Framing Effects in Parental Support of Local Public Schools

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Abstract: The Eugene Education Fund, a non-profit organization whose mission is to find supplemental funding for the 4J School District, contacted the University of Oregon asking to help increase donations in the future. Working in conjunction with the EEF, we posed survey questions to parents at Holt and Edison elementary schools and estimated the difference in the amounts they were willing to donate based on whether they received negative or positive statements regarding financial conditions at the schools. These statements, contained within the survey, discussed both current and future conditions in the 4J school district with either a positive or a negative description. We complimented these framing questions with other questions aimed at better understanding charitable giving at elementary schools. Because Holt and Edison provide a diverse distribution of families, we believe that our sample of parents is representative of the Eugene School District as a whole. Although there are some subtleties, our results show that respondents will be more inclined to donate and have a higher expected donation amount when they receive the negative treatment.

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Report

1. Introduction

As a result of decreased public funding for the 4J School District, which serves Eugene, public education faces a devastating budget shortfall: the 4J 2010-2011 academic year is plagued with a $15.8 million dollar gap that is projected to rise in following years. Because of this, and rapidly decreasing propensity for governmental support of primary education, organizations that facilitate the fundraising to help close this gap and ensure equitable education have become essential. The Eugene Education Fund (EEF) is a nonprofit organization whose purpose is to undertake such fundraising efforts; the donations received are reinvested in the 4J schools through various grants. In 2010, the EEF received an average donation of $190 from 4,596 individual donors amounting to a total of $877,368 in donations. Like all fundraising organizations, their goal is to raise more money, specifically to help offset the 4J budget shortfall.

To achieve this goal and better assist the 4J District, the EEF has identified the need to expand its donor base. Currently, the EEF has strong donor retention, yet they have only 4,596 total people donating in various amounts. EEF would like to see that number increased. In addition, 81 percent of donations received by EEF come through the 4J schools, via donation efforts specific to that locality. At the conclusion of this survey we provided the EEF with experimental analysis to track factors for consideration when they reach out to potential new donors through their various campaigns. In the time we had to complete our project the EEF had no newsletters, mailers or other campaigns we could use to acquire data, therefore, we resorted to survey methods to collect stated willingness to donate. Data was collected through a survey which will be randomly distributed to the parents of two local elementary schools, Holt and

Edison, via email. Our beliefs about the nature of the project, and the nature of charitable giving, informed our survey questions. The survey included questions about the number of children attending the elementary schools, their grades, family income level, past donations, time volunteered and questions about future donations. The full survey and rationale behind each question will be described in greater detail in section three.

Both Holt and Edison are in the 4J district and represent different demographics, allowing the survey to be representative of the whole 4J district. Holt had a highly stratified demographic, with varied income; Edison's income level was higher on average. We randomly selected two separate email groups at each school to receive differently framed treatments. The treatment was contained in a brief paragraph, within the survey, located after the first 3 generic questions that asked about household information. One treatment framed the positive influence donations have had on 4J and the benefits derived for the students through donations. It reads, *"In the wake of budget cuts, financial donations from parents and others have allowed Eugene's public schools to lessen the burden. Through the support of generous donors, Holt has continued offering programs for their students' benefit that otherwise would have been cut."* The other treatment framed the situation more negatively, relating to how drastically 4J is struggling and how closing the funding gap requires donations to try and preserve programs. It reads, *"In the wake of continuing budget cuts, Eugene public schools have been forced to cut vital programs. Without additional financial support from parents and others, further cuts in important areas will be likely. As budget deficits are projected to continue, without financial support, what Holt can offer will continue to decline."* We initially believed people would be more inclined to give when hearing positive information rather than when they received a negative pitch.

Once collected, the responses to the surveys were tested through econometric analysis accounting for some obvious biases in the respondents' answers. Through the data analysis of survey responses and the effects of demographic factors and treatment framings, we identified the factors the EEF should consider when formulating new donor campaigns to make their efforts optimally efficient.

2. Related Research and Literature

In the USA about 3% of GDP enters the "voluntary sector" through charitable giving, much higher than other modern countries. The decision to donate to an organization which funds public schools may seem bizarre to some individuals since a portion of their tax dollars is already invested in the education, but is explained by past literature. Because we are dealing with a good that potential donors have already funded in a way, we wanted to look at literature on what motivates donations for similar goods, those which people have already contributed towards.

Harbaugh (1998a) examines charitable giving between 1989 and 1993 of a prominent law school's 1973 graduating class. Similar to public school donations, these donations go towards an organization that already collects revenue and has collected revenue from donors in the past. Conclusions stemming from the data suggest that donors are more inclined to donate when a prestige effect is associated with their donation. The prestige factor captures the utility gained by having peers become aware of your "selfless" donation to a charitable cause. Further, it shows that the prestige factor is increased as those you wish to impress become more acquainted with your charitable efforts. It is also heightened when your gift can be viewed and compared to those with whom you share associations. These notions are consistent in explaining why there are so few large anonymous donations and why many large donations have contracts stipulating that the donor be announced publicly. Based on the same data, Harbaugh (1998b) concludes that the

more a charitable organization can publicize the donations of its funders, the greater the prestige effect will be, and the more individuals will be inclined to donate.

The prestige effect explains one reason why people donate. However, the notion of selfless altruism is often associated with donations and we wanted to understand its role (Harbaugh, Mayr and Tankersly, 2007). From neurological studies, it has been concluded that in donating, humans act rationally as stimulations of their ventral striatum, caudate and medial frontal area occurred during charitable donations. These brain centers are activated when positive utility is gained, which implies there is some "warm glow effect" present and not purely altruistic reasoning. The warm glow effect comes from the idea that humans gain personal satisfaction from having helped other people. More importantly, however, when testing voluntary giving compared to mandatory spending through a tax, the test group responded with relatively uniform degrees of activity in the above noted brain regions signaling that pure altruistic reasons exist as well. The conclusion states that the warm glow effect, personal benefit through donations and pure altruism are not one-dimensional motivations and all play a part in a person's decision to donate to charity. Additionally empathetic, sympathetic or people in positive mental states are more willing to donate than others who are exhibit less sentiment from the given categories.

From these papers we can conclude that people will act rationally when donating because they do receive some utility from their donation through both warm glow and the prestige effects. Additionally, altruistic reasons do play a part in their decision to donate. When formulating our treatment paragraph we made sure to embed language that associates the benefits of warm glow and altruistic effects to donating in the positive framing and a sense of dismal despair in the negative. We are constrained in incorporating the prestige effects in our recommendations to the EEF due to sensitivity of the 4J district. We suspect that 4J does not

want to potentially create a situation where students, or their families, are looked at or treated differently due to their ability to donate to the schools, therefore we are unable to recommend or test prestige effects in our study.

For any study in econometrics, a process of randomization is vital to ensure that results are most likely to accurately reflect the population from which the sample is drawn. An experiment designer wants his sample to best represent a population. To do this, we must ensure that the effects of any confounding variables—characteristics that will systematically bias our data—are minimized. Moore (2000) contends that a study is biased "if it systematically favors certain outcomes." Should the treatment groups contain, say, a larger number of high-income families in one than in the other; the results of the survey will incorrectly represent the larger population and we must account for such bias in our analysis.

The actual methods of randomization depend upon the specific goals, the expectations, and the type of the study. There are many types of randomization, but they are largely contained within three broad categories. First, there is straight randomization, in which the subjects of the study are split into two or more equal groups at random. Second, there is the stratified random sample, in which groups are randomized after determining characteristics to be similar within each group; these characteristics are often demographic information, like separation by income level, location, race, etc. Finally, there is cluster sampling, in which a statistician will use natural "clusters" or groups already contained within the data. In this method, samples of these clusters are taken and used to project the characteristics of the entire group.

This study makes the assumption that responses across grade level will be different. For that reason, a stratified random sample was chosen, and the groups were split evenly between grade levels. Such a strategy should control for different responses by parents with children in different

grade levels, which we suspect influences results. After separating by grade levels, an equal random sample of each will be taken. This will remove potentially confounding variables and limit an obvious source of bias. Econometrically, that we randomize treatment implies that the error term should be white noise, the characteristic necessary to make accurate inferences using an econometric model. Additionally, questions about the family demographics and a few key points of interest are addressed to allow us to test if anything else had a significant effect on willingness to donate beyond just the treatment framing. Such factors accounted for are: Family income, perceived quality of education, past giving of time and/or money and number of children at the school.

Bakija and Helms (2006) describe a model for charitable giving which incorporates a linear relationship between income and donations. Because of this and the results the authors drew from their data, we see fit to use similarly linear models in our paper. The authors of this paper were interested in testing the elasticity of giving and used a log-linear model so that percent changes were accurate in any direction of the model. Their model included similar variables: children, income (after-tax), and the price of giving among others. The model in their paper corresponded to a larger understanding of charitable giving, but should hold in the context of this paper as well.

3. Theory and Methodology

Holt and Edison

To better assess the nature of what causes Eugene Education Fund's targeted donors to give, we created a survey to gauge a variety of factors that may influence willingness to donate. We then gathered a list of parent e-mails from Holt and Edison elementary schools to which we could distribute such a survey. Among our beliefs is that donations represent a weak-link impure

public good. That is, that people believe their donation will only be effective if other parents donate as well. While there are benefits to be had by donating, parents are unwilling because they don't believe that other families will do the same.

We used families from both Holt and Edison Elementary Schools. The reason for these choices is simple: Holt offers a highly stratified demographic, with varied socioeconomic and ethnic backgrounds—which will better inform our results. Edison offers us a chance to get more descriptive information about the higher income and education, in which, we believe, the EEF will find its strongest donor base. We also expect that Edison parents will have more time and better access to internet, giving us better feedback and a more-representative sample. With these schools in mind, we targeted some of our questions to better understand the relationship between other factors that might influence a person's likelihood to give. These and demographic based questions were at the heart of what we wanted to learn to provide EEF with information about both how to approach potential donors and who specifically might be the best targets, in regards to child's grade, number of siblings and parent involvement.

Survey and why

Knowing we were going to utilize a survey, we wanted to ensure it asked as few questions and required minimal time for us to gather an adequate amount of information from which to create deduction. After consulting with the Principal of Holt Elementary, we created an 11-question survey that took respondents on average about four minutes to complete (the full survey can be seen in Appendix 1). We eventually sent the email out through the principal's email address to improve our chances for responses. We attempted to ask questions as bluntly as possible because we wanted to account for any potential misunderstandings by the respondents. Before any questions we added a brief statement explaining how responses were anonymous,

stated it was being conducted with the assistance of a group from the University of Oregon and would provide valuable information for the school's benefit. The first question asked about how many children in each grade level the parent has (K-5). The second question inquired about the quality of education at the elementary school from the respondent's perception. Third we asked for family pre-tax income. These questions were general background questions that we wanted to use to ensure randomization and consider as having potential influence on the final results.

After these questions we inserted our treatment. Respondents either received positively or negatively framed information about the quality, benefits and programs provided and how donations could affect them. Question four asked if the respondent had heard of the EEF. This was to provide the EEF with information about just how well the community was acquainted with their activities. Question five was a key question, asking "Do you plan on donating directly to Holt, or Edison, within the next year?" and was subsequently used to adjust the results. Questions six and seven asked participants to express the percent chance they would donate time or money at different levels using a slider bar allowing us to view their willingness to give curve for both time and money. Questions eight and nine asked about past time and money donations. Questions ten and eleven were inserted for Kevin Boling's interests and asked if people would be more likely to donate money if they could choose what their money went directly towards and if they would be more likely to volunteer if they had training. The survey was designed to be short enough that we would not have potential respondents renege upon opening it, yet account for other variables that could have an impact outside of framing.

Randomization and Constant Contact

We received the email addresses of 232 Holt parents and 192 Edison parents, each associated with the year in school their child or children. Once the survey was designed and was

approved by the principal of each school, we needed to go about ensuring we were not going to receive biased results. For the lists of Edison and Holt Elementary we had Stata randomly sort the parents email addresses into 2 groups for each grade level. For families with multiple children in the school, resulting in duplicate emails, the youngest grade level was the one the email address was grouped in with. Once the groups were established we named each by grade level with an associated 0 or 1 (First grade 0 and First grade 1). The 0 group was assigned the positively framed treatment while the 1 group was assigned the negatively framed. Thus we were left with twelve groups for each school, two for each of the six grade levels (K-5).

Instead of just splitting them down the middle and purely doing two groups for each school we were interested in seeing the rate at which emails were opened and the percent who clicked through and how it may change based on grade level. We initially believed there may be a tendency for parents of children in lower grades, such as kindergarten and first, to open and click through at a higher rate than the older grades because their child had more future years to complete at Holt or Edison. We believed that parents with children in higher grades, who would derive less benefit from improvements in the schools, would open the survey less often. We did consider that some families may have children who are yet to begin school at Holt or Edison, but could not account for that through open rates and click through. Additionally, we did not want to use survey question space on such a question. To gather email tracking information we found an email marketing information provider, Constant Contact, which could provide such information as well as send out emails as if it were coming from the school principals. We signed up for Constant contact accounts as Kevin Boling and Morley Hegstrom, after receiving their consent, and viewed what their typical emails to parents looked like to crafted our message to parents using their same style and wording. We input our contacts into the twelve groups for each school

and sent the exact same email which encouraged participation for the school's benefit to all the groups with the only difference being the 0 group got the survey with the positive framing and the 1 group got the survey with the negative framing.

Survey Execution

The first email with survey was sent out Wednesday, April 20th, 2011 at 1:00pm PST to all twelve of the groups from Holt Elementary. The email to the Edison Families was sent Monday, April 25th, at 1:00pm PST. The Edison email was sent later because it took longer to gather the parent's emails.

For Holt by Saturday, April 23 at 1:00pm only 41 responses had been captured. Of the 232 emails sent out 14 had bounced (6%), 96 emails had been opened (44%) and 46 people had clicked the link (48% of opened emails). We compared these numbers to Constant Contacts averages for education service emails: on average 19% of education related emails are opened with only 15% of people clicking through. Although our numbers reflected greater success than other constant contact customers we were not satisfied with our sample size thus far and sent another email urging parents to respond to the survey and thanking those who had. The survey groups were distributed exactly as before with no changes and the same groups received the same survey with the same treatment as the email before. We were able to see who had opened the email, but unfortunately were not able to view who of them had clicked through and fully completed the survey. As such the emails were distributed again to everyone and sent at 5:00pm PST. The results from Edison were similar after three days and we used the same procedure as for Holt, sending a reminder email and encouraging greater participation. The message sent to Edison parents was the same as the one sent to Holt parents.

We closed the Holt Surveys Tuesday, April 26th, three days after the reminder email was sent. We had 36 survey responses from the positively treated group and 38 for the negatively treated ones. The Edison Surveys were closed Saturday, April 30th, three days after the reminder email was sent. We had 32 responses for the positively treated group and 36 for the negatively treated ones.

Empirical Modeling

In accordance with the results derived from the J. Bakija paper, we have used a linear model for charitable giving to relating income. While they were estimating elasticity, we are measuring the marginal contribution and would like our coefficients to carry easily accessible meanings—thus informing our decision to not log our models. Empirically, our models follow the form related below:

$$Y_i = \beta X + \varepsilon_i$$

Where β is the coefficient vector for any particular model and X the matrix of observed values for the variables being tested by the model. Because many of our models include dummy variables, we have included intercepts in our specifications to ensure that our models do not result in "perfect multicollinearity," and render themselves useless. These intercepts are included in the above matrix-vector specification. Further it should be said that the model changes from regression to regression and the above form merely indicates that we take a linear form for all our models.

With regards to our understanding of the relationship between hours expended volunteering and charitable donations, we assume a similar specification. As the old saying goes "time is money," and anecdotally (and intuitively), we can assume a similar relationship.

Furthermore, we can guarantee an intercept with all values of income for hours volunteered, as families will still have means to donate time even if they do not have income.

Variables

From the eleven questions asked in our survey, we were able to attain a wide breadth of data to analyze. Below are the variables, and the form that they take i.e. numerical, binary (dummy), etc.:

Income – Numerical variable scaled by dollars

School – Dummy variable with 1 referring to Edison and 0 to Holt

Quality – Numerical variable with scale from 1 to 5

Children – Numerical variable ranging from 1 to 3

Negatively framed Treatment – Dummy variable with 1 referring to the negative framing and 0 to the positive framing

Expected Donation – Donation amount the respondent expects to give during the next year. Answers in excess of 1000 were limited to 1000.

Past Monetary Donations – Dummy variable with 1 referring to donation in the past

Past Volunteering – Dummy variable with 1 referring to time donated in the past

Expected Volunteering – Hour amount ranging from 0 to 2.5 hours that respondents expect to volunteer during the next month. Capped at 2.5 hours

Probability of Giving – A Binary variable with 1 being will give

Several of these variables were created from composites of questions asked during the survey. We aggregated both the donation and volunteer amounts using a specific expected value method. Each of these questions presented the respondent with an amount (either in money donated or hours volunteered) and asked for the percent likelihood that one would give the said quantity,

giving several levels. We assumed that at each level, the question was a binomial one, and that the probability at each higher level of donation would decrease by the probability attributed to the previous levels. In mathematical terms, this means:

$$E(\tilde{o}) = a*level1 + (1-a)*b*level2 + (1-a)*(1-b)*c*level3 + (1-a)*(1-b)*(1-c)*d*level4 + (1-a)*(1-b)*(1-c)*(1-d)*e*level5$$

Where level1,…, level5 are dollar or hour amounts and a,..., e are probabilities that the respondent assigned to each corresponding level, respectively.

4. Results

Checking the responses

We scanned over the responses to ensure that our initial results look like the questions were answered in the correct manner. Specifically we focused on number of children selected for each grade, because this was easily verifiable. In the Holt survey two families responded as having no children at Holt. At Edison, one respondent said they had 9 children and two said they had 5 children currently enrolled at Edison. We checked the email list for both schools and realized no family has more than 3 children associated with an email address. Since we emailed Holt parents, it seems unreasonable that a respondent would have no children at the school. To account for these incorrect observations we had Stata correct the number of children in the alleged 5 and 9 children families from Edison and the two 0 children families from Holt to be the average number of children for that school. This was done because we believe there was most likely user error on the part of the respondent in answering the question and we didn't want to discount their other questions in our study.

We also found a few families who did not interpret the expected time & money question conditionally; instead they thought that they should put 100% at each level prior to the level at

which they most likely intended to donate. In these circumstances, we counted only the highest level and weighted it accordingly.

Finally, there were some circumstances in which a family indicated, through our probability of giving variable, that they had no intention of donating, but had expressed a dollar amount of donation. In these situations, we assigned them an expected donation amount of zero. We feel this gives us a more accurate picture of expected donation and the impact the framing and other variables has on it than by including expected donation amounts for those who do not plan on donating. This also allows the variable used, donation expected, to account for both donation amount and probability of donating.

In viewing the responses these were the only answer choices that drew our attention as potentially incorrect or misinterpreted. Additionally we had no way of checking other choices such as perceived quality of education, donation history and income for accuracy and had to take them as true responses.

Randomness of findings

Our econometric analysis was done using ordinary least squares in Stata. There were admittedly some problems in our econometric modeling, with some of our models having a binary variable on the left-hand side, which would preclude the error terms being orthogonal, and some introduction of potential bias in our estimated treatment effect due to ex poste correlation of income and the framing. This effect was present in both Edison and Holt, but particularly strong at Edison, with the negative group having an average income of $25,000 more than the positive group.[1] The overall sample showed the negative group on average had $14,552 more pre-tax income than the positive group.

[1] Appendix A

Table 1: Was Our Treatment Biased?

Income	Coefficients	SEs	t-value	P>|t|
Negative Treatment	14552.200	9101.898	1.60	0.112
Constant	83598.480	6596.081	12.67	0.000

As shown in table 1, we do see that the negative treatment, taken as a whole, has a much higher level of income than the positively treated group. We had not anticipated such a complication, which will bias the estimated effect of negative framing if higher-income parents donate more (i.e., the estimated treatment effect will capture both the framing and an income effect). We account for this by including income in our models—capturing whatever effects income might have in biasing our results.

Overall Findings

We first considered the other variables to see how much income, number of children, perceived quality of education and donor history contributed to expected and donation probability.[2] We found all of the above positively correlated with giving probability and amount. For each additional 10,000 of income a family is likely to donate $22.53 more. For each additional child, a family is likely to donate an additional $52.83. On a scale of 1-5 for each level better a parents perceives the level of education to be they will donate an additional $100.67. If the person has donated in the past they are likely to give $290.97 more than someone who hasn't. all of these are significant at the 5% level of statistical significance except the amount of children which is almost significant at the 15% level.

Given these variables play a factor in the respondents overall probability and donation amount we include them in our regression to determine how the positive or negative framing

[2] Appendix B

effects their donation probability and amount. The results in table 2 show that, for the whole, the negative framing encourages greater donation probability and amount by $26 more than those exposed to the positive framing.[3]

Table 2: Findings in Combined Holt-Edison Sample

Expected Donation	Coefficients	SEs	t-value	P>|t|
Income	0.002	0.001	2.88	0.005
Children	28.301	34.009	0.83	0.407
Quality	102.537	42.392	2.42	0.017
Donated in the Past	213.241	66.799	3.19	0.002
Negative Treatment	26.484	65.598	0.40	0.687
Constant	-415.850	179.431	-2.32	0.022

However, this is not statistically significant and we believe it can be partially attributed to the large difference of those who have and have not donated in the past. We considered the large donation probability and effect that having previously given has on future donation we broke the two groups up to see what affect the framing had on them separately.

When separated, past donors gave $137 less when exposed to negatively framed information compared to the positive group.[4] While the t-stat dictates that the negative framing wasn't significant, it should be noted that the parameter *was* negative. Furthermore, its contra-positive—what happens when those who haven't donated are treated—is compelling, as our analysis shows that they donate far more. The Non-Donors respond much more likely than the overall group to donate when presented with negative framing, giving $139 more than those non

[3] Appendix C
[4] Appendix C

donors exposed to positive framing. This result is nearly significant at the five percent level. Even acknowledging the income effect from the bias present in our sample, the coefficient attached to the negative binomial variable yields a very large increase in donation. We believe this effect was a result of past donors feeling as though their donation didn't matter and had such a minimal impact that it discouraged future donation. Non-donors on the other hand we believe felt ended up feeling guilty about having not donated and felt the need to compensate by giving more and at a high probability when presented negative information.

Given that these results were most pertinent to the interests of the Eugene Education Fund, we've conducted our survey with particular appointment to this framing. We, however, were also able to conduct a series of other questions that address economic and social precepts of public school parents. Our first interest was regarding the trade-off between volunteering time at a child's elementary school and donating money to the same elementary school. Our economic intuition dictated that there would be a substitution effect present; that when parents are disinclined to donate, they will provide charitable giving instead. To put it bluntly, we were wrong:

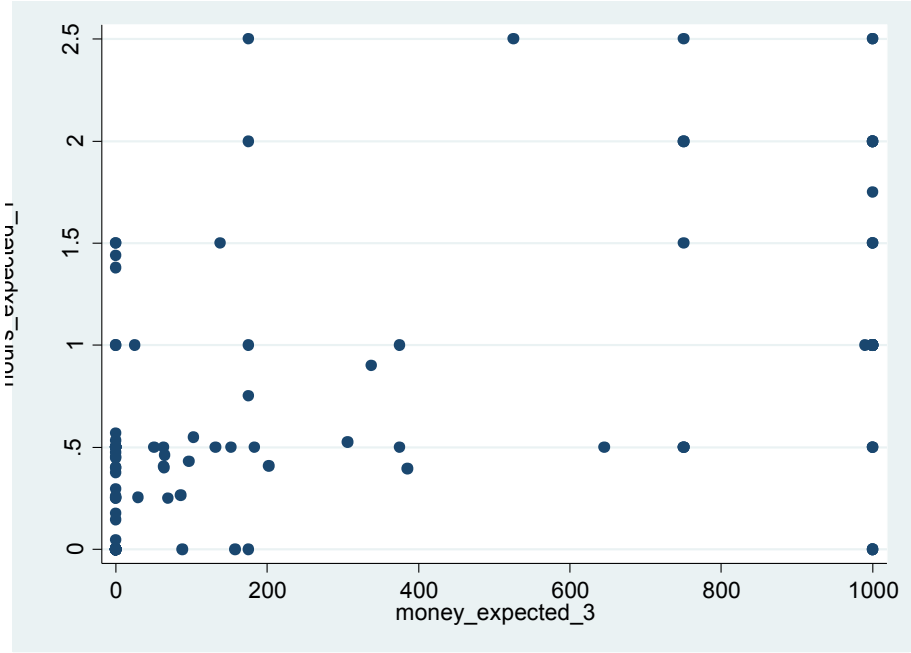
Table 3: Is there a Substitution Effect between Donating and Volunteering?

Expected Donation	Coefficients	SEs	t-value	P>|t|
Volunteer Hours	345.760	41.708	8.31	0.000
Constant	70.352	36.990	1.90	0.059

Instead of a substitution effect, table 3 shows yet another income effect: as people donate more time, they donate more money, and vice-versa. It appears that there is a large contingent of parents in elementary school who are intimately involved, both financially and physically, in

improving their child's education. Thus we can conclude time and money donations are positively correlated with one and other. Additionally of the 46 respondents who stated they donated time but have not donated money in the past, those treated negatively had a vastly higher donation probability and amount, $276 above those who were treated positively.[5]

Figure 1: Scatterplot showing time money tradeoff



A surprising overall finding for the EEF was how their exposure and parental awareness differed between the 2 schools. At Holt only 44% of the parents had heard of the EEF but at Edison over 90% had heard of EEF. However in the entire sample 69% of respondents had heard of the EEF.

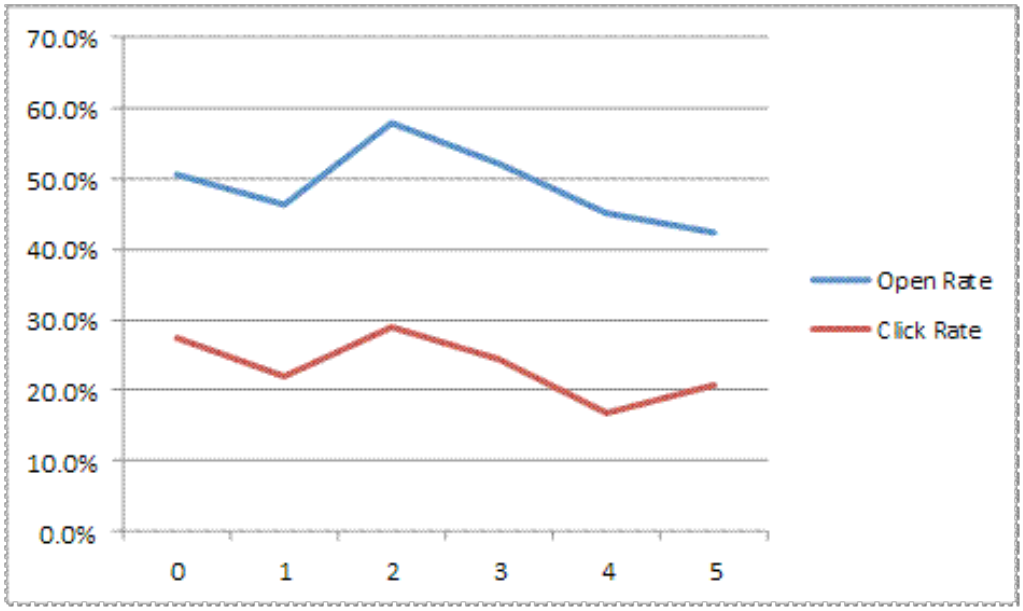
Table 4: Response Rates

	Holt	**Edison**
Yes	33	65
No	41	3

[5] Appendix L

Additionally interesting was the open and click through rate of parents when sorted by grade level. The results defied our initial hypothesis of a negative correlation between grade level and responses. For the aggregate of the sample, open rates decreased each time you went up a grade, except from 1st to second where there was a large increase. Click through rates had a similar result with the only difference being 5th grade parents click through more than 4th grade parents. However when compared to kindergarten, which we expected to have the highest rates, 2nd & 3rd grade have higher rates. For the aggregate we determined that the rate at which someone opens an email from a school administrator as well as the probability they click a contained link is random based on this sample.

Figure 2: Open and Click-Through Rates



To consider the results of the click through and open rate response across grades further we ran it through Stata using a "dprobit" model which is an alternative to the "probit" model so we could observe the marginal effects of changing grades more clearly.[6] The open rate and click through rates for kindergarten at Holt were 45.7 and 43.8 respectively. For Holt, the responses

[6] Appendix D

look highly random across grades for both click through and open rates. The "dprobit" results show how each subsequent grade level differs from the kindergarten level. The open and click through rates for kindergarten at Edison were 55.9 and 63.2 respectively. At Edison open rates seem to be fairly random although showing a slight negative correlation. However other than grade 3, -11.3%, at no other grade level has open rates outside of 5% away from the kindergarten level. The click through rate at Edison, however, shows a strong negative correlation. Second and third grade are 19.5 and 17.6 percent below the kindergarten level while fourth and fifth grade are 27.6 and 24.8 percent less likely to click through to the survey link. These differences are statistically significant and diverge enough from the level of the earliest grade that at Edison we believe the effect is in place that as parents whose children have less time left at Edison are less likely to be engaged with spending time to give information to benefit the school.

Other than the Edison click through effect, the only factor that seemed to have a dramatic effect on whether parents opened and clicked through an email was the number of children they had. Families with multiple children at Holt were over two times as likely to respond to the survey as those with only one child at Holt. At Edison an even more dramatic effect was noticed with household with more than one child at Edison more than three times as likely to respond as families with only one child.

Table 5: Response Demographics

	Holt	**Edison**
Multiple-Children families	37	33
Respondents with Multiple-Children	20	27
Multiple-Children family Response Rate	**54.1%**	**81.8%**
Single Child Families	195	163
Respondents with One Child	52	38
Single Child Family Response Rate	**26.7%**	**23.3%**

Policy implications for EEF

Our results, which are a random representation of the varying socioeconomic demographics present in Eugene, have allowed us to draw some conclusions about donors.

1. Past donors give a greater amount, $116 more[7], when treated with positive information and which means for them to feel like their donations have made a profound impact on the schools and community. Thus encouraging their continued support.
2. Non-donors are more encouraged to donate and in greater amount, $206 more, when treated with negative information and if possible meant to feel a sense of despair about the future education about their lack of support for the fledging level of education.
3. Individuals who have higher incomes, more children and consider the level of education in 4J above that of their peers are more likely to donate an in greater amount.
4. Parent volunteers are a group who invests time in the school, for which we found there to be a positive correlation with money donation. If they are not already donating they are very likely to donated when presented positive information and in large amount.

Individually, it should be noted that the schools performed differently to the given criteria when subjected to the framed treatment. As we've already acknowledged, the schools imbibe a very different demographic—and this could go a long way to explaining the difference. However, viewing the results of each of these individual schools is important to note, and a narrative for each of the tested variables is important to better understand the marginal effects of both the framing and determinants of charitable giving. Furthermore, we believe the story behind the results at each school is very different, and would like to explain the results of each of its own accord. Together though the schools do represent the diverse demographics of Eugene and although their stories may differ, the aggregate information stands to help tell the story of

[7] Appendix E

Eugene. Additionally with 81% of donation handled by the EEF coming through the individual schools, we thought it highly important to note the differences in the two observed to allow EEF a better idea of potential differences and provide the schools with information to guide their future policy choices.

Holt Results

Was it random?

The results from Holt show that, for the most part, our survey was taken by two random groups. The most important factor to consider was the income levels of those taking the survey, and although the negative group's average pre-tax net income was $4,663 higher[8] than the positive groups, and income contributes to greater overall donation and expectancy[9], it was not so large a difference that we felt the need to consider our results from Holt substantially biased. The families in the negative survey on average had 1.36 children attending the school, whereas the positive survey group had a slightly lower average 1.14. The negative group also ranked the perceived quality of education slightly higher than the positive group did with the negative group's answer a 3.8 and the positives groups average a 3.5, on a 5 point scale. Fourteen members of the negative group had donated directly to Holt or the EEF in the past while only four members of the positive group had.

We found that higher income, more children, higher perceived level of education and having donated in the past all contribute to a higher likelihood of donating and in greater quality by varying amounts per variable. The expected donation at Holt based on the variables can be seen below in table 6:

[8] Appendix A
[9] Appendix F

Table 6: How do the Explanatory Variables Contribute to Expected Donations?

Expected Donation	Coefficients	SEs	t-value	P>|t|
Income	0.002	0.001	2.86	0.006
Children	5.653	83.418	0.07	0.946
Quality	116.393	52.757	2.21	0.031
Donated in the Past	85.991	92.630	0.93	0.357
Constant	-466.826	251.355	-1.86	0.068

Due to this bias we can conclude that although our coefficients may contain some degree of multicollinearity, the results are significant enough on their own—diverge enough from the mean—that we will accept them despite the small amount of white noise present through these other variables.

Effect of these variables

Holt families are more likely to give if they have more children and give a lower amount the fewer children they have. Also, the more money a family has the more likely they are to donate and the larger the expressed donation amount. Finally, the better the perceived level of education the less likely the family is to donate, but for those who do donate, the higher the perceived quality of education the higher the expressed donation. Holt families that have more children have a lower pre-tax income by $6,117 per additional child.[10] They also have a greater amount of family expenses associated with having additional children. Despite these factors, multi-child families derive a greater marginal benefit than single child household through their donation. Their donation goes to better a school which supports multiple of their children thus benefitting it benefits multiple of their students, who they have a vested interest in the success of

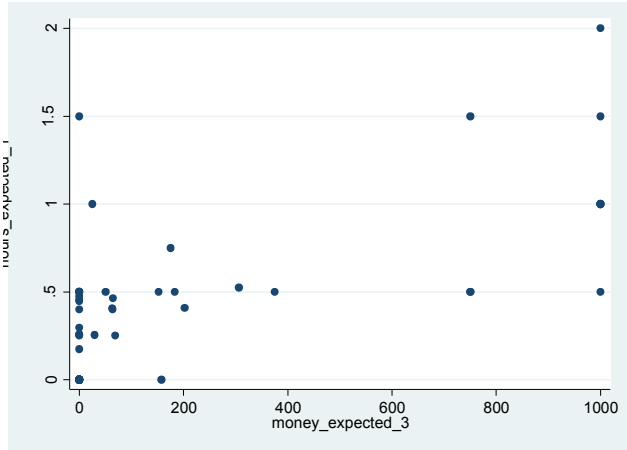
[10] Appendix I

opposed to just one. Those who think the quality of education is poor may be more inclined to donate to raise the level. Those who perceive the education as higher also have a lower income than counterparts who believe it to be lower. The perceived high quality group having a lower income helps establish why they are less likely to donate.[11]

Time/Money tradeoffs

We initially expected there to be a substitution effect between these two variables with people giving less time as they contributed more money. However the data for Holt shows a positive relationship between the two variables. As one variable increases, so does the other.

Figure 3: Relating Time Expected to Money Expected



The data shows the effect is rather drastic at Holt with expected donation rising $566 for every additional hour of time donated.[12] Thirty of our respondents have donated time but not money to Holt in the past. Those who responded to the negative framing expressed giving $242 more than those who received the positive framing.[13] This group, givers of time not money, represents an untapped donation base who responds strongly to negatively framed treatment.

[11] Appendix J
[12] Appendix K
[13] Appendix L

Results

When we ran the full regression Results from Holt, came back with the negative framing accounting for a significantly greater effect on the respondents than the positive framing in their expressed willingness to donate and donation amount. We accounted for the other variables that influence donation and still found the negative framing to have had an overall greater impact than the positive framing.

Table 7: What Happens When We Include Treatment?

Expected Donation	Coefficients	SEs	t-value	P>|t|
Negative Treatment	108.475	87.412	1.24	0.219
Income	0.002	0.001	2.78	0.007
Children	-10.526	84.085	-0.13	0.901
Quality	100.610	54.054	1.86	0.067
Donated in the Past	52.905	96.0176	0.55	0.584
Constant	-431.072	251.955	-1.71	0.092

Past donors compared to Non-donors

Based on our overall finding that families who have donated in the past are highly likely to donate again in the future, we examined how the framing affected past donors compared to non-donors. At Holt our results showed that the positive framing caused both past donors and non-donors to express a higher giving probability and donation amount. The difference in giving probability was larger and much more statistically significant in the non-donors group, the statistical significance partially due to it being a sample size of 53 opposed to the 18 past donors. However, past donors expressed a lower amount of future donation on average than their

positively treated counterparts; $169 for non-donors and only $44 for past donors.[14] Additionally those who have donated in the past have an average income of about $11,620[15] higher than those who have not donated, which may account for their higher expressed future donation opposed to the framing.

Holt policy implications

Having a highly stratified and diverse population, Holt has families from all ends of the spectrum at their school. For the purpose of garnering donations it is obvious that negative information actually has better results in encouraging donations, and larger ones at that, than positive information for both past and non-donors. Additionally, from a purely policy standpoint we have a few recommendations for Holt.

1. All Holt parents responded as more likely to donate and in high amount when presented negative information.
2. Holt families with more kids, greater income and who perceive the level of education offered as higher were more likely to donate and in greater amount than their counterparts. Some of these criteria are hard to identify based on information available to Holt, however number of children is known and income level can be reasonably inferred.
3. Holt parent volunteers are more likely to donate money and in larger amount and we found there was a portion of volunteers who have not given money.

Two questions were asked at the request of the EEF and Holt's principal. They were whether people would be more willing to donate if they could select what area their donation went specifically towards & whether people would be more likely to volunteer if the school

[14] Appendix G
[15] Appendix H

offered them training. The results which can be seen below indicate that getting to earmark where a donation goes to would be beneficial from the standpoint of how likely a person is to donate. Whether people would be more willing to donate time if they could be trained seemed to come back more on the low end. Although more people responded as somewhat/much more inclined than not, the raw numbers seem on the lower end.

Table 8: Does Training or Specific Selection of Donation Location Increase Involvement?

HOLT	**More Likely to donate**	**More likely to volunteer**
No	18	34
Somewhat more inclined	38	32
Much more inclined	16	7

Edison Results

Was it random?

There was evident bias in our treatment groups at Edison. The negatively treated group was substantially richer than the positive group—so much so that the coefficient upon the treatment variable may have been biased upwards. Regressing negative upon income yielded that families receiving the negatively framed information were likely to be in excess $25,000 dollars wealthier.[16] While it was our best intention to make the survey unbiased, the sampling method resulted in potentially biasing results, as our average surveyed family is already significantly wealthier when given the negative treatment. However, we should note that the average family does not donate a substantially different amount based upon their income,[17] and that while the difference in income is large; it is not necessarily correlated to a large change in donation. We have accounted for this by including income in our models, taking out whatever biases it may

[16] Appendix A
[17] Appendix B

cause. There may be a few sources of bias, but we do not see them as absolutely debilitating and believe that our analysis yields potentially effective results.

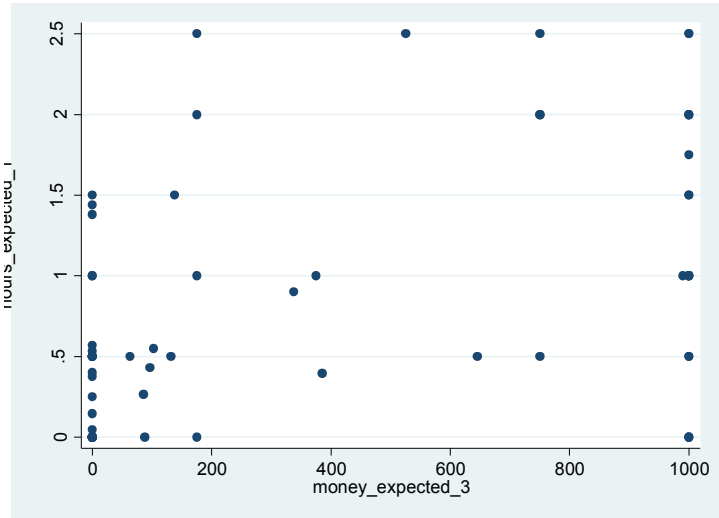
Time/Money tradeoffs

In this same vein, we tested the substitution effect between hours a family expects to volunteer and the money they expect to donate. We also see a strong positive correlation between hours that a family expects to work and the amount a family expects to donate at Edison, similar to Holt. This is contrary to our initial theory, that there would be an underlying substitution effect. Our results seem to indicate that there is a large contingent of highly involved parents, both monetarily and in the classroom, and a group of parents who support with neither. Regressions yielded the following results in table 9:

Table 9: Is there a Substitution Effect between Time Volunteer and Money Given?

Expected Donation	Coefficients	SEs	t-value	P>|t|
Volunteer Hours	263.551	59.548	4.43	0.000
Constant	149.805	66.892	2.24	0.028

Figure 4: Holt Time Volunteered and Money Donated Trade-off



Notwithstanding the potential for bias, these results are very different than we anticipated: rather than being constrained by their time-money budget, families are eschewing economic principles and spending pell-mell on their kids. This lends itself to our current interpretation—that Edison contains two groups of families, one of which is very active in their child's schooling. The outliers that exist high on time or money we believe can be explained by the fact that many Edison parents are graduate teaching fellows, who although they may be capable of donating plenty of time, do not have the income level yet to donate money. Of the parents who gave time to Edison, but not money, those exposed to negatively framed treatment they were highly more likely to donate and in much greater amount, $528 above those treated with positive information.[18] These results are statistically significant at the 5% level.

Results

While we saw the same results at Edison as were viewed at Holt, negative framing had a much different greater impact on willingness to donate. Because our process of randomization created potentially biased groups for our positively and negatively framed treatment, we have lingering concerns about our conclusions. This being said our results in table 10 indicate the negative framing resulted in respondents being more willing to donate than those receiving the positive framing.

Table 10: What Affects Expected Donation at Edison?

Expected Donation	Coefficients	SEs	t-value	P>|t|
Negative	5.264	104.908	0.05	0.960
Income	0.001	0.001	1.05	0.299
Children	30.417	41.260	0.74	0.464

[18] Appendix L

Quality	110.906	69.704	1.59	0.117
Donated in the Past	314.614	106.005	2.97	0.004
Constant	-398.190	295.054	-1.35	0.182

This model, however, does not result in statistical significance for the treatment variable. Given the results we found at Holt elementary we believe that should it not have been for this sampling error we would see the same results, with the negative treatment having a 5% statistical significance. Edison has a wide range of incomes, yet the negative survey received responses from an unusually high number of wealthy families compared to the positive framing which lowered the level of statistical significance for impact of treatment. The only difference between the Edison and Holt results is Edison respondents were more likely to donate the higher they perceived the education to be. This however was also not even close to statically significant with a P-value of 0.960.

Past donors compared to Non-donors

This result was, potentially, caused by the affluence with which the treated group was graced; or it could have been the result of other, perhaps stronger factors. Intuitively, donating is explained in large part by income and also by whether or not a family has donated in the past. While we first assumed that much of the negative effect was caused by a bias in incomes (and granted, we believe some of it was), the difference was stark between families who had and hadn't donated in the past. Results showed Edison families who had not donated in the past were much more inclined to donate when given the negatively framed treatment, in an amount nearing $300. However, Edison families who had donated were much more receptive to the positive framed information and were less likely to donate, and, in lower amount when subjected to the

negatively framed information.[19] These Edison parents we believe are highly involved and invested in their children's education, 55 of the respondent's volunteer at the school compared to only 44 at Holt, and the negative framing offends them thus causing lower likelihood and amount of donations.

What these results depict is a strong intention to donate given negative framing if a person has not donated in the past. A simple story can be constructed: parents who hear that their child's quality of education will decline are more likely to contribute, if they feel guilty of having failed to support the school in the past. Parents who have actively helped in the past, however, are enraged that their donations are not improving their children's education and decide to donate less in the future.

What's perhaps more interesting and far more pertinent is what happens to these same regressions once we control for having donated time in the past. These specific families are particularly observant of future donations, and our numbers suggest that they will donate in nearly $500 dollars. This resulted in a t-statistic of 3.32, clearly showing that these families would like to contribute more. In table 11 are the regression results with the restraints being that families have donated time (using our proxy questions), had not donated in the past and were from Edison:

Table 11: Do Families Donate if they've Given Time, but not Money in the Past after Treatment?

Expected Donation	Coefficients	SEs	t-value	P>|t|
Negative	496.653	144.0849	3.67	0.002
Income	0.001	0.0013955	0.87	0.397
Constant	7.146	87.4562	0.08	0.936

[19] Appendix M

These results are astounding: instead of being offended, like those who had donated money in the past at Edison, these families were significantly more likely to donate after being treated negatively—with a large coefficient.

Edison policy implications

The Eugene Education Fund and Edison Elementary School would both benefit from treating particular groups in a certain way—so as to tease out more potential donations. Given the large amount that negative information increased expected donations, we see potential for both parties to improve their school and the school system at large by giving negative messages to parents who have not donated in the past. Some policy suggestions include:

1. Parents who have donated in the past responded as more likely to donate and in higher amount when given positive information to encourage future donations. Those who have not donated in the past responded better to negative information.
2. Parents who volunteer time but not money responded as more likely to donate and in larger amount when exposed to negative information.
3. Edison families with more children, higher income and who perceive the quality of education as high are more likely to donate than their counterparts.

There is a large untapped contingent of potential donors at Edison. The EEF would be well-served to target these families in the future and present them with negative, but not apocalyptic, messages of the future of the 4J school district. From our given sample, which produced statistically significant results, we encourage the EEF to target families who haven't donated in the past, but are willing to donate time to the school. We suggest that these parents in particular be selected to assume future donation requests, as these parents are perhaps the most likely to give to the EEF. Our results show they should be treated with negative information

yielding a higher give probability and $302 more per family then when treated with positive information.[20]

The initial concern for the EEF should be whether announcing negative things to these parents would discourage them from donating. However, as we have seen, parents who volunteer and have not donated still respond to negative information about the school. These results are significant at the 1 percent level, and correspond to an extra $528.57 in donations. Assuming that our survey was answered correctly and that the bias present in our randomization methods wasn't so great as to violently influence these numbers, the EEF can garner extra donations from this group.

The additional questions asked on the behalf of EEF and the principals came back with results similar to Holt at Edison. Parents did not seem more likely to donate time if training was provided with over 50% stating it wouldn't influence them to volunteer. However parents did seem to like the idea of deciding where their money went directly towards which seems like a low cost way to encourage greater donations.

Table 12: Do Training and Location-Specific Donations Help at Edison?

Edison	**More Likely to Donate**	**More Likely to Volunteer**
No	27	39
Somewhat more inclined	32	24
Much more inclined	9	2

5. Explaining the Difference

Holding all other factors constant in our two separate groups we find, at a relatively high level of statistical significance, that when approached about giving to a weak link public good

[20] Appendix N

such as public education, parents of students in the public education system will respond in a manner more making them more likely to donate if they are approached with negative information. However this framing will be far more effective for parents who have not donated in the past and parents who have will be more encouraged to donate when presented positive information.[21] Although Past donors responded differently at Holt when compared to Edison and the aggregate result we believe this is in part due to the Greater involvement of Edison parents and them taking the treatment far more personally as past donors. Edison has a larger amount and greater percentage of its parents who donate both time and money to the school, based on our respondents. Whereas only 44 Holt parents give time, 59 percent, 55 Edison parents, 81 percent, have volunteered time. Based on the positive correlation we found between time and money given it is further no surprise then that at Edison 40 respondents have donated money, 59 percent compared to only 18 at Holt, 24 percent.

6. Conclusions

Our findings lend credence to the belief that the EEF and schools within the 4J district could find more efficient methods of charitable giving by framing information about the future of the Eugene schools in a negative, although accurate, light. The framing is most effective when it is used selectively, we have found; those who have already given money to 4J are discouraged from predicting that they will donate in the future when told that their donations had little tangible impact on the district, as we expect they interpret the negative message. So for its past donors, the EEF would be best served by using positive information that tells about the bright side of the district and how past donations have made an effort in supporting and improving their child's education.

[21] Appendix C

We have also found that parents who have more children, high income, perceive the quality of education as high and those who have given time are characteristics that relate with high giving probability and amounts. The more children you have, the higher the marginal benefit of a dollar donated to the child's school, which we believe is the reason parents are more inclined to give if they have more kids. Intuitively, and confirmed by our analysis, the more income you have the more money you would be capable of donating to charitable organizations. Contrary to our hypothesis there is not a time against money substitution effect but instead the more involved you are with the school the more likely you will be to both give time and financial support.

Using these conclusions, the EEF can find specific factors that are predictive of future donating patterns. By targeting families who have exhibit these characteristics, but have not donated in the past, the EEF would see an increase in donation if these families are shown negative facts about the future of the 4J school district. Our conclusions are based upon the survey results of Holt and Edison elementary schools, which we believe to be representative of the Eugene School District as a whole. Should this be true, there is great potential to improve local education in Eugene using the findings of this paper.

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Appendix A-

Holt- Negative group on average had $4,663 more pretax income.

Source	SS	df	MS
Model	390228597	1	390228597
Residual	1.6629e+11	70	2.3756e+09
Total	1.6668e+11	71	2.3476e+09

Number of obs =	72
F(1, 70) =	0.16
Prob > F =	0.6865
R-squared =	0.0023
Adj R-squared =	-0.0119
Root MSE =	48740

incomelow	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	4663.313	11505.89	0.41	0.686	-18284.46	27611.09
_cons	77573.53	8358.836	9.28	0.000	60902.36	94244.7

Edison- Negative group on average had $25,428 more pretax income.

Source	SS	df	MS
Model	1.0809e+10	1	1.0809e+10
Residual	2.0449e+11	65	3.1461e+09
Total	2.1530e+11	66	3.2622e+09

Number of obs =	67
F(1, 65) =	3.44
Prob > F =	0.0683
R-squared =	0.0502
Adj R-squared =	0.0356
Root MSE =	56090

incomelow	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	25428.57	13718.66	1.85	0.068	-1969.475	52826.62
_cons	90000	9915.353	9.08	0.000	70197.67	109802.3

Appendix B

Aggregate Income effect

Source	SS	df	MS
Model	2010785.32	1	2010785.32
Residual	19778377.3	136	145429.245
Total	21789162.6	137	159044.982

Number of obs =	138
F(1, 136) =	13.83
Prob > F =	0.0003
R-squared =	0.0923
Adj R-squared =	0.0856
Root MSE =	381.35

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
incomelow	.0022534	.000606	3.72	0.000	.001055	.0034519
_cons	60.15254	64.37961	0.93	0.352	-67.16206	187.4671

Aggregate Children effect

Source	SS	df	MS
Model	336805.392	1	336805.392
Residual	21985954.6	137	160481.421
Total	22322760	138	161759.13

Number of obs =	139
F(1, 137) =	2.10
Prob > F =	0.1497
R-squared =	0.0151
Adj R-squared =	0.0079
Root MSE =	400.6

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
children	52.83291	36.46929	1.45	0.150	-19.28261	124.9484
_cons	194.2358	63.61948	3.05	0.003	68.43265	320.039

Aggregate Quality effect

Source	SS	df	MS
Model	805765.952	1	805765.952
Residual	21303166	134	158978.851
Total	22108932	135	163769.867

Number of obs =	136
F(1, 134) =	5.07
Prob > F =	0.0260
R-squared =	0.0364
Adj R-squared =	0.0293
Root MSE =	398.72

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
quality	100.6748	44.71839	2.25	0.026	12.22965	189.12
_cons	-99.55617	171.1439	-0.58	0.562	-438.0489	238.9366

Aggregate Donated effect

Source	SS	df	MS
Model	2831687.87	1	2831687.87
Residual	19340773.1	135	143264.986
Total	22172460.9	136	163032.801

Number of obs =	137
F(1, 135) =	19.77
Prob > F =	0.0000
R-squared =	0.1277
Adj R-squared =	0.1213
Root MSE =	378.5

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
donated	290.9748	65.44896	4.45	0.000	161.5369	420.4127
_cons	152.9415	42.58498	3.59	0.000	68.72148	237.1615

Appendix C

Aggregate response

Source	SS	df	MS
Model	4479229.56	5	895845.913
Residual	16953634.6	127	133493.185
Total	21432864.1	132	162370.183

Number of obs =	133
F(5, 127) =	6.71
Prob > F =	0.0000
R-squared =	0.2090
Adj R-squared =	0.1778
Root MSE =	365.37

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	26.48352	65.59832	0.40	0.687	-103.3237	156.2908
children	28.3007	34.00915	0.83	0.407	-38.99728	95.59867
incomelow	.0017651	.0006119	2.88	0.005	.0005542	.0029759
quality	102.5366	42.392	2.42	0.017	18.65047	186.4227
donated	213.2408	66.79866	3.19	0.002	81.05827	345.4232
_cons	-415.8503	179.4305	-2.32	0.022	-770.9109	-60.78975

Aggregate Non-Donors

Source	SS	df	MS
Model	2132672.07	4	533168.017
Residual	5979205.62	71	84214.1636
Total	8111877.68	75	108158.369

Number of obs =	76
F(4, 71) =	6.33
Prob > F =	0.0002
R-squared =	0.2629
Adj R-squared =	0.2214
Root MSE =	290.2

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	139.1351	70.45415	1.97	0.052	-1.346483	279.6167
incomelow	.0020016	.0006792	2.95	0.004	.0006473	.0033559
children	86.94546	52.20668	1.67	0.100	-17.1517	191.0426
quality	79.02296	42.33191	1.87	0.066	-5.384476	163.4304
_cons	-481.3542	184.0634	-2.62	0.011	-848.3662	-114.3422

Aggregate Donors

Source	SS	df	MS
Model	807820.679	4	201955.17
Residual	10040793	52	193092.173
Total	10848613.7	56	193725.244

Number of obs =	57
F(4, 52) =	1.05
Prob > F =	0.3926
R-squared =	0.0745
Adj R-squared =	0.0033
Root MSE =	439.42

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	-137.1932	120.127	-1.14	0.259	-378.2457	103.8592
incomelow	.001251	.0010615	1.18	0.244	-.000879	.0033811
children	7.246508	47.82685	0.15	0.880	-88.7251	103.2181
quality	115.4614	85.92432	1.34	0.185	-56.9584	287.8811
_cons	-61.57593	375.3715	-0.16	0.870	-814.814	691.6621

<u>Appendix D-</u>

Open/click through responses at Holt and Edison

v1	HOLT	HOLT	HOLT	EDISON	EDISON	EDISON
	-1	-2	-3	-4	-5	-6
VARIABLES	open	click	click	open	click	click
grade_1	**-0.0528**	-0.0754	**-0.117**	**-0.00716**	-0.00694	**-0.00694**
	-0.0802	-0.0603	-0.12	-0.0896	-0.0725	-0.122
grade_2	**0.122**	0.114	**0.108**	**0.0183**	-0.0874	**-0.195***
	-0.0821	-0.0767	-0.116	-0.0922	-0.0661	-0.114
grade_3	**0.149***	0.0877	**0.0377**	**-0.113**	-0.131**	**-0.176**
	-0.0843	-0.0782	-0.119	-0.0832	-0.0581	-0.113
grade_4	**-0.0671**	-0.0464	**-0.038**	**-0.0411**	-0.149***	**-0.276*** **

	-0.0853	-0.0666	-0.133	-0.0903	-0.0577	-0.106
grade_5	**-0.0831**	0.0227	**0.155**	**-0.059**	-0.140**	**-0.248****
	-0.0825	-0.0714	-0.128	-0.0942	-0.0602	-0.114
Observations	432	432	202	356	356	186

Appendix E-
Aggregate Past Donors

Source	SS	df	MS
Model	458547.699	2	229273.849
Residual	10390066	54	192408.629
Total	10848613.7	56	193725.244

Number of obs =	57
F(2, 54) =	1.19
Prob > F =	0.3116
R-squared =	0.0423
Adj R-squared =	0.0068
Root MSE =	438.64

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	-138.4384	119.4159	-1.16	0.251	-377.8528	100.976
incomelow	.0011156	.0010537	1.06	0.294	-.0009969	.0032281
_cons	398.8495	145.2334	2.75	0.008	107.6742	690.0248

Aggregate Non-Donors

Source	SS	df	MS
Model	1592164.87	2	796082.433
Residual	6585340.39	76	86649.2156
Total	8177505.25	78	104839.811

Number of obs =	79
F(2, 76) =	9.19
Prob > F =	0.0003
R-squared =	0.1947
Adj R-squared =	0.1735
Root MSE =	294.36

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	174.8584	67.20552	2.60	0.011	41.00699	308.7098
incomelow	.0019903	.0006735	2.96	0.004	.0006489	.0033316
_cons	-89.05628	66.98062	-1.33	0.188	-222.4597	44.34718

Appendix F-
Holt income effect

Source	SS	df	MS
Model	699389.89	1	699389.89
Residual	7954648.57	69	115284.762
Total	8654038.46	70	123629.121

Number of obs =	71
F(1, 69) =	6.07
Prob > F =	0.0163
R-squared =	0.0808
Adj R-squared =	0.0675
Root MSE =	339.54

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
incomelow	.0020694	.0008402	2.46	0.016	.0003933	.0037454
_cons	18.15426	78.97597	0.23	0.819	-139.3985	175.707

Edison income effect

Source	SS	df	MS
Model	837424.571	1	837424.571
Residual	11328025.5	65	174277.315
Total	12165450.1	66	184325.001

Number of obs =	67
F(1, 65) =	4.81
Prob > F =	0.0320
R-squared =	0.0688
Adj R-squared =	0.0545
Root MSE =	417.47

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
incomelow	.0019722	.0008997	2.19	0.032	.0001754	.003769
_cons	149.4769	106	1.41	0.163	-62.2196	361.1735

Appendix G-

Holt Non-Donors

Source	SS	df	MS
Model	342060.601	1	342060.601
Residual	4871703.57	51	95523.5995
Total	5213764.17	52	100264.696

Number of obs =	53
F(1, 51) =	3.58
Prob > F =	0.0641
R-squared =	0.0656
Adj R-squared =	0.0473
Root MSE =	309.07

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	161.3931	85.28814	1.89	0.064	-9.830035	332.6161
_cons	78.75741	57.39266	1.37	0.176	-36.46316	193.978

Holt Past Donors

Source	SS	df	MS
Model	6090.84556	1	6090.84556
Residual	3198026.6	16	199876.663
Total	3204117.45	17	188477.497

Number of obs =	18
F(1, 16) =	0.03
Prob > F =	0.8636
R-squared =	0.0019
Adj R-squared =	-0.0605
Root MSE =	447.08

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	44.24672	253.4681	0.17	0.864	-493.0816	581.5751
_cons	250	223.5378	1.12	0.280	-223.8791	723.8791

Appendix H-

Aggregate Income of past donors

Source	SS	df	MS
Model	1.8229e+09	1	1.8229e+09
Residual	1.6486e+11	70	2.3551e+09
Total	1.6668e+11	71	2.3476e+09

Number of obs =	72
F(1, 70) =	0.77
Prob > F =	0.3820
R-squared =	0.0109
Adj R-squared =	-0.0032
Root MSE =	48530

incomelow	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
donated	11620.37	13208.07	0.88	0.382	-14722.3	37963.04
_cons	77129.63	6604.036	11.68	0.000	63958.3	90300.96

Appendix I-

Holt family income

Source	SS	df	MS
Model	631482124	1	631482124
Residual	1.6605e+11	70	2.3721e+09
Total	1.6668e+11	71	2.3476e+09

Number of obs =	72
F(1, 70) =	0.27
Prob > F =	0.6075
R-squared =	0.0038
Adj R-squared =	-0.0104
Root MSE =	48705

incomelow	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
children	-6117.284	11856.27	-0.52	0.608	-29763.87	17529.3
_cons	87936.21	16354.68	5.38	0.000	55317.83	120554.6

Appendix J-

Holt donation expected based on quality

Source	SS	df	MS
Model	316677.006	1	316677.006
Residual	8275490.73	67	123514.787
Total	8592167.74	68	126355.408

Number of obs =	69
F(1, 67) =	2.56
Prob > F =	0.1140
R-squared =	0.0369
Adj R-squared =	0.0225
Root MSE =	351.45

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
quality	86.2103	53.84066	1.60	0.114	-21.2561	193.6767
_cons	-128.1391	203.4248	-0.63	0.531	-534.1767	277.8986

Holt donation expected based on children

Source	SS	df	MS
Model	5718.07735	1	5718.07735
Residual	8648320.38	69	125337.977
Total	8654038.46	70	123629.121

Number of obs =	71
F(1, 69) =	0.05
Prob > F =	0.8315
R-squared =	0.0007
Adj R-squared =	-0.0138
Root MSE =	354.03

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
children	-18.45509	86.40371	-0.21	0.831	-190.8258	153.9156
_cons	209.3648	119.5839	1.75	0.084	-29.19857	447.9281

Holt Donation based on income

Source	SS	df	MS
Model	699389.89	1	699389.89
Residual	7954648.57	69	115284.762
Total	8654038.46	70	123629.121

Number of obs =	71
F(1, 69) =	6.07
Prob > F =	0.0163
R-squared =	0.0808
Adj R-squared =	0.0675
Root MSE =	339.54

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
incomelow	.0020694	.0008402	2.46	0.016	.0003933	.0037454
_cons	18.15426	78.97597	0.23	0.819	-139.3985	175.707

<u>Appendix K-</u>

Holt Time vs. Money tradeoffs

Source	SS	df	MS
Model	4499624.65	1	4499624.65
Residual	4154413.81	69	60208.8958
Total	8654038.46	70	123629.121

Number of obs =	71
F(1, 69) =	74.73
Prob > F =	0.0000
R-squared =	0.5199
Adj R-squared =	0.5130
Root MSE =	245.38

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hours_expe~1	566.3536	65.51335	8.64	0.000	435.658	697.0491
_cons	-21.68869	37.71133	-0.58	0.567	-96.92074	53.54335

<u>Appendix L-</u>

Aggregate: expected donation of non-donors who have volunteered time

Source	SS	df	MS
Model	2837905.11	4	709476.278
Residual	4336925.26	41	105778.665
Total	7174830.38	45	159440.675

Number of obs =	46
F(4, 41) =	6.71
Prob > F =	0.0003
R-squared =	0.3955
Adj R-squared =	0.3366
Root MSE =	325.24

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	276.9672	105.2788	2.63	0.012	64.35235	489.5821
children	47.41134	67.76545	0.70	0.488	-89.44376	184.2665
quality	124.9112	72.9222	1.71	0.094	-22.35813	272.1806
incomelow	.0026666	.0009344	2.85	0.007	.0007794	.0045537
_cons	-654.9341	315.7799	-2.07	0.044	-1292.665	-17.20372

Holt: expected donation of non-donors who have volunteered time

Source	SS	df	MS
Model	442351.276	1	442351.276
Residual	4070838.11	28	145387.075
Total	4513189.39	29	155627.22

Number of obs =	30
F(1, 28) =	3.04
Prob > F =	0.0921
R-squared =	0.0980
Adj R-squared =	0.0658
Root MSE =	381.3

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	242.8583	139.2298	1.74	0.092	-42.34103	528.0577
_cons	118.3333	98.45035	1.20	0.239	-83.33307	319.9997

Edison: expected donation of non-donors who have volunteered time

Source	SS	df	MS
Model	1305841.26	2	652920.632
Residual	1489644.53	16	93102.7833
Total	2795485.8	18	155304.766

Number of obs =	19
F(2, 16) =	7.01
Prob > F =	0.0065
R-squared =	0.4671
Adj R-squared =	0.4005
Root MSE =	305.13

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	496.6534	149.6693	3.32	0.004	179.3685	813.9382
incomelow	.0012158	.0013955	0.87	0.397	-.0017426	.0041742
_cons	-85.55987	138.1357	-0.62	0.544	-378.3944	207.2747

<u>Appendix M-</u>
Edison non-donors

Source	SS	df	MS
Model	689283.96	2	344641.98
Residual	2274262.12	23	98880.9617
Total	2963546.08	25	118541.843

Number of obs =	26
F(2, 23) =	3.49
Prob > F =	0.0476
R-squared =	0.2326
Adj R-squared =	0.1659
Root MSE =	314.45

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	262.6545	127.4168	2.06	0.051	-.9273659	526.2363
incomelow	.0013704	.0012694	1.08	0.292	-.0012555	.0039962
_cons	-92.75473	126.7891	-0.73	0.472	-355.038	169.5285

Edison Donors

Source	SS	df	MS
Model	329898.509	2	164949.254
Residual	6724674.89	36	186796.525
Total	7054573.4	38	185646.668

Number of obs =	39
F(2, 36) =	0.88
Prob > F =	0.4223
R-squared =	0.0468
Adj R-squared =	-0.0062
Root MSE =	432.2

money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	-165.304	142.8906	-1.16	0.255	-455.0997	124.4916
incomelow	.001115	.0012261	0.91	0.369	-.0013716	.0036016
_cons	462.2008	161.1155	2.87	0.007	135.4435	788.9581

<u>Appendix N-</u>
Aggregate parents who donate time but not money

Source	SS	df	MS
Model	1005141.49	1	1005141.49
Residual	5763574.98	42	137227.976
Total	6768716.46	43	157412.011

Number of obs =	44
F(1, 42) =	7.32
Prob > F =	0.0098
R-squared =	0.1485
Adj R-squared =	0.1282
Root MSE =	370.44

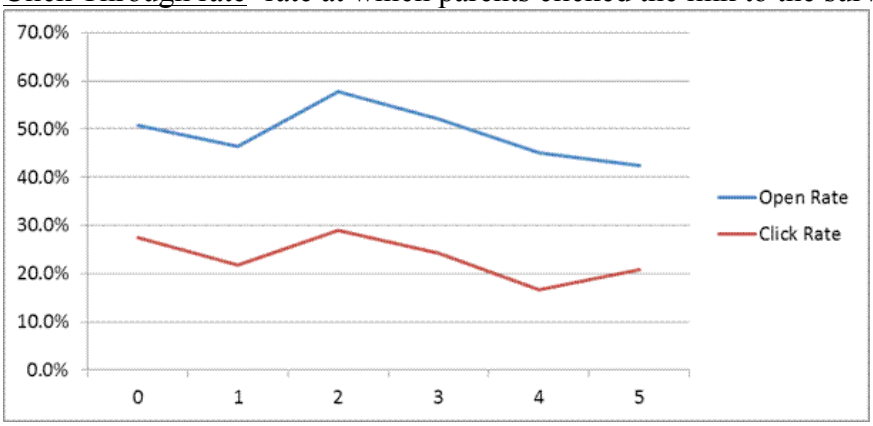
money_expe~3	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
negative	302.5982	111.8083	2.71	0.010	76.95991	528.2365
_cons	112.8436	80.83728	1.40	0.170	-50.29266	275.9798

EXEC Summaries Presented to Clients

Overall results (Holt & Edison)

Open Rate- rate at which parents opened the email

Click Through rate- rate at which parents clicked the link to the survey.



Grade level does not affect parent's responsiveness

Additional Details

- Parents would be more likely to donate if they could select the specific area for their donations allocation.

	More likely to donate	Percentage
No	45	32.1%
Somewhat more inclined	70	50.0%
Much more inclined	25	17.9%

- Overall 69% of respondents are aware of EEF however awareness is vastly different across schools.

	Holt	Edison	Total
Yes	33	65	98
No	41	3	44

Comparison of Time vs. Money donations

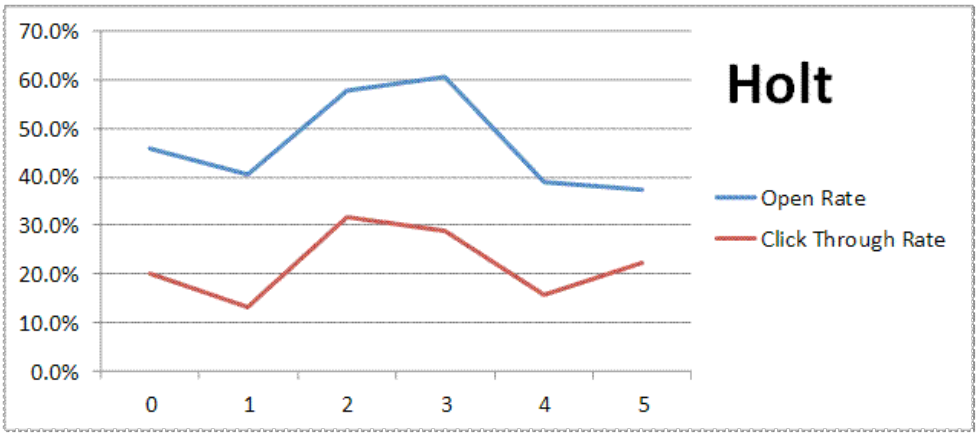
- Parents who donate time are more likely to donate money than those who don't donate time. There is not a substitution effect between the 2 variables.
- We observed 46 individuals who donated time but not money and using negative information made them more likely to donate $247 more than those treated positively.

Effect of Positive/Negative information on parents

- Past Donors- On average, when treated with positive information, past donor responds as more likely to donate and in greater amount, $137 more.
- Non-Donors- On average, when treated with negative information, those who have not donated in the past are more likely to donate and in higher amount, $139 more.

Executive Summary-Holt

Open Rate- rate at which parents opened the email
Click Through rate- rate at which parents clicked the link to the survey.



Grade increases do not affect parent's responsiveness

Perceived quality of Holt education

- On a scale of 1-5, with 1 being poor and 5 being excellent, parents ranked Holt a 3.68, closer to above average than average.

Additional Details

- Parents would not be significantly more inclined to volunteer if provided training.
- Parents would be more likely to donate if they could select the specific area for their donations allocation.

HOLT	More Likely to donate	More likely to volunteer
No	18	34
Somewhat more inclined	38	32
Much more inclined	16	7

Comparison of Time vs. Money donations

- Parents who donate time are more likely to donate money than those who don't donate time. There is not a substitution effect between the 2 variables.
- We observed 30 individuals who donated time but not money and using negative information made them more likely to donate. Parents like these should be targeted.

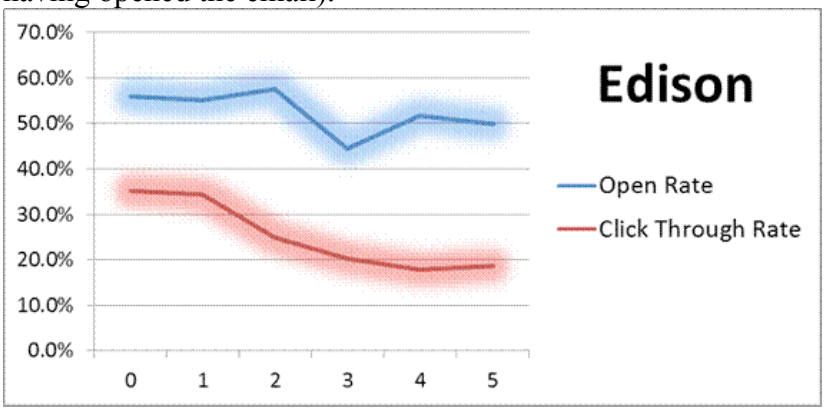
Effect of Positive/Negative information on parents

- Past donors appear to respond to a negative frame by reporting that they plan to donate in slightly higher amounts. In particular, planned donations decrease by $44 for those who were exposed to negative information and had given in the past.
- Non-donors gave $161 more on average when exposed to negatively framed information compared to their counterparts who received the positively framed information.

Executive Summary-Edison

Open Rate- rate at which parents opened the email

Click Through rate- rate at which parents clicked the link to the survey (not conditional on having opened the email).



As grade increases, parents tend to be less responsive.

Perceived quality of Edison education

- On a scale of 1-5, with 1 being poor and 5 being excellent, parents ranked Edison a 3.7, closer to above average than average.

Additional Details

- Parents would not be significantly more inclined to volunteer if provided training.
- Parents would be more likely to donate if they could select the specific area for their donations allocation.

Edison	More Likely to Donate	More Likely to Volunteer
No	27	39
Somewhat more inclined	32	24
Much more inclined	9	2

Comparison of Time vs. Money donations

- Parents who donate time are more likely to donate money than those who don't.
- We observed 19 individuals who donated time but not money and using negative information made them more likely to donate.

Effect of Positive/Negative information on parents

- Past donors appear to respond to a negative frame by reporting that they plan to donate in lower amounts. In particular, planned donations decrease by $109 for those who were exposed to negative information.
- Non donors respond as being more likely to donate and in greater quantity, $297 more, when exposed to negative information.

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