

**UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA**

MERCK & CO., INC., ELI LILLY AND  
COMPANY, AMGEN INC., and  
ASSOCIATION OF NATIONAL  
ADVERTISERS, INC.,

Plaintiffs,

v.

UNITED STATES DEPARTMENT OF  
HEALTH AND HUMAN SERVICES,  
ALEX M. AZAR II, CENTERS FOR  
MEDICARE & MEDICAID SERVICES, and  
SEEMA VERMA,

Defendants.

Case No. \_\_\_\_\_

**EXPERT DECLARATION OF PROFESSOR RAVI DHAR**

**JUNE 14, 2019**

**TABLE OF CONTENTS**

- I. QUALIFICATIONS .....3**
- II. ASSIGNMENT.....4**
- III. SUMMARY OF CONCLUSIONS .....6**
- IV. PROVIDING WAC IN DIRECT-TO-CONSUMER PHARMACEUTICAL TELEVISION ADVERTISING IS LIKELY TO MISLEAD CONSUMERS INTO OVERESTIMATING THEIR ACTUAL OUT-OF-POCKET COSTS FOR MANY DRUGS AND IS *NOT* LIKELY TO LEAD TO MORE INFORMED CHOICES.....7**
  - A. Overview of the Anchoring Process and Consumer Decision Making ..... 8**
  - B. WAC in DTC Television Advertising Is Likely to Anchor Consumers’ Expectations about Out-Of-Pocket Costs..... 10**
  - C. As a Result of the Anchoring Bias, the Rule is Likely to Confuse and Mislead Consumers into Overestimating Their Out-of-Pocket Costs for Many Drugs ..... 12**
- V. BY LEADING MANY CONSUMERS TO OVERESTIMATE THEIR ACTUAL OUT-OF-POCKET COSTS, THE RULE IS LIKELY TO DETER THEM FROM SEEKING INFORMATION FROM A DOCTOR OR OBTAINING TREATMENT .....17**
  - A. DTC Pharmaceutical Advertising Encourages Patients to Seek Treatment..... 17**
  - B. The Rule Is Likely to Deter Many Consumers from Contacting Their Doctors by Leading Consumers to Overestimate Their Out-of-Pocket Costs..... 19**
  - C. The Disclaimer in the Rule is Unlikely to Correct the Biased Expectations of Out-Of-Pocket Costs Caused by the Rule for Many Consumers or the Rule’s Effect of Diminishing the Likelihood that Consumers Will Initiate a Conversation with Their Doctors ..... 20**
- VI. THE JAMA STUDY DOES NOT SUPPORT THE RULE .....23**

## I. QUALIFICATIONS

1. I am the George Rogers Clark Professor of Management and Marketing at the Yale School of Management. I am also the Director of the Yale Center for Customer Insights at the School of Management at Yale University, New Haven, Connecticut. I also have an affiliated appointment as a Professor of Psychology at the Department of Psychology, Yale University. In addition, I serve on the editorial board of peer-reviewed consumer research journals such as the *Journal of Academy of Marketing Science*, *Journal of Consumer Psychology*, *Journal of Consumer Research*, *Journal of Marketing*, and *Marketing Letters*. Previously, I was the Associate Editor of *Journal of Marketing Research*, the Area Editor of *Marketing Science*, and the Associate Editor of *Journal of Consumer Research*. My academic work focuses on consumer behavior, consumer psychology, branding, marketing management, marketing strategy, survey methodology, and evaluation.

2. My teaching responsibilities at Yale University's School of Management include two doctoral courses that examine advanced research topics in the area of consumer behavior, judgment, and decision-making. I also teach or have taught several different courses for graduate students who are enrolled in the MBA program or the Executive MBA program at Yale: Consumer Behavior, E-Business and Marketing, Marketing Strategy, Marketing Management, Marketing of Financial Services, and Strategic Marketing Leadership. I have taught and given seminars to mid-level and senior-level executives in more than a dozen countries in North and South America, Asia, and Europe. Additionally, I have worked as a consultant or adviser to companies on marketing-related issues in different types of industries (*e.g.*, health, consumer products, high technology, and financial services). I have served as an expert witness on issues related to marketing and marketing research on more than 50 cases, including cases involving health-related products.

3. I hold a Ph.D. and Master of Science in Business Administration from the University of California at Berkeley. My doctoral dissertation ("Consumer Preference for a No-Choice Option") was in the area of consumer decision-making. I have published more than seventy papers in journals, proceedings, and as book chapters, including leading marketing, psychology, and management journals, such as the *Harvard Business Review*, *Journal of Behavioral Decision Making*, *Journal of Business*, *Journal of Consumer Psychology*, *Journal of Consumer Research*, *Journal of Marketing Research*, *Journal of Personality and Social Psychology*, *Management Science*, *Marketing Science*, *Organizational Behavior and Human Decision Processes*, *Sloan*

*Management Review*, and other peer-reviewed and industry journals.

4. Several of my publications received research awards such as the William O'Dell Award ("Consumer Choice between Hedonic and Utilitarian Goods," 2005). The William O'Dell Award is presented to the *Journal of Marketing Research* article that has made the most significant, long-term contribution to marketing theory, methodology, and/or practice. I was also awarded the 2012 Distinguished Scientific Contribution Award from the Society of Consumer Psychology, which is given annually to honor a scholar who has made significant and lasting contributions in the field of consumer psychology. A study of 475 marketing faculty at top 30 schools (as of spring 2017), ranked me as one of four most productive marketing faculty (among those with at least one publication per year in one of the four top marketing journals over the 10-year period between 2007 and 2016), tying for rank 2 through 4 with two other faculty.<sup>1</sup>

5. Prior to earning my Ph.D., I earned an undergraduate degree in engineering from the Indian Institute of Technology and a master's degree in business administration from the Indian Institute of Management. A detailed listing of my educational background and publications is set forth in the curriculum vitae, which is attached to the end of this declaration as **Appendix A**.

6. In my work as a marketing professor and as a consultant, I have conducted, supervised, and/or evaluated more than 500 surveys and experiments relating to different aspects of consumer behavior. My current research focuses on consumers' decision making, the manner in which consumers acquire and process information when forming product perception and preferences, the effect of product attributes and information presentation on consumer purchase and consumption decisions, and the effect of different "marketing mix" activities (such as promotions and advertising) on consumer purchase decisions.

## **II. ASSIGNMENT**

7. I understand that Plaintiffs Merck & Co., Inc., Eli Lilly and Company, Amgen Inc., and the Association of National Advertisers, Inc., intend to bring a lawsuit against Defendants, Department of Health and Human Services ("HHS") and Centers for Medicare and Medicaid Services ("CMS"), among others, and to request a stay of implementation of its "Regulation to

---

<sup>1</sup> van Osselaer, Stijn M. J., and Sarah Lim, "Research Productivity of Faculty at 30 Leading Marketing Departments," *Marketing Letters*, (2019): 1-17, at pp. 1-3, 8 (Table 3).

Require Drug Pricing Transparency” (hereafter “the Rule” or “42 C.F.R. § 403”).<sup>2</sup>

8. CMS, which falls under HHS, issued the Rule.<sup>3</sup> The Rule requires that television advertisements for prescription drugs and biological products contain the following statement: “The list price for a [30-day supply of] [typical course of treatment with] [name of prescription drug or biological product] is [insert list price]. If you have health insurance that covers drugs, your cost may be different.”<sup>4</sup> In particular, “this requirement applies to any advertisement for a prescription drugs or biological product distributed in the United States, for which payment is available, directly or indirectly, under titles XVIII or XIX of the Social Security Act, except for a prescription drugs or biological product that has a list price, as defined herein, of less than \$35 per month for a 30-day supply or typical course of treatment.”<sup>5</sup> The Rule was published on May 10, 2019 and is effective starting on July 9, 2019.<sup>6</sup>

9. I have been asked by counsel for Plaintiffs in the above-captioned matter to provide an expert opinion on what the Rule’s required statement is likely to convey to consumers and what impact, if any, the required statement is likely to have on a consumer’s behavior. In addition, I have been asked to opine on whether the required statement is likely to enable consumers to estimate more precisely their actual out-of-pocket costs and lead to more informed choices. I have also been asked to evaluate the *Journal of American Medical Association* article cited extensively in the Federal Register publication of the Rule (hereafter “the JAMA article” or “the JAMA study”).<sup>7</sup>

10. In forming my opinion, I drew on my knowledge, education, and experience in marketing and consumer behavior developed over the past several decades. The materials that I

---

<sup>2</sup> Department of Health and Human Services, Centers for Medicare & Medicaid Services, 42 C.F.R. § 403, “Medicare and Medicaid Programs; Regulation To Require Drug Pricing Transparency,” *Federal Register*, Vol. 84, No. 91, Friday, May 10, 2019, Rules and Regulations (hereafter “the Rule” or “42 C.F.R. § 403”), at pp. 20732-20758.

<sup>3</sup> 42 C.F.R. § 403, at p. 20732; “About CMS,” *CMS.gov*, <https://www.cms.gov/about-cms/about-cms.html> (viewed May 31, 2019).

<sup>4</sup> 42 C.F.R. § 403, at p. 20732 (sic, brackets in the original).

<sup>5</sup> 42 C.F.R. § 403, at p. 20732 (sic).

<sup>6</sup> 42 C.F.R. § 403, at p. 20732.

<sup>7</sup> Garrett, Jace B., William B. Tayler, Ge Bai, Mariana P. Socal, Antonio J. Trujillo, and Gerard F. Anderson, “Consumer Responses to Price Disclosure in Direct-to-Consumer Pharmaceutical Advertising,” *JAMA Internal Medicine*, Vol. 179, No. 3 (2019): 435-437 (“the JAMA article” or “the JAMA study”), cited *e.g.*, in 42 C.F.R. § 403, at p. 20734.

relied upon in developing my opinions are disclosed in **Appendix B**. In addition, I relied on general principles of marketing research and survey and experiment research as well as consumer information processing and decision-making.

11. I have been assisted in this matter by employees of Analysis Group, Inc. I am being compensated at the rate of \$850 per hour. In addition, I receive compensation for work Analysis Group performs in support of my work. My compensation is not contingent on the nature of my findings or on the outcome of this litigation.

12. My analyses and opinions in this declaration are based on information available to me as of the date of this declaration. I reserve the right to supplement my testimony and this declaration in response to any further information provided by the parties, and/or in light of additional documents or testimony brought to my attention after the date of my signature below, prior to the resolution of this matter.

### **III. SUMMARY OF CONCLUSIONS**

13. Based on my review of relevant materials in this case, as well as my education, background, and professional experience, it is my opinion that:

- a. Providing WAC in direct-to-consumer (“DTC”) pharmaceutical television advertising is likely to mislead consumers into overestimating their actual out-of-pocket costs for many drugs and is *not* likely to lead to more informed choices.
- b. By leading many consumers to overestimate their actual out-of-pocket costs, the Rule is likely to deter them from seeking information from a doctor or obtaining treatment.
- c. The disclaimer in the Rule is unlikely to correct the biased expectations of out-of-pocket costs caused by the Rule for many consumers or the Rule’s effect of diminishing the likelihood that consumers will initiate a conversation with their doctors.
- d. The JAMA study does not support the Rule; HHS overstates and misinterprets the JAMA study findings, ignores the study’s implication that the Rule (even with the disclaimer) will likely cause many consumers to vastly overestimate their out-of-pocket costs and reduce their likelihood of asking their doctors about the drug, and ignores the study’s shortcomings that limit its generalizability.

**IV. PROVIDING WAC IN DIRECT-TO-CONSUMER PHARMACEUTICAL TELEVISION ADVERTISING IS LIKELY TO MISLEAD CONSUMERS INTO OVERESTIMATING THEIR ACTUAL OUT-OF-POCKET COSTS FOR MANY DRUGS AND IS *NOT* LIKELY TO LEAD TO MORE INFORMED CHOICES**

14. The Rule requires the disclosure of a drug’s “list price.”<sup>8</sup> HHS explains that “list price” means the “Wholesale Acquisition Cost” or “WAC” for a prescription drug.<sup>9</sup> WAC is not the price at which prescription drugs are sold to consumers.<sup>10</sup> Rather, HHS defines it as “the manufacturer’s list price for the prescription drug or biological product to wholesalers or direct purchasers in the United States, not including prompt pay or other discounts, rebates or reductions in price, for the most recent month for which the information is available, as reported in wholesale price guides or other publications of drug or biological product pricing data.”<sup>11</sup>

15. HHS contends that disclosing WAC is likely to provide consumers important information to permit them to make informed decisions about their prescription drugs.<sup>12</sup> But in actuality, the Rule is likely to mislead consumers by biasing their expectation of their out-of-pocket costs for many prescription drugs.

16. Based on my review of Dr. Craig Garthwaite’s declaration, I understand that the actual out-of-pocket costs paid by most consumers for prescription drugs are significantly lower than a prescription drug’s WAC.<sup>13</sup>

17. As I will demonstrate below, the Rule is likely to mislead consumers into believing that their out-of-pocket costs for many drugs are larger than they actually are through the psychological mechanism known as “anchoring.” Far from promoting informed choice, using WAC as an anchor is likely to have the opposite effect—it is likely to cause consumers to place undue importance on WAC in their assessment of their out-of-pocket costs. Further, the salience of WAC in relation to other inputs that consumers need to consider in order to make an informed decision about whether to pursue a course of treatment— for example, information about their out-of-pocket costs, side effects, and alternative therapies—is likely to result in *less* informed

---

<sup>8</sup> 42 C.F.R. § 403, at p. 20732.

<sup>9</sup> 42 C.F.R. § 403, at p. 20732.

<sup>10</sup> 42 C.F.R. § 403, at p. 20758.

<sup>11</sup> 42 C.F.R. § 403, at p. 20758.

<sup>12</sup> *E.g.*, 42 C.F.R. § 403, at pp. 20732-20735, 20738.

<sup>13</sup> Expert Declaration of Professor Craig Garthwaite, June 14, 2019 (“Garthwaite Declaration”), at ¶ 10.

decisions.<sup>14</sup>

18. In what follows, section IV.A discusses academic research on the anchoring process to explain the role of price information provided to consumers in making judgments involving consumers' out-of-pocket costs. Section IV.B discusses why WAC would serve as such an anchor for consumers' expectations about out-of-pocket costs. Section IV.C discusses why WAC anchor is likely to mislead consumers by biasing their expectations that their out-of-pocket costs are larger than they actually are in the marketplace for most consumers.

### **A. Overview of the Anchoring Process and Consumer Decision Making**

19. Consumers often make judgments and decisions with incomplete and/or imperfect information.<sup>15</sup> As a result, "people rely on a limited number of heuristic principles" that lead to systematic biases in decisions.<sup>16</sup> One of the most established heuristic principles leading to such biases is the "anchoring" effect.<sup>17</sup>

20. Anchoring manifests in the following way. Studies show that when a person makes a numerical judgement, she is biased by initial numerical information she received even when the anchoring information is arbitrary and irrelevant.<sup>18</sup> For example, a study found that when participants were asked to estimate the percentage of members of the United Nations that are

---

<sup>14</sup> Zhang, Shi, and Arthur B. Markman, "Processing Product Unique Features: Alignability and Involvement in Preference Construction," *Journal of Consumer Psychology*, Vol. 11, No. 9 (2001): 13-27, at p. 13; Kivetz, Ran, and Itamar Simonson, "The Effects of Incomplete Information on Consumer Choice," *Journal of Marketing Research*, Vol. 37, No. 4 (2000): 427-448, at p. 427.

<sup>15</sup> "Many decisions are based on beliefs concerning the likelihood of uncertain events such as the outcome of an election, the guilt of a defendant, or the future value of the dollar." Tversky, Amos, and Daniel Kahneman, "Judgment under Uncertainty: Heuristics and Biases," *Science*, Vol. 185, No. 4157 (1974): 1124-1131, at p. 1124. "Some of the most important decisions consumers make involve ambiguity and uncertainty." Kahn, Barbara E., and Rakesh K. Sarin, "Modeling Ambiguity in Decisions under Uncertainty," *Journal of Consumer Research*, Vol. 15, No. 2 (1988): 265-272, at p. 265.

<sup>16</sup> Tversky, Amos, and Daniel Kahneman, "Judgment under Uncertainty: Heuristics and Biases," *Science*, Vol. 185, No. 4157 (1974): 1124-1131, at p. 1124. *See also*, Kahneman, Daniel, "New Challenges to the Rationality Assumption," *Journal of Institutional and Theoretical Economics*, Vol. 150, No. 1 (1994): 18-36, at p. 18. Mullainathan, Sendhil, and Richard H. Thaler, "Behavioral Economics," *NBER Working Paper Series*, No. 7948, (2000): 1-13, at p. 2, <https://www.nber.org/papers/w7948.pdf>.

<sup>17</sup> "Three heuristics of judgment, labeled representativeness, availability and anchoring, were described in the 1974 review, along with a dozen systematic biases, including non-regressive prediction, neglect of base-rate information, overconfidence and overestimates of the frequency of events that are easy to recall." Kahneman, Daniel, "Maps of Bounded Rationality: A Perspective on Intuitive Judgment and Choice," *Nobel Prize Lecture* (2002): 449-489, at p. 465.

<sup>18</sup> Tversky, Amos, and Daniel Kahneman, "Judgment under Uncertainty: Heuristics and Biases," *Science*, Vol. 185, No. 4157 (1974): 1124-1131, at p. 1128.



African countries, their estimates were influenced by first observing the results of the researcher spinning a wheel containing numbers 0 to 100.<sup>19</sup> Although individuals usually make some adjustments from the anchor before arriving at a numerical judgment, their judgements tend to end up around the starting anchors.<sup>20</sup> The anchoring bias is robust, evidenced by considerable research in a variety of contexts.<sup>21</sup> And it prevails in payment scenarios, both hypothetical and real.<sup>22</sup>

21. As I will discuss below, the proposed disclosure of WAC in direct-to-consumer television advertisements is likely to bias consumers' expectations about their out-of-pocket costs for many drugs in the direction of WAC, the anchor. Such expectations would be biased and result in consumers overestimating the out-of-pocket costs for many drug purchases because, as I will discuss in Section IV.C, WAC for a prescription drug is generally substantially higher than—and

---

<sup>19</sup> Tversky, Amos, and Daniel Kahneman, "Judgment under Uncertainty: Heuristics and Biases," *Science*, Vol. 185, No. 4157 (1974): 1124-1131, at p. 1128.

<sup>20</sup> "In many situations, people make estimates by starting from an initial value that is adjusted to yield the final answer. The initial value, or starting point, may be suggested by the formulation of the problem, or it may be the result of a partial computation. In either case, adjustments are typically insufficient." Tversky, Amos, and Daniel Kahneman, "Judgment under Uncertainty: Heuristics and Biases," *Science*, Vol. 185, No. 4157 (1974): 1124-1131, at p. 1128. *See also*, Epley, Nicholas, and Thomas Gilovich, "Are Adjustments Insufficient?," *Personality and Social Psychology Bulletin*, Vol. 30, No. 4 (2004): 447-460, at p. 447; Strack, Fritz, and Thomas Mussweiler, "Explaining the Enigmatic Anchoring Effect: Mechanisms of Selective Accessibility," *Journal of Personality and Social Psychology*, Vol. 73, No. 3 (1997): 437-446, at pp. 437-438.

<sup>21</sup> "Anchoring effects are elicited easily in the laboratory, the field, and the classroom—a robustness that helps explain why anchoring has been used to explain such diverse phenomena as preference reversals, the hindsight bias, subadditivity in likelihood judgment, social comparison, and egocentric biases, among others." Epley, Nicholas, and Thomas Gilovich, "The Anchoring-and-Adjustment Heuristic: Why the Adjustments Are Insufficient," *Psychological Science*, Vol. 17, No. 4 (2006): 311-318, at p. 311 (references omitted).

<sup>22</sup> "Given how often consumers are called upon to make numeric judgments, anchoring could be important across many payment contexts. In hypothetical scenarios, anchoring effects have been shown with credit card payments, negotiation outcomes, and buying and selling prices. ... A smaller body of work has considered anchoring effects with incentive-compatible designs. Work by Ariely, Loewenstein, and Prelec (2003), as well as Maniadis, Tufano, and List (2014) employs designs with real money and goods at stake. Both of these articles show data consistent with classic anchoring effects." Jung, Minah H., Hannah Perfecto, and Leif D. Nelson, "Anchoring in Payment: Evaluating a Judgmental Heuristic in Field Experimental Settings," *Journal of Marketing Research*, Vol. 53, No. 3 (2016): 354-368, at p. 355 (references partially omitted). "[T]he combined uncertainty of personal valuation and socially appropriate payment should make customers especially susceptible to anchors." Jung, Minah H., Hannah Perfecto, and Leif D. Nelson, "Anchoring in Payment: Evaluating a Judgmental Heuristic in Field Experimental Settings," *Journal of Marketing Research*, Vol. 53, No. 3 (2016): 354-368, at p. 355 (references omitted). *See also*, Chandrashekar, Rajesh, and Dhruv Grewal, "Anchoring Effects of Advertised Reference Price and Sale Price: The Moderating Role of Saving Presentation Format," *Journal of Business Research*, Vol. 59, No. 10-11 (2006): 1063-1071, at p. 1064. Ariely, Dan, George Loewenstein, and Drazen Prelec, "'Coherent Arbitrariness': Stable Demand Curves without Stable Preferences," *The Quarterly Journal of Economics*, Vol. 118, No. 1 (2003): 73-105, at pp. 73, 76, 78; Frederick, Shane W., and Daniel Mochon, "A Scale Distortion Theory of Anchoring," *Journal of Experimental Psychology: General*, Vol. 141, No. 1 (2012): 124-133, at pp. 124, 132.

often not directly related to—a consumer’s out-of-pocket cost.<sup>23</sup> And, as I will discuss in Section V, this overestimation will likely impact how consumers compare the costs and benefits of talking to a doctor about a particular treatment or getting treated.

**B. WAC in DTC Television Advertising Is Likely to Anchor Consumers’ Expectations about Out-Of-Pocket Costs**

22. Rather than WAC providing meaningful information to assist consumers in making informed judgments, WAC is likely to serve as an anchor that biases consumers’ estimates of their out-of-pocket costs.

23. Research on the Affordable Care Act has shown that the manner in which consumers make health-related decisions is influenced by the context in which the information is provided.<sup>24</sup> For several reasons, the context here (a brief disclosure of WAC in a television advertisement) will likely enhance the anchoring effect of that disclosure.

24. First, WAC is the only price-related information required by the Rule to be disclosed to consumers in the advertisement and, as such, is likely to become a salient point entering into their assessment. Research finds that a “consumer’s attention is drawn to salient attributes of goods” and that “[c]onsumers attach disproportionately high weight to salient attributes.”<sup>25, 26</sup> As a result, information that is not explicitly provided (*e.g.*, insurance plan specifics<sup>27</sup>) is likely to be underweighted in arriving at the out-of-pocket costs estimate, while the

---

<sup>23</sup> Garthwaite Declaration, at ¶¶ 22, 67.

<sup>24</sup> Taylor, Erin Audrey, Katherine Grace Carman, Andrea Lopez, Ashley Muchow, Parisa Roshan, and Christine Eibner, *Consumer Decisionmaking in the Health Care Marketplace*, RAND, 2016, [https://www.rand.org/pubs/research\\_reports/RR1567.html](https://www.rand.org/pubs/research_reports/RR1567.html). *See also*, Dhar, Ravi, and Margarita Gorlin, “A Dual-System Framework to Understand Preference Construction Processes in Choice,” *Journal of Consumer Psychology*, Vol. 23, No. 4 (2013): 528-542, at p. 529.

<sup>25</sup> Bordalo, Pedro, Nicola Gennaioli, and Andrei Shleifer, “Salience and Consumer Choice,” *Journal of Political Economy*, Vol. 121, No. 5 (2013): 803-843, at pp. 803, 805. *See also*, “Highly accessible values are generally overweighted, and when considered as possible answers to a question, they become potent anchors. ... These effects of salience and anchoring play a central role in treatments of judgment and choice.” Kahneman, Daniel, “A Perspective on Judgment and Choice: Mapping Bounded Rationality,” *American Psychologist*, Vol. 58, No. 9 (2003): 697-720, at p. 716. *See also*, Frederick, Shane, Nathan Novemsky, Jing Wang, Ravi Dhar, and Stephen Nowlis, “Opportunity Cost Neglect,” *Journal of Consumer Research*, Vol. 36, No. 4 (2009): 553-561.

<sup>26</sup> WAC in an advertisement may be particularly salient for the 34% of Americans who find it “difficult” (24%) or “very difficult” (10%) to afford their drugs (a statistic reported by HHS, 42 C.F.R. § 403, at p. 20735).

<sup>27</sup> Out-of-pocket costs vary significantly by, among other things, cost-sharing elements such as copayments, coinsurance, and deductibles. Garthwaite Declaration, at ¶¶ 18-19.

salient information, the so-called “list price,” is likely to be overweighted.<sup>28</sup> Further, it is easy for a consumer to assign value to WAC (a numerical dollar amount) whereas assigning value to more abstract concepts, like the benefits of a drug, is more challenging.<sup>29</sup> As a result, the Rule is likely to cause consumers to place undue importance on WAC, rather than balance it with other considerations consumers need to make an informed decision.

25. Additionally, unique aspects of television advertising are likely to enhance the anchoring effect of a WAC disclosure. Television advertisements are characterized by “fleeting messages that have a very short life span” with little “opportunity to examine [them] in considerable detail.”<sup>30</sup> WAC will be displayed for a few fleeting moments in the television advertisement, which are not likely to provide the consumer the opportunity to process the information at her own pace, much less the opportunity to process the complex detail needed to accurately understand what WAC represents. Thus, consumers may not process much more than the dollar value itself, rather than what that dollar value likely means vis-à-vis the consumer’s actual out-of-pocket costs. Likewise, WAC is to be presented to consumers while they are likely to be in a “low-involvement” state—watching television and not motivated to make much effort with respect to that information.<sup>31</sup> That is, the disclosure of WAC is unlikely to trigger immediate

---

<sup>28</sup> E.g., Bordalo, Pedro, Nicola Gennaioli, and Andrei Shleifer, “Salience and Consumer Choice,” *Journal of Political Economy*, Vol. 121, No. 5 (2013): 803-843, at pp. 803, 805.

<sup>29</sup> “[P]eople focus primarily on alignable differences of options rather than on nonalignable differences,” and the degree of involvement in a decision is likely to affect participants’ attention to nonalignable differences, *i.e.*, a higher degree of task involvement would increase the processing of nonalignable information. Zhang, Shi and Arthur B. Markman, “Processing Product Unique Features: Alignability and Involvement in Preference Construction,” *Journal of Consumer Psychology*, Vol. 11, No. 1 (2001): 13-27, at pp. 19, 25. *See also*, Kivetz, Ran, and Itamar Simonson, “The Effects of Incomplete Information on Consumer Choice,” *Journal of Marketing Research*, Vol. 37, No. 4 (2000): 427-448, at p. 427.

<sup>30</sup> “TV and radio are characterized by fleeting messages that have a very short life span; newspapers are generally discarded soon after being read. Magazines, however, are generally read over several days and are often kept for reference [...] One benefit of the longer life of magazines is that reading occurs at a less hurried pace and there is more opportunity to examine ads in considerable detail.” Belch, George E., and Michael A. Belch, *Advertising and Promotion: An Integrated Marketing Communications Perspective*, Sixth Edition, New York, NY: McGraw-Hill, 2003, at p. 400.

<sup>31</sup> “[T]he special quality of television advertising impact is low involvement, as compared with higher involvement for magazine advertising.” Krugman, Herbert E., “The Measurement of Advertising Involvement,” *Public Opinion Quarterly*, Vol. 30, No. 4 (1966): 583-596, at p. 584. “Magazine ads generate more brainwave activity in the *beta*-range than the television ads. Relative to TV, magazine ads generate more left-brain activity.” Zaichkowsky, Judith L., “Conceptualizing Involvement,” *Journal of Advertising*, Vol. 15, No. 2 (1986): 4-34, at p. 11; *see also*, Park, C. Whan, and S. Mark Young, “Consumer Response to Television Commercials: The Impact of Involvement and Background Music on Brand Attitude Formation,” *Journal of Marketing Research*, Vol. 23, No. 1 (1986): 11-24.

further research or inquiry beyond the passive absorption of the information when a consumer is in a low-involvement state and not motivated to fully process the information.<sup>32</sup>

26. For these reasons, many consumers exposed to WAC are likely to use it as an anchor or a starting value when estimating their out-of-pocket costs for a prescription drug and making decisions about whether to discuss that treatment with their doctor. Indeed, HHS’s *understanding* and *objective* is for WAC to anchor consumers’ perceptions: “Arming a beneficiary with basic price information will provide him or her with an anchor price or a reference comparison to be used when making decisions about therapeutic options.”<sup>33</sup> HHS even states that Medicare and Medicaid beneficiaries can use the “anchor price ... to make informed decisions about their care, including whether the difference between the list price and what they actually pay out of pocket is reasonable.”<sup>34</sup>

27. Thus, although HHS repeatedly suggests that the Rule is likely to allow consumers, especially Medicare and Medicaid beneficiaries, to “make informed decisions about their care, including whether the difference between the list price and what they actually pay out of pocket is reasonable,”<sup>35</sup> it would actually do no such thing. Instead, because WAC is the only price information required by the Rule, salient, easy to evaluate (as a numeric dollar value), and provided briefly on TV when consumers are more likely to be in a low-involvement state, the WAC value is likely to bias consumers’ expectations about out-of-pocket costs—consumers are likely to base those expectations on WAC anchor.

**C. As a Result of the Anchoring Bias, the Rule is Likely to Confuse and Mislead Consumers into Overestimating Their Out-of-Pocket Costs for Many Drugs**

28. Because WAC is likely to be the salient input into consumers’ perceptions of their out-of-pocket costs for prescription drugs—either through anchoring and/or the reference to “list price” as discussed below—such consumers are likely to be misled into assuming those out-of-

---

<sup>32</sup> “Health care information can be complex.... We tend to assume that simply providing information will result in a level playing field for all. However, many consumers lack the skills, knowledge, and motivation to access credible sources, process information, and make informed choices.” Peters, Ellen, Judith Hibbard, Paul Slovic, and Nathan Dieckmann, “Numeracy Skill and the Communication, Comprehension, and Use of Risk-Benefit Information,” *Health Affairs*, Vol. 26, No. 3 (2007): 741-748, at p. 742.

<sup>33</sup> 42 C.F.R. § 403, at p. 20735.

<sup>34</sup> 42 C.F.R. § 403, at p. 20737.

<sup>35</sup> 42 C.F.R. § 403, at p. 20737; *see also*, pp. 20732-20734, 20736, 20738.

pocket costs are much higher than they actually would be.

29. I understand from Dr. Garthwaite that WAC for a prescription drug is the price that is charged by manufacturers to wholesalers and is generally substantially higher than—and often not related to—a consumer’s out-of-pocket cost.<sup>36</sup> Thus, because the disclosure of WAC in DTC television advertising will function as an anchor, as explained above, it is likely to lead consumers to overestimate their out-of-pocket costs for many drugs.

30. Even aside from bias due to anchoring, the Rule is likely to mislead consumers due to HHS’s decision to refer to WAC in advertisements as “list price.”<sup>37</sup> For most consumer products, a consumer expects a product’s advertised “list price” to be closely related to the amount at which the consumer ordinarily purchases a product. In fact, the government compares the disclosed WAC to the MSRP (a type of “list price”) for automobile purchases, noting that the Rule’s objective is to provide consumers an “anchor price, such as an MSRP for automobiles, to gauge the reasonableness of the various price quotes.”<sup>38</sup> Thus, HHS’s objective is for consumers to draw on their experience with MSRP and “list price” disclosures. However, while a consumer may negotiate additional discounts from the MSRP, she usually pays a sum that is close to—and directly related to—the MSRP. As discussed above, for most consumers, a prescription drug’s out-of-pocket costs is nothing like an MSRP, with which a consumer is likely to be familiar. WAC is the price at which prescription drugs are sold to wholesalers (net of rebates and discounts), but it is not charged directly to consumers and is not representative of the price that most consumers pay.<sup>39</sup>

31. In addition to the misleading effect on consumers of the term “list price” in television advertisements, the bias due to anchoring on WAC is likely to further mislead consumers into overestimating their out-of-pocket costs for many drugs. “[W]hen an uncertain numeric entity is evaluated [*i.e.*, the out-of-pocket cost of the advertised drug], higher anchors [*i.e.*, WAC] should

---

<sup>36</sup> Garthwaite Declaration, at ¶¶ 14, 22, 67.

<sup>37</sup> 42 C.F.R. § 403, p. 20732.

<sup>38</sup> “Medicare and Medicaid Programs; Regulation to Require Drug Pricing Transparency,” *Centers for Medicare & Medicaid Services*, October 18, 2018, <https://www.federalregister.gov/documents/2018/10/18/2018-22698/medicare-and-medicaid-programs-regulation-to-require-drug-pricing-transparency> (viewed May 31, 2019).

<sup>39</sup> Garthwaite Declaration, at ¶¶ 14, 22, 67; footnote 5.

produce higher estimates.”<sup>40</sup> This is true for several reasons. First, as discussed above, consumers are susceptible to numerical anchors even when they know that they are arbitrary. For example, in assessing how much participants in a study were willing to pay for a given item, in arriving at a dollar value, they were influenced by the last two digits of their social security number (also presented as a dollar value).<sup>41</sup> Second, people tend to overweight *nominal* values relative to *real* values.<sup>42</sup> In particular, economic transactions can be represented in either nominal terms (*e.g.*, salary) or real terms (*e.g.*, salary adjusted for inflation). Even when consumers are aware of this distinction, judgments are often biased towards nominal values, which are relatively simpler to process and are more salient.<sup>43</sup> In the current context, where the so-called “list price” is analogous to the nominal value and the out-of-pocket cost is the real value, these findings suggest that even if consumers know that they will pay only a percentage of the “list price,” and even if they know the exact conversion between the “list price” and their out-of-pocket costs, they are still likely to overweight the nominal WAC value in their decision. Third, because of the complex and varying structure of individual insurance plans discussed above, it is extremely challenging even for motivated and knowledgeable consumers to approximate their out-of-pocket costs from the advertised “list price.”

32. Indeed, this anchoring effect manifests in the JAMA study on which HHS relies. In that study, participants who saw an advertisement for a fictitious drug with a “price” of \$15,500 per month, assumed their out-of-pocket costs would be on average \$2,787/month.<sup>44</sup> While we do

---

<sup>40</sup> Jung, Minah H., Hannah Perfecto, and Leif D. Nelson, “Anchoring in Payment: Evaluating a Judgmental Heuristic in Field Experimental Settings,” *Journal of Marketing Research*, Vol. 53, No. 3 (2016): 354-368, at p. 355.

<sup>41</sup> Ariely, Dan, George Loewenstein, and Drazen Prelec, “‘Coherent Arbitrariness’: Stable Demand Curves without Stable Preferences,” *The Quarterly Journal of Economics*, Vol. 118, No. 1 (2003): 73-105, at pp. 73, 76, 78. *See also*, Frederick, Shane W., and Daniel Mochon, “A Scale Distortion Theory of Anchoring,” *Journal of Experimental Psychology: General*, Vol. 141, No. 1 (2012): 124-133.

<sup>42</sup> “[R]esponses of the participants in [] surveys departed systematically from standard economic prescription in a manner suggestive of money illusion. ... [W]e interpret money illusion as a bias in the assessment of the real value of transactions, induced by their nominal representation. ... Money illusion... arises in large part because it is considerably easier and more natural to think in nominal rather than in real terms.” Shafir, Eldar, Peter Diamond, and Amos Tversky, “Money Illusion,” *The Quarterly Journal of Economics*, Vol. 112, No. 2 (1997): 341-374, at pp. 366-367.

<sup>43</sup> Raghubir, Priya, and Joydeep Srivastava, “Effect of Face Value on Product Valuation in Foreign Currencies,” *Journal of Consumer Research*, Vol. 29, No. 3 (2002): 335-347, at p. 335. *See also*, Wertebroch, Klaus, Dilip Soman, and Amitava Chattopadhyay, “On the Perceived Value of Money: The Reference Dependence of Currency Numerosity Effects,” *Journal of Consumer Research*, Vol. 34, No. 1 (2007): 1-10, at p. 1.

<sup>44</sup> JAMA article, at p. 437.

not know the “actual” out-of-pocket cost of this drug because it is fictitious and we do not know the particulars of each participant’s insurance plan, if any (out-of-pocket costs differ greatly from consumer to consumer and even for the same consumer over the course of the year),<sup>45</sup> per Dr. Garthwaite’s analysis, the out-of-pocket costs for large portions of the population are much lower for *any* drug. For example, according to Dr. Garthwaite, for nearly all of Medicaid recipients (almost 65 million Americans or 21% of the population), the out-of-pocket cost is a flat copayment of \$8 or less, regardless of WAC.<sup>46</sup> Thus, for about 21% of US consumers in the high-price no-disclaimer group, the actual out-of-pocket costs are \$8 or less (assuming the sample is representative of the US population). That contrasts with the implied range for 95% of respondents in the high-price no-disclaimer group from \$1,839 to \$3,735.<sup>47</sup> As a result, a substantial number of participants overestimated their out-of-pocket costs by over 20,000%.<sup>48</sup>

33. A similar overestimation is true for participants covered by commercial insurance. Specifically, 156 million Americans (49% of the population) are enrolled in employer-sponsored insurance, of which 99% have a yearly cap on their out-of-pocket spending (*i.e.*, once the consumer reaches his or her annual limit, he or she will pay *nothing* out of pocket).<sup>49</sup> For those on employer-sponsored plans with three or more tiers of cost-sharing for prescription drugs (82% of all covered workers), copays average “\$11 for first-tier drugs, \$33 for second-tier drugs, \$59 for third-tier drugs, and \$105 for fourth-tier drugs.”<sup>50</sup> While the tier of the drug cannot be known for certain

---

<sup>45</sup> Garthwaite Declaration, at ¶ 53. It appears that the JAMA study collected only high-level data on the type of participants’ insurance coverage: whether or not they had insurance, and if they did, if they had a high deductible or prescription drug coverage. (JAMA article, at p. 436, Table 1.) It is not clear whether the JAMA study collected information on whether participants were Medicaid beneficiaries, Medicare beneficiaries (beyond reporting that 68 out of 580 participants, or 12%, were between the ages of 55-74), commercially insured, and, if so, whether they reached their yearly cap at the time. The JAMA article does not report on how the expected out-of-pocket costs varied across subgroups defined by this information.

<sup>46</sup> Garthwaite Declaration, at ¶¶ 20, 34-36; *see also* footnote 45.

<sup>47</sup> That is, the 95% confidence interval around the \$2,787 mean.  $\$1,839 = \$2,787 - 1.96 \times (5209.57 / \sqrt{116})$ ;  $\$3,735 = \$2,787 + 1.96 \times (5209.57 / \sqrt{116})$ . “Confidence Intervals,” *Yale University, Department of Statistics*, <http://www.stat.yale.edu/Courses/1997-98/101/confint.htm> (viewed June 7, 2019). Using similar calculations, the implied range for 99% of respondents in the high-price no-disclaimer group is from \$1,542 to \$4,033.  $\$1,542 = \$2,787 - 2.575 \times (5209.57 / \sqrt{116})$ ;  $\$4,033 = \$2,787 + 2.575 \times (5209.57 / \sqrt{116})$ .

<sup>48</sup>  $(\$1,839 - \$8) / \$8 = 22,887\%$ .

<sup>49</sup> Garthwaite Declaration, at ¶¶ 20, 25; *see also*, footnote 45.

<sup>50</sup> Claxton, Gary, Matthew Rae, Michelle Long, Anthony Damico and Heidi Whitmore, “Employer Health Benefits: 2018 Annual Survey,” *Kaiser Family Foundation*, 2018, at p. 155, <http://files.kff.org/attachment/Report-Employer-Health-Benefits-Annual-Survey-2018>.

from this hypothetical example, even the highest tier drug under that copay structure is only \$105 on average.<sup>51,52</sup>

34. Thus, the expected out-of-pocket costs for more than 60% of the population (almost all of Medicaid beneficiaries and the employees with the plans with three or more tiers of cost-sharing),<sup>53</sup> the out-of-pocket costs would be far lower than the average \$2,787/month or the expected spend of \$1,839 to \$3,735 for 95% of respondents in this group, demonstrating that the \$15,500 “price” is not indicative of the out-of-pocket costs but likely serves as an arbitrary anchor that biases respondents’ expectation of the price they will pay.<sup>54</sup> Even HHS recognizes that “a general statement [of WAC] might not provide detailed information about each patient’s [out-of-pocket] cost or **address the potential confusion between list price and [out-of-pocket] for a patient.**”<sup>55</sup> Thus, the Rule is not likely to help consumers make more informed decisions, but instead is likely to bias them with arbitrary information.

---

<sup>51</sup> Claxton, Gary, Matthew Rae, Michelle Long, Anthony Damico and Heidi Whitmore, “Employer Health Benefits: 2018 Annual Survey,” *Kaiser Family Foundation*, 2018, at p. 155, <http://files.kff.org/attachment/Report-Employer-Health-Benefits-Annual-Survey-2018>. For “specialty drugs,” the average copay is \$99 for workers on a plan with a specialty-only tier (98% of workers at large firms). Data for small firms are not reported (at p. 161). The JAMA article does not report what share of the study’s commercially-insured participants are on a plan with three or more tiers.

<sup>52</sup> HHS argues that the majority of Medicare Part D beneficiaries pay a pre-set percentage (32%-50%) of a “negotiated price,” which supposedly “closely resembles the WAC.” (42 C.F.R. § 403, p. 20740). However, according to Dr. Garthwaite, the price on which the Medicare “beneficiary’s cost-sharing is based is the price negotiated by the pharmacy, not WAC. [] This negotiated price is difficult, if not impossible, for a Medicare beneficiary to discern, as it can vary by pharmacy due to preferred pharmacy networks—limited networks of pharmacies that Medicare Part D plan sponsors use to lower costs.” (Garthwaite Declaration, at ¶ 47.) Yet at most 12% of the participants in the study would qualify for Medicare (*see* footnote 45) and it is not discussed in the study whether that subsample (*i.e.*, those who are on Medicare) differed from the other respondents in their predictions. Even for Medicare (Part D) beneficiaries, however, I understand from Dr. Garthwaite’s declaration that a drug with a WAC of \$15,500 would quickly result in entering “catastrophic coverage,” with a coinsurance of 5% of WAC, or \$775 in this fictitious example. (Garthwaite Declaration, at ¶ 50.)

<sup>53</sup>  $21\% + 49\% \times 82\% = 61\%$ . Taking into account Medicaid Part D “catastrophic coverage” beneficiaries will further increase this number.

<sup>54</sup> The Rule compares WAC and out-of-pocket costs for 20 drugs with the highest DTC television advertisement expenditure (42 C.F.R. § 403, p. 20741, Table 1). The table includes two drugs with WAC similar to the study’s high price, one with WAC of \$16,938 and one with WAC of \$12,087. The table implies that the out-of-pocket costs are likely to be in the \$834 to \$4,402 range per month and \$595 to \$5,715 range per month, respectively, for these drugs. However, these ranges do not cover the entire population (*see* notes at the bottom of the table) and show that even within a single plan, out-of-pocket costs may vary by a factor of five.

<sup>55</sup> 42 C.F.R. § 403, at p. 20749 (emphasis added).



**V. BY LEADING MANY CONSUMERS TO OVERESTIMATE THEIR ACTUAL OUT-OF-POCKET COSTS, THE RULE IS LIKELY TO DETER THEM FROM SEEKING INFORMATION FROM A DOCTOR OR OBTAINING TREATMENT**

35. An informed decision about whether to get treatment, and which treatment to choose, or whether to talk to a doctor about a potential treatment, would require that consumers understand several factors, including the actual costs they would incur (*i.e.*, out-of-pocket costs) and benefits that various treatments may provide (*e.g.*, efficacy). Studies indicate that DTC advertising of pharmaceuticals raises awareness of disease conditions and increases the likelihood that consumers will talk to their doctor about their conditions. By increasing the salience of WAC to consumers, the Rule is likely to lead many consumers to assume that the drug is too expensive, thereby deterring them from initiating a conversation with their doctors.

36. In Section V.A below, I will discuss how DTC pharmaceutical advertising benefits patients primarily by encouraging patients to seek treatment. Then in Section V.B, I will discuss how the Rule is likely to diminish the benefits of DTC pharmaceutical television advertising by creating misimpressions about out-of-pocket costs. Finally in Section V.C, I will discuss how the disclaimer in the Rule is unlikely to correct the confusion about out-of-pocket costs caused by the Rule for many consumers or the Rule's effect of diminishing the likelihood that consumers will initiate a conversation with their doctors.

**A. DTC Pharmaceutical Advertising Encourages Patients to Seek Treatment**

37. As HHS recognizes, “consumers are responsible for critical choices related to their treatment with prescription drugs. For example, consumers decide whether to make the initial appointment with a physician[, and] whether to ask the physician about a particular drug or biological product [...]”<sup>56</sup> Research shows that DTC advertising spurs patients to make that initial appointment and ask about available drugs and biological products. For example, a 1999 FDA consumer survey found that exposure to DTC advertising prompted 27 percent of Americans to make an appointment with their doctor to talk about a condition they had not previously discussed.<sup>57</sup> A subsequent similar study concluded that 18 percent of Americans spoke with their

<sup>56</sup> 42 C.F.R. § 403, at pp. 20733-20734.

<sup>57</sup> Aikin, Kathryn J., John L. Swasy, and Amie C. Braman, “Patient and Physician Attitudes and Behaviors Associated with DTC Promotion of Prescription Drugs—Summary of FDA Survey Research Results,” *U.S. Food and Drug Administration*, November 19, 2004, at p. 2,

doctor after viewing a DTC advertisement.<sup>58</sup> According to the FTC, by providing information about benefits and risks, DTC advertising has had positive effects for consumers, such as encouraging consumers to “seek out information about medications and medical conditions, some of which may not have been diagnosed previously” and “have more fruitful, informed conversations with their doctors about treatment options and may permit them to make better-informed health care decisions for themselves.”<sup>59</sup> A recent study of antidepressants similarly concluded that DTC advertising could be beneficial, especially for “conditions that are seen as undertreated.”<sup>60</sup>

38. Not only does DTC advertising motivate consumers to schedule appointments with their health care providers, but the conversations that occur during those appointments better inform the patient about possible treatment—including other available treatment options. As HHS acknowledges: “[t]riggering conversations about a particular drug or biological product and its substitutes may lead to conversations not only about price, but also efficacy and side effects, which in turn may cause both the consumer and the prescriber to consider the cost of various alternatives (after taking into account the safety, efficacy, and advisability of each treatment for the particular patient).”<sup>61</sup>

39. Furthermore, studies reveal that many patients who are motivated by DTC advertising to discuss particular prescription drugs with their health care providers<sup>62</sup> may be

---

<https://www.fda.gov/downloads/AboutFDA/CentersOffices/OfficeofMedicalProductsandTobacco/CDER/UCM600276.pdf>.

<sup>58</sup> Aikin, Kathryn J., John L. Swasy, and Amie C. Braman, “Patient and Physician Attitudes and Behaviors Associated with DTC Promotion of Prescription Drugs—Summary of FDA Survey Research Results,” *U.S. Food and Drug Administration*, November 19, 2004, at p. 2, <https://www.fda.gov/downloads/AboutFDA/CentersOffices/OfficeofMedicalProductsandTobacco/CDER/UCM600276.pdf>.

<sup>59</sup> “Comments of the Staff of the Bureau of Consumer Protection, the Bureau of Economics, and the Office of Policy Planning of the Federal Trade Commission,” *Federal Trade Commission*, May 10, 2004, at p. 12, [https://www.ftc.gov/sites/default/files/documents/advocacy\\_documents/ftc-staff-comment-food-and-drug-administration-concerning-consumer-directed-promotion/040512dtcdrugscomment.pdf](https://www.ftc.gov/sites/default/files/documents/advocacy_documents/ftc-staff-comment-food-and-drug-administration-concerning-consumer-directed-promotion/040512dtcdrugscomment.pdf).

<sup>60</sup> Shapiro, Bradley T., “Positive Spillovers and Free Riding in Advertising of Prescription Pharmaceuticals: The Case of Antidepressants,” *Journal of Political Economy*, Vol. 126, No. 1 (2018): 381-437, at p. 434 (further concluding that “[a]lthough a brand effect is present, it is short-lived, whereas the category expansion effect is more persistent”).

<sup>61</sup> 42 C.F.R. § 403, at p. 20735.

<sup>62</sup> *E.g.*, research has found that “antidepressant advertising leads to new initiations of treatment followed by reductions in absenteeism.” Shapiro, Bradley T., “Promoting Wellness or Waste? Evidence from Antidepressant

prescribed other, potentially less expensive, alternatives.<sup>63</sup> For example, a study of five therapeutic classes of drugs (recent vintage anti-depressants, antihyperlipidemics, proton pump inhibitors, nasal sprays, and antihistamines) found that DTC advertising “has been effective primarily through increasing the size of the entire class” rather than the “within-class market share of advertised drugs.”<sup>64</sup> Similarly, a recent study of DTC advertising of antidepressants concluded that “[a]lthough a brand effect is present, it is short-lived, whereas the category expansion effect is more persistent.”<sup>65</sup> A follow-up study found that DTC television advertising had significant positive spillover effects on prescribing of the therapeutic class as a whole: “antidepressant advertising leads to new initiations of treatment followed by reductions in absenteeism.”<sup>66</sup>

### **B. The Rule Is Likely to Deter Many Consumers from Contacting Their Doctors by Leading Consumers to Overestimate Their Out-of-Pocket Costs**

40. The Rule is likely to diminish the beneficial effect of DTC advertising by causing many consumers to overestimate their actual out-of-pocket costs, which can reduce their interest in a product and potentially delay or deter them from contacting their health care providers.<sup>67</sup>

---

Advertising,” *Becker Friedman Institute for Research in Economics Working Paper Series*, No. 2018-14 (2019): 1-60, at p. 1.

<sup>63</sup> E.g., “[o]ur findings suggest that, for these classes of drugs, DTCA [“direct-to-consumers advertising”] has been effective primarily through increasing the size of the entire class. Overall, we estimate that 13 to 22 percent of the recent growth in prescription drug spending is attributable to the effects of DTCA.” Rosenthal, Meredith B., Ernst R. Berndt, Julie M. Donohue, Arnold M. Epstein, and Richard G. Frank, “Demand Effects of Recent Changes in Prescription Drug Promotion,” *Frontiers in Health Policy Research*, Vol. 6 (2003): 1-26, at p. 1. *See also*, a study on statins sales has found that “a 10% increase in category advertising produces a 0.2% revenue increase for non-advertised drugs,” suggesting that advertising has “a positive spillover effect to non-advertised drugs.” Sinkinson, Michael, and Amanda Starc, “Ask Your Doctor? Direct-to-Consumer Advertising of Pharmaceuticals,” *NBER Working Paper Series*, No. 21045 (2015): 1-54, at pp. 1, 3.

<sup>64</sup> Rosenthal, Meredith B., Ernst R. Berndt, Julie M. Donohue, Arnold M. Epstein, and Richard G. Frank, “Demand Effects of Recent Changes in Prescription Drug Promotion,” *Frontiers in Health Policy Research*, Vol. 6 (2003): 1-26, at pp. 1, 12.

<sup>65</sup> Shapiro, Bradley T., “Positive Spillovers and Free Riding in Advertising of Prescription Pharmaceuticals: The Case of Antidepressants,” *Journal of Political Economy*, Vol. 126, No. 1 (2018): 381-437, at pp. 381, 434.

<sup>66</sup> Shapiro, Bradley T., “Promoting Wellness or Waste? Evidence from Antidepressant Advertising,” *Becker Friedman Institute for Research in Economics Working Paper Series*, No. 2018-14 (2019): 1-60, at p. 1. *See also*, a study on statins sales, Sinkinson, Michael, and Amanda Starc, “Ask Your Doctor? Direct-to-Consumer Advertising of Pharmaceuticals,” *NBER Working Paper Series*, No. 21045 (2015): 1-54, at pp. 1-3.

<sup>67</sup> “[L]aw of demand[.]:] The inverse relationship between the price of a good and the quantity demanded, when all other factors that influence demand are held fixed.” Besanko, D.A. and R.R. Braeutigam, *Microeconomics*, Fourth Edition, Hoboken: John Wiley & Sons, Inc., 2011, at p. 31 (emphasis in the original). “The most enduring legacy of the RAND experiment [on the impact of consumer cost sharing in health insurance on medical spending] is not merely the rejection of the null hypothesis that price does not affect medical utilization, but rather the use of the RAND results to forecast the spending effects of other health insurance contracts. In extrapolating the RAND results out of sample, analysts have generally relied on the RAND estimate of a price elasticity of demand for

Indeed, HHS concedes this risk: “consumers, intimidated and confused by high list prices, may be deterred from contacting their physicians about drugs or medical conditions. ... This could discourage patients from using beneficial medications, reduce access, and potentially increase total cost of care.”<sup>68</sup> The JAMA study (discussed in more detail in section VI) similarly found that consumers shown a high-priced fictitious drug, Mayzerium, were significantly less likely to ask their doctor about the drug than those who were not shown price information.<sup>69</sup> This was true whether or not they were also shown a disclaimer that with insurance, their cost could be zero, but those shown a high price without a disclaimer reported the lowest likelihood to ask their doctor about the drug across all study groups.<sup>70</sup>

41. For these reasons, the Rule will likely not only adversely affect the advertised pharmaceuticals but, more generally, will likely reduce the effectiveness of the advertisements in encouraging patients to seek needed treatment.<sup>71</sup>

**C. The Disclaimer in the Rule is Unlikely to Correct the Biased Expectations of Out-Of-Pocket Costs Caused by the Rule for Many Consumers or the Rule’s Effect of Diminishing the Likelihood that Consumers Will Initiate a Conversation with Their Doctors**

42. The Rule requires manufacturers to include the following disclaimer in the advertisement: “If you have health insurance that covers drugs, your cost may be different.”<sup>72</sup> HHS contends that this disclaimer will mitigate the risk that “disclosure of a drug’s WAC in DTC

---

medical spending of –0.2.” Aron-Dine, Aviva, Liran Einav, and Amy Finkelstein, “The RAND Health Insurance Experiment, Three Decades Later,” *Journal of Economic Perspectives*, Vol. 27, No. 1 (2013): 197-222, at pp. 197, 207-208.

<sup>68</sup> 42 C.F.R. § 403, at p. 20756.

<sup>69</sup> JAMA article, at p. 437, Table 2. *See also*, Section V.C.

<sup>70</sup> JAMA article, at p. 437, Table 2. *See also*, Section V.C.

<sup>71</sup> The FTC document cited above points out that “DTC ads may create misimpressions about drug risks and benefits, and doctors may have to correct these misimpressions and not let them affect their prescribing decisions.” (“Comments of the Staff of the Bureau of Consumer Protection, the Bureau of Economics, and the Office of Policy Planning of the Federal Trade Commission,” *Federal Trade Commission*, May 10, 2004, at p. 12, [https://www.ftc.gov/sites/default/files/documents/advocacy\\_documents/ftc-staff-comment-food-and-drug-administration-concerning-consumer-directed-promotion/040512dtdrugscomment.pdf](https://www.ftc.gov/sites/default/files/documents/advocacy_documents/ftc-staff-comment-food-and-drug-administration-concerning-consumer-directed-promotion/040512dtdrugscomment.pdf).) However, disclosure of WAC in DTC television advertisements will not correct any misleading impressions of a drug’s risks or benefits; it will likely prevent consumers from talking to their doctors about the advertised drug and the possible need for treatment.

<sup>72</sup> 42 C.F.R. § 403, at p. 20732.

television advertisements will overemphasize costs or deter patients from seeking care.”<sup>73</sup> In support, HHS cites the JAMA study.<sup>74</sup> The JAMA study is discussed in more detail in the next section, but HHS’s specific conclusion from that study about the purported mitigating effect of the disclaimer is flawed for the following reasons.

43. First, as discussed above, the results of the JAMA study *reinforce* my opinion that viewing a drug’s price reduces a patient’s interest in contacting his or her physician. In the JAMA study, some of the participants were shown a price for Mayzerium, with the disclaimer that “eligible patients may be able to get Mayzerium for as little as \$0 per month,” while other participants were not provided the disclaimer.<sup>75</sup> HHS appears to refer to the finding in the study that respondents who viewed a high price for the fictitious drug, but saw the disclaimer, had a significantly higher intent (in the study’s hypothetical scenario) of asking their doctor about the drug than those who saw the same price but did not see the disclaimer (an average response of 4.48 on a 1-to-7 scale compared with 2.90).<sup>76</sup> However, those respondents who were provided *no price* had a significantly higher intent to ask their doctors (average 5.12 response) than both those who were shown a price with a disclaimer or without it.<sup>77</sup>

44. Second, in making its claim, HHS ignores the fact that the disclaimer in the JAMA study is very different from the disclaimer proposed in the Rule: “If you have health insurance that covers drugs, your cost may be different.”<sup>78</sup> In particular, the disclaimer in the JAMA study evoked zero price (“\$0 per month”). Research shows that zero price is a “special price” and that consumers experience such a positive affect (good feeling) when encountering something for free that they

---

<sup>73</sup> 42 C.F.R. § 403, at pp. 20741-20742.

<sup>74</sup> 42 C.F.R. § 403, at pp. 20741-20742.

<sup>75</sup> JAMA article, at p. 436.

<sup>76</sup> JAMA article, at p. 437, Table 2. Here and throughout, I use “significantly higher” or “significantly lower” as shorthand to refer to cases when one mean is larger than the other and, unless otherwise specified, the corresponding medians are statistically significantly different. Table 2 of the study reports means and statistical tests for medians.

<sup>77</sup> JAMA article, at p. 437, Table 2. While the article does not test for statistical difference between the group provided no price and the group provided the high price with a disclaimer, a z-test shows that they are statistically significantly different on this measure ( $z = 2.65$ ,  $p = 0.008$ ). “Comparison of Two Means,” *Yale University, Department of Statistics*, <http://www.stat.yale.edu/Courses/1997-98/101/meancomp.htm> (viewed June 7, 2019). This is a test of means. The tests in the article are tests of medians as explained in Table 2 of the article, but one cannot conduct such a test of medians without the underlying data.

<sup>78</sup> 42 C.F.R. § 403, at p. 20732.

behave as if the free product not only is available at no cost but also has incremental benefits.<sup>79</sup> In contrast, far from evoking a zero price, HHS’s mandated disclaimer does not even state that a consumer’s cost may be *lower* than WAC—only that it may be “different.” The Rule’s disclaimer does not provide *any* specific number and because of its ambiguity, cannot be assumed to have the same impact as the disclaimer used in the JAMA study.

45. Third, and relatedly, HHS ignores a large body of academic research that shows that disclaimers are often ineffective. One academic study shows that “remedial statements may be at least as confusing and misleading as the advertising they are designed to counteract” and that “comprehension is made more difficult as the number of concepts increases and finite memory resources are expended to maintain information in active memory for processing.”<sup>80</sup> Other research points to a multitude of factors which can render disclaimers ineffective, such as consumers’ limited attention,<sup>81</sup> or information being ignored or discounted as “irrelevant, incomprehensible, or requiring too much effort,”<sup>82</sup> or if consumers do not view the disclaimer as useful or do not have “the knowledge to be able to make the information from the environment meaningful.”<sup>83,84</sup>

46. Therefore, whether and to what extent a disclaimer impacts consumer response is an empirical question, which requires careful empirical study of the particular language of a disclaimer, in the context of its surrounding message. HHS points to no such empirical evidence

---

<sup>79</sup> Shampanier, Kristina, Nina Mazar, and Dan Ariely, “Zero as a Special Price: The True Value of Free Products,” *Marketing Science*, Vol. 26, No. 6 (2007): 742-757, at p. 742.

<sup>80</sup> Jacoby, Jacob, Margaret C. Nelson, and Wayne D. Hoyer, “Corrective Advertising and Affirmative Disclosure Statements: Their Potential for Confusing and Misleading the Consumer,” *Journal of Marketing*, Vol. 46, No. 1 (1982): 61-72, at pp. 62-63.

<sup>81</sup> “[L]imited attention, motivated attention, and biased assessments of probability can undermine the goal of promoting informed consumer choice, potentially rendering disclosure ineffective.” In particular, “there are serious limitations on the amount of information to which people can attend at any point in time. Bounded attention renders many disclosures useless because consumers ignore them.” Furthermore, a disclosure “can be affirmatively counterproductive when it distracts from other, possibly more important, information.” Loewenstein, George, Cass R. Sunstein, and Russell Golman, “Disclosure: Psychology Changes Everything,” *Annual Review of Economics*, Vol. 6 (2014): 391-419, at p. 396; *see also* pp. 398-399.

<sup>82</sup> Stewart, David W., and Ingrid M. Martin, “Advertising Disclosures: Clear and Conspicuous or Understood and Used?,” *Journal of Public Policy & Marketing*, Vol. 23, No. 2 (2004): 183-192, at p. 185.

<sup>83</sup> Brucks, Merrie, Andrew A. Mitchell, and Richard Staelin, “The Effect of Nutritional Information Disclosure in Advertising: An Information Processing Approach,” *Journal of Public Policy & Marketing*, Vol. 3 (1984): 1-25, at p. 23.

<sup>84</sup> The disclaimer is different from WAC itself. As discussed above in Section IV.B, WAC, as a numerical figure—and one conveying pricing information—is likely to be anchoring information. More generally, the disclaimer is boilerplate and not specific (unlike WAC). It says that costs may be different but not how different.

(pertaining to the Rule’s disclaimer) in the preamble to its Rule. To the contrary, HHS relies on a single study which tests a disclaimer different from the one required by the Rule. Unlike the disclaimer in the study on which HHS relies, the disclaimer required by the Rule does not specify that a consumer’s out-of-pocket cost may be \$0; indeed, it does not specify *any* amount or the *extent* to which a consumer’s out-of-pocket cost might vary from WAC. As such, the study on which HHS relies cannot support the general supposition that the actual disclaimer will have any mitigating effect on whether consumers are deterred from treatment by the inclusion of WAC in DTC advertising. Regardless of these flaws in HHS’s application of the JAMA study findings, even the group shown the disclaimer with the high price reported significantly lower intent to talk to their doctor in the hypothetical scenario than the group not shown a price.

## VI. THE JAMA STUDY DOES NOT SUPPORT THE RULE

47. In the Rule, HHS relies extensively on the results of the JAMA study to conclude that disclosing WAC in DTC pharmaceutical advertisements will lead to more informed decisions by improving how accurately consumers predict their out-of-pocket costs.<sup>85</sup> In the study, 580 participants were randomly assigned to one of five groups and each group was shown one of five print DTC pharmaceutical advertisements for Mayzerium, a fictitious Type 2 diabetes prescription drug.<sup>86</sup> The advertisement presented to one group did not display any price information (I will refer to it as the “no-price” group).<sup>87</sup> Four groups were presented with advertisements displaying a “price,” \$50 per month for two groups and \$15,500 per month for two others (I will refer to them as “low-price” and “high-price” groups respectively).<sup>88</sup> Advertisements in one of the low-price groups and in one of the high-price groups also displayed a disclaimer stating that “eligible patients may be able to get Mayzerium for as little as \$0 per month.”<sup>89</sup> After reviewing the advertisement, participants were asked a series of questions, including predicting their out-of-pocket cost for the

---

<sup>85</sup> 42 C.F.R. § 403, at pp. 20734-20735, 20741-20742, 20746-20747, 20752-20753, 20755, 20757.

<sup>86</sup> JAMA article, at p. 436.

<sup>87</sup> JAMA article, at p. 436.

<sup>88</sup> JAMA article, at p. 436. (These “prices” represent “the 1st and 99th percentiles, respectively, of the average wholesale price in 2016 of diabetic prescription drugs.”)

<sup>89</sup> JAMA article, at p. 436. *See also*, JAMA article supplemental Appendix. For example, participants in the high-price with-disclaimer group read “[t]he price for Mayzerium is \$15,500 a month, *but eligible patients may be able to get Mayzerium for as little as \$0 a month*” (emphasis in the original).

drug, and likelihood to ask their doctor about the drug.<sup>90</sup>

48. The authors caution about the generalizability of the study to other drugs and situations.<sup>91</sup> Notwithstanding that caution, HHS repeatedly cites and relies on the study in the Rule.<sup>92</sup> In particular, HHS concludes that participants shown the high price (and no disclaimer) got closer to estimating the purported out-of-pocket cost:

[R]esearchers asked subjects to estimate their monthly OOP [out-of-pocket] costs for a drug with a hypothetical price of \$15,500 per month. When subjects were provided no information about price, they responded that their OOP costs would be, on average, \$78 per month. This finding tends to support our belief that patients seem to underestimate the true cost of drugs advertised on television. However, when subjects were told the price, they more accurately determined their OOP costs at \$2,787 or about 18 percent of the hypothetical price. The informed estimates were **far closer to what one would expect to see paid at the pharmacy counter under most plans** than the uninformed assessment of \$78.<sup>93</sup>

49. However, as discussed below, HHS overlooks various limitations of the study and attempts to extend the study's limited findings well beyond what they actually support.

50. First, the JAMA study does not support HHS's claim that \$2,787 is a more accurate estimate of the study drug's monthly out-of-pocket cost "under most plans."<sup>94</sup> This is a conclusion that HHS reaches, but is not a finding in the study. For example, the article makes no claim about by what percent, on average, respondents' predicted out-of-pocket costs would have differed from their actual out-of-pocket costs. Neither does the article state whether, as HHS suggests, the high-price no-disclaimer group performed more accurately in that respect than the no-price group.

51. As an initial matter, HHS's conclusion is nonsensical because no one can know the actual out-of-pocket cost for the drug. Not only is the study's drug Mayzerium fictitious, but the study did not report the particulars of each insured participant's plan.<sup>95</sup> Thus, the drug's true out-of-pocket cost for each participant cannot be known. As discussed in Section IV.C, out-of-pocket

<sup>90</sup> JAMA article, at p. 436.

<sup>91</sup> JAMA article, at p. 436 ("results might not be generalizable to drugs of other therapeutic classes [*i.e.*, other than Type 2 diabetes drugs], in different price ranges [*i.e.*, other than for the \$50 and \$15,500 'price'], or using other marketing strategies in DTCPA [*i.e.*, other than a print ad].")

<sup>92</sup> 42 C.F.R. § 403, at pp. 20734-20735, 20741-20742, 20746-20747, 20752-20753, 20755, 20757.

<sup>93</sup> 42 C.F.R. § 403, at p. 20735 (emphasis added); *see also* JAMA article, at p. 437, Table 2.

<sup>94</sup> As HHS claims in 42 C.F.R. § 403, at p. 20735.

<sup>95</sup> *See* footnote 45.



drug costs differ greatly from consumer to consumer and even for the same consumer over the course of the year.<sup>96</sup> I understand from Dr. Garthwaite that out-of-pocket costs for drugs vary by whether a consumer is insured or not, who the consumer is insured by (*i.e.*, Medicare, Medicaid, private commercial insurance), the specific cost-sharing structure of the consumer's plan (*i.e.*, deductibles, copays, and coinsurance), and the status of the drug on the plan's formulary (*i.e.*, covered, high-tier, low-tier, not covered), among many other factors.<sup>97</sup> As discussed in detail in Section IV.C, the \$2,787 (as well as the 95% confidence interval surrounding it) is an extremely inaccurate prediction of the actual out-of-pocket costs paid by a majority of consumers for any drug. For example, if the JAMA study sample is representative of the U.S. population, following HHS's logic, about 21% of respondents (the number corresponding to the percent of the US population on Medicaid) should have estimated their out-of-pocket costs to be \$8 or lower.<sup>98</sup> However, the implied range for 95% of respondents in the high-price no-disclaimer group is from \$1,839 to \$3,735.<sup>99</sup> As a result, a substantial number of participants overestimated their out-of-pocket costs by over 20,000%.<sup>100</sup> A similar overestimation is true for most participants covered by commercial insurance (including those who have already reached their yearly cap) and for some participants covered by Medicare Part D.<sup>101</sup> Overall, assuming the JAMA study sample is representative of the U.S. population, for a large section of the sample, there is no basis to state that \$1,839 to \$3,735 is a better prediction of their out-of-pocket costs than \$78. Based on this discussion, it would make sense to look at the JAMA study data by participants' insurance type (or lack of it), but the article does not do it.

52. Second, the scenarios in the JAMA study, particularly with respect to those presented to the high-price groups, are not representative of the overwhelming majority of real world WAC for diabetes drugs or drugs in general. As the JAMA article acknowledges, 99% of

---

<sup>96</sup> Garthwaite Declaration, at ¶ 53.

<sup>97</sup> See Section IV.C.

<sup>98</sup> See Section IV.C and in particular footnote 45.

<sup>99</sup> See Section IV.C.

<sup>100</sup> See Section IV.C.

<sup>101</sup> See Section IV.C and in particular footnote 45.

all diabetes drugs have a lower WAC than \$15,500.<sup>102</sup> Further, of the 20 drugs with the highest 2016 television advertising expenditures, only one costs more than \$15,500 and only one other costs more than \$10,000.<sup>103</sup> WAC for the rest is considerably lower, under \$6,000 per month.<sup>104</sup> Thus, the advertisements presented to the high-price groups in the study are not representative of most situations that consumers are likely to encounter in DTC advertising once the Rule takes effect. Generally, one cannot generalize from outliers. And in fact, participants in the two groups shown a low price (\$50, which is lower than 99% of all diabetes drugs,<sup>105</sup> *i.e.*, another outlier), regardless of whether they saw the disclaimer, on average estimated that their out-of-pocket costs would be the same as the disclosed “price.”<sup>106</sup> This outcome is no more accurate than for those presented with a high price as, generally, out-of-pocket cost is a fraction of WAC, as discussed above. Yet while HHS references the no-price and high-price groups in the Rule, HHS largely ignores the low-price groups presented with a \$50 “price.”<sup>107</sup>

53. HHS ignores other limitations of the JAMA study as well. Among other things, the study addresses *print* advertisements, not television advertisements. Television advertisements elicit different responses from consumers than print advertisements.<sup>108</sup> Further, any survey should target the relevant population about which it seeks to draw conclusions. Therefore, one of the first steps in deciding whether the survey results are relevant and meaningful is to evaluate the target population or universe for the survey.<sup>109</sup> The universe is that segment of the population whose beliefs are relevant to the issues in the case. As Professor Thomas McCarthy, an expert on proper survey methodology, points out, “[s]election of the proper universe is a crucial step, for even if the

---

<sup>102</sup> “The remaining 4 advertisements disclosed either a low (\$50 per month) or high (\$15 500 per month) price, representing the 1st and 99th percentiles, respectively, of the average wholesale price in 2016 of diabetic prescription drugs.” JAMA article, at p. 436.

<sup>103</sup> 42 C.F.R. § 403, at p. 20741, Table 1.

<sup>104</sup> 42 C.F.R. § 403, at p. 20741, Table 1.

<sup>105</sup> JAMA article, at p. 436.

<sup>106</sup> JAMA article, at p. 437, Table 2.

<sup>107</sup> HHS references the no-price and high-price groups nine times (42 C.F.R. § 403, at pp. 20734-20735, 20741-20742, 20746-20747, 20752, 20755, 20757) and the low-price groups one time (42 C.F.R. § 403, at pp. 20752-20753).

<sup>108</sup> See footnotes 30, 31.

<sup>109</sup> “Identification of the proper target population or universe is recognized uniformly as a key element in the development of a survey.” Diamond, Shari Seidman, “Reference Guide on Survey Research,” in *Reference Manual on Scientific Evidence*, Third Edition, Federal Judicial Center, (2011): 359-423, footnote 76, at p. 376; see also, pp. 376-387.

proper questions are asked in a proper manner, if the wrong persons are asked, the results are likely to be irrelevant.”<sup>110</sup> By contrast, while the JAMA study focuses on a fictitious type 2 diabetes drug, only 6% of respondents in the study had a history of type 2 diabetes.<sup>111</sup> In other words, for 94% of the study participants, the study scenario was likely *irrelevant*. The sample is also skewed in the sense that 20% of participants did not have health insurance while the corresponding value in the U.S. population is only 9%.<sup>112</sup>

54. For these reasons, HHS is stretching the JAMA study beyond what its findings logically support, especially in light of its design limitations.

I declare and state the foregoing is true and accurate to the best of my knowledge.



---

Ravi Dhar

June 14, 2019

---

<sup>110</sup> McCarthy, J. Thomas, *McCarthy on Trademarks and Unfair Competition*, Fourth Edition, Thomson Reuters, 2013, § 32:159, at p. 32-363.

<sup>111</sup> JAMA article, at p. 436, Table 1.

<sup>112</sup> JAMA article, at p. 436, Table 1; Garthwaite Declaration, at ¶ 52.

**APPENDIX A  
CURRICULUM VITAE**

April 2019

**RAVI DHAR**  
 Yale School of Management  
 165 Whitney Avenue  
 Yale University  
 New Haven, CT 06520  
 (203) 432-5947

---

**Employment**

<b>George Rogers Clark Professor of Management</b>	<b>2005 - Present</b>
<b>Professor of Psychology (<i>joint appointment</i>)</b>	<b>2003 – Present</b>
<b>Director, Yale Center for Customer Insights</b>	<b>2004 – Present</b>
<b>Professor of Marketing,</b>	<b>2000 – Present</b>
Associate Professor of Marketing,	1997 - 2000
Assistant Professor of Marketing	1992 - 1997
Yale School of Management	

**Other Appointments**

Visiting Faculty, HEC Paris	Summer 1996
Visiting Associate Professor, Stanford University	Spring 1998
Visiting Professor, Erasmus University	Summer 2000, 2001
Visiting Professor, New York University	Spring 2005, Spring 2010

**Education**

<b>Haas School of Business, UC Berkeley</b>	1988-1992
Ph. D. (Business Administration)	1992
M.S. (Business Administration)	1990
<b>Indian Institute of Management</b>	1987
M.B.A.	
<b>Indian Institute of Technology</b>	1985
B.Technology	

**Academic Honors and Fellowships**

Distinguished Alumnus Award, Indian Institute of Management, 2013  
 Distinguished Scientific Contribution Award, SCP, 2012  
 Yale SOM Alumni Association Teaching Award, 2012  
 Finalist O'Dell Award 2012  
 Finalist, O'Dell Award, 2008  
 Winner, O'Dell Award 2005  
 Finalist, O'Dell Award, 2004  
 Finalist, Paul Green Award, 2004  
 AMA Consortium Faculty Fellow, 2003- 2009, 2010, 2012, 2013  
 INFORMS Doctoral Consortium Faculty – Multiple Years  
 ACR Doctoral Consortium Faculty – Multiple Years  
 John A. Howard Doctoral Dissertation Award (Honorable Mention), 1993  
 AMA Doctoral Consortium Fellow, 1991

**Research Interests**

Consumer Behavior	Marketing Strategy
Judgment and Decision Making	Branding
E-Commerce	Behavioral Finance

**Teaching Interests**

Marketing Management	Consumer Behavior
Marketing Strategy	Behavioral Decision Theory
Financial Services	E-Commerce Marketing

**Professional Affiliation (Member)**

American Marketing Association  
Association for Consumer Research  
Society of Judgment and Decision Making

**Professional Activities**

Editorial Board, *Journal of Consumer Research*, 1997 – Present, Past Associate Editor  
*Journal of Consumer Psychology*, 1997 – 2002, 2005 - Present  
*Journal of Marketing Research*, 2001 – Present, Associate Editor  
*Journal of Marketing*, 2005 - Present  
*Marketing Letters*, 2000 - Present  
*Marketing Science*, 2002- 2011, Past Area Editor

Occasional Reviewer, *Marketing, Management, Psychology Journals, NSF, etc.*

**Publications in Journals**

**Approximate Number of Citations in Google Scholar: 14,000+**

1. “By-Brand or By-Category? The Effect of Display Format on Brand Extension Evaluation,” (with Xiaoying Zheng and Ernest Baskin), *Journal of Retailing*, in press.
2. “You Don’t Blow Your Diet on Twinkies: Choice Processes When Choice Options Conflict with Incidental Goals,” (with K. Goldsmith and EMS Friedman), *Journal of the Association for Consumer Research*, 2019.
3. “The Uncertain Self: How Self-Concept Structure Affects Subscription Choice,” (with Jennifer Savary), *Journal of Consumer Research*, conditional accept, 2018.

4. “Apples, Oranges and Erasers: The Effect of Considering Similar versus Dissimilar Alternatives on Purchase Decisions,” (with Liz Friedman and Jennifer Savary), *Journal of Consumer Research*, 2018.
5. “Seeing Stars: How the Binary Bias Distorts the Interpretation of Customer Ratings,” (with Matt Fisher and George Newman), *Journal of Consumer Research*, 2018.
6. “Effect of Intelligence on Consumers’ Responsiveness to a Pro-Environmental Tax: Evidence from Large-Scale Data on Car Acquisitions of Male Consumers,” (with Jaakko Aspara and Xueming Luo), *Journal of Consumer Psychology*, 2017.
7. “Proximity of Snacks to Beverages Increases Food Consumption in the Workplace: A Field Study,” (with E. Baskin, M. Gorlin, Z. Chance, N. Novemsky, K Huskey, M. Hatzis), *Appetite*, 2016.
8. “Mental Representation Changes the Evaluation of Green Product Benefits,” (with Kelly Goldsmith and George Newman), *Nature Climate Change*, 2016.
9. “Closer to the Creator: Temporal Contagion Explains The Preference for Earlier Serial Numbers,” (with R. Smith and G. Newman), *Journal of Consumer Research*, 2016.
10. “Sophisticated by Design: the Nonconscious Influences of Primed Concepts and Atmospheric Variables on Consumer Preferences,” (with T. Andrew Poehlman and John A. Bargh), *Customer Needs and Solutions*, 2015.
11. “Positive Consequences of Conflict on Decision Making,” (with J. Savary, T. Kleiman, and R. Hassin), *Journal of Experimental Psychology: General*, 2015.
12. “The Technological Conundrum: How Rapidly Advancing Technology Can Lead To Commoditization,” (with T. Chan and W. Putsis), *Customer Needs and Solutions*, 2015.
13. “When Going Green Backfires: How firm Intentions Shape the Evaluation of Socially Beneficial Product Enhancements,” (with G. Newman and M. Gorlin), *Journal of Consumer Research*, 2014.
14. “Why Choosing Healthy Foods Is Hard, and How to Help: Presenting 4P’s Framework for Behavior Change,” (with Z. Chance and M. Gorlin), *Customer Needs and Solutions*, 2014.
15. “Giving Against the Odds: When Tempting Alternatives Increase Willingness to Donate,” (with J. Savary and K. Goldsmith), *Journal of Marketing Research*, 2014.
16. “Authenticity is Contagious: Brand Essence and the Original Source of Production,” (with George Newman), *Journal of Marketing Research*, 2014.

17. "A Dual System Framework to Understand Preference Construction Processes in Choice," (with M. Gorlin), *Journal of Consumer Psychology*, 2013.
18. "Refining the dual-process theory of preference construction: A reply to Gawronski, Martin and Sloman, Stanovich, and Wegener and Chien," (with M. Gorlin), *Journal of Consumer Psychology*, 2013.
19. "Negativity Bias and Task Motivation: Testing the Effectiveness of Positively Versus Negatively Framed Incentives," (with K. Goldsmith), *Journal of Experimental Psychology: Applied*, 2013.
20. "Representation and Perceived Similarity: How Abstract Mindset Aids Choice from Large Assortments," (with J. Xu and Z. Jiang), *Journal of Marketing Research*, 2013.
21. "Comparing Apples to Apples or Apples to Oranges: The Role of Mental Representation in Choice Difficulty," (with U. Khan and E. Kim), *Journal of Marketing Research*, 2013.
22. "Adding Small Differences Can Increase Similarity and Choice," (with J. Kim and N. Novemsky), *Psychological Science*, 2013.
23. "When Guilt Begets Pleasure: The Positive Effect of a Negative Emotion," (with K. Goldsmith and E. Kim), *Journal of Marketing Research*, 2012.
24. "Bridging the Gap between Joint and Individual Decisions: Deconstructing Preferences in Relationships," (with M. Gorlin), *Journal of Consumer Psychology*, 2012.
25. "The Importance of the Context in Brand Extension: How Pictures and Comparisons Shift Consumers' Focus from Fit to Quality," (with T. Meyvis and K. Goldsmith), *Journal of Marketing Research*, 2012.
26. "Self-Signaling and the Costs and Benefits of Temptation in Consumer Choice," (with K. Wertenbroch), *Journal of Marketing Research*, 2012.
27. "Price Framing Effects on Purchase of Hedonic and Utilitarian Bundles," (with U. Khan), *Journal of Marketing Research*, 2010.
28. "Making Products Feel Special: When Metacognitive Difficulty Enhances Evaluation," (with A. Pocheptsova and A. Labroo), *Journal of Marketing Research*, 2010.
29. "Modeling the Under Reporting Bias in Panel Survey Data," (with Sha Yang and Yi Zhao) *Marketing Science*, 2010.



30. "The Effect of Decision Order on Purchase Quantity Decisions," (with I. Simonson and S. M. Nowlis), *Journal of Marketing Research*, 2010.
31. "Tradeoffs and Depletion in Choice," (with N. Novemsky, J. Wang, R. Baumeister), *Journal of Marketing Research*, 2010.
32. "Opportunity Cost Neglect," (with S. Frederick, N. Novemsky, J. Wang, and S. Nowlis), *Journal of Consumer Research*, 2009.
33. "Anticipating Adaptation to Products," (with J. Wang and N. Novemsky), *Journal of Consumer Research*, 2009.
34. "Deciding Without Resources: Psychological Depletion and Choice in Context," (with O. Amir, A. Pochepstova, and R. Baumeister), *Journal of Marketing Research*, 2009.
35. "Customization Procedures and Customer Preferences," (with A. Valenzuela and F. Zettelmeyer), *Journal of Marketing Research*, 2009.
36. "Beyond Rationality: The Content of Preferences," (with N. Novemsky), *Journal of Consumer Psychology*, 2008.
37. "Of Frog Wines and Frowning Watches: Semantic Priming of Perceptual Features and Brand Evaluation," (with A. Labroo and N. Schwarz), *Journal of Consumer Research*, 2008.
38. "When Thinking Beats Doing: The Role of Optimistic Expectations in Goal-Based Choice," (with A. Fishbach and Y. Zhang), 2007, *Journal of Consumer Research*.
39. "Seeing The Forest Or The Trees: Implications of Construal Level Theory for Consumer Choice," (with E. Kim), *Journal of Consumer Psychology*, 2007
40. "Where There Is a Way, Is There a Will? The Effect of Future Choices on Self-Control," (with U. Khan), *Journal of Experimental Psychology: General*, 2007
41. "Preference Fluency in Choice," (with N. Novemsky, N. Schwarz, and I. Simonson), 2007, *Journal of Marketing Research*.
42. "The Shopping Momentum Effect," (with J. Huber and U. Khan), 2007, *Journal of Marketing Research*.
43. "Institutional Perspectives in Real Estate Investing," (with W. Goetzmann), 2006, *Journal of Portfolio Management*.
44. "Are Rheumatologists' Treatment Decisions Influenced by Patients Age?," (with L. Fraenkel and N. Rabidou), 2006, *Rheumatology*.

45. "Sub-goals as Substitutes or Complements: The Role of Goal Accessibility," (with A. Fishbach and Y. Zhang), 2006, *Journal of Personality & Social Psychology*.
46. "Up Close and Personal: A Cross Sectional Study of the Disposition Effect," (with N. Zhu), *Management Science*, 2006.
47. "Licensing Effect in Consumer Choice," (with U. Khan), *Journal of Marketing Research*, 2006.
48. "Goals as excuses or guides: The liberating effect of perceived goal progress on choice," (with A. Fishbach), *Journal of Consumer Research*, 2005.
49. "Goal Fulfillment and Goal Targets in Sequential Choice," (with N. Novemsky), *Journal of Consumer Research*, 2005.
50. "Towards extending the Compromise Effect to Complex Buying Contexts," (with Anil Menon and Bryan Maach), *Journal of Marketing Research*, 2004.
51. "To Buy or Not to Buy: Response Mode Effects on Consumer Choice," (with S. Nowlis), *Journal of Marketing Research*, 2004.
52. "Hedging Customers," (with R. Glazer), *Harvard Business Review*, 2003.
53. "The Effect of Forced Choice on Choice," (with I. Simonson), *Journal of Marketing Research*, 2003.
54. "Coping with Ambivalence: The Effect of removing a 'fence sitting' option on Consumer Attitude and Preference Judgments," (with B. Kahn and S. Nowlis), *Journal of Consumer Research*, 2002.
55. "Consumer Psychology: In Search of Identity," (with Z. Carmon, A. Drolet, S. Nowlis, and I. Simonson), *Annual Review of Psychology*, 2001.
56. "An Empirical Analysis of the Determinants of Category Expenditure," (with W. Putsis), *Journal of Business Research*, 2001.
57. "Trying Hard or Hardly Trying: An Analysis of Context Effects in Choice," (with S. Nowlis and S. Sherman), *Journal of Consumer Psychology*, September 2000.
58. "Consumer Choice between Hedonic and Utilitarian Goods," (with K. Wertenbroch), *Journal of Marketing Research*, February 2000.
59. "Assessing the Competitive Interaction Between Private Labels and National Brands," (with R. Cotterill and W. Putsis), *Journal of Business*, January 2000.
60. "Comparison Effects on Preference Construction," (with S. Nowlis and S. Sherman), *Journal of Consumer Research*, December 1999.

61. "The Effect of Time Pressure on Consumer Choice Deferral," (with S. Nowlis), *Journal of Consumer Research*, March 1999.
62. "Making complementary choices in consumption episodes: Highlighting Versus Balancing," (with I. Simonson), *Journal of Marketing Research*, February 1999.
63. "The Many Faces of Competition," (with W. Putsis), *Marketing Letters*, July 1998.
64. "Consumer Preference for a No-Choice Option," *Journal of Consumer Research*, September 1997.
65. "Context and Task Effects on Choice Deferral," *Marketing Letters*, January 1997.
66. "The Effect of Decision Strategy on the Decision to Defer Choice," *Journal of Behavioral Decision Making*, December 1996.
67. "The Effect of Common and Unique features in Consumer Choice," (with S. J. Sherman), *Journal of Consumer Research*, December 1996.
68. "Similarity in Context: Cognitive Representation and the Violation of Preference Invariance in Consumer Choice," (with R. Glazer), *Organizational Behavior and Human Decision Processes*, September 1996.
69. "The Effect of the focus of comparison on consumer preferences," (with I. Simonson), *Journal of Marketing Research*, November 1992.

#### **Publications in Book Chapters / Managerial Summary**

1. Introduction to the Special Issue: Goals and Motivation (with U. Khan and A. Fishbach), *Journal of the Association for Consumer Research*, 2019.
2. "Nudging Healthy Choices with the 4 Ps Framework for Behavioral Change," (with Zoe Chance, M. Hatzis, M. Bakker, and L. Ash), *Handbook of Marketing Analytics: Methods and Applications in Marketing Management, Public Policy, and Litigation Support.*
3. "How Google Optimized Office Snacks," (with Zoe Chance, Michelle Hatzis, and Michiel Bakker," Harvard Business Review, 2016.
4. "Nudging Individuals Toward Healthier Food Choices with the 4Ps Framework for Behavior Change," (with Zoe Chance, Ravi Dhar, Michelle Hatzis, and Kim Huskey), *Behavioral Economics and Public Health*, (eds. C. Roberto and I. Kawachi), 2015.
5. "The Power of Customer's Mindset," (with Kelly Goldsmith and Jing Xu), *Sloan Management Review*, 2010.

6. "Giving Consumers License to Enjoy Luxury," (with U. Khan and S. Schmidt), *Sloan Management Review*, 2010.
7. "Brand Permission: A Conceptual and Managerial Framework," (with Tom Meyvis), *Handbook on Brand and Experience Management*, (eds. Bernd H. Schmitt and David L. Rogers), Elgar Publishing, Northampton, MA, 2008.
8. "Dynamics of goal-based choice," (with A. Fishbach), *Handbook of Consumer Psychology*, (eds. C. P. Haugtvedt, P.M. Herr & F. R. Kardes), Erlbaum Press, 2007.
9. "A Behavioral Decision Theoretic Perspective on Hedonic and Utilitarian Choice," (with U. Khan and K. Wertebroch), *Inside Consumption: Frontiers of Research on Consumer Motives, Goals, and Desires*, (eds. S. Ratneshwar and David Glen Mick), London: Routledge, 2005.
10. "Customer Relations Online," *Wiley Next Generation of Business Thinkers*, (ed. Subir Chowdhury), 2004.
11. "Defining Customers' Needs and Values for Marketing Success," *Inside the Minds: Textbook Marketing*, Aspatore Press, 2003.
12. "The Online Store," (with D. R. Wittink), *Managing Customer Relationships*, (eds. Martha Rogers and Don Peppers), Wiley, 2003.
13. "Choice Deferral," *The Elgar Companion to Consumer Research and Economic Psychology*, (eds. P. Earl and S. Kemp), 1999.

### **Select Working Papers / Papers Under Review**

1. "Ironic Effects of Goal Activation on Choice," (with K. Goldsmith), under first review.
2. "The Effect of Goal Breadth on Consumer Preferences," (with E. Kim), under first review.
3. "Can Investors Multiply and Divide: Investors' response to Stock Splits," (with N. Zhu and Dan Ariely).
4. "Category Expenditure and Promotion: Can Private Labels Expand the Pie," (with W. Putsis), Working Paper.
5. "Mindset over Matter: The Interplay between Goals and Preferences," (with A. Pochepstova), Working Paper.

### **Conference Proceedings Publications**

1. "Constructing preferences: The role of comparisons in consumer judgment and choice," (with S. Zhang) *Proceedings of the Association for Consumer Research*, University of Chicago Press (1999).
2. "Sequential Choices and Uncertain Preferences," *Proceedings of the Association for Consumer Research*, University of Chicago Press (1997).
3. "Causes and Effects of Reference Effects in Choice," *Proceedings of the Association for Consumer Research*, University of Chicago Press (1997).
4. "New Directions in Mental Accounting," *Proceedings of the Association for Consumer Research*, University of Chicago Press (1995).
5. "Decision Difficulty and Uncertain Preferences: Implications for Consumer Choice," *Proceedings of the Association for Consumer Research*, University of Chicago Press (1994).
6. "Behavioral Decision Research: Theory and Applications," *Proceedings of the Association for Consumer Research*, University of Chicago Press (1993).
7. "To Choose Or Not To Choose: This is the Question," *Proceedings of the Association for Consumer Research*, University of Chicago Press (1992).

### **Invited and Conference Presentations**

#### **Invited Academic Presentations (\* denotes multiple presentations)**

*Boston College*  
*Carnegie-Mellon University*  
*Chinese University, Hong Kong*  
*Columbia University\**  
*Cornell University\**  
*Duke University\**  
*Harvard University*  
*Hong Kong University of Science and Technology*  
*IIPM\**  
*INSEAD\**  
*Indiana University*  
*Korea University*  
*London Business School\**  
*MIT\**  
*National University of Singapore*  
*New York University\**  
*Northwestern University\**  
*Ohio State University*

*Pennsylvania State University*  
*Stanford University\**  
*Texas A&M University*  
*Tilburg University*  
*Tulane University*  
*University of Alberta*  
*University of British Columbia (planned)*  
*University of California, Berkeley\**  
*University of California, Los Angeles\**  
*University of California, San Diego*  
*University of Chicago\**  
*University of Delaware*  
*University of Colorado*  
*University of Florida*  
*University of Houston*  
*University of Illinois, Urbana-Champaign\**  
*University of Miami*  
*University of Maryland*  
*University of Massachusetts, Amherst*  
*University of Michigan\**  
*University of North Carolina\**  
*University of Peking\**  
*University of Pennsylvania\**  
*University of Rotterdam\**  
*University of Texas, Austin*  
*University of Utah*  
*University of Toronto\**  
*University of Vienna*  
*Washington University, St. Louis\**

**Conference Presentations (Over 200 presentations at conferences, consortiums, keynotes, symposiums, workshops, etc.) Recent presentations include:**

Keynote Addresses to Practitioners, Various Events  
Choice Symposium  
CEO Roundtables, New York and New Haven  
CMO Roundtables, Various Organizations  
ACR  
Informs  
Judgment and Decision Making  
Behavioral Decision Research in Management  
Society of Consumer Psychology

**APPENDIX B**  
**MATERIALS RELIED UPON**

## Case Documents

Expert Declaration of Professor Craig Garthwaite, June 14, 2019.

## Academic Articles, Books, and Publications

Ariely, Dan, George Loewenstein, and Drazen Prelec, “‘Coherent Arbitrariness’: Stable Demand Curves without Stable Preferences,” *The Quarterly Journal of Economics*, Vol. 118, No. 1 (2003): 73-105.

Aron-Dine, Aviva, Liran Einav, and Amy Finkelstein, “The RAND Health Insurance Experiment, Three Decades Later,” *Journal of Economic Perspectives*, Vol. 27, No. 1 (2013): 197-222.

Belch, George E., and Michael A. Belch, *Advertising and Promotion: An Integrated Marketing Communications Perspective*, Sixth Edition, New York, NY: McGraw-Hill, 2003.

Besanko, D.A. and R.R. Braeutigam, *Microeconomics*, Fourth Edition, Hoboken: John Wiley & Sons, Inc., 2011.

Bordalo, Pedro, Nicola Gennaioli, and Andrei Shleifer, “Salience and Consumer Choice,” *Journal of Political Economy*, Vol. 121, No. 5 (2013): 803-843.

Brucks, Merrie, Andrew A. Mitchell, and Richard Staelin, “The Effect of Nutritional Information Disclosure in Advertising: An Information Processing Approach,” *Journal of Public Policy & Marketing*, Vol. 3 (1984): 1-25.

Chandrashekar, Rajesh, and Dhruv Grewal, “Anchoring Effects of Advertised Reference Price and Sale Price: The Moderating Role of Saving Presentation Format,” *Journal of Business Research*, Vol. 59, No. 10-11 (2006): 1063-1071.

Dhar, Ravi, and Margarita Gorlin, “A Dual-System Framework to Understand Preference Construction Processes in Choice,” *Journal of Consumer Psychology*, Vol. 23, No. 4 (2013): 528-542.

Epley, Nicholas, and Thomas Gilovich, “Are Adjustments Insufficient?” *Personality and Social Psychology Bulletin*, Vol. 30, No. 4 (2004): 447-460.

Epley, Nicholas, and Thomas Gilovich, “The Anchoring-and-Adjustment Heuristic: Why the Adjustments Are Insufficient,” *Psychological Science*, Vol. 17, No. 4 (2006): 311-318.

Federal Judicial Center, *Reference Manual on Scientific Evidence*, Third Edition, Washington, D.C.: The National Academics Press, 2011.

Frederick, Shane W., and Daniel Mochon, “A Scale Distortion Theory of Anchoring,” *Journal of Experimental Psychology: General*, Vol. 141, No. 1 (2012): 124-133.

Frederick, Shane, Nathan Novemsky, Jing Wang, Ravi Dhar, and Stephen Nowlis, “Opportunity Cost Neglect,” *Journal of Consumer Research*, Vol. 36, No. 4 (2009): 553-561.

Garrett, Jace B., William B. Tayler, Ge Bai, Mariana P. Socal, Antonio J. Trujillo, and Gerard F. Anderson, “Consumer Responses to Price Disclosure in Direct-to-Consumer Pharmaceutical Advertising,” *JAMA Internal Medicine*, Vol. 179, No. 3 (2019): 435-437.



- Jacoby, Jacob, Margaret C. Nelson, and Wayne D. Hoyer, "Corrective Advertising and Affirmative Disclosure Statements: Their Potential for Confusing and Misleading the Consumer," *Journal of Marketing*, Vol. 46, No. 1 (1982): 61-72.
- Jung, Minah H., Hannah Perfecto, and Leif D. Nelson, "Anchoring in Payment: Evaluating a Judgmental Heuristic in Field Experimental Settings," *Journal of Marketing Research*, Vol. 53, No. 3 (2016): 354-368.
- Kahn, Barbara E., and Rakesh K. Sarin, "Modeling Ambiguity in Decisions under Uncertainty," *Journal of Consumer Research*, Vol. 15, No. 2 (1988): 265-272.
- Kahneman, Daniel, "A Perspective on Judgment and Choice: Mapping Bounded Rationality," *American Psychologist*, Vol. 58, No. 9 (2003): pp. 697-720.
- Kahneman, Daniel, "Maps of Bounded Rationality: A Perspective on Intuitive Judgment and Choice," *Nobel Prize Lecture* (2002): 449-489.
- Kahneman, Daniel, "New Challenges to the Rationality Assumption," *Journal of Institutional and Theoretical Economics*, Vol. 150, No. 1 (1994): 18-36.
- Kivetz, Ran, and Itamar Simonson, "The Effects of Incomplete Information on Consumer Choice," *Journal of Marketing Research*, Vol. 37, No. 4 (2000): 427-448.
- Krugman, Herbert E., "The Measurement of Advertising Involvement," *Public Opinion Quarterly*, Vol. 30, No. 4 (1966): 583-596.
- Loewenstein, George, Cass R. Sunstein, and Russell Golman, "Disclosure: Psychology Changes Everything," *Annual Review of Economics*, Vol. 6 (2014): 391-419.
- McCarthy, J. Thomas, *McCarthy on Trademarks and Unfair Competition*, Fourth Edition, Thomson Reuters, 2013.
- Mullainathan, Sendhil, and Richard H. Thaler, "Behavioral Economics," *NBER Working Paper Series*, No. 7948 (2000): 1-13.
- Park, C. Whan, and S. Mark Young, "Consumer Response to Television Commercials: The Impact of Involvement and Background Music on Brand Attitude Formation," *Journal of Marketing Research*, Vol. 23, No. 1 (1986): 11-24.
- Peters, Ellen, Judith Hibbard, Paul Slovic, and Nathan Dieckmann, "Numeracy Skill and the Communication, Comprehension, and Use of Risk-Benefit Information," *Health Affairs*, Vol. 26, No. 3 (2007): 741-748.
- Raghubir, Priya, and Joydeep Srivastava, "Effect of Face Value on Product Valuation in Foreign Currencies," *Journal of Consumer Research*, Vol. 29, No. 3 (2002): 335-347.
- Rosenthal, Meredith B., Ernst R. Berndt, Julie M. Donohue, Arnold M. Epstein, and Richard G. Frank, "Demand Effects of Recent Changes in Prescription Drug Promotion," *Frontiers in Health Policy Research*, Vol. 6 (2003): 1-26.

- Shafir, Eldar, Peter Diamond, and Amos Tversky, "Money Illusion," *The Quarterly Journal of Economics*, Vol. 112, No. 2 (1997): 341-374.
- Shampanier, Kristina, Nina Mazar, and Dan Ariely, "Zero as a Special Price: The True Value of Free Products," *Marketing Science*, Vol. 26, No. 6 (2007): 742-757.
- Shapiro, Bradley T., "Positive Spillovers and Free Riding in Advertising of Prescription Pharmaceuticals: The Case of Antidepressants," *Journal of Political Economy*, Vol. 126, No. 1 (2018): 381-437.
- Shapiro, Bradley T., "Promoting Wellness or Waste? Evidence from Antidepressant Advertising," *Becker Friedman Institute for Research in Economics Working Paper Series*, No. 2018-14 (2019): 1-60.
- Sinkinson, Michael, and Amanda Starc, "Ask Your Doctor? Direct-to-Consumer Advertising of Pharmaceuticals," *NBER Working Paper Series*, No. 21045 (2015): 1-54.
- Stewart, David W., and Ingrid M. Martin, "Advertising Disclosures: Clear and Conspicuous or Understood and Used?" *Journal of Public Policy & Marketing*, Vol. 23, No. 2 (2004): 183-192.
- Strack, Fritz, and Thomas Mussweiler, "Explaining the Enigmatic Anchoring Effect: Mechanisms of Selective Accessibility," *Journal of Personality and Social Psychology*, Vol. 73, No. 3 (1997): 437-446.
- Tversky, Amos, and Daniel Kahneman, "Judgment under Uncertainty: Heuristics and Biases," *Science*, Vol. 185, No. 4157 (1974): 1124-1131.
- van Osselaer, Stijn M. J., and Sarah Lim, "Research Productivity of Faculty at 30 Leading Marketing Departments," *Marketing Letters* (2019): 1-17.
- Wertenbroch, Klaus, Dilip Soman, and Amitava Chattopadhyay, "On the Perceived Value of Money: The Reference Dependence of Currency Numerosity Effects," *Journal of Consumer Research*, Vol. 34, No. 1 (2007): 1-10.
- Zaichkowsky, Judith L., "Conceptualizing Involvement," *Journal of Advertising*, Vol. 15, No. 2 (1986): 4-34.
- Zhang, Shi, and Arthur B. Markman, "Processing Product Unique Features: Alignability and Involvement in Preference Construction," *Journal of Consumer Psychology*, Vol. 11, No. 1 (2001): 13-27.

#### **Other Publicly Available Sources**

- "About CMS," CMS.gov, <https://www.cms.gov/about-cms/about-cms.html>.
- "Comments of the Staff of the Bureau of Consumer Protection, the Bureau of Economics, and the Office of Policy Planning of the Federal Trade Commission," *Federal Trade Commission*, May 10, 2004, [https://www.ftc.gov/sites/default/files/documents/advocacy\\_documents/ftc-staff-comment-food-and-drug-administration-concerning-consumer-directed-promotion/040512dtcdrgscomment.pdf](https://www.ftc.gov/sites/default/files/documents/advocacy_documents/ftc-staff-comment-food-and-drug-administration-concerning-consumer-directed-promotion/040512dtcdrgscomment.pdf).
- "Comparison of Two Means," *Yale University, Department of Statistics*, <http://www.stat.yale.edu/Courses/1997-98/101/meancomp.htm>.
- "Confidence Intervals," *Yale University, Department of Statistics*, <http://www.stat.yale.edu/Courses/1997-98/101/confint.htm>.

“Medicare and Medicaid Programs; Regulation to Require Drug Pricing Transparency,” Centers for Medicare & Medicaid Services, October 18, 2018, <https://www.federalregister.gov/documents/2018/10/18/2018-22698/medicare-and-medicaid-programs-regulation-to-require-drug-pricing-transparency>.

Aikin, Kathryn J., John L. Swasy, and Amie C. Braman, “Patient and Physician Attitudes and Behaviors Associated with DTC Promotion of Prescription Drugs—Summary of FDA Survey Research Results,” *U.S. Food and Drug Administration*, November 19, 2004, <https://www.fda.gov/downloads/AboutFDA/CentersOffices/OfficeofMedicalProductsandTobacco/CDER/UCM600276.pdf>.

Claxton, Gary, Matthew Rae, Michelle Long, Anthony Damico, and Heidi Whitmore, “Employer Health Benefits: 2018 Annual Survey,” *Kaiser Family Foundation*, 2018, <http://files.kff.org/attachment/Report-Employer-Health-Benefits-Annual-Survey-2018>.

Department of Health and Human Services, Centers for Medicare & Medicaid Services, 42 C.F.R. § 403, “Medicare and Medicaid Programs; Regulation To Require Drug Pricing Transparency,” *Federal Register*, Vol. 84, No. 91, Friday, May 10, 2019, Rules and Regulations.

Taylor, Erin Audrey, Katherine Grace Carman, Andrea Lopez, Ashley Muchow, Parisa Roshan, and Christine Eibner, “Consumer Decisionmaking in the Health Care Marketplace,” *RAND*, 2016, [https://www.rand.org/pubs/research\\_reports/RR1567.html](https://www.rand.org/pubs/research_reports/RR1567.html).