



# Rank and response: A field experiment on peer information and water use behavior <sup>☆</sup>



Syon P. Bhanot

Swarthmore College, 500 College Ave, Swarthmore PA 19081, United States

## ARTICLE INFO

### Article history:

Received 10 August 2016  
Received in revised form 23 June 2017  
Accepted 26 June 2017  
Available online 1 July 2017

### JEL classification:

C93  
D03  
Q5  
Q25

### PsycINFO codes:

2360  
3020  
4070

### Keywords:

Social norms  
Field experiment  
Rank  
Peer information  
Motivation

## ABSTRACT

Perception of peer rank, or how we perform relative to our peers, can be a powerful motivator. While research exists on the effect of social information on decision making, there is less work on how ranked comparisons with our peers influence our behavior. This paper outlines a field experiment conducted with 3896 households in Castro Valley, California, which uses household mailers with various forms of social information and peer rank messaging to motivate water conservation. The experiment tests the effect of a visible peer rank on water use, and how the competitive framing of rank information influences behavioral response. The results show that households with relatively low or high water use in the pre-treatment period responded differently to how rank information was framed. I find that a neutrally-framed peer rank caused a small “boomerang effect” (i.e., an increase in average water use) for low water use households, but this effect was eliminated by competitive framing. At the same time, a competitively-framed peer rank demotivated high water use households, increasing their average water use over the full period of the experiment. This result is supported by evidence that the competitive frame on rank information increased water use for households who ranked “last” in the peer group – a detrimental “last place effect” from competitively-framed rankings.

© 2017 Elsevier B.V. All rights reserved.

## 1. Introduction

Traditionally, economists studying human behavior have focused more on financial motivators than on social norms, peer pressure, and other social motivators. However, when pricing is not salient or the benefits from behavior change are diffuse, social motivators can be a useful tool for encouraging behavior change (Allcott, 2011; Brent, Cook, & Olsen, 2015; Ferraro, Miranda, & Price, 2011; Kraft-Todd, Yoeli, Bhanot, & Rand, 2015; Olmstead & Stavins, 2007). In particular, recent research in psychology and behavioral economics has demonstrated that people are influenced by how they compare to their peers, and motivated by the desire to obtain a high rank relative to others (Barankay, 2012; Beshears, Choi, Laibson, Madrian, & Milkman, 2015; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007; Tran & Zeckhauser, 2012). In this paper, I present

<sup>☆</sup> This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.  
E-mail address: [sbhanot1@swarthmore.edu](mailto:sbhanot1@swarthmore.edu)

a field experiment that tests the effect of peer rank on behavioral response and explores how the framing of information can influence this response.

Existing work has explored the effects of social information in a variety of contexts, including energy conservation, voting, and savings (Allcott, 2011; Beshears et al., 2015; Gerber, Green, & Larimer, 2008; Kast, Meier, & Pomeranz, 2014). Most interventions have provided individuals with information on the average performance of a broader social group, with mixed results. Allcott (2011), for example, finds that showing individuals how their energy use compares to the mean of both their most efficient neighbors and all of their neighbors reduces electricity consumption by roughly 2% on average. However, other research suggests that sharing peer information can lead to socially undesirable behavior. Beshears et al. (2015) find that the provision of peer information about savings for retirement can reduce savings rates by demotivating low-performers. Bursztyn and Jensen (2015) document similar performance declines from “leaderboards” that publicly displayed the performance of top students in computer-based remedial high school courses. John and Norton (2013) observe a related phenomenon in the context of workplace exercise “walkstations,” finding that people tend to converge to the bottom performer, exercising less at walkstations when given information about the low rates of use by others.

One limitation of existing work is that it does not isolate the elements of social information that are central to both positive and negative behavioral responses. There is also limited evidence on how ranked comparisons to specific peers influence behavior, or on heterogeneities in the motivational effects of rankings (though some work on both topics does exist – see Barankay (2012), Beshears et al. (2015), & Eisenkopf & Friehe (2014), for example). I provide evidence on some of the outstanding questions in this area. Do ranked comparisons to people who are “like us” motivate us differently than aggregate social comparisons? And how does our response to peer rank information relate to our competitive drive?

In this paper, I outline a field experiment with 3896 households in Castro Valley, California, which tests how peer rank influences behavior. The experiment was conducted with a partner firm, WaterSmart Software, which works with local utilities to reduce water use at the household level through mailers and other outreach campaigns. The experiment involved sending mailers with different forms of peer information and peer rank messaging to households to motivate reductions in water use. Through the experimental design, I am able to address existing theories about how peer rank and the competitive framing of rank messaging can influence behavior. The goal of this study is to improve our understanding of social and peer information and their potentially heterogeneous effects on behavior.

The results suggest that while social information can reduce water use, peer rankings and competitive framing can also have detrimental impacts on behavior. Specifically, I find evidence of heterogeneity in treatment effects from peer rank information. In particular, households that were low water users prior to the experiment showed a “boomerang effect” (i.e., an increase in water use) from peer rank information, except when a competitive frame was included. This result is consistent with Garcia, Tor, and Gonzalez (2006), who posit that a competitive drive triggered by a high rank might make people less likely to “boomerang.” However, the competitive frame had detrimental effects on the behavior of households that were high water users prior to the experiment, increasing their water use on average. Further analysis of rankings suggests the possible existence of a “last place effect,” whereby a competitively-framed peer rank led to an increase in water use by the worst performer in the peer group – a movement away from the social norm. I argue that this stems from the potentially demotivating power of peer information, in line with the results on peer information and savings in Beshears et al. (2015).

## 2. Background

Household water use behavior is both important to change and difficult to influence. The salience of inefficient water consumption and the price of water are both low – most families are not aware of existing leaks or other inefficiencies, and even when they are, the low price of water limits their responsiveness to such problems. Indeed, the average family in the United States spends only 0.5% of household income on water and sewage bills (United States Environmental Protection Agency & Water, 2009). Consequently, the price elasticity of demand for water is low, with recent estimates from California finding elasticities in the  $-0.2$  to  $-0.5$  range (Lee & Tanverakul, 2015). This inelastic demand, along with a variety of political economy and legal considerations, limits the influence of price-based strategies for water reduction (like tiered pricing) in many places, including California (Sillers, 2015).

In such scenarios, it might be cost-effective and welfare-improving to utilize non-price incentives that target specific factors driving behavior and motivation. For example, households are arguably unsure of what constitutes “good” and “bad” water consumption behavior. Social information interventions that compare households to their neighbors offer a solution, by providing a relevant reference point for household consumption and social pressure to conform. Such an approach can change behavior without raising the financial cost to households from water use; Allcott (2011) found that providing households with social norms information decreased energy use by roughly the same amount as an 11–20% increase in price. This paper reports on an experiment that tests the effect of ranked comparisons with peers to motivate behavior change. A number of important social science theories help explain how peer rank could affect behavior – a brief discussion of these theories and their predictions is presented here.

Download English Version:

<https://daneshyari.com/en/article/5034734>

Download Persian Version:

<https://daneshyari.com/article/5034734>

[Daneshyari.com](https://daneshyari.com)