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To Nudge or Not to Nudge: Promoting Environmentally Beneficial Behaviors

Emma Jean Cooper
Bard College

TO NUDGE OR NOT TO NUDGE: PROMOTING ENVIROMENTALLY-BENEFICIAL BEHAVIORS

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By Emma Cooper

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Bard College

Bard Center for Environmental Policy

P.O. Box 5000

Annandale on Hudson, NY 12504-5000

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Bard CEP
CENTER FOR ENVIRONMENTAL POLICY

Emma Jean Cooper

We, the Graduate Committee of the above candidate for the Master of Science in Climate Science and Policy degree, hereby recommend the acceptance of the Master's Project.

Professor Gautam Sethi
Bard Center for Environmental Policy
Bard College

Chair

Professor Monique Segarra
Bard Center for Environmental Policy
Bard College

Committee Member

Professor Caroline Ramaley
Bard Center for Environmental Policy
Bard College

Committee Member

The Master's Project is accepted by
Bard Center for Environmental Policy

Eban Goodstein, Director

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Abstract

In order to mitigate the effects of climate change, humans need to change how they act toward the environment. Unfortunately, as much as we may want to act in ways that would be best for us and for the environment, we often struggle to do just that due to cognitive biases. Nudge theory attempts to remedy this problem by helping us make the decision that would be in our best interests. To explore this issue, I conduct an extended review of the literature to examine how well nudge theory can be applied to the realm of environmental policy. Specifically, I investigate its ability to successfully influence individuals toward environmentally beneficial decisions. There are several documented instances in which different nudging tools have been implemented effectively. I also examine the discussion of the ethical issues surrounding the use of nudge theory—even in situations in which nudge theory *can* be used, *should* it be used? Based on my findings, I recommend that the default option, a type of nudge, be set to the environmentally beneficial option wherever a default option is available. I also recommend creating a nudge unit to determine how nudges can be used in policies where other methods of behavior change (for example, tax incentives) may fail.

Executive Summary

With the looming threat of climate change, we need to take action. To combat climate change, the Intergovernmental Panel on Climate Change (2014) recommends decreasing our greenhouse gas (GHG) emissions, especially our carbon dioxide (CO_2) emissions, through mitigation strategies such as geoengineering, new technologies, efficiency, and consumption reduction. Policymakers and various organizations have tried different methods to encourage us to change our behaviors. They have used external stimuli, such as raising fossil fuel prices or penalizing emissions, forcing us to take action through rules and regulations. They have used internal factors, educating us on why and how we should reduce our CO_2 emissions. Even with these measures, we still struggle to make the proper changes to reduce our emissions.

Nudge theory, which proposes that we use the underlying subconscious processes influencing our decision making to "nudge" individuals in the direction that would be best for their well-being (Thaler & Sunstein, 2009), can potentially help change their environmental behavior. Behavioral scientists view some of the struggles we face in changing our behaviors as the result of subconscious psychological processes that take place when we make decisions. Because these processes are subconscious, it is difficult to avoid their effects on decision making. This is where nudge theory comes into play, and it argues that we influence these subconscious behaviors by altering how the choices are framed, which is, undoubtedly, a controversial claim. In this thesis, I review the literature to analyze whether nudge theory *can* and *should* be used in creating policies that successfully encourage environmentally beneficial human behavior, specifically in improving sustainable

consumption in the food, energy, and transportation sectors.

Choice architecture is the ever-present context in which individuals make decisions, and altering it slightly can have a major impact on consumer behavior (Sunstein, 2013). These alterations to the underlying choice architecture include default options, use of social norms, increased salience and simplification, and change in the physical environment (Baddeley, 2011; Sunstein, 2013). The default option is the option that remains when individuals are faced with a choice and do not actively choose a different option (Sunstein & Reisch, 2014). Social norms affect human behavior because humans are social beings, and we use social cues to determine how to act (Lehner, Mont, & Heiskanen, 2015; Sunstein, 2013). Comparing an individual's consumption to another's, especially to someone in that individual's social network, can reduce the consumption of that individual (Croson & Treich, 2014; Young & Middlemiss, 2012). Salience is important in promoting environmental goals because people have limited attention spans, so making information as clear and simple as possible can influence what product a consumer will purchase (Lehner et al., 2015; Sunstein, 2013). Finally, changing the physical environment involves exactly what it sounds like, altering how individuals interact with the physical world to impact the decisions they make, such as by reducing plate size to decrease food consumption and waste (Kallbekken & Sælen, 2013).

Taking up one of the most popular of these nudges in slightly more detail, Rutgers University used the effects of the default option to reduce paper consumption (Sunstein & Reisch, 2014). The university changed the default printer setting from "print on one side" to "print on both sides." As a result, it reduced paper consumption by well over 55 million sheets (4,650 trees) over the first four years of the change, equivalent to a 44% reduction

(Sunstein & Reisch, 2014). This simple example shows how the default option can be utilized to nudge individuals toward environmentally beneficial behaviors, such as paper reduction.

Nudges have several benefits over other policy tools. They are low cost compared to other policy options (like tax incentives) commonly used to change behavior. They also preserve the consumer's freedom of choice (although this is a point of contention for those who oppose nudge theory), potentially spurring large environmental gains while preserving and maybe even promoting economic goals (Allcott & Mullainathan, 2010; Baddeley, 2011; Croson & Treich, 2014; Sunstein, 2013).

Some authors argue that nudges are ethically wrong because they are a form of manipulation (Goodwin, 2012) and that they do not bring about prolonged social change, which is needed when dealing with complex policy problems like climate change (Goodwin, 2012; Mols, Haslam, Jetten, & Steffens, 2014; Selinger & Whyte, 2012). In addition, other authors argue that the claim that humans are prone to biases stems from selectively reporting literature related to psychological biases and is based on narrow logical norms of rationality (Binder, 2014; Gigerenzer, 2015). To implement nudge theory requires determining what is in individuals' best interests. These dissenting authors ask who determines what the best choice for an individual is, and is this person not subject to these psychological biases? What if the best choice for one individual results in a negative consequence for another individual? How do we determine an individual's best interest? These are only a few of the ethical concerns and logistical problems associated with nudge theory.

Notwithstanding these ethical concerns, nudge theory has been successfully used to reduce consumption in the food, energy, and transportation sectors, which significantly

contribute to greenhouse gas emissions. Food consumption, for example, tends to be a mostly habitual, unreflective process, allowing it to be influenced by nudges (Lehner et al., 2015). Places such as restaurants, cafeterias, and grocery stores offer opportunities to influence how much and what individuals eat (Lehner et al., 2015). Similarly, the default option can help increase energy efficiency and reduce energy consumption by having consumers opt out of energy efficiency options or environmentally friendly types of energy instead of opting in (Baddeley, 2011; Lehner et al., 2015; Momsen & Stoerk, 2014). One of the most effective nudge influences on travel behavior is change in the physical environment, through road planning with lines, colors, signs, and speed bumps (Higham et al., 2015; Lehner et al., 2015). For example, Pucher and Buehler (2008) found that separate cycling facilities along heavily traveled roads, sufficient parking spaces for bikes, and the integration of cycling with public transport help promote cycling as a means of transport.

Based on my research, I propose the following policy recommendations. First, in any circumstance in which there are options for individuals to choose from, make the default option the environmentally beneficial one. Second, I recommend that places that lay out food for purchase, such as grocery stores and cafeterias, arrange their food products so that environmentally friendly products are more readily available and easier to find. I also recommend that restaurants and other places that serve food use smaller plates.

Third, to change social norms, I recommend focusing advertisements toward the environmentally beneficial option as the one people use. For example, instead of saying that x% of individuals do not throw away their litter, highlight the percent who do, even if it is the minority. I also suggest comparing food, energy, and travel consumption among individuals within similar groups, rather than among individuals who have nothing in common.

Individuals are influenced more by the groups they identify with (Goette, Huffman, & Meier, 2006). Comparing consumption within those groups rather than within a random group of individuals would be more effective in nudging behavior. When comparing consumption use, I recommend reinforcing low consumption through positive images, such as a smiley face emoticon.

Finally, I recommend presenting information as simply as possible, using vivid images over words whenever feasible. For example, the Energy Star logo easily identifies the energy efficient product in a store. Stores and restaurants should draw attention to the environmentally friendly options, such as organic food or energy efficient appliances. The easier it is for an individual to find and understand the environmentally friendly option, the better then chances the individual will choose that option.

Even though nudges can be simple and straightforward to implement, I strongly urge policymakers and anyone else considering using nudges to thoroughly think about a nudge before implementing it, analyzing the pros and cons and various outcomes that may occur if a nudge is implemented. As a final policy recommendation, policymakers should create a "nudge unit" to determine how nudges can be used on policies where other methods of behavior change (for example, tax incentives) may fail. This unit can also work toward preventing psychological biases from impacting the choice architect by having individuals who are aware of these biases present and part of the nudge unit. Nudge theory could be a valuable addition to the toolkit policymakers have to combat climate change by changing people's behaviors without forcing them to make decisions. In addition, nudges are relatively inexpensive and easy to implement in most cases, giving them an advantage over other forms of policies that require more expensive measures to be taken. However, those implementing

nudges need to consider nudges carefully before reaping these benefits, making sure that they are implemented in ways that do not harm individuals.

Chapter 1: Introduction

With the looming threat of climate change, we need to take action. The Intergovernmental Panel on Climate Change (IPCC, 2014) states that there will be an increase in extreme weather events, including drought, flood, sea level rise, and fires, in the future. There will also be more gradual changes such as increasing temperatures (IPCC, 2014). To combat these changes, the IPCC (2014) recommends decreasing our greenhouse gas (GHG) emissions, especially our carbon dioxide (CO_2) emissions, through mitigation strategies such as geoengineering, new technologies, efficiency, or consumption reduction, among others. New technologies such as solar panels and electric vehicles emit fewer GHG emissions than their fossil fuel-based counterparts. Increasing the efficiency of current products is another way to reduce emissions because we can use less input and achieve the same output.

Ultimately, though, energy efficiency cannot be relied on since our energy needs are constantly growing. For this reason, we must reduce our own consumption of food and energy, which could be achieved through behavioral changes. We can change our behaviors ourselves, but one of the problems we face in responding to climate change is the fact that humans struggle to change their behavior, which we have to do if we are to successfully mitigate and adapt to climate change (Allcott & Mullainathan, 2010; Baddeley, 2011; Sunstein, 2013).

Policymakers and various groups and organizations have tried different methods to encourage us to change our behaviors. They have used external stimuli, such as raising fossil fuel prices or penalizing emissions, forcing us to take action through rules and regulations.

They have used internal factors by educating us on why and how we should reduce our CO_2 emissions. Even with these measures, we still struggle to make the proper changes to reduce our emissions. Nudge theory can help change behavior by modifying the choice architecture through the use of nudges.

Choice architecture is the context in which individuals make decisions. It is the surrounding environment and all the influences (small or large) it has on the individual's decision-making ability (Thaler & Sunstein, 2009). The person who alters the choice architecture is a choice architect (Thaler & Sunstein, 2009). Doctors who describe treatment options to patients, ballot designers, and parents who describe education options are all examples of choice architects, whether they realize it or not (Thaler & Sunstein, 2009). Everything matters in the choice architecture because anything can influence one's decision (Thaler & Sunstein, 2009). This includes the psychological biases that influence our decisions.

Nudge theory proposes that we use the underlying subconscious processes influencing our decision making to our advantage and "nudge" individuals in the direction that would be best for their well-being (Thaler & Sunstein, 2009). Behavioral scientists have begun accounting some of the struggle we face in changing our behaviors to subconscious psychological processes that take place when we make decisions. Because these processes are subconscious, it is difficult to avoid their effects on decision making. This is where nudge theory comes into play.

In this thesis, I review the literature to analyze whether nudge theory *can* and *should* be used in creating policies that successfully encourage environmentally beneficial human behavior, specifically in improving sustainable consumption in the food, energy, and

transportation sectors. Based on the review, I examine how nudge theory has been applied in other fields to propose policy recommendations. Chapter 2 reviews several types of nudges described in the literature. Chapter 3 explores various arguments for and against using nudges to change behavior. Chapter 4 describes how these nudges have been applied to increase sustainable consumption in the food, energy, and transportation sectors. Finally, Chapter 5 details policy implications and recommendations.

Chapter 2: Nudging Tools

Humans have several cognitive biases and flawed heuristics affecting their ability to make rational decisions, such as heavily discounting future benefits by being overly impatient, and postponing costs in the present by procrastinating (Baddeley, 2011; Bowman, 2011; Croson & Treich, 2014; Sunstein, 2013). Policymakers can capitalize on these biases and increase their range of tools used to combat climate change (Baddeley, 2011; Bowman, 2011; Croson & Treich, 2014). Choice architecture is the ever-present context in which individuals make decisions, and altering it slightly can have a major impact on human behavior (Sunstein, 2013). These alterations to the underlying choice architecture are low-cost compared to other options (e.g. tax incentives) used to change behavior, and they preserve the individual's freedom of choice (although this is a point of contention for those against nudge theory and will be discussed in greater detail in Chapter 3), allowing large environmental gains to be achieved while preserving and maybe even promoting economic goals (Allcott & Mullainathan, 2010; Baddeley, 2011; Croson & Treich, 2014; Sunstein, 2013).

Several nudges have been proposed and used to increase environmentally beneficial behaviors and combat climate change. They include changing the default option (Campbell-Arvai, Arvai, & Kalof, 2014; Momsen & Stoerk, 2014; Sunstein & Reisch, 2014), changing social norms and using social comparisons (Allcott & Mullainathan, 2010; Croson & Treich, 2014; Sunstein, 2013), increasing salience and simplification (Sunstein, 2013), and changing the physical environment (Lehner, Mont, & Heiskanen, 2015). This section explores these nudges more closely and how they can help change behavior.

Changing the Default Option

The default option is the option that remains when individuals are faced with a choice and do not actively choose a different option (Sunstein & Reisch, 2014). Making the environmentally friendly choice the default option would increase environmentally friendly behaviors because individuals prefer not to act unless they have to, preferring instead to make a passive choice (Allcott & Mullainathan, 2010; Croson & Treich, 2014; Lehner et al., 2015). In addition, it can help avoid the negative effects associated with making a decision mandatory through regulations (Sunstein, 2013).

Rutgers University used the effects of the default option to reduce paper consumption (Sunstein & Reisch, 2014). The university changed the default printer setting from "print on one side" to "print on both sides." As a result, it reduced paper consumption by well over 55 million sheets (4,650 trees) over the first four years of the change, equivalent to a 44% reduction (Sunstein & Reisch, 2014). This simple example shows how the default option can be utilized to nudge individuals toward environmentally beneficial behaviors, such as paper reduction.

Changing Social Norms and Using Social Comparisons

Social norms affect human behavior because humans are social beings, and we use social cues to determine how to act (Lehner et al., 2015; Sunstein, 2013). If homeowners see all their neighbors recycling, they will be more likely to recycle waste themselves. Presenting positive environmental choices as social norms can nudge individuals into performing environmentally beneficial behaviors more often (Allcott & Mullainathan, 2010; Lehner et al., 2015; Sunstein, 2013). Comparing an individual's consumption to another's, especially to

someone in that individual's social network, can reduce the consumption of that individual (Croson & Treich, 2014; Young & Middlemiss, 2012).

The Shelton Group, along with four other companies, started the Wasting Water is Weird campaign in an effort to encourage individuals to reduce their water consumption (Shelton Group). They aired advertisements featuring a socially undesirable character named Rip the Drip, whose strange behavior while wasting water aimed to influence the seemingly ordinary character toward not wasting it. For example, in one commercial, an "ordinary" individual keeps the water running while brushing his teeth until Rip the Drip appears and acts in a strange manner while talking about how much he loves wasting water. As a result, the ordinary character turns the water off. The idea is to influence individuals into thinking that only socially undesirable people (like Rip the Drip) waste water.

Another example is a series of programs conducted by the energy company OPOWER in which the company sent out Home Energy Report letters to over 600,000 U.S. residential utility customers, comparing their electricity use to that of their neighbors (Allcott, 2011). The programs resulted in an energy use decrease between 1.4% and 3.3%, with an average energy consumption reduction of 2% (Allcott, 2011). This result is equivalent to a 11-20% short-run increase in electricity prices, and the cost of the programs were similar to that of traditional energy conservation programs (Allcott, 2011). As with the other nudging tools, the effect the nudges have varies depending on the situation and the individuals involved. However, this example suggests that with a little time and effort (and minimal cost compared to other options), this nudge can be used successfully to influence positive behavior change in individuals.

Increasing Salience and Simplification

Salience is important in promoting environmental goals because people have limited attention spans (Sunstein, 2013). Making information as clear and simple as possible can influence what product a consumer will purchase (Lehner et al., 2015; Sunstein, 2013). Information should be straightforward and presented in such a way that fits how the consumer processes information and makes decisions (Lehner et al., 2015).

An example of increasing information salience and simplification comes in the form of the Department of Energy and the Environmental Protection Agency's Energy Star label (Energy Star). This label identifies products, as well as homes and buildings, that meet certain energy efficiency standards. The label is easy to notice and recognize, allowing individuals to pick out energy efficient products in stores with less effort. As a result, individuals can purchase energy efficient products without having to read and digest all the energy information before deciding which product to use. The Energy Star label increases salience through its easily identifiable label and increases simplification by decreasing the amount of information individuals have to process before deciding which energy efficient product to purchase.

Changing the Physical Environment

Changing the physical environment can impact individuals' behaviors (Higham, Cohen, Cavaliere, Reis, & Finkler, 2015; Lehner et al., 2015). For example, reducing the plate size can decrease food consumed and food wasted (Kallbekken & Sælen, 2013), and providing adequate parking spaces and road infrastructure for bikes can increase cycling (Pucher & Buehler, 2008). MasterCard is working with cities to make it easier for individuals to pay for

bus and subway tickets, for example, by taking out the extra step needed to purchase tickets or by not requiring exact change (Moodie, 2016). By making it easier for individuals to use public transportation, cities hope to increase the number of public transportation users and subsequently decrease car use.

Interim Summary

The relative effectiveness of each of these tools is difficult to measure and varies from situation to situation. For example, presenting certain actions as socially undesirable may work to sway individuals into altering their behaviors, but some may take offense to the insinuation that their actions are frowned upon. In addition, there are several ethical concerns associated with nudge theory. The next section examines the question of whether we *should* use nudge theory to change individuals' behaviors.

Chapter 3: Arguments For and Against Use of Nudge Theory

Using nudge theory, policymakers could create environments that would make it easier for us to decide to reduce greenhouse gases. For example, companies, businesses, groups, and organizations could actively advertise the number of individuals who perform environmentally beneficial actions, suggesting that these actions are the norm and not the exception and potentially influencing more of us to perform them (Croson & Treich, 2014). Costa and Kahn (2011) found that giving households information about their own electricity usage versus that of their peers "nudged" them toward conserving energy. Actions such as these are subtle "nudges" that would push us toward making decisions that decrease greenhouse gases and help mitigate climate change.

Some benefits of nudges include that they are equally applied to all individuals, in most cases, and that they can be relatively low cost compared to other typical forms of regulation, such as taxes (Croson & Treich, 2014). For example, changing the default of an option from buying conventional energy in an energy contract to buying half renewable and half conventional is a task that takes relatively little time, effort, and money (Momsen & Stoerk, 2014). Some scientists agree on the potential for nudges to increase environmentally beneficial behaviors in areas such as energy, food, and transportation (Lehner et al., 2015; Rasul and Hollywood, 2012). However, others argue that nudges are ethically wrong because they are a form of manipulation (Goodwin, 2012) and that they will not bring about prolonged social change, which is what is needed when dealing with complex policy problems like climate change (Goodwin, 2012; Mols, Haslam, Jetten, & Steffens, 2014; Selinger & Whyte, 2012). In this section, I will explore some of the arguments for and

against using nudges to change behavior.

Rationality Argument

According to neoclassical economics, humans are rational beings in the sense of always choosing the option that is in their best interest and well-being. Thaler and Sunstein (2009) argue that human behavior contradicts the neoclassical assumption and that we err in predictable ways because of psychological biases. For example, when presented with a large amount of new, complex information, we tend to stick with what we are used to (Frederiks, Stenner, & Hobman, 2015). We are so overwhelmed by the new information that the easier decision is to choose what we usually decide instead of what the new information suggests, even if the new information suggests deciding something that would be better for us than what our usual decision brings.

Tversky and Kahneman (1973) discuss another decision-making bias called the availability bias, in which we judge how likely something is to happen based on how easily we can recall past events. In another article, they explain how often our decision making is influenced by the first piece of information we are given, called the anchoring bias (Tversky & Kahneman, 1974). Whether we realize it or not, we end up using this first piece of information to make subsequent judgments. Because we are prone to making such biased decisions, Thaler and Sunstein (2009) argue that we should use nudge theory to help individuals make decisions in their best interest. Nudge theory uses insights on these psychological biases to influence an individual's decision toward the choice that would benefit the individual's future well-being the most (Thaler & Sunstein, 2009).

There are some problems with this argument. First off, how does one define "well-

being"? Is it the individual's well-being, or the well-being of society as a whole? Is it the future well-being of the individual? If it is the individual's well-being, how does one individual determine another individual's best interest? Is the individual in charge of producing the nudge (the choice architect) not also subject to the same biases that everyone else is subject to? What makes them better able to determine a person's best interest over someone else? What if the rational decision is not in the best interest of the individual (Binder, 2014)?

In addition, some authors argue that this rationality justification stems from selectively reporting literature related to psychological biases and is based on narrow logical norms of rationality (Binder, 2014; Gigerenzer, 2015). Given that we know humans do not always act rationally even when informed on our preferences, it does not follow that we should expect rational behavior to occur only when humans make a rational decision when fully informed (Binder, 2014). Libertarian paternalists may set such high standards of being informed that humans have little choice but fail to meet them (Binder, 2014). In addition, the exact definition of what constitutes an informed preference varies, making it hard to determine when an individual is sufficiently informed on a preference (Binder, 2014). Setting this unattainable goal only gives policymakers an excuse to interfere in individuals' lives and manipulate the choice architecture in ways such that only a fully rational being would be able to make a fully informed decision (Binder, 2014).

Autonomy Argument

If indeed humans are as prone to biases as Thaler and Sunstein (2009) claim and do not always make decisions in their best interest, then nudge theory presents a potential option to

influence individuals toward choices in the best interest of the individual without taking away any of the choices available to said individuals. Instead of regulating individuals to a single choice, we keep the menu of choices the same while "nudging" them toward the choice that would be best for them (Binder, 2014; Brooks, 2013). We are not forcing individuals into making decisions that they do not want to make, like some policy options do. We are simply encouraging them to choose one option over another.

However, there are problems with this argument as well. Again, who determines what the best choice for an individual is, and is this person not subject to psychological biases? What if the best choice for one individual results in a negative consequence for another individual? How do we determine an individual's best interest? In addition, consistently using human biases to one's advantage may result in a decrease in an individual's ability to make autonomous decisions, thus infantilizing them (Hausman & Welch, 2010; Selinger & Whyte, 2012). That being said, some argue that sometimes the benefits to society outweigh the resulting loss of autonomy associated with nudge theory (Hausman & Welch, 2010). However, how does one calculate the benefit to society? At what point does the cost to the individual outweigh the overall benefit to society?

Manipulation Argument

Even though individuals still have all options available to them, several authors argue that nudging is an unacceptable form of manipulation and is subject to abuse (Binder, 2014; Brooks, 2013; Goodwin, 2012; Hansen & Jespersen, 2013; Hausman & Welch, 2010). Thaler and Sunstein (2009) claim this is not problematic if nudges are transparent and lead to improvements in well-being. However, what does it mean for a nudge to be "transparent"?

Transparent to whom? How much transparency is enough transparency? Nudges tend to work best when individuals are not aware of their influence, so making them transparent to the individuals being influenced may counteract the influence the nudge would have had on the individual otherwise (Alemanno & Spina, 2014; Selinger & Whyte, 2011). In addition, are these improvements in well-being to the individual or to society as a whole? Is a nudge acceptable if society benefits as a whole, even with costs to some individuals? If so, how high does a cost have to be before it is considered too high?

Inevitability Argument

Even with these problems mentioned, some argue that we should use nudge theory because it is inevitable that our choices will be influenced by the surrounding choice architecture (Brooks, 2013; Thaler & Sunstein, 2009). Every choice we make has a surrounding choice architecture through which our decision is influenced. As long as we choose within a context, we will be subjected to nudges (Brooks, 2013). In this way, Brooks (2013) states we are condemned to nudge. However, this does not mean that nudges are required or that we should not nudge because they may be manipulative. Instead, Brooks (2013) argues that we must be aware that information is often presented in a context that will result in individuals processing the information in different ways. The problem for Brooks (2013) is how to nudge properly, not whether we should.

In response to these arguments, Hansen and Jespersen (2013) argue that intentionally changing the choice architecture places certain responsibilities on the policymaker that are not adequately addressed by Thaler and Sunstein. These responsibilities cannot be dismissed simply by pointing out that nudges preserve an individual's list of choices (Hansen &

Jespersen, 2013). In addition, does the fact that the choice architecture inevitably affects our decisions automatically imply that someone should have the power to manipulate it? If so, once again, what makes any one person better than another at determining what is in an individual's best interest while also not being subject to their psychological biases?

Other Arguments

While these arguments occupy much of the debate, there are other critiques of nudge theory presented in the literature. The following section briefly describes other arguments used both for and against use of nudge theory.

Slippery Slope Argument

The slippery slope argument against nudge theory asserts that using nudges, a form of soft paternalism, will lead to complacency about harder forms of paternalism (Binder, 2014; Selinger & Whyte, 2011). Policy interventions occur within a dynamic context, affecting the future environment in which individuals make decisions. We habituate to soft forms of paternalism and are less bothered by the slow introduction of more controlling tactics (Selinger & Whyte, 2011). This cycle continues until lines are blurred between soft and hard paternalistic policy interventions, creating the slippery slope (Binder, 2014; Selinger & Whyte, 2011). In addition, nudges may affect the development of our moral character because we act in different ways based on whether a nudge is present in a situation. This can lead to us become morally lazy and not care so much about the form of government present in our lives (Selinger & Whyte, 2011).

Not Effective Enough Argument

Some authors argue against nudge theory because it does not bring about effective behavior change needed to combat society's major problems, such as climate change (Goodwin, 2012). Others argue that it cannot solve complex policy problems reliably and peacefully under current conditions (Selinger & Whyte, 2012). In addition, just because a bias can be nudged does not mean it should be. Some things like racial injustice should be dealt with in a more explicit manner (Selinger & Whyte, 2011). While nudges may not be sufficient, they can help expand the range of policy options, such that policymakers can use it in addition to incentives or other policy interventions (Baddeley, 2011; Croson & Treich, 2014; Sunstein, 2013; Young & Middlemiss, 2012). Regarding social situations, policymakers should understand which social influence is exerted in a situation and choose a policy intervention that would lead to the most ethical, effective, and lasting behavior change, instead of just relying on nudging (Mols et al., 2014). They should target individuals as social beings aware of what others around them value and ensure that the interventions can coexist with existing social norms (Mols et al., 2014).

Compounded Knowledge and Conservatism Arguments

The compounded knowledge argument questions what makes the choice architect able to create nudges without being influenced by the same cognitive biases that everyone else is subject to (Binder, 2014; Gigerenzer, 2015). The choice architect would also need to know the extent to which individuals are biased, as well as individuals' preferences (Binder, 2014). However, because they too are human, choice architects may not choose what those who are being nudged want. They may project their own values onto others, assuming their own

preferences are the preferences of others (Selinger & Whyte, 2011).

Related to the compounded knowledge argument, the conservatism argument arises when choice architects are unable to determine individuals' informed preferences and what is in their best interests (Binder, 2014). As a result, they rely on other elements, such as social norms, to guide them in deciding what is best for individuals (Binder, 2014). This, in turn, results in status quos being maintained, many of which are harmful to individuals, and introduces a conservative bias into the policies presented (Binder, 2014). It can also fix negative social norms more securely in society (Binder, 2014).

Fairness Argument

The fairness argument, simply put, asserts that because not everyone has the same cognitive abilities, we should use paternalism to level the playing field (Binder, 2014). This argument assumes that welfare is more important than autonomy, so autonomy is sacrificed to benefit the members of society (Binder, 2014).

Faulty Preference Learning Argument

An argument in favor of nudge theory is the faulty preference learning argument. The idea here is that decisions are made as part of a series of decisions that ultimately lead to preference learning (Binder, 2014). For example, we typically imitate our role models, even if they act in ways not conducive to society. Preference learning prevents individuals from learning and choosing the best option in situations, whatever that may be (Binder, 2014). Nudge theory would be used to influence individuals away from the faulty preference learning they have acquired to make better decisions for themselves (Binder, 2014).

Legal Framework Argument

If nudging is to be implemented, there should be safeguards against its abuse. However, there is currently no framework ready to incorporate behavioral science insights into policymaking (Alemanno & Spina, 2014). Some researchers suggest that nudging should be held accountable and subjected to the same conditions of democratic legitimacy that other forms of public power undergo (Alemanno & Spina, 2014). It should preserve and respect the fundamental rights found in democratic societies (Alemanno & Spina, 2014). However, before nudge theory is implemented, Alemanno and Spina (2014) argue that a legal framework should be put in place to keep it in check and prevent as much abuse from occurring as possible.

Outside Influences on Nudges

This final section describes the outside influences affecting how the individual being influenced receives the nudges. Nudges are complicated to implement because there are outside factors that affect how they are received. Libertarian paternalists can argue that a certain nudge will result in a specific outcome given a situation, but factors such as cultural and social differences influence how individuals will react to the nudge, even if the situation is the same (Alemanno & Spina, 2014; Selinger & Whyte, 2011). For example, Costa and Kahn (2011) tested the effect of political ideology on the nudge of household energy use feedback. Participants received energy consumption feedback on their own home and on the homes of their peers. Political liberals were two to four times more likely to be influenced by the energy consumption of their peers than conservatives were (Costa & Kahn, 2011).

Conservatives were more likely to increase their consumption if they were told that they do not use significant amounts of energy compared to their peers (Costa & Kahn, 2011).

Nudges that work in one culture may not work in another simply because of the differences in cultural values, histories, and symbolic forms of understanding (Selinger & Whyte, 2011). In addition, elements like freedom and well-being are heavily contested normative terms, and given that achieving well-being is a central part for implementing nudges, how one defines well-being plays a role in what nudges one chooses to implement (Fischer & Lotz, 2014). It is not enough to understand human biases to know how individuals will perceive and interpret meaning in situations where they have to make a choice (Selinger & Whyte, 2011).

Chapter 4: Effects of Nudges on Sustainable Consumption

This section explores how nudges can be used to increase sustainable consumption of energy, food, and transportation. These sectors make up significant portions of GHG emissions among individuals, so using nudges to reduce consumption associated with each sector can help decrease these emissions.

Consumption Behavior toward Food

Food production results in significant amounts of greenhouse gases (GHGs) being released into the atmosphere (Burney, Davis, & Lobell, 2010). When we waste food, we emit GHGs that could have been easily avoided. Reducing both food waste and food consumption, therefore, is a major way to decrease GHG emissions and combat climate change. Food consumption tends to be a mostly habitual, unreflective process, allowing it to be influenced by nudges (Lehner et al., 2015). Places such as restaurants, cafeterias, and grocery stores offer opportunities to influence how much and what individuals eat (Lehner et al., 2015). For the most part, nudges so far have been used to try and combat obesity (Lehner et al., 2015), which Marlow and Abdukadirov (2012) have argued as ineffective. However, policymakers and other groups and organizations are starting to use nudges as a way to increase sustainable consumption, for example by reducing meat consumption and food waste (Lehner et al., 2015).

Changing the Default Option

Default options can influence what foods individuals choose to consume. Providing

individuals with a default option allows individuals to make a passive decision that can be viewed as an ideal option because it is being recommended as the default (Frederiks et al., 2015). Campbell-Arvai et al. (2014) conducted a study on how default menu options affect choice of meal. Default menus varied between meat-free options or a combination of meat-free and meat options. Participants chose a meat-free meal significantly more often when meat-free options were presented as the default (Campbell-Arvai et al., 2014). They were also more likely to choose a meat-free meal when the meat-free options were more appealing compared to the unappealing items (Campbell-Arvai et al., 2014).

Changing Social Norms and Using Social Comparisons

Individuals tend to follow social norms both as a way of learning and adapting and as a way of fitting in and contributing to society (Frederiks et al., 2015). We compare ourselves to others and are influenced by their attitudes and behaviors (Frederiks et al., 2015). For these reasons, merely suggesting that reducing food waste is the norm can sometimes be enough to get individuals to change their behavior and waste less food. Schultz (2014) suggests that social norms are most effective when the behavior one wants to change is relatively simple and easy to perform, with few benefits gained from engaging in the behavior. In addition, the more relevant the social norm is to the individual, i.e., the more the individual identifies with or is affected by the social norm, the more likely the social norm will impact the individual's behavior (Frederiks et al., 2015).

Social norms and ideal-type behavior can influence how much an individual consumes, with individuals more likely to consume a larger portion of food when they are eating with someone else (Lehner et al., 2015). In their study on food consumption by hotel

guests, Kallbekken and Sælen (2013) displayed a sign at the hotel buffet encouraging guests to come back for more than one helping. The sign was meant to convey the message that it is socially acceptable to get food from the buffet more than once, hopefully leading to a reduction in the amount of food guests put on their plates when they serve themselves and thereby decrease food waste. Kallbekken and Sælen (2013) found a 20% reduction in food waste.

Increasing Salience and Simplification

When individuals experience information overload, they tend to choose the option most readily available, rather than the optimal option (Frederiks et al., 2015). Simplifying the information on foods to include what the consumer wants to know can make it easier for the consumer to identify the optimal option. Individuals also tend to process only enough information to make an adequate decision, instead of processing all information available to make the best decision (Frederiks et al., 2015). As a result, simplifying the information on foods to include what the consumer wants to know can also makes it easier to influence what the consumer then purchases (Lehner et al., 2015). For example, while grocery shopping, consumers are most interested in price and health of foods, so simplifying these specific pieces of information can point consumers toward specific foods over others (Lehner et al., 2015). The specific information varies by situation, so what works in a grocery store may not work in a restaurant, and vice versa.

Simplifying the information on products can help individuals make more effective decisions without wasting time and cognitive resources trying to sort through large amounts of information only to rely on a shortcut that results in a less than optimal decision for the

individual (Frederiks et al., 2015). It can also reduce the amount of perceived uncertainty associated with making a decision without consulting all the facts first (Frederiks et al., 2015). Educating individuals is important in trying to change their behavior, but if they get lost in all the information provided, then long-term behavior change may not occur. Instead, focus on short, simple facts that can be quickly and easily understood (Frederiks et al., 2015).

Individuals also rely on easily available information when making decisions, especially if they begin experiencing information overload (Frederiks et al., 2015). In this case, making the information on a product obvious and memorable can help influence the individual toward that product because the product's information may appear more readily in the individual's mind. As a result, the individual may choose the product simply because they recognize it more easily than other products. In the case of food consumption, referring to topical or well-publicized sustainable food consumption behaviors may lead individuals to think sustainable food consumption is more socially normative because of how easily they thought of examples of sustainable food consumption. In addition, providing vivid, visual, and simple prompts or reminders may help individuals perform simple behaviors that result in sustainable food consumption (Frederiks et al., 2015).

Changing the Physical Environment

Reducing the portion size can help decrease subsequent food waste in places like restaurants (Kallbekken & Sælen, 2013; Lehner et al., 2015). It can also decrease food consumption in general, resulting in less food production and fewer GHG emissions. Kallbekken and Sælen (2013) conducted a study among hotel guests to determine if and how plate size would influence the amount of food wasted. They reduced the diameter of the place from 24 to 21 centimeters in their field experiment and found a significant 20% reduction in the amount of

food wasted (Kallbekken & Sælen, 2013).

In addition, making information or options more visible and easily accessible can help reduce food waste (Bernstad, 2014; Lehner et al., 2015). For example, stores can place healthier foods near the front of shelves where they are easily spotted to nudge consumers to purchase them over other foods (Lehner et al., 2015). Bernstad (2014) conducted an experiment in which homeowners were faced with the option of sorting out food waste whenever they went to throw something away. The visibility and ease of access associated with the food sorting option resulted in significant increases of separation in the food waste bin compared to the regular trashcan (Bernstad, 2014).

Consumption Behavior toward Energy

Reducing energy consumption, especially in buildings, would significantly reduce the amount of GHGs emitted. Buildings are responsible for around 40% of the U.S.'s energy use, so decreasing energy consumption or increasing energy efficiency in residential and commercial buildings would assist the U.S. in meeting its GHG emissions agreements (U.S. Energy Information Administration, 2016). Energy efficiency can help individuals save energy and money by allowing them to get more out of the energy they use or to use less energy to get the same result. As a result of using less energy, we need to produce less energy, which leads to fewer GHG emissions. However, even with these benefits, individuals tend to not invest in energy efficiency (Lehner et al., 2015). Different nudges could help increase investment in energy efficiency and reduce energy consumption.

Changing the Default Option

The default option can help increase energy efficiency and reduce energy consumption by having consumers opt out of energy efficiency options or environmentally friendly types of energy instead of opting in (Baddeley, 2011; Lehner et al., 2015; Momsen & Stoerk, 2014). The default option works best by targeting energy-use behaviors that can be easily modified through a default setting (Frederiks et al., 2015). This may include actions as simple as setting washing machines to "short cycles" and "cold water," for example.

The opt in option is prone to the status quo bias, where individuals would rather stick with what they have than change to something new, so setting clean energy or energy efficiency as the status quo removes this bias from the equation (Lehner et al., 2015). It can also lead the individual to think that clean energy or energy efficiency are optimal options because they are the recommended options (Frederiks et al., 2015). In addition, it can lead to greater acceptance of a program or project if everyone is automatically enrolled in the project (Frederiks et al., 2015). For example, Pichert and Katsikopoulos (2008) found that when individuals were presented with an environmentally friendly utility as the default option for electricity use, they were more likely to choose that utility than when a conventional energy utility was the default.

Momsen and Stoerk (2014) tested the effect of the default option (in addition to other types of nudges) on consumers' choice of energy source, either renewable or conventional. They found that the number of individuals who chose renewable energy increased by about 45% when renewable energy was the default contract option (Momsen & Stoerk, 2014). Default options are employed ideally during a period of big transition or change for an individual (for example, moving houses or having a child), since it is easier to influence an

individual's habits when the individual is already undergoing serious change (Frederiks et al., 2015).

Changing Social Norms and Using Social Comparisons

As with social norm nudges relating to food consumption behaviors, social norm and comparison nudges related to energy consumption behaviors can also influence subsequent energy consumption. Individuals tend to shift their behavior toward the norm, and because of this, it is important to emphasize positive social norms resulting in desirable behaviors over negative social norms resulting in undesirable behaviors (Frederiks et al., 2015). In addition, Frederiks et al. (2015) suggest including an injunctive norm (such as a smiley-face emoticon) when presenting a social norm message to individuals who already perform better than the norm in terms of energy consumption. This is to prevent said individuals from rebounding and using more energy because they have been underestimating the prevalence of an undesired behavior (Frederiks et al., 2015).

Because individuals evaluate themselves by comparing themselves to others, providing feedback on energy use compared to one's neighbors can affect subsequent energy consumption (Frederiks et al., 2015). For example, Nolan, Schultz, Cialdini, Goldstein, and Griskevicius (2008) found that householders who received descriptions of energy use relative to that of their neighbors used significantly less energy over a short period than householders who only received energy saving tips. Frederiks et al. (2015) also recommend referring to popular or well-publicized energy-saving behaviors with favorable customer testimonials, in order to perpetuate the idea that energy-saving behaviors are more socially normative.

Comparing consumers' energy use to that of their neighbors or of similar households

can nudge individuals toward decreasing their energy use (Allcott & Mullainathan, 2010; Costa & Kahn, 2011; Lehner et al., 2015). This can work best if the individual is being compared to others who are similar to the individual, since social norms are more effective if the message is relevant to the individual (Frederiks et al., 2015). Individuals are more likely to be influenced by changes to social norms within their social groups than by changes to social norms within groups in another city or across the world (Frederiks et al., 2015). Feedback on energy consumption through informative billing or smart meters can also help reduce energy consumption because consumers become more aware of how much energy they are consuming at a given time and can adjust accordingly to reduce consumption (Lehner et al., 2015).

Increasing Salience and Simplification

As with food consumption, individuals are more likely to purchase energy-related items that they know and understand. The easier the information is to comprehend, the easier it will be to convince an individual to purchase an energy-efficient appliance or take part in some other energy saving measure. Schultz (2014) suggests using prompts for simple, easy, effortless, and repetitive behaviors and for individuals who are already motivated to partake in environmentally beneficial actions. Frederiks et al. (2015) propose using basic visual or auditory reminders for those individuals who simply forget to act in energy-efficient ways, as well as to use visual cues and vivid descriptions whenever possible. This speaks to the salience of the information, with the more salient (i.e., visual cues and vivid descriptions) information being retained more easily and thus influencing individuals more heavily later on (Frederiks et al., 2015). For example, Thaler and Sunstein (2009) describe how giving

individuals a light bulb that glows red when energy consumption is high and green when consumption is low decreased peak energy consumption by 40%.

Consumption Behavior toward Transportation

The transportation sector makes up 30% of a household's carbon dioxide emissions, and this number is expected to grow in the future (Lehner et al., 2015). Behavior change in the transportation sector has been a point of focus for many years, but the use of nudges has not yet been largely employed as a means of changing behavior (Lehner et al., 2015). One of the most effective nudge influences on travel behavior, however, is change in the physical environment, through road planning with lines, colors, signs, and speed bumps (Higham et al., 2015; Lehner et al., 2015). For example, Pucher and Buehler (2008) found that separate cycling facilities along heavily traveled roads (as opposed to directly along the roads), sufficient parking spaces for bikes, and the integration of cycling with public transport help promote cycling as a means of transport. Recently, smartphone apps have been used to encourage walking, but significant effects are limited (Lehner et al., 2015). As mentioned in Chapter 2, MasterCard is working with cities to make it easier for individuals to pay for bus and subway tickets by taking out the extra step needed to purchase tickets or by not requiring exact change (Moodie, 2016). By making it easier for individuals to use public transportation, cities hope to increase the number of public transportation users and subsequently decrease car use.

Chapter 5: Policy Recommendations

The following recommendations are mainly directed toward policymakers, but anyone can use them as they see fit. As discussed in Chapter 3, proponents of nudge theory struggle to define key terms central to its implementation, terms such as transparency and well-being. To determine what nudge to use and where to direct individuals, choice architects must define what would be in the individuals' best interests, what would be best for their future well-being. However, this differs among individuals. Moreover, individuals may react to the same nudge in different way. This makes it difficult for policymakers to determine what nudge to use.

In addition, because nudges are a form of manipulation, some proponents of nudge theory have suggested making nudges more transparent to the individuals being nudged. The problem with this suggestion lies in determining how transparent a nudge must be before it is transparent enough to counteract the manipulative aspect opponents fear. Determining this point is made more difficult by the fact that nudges work best when the individuals being nudged are not aware of the nudges. By making the nudge more transparent, we may end up decreasing the effect of the nudge on the individual.

Regardless of these moral issues, nudges have been used, and in successful ways. For example, as described in Chapter 2, Rutgers University successfully utilized the default option to reduce paper consumption by 44% over four years (Sunstein & Reisch, 2014). Another instance includes the Wasting Water is Weird campaign, in which the Shelton Group and others set out to change social norms surrounding water usage. The Shelton Group reported the year after the campaign was launched that 29% of individuals who had seen the

commercials changed their water use habits (Shelton Group). These examples show that nudges can be implemented successfully with good results, even with the mentioned ethical issues.

The default option is probably the least controversial nudging tool. It is already present in choices we make in everyday life. There is almost always a default option. For example, the default option for organ donation in the United States is to not be an organ donor. Because of the prevalence of the default option, it would require very little time or effort to include a default option (if it is not already present) or to change the already-present default option to something else. The problem, as with all of these tools, is in determining which potential default option would be in the best interest of the individuals it would affect. In the face of climate change, I recommend making the default option the environmentally beneficial one in cases where individuals have to choose between different options.

Changing the physical environment, while not quite as easy and straightforward to implement as changing the default option, still can be readily adapted without too much trouble. For example, smaller plate sizes can help decrease food waste (Kallbekken & Sælen, 2013). Another option is to rearrange the layout of food at cafeterias and grocer stores to bring healthier food options to eye level, thereby prompting individuals to make healthier choices (Thaler & Sunstein, 2009). Changing the physical environment can also produce immediate results, similar to the default option. Based on my research, I recommend that places that lay out food for purchase, such as grocery stores and cafeterias, arrange their food products so that environmentally friendly products are more readily available and easier to find. I also recommend that restaurants and other places that serve food use smaller plates.

Changing social norms and using social comparisons as nudges is a bit trickier than simply changing the default option. For one, individuals react to social norms or comparisons in different ways. For example, Costa and Kahn (2011) found that conservatives are more likely to increase their energy consumption if they are told that they use less energy compared to their neighbors. They also found that conservatives are two to four times less likely to be affected by energy consumption comparisons than liberals are (Costa & Kahn, 2011). In other words, liberals are more likely to decrease their energy consumption when their energy use is compared to that of their neighbors.

In addition to the problems with using social comparisons, changing social norms can take a long time, time that we do not necessarily have in the fight against climate change. Humans also tend to be resistant to change, making it difficult for new norms to take place unless individuals believe that most others already take part in these norms. However, there are examples where changing social norms or using social comparisons has led to positive behavior change results (for example, the Wasting Water is Weird campaign).

To change social norms, I recommend focusing advertisements toward the environmentally beneficial option as the one people use. For example, instead of saying that x% of individuals do not throw away their litter, highlight the percent who do, even if it is the minority. I also suggest comparing food, energy, and travel consumption among individuals within similar groups, rather than among individuals who have nothing in common. Individuals are influenced more by the groups they identify with (Goette, Huffman, & Meier, 2006). Comparing consumption within those groups rather than within a random group of individuals would be more effective in nudging behavior. When comparing consumption use,

I recommend reinforcing low consumption through positive images, such as a smiley face emoticon.

Depending on how much it costs to rearrange food or change plate sizes, changing the physical environment nudge can be easier to implement and less time consuming compared to changing social norms. In addition, it may produce faster results because the nudge can be enacted more quickly compared to implementing new social norms. However, changing social norms is a better way to ensure internalized, long-term behavior change, depending on how long the social norm remains the norm. Changing social norms may also stand up to "nudge transparency" better if the nudge is revealed after the norm has been internalized. This is because norms, beliefs, values, and the like are hard to change once they have been internalized. This is also what makes it harder for those implementing the nudge to change social norms initially, suggesting that for quick results, change the default option or the physical environment, and for longer-term behavior change, alter social norms.

Those who argue against nudge theory because they think it should not be used or cannot result in the widespread social change we need to combat climate change also suggest methods to properly educate individuals, as well as the potential role deliberate discussion can play (Gigerenzer, 2015; John, Smith, & Stoker, 2009). Gigerenzer (2015) argues against claims that educating individuals to free them from their biases will fail, saying they are misleading because of how the studies are conducted and that we can in fact educate individuals successfully so that they make rational decisions. Specifically, by using adequate visual or numeric representations, individuals can learn statistical thinking and become more risk savvy, but only in situations where risk is involved, not uncertainty (Gigerenzer, 2015).

Deliberate discussion involves exactly what it describes: any citizen sits and deliberates with other citizens on various topics (John et al., 2009). It goes beyond simply exchanging information and involves thoughtful and deliberate discussion. The idea is that because individuals would have to justify and defend their positions in front of others, they would put the good of the group over self-interest (John et al., 2009). In addition, citizens are presented with different ideas and thought processes, allowing them to grow as individuals and as a group (John et al., 2009). The problem with deliberate discussion is that it does not present immediate results (John et al., 2009). This is of concern because we have to deal with climate change now.

Related to the idea of educating individuals to change their behaviors is the nudge of increasing salience and simplification of information. This nudge is also straightforward to use in that it only requires simplifying or clarifying information about items that are already present. However, how the information is framed can affect who the information influences, and in this regard, it requires slightly more time and effort than changing the default option does. That being said, even if we were to disregard nudge theory and focus only on educating individuals as those mentioned above suggest, simplifying the information we present to these individuals can impact how quickly they grasp the information, allowing them to change their behaviors more quickly. Therefore, I recommend presenting information as simply as possible, using vivid images over words whenever feasible. For example, the Energy Star logo easily identifies the energy efficient product in a store. Stores and restaurants should draw attention to the environmentally friendly options, such as organic food or energy efficient appliances. The easier it is for an individual to find and understand

the environmentally friendly option, the better then chances the individual will choose that option.

Conclusion

One of the important factors about nudge theory is that it can be applied to many different areas. It is not limited to environmental areas. Within the environmental areas, it can be used, as mentioned, in food conservation, energy conservation, and transportation, as well as other areas not described. Outside, it is often used in health and wellness areas, but it can be applied to others as well. In addition, while this paper was directed toward policymakers, anyone can implement nudges to accomplish their goals. It is not limited to government policies. Public and private sectors can use this theory to change individuals' behaviors toward the environment. Nudge theory can be used in so many areas by virtually anyone because psychological biases and choice architecture influences are not limited to affecting certain individuals in certain areas only at certain times. They affect us at all times, whatever we are doing. The problem is figuring out how to use nudge theory ethically and without harming individuals while still effecting change for the better of individuals. Anywhere people are involved, nudge theory can be used.

Despite these concerns, I strongly urge policymakers and anyone else who is considering using nudges to thoroughly think about a nudge before implementing it, analyzing the pros and cons and various outcomes that may occur if a nudge is implemented. As a final policy recommendation, policymakers should create a "nudge unit" to determine how nudges can be used on policies where other methods of behavior change (for example, tax incentives) may fail. This unit can also work toward preventing psychological biases

from impacting the choice architect by having individuals who are aware of these biases present and part of the nudge unit. Nudge theory could be a valuable addition to the toolkit policymakers have to combat climate change by changing people's behaviors without forcing them to make decisions. In addition, nudges are relatively inexpensive and easy to implement in most cases, giving them an advantage over other forms of policies that require more expensive measures to be taken. However, those implementing nudges need to consider nudges carefully before reaping these benefits, making sure that they are implemented in ways that do not harm individuals.

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