

Weight Loss Nudges: Market Test or Government Guess?

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Abstract

Obesity is a major health concern, given its association with diabetes, hypertension, high cholesterol, stroke, heart disease, certain cancers, and arthritis. Rising obesity prevalence has led public health experts to propose solutions to what is frequently called an obesity epidemic. Many behavioral economists believe that well-designed “nudges” can steer individuals toward decisions that improve their welfare. This paper examines the effectiveness of nudges designed to steer individuals toward better eating behaviors as a means of lowering population weight. It presents basics of nudge theory, followed by criticisms of that theory. It explains various imperfections that all choice architects—whether in governments or in markets—must face, concluding that nudges are a rather blunt instrument for reducing population weight. Discussion of how nudging by governments differs from nudging by markets leads to the conclusion that market nudging is the more promising avenue of the two for helping citizens lose weight.

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“When self-control problems and mindless choosing are combined, the result is a series of bad outcomes for real people. . . . Nearly two-thirds of Americans are overweight or obese. . . . Together, these facts suggest that significant numbers of people could benefit from a nudge.”
—Thaler and Sunstein (2008: 44)

1. Introduction

Rising obesity prevalence in the United States has led public health experts to propose solutions to what is frequently called an obesity epidemic. Obesity prevalence has doubled during the past three decades and, as of 2009, more than one-third of adults were obese (Flegal et al. 2012). A recent study predicts that, by 2030, 42 percent of Americans will be obese and 11 percent will be severely obese¹ (Finkelstein et al. 2012). Obesity is a major health concern, given its association with chronic conditions that include diabetes, hypertension, high cholesterol, stroke, heart disease, certain cancers, and arthritis (Dixon 2010).

Economists traditionally propose controlling population weight through taxing “bad” foods, subsidizing “good” foods, and implementing other policies that change the economic incentives of rational individuals. However, many behavioral economists believe that undesired weight gain is the result of unconscious and irrational decisions that result from psychological, social, cognitive, and emotional factors. In their book *Nudge: Improving Decisions about Health, Wealth, and Happiness*, Richard H. Thaler and Cass R. Sunstein espouse the behavioral economics view that well-designed nudges devised by “choice architects” can steer individuals toward wiser decisions that enhance their welfare (Thaler and Sunstein 2008).

¹ Severely obese is defined as being 100 or more pounds overweight.

Thaler and Sunstein believe that it is legitimate for both markets and governments “to influence people’s behavior in order to make their lives longer, healthier, and better” (2008: 7). However, they argue that the most important applications of nudge theory often lie with governments rather than markets. They assert that markets frequently exploit individuals’ decision-making flaws, as the following statement makes clear: “The key point here is that for all their virtues, markets often give companies a strong incentive to cater to (and profit from) human frailties, rather than try to eradicate them or to minimize their effects” (Thaler and Sunstein 2008: 74). Thaler and Sunstein acknowledge that government policymakers are also subject to various imperfections, but they believe that the noncoercive nature of nudges mitigates many of these concerns.

This paper examines the effectiveness of nudges designed to steer us toward better food and beverage consumption behaviors as a means of lowering population weight. It first discusses our state of knowledge on obesity causes and prevention. Next, it presents the basics of nudge theory followed by criticisms of that theory. It then discusses various imperfections that all choice architects—whether in governments or markets—must face that suggest that nudges are a blunt instrument for reducing population weight. Finally, the paper discusses how nudging by governments differs from nudging by markets, and concludes that market nudging is the more promising avenue for helping citizens lose weight.

2. The State of Our Knowledge on Obesity Causes and Prevention

Historical BMI data show that Americans started gaining weight in the 1920s, but only in the 1980s did a large number of Americans begin crossing the body mass index (BMI) threshold of 30 (Komlos and Brabec 2010) that defines obesity. To calculate BMI, individuals divide their

weight by the square of their height, with values given in units of kg/m^2 . A six-foot-tall male, for example, is obese if he weighs at least 221 pounds.

The timing of the “obesity epidemic” is sensitive to measures of fatness used (Burkhauser et al. 2009). BMI, for instance, does not distinguish fat from lean mass, thus leading to greater misclassification in men due to larger variation in muscularity. BMI misclassifies substantial percentages of individuals as obese and nonobese when compared with more accurate measures such as percentage of body fat (Cawley and Burkhauser 2008). Using skinfold thickness indicates that rising obesity prevalence became apparent 10 to 20 years earlier than the 1980s, thus suggesting that gradual influences on weight are more important than commonly thought.

Despite decades of research into the causes of the obesity epidemic, a clear understanding of obesity has proven elusive (Hebert et al. 2013). A short list of potential causes for rising obesity prevalence includes increased consumption of sugar-sweetened beverages (Bleich et al. 2009), falling food prices (Cawley 2010), urban sprawl (Zhenxiang and Kaestner 2010), increases in calories consumed away from home (Larson et al. 2009), sedentary lifestyles fostered by technology (Lakdawalla and Philipson 2009), and agricultural policies that encourage production of unhealthy foods (Walling 2010). Obstacles believed to impede understanding of the obesity epidemic include problems in defining obesity, lax application of scientific standards, tenuous assumption making, flawed measurement, and limited examination of alternative explanations of cause (Hebert et al. 2013).

Casazza et al. (2013) argue that scientifically unsupported beliefs about obesity are pervasive in both the scientific literature and the popular press. The authors identify myths, presumptions, and facts based on the current state of scientific knowledge. They consider

propositions to be true only when supported by confirmatory randomized studies. The following “myths,” “presumptions,” and “facts” are those most relevant to the present paper.

The authors define “myths” as beliefs persisting despite clear contradicting evidence:

- Small, sustained changes in energy intake or expenditure will produce large, long-term weight changes.
- Setting realistic goals in obesity treatment is important because otherwise patients will become frustrated and lose less weight.
- Large, rapid weight loss is associated with poorer long-term weight outcomes than is slow, gradual weight loss.

The authors define “presumptions” as beliefs about obesity that persist in the absence of supporting scientific evidence:

- Regularly eating (vs. skipping) breakfast protects against obesity.
- Eating more fruits and vegetables will result in weight loss or less weight gain, regardless of whether one intentionally makes any other behavioral or environmental changes.
- Snacking contributes to weight gain and obesity.

“Facts” were beliefs consistent with the evidence:

- Diets very effectively reduce weight, but trying to go on a diet or recommending that someone go on a diet generally does not work well in the long term.
- Exercise helps mitigate the health-damaging effects of obesity, even without weight loss.
- Physical activity in a sufficient dose aids long-term weight maintenance.
- Involving parents promotes greater weight loss or maintenance in overweight children.
- Provision of meals and use of meal-replacement products promotes greater weight loss.

A recent study is consistent with the view that many popular myths persist regarding obesity. The study found no support for the commonly made recommendation that eating more fruits and vegetables promotes weight loss (Kaiser et al. 2014). Such recommendations are common and included in the Department of Agriculture's "Choose My Plate," for example.² What is often viewed as a commonsense prescription apparently only works to lower weight as long as individuals combine this recommendation with reduced intake of other energy sources. Fruit and vegetable consumption has demonstrable health benefits, but apparently weight loss is not one of them as long as individuals do not also reduce intake of other foods.

The current state of knowledge is far from complete. Researchers have yet to reach consensus on what specific causes for excessive weight gain are most important in explaining our rising obesity prevalence. Unfortunately, there are also relatively few facts about how to successfully lose weight, and the evidence does not fully support many widely held beliefs.

3. Nudge Theory

Individuals are not always rational, according to behavioral economists. Poorly informed individuals who follow perceived norms and exercise poor judgment make unconscious and irrational decisions, according to this view. Irrational decisions contribute to undesired weight gain when individuals do not realize how much food they actually eat. One study concludes that test subjects underestimated the number of daily food-related decisions by an average of more than 221 decisions in what the authors refer to as "mindless eating" (Wansink and Sobal 2007). "Mindless eating" is consistent with the view that eating decisions are often made with little thought and lead to undesired weight gain over time.

² United States Department of Agriculture. 2013. Choose My Plate. Available from: <http://www.choosemyplate.gov/> (cited June 7, 2014).

Sunstein and Thaler (2003) argue there is no clear difference between choice and coercion since they represent two ends of a continuum. They argue that someone—a choice architect—is always deciding the default choice by providing the quantity and quality of information that frame people’s choices. Sunstein and Thaler (2008: 5) state that “it is legitimate for choice architects to try to influence people’s behavior in order to make their lives longer, healthier and better.” In other words, choice architects should change default choices and provide information when people make irrational choices.

Thaler and Sunstein (2008: 6) define a nudge as “any aspect of the choice architecture that alters people’s behavior in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are not mandates. Putting fruit at eye level counts as a nudge. Banning junk food does not.” Nudges are thus not meant to sacrifice the freedom to make our own choices and should not impose significant burdens on those who do not follow or need them. Often described as “libertarian paternalism,” nudges are intended to steer people toward decisions that they would choose if they were not subject to various decision-making flaws.

Systematic biases in behavior fall into two broad categories. First, “bounded willpower” problems arise when individuals suffer from persistent self-control problems associated with hyperbolic discounting. Individuals are said to exhibit time inconsistency about discounting future trade-offs between the present self and the future self. For example, an overweight person finds it hard to quit eating desserts, but still wants to lose weight because his long-term welfare rises when he loses weight today.

Education has been proposed to help overweight people better understand trade-offs and perhaps foster lower discount rates based on research that obese dieters appear to exhibit time

inconsistent preferences (Scharff 2009). Calorie labels are nudges based on the assumption that more informed consumers will make healthier choices that might also encourage businesses to offer smaller portions and other lower-calorie options.

A second category focuses on “cognitive biases” that prevent individuals from pursuing actions that improve their welfare. For example, a status-quo bias might lead individuals to stick with what they have rather than search for better alternatives. Experiments indicate that people disproportionately prefer the status quo to changing their routines.

In one natural experiment, a number of Western European countries adopted a policy that assumed deceased individuals to be organ donors by default, instead of using the traditional approach in which the deceased had to consent explicitly while alive (Johnson and Goldstein 2004). Individuals still could opt out of being donors, so they still had both choices available to them; the default option simply changed. Changing the default option from opt-in to opt-out led to a remarkable difference in individual decisions: the rate of organ donation ranged between 4 and 27 percent in opt-in countries, but hovered above 98 percent for most opt-out countries.

Behavioral economists frequently propose setting default options that nudge people toward healthier eating. Plate shapes and sizes, lighting, color, and convenience are a few of the hidden environmental factors believed to increase consumption norms and decrease consumption monitoring (Wansink 2010). Eating-behavior researcher Brian Wansink (2004) offers the following default option changes aimed at lessening temptations to overeat:

- Store tempting foods in less-convenient locations (such as basements or top cupboards).
- Do not leave serving bowls and platters on the dinner table.
- Reduce the convenience of stockpiled foods by boxing them up or freezing them.
- Replace short, wide glasses with tall, narrow ones.

- Reduce serving sizes and consumption by using smaller bowls and plates.
- Use smaller spoons rather than larger ones.

The following passage from *Nudge* demonstrates that Wansink's experimental research on "mindless eating" has heavily influenced nudge theory:

In another Wansink (2006) masterpiece, people sat down to a large bowl of Campbell's tomato soup and were told to eat as much as they wanted. Unbeknownst to them, the soup bowls were designed to refill themselves (with empty bottoms connected to machinery beneath the table). No matter how much soup subjects ate, the bowl never emptied. Many people just kept eating, not paying attention to the fact that they were really eating a great deal of soup, until the experiment was (mercifully) ended. Large plates and large packages mean more eating; they are a form of choice architecture, and they work as major nudges. (Hint: if you would like to lose weight, get smaller plates, buy little packages of what you like, and don't keep tempting food in the refrigerator.) (Thaler and Sunstein 2008: 44)

Other experiments have also found that altering choice architecture influences eating. One study found that slight changes in the accessibility of foods in a cafeteria salad bar reduced intake by 8–16 percent (Rozin et al. 2011). Making food slightly more difficult to reach (varying proximity by 10 inches) and changing sizes and accessibility of serving utensils were two such changes. Moving healthier foods to the convenience line, where unhealthy foods were usually placed, increased sales of healthy foods by 18 percent, but decreased sales of unhealthy foods by 28 percent, in a high school lunchroom (Hanks et al. 2012).

Just and Price (2013) examined whether requiring children to place fruits and vegetables on their lunch trays increased their consumption as an application of resetting "default options." This change increased the fraction of children who ate a serving of fruits or vegetables by 8 percentage points but led to an extra 0.7 servings being thrown away per lunch served. The authors suggested adopting additional interventions such as bribing children to consume fruits and vegetables as a possible solution to lessening the amounts thrown away.

“Loss aversion,” another cognitive bias, says that people are disproportionately sensitive to prospects of losing something compared with prospects of gaining something. Getting people to precommit to healthy goals (e.g., exercising three days a week or skipping desserts) coupled with the risk of losing money are nudges that might help people honor their health goals.

Limiting the hours during which restaurants may be open or operate drive-up windows and forbidding placement of candy near cash registers at stores are examples of changing choice architecture by imposing search or travel costs (Cohen and Babey 2012). Former New York City Mayor Michael Bloomberg’s proposal to ban sugary beverages in portions over 16 ounces also attempted to steer consumers away from excessive soda consumption. These changes are not nudges, however, even though they are based on paternalism and attempt to steer consumers toward healthier food choices. They can be considered somewhat coercive as they raise costs for consumers or ban certain food choices, thus violating the spirit of libertarian paternalism.

4. Criticisms of Nudge Theory

Nudge theory draws both praise and criticism. This section summarizes criticism that focuses on nudges aimed at steering individuals toward weight loss.

A. The Evidence Is Far from Settled

Empirical evidence on nudges indicates that they do not always work out as planned. One study found that altering plate sizes had no significant effect on energy intake at meals eaten in three laboratory experiments (Rolls et al. 2007). Participants made significantly more trips to the buffet when they were given the smallest plate in one of these experiments.

Adding “healthy” options to “unhealthy” meals is also problematic. One study finds that the mere presence of a healthy food option vicariously fulfills nutrition goals and provides consumers with a license to indulge, thus exerting ambiguous effects on overall diets (Wilcox et al. 2009). Psychologists also report “negative calorie illusion,” whereby adding a healthy option to weight-conscious individuals’ unhealthy meals decreases their perception of the meals’ calorie content. For example, weight-conscious participants estimated that a hamburger alone contains 734 calories but only 619 calories when accompanied by celery sticks (Chernev 2011).

Labeling requirements are designed to help individuals who routinely underestimate calories, fats, and other attributes of foods. Studies have found that labeling improves calorie estimates (Elbel 2011), but evidence so far does not clearly demonstrate that required labels result in healthier eating.

A study of New York City’s 2008 law requiring restaurant chains to post calorie counts finds no change in calories purchased after the law (Elbel et al. 2009). Finkelstein et al. (2011) reach a similar conclusion in a study of menu-labeling regulation in King County, Washington. A study of mandatory calorie posting on purchase decisions at Starbucks finds virtually no change in purchases of beverage calories (Bollinger et al. 2011). The same study finds that posting calorie benchmarks on labels also failed to promote healthier eating. One study of providing daily, per-meal, or no calorie recommendations to randomized subsets of adult customers entering two McDonald’s restaurants finds no effect on purchases (Downs et al. 2013). Rendell and Swencionis (2014) find that calorie labeling did not influence what patrons of a large chain bakery café ordered for lunch. BMI also did not influence the relationship between ordering from a menu with or without calorie information and the number of calories that one orders, even after controlling for age, sex, income, education, and race/ethnicity. Studies also

suggest that restaurants claiming to serve “healthy” foods may steer diners to underestimate the caloric density of their foods and that diners are more likely to purchase higher-calorie side dishes at restaurants that claim “healthy” foods when compared with those not making such claims (Chandon and Wansink 2007).

Conflicting evidence on nudge efficacy may stem from the fact that nudges are often based on laboratory experiments. There are well-known problems in extrapolating results from laboratory experiments to the real world (Harrison and List 2004; Levitt and List 2007). Participants’ choices in experiments are influenced by factors that include financial incentives, how choices are framed, the nature of others’ scrutiny, and participant selection. Real-world decisions are made under circumstances not so easily mimicked in laboratories. A review of 12 studies altering choice architecture finds that studies were generally of short duration, had questionable methodology, and were not conducted in naturally occurring environments (Skov et al. 2013).

Overconfidence in nudge efficacy probably explains some rather ambitious claims. One study claims that very small but cumulative decreases in food intake from modest changes in accessibility and sizes of serving utensils may be sufficient to “erase obesity” over a period of years (Rozin et al. 2011). Another study argues that small changes in choice architecture allow people to “effortlessly control their consumption and lose weight in a way that does not necessitate the discipline of dieting” (Wansink 2004: 472–73). The following passage also suggests that Thaler and Sunstein overstate the efficacy of a few nudges: “Consider the issue of obesity. . . . There is overwhelming evidence that obesity increases risks of heart disease and diabetes, frequently leading to premature death. It would be quite fantastic to suggest that everyone is choosing the right diet, or a diet that is preferable to what might be produced with a few nudges” (Thaler and Sunstein 2008: 7).

Loewenstein and Ubel (2010) argue that behavioral economics helps explain why we eat too much, but they say it is being asked to solve problems it cannot correct. For example, they believe the “fashionable response” is to require calorie labeling even though the real problem stems from falling food prices and requires stronger interventions such as taxing unhealthy foods. However, such measures require more political courage than they believe is available. The authors argue that behavioral economics should complement, not substitute for, taxation or subsidies. Behavioral economics research can then suggest whether consumers respond better to a subsidy for unsweetened drinks or a tax on sugary drinks, according to the authors.

In sum, the empirical evidence suggests that nudges are a particularly blunt and possibly ineffective tool for addressing obesity.

B. Choice Architects Are Also Human

Nudge theory often assumes that choice architects exhibit superhuman traits. Choice architects, for example, mostly escape the irrational decision-making that behavioral economists believe affects so many individuals, and they know all relevant information about individuals’ true preferences (Glaeser 2004; Rizzo and Whitman 2009). Behavioral economists rarely question why choice architects themselves are not subject to the same decision-making flaws that other people are. One study examined behavioral economics articles in 10 highly ranked economics journals from 2000 through 2009 to determine whether the authors had addressed the rationality or cognitive ability of policymakers (Berggren 2012).³ The main finding was that 20.7 percent of all articles contained a policy recommendation and that 95.5 percent of these did not contain any

³ The 10 journals were *American Economic Review*, *Journal of Finance*, *Quarterly Journal of Economics*, *Econometrica*, *Journal of Financial Economics*, *Journal of Political Economy*, *Review of Financial Studies*, *Journal of Economic Theory*, *Review of Economic Studies*, and *Journal of Econometrics*.

analysis of the rationality or cognitive ability of policymakers. Only two of the 67 articles with a policy recommendation contained an assumption or analysis of policymakers of the same kind as that applied to economic decision makers.

Choice architects are also implicitly assumed to not fall victim to the many presumptions and myths surrounding obesity, as previously discussed. These are (1) small sustained changes in energy intake or expenditure will produce large, long-term weight changes; (2) setting realistic goals in obesity treatment is important because otherwise patients will become frustrated and lose less weight; and (3) large, rapid weight loss is associated with poorer long-term weight outcomes than is slow, gradual weight loss. Previous discussion indicated various examples of overstated promises that a few small nudges can significantly dent population weight. These would appear to be based more on myths regarding “small changes” than on factual evidence.

Thaler and Sunstein acknowledge various imperfections of choice architects:

So let's go on record as saying that choice architects in all walks of life have incentives to nudge people in directions that benefit the architects (or their employers) rather than the users. . . . We agree that government officials, elected or otherwise, are often captured by private-sector interests whose representatives are seeking to nudge people in directions that will specifically promote their selfish goals. That is one reason that we want to maintain freedom of choice. (2008: 242–43)

Thaler and Sunstein call for creating better rules of engagement that reduce fraud and other abuses as a means of mitigating the imperfections of choice architects. Proposing better rules of engagement sounds promising, but politicians promise various reforms all the time. It remains unclear how poorly designed nudges are so easily corrected.

Thaler and Sunstein also argue that nudges' noncoercive nature provides an exit option for unhappy citizens that should limit the potential harm from poorly designed nudges. While the ability to exit nudges may be an advantage, exiting does not clearly mitigate concerns that nudges are often a blunt tool for lowering population weight. The imperfections of choice

architects and their ability to “correctly” nudge are research areas requiring much more exploration.

C. The Obese May Understand Health and Economic Consequences

A critical assumption of nudge theory is that individuals are acting out of sync with their long-term interests. The obese, for example, often want to lose weight, but nonetheless frequently fail in their weight-reduction efforts. The evidence, however, on whether the obese are truly misinformed or simply irrational is less than complete.

One study of 1,130 adults examined whether overweight and obese individuals believed they were at greater risk of obesity-related diseases and premature mortality (Finkelstein et al. 2008). Obese and overweight adults forecasted life expectancies that were 3.9 and 2.4 years, respectively, shorter than those of normal-weight adults. Excess weight was associated with greater self-perceived risk of developing diabetes, cancer, heart disease, and stroke. Mortality predictions were reasonably close to those from actual life tables. These results are consistent with another study of 9,035 individuals that found that overweight and obese adults aged 51 to 61 predicted that their weight will reduce their life expectancy by an average of 2.5 and 4 years, respectively (Falba and Busch 2005).

The obese may understand penalties for being overweight in the labor market.⁴ One study finds that both men and women experience a persistent obesity wage penalty during the first two decades of their careers (Baum and Ford 2004). Another study finds that obese white females earned 11.2 percent less than their nonobese counterparts, with a difference in weight of roughly 65 pounds associated with a 9 percent difference in wages (Cawley 2004). Another

⁴ There do not appear to be empirical studies examining whether obese individuals understand this penalty, however.

study finds that obese workers who receive employer-sponsored health insurance pay for their higher medical costs by receiving lower cash wages than nonobese workers (Bhattacharya and Bundorf 2009).

Finkelstein and Strombotne (2010) speculate that the obese may be putting less effort into controlling their weight in response to advances in medical technology that lessen the health consequences of being obese. They argue that recent drug and surgical treatments for high cholesterol, blood pressure, and other risk factors that obesity promotes are important reasons why obese adults exhibit better blood pressure and cholesterol concentrations than normal-weight individuals did a few decades ago.⁵ The obese may therefore be less likely to make an effort to decrease their weight because they have processed information on reduced health consequences.

Whether the obese are unaware that they are penalized in the labor market, that they live shorter lives, or that they experience improved health prospects because of advances in medical technology remain open issues that merit further study. Even if the obese are well informed, it does not necessarily mean they are “fat and happy.” Many would surely prefer to weigh less, thus raising questions of whether the obese should be nudged by choice architects and, if so, should nudging be conducted by governments, markets, or some combination of the two?

5. Market Nudging Theory

It’s no secret that many of us are concerned with our weight. A recent Gallup poll found that 51 percent of adult Americans want to lose weight, although only 25 percent are seriously working

⁵ See, for example, Gregg et al. (2005).

toward that goal.⁶ People were undoubtedly eating on smaller plates, avoiding buffets, and skipping desserts for many years before behavioral economics came to light. Apparently, Americans are lowering caloric intakes. The US Department of Agriculture reports that average daily caloric intake declined by 118 calories (about 5 percent) between 2006 and 2009 among working-age adults (Todd 2014).

Markets nudge all the time, as Thaler and Sunstein acknowledge. “Many of the policies we recommend can and have been implemented by the private sector (with or without a nudge from the government),” they write. “Employers, for example, are important choice architects in many of the examples we discuss in this book. In areas involving health care and retirement plans, we think that employers can give employees some helpful nudges” (2008: 6).

Thaler and Sunstein, however, appear to strongly favor government nudges rather than market nudges when they argue, “Markets provide strong incentives for firms to cater to the demands of consumers, and firms will compete to meet those demands, whether or not those demands represent the wisest choices” (2008: 49). Moreover, they state, “The key point here is that for all their virtues, markets often give companies a strong incentive to cater to (and profit from) human frailties, rather than to try to eradicate them or to minimize their effects” (2008: 74).

Thaler and Sunstein (2008) use the term “planner” to describe a farsighted nudger with ability to know welfare-enhancing choices for individuals who suffer from various decision-making flaws. The following passage provides an interesting take on market nudging.

Even when we’re on our way to making good choices, competitive markets find ways to get us to overcome our last shred of resistance to bad ones. At O’Hare Airport in Chicago, two food vendors compete across the aisle from each other. One sells fruit, yogurt, and other healthy foods. The other sells Cinnabons, sinful cinnamon buns that have a whopping 730 calories and 24 grams of fat. Your Planner may have set the course

⁶ See Brown (2013); similar discrepancies have persisted since at least 2003, and based on Gallup’s annual Health and Healthcare survey conducted yearly since 2002, occasionally before then.

for the yogurt and fruit stand, but the Cinnabon outlet blasts the aromas from their ovens directly into the walkway in front of the store. Care to guess which of the two stores always has the longer line? (Thaler and Sunstein 2008: 40).

This view suggests that sellers that provide “unhealthy” products are the most profitable. The authors place blame squarely on sellers who exploit consumers’ faulty decision-making. This view, however, appears out of sync with the views of the general public. Lusk and Ellison (2013) conducted a nationwide study of 800 individuals in the United States in order to assess blame given to seven different entities (food manufacturers, grocery stores, restaurants, government policies, farmers, individuals, and parents). Eighty percent said individuals were primarily to blame for the rise in obesity, followed by 59 percent placing blame on parents. Apparently, people believe they themselves are mostly responsible for weight gain.

An alternative view is that sellers can systematically profit when marketing “healthier” products to customers interested in controlling their weight. The finding that 51 percent of adult Americans want to lose weight indicates that many potential customers are looking for products that will help them lose weight. Food and restaurant businesses have been increasingly experimenting with smaller plates and packages to meet growing consumer demand for products that help them control their weight. Research indicates that numbers of small plates and smaller-portion items at restaurants have grown 32 percent since 2009 (Gasparro and Jargon 2014). Of course, few customers would single out calories as the only attribute of interest. Calories are one attribute along with price, taste, convenience, appearance, size, storage, and others.

Wansink and Mike Huckabee describe the importance of sellers:

Food companies are not focused on making people fat, but on making money. If they are not profitable, their shareholders will abandon their stocks, fire their executives, put their employees out of work, bankrupt their suppliers, and collapse their pension funds. The first steps toward an obesity solution do not involve increased government regulation; they involve market-based changes that help consumers develop a new appetite for healthy foods. (2005: 16–7)

“Stealth health” is the tactic that food and restaurant businesses employ to make products healthier when they don’t want to directly inform customers they are cutting fat or salt (Jargon 2014b). A concern is that customers sometimes connect healthy with less taste, especially when foods are considered indulgences, such as mashed potatoes, gravy, stuffing, and other items typically loaded with sodium and fat. Otherwise, companies are quick to tout nutritional improvements for foods aimed at health-conscious consumers.

Businesses have incentives to “nudge” worker productivity by helping workers control their weight to the extent it affects job performance. Eating less, exercising more, joining health clubs, or subscribing to weight-control programs are some options. One business recently dealt directly with the weight of its customers. In 2013, Samoan carrier Samoa Air Ltd. proposed charging consumers based on their weight at a rate of \$0.42 a pound for each flight (Craymer 2013). Passenger weight was a concern because roughly 55 percent of Samoans over the age of 20 are obese and Samoa Air only flies small propeller planes that seat between three and ten passengers. Passenger weight influences revenues through impacts on fuel, space, and comfort. Knowing passenger weight allows the company to configure seating accordingly. While passengers might lie about their weight, the company is willing to weigh customers at the boarding gate. US carriers have been reluctant to require larger customers to purchase two seats for various reasons that include discrimination lawsuits.

A. Evidence on Market Nudges

Industry promotion of health food. A widely reported study concludes that 16 of the nation’s leading food and beverage companies sold 6.4 trillion fewer calories in 2012 than they did in

2007.⁷ These companies had pledged to lower calories and have so far exceeded their 2015 pledge by more than 400 percent. However, it remains unclear what effect this reduction in calories sold exerts on population weight. Consumers may substitute other products and alter their behaviors in other ways that make predictions ambiguous at best.

Clearer evidence comes from a US Department of Agriculture study showing rapid growth of new products appealing to weight-conscious consumers (Martinez 2013). Displaying health claims was considered evidence of growing awareness of obesity-related issues. Health- and nutrition-related claims per product increased, from 2.2 in 2001 to 2.6 in 2010, which the author interprets as competition fostering a more complete representation of products' health and nutritional attributes. Claims related to gluten, antioxidants, and omega-3s ranked among the leading health- and nutrition-related (HNR) claims. The study suggests that growing demand for food products that contribute to overall health beyond basic nutrition provided incentives to manufacturers to supply and promote these products. The largest increase in health- and nutrition-related claims from 2001 to 2010 was for “no gluten,” followed by “no trans fats.”⁸

The same study finds that voluntary use of HNR claims on new food products was an important component of food companies' marketing strategies. The percentage of new food products carrying HNR claims grew from 25 percent in 2001 to 43 percent in 2010. Claims related to calories, whole grain, fiber, sugar, and vitamins and minerals were important contributors to growth in HNR claims on new products after 2001. Sales of new products introduced in 2009 and 2010 with nutrient content claims exceeded those of all new food

⁷ The companies, acting together as part of the Healthy Weight Commitment Foundation (HWCF), pledged to remove 1 trillion calories from the marketplace by 2012, and 1.5 trillion by 2015. See Healthy Weight Commitment Foundation, “Major Food, Beverage Companies Remove 6.4 Trillion Calories from U.S. Marketplace,” January 8, 2014, http://www.healthyweightcommit.org/news/major_food_beverage_companies_remove_6.4_trillion_calories_from_u.s._market/.

⁸ Growth in “no trans fats” claims was partly caused by new labeling requiring disclosures of the trans fat content.

products with a range from 8 percent higher to 28 percent higher. The analysis, however, did not control for other product attributes such as pricing, packaging, advertising, and product positioning, thus making the results only suggestive of the impact of HNR product claims on sales. Again, there is no direct evidence that population weight has changed as a result.

A study of Nielsen sales data from 2007 through 2011 from grocery stores, drug stores, and mass merchandisers reports similar results (Hudson Institute 2011). Food products by 15 of the largest food and beverage manufacturers were classified into traditional and “better-for-you” (BFY) categories. BFY products included those designated as diet, lite, fewer calorie, or zero calorie (e.g., Lean Cuisine, Coca-Cola Zero, Tropicana 50) as well as “good” foods, including whole-grain products and healthier traditional product formulations such as Cheerios, Dannon yogurt, and Nabisco Wheat Thins. Traditional products (i.e., not BFY items, such as Pepsi, Kellogg’s Frosted Flakes, and Hellmann’s Mayonnaise) accounted for 61.4 percent of sales, while “lite” and “good” products each accounted for 19.3 percent of sales. BFY products accounted for less than 40 percent of sales but accounted for more than 70 percent of sales growth. Again, there is no direct evidence that population weight has changed as a result.

Not all health claims are based on solid evidence that such products are “healthier” or even support weight loss. It has been reported that almost one-third of Americans are trying to avoid gluten, a protein found in grain (Jargon 2014a). This behavior has led to a market of gluten-free products estimated at \$23.3 billion in 2013. Yet many health experts believe there is little to no benefit from gluten-free products to most Americans because few people cannot process the protein. Ironically, some supposedly healthier gluten-free foods contain more sugar, less fiber, and fewer vitamins than their counterparts with gluten. In other words, growth in gluten-free products might promote weight gain for some people.

There is evidence that consumers and producers are responding to growing concerns regarding population weight, as shown in the expanding market for “healthier” products. But evidence so far is more suggestive than conclusive that these trends have resulted in population weight loss.

Employer interest in weight reduction. Bilger et al. (2013) examine whether 1,868 employees in 17 community colleges and 12 universities in North Carolina who achieved clinically significant weight loss of at least 5 percent had reduced medical expenditures, lowered absenteeism, and raised presenteeism. The authors find some evidence of productivity gains. No reduction in medical expenditures was observed, but the authors suggest anticipated reductions may occur over longer periods.

Caloyeras et al. (2014) find no evidence that “lifestyle management or wellness” nudging at PepsiCo lowered employer health costs, but nudges aimed at helping people with chronic diseases to stay healthy apparently do. Disease-management nudges (e.g., text message reminders for taking medicine) lowered health care costs by \$136 per member per month, driven by a 29 percent reduction in hospital admissions. Workplace wellness programs did not show a similar reduction in costs.

Offering overweight individuals financial incentives is another approach. Cawley and Price (2013) find modest results from their examination of workplace wellness programs (2,635 workers across 24 worksites) that offered financial rewards and deposit contracts for weight loss. This study examines various deposit contracts where participants put their own money at risk if they failed to achieve weight loss goals. This method attempts to increase motivation to reach goals when individuals suffer from “loss aversion bias,” whereby people feel the pain of a loss

more than the pleasure of a gain. Attrition was high, with 43 percent dropping out by the end of the first quarter and 68 percent by year end. Workers offered financial rewards did not exhibit higher year-end weight loss than those in the control group, and those who made deposit contracts had year-end weight loss that was two pounds greater than that of the control group. Cawley and Price suggest rewarding loss of fat and gain of muscle or even rewarding behavior change rather than weight loss as means of improving incentives.

Employers have incentives to nudge overweight employees toward weight loss to the extent that excess weight harms productivity and health costs. Numerous experiments are ongoing by businesses dedicated to designing nudges that work well.

Apps and weight loss firms. A survey of more than 6,000 people in six countries (Australia, Canada, India, South Africa, the United Kingdom, and the United States) found that more than half of consumers are interested in buying wearable technologies such as fitness monitors for tracking physical activity and managing their personal health (Leventhal 2014). One report finds more than 200 mobile health care apps cobranded with health care organizations (Conn 2013). An interesting example of closely engaging patients is “Run with DMC,” a mobile fitness app that plays on the name of hip-hop pioneers Run-DMC and the app’s sponsor, the Detroit Medical Center (DMC).⁹ In addition to tracking runs with a coaching component, the app includes information on injuries common to runners and when to talk to the DMC if they happen. There is even a “shoe tracking” function that helps runners decide when to buy new shoes.

There are more than 40,000 health, fitness, and medical apps currently available (Powell et al. 2014). An estimated 8,786 disease prevention and healthy living apps are widely

⁹ Detroit Medical Center, “DMC Smartphone Apps,” <http://www.dmc.org/apps/>.

available (IMS Institute for Healthcare Informatics 2013). These apps focus on factors associated with overall wellness, such as healthy eating, weight management, fitness, healthy living, smoking cessation, stress management, and sleep. They display information, show preloaded instructions for diet and fitness, record and display user-entered data, and track weight measurements over time.

Interest has been growing in studying the effectiveness of mobile technology. Pagoto et al. (2013) assessed 30 weight-loss mobile apps with a primary focus on the degree to which apps included 20 behavioral strategies derived from evidence-based weight-loss interventions. The apps included on average 19 percent of the 20 strategies, with seven strategies never used. Common features were barcode scanners (57 percent) and a social network (47 percent). The authors conclude that the apps mostly included a minority of strategies found in evidence-based weight-loss interventions.

Azar et al. (2013) evaluate top-rated free diet and nutrition tracking apps based on their incorporation of features divided into five categories: (1) diet tracking, (2) healthy cooking, (3) weight tracking, (4) grocery decision-making, and (5) restaurant decision-making. Apps received low overall scores for the inclusion of behavioral theory-based strategies, but the authors acknowledge that the most effective apps are those that engage people for the longest period. The authors do not assess this component.

One market test of apps is whether they encroach on the turf of more traditional businesses. Falling share prices of several widely recognized weight loss companies suggest their businesses are being undermined by mobile technology (Landen 2013). Jenny Craig has performed poorly with its plan of prepackaged meals with nutritional counseling. Nutrisystem has struggled with its model that provides home-delivered meal plans and nutritional counseling.

Weight Watchers, too, has struggled with attracting new customers (Stynes 2014). Weight Watchers in 2012 added a mobile app for tracking food and activity, but this feature was an add-on to its paid subscription. Many apps, however, are free and do not require monthly payments for a base subscription bundled with services such as menus and counseling.

StickK.com creates precommitment contracts, an approach advocated by behavioral economists to help people with self-control problems. StickK.com is designed to promote healthier lifestyles by allowing users to create contracts that nudge them into achieving personal goals that include losing weight, exercising regularly, quitting smoking, and maintaining weight. As of July 6, 2014, there were 248,712 commitment contracts with \$18,078,610 in deposits by users of StickK.com. Users had created a total of 300,659 workouts and refrained from smoking 2,502,250 cigarettes. Use of StickK.com is free.

Markets for weight-loss and health apps are rapidly expanding. Traditional weight-loss companies are facing growing pressure from new technologies. This is strong evidence that consumers are sampling the growing number of nudges offered by markets for weight loss and health apps. Markets are, in effect, the choice architects of these nudges, and businesses have financial incentives to meet this growing demand. The evidence on whether these nudges are effective is more promising than certain at this point.

6. Market Nudging Is More Promising Than Government Nudging

Nudge theory can play a role in helping us lose weight, despite previous discussion indicating that all choice architects—government or market—are imperfect. Experimentation is the key to overcoming choice architects' imperfections, including flawed decision-making, basing nudges on pervasive myths regarding weight loss, and the inability to know individual preferences. Any

of these imperfections could be fatal, but market choice architects hold significant advantages over those in governments.

Businesses face “market tests” in a world where consumers may reject products that fail to deliver value. Consumers eventually understand whether marketing claims are real or not, with poorly designed products being improved or simply removed from markets. Evidence is imperfect so far on whether currently available products result in weight loss, but ongoing feedback from consumers helps to weed out poor designs. All product attributes, including calories, size, packaging, taste, simplicity, and pricing, receive market scrutiny.

Government choice architects do not face comparable “market tests” and thus face greater problems overcoming their imperfections. Poor products do not directly jeopardize the financial solvency of governments because they do not face profit constraints. Businesses that provide nudges that do not enhance consumer welfare are not profitable for long in competitive environments such as those aimed at weight-conscious consumers.

Thaler and Sunstein argue we should not be too concerned about imperfect or ineffective nudges. They argue that the noncoercive nature of nudges allows easy exiting by those wishing to avoid them. But this argument simply acknowledges that poorly designed nudges can easily be avoided. This view suggests that there is little harm in designing numerous nudges because some might help people meet their weight-loss goals. This is not an approach, however, that allows researchers to easily parse out effective from ineffective nudges or discern what interrelationships might exist among the many nudges. It is also possible that nudges that turn out to be harmful might never be discarded.

This view that ineffective but easily avoided nudges are not harmful fails to recognize the superiority of markets in helping choice architects overcome their various imperfections.

Consumers directly signal to market choice architects which products are ineffective or detrimental. They simply stop buying them, thus leaving little doubt that product attributes do not meet their approval. Harmful products might yield costly lawsuits directly aimed at businesses. Businesses read these signals routinely because they threaten their financial health.

Government nudging suffers from higher hurdles in getting nudges “right.” Government revenues do not rise or fall to signal the good from the bad. Government employees typically are not fearful that failed products place their jobs in jeopardy. Effective feedback becomes even more problematic when governments supply many nudges based on the view that they pose little harm since citizens can easily avoid them. Feedback is limited at best for government choice architects in an environment where ineffective nudges do not directly jeopardize their jobs or financial viability.

Markets are also superior at being true to the noncoercive spirit of nudging theory. Businesses do not have incentives to keep nudging those unwilling to change their behavior. They may try to educate customers unwilling to buy their products, but financial incentives are a clear limit facing businesses that continue nudging consumers toward products they do not purchase. Low-calorie cookies, for example, may sit on the shelves no matter where the grocer locates them or how many advertising dollars are invested. Markets will eventually get the message and either alter product attributes or drop products altogether.

Governments have considerably more latitude to repeatedly nudge people toward behavior that choice architects believe improves their lives. It can be difficult to determine when changes in choice architecture cross the line into coercion, especially when government choice architects believe people exhibit decision-making flaws or are resistant to educational nudges. A slippery slope problem may arise. Noncoercive but ineffective nudges may engender subtle, but perhaps

coercive, policies (e.g., taxes and subsidies) as government choice architects remain convinced that people's behavior should change. Government choice architects therefore must exercise considerable restraint in resisting urges to "ramp up" the pressure on citizens that resist their nudges.

An appropriate role for government is to facilitate market correction of fraudulent practices and claims. For instance, the Federal Trade Commission (FTC) recently fined several weight-loss businesses \$34 million after it concluded that they made deceptive advertising claims that their products would help people lose weight with little effort (Dooren 2014). The \$34 million included a \$26.5 million settlement against Sensa Products LLC, which markets a dietary supplement called Sensa that weight-conscious consumers may sprinkle on foods. One Sensa advertisement stated that "whether you need to lose 10 pounds, 50 pounds or more, now you can without dieting. Simply sprinkle Sensa on, eat all the foods you love and watch the pounds come off" (Dooren 2014). Policies that penalize or remove fraudulent claims help nudge weight-conscious consumers toward effective products designed by choice architects in markets.

Another potential role for governments is to experiment with market-based nudges on their own workforces or perhaps to experiment with social programs whose costs are influenced by obesity. However, governments may be resistant to utilizing nudges that yield cost savings because governments do not face profit motives and thus may be uninterested in raising profit. Government choice architects may also prefer designing their own nudges, even though they face higher hurdles in designing effective nudges than market choice architects do.

7. Conclusion

Obesity remains a serious health problem, and it is no secret that many people want to lose weight. Behavioral economists typically argue that nudges help individuals with various

decision-making flaws to live longer, healthier, and better lives. This paper has also argued that even if the obese are not subject to these flaws, many are still interested in products that help them lose weight.

Nudges remain well-intentioned but blunt tools for lowering population weight. This conclusion is not surprising given the current state of knowledge. Researchers have yet to reach consensus on what specific causes for excessive weight gain are most important in explaining rising obesity prevalence. There are also relatively few facts about how to successfully lose weight, and the evidence does not fully support many widely held beliefs. The empirical evidence also indicates that nudges do not always work as planned.

Market nudges play a potentially important role in helping citizens control their weight. The evolving markets in apps, weight loss programs, and “healthy” products indicate that many consumers are willing to purchase products that help them with their weight-loss goals. Worksite programs aimed at enhancing worker productivity and reducing health costs indicate that businesses are also interested in products that work well. The evidence so far is more promising than conclusive that markets have been effective in nudging people to lose weight.

Experimentation is the key to overcoming choice architects’ imperfections, including flawed decision-making, basing nudges on various myths regarding weight loss, and the inability to know individual preferences. Choice architects in markets hold significant advantages over those in governments, however, in their efforts to overcome these shortcomings. Unlike governments, businesses face “market tests” in a world where consumers reject products that fail to deliver value. Markets also hold an advantage in sticking to the noncoercive spirit of nudging theory.

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