



Impact of satisficing behavior in online surveys on consumer preference and welfare estimates



Zhifeng Gao^{a,b,*}, Lisa House^b, Xiang Bi^b

^a College of Economics and Management, Jilin Agricultural University, China

^b Food and Resource Economics Department, University of Florida, United States

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ABSTRACT

Conducting online surveys through consumer panels has become increasingly popular for researchers to assess consumers' preferences and attitudes for the purpose of obtaining welfare estimates because they are inexpensive, flexible, and allow for fast feedback. Interestingly, few studies have examined the behaviors of online survey panelists, particularly their satisficing behaviors on welfare measures. This study demonstrates the use of validation questions (trap questions) to detect survey respondents' satisficing behavior and its impact on consumer choice, willingness to pay (WTP), and consumer surplus (CS) estimates. We find that respondents who fail a validation question (VQ) are more likely to violate the weak axiom of revealed preferences (WARP) in the choice experiment. The estimates for preference parameters, WTP, and CS are statistically different between those who pass and those who fail the VQ. In addition, the WTP and CS from respondents passing the VQ in general have smaller variances than those from respondents failing the VQ. These results indicate that without controlling for potential satisficing behaviors, online surveys may produce less efficient estimates (estimates with larger variance) of welfare measures.

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1. Introduction

Using surveys to obtain estimates of consumers' preferences, attitudes, and opinions of public events, products, and services is critical because it provides important information for business strategy development, public program and policy design, and welfare analysis (Dillman et al., 2011; Porto, 2006). With advances in internet technology and increased penetration of internet access, online surveys have become increasingly popular in both industry and academia because they are inexpensive, quickly executable, allow interactive features through sound and video, and allow real-time data processing (Dillman et al., 2011; Granello and Wheaton, 2004; Griffis et al., 2003; Kwak and Radler, 2002).

Despite these advantages, recent research shows that online surveys are more likely to suffer from lower data quality than traditional survey modes (Baker et al., 2010). In response to the increasing concerns with data quality from online surveys, the American Association for Public Opinion Research (AAPOR) publishes a special report to discuss the potential problems with the use of online consumer panels. Particularly, the AAPOR notes that

the nonprobability sample method is widely used in online research, which may be inappropriate if the research objective is to estimate population values. AAPOR also cautions researchers to choose their panels carefully and to have a good understanding of the sampling method (Baker et al., 2010).

Besides sampling, another major concern with online surveys is consumer panels' satisficing behavior. Satisficing behavior in surveys happens if respondents do not choose the answers that most precisely reflect their judgments (Krosnick, 1991). Although satisficing also exists in other survey modes, this behavior may be a more serious problem in online surveys due to the foreseeable monetary incentives, ease of participating in multiple online consumer panels (Willems et al., 2006), and lack of motivation to focus without an interviewer being present (Krosnick, 1991). There are mixed findings in the literature as to whether or not estimates of willingness to pay (WTP) calculated through different survey modes lead to differing results. For example, Lindhjem and Navrud (2011) find no significant differences between WTP estimates derived from contingent valuation collected via in-person interviews and online surveys. However, others (e.g., MacDonald et al., 2010; Maguire, 2009; Taylor et al., 2009) have found differences in WTP estimates based on survey modes. Even if estimates are found to be similar across modes, this may only indicate that satisficing behavior does not differ between modes. In this case,

* Corresponding author at: 1155 McCarty Hall/P.O. Box 110240, University of Florida, Gainesville, FL 32611-0240, United States.

E-mail address: zfao@ufl.edu (Z. Gao).

satisficing may still impact results, and any method to reduce satisficing could improve the results.

Previous literature has shown that respondents with satisficing behaviors in online surveys range from 5% to 30%, which might significantly reduce data quality and the conclusions drawn from the data (Baker and Downes-LeGuin, 2007; Gao et al., 2016; Willems et al., 2006). However, many previous studies are conducted by industry to improve the quality of their online consumer panels. Among the academic research on the subject, Jones et al. (2015) show that respondents with satisficing behavior are more likely to violate the strong axiom of revealed preference in choice experiments. Gao et al. (2016) demonstrate that the satisficing behavior of online consumer panels differs by country and significantly impacts the willingness to pay (WTP) estimates derived from choice experiments both in mean and variances.

To our knowledge, no previous studies have determined the impact of satisficing behavior on welfare changes resulting from the analysis of policy implementation using choice experiments. Because the results from choice experiments are always used to infer policy implications (e.g., Alpizar and Carlsson, 2003; Beck et al., 2013; Jaffry et al., 2004; McIntosh and Ryan, 2002), it is important to determine how the satisficing behavior of online consumer panels influences the conclusions related to policy and regulation implementation. The objective of this paper is to examine the impact of satisficing behavior on the estimates of consumer WTP and the changes in consumer surplus (CS).¹ The specific objectives of this paper are to determine (1) important demographics that affect the satisficing behavior of online consumer panels; (2) the impact of satisficing behavior on consumer choice behaviors in choice experiments; and (3) the impact of satisficing behavior on consumer WTP and CS estimates.

2. Background on satisficing behavior

Satisficing, in a broad sense, refers to a type of behavior whereby decision-makers will stop searching for an optimal option if they find an option that meets a set of given needs. Simon first introduced this concept by arguing that an organism “has neither the senses nor the wits to discover an ‘optimal’ path” and “we are concerned only with finding a choice mechanism that will lead it to pursue a ‘satisficing’ path, a path that will permit satisfaction at some specified level of all of its needs” (Simon, 1956: 136). The satisficing behavior assumption has been widely applied to the fields of finance (Sanders and Carpenter, 2003; Güth, 2007), political sciences (Davidson et al., 1992; Melé, 2010), decision making research (Bordley and LiCalzi, 2000), economics and behavioral sciences (Kaufman, 1990; Simon, 1959; van Rooij, 2011), among others. The satisficing behavior examined in our study is based on the concept defined in survey methodology. Krosnick (1991: 215) classifies survey respondents as weakly satisficing if they “select the first response alternative that seems to constitute a reasonable answer, and agree with any assertion the interviewer makes.” Strong satisficing appears if respondents “fail to differentiate among a set of diverse objects in ratings, say ‘don’t know’ instead of reporting an opinion, and randomly choose among the response alternatives offered” (Krosnick, 1991: 215–216). Based on the level of satisficing behavior and respondents’ activity participating in online consumer panels (particularly panels with voluntary, opt-in participants), researchers classify respondents into four basic groups: “Loyal”/“Optimizers”; “Professional”/“Hyperactives”; “Ina-

tentive”/“Satisficers”; and “Fraudulents”/“Gamers” (Baker et al., 2010; Baker and Downes-LeGuin, 2007; Willems et al., 2006). “Optimizers” are ideal because they execute all the four steps of cognitive processing required for high data quality—they carefully read and interpret the questions being asked, search related information from memory, carefully integrate the information and make judgments, and correctly choose the answers that most precisely reflect their judgments (Krosnick, 1991). “Hyperactives” are the respondents who are very active in taking online surveys by participating in multiple online consumer panels. For example, a Dutch online panel study showed that the average number of consumer panels of their study respondents was 2.73. The number of consumer panels that participants belonged to varied from one to eleven (Willems et al., 2006). “Satisficers” are the respondents who are careless in taking the survey, give thoughtless answers, and give little cognitive effort to complete the survey. “Gamers” are respondents who intend to choose the “right” answer to qualify for the surveys or those who cheat to enter the surveys. Among these four types of respondents, “Satisficers” and “Gamers” are the most worrisome because their survey behavior may bring a lot of noise to the data, thus reducing the overall data quality.²

Most of the recent studies on online consumer panels have been conducted by industry, where the focus has been on the presence of “Satisficers” and “Gamers” in online surveys, the ways to detect these types of respondents, and the differences between these two types of respondents and “Optimizers” or “Hyperactives” (Baker and Downes-LeGuin, 2007; Downes-LeGuin, 2005; Miller, 2006; Miller and Baker-Prewitt, 2009). Two recent papers have examined the impact of the satisficing behavior of online consumer panels on data quality, consumer behavior, and WTP. Jones et al. (2015) utilize multiple instruments to identify inattentive (satisficing) respondents and fraudulent (gaming) respondents, respectively, in an online survey. They show that respondents with satisficing behavior are more likely to violate the weak axiom of revealed preference (WARP) and the strong axiom of revealed preference (SARP),³ which implies inconsistency in their choices (Mas-Colell et al., 1995). They go further to show that the most efficient way to reduce the violations is to use validation questions and low-incidence screening. Gao et al. (2016) demonstrate that the satisficing behavior of online consumer panels differs by country and significantly impacts the WTP estimates from choice experiments in both mean and variance. In general, the variance of the WTP estimates for satisficers (those who fail a validation question) are larger than those who pass a validation question. However, the conclusions are inconclusive regarding the impact of the satisficing behavior on the mean of the WTP estimates (Gao et al., 2016).

Our study will comprehensively examine the impact of satisficing behavior by determining its impact on consumer behavior measured by violation of the WARP⁴ and on WTP estimates. Most importantly, we will determine how the changes in consumer surplus (CS) differ between respondents who have and do not have satisficing behavior. Because the ultimate goal of many consumer preference estimates using online surveys is to evaluate the impact

¹ It is noted that the survey used for this paper was not developed to analyze a real policy change. Instead, our goal was to use a simplified example to demonstrate how satisficers (as identified in online surveys) may impact estimates of WTP and CS, thus affecting the policy implications based on results of WTP and CS estimated from online surveys.

² Willems et al. (2006) show that although about 22% of “Hyperactives” (vs 30% of “Satisficers”) select “Incentive” as the most important reason for participating in the surveys, there is no large difference in the answers between “Hyperactives” and “Optimizers”.

³ WARP is a necessary condition for individuals to reveal consistent choices, while SARP is a necessary and sufficient condition for individual choices to be consistent with the utility maximization theory (Mas-Colell et al., 1995).

⁴ We focus on the violation of the WARP because it is more widely used in choice experiment studies. Calculating SARP is more computationally demanding than WARP. Most importantly some researches show that WARP and SARP are equivalently effective in examining individual rational behavior (Sippel, 1997). Jones et al. (2015) also show that WARP and SARP provide consistent conclusions regarding individual satisficing behavior.

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