	7.994
	[7.403]	[4.589]	[38.16]	[13.11]
Constant	50.48***	45.36***	48.44***	45.80***
	[3.189]	[2.324]	[17.34]	[7.018]
Observations	237	1110	54	231
R-squared	0.0331	0.0103	0.0579	-0.0160
Test T1=T2	T1 = T2	T1 = T2	T1 = T2	T1 = T2
Marginal effects; (d) for discrete change of dummy variable from 0 to 1				
Standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%				

Table 11. OLS (dependent variable=unconditional contribution amount)

	(1) Active M-Donor	(2) Active*NoM-Donor	(3) InActive*M-Donor	(4) InActive*NonM-Donor
T1 (d)	-0.321	-0.0381*	-0.447	-0.00799
	[0.367]	[0.0208]	[0.459]	[0.00970]
T2 (d)	-0.351	-0.00757	-0.0494	0.00365
	[0.369]	[0.0209]	[0.453]	[0.00969]
C*Red (d)	0.00399	-0.0543*	-0.169	0.000554
	[0.590]	[0.0311]	[0.722]	[0.0150]
T1*Red (d)	-0.274	-0.0276	-0.0757	0.00309
	[0.573]	[0.0307]	[0.684]	[0.0148]
T2*Red (d)	-0.214	-0.0432	1.768**	0.0138
	[0.587]	[0.0308]	[0.746]	[0.0148]
Constant	2.068***	0.200***	0.781**	0.0340***
	[0.261]	[0.0148]	[0.326]	[0.00689]
Observations	5595	240655	3826	290946
R-squared	-0.000504	0.0000182	0.00104	-0.00000495
Test T1=T2	T1 = T2	T1 = T2	T1 = T2	T1 = T2

Marginal effects; (d) for discrete change of dummy variable from 0 to 1
Standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%

Table 12. Composition of Blue and Red State List Members

Blue States	Active	Inactive	Totals
M-Donor	1.1%	0.7%	1.8%
Non M-Donor	43.9%	54.3%	98.2%
Totals	45.0%	55.0%	

Red States	Active	Inactive	Totals
M-Donor	0.9%	0.7%	1.6%
Non M-Donor	46.4%	52.0%	98.4%
Totals	47.3%	52.7%	

Figure 1. The solid line represents an individual's demand curves based on one specific membership signal. As the charity announces a higher threshold for receiving the membership benefit (T), the individual adjusts their beliefs about the expected value of the membership and thus operates along the demand curve depicted by the dotted line (i.e., $m_i' \geq m_i$).