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Role of Social Networks and Individual Endowments in Meeting Fundraising Targets: An Economic Experiment

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Cornhusker Economics

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Market Report	Year Ago	4 Wks Ago	3-25-16
Livestock and Products, Weekly Average			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight.	165.72	132.00	*
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb.	280.75	198.24	193.84
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb.	220.64	165.76	158.93
Choice Boxed Beef, 600-750 lb. Carcass.	248.92	226.24	226.62
Western Corn Belt Base Hog Price Carcass, Negotiated.	55.83	51.55	61.97
Pork Carcass Cutout, 185 lb. Carcass 51-52% Lean.	66.49	69.65	76.02
Slaughter Lambs, wooled and shorn, 135-165 lb. National.	144.21	143.71	132.01
National Carcass Lamb Cutout FOB.	370.66	359.79	346.31
Crops, Daily Spot Prices			
Wheat, No. 1, H.W. Imperial, bu.	5.03	3.93	3.87
Corn, No. 2, Yellow Nebraska City, bu.	3.75	3.33	3.42
Soybeans, No. 1, Yellow Nebraska City, bu.	9.22	8.21	8.56
Grain Sorghum, No.2, Yellow Dorchester, cwt.	7.79	5.48	5.61
Oats, No. 2, Heavy Minneapolis, Mn, bu.	3.07	2.66	2.42
Feed			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton.	175.00	250.00	200.00
Alfalfa, Large Rounds, Good Platte Valley, ton.	77.50	82.50	77.50
Grass Hay, Large Rounds, Good Nebraska, ton.	105.00	85.00	85.00
Dried Distillers Grains, 10% Moisture Nebraska Average.	174.25	134.50	127.50
Wet Distillers Grains, 65-70% Moisture Nebraska Average.	57.00	51.50	52.00

*** No Market**

Social networks have widespread influence by virtue of the easy and often low-cost manner in which information is transmitted through them. For example, they can enable diffusion of pro-social behaviors and production of public benefits as evidenced by the fantastic success of the Amyotrophic Lateral Sclerosis (ALS) Ice Bucket Challenge. Recently, the ALS Society announced that the funds generated through the campaign helped pursue high-risk research and produced scientific breakthroughs (Washington Post 2015). Against the backdrop of such successful initiatives, *our research investigates the role of information obtained about charitable giving behavior of one's social connections on fundraising success, specifically in situations where funding campaigns involve predetermined targets and where donors have different levels of endowments from which they make their charitable contributions.*

Our focus on such funding targets is motivated by the fact that in many situations public benefits or goods may only be feasibly provided in discrete quantities or when a particular threshold is reached. In some instances, if funds raised are not sufficient to meet this threshold, the project is not implemented. Also, in the case of many crowd-funding sites, the total money raised gets transferred to the individuals only when a predefined target is met.

For this study, we conduct human subject laboratory economic experiments. These experiments involve controlled settings in which randomly selected student subjects make decisions under different experimental conditions on the basis of which they are paid. By varying the incentives associated with each decision, it is possible for the experimenter to evaluate different types of behaviors under conditions re-

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presentative of realistic environments in which fundraising activities are implemented. Experiments are specifically suited for this study since they can indicate how different behaviors dynamically spread on the network, which is difficult to isolate from observational field data. Moreover, in real life, people's peer groups change over time so the experimental setting can provide a benchmark framework for studying behavior in situations where people's networks and peer groups remain unchanged.

Experimental Design:

We collected data from 144 student subjects (24 experimental groups in total) who were recruited from the broad undergraduate student population of Indiana University Bloomington. The experiment involved groups of six people who individually decided how much of their endowment of "tokens" (they received each round) they would contribute for public good provision. The public good was produced if and only if the group as a whole contributed 120 tokens. If the target was not reached, all the tokens were fully refunded back to the group members. The group as a whole earned less (and thus enjoyed less benefits) if the public good was not funded. Individual payoffs were determined based on the number of tokens retained in one's personal fund and the total benefit generated if the public good was provided.

During these experiments, we varied the information available to subjects through their social networks in two ways:

- In the 12 groups termed LOCAL, the social network involved every person having two neighbors (one to their left and other to their right) from whom they received individual contribution information.
- In the remaining 12 groups termed COMPLETE, all six people were connected to each other and so they received contribution information from every group member.

Figure 1 presents these two network structures. Additionally, we varied subjects' endowment levels to represent the fact that in real life, different people have different endowments and hence different abilities to contribute to the public good. In 12 groups termed LOW, subjects had an endowment of 30 tokens. In the remaining groups termed HIGH, subjects were endowed with 50 tokens. As a result of this design specification, we had four types of experimental treatments presented in Table 1.

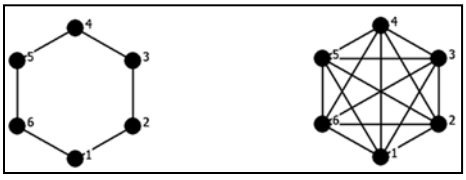

Figure 1: LOCAL and COMPLETE Information Networks

Table 1: Experimental Design

Endowment Level	Information	
	LOCAL-Info	**COMPLETE-Info**
LOW	LOW-LOCAL (6 groups)	LOW-COMPLETE (6 groups)
HIGH	HIGH-LOCAL (6 groups)	HIGH-COMPLETE (6 groups)

Each experiment session had three parts. In Part I, the subjects participated in a practice round with no feedback on decisions made by other participants. In Parts II and III, they interacted with their group members 20 times or for 20 periods during which they decided how much to contribute to the public good. The first 10 periods (in Part II) served as a baseline during which everyone received aggregate information about the total amount of tokens contributed to the public good (once everyone had made their contributions from their endowment). In the remaining 10 periods (Part III), treatment specific (LOCAL or COMPLETE) information was provided. This repeated interaction setting is important for multiple reasons. First, it facilitates people's understanding of the experimental environment so that data collected is a result of systematic deliberation rather than of idiosyncratic decisions. Second, it provides evidence about how individuals learn and respond to non-monetary dynamic incentives such as reputation amongst one's peers, in different economic environments.

Results:

Figure 2 presents the performance of the groups in terms of whether they are able to meet the funding threshold or not. Comparing the size of the grey and black bars in Part II and Part III, our first result is that HIGH-endowment groups (right set of graphs) are more likely to reach the threshold than LOW-endowment ones (left set of graphs). Figure 3 plots the average group contributions across all 20 periods of the game. The graphs indicate that in the later periods of Phase III, success depends upon the amount of information received about others' actions – groups are more likely to meet the target when people have information about everyone's contributions i.e., under the COMPLETE condition than under the LOCAL one. This finding is corroborated by statistical analysis.

Implication: Thus, funding agencies are more likely to be successful in communities where people are not constrained by their endowments (of income or time relative to the funding threshold) or the information they receive about the giving behaviors of their social con-

nections. With more of both, the public good has a higher likelihood of being provided.

Second, focusing only on the behavior of low endowment groups represented by the grey bars in the left panel of Figure 2, we find a statistically significant treatment effect (between LOW-LOCAL and LOW-COMPLETE conditions). Thus, when groups are constrained by their endowments, information about giving behavior of more peers increases the chances of reaching funding targets, relative to situations where people have information about fewer contacts.

Implication: Thus when running fundraising campaigns in communities where people have lower endowments (of time or money), funders may be able to significantly increase chances of fundraising success by facilitating information exchange between as many community members as possible.

Finally, in Figure 3 we also observe that there is less variability across periods i.e., fewer instances where groups fall short of or overshoot the threshold, in the COMPLETE sessions (solid line) than in the LOCAL ones (dashed line) irrespective of the endowment value. Overshooting the threshold leads to inefficiency since tokens contributed above 120 are lost (and don't accrue any income) and undershooting means the group forgoes the benefits derived from the public good.

Implication: Thus, devising mechanisms to provide people with giving information about all their group members can benefit both funders and donors by reducing wasteful contributions beyond the threshold.

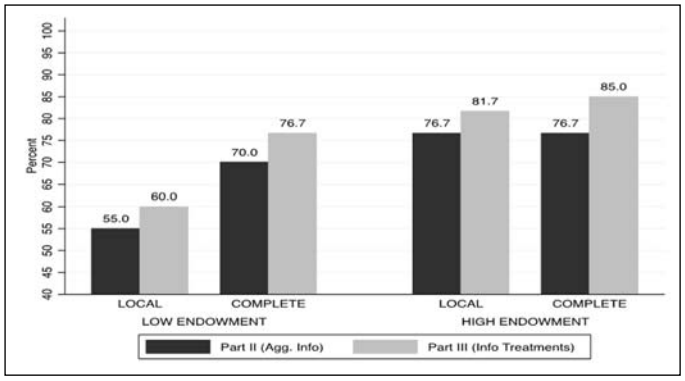

Figure 2: Percentage of Groups Meeting the Threshold with LOW & HIGH Endowments in Part II & Part III

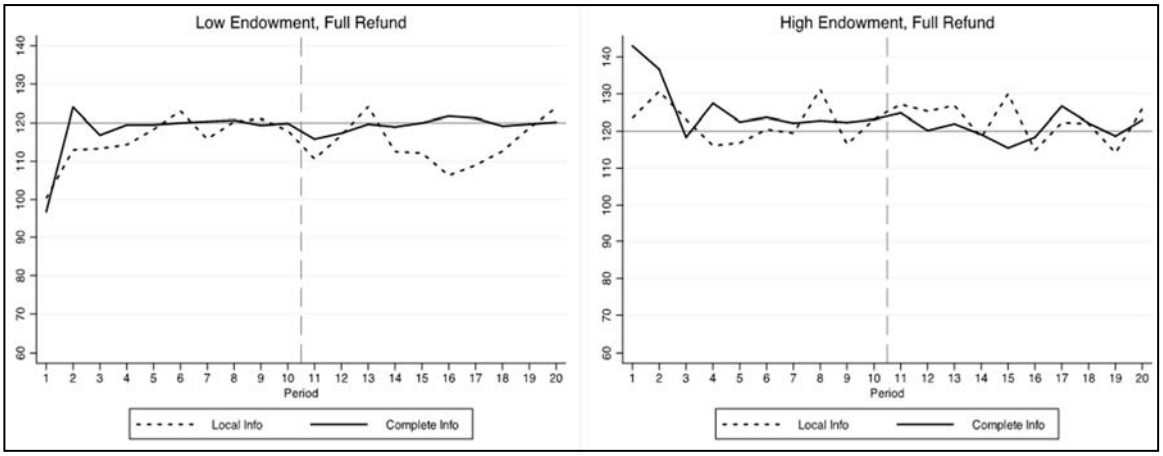

Figure 3: Mean Group Contributions in the Repeated Game in LOW and HIGH Treatments

Conclusions and Next steps:

Our study results indicate that success of fundraising outcomes depends both on the nature of social connections that determine the amount of information available about other's giving behaviors as well as the endowments from which people make their donations. Thus, a key lesson from our study is that fundraising is not a one-size-fits-all endeavor. If funding organizations want to streamline their activities to achieve their targets at the lowest possible costs, they should be mindful of the donor demographic and the nature of community relations.

At this point, we caution the reader about extrapolating the results of this controlled and stylized study to real life settings. The goal of laboratory experiments is to provide important benchmark results that establish proof of concept and internal theoretical validity of the mechanisms studied. For external validity, greater generalizability and eventual policy implementation, experimentation in other related settings and with a non-student subject pool is essential. This is the subject matter of current ongoing research.

References:

https://www.washingtonpost.com/news/to-your-health/wp/2015/08/19/scientists-are-crediting-the-ice-bucket-challenge-for-breakthroughs-in-research/

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