

# Minimum Wages, Morality, and Efficiency: A Choice Experiment

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September 20, 2018

## Abstract

We use a choice experiment to examine the extent to which ethical and moral concerns shape preferences for minimum wages. In the experiment, we ask respondents to consider two labor market systems: one with a minimum wage and one without. Respondents first express their moral position on each system including whether the systems are unfair to workers, exploitative, or undignified. Then, we present each respondent with four sets of hypothetical employment consequences. Participants ‘vote’ for their preferred option in each set. Our findings suggest that public support for minimum wage legislation is a moral issue and is unlikely to be affected by arguments focused on employment consequences. For example, our main estimates suggest the average respondent is willing to tolerate about five percentage points of additional unemployment in order to maintain a minimum wage. Additionally, 68.6% of respondents made the same choice in all four scenarios regardless of the consequences for employment.

**Keywords:** Minimum Wages, Employment, Morality, Efficiency, Consequences, Preferences

**JEL Codes:** J31, J38, D47, D63, J47, J48, J88

## 1 Introduction

In 2015, the Pew Research Institute reported that support for a federal minimum wage increase to \$10.10 was as high as 73%, including a majority of conservative voters.<sup>1</sup> Economic theory suggests such an increase would reduce the quantity of labor demanded by employers. However,

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<sup>1</sup>At the time of the survey, the federal minimum wage was \$7.25. For more on the findings of the survey, see <http://www.people-press.org/2014/01/23/most-see-inequality-growing-but-partisans-differ-over-solutions/>.

theory makes no prediction about the magnitude of the effect.<sup>2</sup> Empirical work has attempted to provide answers but “consensus” is not a term that could be used to characterize the literature (see Card, 1992; Card and Krueger, 1994; Neumark and Wascher, 2004, 2007; Addison et al., 2009; Dube et al., 2010; Sabia and Burkhauser, 2010; Allegretto et al., 2011; Neumark et al., 2014; Meer and West, 2016; Jardim et al., 2017).

Regardless of specific findings, the focus of the literature is squarely on how changes in minimum wages affect labor market outcomes. In contrast, employment consequences seem to be just one component of the public and political debate surrounding minimum wages. For example, arguments for and against minimum wages often consider issues of fairness, equality, right versus wrong, exploitation, dignity, and “living” wages. These are terms associated with issues of morality and used often in the economics literature on repugnance (see Roth, 2008, 2015). The lack of focus on employment consequences in the public debate may reflect gaps in economic education. However, it is possible that public support for minimum wage legislation is deontological in nature: there might be something morally impermissible about low wages. If so, consequentialist arguments focused on the employment effects of minimum wages will be ineffective.<sup>3</sup> This echoes Roth’s argument about how to broach the permissibility of kidney sales: “laws against buying or selling kidneys reflect a reasonably widespread repugnance, and this repugnance may make it difficult for arguments that focus only on the gains from trade to make headway in changing these laws.”

In this paper, we examine the extent to which ethical and moral concerns shape preferences for minimum wages by performing a choice experiment with 2,219 Americans via Amazon’s mTurk service.<sup>4</sup> Our experimental design is inspired by Elias et al. (2016), who examine support for private or publicly-financed payments to kidney donors. They present alternative options for organizing the market for kidneys and elicit whether the system is viewed as fair, exploitative, or coercive to kidney donors and recipients. Then, participants are presented with hypothetical outcomes describing how many kidneys would be procured and asked to “vote” for their preferred option.

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<sup>2</sup>If labor markets are not competitive, higher minimum wages could lead to an increase in employment.

<sup>3</sup>Consequentialist arguments focused on other outcomes may be more effective.

<sup>4</sup>University of Louisville IRB Protocol 18.0002, approved September 5, 2018.

In our experiment, participants encounter two hypothetical labor market systems: one with a minimum wage and the other with market wages (that is, no minimum wage). Each participant is randomly assigned to observe a minimum wage of \$7.25, \$10.10, or \$15. Participants rate the two systems on five moral dimensions including the degree to which the system was viewed as unfair, exploitative, or undignified. In the second stage of the experiment, participants are presented with four sets of hypothetical employment consequences for each system and are asked to “vote” for their preferred option from each set. Note that the system with no minimum wage features decreasing levels of unemployment across the scenarios presented.<sup>5</sup>

Given the parameters of our experiment and the average morality/repugnance (used interchangeably in the paper) ratings of the two systems, we estimate that the average respondent requires unemployment to be almost five percentage points lower for her to prefer a system with no minimum wage. However, focusing on the average respondent masks considerable heterogeneity in the sample: 41.5% of respondents always choose the system with a minimum wage while 27.1% always choose the system without a minimum wage.<sup>6</sup> That is, more than two out of every three experiment participants are unresponsive to unemployment changes. Our findings suggest that research on the employment effects of minimum wages will affect support for minimum wages among only a small fraction of the population.

There is, however, one important caveat to our main findings. In the experiment, half of our respondents are given additional information on how females and minorities are affected by the minimum wage. Among respondents given such information, one out of every three is told that the effects are distributed equally throughout the population while the remainder are informed that the effects fall disproportionately on females and minorities. When the effects are distributed evenly, there is no observable difference in choices (compared to the choices of respondents who received no information). On the other hand, respondents are 19.7 percentage points less likely to vote for a system with a minimum wage when females and minorities are affected disproportionately.

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<sup>5</sup>The experiment is described in greater detail in Section 3. A sample survey is presented as an appendix item.

<sup>6</sup>The respondents who made these kinds of choices appear to have known what they were doing: answers are strongly predicted by the morality/repugnance ratings of each system.

Section 2 connects this paper to the relevant literature surrounding the political economy of the minimum wage and the economics of morally troublesome (“repugnant”) transactions. Section 3 describes the choice experiment.<sup>7</sup> Section 4 describes our main findings. As the experiment relies on a convenience sample, Section 5 reports on the representativeness of our sample. This includes sensitivity and heterogeneity analyses along with measures of attention and preference stability.<sup>8</sup> Section 6 concludes the paper.

## 2 Literature

Minimum wage research in economics has primarily focused on employment consequences. Some of the earliest work on this issue using modern empirical methods included Card (1992) and Card and Krueger (1994). They find minimum wages were not associated with losses in employment. In particular, Card and Kreuger studied fast-food restaurants on either side of the Pennsylvania and New Jersey borders shortly before and after New Jersey increased its minimum wage. They find no negative impact after the change. Card and Krueger’s findings are supported by the work of Addison et al. (2009), Dube et al. (2010), Allegretto et al. (2011), and several others.

On the other hand, Neumark and Wascher (2004) find that minimum wages harm certain groups, including younger workers. Indeed, Neumark and his coauthors have published extensively on the negative effects of the minimum wage (see, for example, Neumark and Wascher, 2000, 2007 and Neumark et al., 2014). Sabia and Burkhauser (2010) and Meer and West (2016) also suggest minimum wages have negative effects. Jardim et al. (2017) study what happened in Seattle when the city instituted a minimum wage increase to \$12.50 for larger employers in 2016 and \$13 for large employers who did not contribute to their employees’ health coverage.<sup>9</sup> Their paper uses several empirical approaches, including synthetic control, and finds a large negative effect on low-skilled workers’ employment and earnings. The effects are large enough to leave low-skill workers worse off as a group: average earnings for a low-skill

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<sup>7</sup>A sample experiment experienced by an actual respondent is presented as an Appendix item.

<sup>8</sup>Appendices B and D complement Section 5.

<sup>9</sup>See [http://www.seattle.gov/Documents/Departments/LaborStandards/OLS-MW-Chart-082016\\_3\\_13.pdf](http://www.seattle.gov/Documents/Departments/LaborStandards/OLS-MW-Chart-082016_3_13.pdf).

worker in Seattle after the minimum wage were \$125 per month lower than what they would have been in the absence of the higher minimum wage, if the identifying assumption holds. Jardim et al.'s findings are quite an outlier in the literature. In prior work on the topic, minimum wage legislation tended to raise average wages because the loss in employment was more than compensated for by a gain in wages for those who remain employed. However, Seattle's move to a \$12.50/\$13 minimum wage is much larger than the changes studied by other authors.<sup>10</sup>

Our paper asks if the focus on consequences is helpful for the policy debate?<sup>11</sup> To do so, we examine the issue of minimum wages via the lens of repugnance. Researchers who work on the economics of repugnant transactions do not proceed by assuming that public support for or opposition to the issues they study will be swayed by arguments which rest on the effects of changed legislation one way or another. For example, allowing legal payment for sex has been shown to lead to better outcomes (Cunningham and Shah, 2017) but that research is unlikely to have swayed opinion on the relative merits of legal prostitution. Many people are simply fundamentally opposed to gun ownership, genetic modification, gambling, usury, alcohol consumption, sex outside marriage, ticket scalping, and pornography regardless of efficiency or welfare gains. For these people, the consequences are not relevant: the act itself is subjectively wrong. Social scientists have acknowledged these kinds of deontological preferences when discussing the economics of repugnance. Examples include the use of markets to buy and sell human organs (Elias et al., 2016), meat (Roth, 2008), and sexual encounters (Fiske and Tetlock, 1997).

The case of price-gouging discussed by Roth is particularly relevant to this paper. Roth notes that after a natural disaster there appears to be no issue with selling supplies at their regular pre-disaster price, but it is viewed as offensive to sell supplies at a higher price.<sup>12</sup> In this case, Roth explains that it is the level of the price that is offensive rather than the act associated

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<sup>10</sup>The paper sparked heated debate in the media and the economics blogosphere. However, the debate was firmly consequentialist. It centered on the data, methods, potential sources of bias, and potential weaknesses in the evidence. The goal of the debate was only to understand if the reported consequences were true. There are too many to report here but see <http://marginalrevolution.com/marginalrevolution/2017/06/seattle-minimum-wage-study.html> and <https://www.nytimes.com/2017/06/26/business/economy/seattle-minimum-wage.html> as a starting point.

<sup>11</sup>This irony here is not lost on the authors: our paper considers the consequences of the minimum wage literature's focus on consequences.

<sup>12</sup>To a consequentialist this appears cold-hearted. They see rising prices as a way to coordinate market responses and ensure people do not starve or die of thirst after a natural disaster.

with the price. Uber's pricing system is a similar example. In both cases, the underlying economic activity is permissible but the price can become offensively high. Other explanations are possible, including the idea that the price is not what is objectionable: it correctly reflects the social cost of providing the good. Instead, the higher price changes the equitable nature and moral permissibility of market-based exchange (see Sandel, 2012 and Snyder, 2009).

We ask if support for the minimum wage may be rooted in the idea that the price of labor is offensively low. This would be a surprising turn of events given the origins of the minimum wage were overtly eugenic and discriminatory in the U.S. (Leonard, 2005). However, Roth (2008) highlights that moral repugnance is hard to predict and in a constant state of flux. Activities that were once common are no longer acceptable (slavery, corporal punishment in schools, short-selling in financial markets) and *vice-versa* (the sale of alcohol, usury, same-sex marriage).

If support for minimum wage legislation is a moral issue then allowing people to work for less than some nominal minimum wage is problematic in much the same way that payment for sexual activities or internal organs is repulsive to many people. These individuals are not fundamentally against the concept of wage-based employment, people having sex, or transferring a kidney from one person to another. However, working for less than \$7.25 (or some other number) is repulsive in the same way as engaging in sex for money or selling a kidney to the highest bidder is morally problematic to certain people.

Roth (2008) emphasizes that repugnance is a real and binding constraint on markets. The constraint arises through both social norms and/or formal legislation banning or disincentivizing certain activities and transactions. Roth claims that the desire to impose moral constraints on others comes from one or more of three sources of repugnance. First, objectification: putting a price (or a lower or higher price) on something might classify that thing as an object. For instance, allowing payment for sex has implications for sexual relations within a relationship. Second, coercion: prices affect behavior. The concern here is paternalistic in nature. For example, kidney donors might be disproportionately poor or young people if large monetary payments were allowed. In time, they might regret these decisions. Third, the slippery slope: allowing a watered-down version of an activity could cause the floodgates to open. Examples include strip-clubs leading to prostitution, marijuana legalization leading to a narcotics free-for-all, and

how allowing heavily-regulated payments for kidneys could eventually lead to a “commercial dystopia” where kidneys were used as collateral for loans or sold on eBay.<sup>13</sup>

To summarize his argument, Roth provides a table listing the types of activities and transactions that are or were once considered morally problematic. These are activities many wish to engage in but third parties wish to prohibit. Moreover, they wish to prohibit them even though there are efficiency losses from the precluded exchange. Note that just because a transaction is generally impermissible, does not indicate that it must belong on Roth’s list. It seems necessary that people must be against the transaction taking place even when it could promote economic welfare and efficiency as subjectively determined by the participants who partake in the repugnant activity or exchange.<sup>14</sup> This paper considers if the concept of working for a wage below the nominal minimum wage belongs on Roth’s table of morally repugnant transactions. To do so, we implement a choice experiment with 2,219 Americans. The next section explains the experimental design.

### 3 The Choice Experiment

Our choice experiment is implemented in Qualtrics. Our participants are recruited using Amazon’s mTurk service. We restrict participation to those in the United States, aged 18 and older. This avoids having to report wages in a variety of currencies, having to create versions of the survey in multiple languages, or having to frame the experiment for several national labor markets. Appendix B explains participant recruitment, pre-testing, payments, average earnings and time taken, and the results of various checks on participants’ attention. In this section, we will focus on the core of the experiment.

As mentioned in the introduction, our experimental design is inspired by Elias et al. (2016), who examine if individuals would be willing to tolerate payments to kidney donors. They present private or public payments as alternative options for organizing the market for kidneys and elicit whether each system was viewed as fair, exploitative, or coercive to kidney donors and

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<sup>13</sup>Recall the case of Catarina Migliorini, a young Brazilian woman who attempted to auction her virginity for \$780,000. See [https://www.huffingtonpost.com/2014/01/29/catarina-migliorini\\_n\\_4681288.html](https://www.huffingtonpost.com/2014/01/29/catarina-migliorini_n_4681288.html).

<sup>14</sup>For example, contrast the concepts of murder and euthanasia.

recipients. Then, they present participants with hypothetical outcomes describing how many kidneys would be procured and ask survey participants to “vote” for their preferred option (the current “no payment” system was also an option).

The Elias et al. approach is ideal for examining how controversial market transactions are viewed. They focus on a currently-forbidden transaction (at any positive price) and find that their respondents would be willing to tolerate payments to kidney donors for relatively mild increases in number of kidneys procured, particularly when the payment is made from a third party rather than the payment coming from kidney recipients. That is, people seem to only find payments from recipients to donors repugnant, and not payments *per se*.

We use a modified version of the Elias et al. approach to examine if another forbidden transaction - working for or employing workers at a wage less than a legal minimum - is forbidden for repugnant reasons. That is, Elias et al. know the topic they are studying is a repugnance issue and are seeking to isolate the source of the repugnance. To do so, they offer two ways to improve efficiency in the market for kidneys. In both systems, they relax existing price controls to allow the market to move towards an efficient outcome. For our experiment, to increase efficiency (employment) we have to relax the price floor. The simplest way to explain this to participants is to say the federal minimum wage is eliminated. Therefore, our experiment compares two systems: one with a minimum wage (denoted System A) and one without (denoted System B).<sup>15</sup> The next subsection details the experimental procedure.

### 3.1 Experimental Procedure

We collected our data in early September 2018. Willing mTurk workers click on our posted “Human Intelligence Task” (HIT) and are then taken to a Qualtrics survey containing the choice experiment.<sup>16</sup> The first screen a respondent sees explains their rights as a research subject and IRB boilerplate language. After consenting to participation, our respondents experience four stages of the experiment. In stage one, the options for organizing the labor market are presented to participants. As part of this, but prior to observing the alternative systems, we

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<sup>15</sup>See Appendix E for more on how our work relates to Elias et al.’s.

<sup>16</sup>They return at the end of the survey to input a unique code for payment.



Table 1: Description of Alternative Systems

System	Description to Participants
System A	This system features a minimum wage of \$X per hour worked. This minimum applies in all 50 U.S. states and employers must pay their employees at least \$X per hour. Any employer who pays any worker a wage below \$X would be guilty of a federal crime under the Fair Labor Standards Act.
System B	The federal government abolishes all minimum wages. For the purposes of this survey, please assume that this law would apply equally in all 50 U.S. states and would override existing laws in all states. That is, there would be no minimum wage law anywhere in the United States. Workers and employers would negotiate hourly wages on a case-by-case and person-by-person basis. All wage agreements that workers and employers agree to are completely legal.

The table reports the labor market systems described to participants. \$X is randomly chosen to be either \$7.25, \$10.10, or \$15 with probabilities of 20%, 40%, and 40% respectively. See Table 2 for more info on assignment to treatment conditions.

present participants with some background information on what a minimum wage is, what it does, and who it typically applies to. We also explain how it varies across the United States. In addition, to encourage truthful responses, we advise participants that our findings will be made public via op-eds in major newspapers. The descriptions of System A (a minimum wage) and System B (no minimum wage) are summarized in Table 1. The complete text of the experiment is available in Appendix A.

Notice that the value for the minimum wage observed by a respondent is a random variable denoted as X in Table 1. This is because each participant experienced one of eighteen potential treatment conditions. Each condition varies by minimum wage observed, baseline unemployment in System A, and the distribution of unemployment effects by race and gender. Specifically, we assign each respondent to one of three minimum wage levels: \$7.25, \$10.10, or \$15 with probabilities of 20%, 40%, and 40%. In addition, the unemployment level under System A (minimum wage of \$X) could take on a value of 8 percent or 10 percent. Appendix B explains our choice of parameters and how they were informed by pre-testing. Finally, we assign

Table 2: Summary of Assignment to Treatment Conditions

<b>Minimum Wage Observed</b>	<b>\$7.25</b>	<b>\$10.10</b>	<b>\$15.00</b>	<b>All</b>
Unreliable Responses	40	86	100	226
Duplicate IP Addresses	24	40	38	102
Valid Responses	446	880	893	2,219
<b>Unemployment Treatments</b>				
System A Unemployment = 8,000	225	418	401	1,044
System A Unemployment = 10,000	197	428	454	1,079
No Efficiency/Employment Info Group	24	34	38	96
<b>Race and Gender Information Treatments</b>				
Did not Observe Race/Gender Info	240	442	419	1,101
Observed Race/Gender Info	206	438	474	1,118
Observed Unequal Race/Gender Outcomes	135	296	322	753

Note: Upon consenting to the experiment each respondent was assigned one of three minimum wage levels, one of two levels for unemployment in System A, and to one of three potential information treatments regarding the distribution of unemployment by race and gender (no information, equal impact, differential impact). The table reports on the distribution of respondents to the eighteen potential treatment conditions within the experiment. The table also highlights how many responses were deemed valid and how many had to be thrown away.

each respondent to one of three potential information treatments regarding the distribution of unemployment effects by race and gender (no information, information suggesting an equal impact, information suggesting females and minorities were disproportionately impacted). These variations, and the frequency of assignment to each condition, are summarized in Table 2. The table also explains how many of our collected responses were deemed valid and how many had to be discarded due to concerns about data quality (see Appendix B for more on this).

As part of stage one of the experiment, participants rate each system on five dimensions including unfairness to employers, unfairness to workers, human dignity, subjective values, and exploitation. From this we can observe which system is viewed as least offensive to participants.<sup>17</sup> As an example, when asked about exploitation, the statement respondents observe is “[T]his system exploits workers.” They state their agreement or disagreement using

<sup>17</sup>We randomly varied the order of presentation of each system.

a sliding scale which ranges from zero to 100, where zero means “strongly disagree” and 100 represents “strongly agree.”

In stage two of the experiment, we present participants with four hypothetical sets of consequences for unemployment in each system.<sup>18</sup> We focus on unemployment levels in a city with a labor force of 100,000 for ease of explanation. Focusing on a single city allows us to communicate the effects of each system while abstracting from the complications of examining the entire economy (such as labor force participation rates, heterogeneous firms and workers, and frictional and structural unemployment).

For System B, the unemployment level presented was 8,000 in the first scenario and then 6,000, 4,000, and 2,000 for the next three scenarios. We inform participants that they should think of their choice between the systems as a vote in favor of a particular system. Intuitively, an individual who tends to choose the most efficient outcome can be considered as consequentialist. For these people, their support for minimum wages is dependent mainly on its associated employment effects. A moral compass plays a diminished role.<sup>19</sup> A focus on consequences potentially characterizes academic economists more than any other group of humans - perhaps the reason for the narrow focus of the existing minimum wage literature in economics.<sup>20</sup>

We present each participant with four choice scenarios in order to gather sufficient data to determine the individual willingness to trade off moral concerns for efficiency. After the participants make their choices we ask them a basic recall question. In the question, they tick a corresponding box if they chose System A (minimum wage) in any of the four scenarios or System B (no minimum wage) in any of the choice scenarios. For an individual who always chose System A, they should tick just one box, allowing us to check on understanding and attention. We then ask if they hold particularly strong beliefs against one or more of the systems. In that question, we ask them to tick if they “would never choose System A [or B] regardless of

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<sup>18</sup>From our pretests, it was clear that we needed the unemployment difference to be a large number for many people or we would not generate switching between the systems. On the other hand, many respondents were willing to switch relatively quickly. We required four choice scenarios to provide a sufficient range of unemployment effects to each participant. More would have been ideal but we were conscious of survey length. See Appendix B for more information on pre-testing and parameter selection.

<sup>19</sup>Individuals who never choose an option with a minimum wage might be viewed as committed libertarians.

<sup>20</sup>Roth notes that in his work as a consultant on market design, discussions have focused on the rights and wrongs of various transactions rather than on efficiency and incentives. Humorously, he then notes that the only exception was in his role as chair of the American Economic Association’s Ad Hoc Committee on the Job Market.

its outcomes.” See Appendix B for a detailed breakdown of how respondents fared with these questions.

In the third stage of the experiment, to examine the degree to which participants believe their responses matter, we remind participants of our intention to heavily publicize our findings and ask respondents if policy makers *will* be interested in our findings and if they *should* be interested in these findings. As a brief aside, we find that 83% of our respondents believe policy makers should take the findings of this study into consideration (see Appendix D for more on the response to these questions).

In the final stage of the experiment we gather some demographic information on participants in order to relate choices to demographic characteristics. As part of this stage, we ask participants to consider a moral dilemma. The answers given to this moral dilemma should identify those with consequentialist tendencies. Our final question asks respondents if they would be willing to participate in a “similar” follow-up survey some time in the future. The goal of the follow up is to examine the stability and reliability of preferences. This follow up has not yet been completed as of this version of the paper. The next subsection describes the characteristics of our experiment participants.

### **3.2 Sample Characteristics**

We gathered 2,534 complete responses to our survey. The data in Table 2 refers to only 2,219 of these complete responses. The discrepancy arises due to concerns about the quality of the data for about 8% of sample respondents. We eliminate these responses from the analysis because they either completed the survey too quickly to have paid any attention, their IP address appears more than once in our data set, they fail our built-in recall and attention checks, or all three.<sup>21</sup>

In addition, 107 respondents are separated from the main sample because these respondents experience a choice scenario with no information on employment. Of those 107, 96 are deemed to be reliable responses (see Appendix D for more on this) and 88.5% (85 of the 96) chose System A (minimum wage of \$X). In contrast, System A was chosen in only 55.5% of situations

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<sup>21</sup>We eliminate those whose IP address appears more than once in the data because this suggests, but does not guarantee, that one person is using multiple mTurk accounts to complete our survey multiple times. Including these respondents does not meaningfully change our findings.

Table 3: Selected Demographic Characteristics of Experiment Participants

		Democratic	Republican	Neither	All
<b>Count</b>		1,095	614	510	2,219
<b>Demographics</b>	Age	36.2	39.3	35.8	36.9
	Std. Dev.	11.4	12.8	11.1	11.8
	% Male	45.2%	52.1%	51.1%	48.5%
	White	71.8%	87.0 %	68.6%	75.3%
	Black	12.9%	3.1%	10.8%	9.7%
	Other	15.3 %	9.9 %	20.6%	15.1%
<b>Politics</b>	Liberal-Conservative Scale	1.9	4.0	2.8	2.7
Note: 1= Strongly Liberal and 5 = Strong Conservative					
<b>Self-Reported Income</b>	<\$20,000	11.3%	10.4%	17.0%	12.3%
	\$20,000 to \$60,000	50.5%	45.5%	49.2%	48.8%
	\$60,000 to \$100,000	25.3%	27.0%	24.4%	25.6%
	\$100,000 or more	12.9%	17.0%	9.4%	13.3%
<b>Education</b>	Less than High School	0.5%	0.2%	0.8%	0.5%
	High School or Some College	41.6%	44.0%	52.55%	44.8%
	Bachelor's Degree	41.6%	38.6%	34.3%	39.1%
	Graduate Degree	16.4%	17.3%	12.4%	15.7%
<b>Religion</b>	Christian	39.3%	75.4%	36.3%	48.6%
	Other	8.9%	3.4%	9.2%	7.8%
	Atheist/Agnostic/No Affiliation	51.9%	21.2%	54.5%	43.7%
<b>Morality Questions</b>	Some Values are Sacred	4.4	4.3	4.4	4.4
	Suffering for a Principle is Wrong	3.9	3.5	3.7	3.7
	Freedom from Interference	3.5	3.4	3.6	3.5
	Vaccine Injection	3.5	3.5	3.4	3.5
Note: 1= Strongly Disagree and 5 = Strongly Agree					
<b>Min Wage Experience</b>	Currently Works for Min Wage	7.5%	14.0%	5.9%	8.9%
	Ever Worked for Min Wage	70.8%	69.8%	65.6%	69.1%
	Never Worked for Min Wage	21.7%	20.4%	24.3%	22.0%
<b>Location</b>	Number of States (incl PR and DC)	51	48	49	52
	Most Common	California (13.3%)	California (11.6%)	California (14.9%)	California (13.2%)

Note: Data refers only to the 2,219 valid responses. See Table 2 and Appendix B for more on what is considered a valid response.

where effects on employment were provided. We claim that differences between the choices in scenarios with and without information on employment effects are causally related to the only change - the provision of employment information.

Table 3 reports on the demographic characteristics we gathered for the 2,219 participants with valid responses. As we have a convenience participant group, they are not representative of the U.S. population. In particular, the table illustrates that the sample was predominantly

democratic-leaning. In addition, while there are respondents from every state, there is a mild west coast bias in the sample. Part of this is due to population: California appears most frequently but we should expect this given California is the U.S.'s most populous state. However, it is over-represented in our data (by about a 1.1 to 1 ratio). States such as Oregon (1.77 to 1) and Nevada (1.47 to 1) are also over-represented relative to their population. We suspect that this pattern partly arises because we began gathering our data late in the evening on September 7th, 2018. We expected the data gathering process to take 24 to 48 hours and, therefore, the starting time to matter little to the composition of our sample. To our surprise, the data gathering process took just under 12 hours. For Californians, and others on the west coast, this time period was roughly 5pm to 5am. For east coast mTurkers, this was 8pm to 8am. Without knowing in advance how long it will take to gather a given amount of data, it is unclear when the “ideal” time to begin data collection would be. Sensitivity analyses which remove or separately control for over and under-represented states or political groups can address these kinds of imbalances. For a complete breakdown of the geographic representation of our respondents relative to the U.S. as a whole, see Appendix D.

### 3.3 Repugnance Ratings

Figure 1 illustrates the rating of each system on the five dimensions of morality described earlier. As a reminder, each respondent rated each aspect of each system on a scale from zero to 100. The order in which respondents viewed the two alternative systems was randomized.<sup>22</sup> A clear pattern can be seen. For the exploitation, unfairness to workers, human dignity, and personal values morality questions System B (no minimum wage) was viewed less favorably than System A (minimum wage of \$X). For example, just under 800 of the 2,219 respondents viewed System A as completely fair and not exploitative (these respondents stated “strongly disagree” with the statements “[T]his system is unfair to workers” and “[T]his system exploits workers”). In contrast, about the same number of respondents viewed System B as maximally unfair and exploitative. The exception to this pattern is in the “unfair to employers” question. There, the two systems were not viewed much differently: the distribution of responses to the question

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<sup>22</sup>Unfortunately, we did not set the Qualtrics system to record the order of presentation for this randomization.

## System Ratings on Several Dimensions

100=Strongly Agree

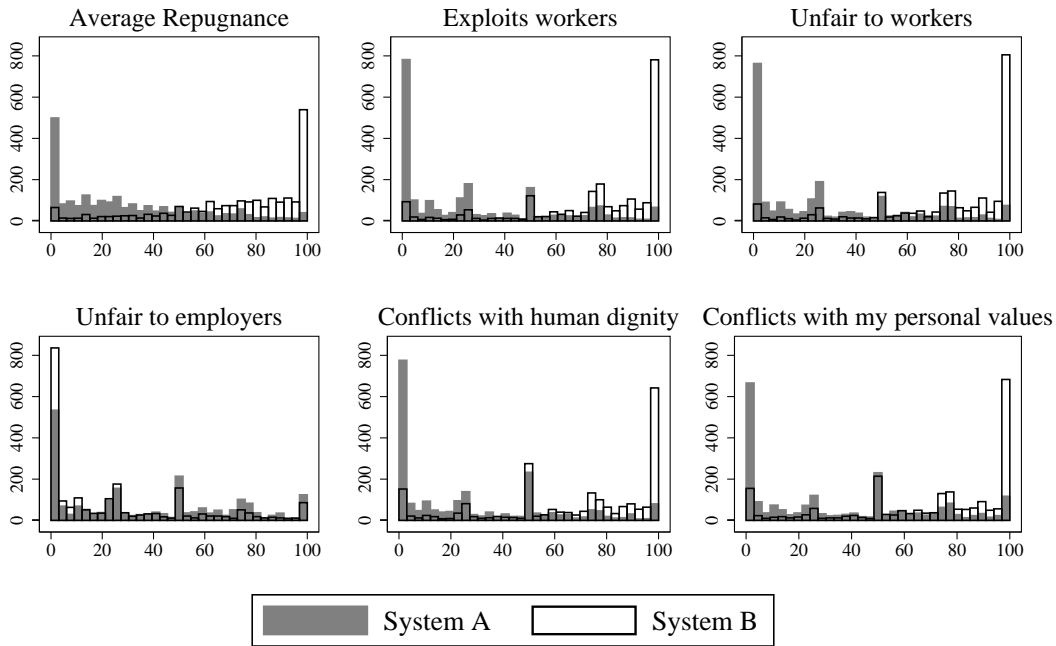


Figure 1: Ratings of System A (minimum wage of \$X) and System B (no minimum wage) on Moral Dimensions.

suggests System B was perhaps viewed a little fairer to employers. For that reason, the “average repugnance” score is generated as the average of the exploitation, unfairness to workers, human dignity, and personal values morality questions. Estimates which use any one (rather than the average) of these four measures of moral concerns produce very similar findings. In addition, including “unfairness to employers” in the measure of average repugnance changes little. If anything, because it brings the “averages” slightly closer together, it increases the sensitivity of our estimates to differences in repugnance ratings. See Appendix D for a complete breakdown of how each system was viewed, particularly as a function of the minimum wage observed (\$7.25, \$10.10, or \$15) and self-reported political party affiliation.

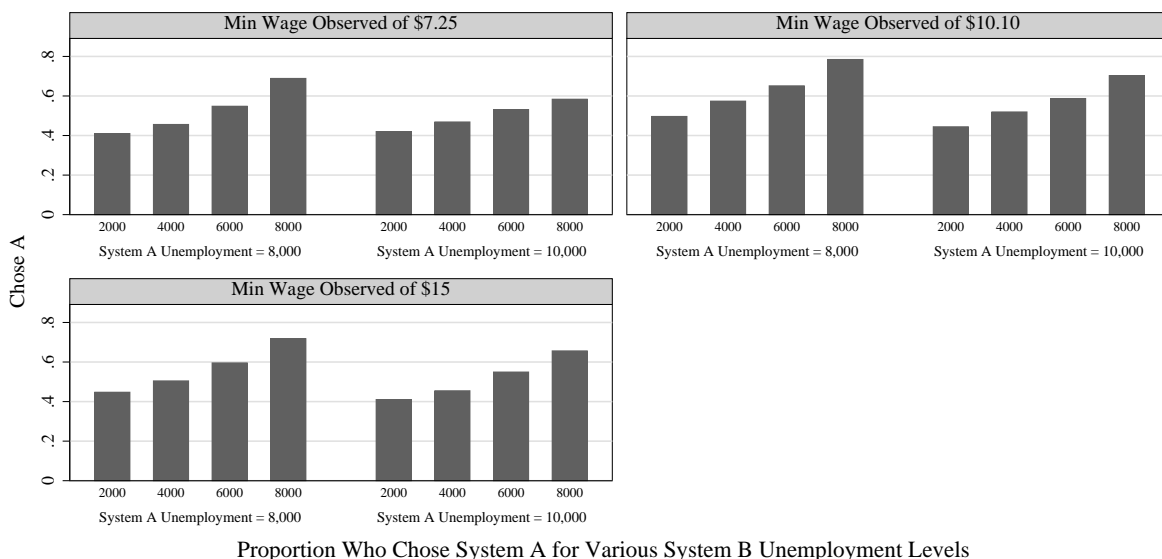


Figure 2: Choices in All Combinations of System A and B Unemployment Levels

### 3.4 Choice Frequencies

As a reminder, for System B, the unemployment level presented was 8,000 in the first scenario and then 6,000, 4,000, and 2,000 for the next three scenarios. Predictably, the frequency of choosing System A decreases across the four choice scenarios. The choice frequencies for System A in each scenario were 70.0%, 58.1%, 49.9% and 43.9%. However, those frequencies vary by minimum wage observed: Figure 2 reports the pattern of choices under each of the different minimum wages. The figure serves as a preliminary check on variation across experimental conditions. In the figure, we see a clear pattern, System A (minimum wage) is chosen frequently (55.5% of the time), but is less likely to be chosen when the unemployment rate for System A is 10% (10,000 out of 100,000). Additionally, the probability that System A is chosen decreases as the difference in unemployment between the two systems increases. This pattern suggests that participants were responsive to the variation presented to them. Note that Table B.1 in the appendix shows that 96.9% of respondents made choices that respect monotonicity (that is, they did not switch back and forth from System A to B on multiple occasions).

What is interesting is that the level of the minimum wage appears to affect the frequency of choosing System A in a non-monotonic way. System A seems about as likely to be chosen



when the minimum wage is relatively small (\$7.25) or relatively large (\$15). Specifically, the frequency of choosing System A is 64.0%, 53.8%, 46.2%, and 41.5% across the four scenarios for a minimum wage of \$7.25 and 68.6%, 56.8%, 47.5%, and 42.3% for a minimum wage of \$15. However, it appears a minimum wage of \$10.10 is something of a “sweet spot” for our experimental participants. That is, for any given combination of unemployment under Systems A and B, System A was more likely to be chosen when the minimum wage was \$10.10. Specifically, System A was chosen 74.4%, 61.5%, 54.3%, and 46.6% of the time across the four scenarios. Intuitively, \$7.25 appears to not be enough to be worth “fighting” for, while \$15 is “too much.”<sup>23</sup>

## 4 Main Findings

We present our main findings as the coefficient estimates from a linear probability model (LPM). The basic estimating equation takes the following form:

$$P(\text{Chose } A)_{ic} = \beta_0 + \beta_1 \text{Repugnance}_i + \beta_2 \text{Unemployment Rate}_{ic} + \Pi X_{it} + \epsilon_{ic}$$

In the estimating equation,  $P(\text{Chose } A)_{ic}$  refers to person  $i$ 's probability of choosing System A in choice situation  $c$ , where  $c = 1, 2, 3, 4$ . In order for the estimated coefficients to represent percentage point changes in probability, the dependent term takes on the value of 100 when person  $i$  chooses System A in choice scenario  $c$  and a value of zero otherwise. The  $\text{Repugnance}_i$  term reflects the difference between respondents' rating of System A and System B where the measure of repugnance is the average of the exploitation, unfairness to workers, human dignity, and personal values morality questions. In the regression estimates presented this variable is also de-meanned. The  $\text{Unemployment}_{ic}$  term reflects the difference in the unemployment rate between the systems in each choice scenario: it can take on five values, zero, two, four, six, or eight. The estimation is completed by allowing for a series of demographic controls and/or fixed effects  $X_{it}$  plus an error term  $\epsilon_{ic}$ . With the dependent variable -  $P(\text{Chose } A)_{ic}$  - taking on

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<sup>23</sup>Subgroup analyses in Section 5 examine if this pattern is due to different responses to larger minimum wages for each political group.

values of 0 or 100, the coefficients on  $Repugnance_i$  and  $Unemployment_{ic}$  can be interpreted as percentage point differences in the probability of choosing System A for a one unit change in  $Repugnance_i$  and  $Unemployment_{ic}$  as appropriate.

Using the LPM specified above, Table 4 presents our main estimates. There are six columns of estimates representing six different specifications. In the first column, we regress the difference in the unemployment rate and difference in (de-meanned) repugnance scores on the probability of choosing System A (minimum wage of \$X). The repugnance variable is increasing in the subjects' rating of System A and decreasing in their rating of B (no minimum wage). That is, if System A (B) is rated more (less) repugnant by a particular respondent, then the  $Repugnance_i$  variable will be larger. The coefficient on the repugnance term in the estimate in the first column of Table 4 suggests that a one unit increase in our measure of repugnance is associated with a .44 percentage point reduction in the probability of choosing System A. The coefficient on the unemployment term suggests that a one unit difference in the unemployment rate is associated with a 4.06 percentage point reduction in the probability of choosing System A.

In our data, the difference in repugnance between System A and System B is 43 points in favor of System A (see Appendix D for more on the repugnance ratings provided by participants). Therefore, the estimates in the first column of Table 4 suggest that someone who rates System A as morally equal to System B is 18.9 percentage points ( $43 \times .44$ ) less likely to choose System A than the average respondent. In turn, a back of the envelope calculation (using the 4.06 coefficient on the unemployment term in the first column of Table 4) suggests that, all else equal, the average respondent requires unemployment in System B to be 4.66 ( $18.9/4.06$ ) percentage points lower in order to become willing to choose System B instead of System A.

Subsequent columns in Table 4 interact the main effect of repugnance and unemployment with the experimental choice parameters to examine if and how choices change in response to these parameterizations. Specifically, column two reports estimates where System A's unemployment level is included as a dummy variable and also interacted with  $Repugnance_i$  (co-efficient estimates not reported in the table) and  $Unemployment_{ic}$ . In those estimates, the main effect of  $Repugnance_i$  is little different to the first column of estimates. In addition, the coefficient on the interaction term (System A  $\times$  repugnance) is small and statistically no different from zero and

Table 4: Main Estimates using Linear Probability Model

	(1)	(2)	(3)	(4)	(5)	(6)
	P(Chose A)	P(Chose A)	P(Chose A)	P(Chose A)	P(Chose A)	P(Chose A)
Difference in Unemployment Rate	-4.059*** (0.195)	-4.646*** (0.252)	-3.379*** (0.438)	-4.724*** (0.266)	-4.556*** (0.493)	
Difference in Repugnance	-0.440*** (0.0191)	-0.439*** (0.0267)	-0.438*** (0.0441)	-0.464*** (0.0254)	-0.469*** (0.0194)	-0.440*** (0.0191)
Difference in Unemployment Rate = 2%						-10.65*** (1.185)
Difference in Unemployment Rate = 4%						-20.11*** (1.307)
Difference in Unemployment Rate = 6%						-27.27*** (1.367)
Difference in Unemployment Rate = 8%						-32.16*** (1.902)
System A = 10,000		0.617 (1.937)			0.486 (1.887)	
Unemployment Rate × System A = 10,000		0.637* (0.341)			0.795** (0.345)	
Min Wage Observed = \$10.10			0.448 (2.940)		0.413 (2.807)	
Min Wage Observed = \$15			-7.848*** (2.981)		-7.124** (2.849)	
Unemployment Rate × \$10.10			-0.843 (0.538)		-0.968* (0.532)	
Unemployment Rate × \$15			-0.795 (0.532)		-0.961* (0.526)	
Equal Race and Gender Effects				1.115 (2.600)	1.588 (2.592)	
Unequal Race and Gender Effects				-19.74*** (2.355)	-19.37*** (2.347)	
Unemployment Rate × Equal RG				-0.0483 (0.551)	-0.0819 (0.547)	
Unemployment Rate × Unequal RG				1.936*** (0.431)	1.941*** (0.431)	
No. of Choices	8,492	8,492	8,492	8,492	8,492	8,492
No. of Respondents	2,123	2,123	2,123	2,123	2,123	2,123

\*\*\* Significant at the 1% level; \*\* Significant at the 5% level; \* Significant at the 10% level. Standard errors are clustered at the respondent level.

is therefore omitted to economize on space (the same is true in subsequent specifications). It appears as if experimental participants are less responsive to the size of the difference in unemployment between the two systems when System A unemployment is 10,000. This is misleading because the average difference in unemployment is larger when System A unemployment is 10,000. The effect of this difference “loads” onto the main effect of unemployment.

In the third column, the main effects are interacted with the level of minimum wage observed. Indicators for a minimum wage of \$10.10 and \$15 are included. These should be interpreted as relative to the missing category, \$7.25. Notice that System A appears to be 7.8 percentage

points less likely to be chosen when the minimum wage is \$15. This seems to conflict with the data presented in Figure 2. There, System A seemed to be about as likely to be chosen when the minimum wage is \$15 versus when it is \$7.25. The discrepancy arises via the repugnance ratings of the two systems. Specifically, a minimum wage of \$7.25 is associated with higher repugnance scores. The negative effect of repugnance on the probability of choosing System A eliminates the disparity (see Appendix D for details of the repugnance ratings of each system).

In the fourth column of Table 4, we examine the effect of providing information on the distribution of unemployment effects by race and gender relative to the composition of the labor force in the experiment's fictional "city." The estimates presented should be viewed as relative to "no information." The data suggests that choices are similar to the baseline (no information) if all races and genders are affected equally. On the other hand, informing our participants that the effects of the minimum wage fall disproportionately on minorities and females is associated with a 19.74 percentage point reduction in the probability of choosing System A. This effect is roughly equal to the effect of a four percentage point difference in unemployment. That is, all else equal, our estimates suggest that System A is as likely to be chosen when there is (i) a two percent difference in employment between System A and B but where females and minorities are impacted disproportionately compared to (ii) a six percent difference in employment between System A and B where the effects do not differ by race and gender.

Note that the coefficient on the interaction of the unemployment variable and unequal race and gender indicator is positive but the effect is mechanical. That is, given many fewer people choose System A when they observe that there is a disproportionate impact on females and minorities, there are fewer people left to "react" to the difference in unemployment. Therefore, relative to the rest of the respondents, those who observe unequal race and gender effects appear relatively less concerned about the unemployment differences between the systems.

For completeness, column five of the table interacts the indicators for minimum wage observed, the level of unemployment in System A, and the race and gender information treatments with the unemployment rate term. Column five does not interact the repugnance term with those indicators. This is partly to economize on space and partly because the estimated effect of

Table 5: Introducing Demographic Controls: Linear Probability Model

		(1)	(2)	(3)	(4)
		P(Chose A)	P(Chose A)	P(Chose A)	P(Chose A)
<b>Unemployment</b>	Difference in Unemployment Rate = 2%	-10.65*** (1.185)	-10.60*** (1.187)	-10.53*** (1.193)	-10.59*** (1.210)
	Difference in Unemployment Rate = 4%	-20.11*** (1.307)	-20.07*** (1.307)	-20.00*** (1.311)	-20.10*** (1.326)
	Difference in Unemployment Rate = 6%	-27.27*** (1.367)	-27.23*** (1.368)	-27.16*** (1.370)	-27.24*** (1.389)
	Difference in Unemployment Rate = 8%	-32.16*** (1.902)	-32.08*** (1.894)	-31.93*** (1.877)	-32.02*** (1.895)
<b>Repugnance</b>	Difference in Repugnance	-0.440*** (0.0191)	-0.450*** (0.0191)	-0.411*** (0.0204)	-0.413*** (0.0208)
<b>Demographics</b>	Age		0.0263 (0.0722)	0.0103 (0.0799)	0.0110 (0.0811)
	Male		6.168*** (1.680)	6.494*** (1.700)	7.034*** (1.723)
<b>Politics (omitted "Democrat")</b>	Neither Democrat nor Republican			-6.640*** (2.177)	-6.786*** (2.236)
	Republican			-12.84*** (2.121)	-12.15*** (2.139)
<b>Education (omitted "&lt; High School")</b>	Some College				6.985 (15.90)
	Completed College				10.46 (15.91)
	Graduate Degree				12.65 (16.04)
<b>Income (omitted "&lt; \$20,000")</b>	\$20,000 to \$60,000				-3.714 (2.706)
	\$60,000 to \$100,000				-4.438 (2.994)
	\$100,000 or more				-10.71*** (3.465)
	No. of Choices	8,492	8,492	8,492	8,288
	No. of Respondents	2,123	2,123	2,123	2,072
<b>Controls</b>	Age, Race, Gender		Y	Y	Y
	Politics, LF Status, Location			Y	Y
	Income, Education				Y

\*\*\* Significant at the 1% level; \*\* Significant at the 5% level; \* Significant at the 10% level. Standard errors are clustered at the respondent level.

repugnance on choices remains stable across the specifications in column two, three, and four. Moreover, its interaction with those indicators is statistically zero in each of those specifications.

The final column of estimates is a non-parametric version of the estimates in the first column of the table. Here, instead of treating the unemployment term as a continuous variable, we include indicators for each of the values the variable takes on. The omitted category is an unemployment rate difference of zero. These estimates should be interpreted as the change in probability of choosing System A compared to the omitted category.

Table 5 uses the non-parametric specification in column six of Table 4 to examine how the main estimates of interest vary when we include controls for self-reported demographic information. Note that not all of the estimated coefficients can be presented in the available space. Also note that the first column of the table repeats the estimates in the final column of Table 4 for ease of comparison. The table highlights that the corresponding point estimates in each specification are statistically no different to one another, regardless of controls. The stability of the estimates is remarkable given the final specification in the table includes controls for age, race, gender, political affiliation, labor force status, state of residence, income level, and education level.

## 5 Robustness and Sensitivity

### 5.1 Sensitivity Analysis

Table 6 examines the robustness of our main estimates to the omission of certain groups of respondents. These estimates also follow the non-parametric specification in the final column of Table 4. In the first column, we remove the 68.6% of respondents ( $2,219 - 663 = 1,556$ ) who never switch choices. Because more than half of these “never switchers” choose A in all choice scenarios, these respondents bias the coefficient estimates on the relative employment efficiency terms towards zero.<sup>24</sup> Given we are focusing on those who we have identified as sensitive to employment effects it is unsurprising that the estimates without the “never switchers” are more sensitive to the unemployment rate. Appendix D contains a breakdown of the demographic characteristics of switchers and never switchers (those who always choose System A and those who always choose System B are examined separately).

In columns two, three, and four of Table 6 we eliminate those who reported themselves as extremely conservative or liberal, those who express a religious affiliation, and those who are non-college educated. The point estimates differ little relative to the final column of Table 4. The final column of the table presents fixed effect estimates. These estimates ease concerns about the representativeness of the sample. Note that our sample contains respondents from eight

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<sup>24</sup>The use of the word bias here is not as a synonym for erroneous.

Table 6: Sensitivity Analysis: Linear Probability Model

	(1)	(2)	(3)	(4)	(5)
	P(Chose A)	P(Chose A)	P(Chose A)	P(Chose A)	P(Chose A)
Difference in Unemployment = 2%	-20.60*** (2.304)	-12.94*** (1.745)	-10.56*** (1.605)	-11.14*** (1.538)	-12.37*** (1.090)
Difference in Unemployment = 4%	-50.91*** (2.576)	-22.64*** (1.909)	-19.79*** (1.803)	-20.41*** (1.699)	-21.84*** (1.090)
Difference in Unemployment = 6%	-73.84*** (2.383)	-30.24*** (1.976)	-28.16*** (1.959)	-26.85*** (1.794)	-29.00*** (1.090)
Difference in Unemployment = 8%	-83.89*** (2.277)	-35.92*** (2.668)	-34.18*** (2.745)	-30.82*** (2.555)	-35.56*** (1.369)
Difference in Repugnance	-0.127*** (0.0263)	-0.448*** (0.0265)	-0.506*** (0.0280)	-0.464*** (0.0245)	
No. of Choices	2,652	4,368	3,728	4,660	8,492
No. of Respondents	663	1,092	932	1,165	2,123
Omitted Group	Never Switchers	Extreme Politics	Religious	Non-College Educated	-
Fixed Effects	-	-	-	-	Yes

\*\*\* Significant at the 1% level; \*\* Significant at the 5% level; \* Significant at the 10% level. Estimates in the first four columns include standard errors clustered at the respondent level. The fifth column reports fixed effects estimates.

different racial groups, all 50 states (plus PR and DC), both political parties plus independents, the entire spectrum of education levels, twelve different income groups, employees, retirees, and job seekers, a balance of males and females, and respondents ranging in age from 18 to 80. Given the breadth of respondent characteristics, the fixed effects estimates likely closely approximate what we would find if we repeated this experiment with a purpose-built fully-representative panel of Americans.

## 5.2 Heterogeneity of Preferences

Table 7 reports on how choices are related to various characteristics of our respondents. In each specification we include an indicator for the characteristic of interest and interact that indicator with the unemployment difference between Systems A and B in a given choice scenario (to reduce the number of coefficients reported, we return to a parametric specification similar to the first column of Table 4). The first column of Table 7 focuses on differences in the choices of males and females. The estimate suggests males are 5.66 percentage points more likely than females

Table 7: Heterogeneity Across Groups: Linear Probability Model

	(1)	(2)	(3)	(4)	(5)
	P(Chose A)	P(Chose A)	P(Chose A)	P(Chose A)	P(Chose A)
Difference in Unemployment	-4.113*** (0.277)	-4.306*** (0.244)	-4.419*** (0.418)	-3.591*** (0.304)	-4.335*** (0.277)
Difference in Repugnance	-0.449*** (0.0190)	-0.441*** (0.0191)	-0.440*** (0.0192)	-0.441*** (0.0191)	-0.403*** (0.0203)
Male	5.663*** (2.059)				
Unemployment × Male	0.0833 (0.391)				
Age >40		-2.366 (2.161)			
Unemployment × Age>40		0.751* (0.405)			
White			3.563 (2.488)		
Unemployment × White			0.483 (0.472)		
Inject Vaccine				1.714 (2.090)	
Unemployment × Vaccine				-0.773* (0.396)	
Neither Democrat nor Republican					-8.467*** (2.608)
Republican					-14.56*** (2.586)
Unemployment × Neither					0.484 (0.498)
Unemployment × Republican					0.596 (0.455)
No. of Choices	8,492	8,492	8,492	8,492	8,492
No. of Respondents	2,123	2,123	2,123	2,123	2,123

\*\*\* Significant at the 1% level; \*\* Significant at the 5% level; \* Significant at the 10% level. Standard errors are clustered at the respondent level.

to choose System A. However, males are not more responsive to the size of the unemployment difference between the systems. That is, the difference is a level rather than a slope difference.

The second column suggests that older respondents are less likely to choose System A (2.37 percentage points) but the effect is not statistically different from zero. On the other hand, older respondents are also less responsive to the size of the unemployment difference between the



systems. They are .75 percentage points more likely to choose A for each percentage point difference in unemployment, relative to younger respondents.

Column four compares White respondents to all others. They are more likely to choose System A but the effect is not different from zero. Column five examines differences in choices as a function of responses to our moral dilemma question. The moral dilemma question is designed to identify utilitarian preferences by asking respondents if a fictional doctor should inject two substances, one of which is a vaccine and the other deadly poison, into two fictional patients. Both patients have contracted a deadly virus and will die regardless of the doctor's actions. However, by injecting the substances, the doctor will learn which substance is the vaccine (the patient who gets the poison will die immediately). The doctor will then be able to replicate the vaccine and save many from contracting the deadly virus in the first place. Those who suggest the vaccine should be injected are supposedly utilitarian. We find that the answer to that question has relatively mild effects on choices. In particular, those who agree ("somewhat" or "strongly" - see Table 3 for a breakdown of responses) that the doctor should inject the substances are mildly more likely (than those who do not agree) to be responsive to the effects of minimum wages.

The final column of Table 7 reports how the choices of Republicans and those who report no political affiliation differ from Democrats. Relative to Democrats, those who report no political affiliation are 8.47 percentage points less likely to choose System A. Those who identify as Republicans are 14.56 percentage points less less likely to choose System A. Again, the effect is a level difference rather than a slope difference with the coefficients on the interaction term being statistically no different to zero in each case.

## **6 Conclusion and Discussion**

In this paper, we use a choice experiment to examine how moral concerns affect minimum wage policy preferences. In the experiment, we ask individuals to consider various minimum wage levels in comparison to a situation without a minimum wage. Our participants then rate the alternative "systems" on five moral dimensions including whether the system is unfair to em-

ployers and employees, exploitative, respects human dignity, or conflicts with the respondent's personal values.

Participants in the experiment then observe hypothetical outcomes associated with each system. Specifically, they observe four choice scenarios and, in each situation, they vote for their preferred option. Consequentialist individuals (those who focus on outcomes) should be willing to choose a system they view as repugnant if it "performs well." Deontological individuals are unresponsive to outcomes, by definition. They are unmoved by efficiency or welfare gains. They view the issue through a moral lens that does not permit deviation from their beliefs about how much one hour of a person's time is worth.

Our findings suggest that support for minimum wages could be described as deontological rather than consequentialist for many individuals, especially in relation to employment consequences. In our survey, the average respondent would need around a five percentage point drop in unemployment in order to overcome the estimated effect of moral concerns on their decision. That is, preferences are only mildly responsive to the effects minimum wages might have on employment. Focusing on the average respondent masks heterogeneity: more than 41% of participants were unresponsive to the negative consequences of minimum wages in any of the choice scenarios. On the other hand, many people find minimum wage laws distasteful: 27% of respondents voted for the system without a minimum wage in all four choice scenarios. This highlights that the effect of minimum wages on the quantity of labor demanded by employers affects the preferences of only a minority of Americans.

These findings have important policy implications and should inform future research on the trade-off between wages and employment levels. In particular, research which tries to empirically estimate how higher minimum wages affects employment will miss the mark with the majority of the U.S. public. Instead, those who are concerned about the inefficiency created by minimum wage laws might reconsider how that inefficiency could be remedied in a way that is amenable to those who take a deontological view of the issue. Future revisions of this paper will attempt to begin this process by examining how the minimum wage is viewed compared to potential alternative labor market interventions.

Fundamentally, to be helpful to the debate, future empirical work on minimum wages needs to directly address both the moral and economic issues at hand. Understanding when, where, and why preferences for minimum wages are deontological is the first step because attitudes towards moral issues can and do change. Minimum wages were originally implemented to exclude certain workers from the labor market (Leonard, 2005) but, paradoxically, appear to now be viewed as morally sacred. Marijuana and alcohol prohibitions were implemented but then relaxed. Attitudes towards homosexuality, the role of women in the economy, and organized religion have undergone dramatic change in the last century. These changes did not happen due to a careful examination of the associated consequences. As Roth notes, “attitudes about the repugnance (or other kinds of inappropriateness) of transactions shape whole markets, and therefore shape what choices people face.” Economists might do well to carefully consider how that impacts the work they do.

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## **A Experiment/Survey Document**

### **A.1 Sample Survey**

This appendix section contains a complete survey, beginning on the following page. The survey remains available to complete at [http://louisville.az1.qualtrics.com/jfe/form/SV\\_39Keupyg3Vnqt49](http://louisville.az1.qualtrics.com/jfe/form/SV_39Keupyg3Vnqt49).

English ▼

## Minimum Wages, Morality, and Efficiency: A choice Experiment

September, 2018

Dear Survey Participant:

You are invited to participate in a research study about attitudes toward minimum wages. This study is conducted by Dr. Stephan Gohmann, Dr. Keith Teltser, Dr. Conor Lennon, and Dr. Jose Fernandez of the University of Louisville. There are no known risks for your participation in this research study. The information collected may not benefit you directly. The information learned in this study may be helpful to others. The information you provide will be used to help us understand the nature of public preferences towards minimum wages. Your completed survey will be stored at the University of Louisville. The survey will take approximately 10 to 12 minutes to complete. Payment will be \$1 for completing the survey. You will also be asked if you would be willing to be re-contacted for a similar follow-up survey. If you are re-contacted, you will also be compensated \$1 for that follow-up survey.

Individuals from the Department of Economics at the University of Louisville, the Institutional Review Board (IRB), the Human Subjects Protection Program Office (HSPPO), and other regulatory agencies may inspect these records. In all other respects, however, the data will be held in confidence to the extent permitted by law. Should the data be published, your identity will not be disclosed.

Taking part in this study is voluntary. By answering survey questions you agree to take part in this research study. You do not have to answer any questions that make you uncomfortable. You may choose not to take part at all. If you decide to be in this study you may stop taking part at any time. If you decide not to be in this study or if you stop taking part at any time, you will not lose any benefits for which you may qualify.

If you have any questions, concerns, or complaints about the research study, please contact: Dr. Conor Lennon (phone: (502) 852-7773; e-mail: conor.lennon@louisville.edu) or Dr. Jose Fernandez (phone: (502) 852-4861; e-mail: jose.fernandez@louisville.edu).

If you have any questions about your rights as a research subject, you may call the Human Subjects Protection Program Office at (502) 852-5188. You can discuss any questions about your rights as a research subject, in private, with a member of the Institutional Review Board (IRB). You may also call this number if you have other questions about the research, and you cannot reach the research staff, or want to talk to someone else. The IRB is an independent committee made up of people from the University community, staff of the institutions, as well as people from the community not connected with these institutions. The IRB has reviewed this research study.

If you have concerns or complaints about the research or research staff and you do not wish to give your name, you may call 1-877-852-1167. This is a 24 hour hot line answered by people who do not work at the University of Louisville.

Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device. If



you do not wish to participate in this study, please close this window now and your session will end.

Sincerely,

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Dr. Conor J. Lennon

Dr. Jose M. Fernandez

- I consent, begin the study
- I do not consent, I do not wish to participate, please delete all record of my involvement.

>>

English ▼

You will be able to continue with the survey after reading the brief text below.

The Fair Labor Standards Act explains that, as of June 2018, the federal minimum wage in the United States is \$7.25 per hour of work. It is a federal crime to employ workers at any hourly wage below the federal minimum wage. Individual states are free to set a higher minimum wage, but the federal rate is the lowest possible hourly wage (there are some exceptions such as the hospitality industry, where tipping is customary).

In March of 2018, the Bureau of Labor Statistics reported that 1.8 million hourly workers, roughly 2.3 percent of all hourly workers, were paid no more than the federal minimum wage. Of those 1.8 million workers;

- 49 percent were between 16 and 24 years old.
- 65 percent work part-time.
- 53 percent have a high school diploma or less.
- 17 percent are Black, and 17 percent are Hispanic or Latino.
- 58 percent are female.

In recent years, there has been discussion about raising the federal minimum wage. Those in favor of an increase see the minimum wage as a potential way to reduce poverty and inequality. Opponents note that increasing the minimum wage could lead to unemployment because employers will not be able to afford to employ as many workers.

In this study, you may be asked to consider the minimum wage compared to some alternative policy options. We will refer to your options as System A and System B in each scenario. The order of presentation is randomly chosen. For that reason, you may be asked to consider System B prior to considering System A. You will be asked to express your opinion on the ethics of these systems, including if you feel they are fair (to both workers and their potential employers), dignified, or exploitative. You will then be given some potential associated employment outcomes to consider and asked to "vote" on a preferred option.

**Based on the findings of this study, we will prepare and submit a summary of our findings (in the form of an op-ed) to major national newspapers including the New York Times, the Washington Post, the Chicago Tribune, and the Los Angeles Times. We may also be asked to speak about our findings on television, radio, or at public speaking events. In order to help us explain how American people view the minimum wage, we ask that you commit to answering our study's questions honestly.**

Note that all of the answers that you provide will remain anonymous and treated with absolute confidentiality. The researchers do not know your identity, and they will never be able to match your name with the answers that you provide.

**Do you commit to carefully reading and providing your thoughtful and honest answers to the questions in this survey?**

- I commit to answering the questions in this study honestly and truthfully.**
- I do not commit to answering the questions in this study honestly and truthfully, please remove me from this study.**

English ▼

System A: This system features a minimum wage of \$10.10 per hour worked. This minimum applies in all 50 US states and employers must pay their employees at least \$10.10 per hour. Any employer who pays any worker a wage below \$10.10 would be guilty of a federal crime under the Fair Labor Standards Act.

Please consider the following statements and indicate your agreement or disagreement with them by moving the appropriate slider.

Note: the definition of underlined words can be viewed by hovering over them with the mouse cursor.

This system exploits workers

Strongly disagree 0      Somewhat disagree 25      Neither agree nor disagree 50      Somewhat agree 75      Strongly agree 100



This system is unfair to workers

Strongly disagree 0    Somewhat disagree 25    Neither agree nor disagree 50    Somewhat agree 75    Strongly agree 100



This system is unfair to employers

Strongly disagree 0    Somewhat disagree 25    Neither agree nor disagree 50    Somewhat agree 75    Strongly agree 100



This system does not respect human dignity

Strongly disagree 0    Somewhat disagree 25    Neither agree nor disagree 50    Somewhat agree 75    Strongly agree 100



This system conflicts with my personal values

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
0	25	50	75	100



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This system is unfair to workers

Strongly disagree 0      Somewhat disagree 25      Neither agree nor disagree 50      Somewhat agree 75      Strongly agree 100



This system is unfair to employers

Strongly disagree 0      Somewhat disagree 25      Neither agree nor disagree 50      Somewhat agree 75      Strongly agree 100



This system does not respect human dignity.

Strongly disagree 0      Somewhat disagree 25      Neither agree nor disagree 50      Somewhat agree 75      Strongly agree 100







In this part of the survey, you will consider some potential consequences of the systems you have rated. You will be presented with three choice scenarios. This is the first scenario.

For the purposes of the survey consider the potential effect of the alternative systems on a small U.S. city. The city contains 100,000 adults who are willing and able to work. Of these 100,000, 55,000 are male and 45,000 are female. In addition, 60,000 are White, 20,000 are Black, and 20,000 are Hispanic/Latino.

The table below summarizes what happens to employment in the city under each alternative system.

System A		System B
Minimum wage of \$10.10  <b>Number of people <u>unable</u> to find work: 10,000</b>		Minimum Wage Eliminated  <b>Number of people <u>unable</u> to find work: 8,000</b>
<p><b>For System A, among the workers who are unable to find work, 40 percent are members of a minority community (they are Black or Hispanic) and 45 percent are female.</b></p>		

**For System B, among the workers who are unable to find work, 40 percent are members of a minority community and 45 percent are female.**

Please indicate the system you would like to see implemented by choosing one of the options below. Please think of your selection as the expression of a "vote."

System A

System B

On a scale of 0 to 100, how would you rate the overall desirability of each system?

Extremely  
undesirable  
0

Somewhat  
undesirable  
25

Neither desirable  
nor undesirable  
50

Somewhat  
desirable  
75

Extremely  
desirable  
100

System A



System B



This is the second scenario.

Again, consider the potential effect of the alternative systems on a small U.S. city. The city contains 100,000 adults who are willing and able to work. Of these 100,000, 55,000 are male and 45,000 are female. In addition, 60,000 are White, 20,000 are Black, and 20,000 are Hispanic/Latino.

The table below summarizes what happens to employment in the city under each system.

<b>System A</b>		<b>System B</b>
<p>Minimum wage of \$10.10</p> <p><b>Number of people <u>unable</u> to find work: 10,000</b></p>		<p>Minimum Wage Eliminated</p> <p><b>Number of people <u>unable</u> to find work: 6,000</b></p>
<p><b>For System A, among the workers who are unable to find work, 40 percent are members of a minority community (they are Black or Hispanic) and 45 percent are female.</b></p> <p><b>For System B, among the workers who are unable to find work, 40 percent are members of a minority community and 45 percent are</b></p>		

female.

Please indicate the system you would like to see implemented by choosing one of the options below. Please think of your selection as the expression of a "vote."

System A

System B

On a scale of 0 to 100, how would you rate the overall desirability of each system?

Extremely  
undesirable  
0

Somewhat  
undesirable  
25

Neither desirable  
nor undesirable  
50

Somewhat  
desirable  
75

Extremely  
desirable  
100

System A

0



System B

0



This is the third scenario.

For the purposes of the survey consider the potential effect of the alternative systems on a small U.S. city. The city contains 100,000 adults who are willing and able to work. Of these 100,000 people, 55,000 are male and 45,000 are female. In addition, 60,000 are White, 20,000 are Black, and 20,000 are Hispanic/Latino.

The table below summarizes what happens to employment in the city under each system.

System A		System B
<p>Minimum wage of \$10.10</p> <p><b>Number of people <u>unable</u> to find work: 10,000</b></p>		<p>Minimum Wage Eliminated</p> <p><b>Number of people <u>unable</u> to find work: 4,000</b></p>
<p><b>For System A, among the workers who are unable to find work, 40 percent are members of a minority community (they are Black or Hispanic) and 45 percent are female.</b></p> <p><b>For System B, among the workers who are unable to find work, 40 percent are members of a minority community and 45 percent are</b></p>		

female.

Please indicate the system you would like to see implemented by choosing one of the options below. Please think of your selection as the expression of a "vote."

System A

System B

On a scale of 0 to 100, how would you rate the overall desirability of each system?

Extremely  
undesirable  
0

Somewhat  
undesirable  
25

Neither desirable  
nor undesirable  
50

Somewhat  
desirable  
75

Extremely  
desirable  
100

System A



System B



This is the third scenario.

For the purposes of the survey consider the potential effect of the alternative systems on a small U.S. city. The city contains 100,000 adults who are willing and able to work. Of these 100,000 people, 55,000 are male and 45,000 are female. In addition, 60,000 are White, 20,000 are Black, and 20,000 are Hispanic/Latino.

The table below summarizes what happens to employment in the city under each system.

System A		System B
<p>Minimum wage of \$10.10</p> <p><b>Number of people <u>unable</u> to find work: 10,000</b></p>		<p>Minimum Wage Eliminated</p> <p><b>Number of people <u>unable</u> to find work: 2,000</b></p>
<p><b>For System A, among the workers who are unable to find work, 40 percent are members of a minority community (they are Black or Hispanic) and 45 percent are female.</b></p> <p><b>For System B, among the workers who are unable to find work, 40 percent are members of a minority community and 45 percent are</b></p>		



female.

Please indicate the system you would like to see implemented by choosing one of the options below. Please think of your selection as the expression of a "vote."

System A

System B

On a scale of 0 to 100, how would you rate the overall desirability of each system?

Extremely  
undesirable  
0

Somewhat  
undesirable  
25

Neither desirable  
nor undesirable  
50

Somewhat  
desirable  
75

Extremely  
desirable  
100

System A



System B



English ▼

The following question asks you to recall the choices you made.

Please check all of the below sentences that apply to your choices, as truthfully and honestly as possible.

- I chose System A (a minimum wage of \$10.10) in at least one choice opportunity
- I chose System B (no minimum wage) in at least one choice opportunity

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English ▼

Again, please consider the choices you made.

Please check all of the below sentences that apply to your choices, as truthfully and honestly as possible.

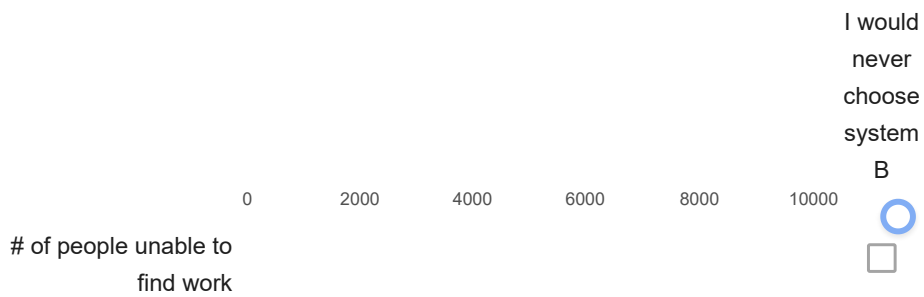
- I would have never chosen System A (a minimum wage of \$10.10) regardless of the number of workers who were able to find work
- I would have never chosen System B (no minimum wage) regardless of the number of workers who were able to find work
- None of the above

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English ▾

Suppose **10,000** people were unable to find work under System A (minimum wage of \$10.10). Please use the slider below to select a numerical answer to complete the missing part of the following statement: I would be willing to choose System B (no minimum wage) instead of System A if the number of people unable to find work was less than \_\_\_\_\_.



>>

English ▼

As mentioned earlier, we will share the findings of this study with the general public and policy makers by sending them to major national newspapers for publication as an op-ed.

To what extent do you believe that policy makers **will** take your opinion about the minimum wage into consideration?

- Not at all
- Very little
- Little
- Somewhat
- Very much

To what extent do you believe that policy makers **should** take your opinion into consideration?

- Not at all
- Very little
- Little
- Somewhat
- Very much

English ▼

In this section of the survey we ask that you provide some socio-demographic information.

**Thank you for helping us collect accurate information.**

What is your age?

Are you...

- Male
- Female

In which state do you currently reside?

Which statement best describes your current employment status?

- Working (paid employee)
- Working (self-employed)
- Not working (disabled)
- Not working (temporary layoff from a job)
- Not working (retired)
- Not working (looking for work)
- Not working (other)

- Prefer not to answer

What is the highest level of school you have completed or the highest degree you have received?

- Less than high school degree
- High school graduate (high school diploma or equivalent including GED)
- Some college but no degree
- Associate degree in college (2-year)
- Bachelor's degree in college (4-year)
- Master's degree
- Doctoral degree

- Professional degree (JD, MD)

Information about income is very important to understand. Please indicate the answer that includes your entire household income in 2017 before taxes.

- Less than \$10,000
- \$10,000 to \$19,999
- \$20,000 to \$29,999
- \$30,000 to \$39,999
- \$40,000 to \$49,999
- \$50,000 to \$59,999
- \$60,000 to \$69,999
- \$70,000 to \$79,999
- \$80,000 to \$89,999
- \$90,000 to \$99,999
- \$100,000 or more
- Prefer not to answer

To which racial group do you most identify?

- White
- Asian





- My affiliation is not listed
- No religious affiliation

Have you donated money to or volunteered for a non-profit or charitable organization in the past 2 years?

- Yes
- No

Do you think of yourself as closer to the Republican or Democratic Party?

- Republican
- Democratic
- Neither

Have you ever worked in a position where your hourly wage was equal to the minimum wage?

- Yes, my current job pays minimum wage.
- Yes, a previous job paid minimum wage.
- No

Is any member of your immediate family currently working in a position that pays minimum wage?

- Yes
- No
- Unsure

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English ▼

Please indicate your level of agreement with the following sentence:

**Some aspects of human life are sacred and should never be violated regardless of the possible material gains.**

- Strongly disagree    Somewhat disagree    Neither agree nor disagree    Somewhat agree    Strongly agree

Please indicate your level of agreement with the following sentence:

**Allowing people to experience suffering in order to maintain an ethical principle is morally wrong.**

- Strongly disagree    Somewhat disagree    Neither agree nor disagree    Somewhat agree    Strongly agree

Please indicate your level of agreement with the following sentence:

**People should have the freedom to do things that offend others' morals so long as no one is directly physically or financially harmed.**

- Strongly disagree    Somewhat disagree    Neither agree nor disagree    Somewhat agree    Strongly agree

Consider the following scenario:

Suppose a viral epidemic is killing millions of people around the world. The virus is fatal in every case: once someone contracts the virus they cannot be saved but the virus takes several days to kill a person. A doctor has developed two substances. One is a vaccine and the other is a deadly poison. Due to a clerical error, the doctor is not sure which is which. The doctor is taking care of two patients who have the fatal virus.

The only way to identify the vaccine is to inject each patient with one of the two substances. If the doctor injects the substances one of the patients will die immediately from the poison. However, because the doctor will know which substance is the vaccine, millions of other lives will be saved.

Please indicate your level of agreement with the following sentence:

**The doctor should inject the substances into the patients.**

- Strongly disagree    Somewhat disagree    Neither agree nor disagree    Somewhat agree    Strongly agree

>>

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English ▼

We are planning to contact some of the respondents to this survey sometime in the next 4 to 6 weeks to complete a similar type of survey. If you are interested in being contacted, please indicate below. If you are recontacted and choose to participate, your participation will be compensated.

- Yes, I am willing to be contacted again       No, I am not willing to be contacted again.

If you have any feedback on our survey (typos, errors, general comments, and so on) please let us know. You can type your comments into the text box below.

>>

Thank you for completing our survey. Your response has been recorded.

Your MTurk completion code is: 1234567890

Please copy and paste the completion code into the space provided in the mTurk HIT to ensure your prompt payment.

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## **B Practical Experimental Details**

This appendix describes describes participant recruitment, pre-testing, payments and earnings, time taken, along with the results of various checks on participants' attention.

### **B.1 Recruitment**

Participants were recruited via Amazon's mTurk platform. On this platform, "requesters" can pay people to perform relatively short human intelligence tasks (HITs). These tasks include data entry, audio transcription, and so on. In addition, the platform is used for marketing surveys and experiments.

### **B.2 Pre-testing**

We completed a round of pretesting in August of 2018. To be precise, we did two pretests, one involved gathering and paying for 50 responses to check our survey instrument was working as intended. Then, we gathered 250 responses to estimate the effect size of interest and to understand if the parameters would generate enough variation in the data. None of the data gathered in the pretest phase is presented here.

The pretest version of the survey allowed the unemployment rate to vary randomly in System A between 4%, 6%, 8% and 10%. For System B, the rate varied between 4% and 6% (presented to participants as X out of 100,000 who want to work are unable to find a job). Participants were given three choice scenarios with the unemployment rate randomly drawn for each system. From this, we found that in order to overcome the mean repugnance between A and B, respondents needed about a 5,000 (5 percentage point) difference in employment. For that reason, about 15% of our respondents in the pretest faced three choice scenarios where all three were redundant - either the unemployment rate in system B was the same or worse than A. That is, due to the randomization they never observed a scenario where A was "worse" than B.<sup>B.1</sup> In addition, many experimental participants observed situations where unemployment in System B was always much lower than System A.

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<sup>B.1</sup> There are eight possible pairings, the unemployment rate in system B was the same or worse than A in three of these eight pairings.

To avoid these extremes, we altered the survey design to set System A's unemployment level at either 8% (8,000 out of 100,000 workers) or 10% upon entering the survey. We then asked the respondent to compare System A to System B in four scenarios. In the first scenario, the unemployment rate for System B was 8%, in the second it was 6%, in the third it was 4%, and it was 2% in the final scenario. This ensured everyone saw a situation where the unemployment difference between System A and B was small and one where it was not.

### **B.3 Earnings and Time Taken**

The average respondent took just over 12 minutes to complete the survey. The median respondent took 10 and a half minutes. Each respondent was paid \$1. The average time is inflated significantly by outliers in the right tail of the "time taken" distribution. For example, one respondent took over 2 hours and 40 minutes to complete the survey. It is likely that this person did not spend that time focused on the survey. Indeed, given 25% of reliable survey respondents took less than 8 minutes to do the survey, we suspect that the time taken to do the survey is artificially inflated for reasons that are unrelated to the survey's length (such as working on other short mTurk tasks or due to interruptions from phone calls, social media, bathroom breaks, and so on). Lastly, dropping those above the 95th percentile of the time distribution (a survey completion time of about 26 minutes) brings the median time to completion to 10 minutes and 7 seconds and the mean to 10 minutes and 55 seconds.

### **B.4 Attention Checks**

There are several attention checks built into the survey. We consider two of these to be relatively strong and three of them to be somewhat weaker. The stronger checks ask respondents (1) to recall if they ever chose each system and (2) if they would never choose either of the systems. They fail the first check if they cannot accurately recall if they chose System A or B across the various choice scenarios. They fail the second check if they claim they would never choose one of the systems but actually did choose one of those systems in at least one choice scenario. We eliminate anyone who fails both of these checks. Therefore Table B.1 reports on the "pass" and "fail" rates in the various attention checks for only 2,219 responses (also, see Table 2).

Table B.1: Checks on Attention and Reliability

Reliability Check	Description	Pass	Fail
1	Cannot recall own choices	2,035 91.7%	184 8.3%
2	Claims they would never choose a system which they did choose	2,033 91.6%	186 8.4%
3	Choices Correspond to Desirability Rating of each system	1,656 74.6%	563 25.4%
4	Suggested they would choose System B for some level of employment but did not do so in the experiment	2,135 96.2%	84 3.8%
5	Choices reflect monotonic preferences	2,139 96.4%	80 3.6%

The table reports how many respondents passed or failed five checks on attention, response reliability, and consistency. Statistics are reported for 2,219 respondents. This total excludes those who failed both the first and second reliability checks listed above plus those who appear to have taken the survey more than once based on their IP address.

The stronger checks on attention are presented first in the table. Among those who did not fail both of those reliability checks, there remains a small minority who failed one of them. However we keep these responses in our data because many of those who fail one of the strong checks do not fail any of the other weaker three tests. In any case, the estimates presented in the paper are almost identical if we exclude those who fail just one of those strong checks. Indeed, including those who fail both of our stronger checks does little to alter the estimates.

The third reliability check in the table examines if participants chose the system they rated as most “desirable.” Given the loaded and subjective meaning of that term, we do not consider “failing” this check to be a major concern. A person could consider System A as “most desirable” but chooses System B due to its employment consequences.

Reliability check number four examines respondents’ answers to our “switching” question. In the survey, towards the end, our “switching” question asks respondents to choose (on a

sliding scale) the level of unemployment that would be required to get them to switch from System A (the level of unemployment for A was fixed for a given respondent but varied across respondents between 8,000 and 10,000). A respondent fails this check if they choose some number in this question that implies that they should have chosen System B in the survey but did not. The data shows that 96.2% of respondents passed this test.

The fifth reliability check examines inconsistent preferences. There are four binary choices for each participant, leading to 16 combinations of choices. Eight of these 16 potential routes through the experiment reflect consistent preferences in the sense that the participant always answers the same choice in each scenario or switches from System A or B to the other, only once. A respondent therefore fails this check if their responses do not respect monotonicity. For instance, a respondent who chooses A, then B, then A again is potentially unreliable. The data shows that 96.4% of respondents' sets of choices respect monotonicity.

Table C.1: Main Estimates using Linear Probability Model

	(1)	(2)	(3)	(4)	(5)	(6)
	P(Chose A)	P(Chose A)	P(Chose A)	P(Chose A)	P(Chose A)	P(Chose A)
Difference in Unemployment Rate	-0.0402*** (0.00188)	-0.0426*** (0.00162)	-0.0400*** (0.00186)	-0.0403*** (0.00185)	-0.0425*** (0.00160)	
Difference in Repugnance	-0.00431*** (0.000180)	-0.00431*** (0.000179)	-0.00456*** (0.000188)	-0.00434*** (0.000178)	-0.00461*** (0.000186)	-0.00431*** (0.000180)
Difference in Unemployment Rate = 2%						-0.106*** (0.0118)
Difference in Unemployment Rate = 4%						-0.200*** (0.0130)
Difference in Unemployment Rate = 6%						-0.272*** (0.0136)
Difference in Unemployment Rate = 8%						-0.322*** (0.0189)
System A = 10,000		0.0298* (0.0171)			0.0312* (0.0168)	
Min Wage Observed = \$10.10			-0.0301 (0.0240)		-0.0367 (0.0227)	
Min Wage Observed = \$15			-0.112*** (0.0241)		-0.112*** (0.0230)	
Equal Race and Gender Effects				0.0102 (0.0224)	0.0141 (0.0221)	
Unequal Race and Gender Effects				-0.118*** (0.0190)	-0.115*** (0.0189)	
No. of Choices	8,492	8,492	8,492	8,492	8,492	8,492
No. of Respondents	2,123	2,123	2,123	2,123	2,123	2,123

\*\*\* Significant at the 1% level; \*\* Significant at the 5% level; \* Significant at the 10% level. Standard errors are clustered at the respondent level.

## C Logit Estimates

A linear probability model allows us to easily present our data and findings. For completeness, Table C.1 reports post-estimation marginal effects from a binomial logit estimation. The estimation procedure uses maximum likelihood to find the  $\beta$ 's which best predict outcomes. In the estimating equation, the variables are the same as in Section 4 of the paper but  $\epsilon_{ic}$  takes on a logit distribution. Note that the outcome variable is 0 or 1 (where choosing System A = 1). In each column, we re-estimate the corresponding specification from Table 4 in the body of the paper but do not report the marginal effects for the interaction terms.

The coefficients must be multiplied by 100 to be interpreted as percentage point changes. That is, in the first column, a one percentage point difference in the unemployment rate between the two systems is associated with a 4.02 percentage point reduction in the probability of choosing System A. In each specification, the estimates are remarkably similar to Table 4.

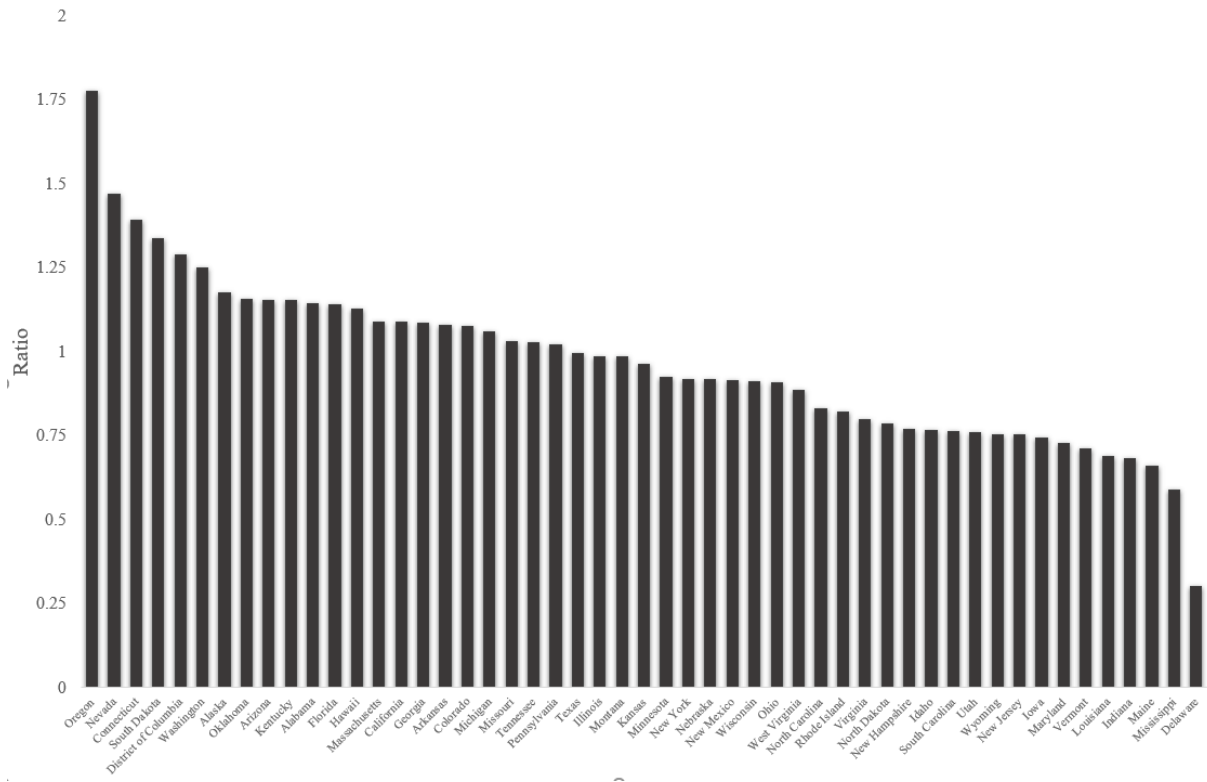


Figure D.1: Ratio of Representation: Experiment Participants vs. U.S. Population

## D Miscellaneous Additional Sample Characteristics

### D.1 Geographic Representation

Figure D.1 illustrates the ratio between the percent of all responses from a given state in our sample relative to that state’s share of the U.S. population in 2017 as reported by the Census Bureau. Most states are reasonably represented but states such as Oregon and Delaware are over- and under-represented, respectively. Note that our main findings are robust to excluding any state which was more than 20% over- or under-represented (that is, omitting any state with a 1.2 to 1 ratio of response share to population share and/or omitting those with a .8 to 1 ratio).

### D.2 Detailed Repugnance Ratings

Table D.1 reports the repugnance ratings for each system. First, it presents ratings for System A as a function of the minimum wage observed. Notice that the ratings of each system are very

Table D.1: Detailed Repugnance Ratings

	System A				System B
	\$7.25	\$10.10	\$15	All	No Min Wage
<b>Min Wage</b>					
<b>Count</b>	446	880	893	2,219	2,219
<b>Exploits Workers</b>	49.4	26.8	16.6	27.2	75.6
<b>Unfair to Workers</b>	50.0	26.6	18.1	27.9	74.4
<b>Unfair to Employers</b>	24.9	33.2	48.5	37.6	25.1
<b>Fails to Respect Human Dignity</b>	48.3	26.5	19.3	28.0	67.8
<b>Conflicts with Personal Values</b>	48.8	30.4	30.7	34.2	69.5

	System A				System B			
	Democrat	Republican	Neither	All	Democrat	Republican	Neither	All
<b>Political Affiliation</b>								
<b>Count</b>	1,095	614	510	2,219	1,095	614	510	2,219
<b>Exploits Workers</b>	26.1	27.4	29.4	27.2	82.6	64.8	73.4	75.6
<b>Unfair to Workers</b>	26.6	28.1	30.5	27.9	83.0	62.4	74.9	74.4
<b>Unfair to Employers</b>	29.5	52.0	37.8	37.6	23.0	28.8	25.0	25.1
<b>Fails to Respect Human Dignity</b>	25.9	29.9	30.1	28.0	76.7	54.6	64.6	67.8
<b>Conflicts with Personal Values</b>	28.4	43.5	35.4	34.2	78.8	56.3	65.4	69.5

Table reports breakdown of repugnance by minimum wage observed and reported political affiliation.

responsive to minimum wage observed with the system with a \$15 minimum being markedly less problematic in four of the five moral dimensions. The exception to the pattern is in how higher minimum wages are unfair to employers. These System A ratings should be compared to the ratings for System B (which eliminates the minimum wage). Even a system with a \$7.25 minimum wage is viewed very differently to one with no minimum wage.

The table then presents the ratings for each system as a function of reported political affiliation. Unsurprisingly, respondents who see themselves as closer to the Democratic Party drive a lot of the difference in ratings between the two systems. However, Republicans also tend to report that System B (relative to System A) is more exploitative, unfair to workers,

disrespectful to human dignity, and is in conflict with their personal values. The responses for those who claim to be affiliated with neither party tend to lie between the score for the typical Democrat and Republican respondent. This pattern provides additional confidence in the reliability of our respondents' answers to the survey's demographic questions.

### **D.3 Do People Believe their Responses Matter?**

In the third stage of the experiment, to examine the degree to which participants believe their responses matter, we remind participants of our intention to heavily publicize our findings and ask respondents if policy makers *will* be interested in our findings and if they *should* be interested in these findings. Figure D.2 provides the breakdown of respondents answers to those questions. It is clear that most respondents do not believe their voice will be heard. However, over 83% of respondents feel that their voice *should* be heard. This provides some additional confidence in the reliability and trustworthiness of our survey responses.

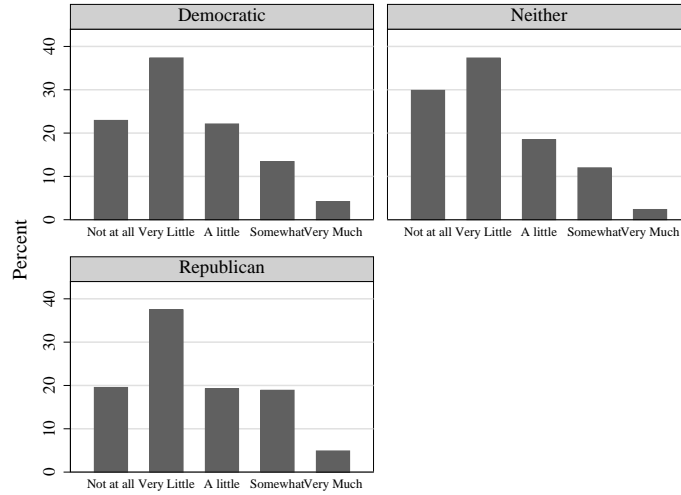
### **D.4 Characteristics of Switchers and non-Switchers**

Table D.2 lays out the demographic characteristics of the sample for those who always chose System A, those who switched, and those who always chose System B. It is comparable to Table 3 in the main body of the paper, which lays out the demographic characteristics of the sample by political affiliation. The first thing to notice is that the division into the three categories “compresses” the data. That is, relative to the differences as a function of political affiliation in Table 3 in the paper, the differences observed across the groups as a function of their choices, is “smaller.” For example, the self-rated political “score” (on a scale of 1 to 5, where 1 is most liberal) was 1.9 for Democrats and 4.0 for Republicans in Table 3. In contrast, these numbers are 2.4 for those who always choose System A and 3.2 for those who always choose System B.

A notable exception to that pattern is in labor market experience. Those who always chose System B tend to report earning more income and have less experience with minimum wage jobs. It is true that those who chose System B are more likely to report a religious affiliation the difference between the groups is less pronounced than the difference across political affiliation. A similar pattern applies to self-reported race.

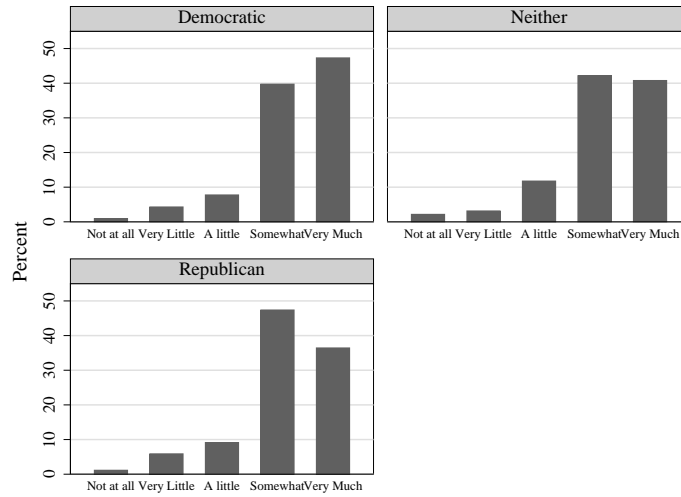


### Policyholders Will Consider these Findings



(a) Policyholders Will Consider these Findings

### Policyholders Should Consider these Findings



(b) Policyholders Should Consider these Findings

Figure D.2: Beliefs on the Effect of Study on Policyholders

Table D.2: Selected Demographic Characteristics of Experiment Participants

		Always A	Switcher	Always B	All
<b>Count</b>		921	696	602	2,219
<b>Demographics</b>	Age	37.6	35.7	37.4	36.9
	Std. Dev.	12.1	11.3	11.7	11.8
	% Male	49.6%	45.5%	50.2%	48.5%
	White	78.6%	72.4%	73.4%	75.3%
	Black	8.6%	11.8%	9.0%	9.7%
	Other	12.8 %	15.8%	17.6%	15.0%
<b>Politics</b>	Liberal-Conservative Scale	2.4	2.8	3.2	2.7
		Note: 1= Strongly Liberal and 5 = Strong Conservative			
<b>Self-Reported Income</b>	<\$20,000	13.5%	12.8%	10.0%	12.3%
	\$20,000 to \$60,000	49.8%	49.6%	46.4%	48.8%
	\$60,000 to \$100,000	25.9%	25.3%	25.3%	25.6%
	\$100,000 or more	10.8%	12.4%	18.2 %	13.3%
<b>Education</b>	Less than High School	0.3%	0.6%	0.5%	0.5%
	High School or Some College	43.2%	46.8%	44.7 %	44.8%
	Bachelor's Degree	40.3%	37.6%	39.0%	39.1%
	Graduate Degree	16.2%	14.9%	15.7%	15.7%
<b>Religion</b>	Christian	43.5%	50.3%	54.3%	48.6%
	Other	6.3%	8.5%	8.1%	7.8%
	Atheist/Agnostic/No Affiliation	50.2%	41.2%	37.6%	43.7%
<b>Morality Questions</b>	Some Values are Sacred	4.5	4.4	4.3	4.4
	Suffering for a Ethical Principle is Wrong	3.8	3.8	3.5	3.7
	Freedom from Interference	3.6	3.4	3.5	3.5
	Vaccine Injection	3.4	3.5	3.5	3.5
		Note: 1= Strongly Disagree and 5 = Strongly Agree			
<b>Min Wage Experience</b>	Currently Works for Min Wage	11.29%	8.05%	6.3%	8.9%
	Ever Worked for Min Wage	69.1%	69.5%	68.8%	69.1%
	Never Worked for Min Wage	19.7%	22.4%	24.9%	22.0%
<b>Location</b>	Number of States (incl PR and DC)	51	52	52	52
	Most Common	California (13.1%)	California (13.3%)	California (13.3%)	California (13.2%)

Note: Data refers only to the 2,219 valid responses. See Table 2 and Appendix B for more on what is considered a valid response.

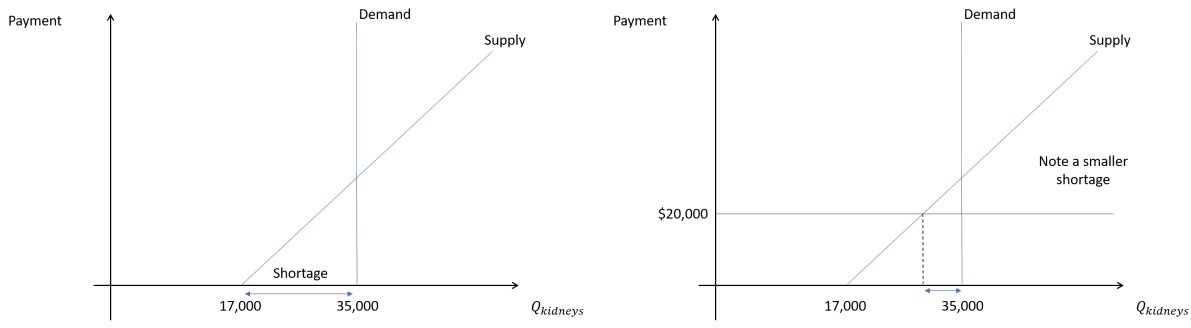
## **E Relationship to Elias, Lacetera, and Macis's work on Payments for Kidneys**

The experiment we use in this paper is similar to Elias et al.'s approach to examine public support for payments to kidney donors. Elias et al.'s experiment asked participants to consider the three systems depicted in Figure E.1. Their baseline system (System A) is depicted in Figure E.1a. It, System A, precludes payments for kidneys. They then offer experimental subjects two ways to move away from that baseline - private or public payments for kidneys. Private payments allow for an upward movement along the kidney supply curve (Figure E.1b). Public payments also enforce a \$0 payment (from recipients) but cause a rightward shift in supply due to the effects of the public subsidy.

These systems were described to experiment participants in language that was easy to understand without training in economics. Participants were then asked to rate the systems on six dimensions of repugnance. These included whether or not the system was coercive, exploitative, fair to donors, fair to recipients, against human dignity, and against their personal values. The participants were presented with triplets of information on the ability of each system to procure kidneys only after they had rated the repugnance of the systems. The researchers presented individuals with several random combinations of efficiency to help them elicit what efficiency gains were required for a participant to accept a system they viewed as repugnant.

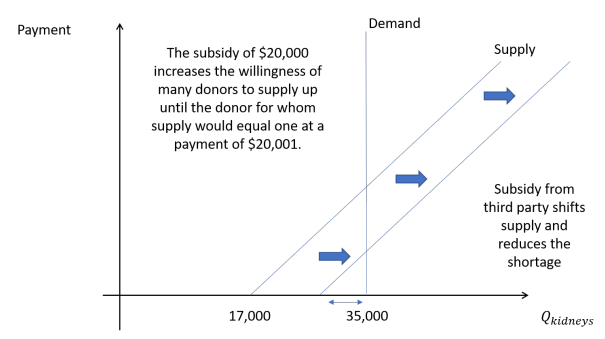
Elias et al. find that their respondents are willing to tolerate payments to kidney donors for relatively mild increases in number of kidneys procured, particularly when the payment is made from a third party rather than the payment coming from the recipient. That is, people seem to only find payments from recipient to donor repugnant, and not payments *per se*.

Elias et al.'s task was simplified by the reasonable assumption that the quantity demanded of kidneys is fixed. They also abstract from a general welfare analysis by focusing only on the ability of each system to procure kidneys for those who need them. For example, Elias et al. explain to participants that a public subsidy would be paid from savings on Medicare and Medicaid dialysis treatment costs. This ensured that participants could focus on the trade-off



(a) System A - No payments

(b) System B - Payments of \$20,000



(c) System C - Subsidy of \$20,000

Figure E.1: Systems of Elias et al.'s Choice Experiment on Kidney Donations

The three systems presented to participants in Elias et al. are graphically depicted in the above supply and demand diagrams. System A represents a system with no payments (voluntary donations only) and a large shortage. System B allows payments and reduces the shortage. The effect of this reduction was varied at random both within and across participants. System C reinstates the price ceiling at zero but subsidizes donors. This shifts supply out to the right so that more people are willing to give a kidney to someone who pays zero for that kidney. Again, the effect of the reduction in the shortage of kidneys was varied both within and across participants. Note that this order of presentation switches System B and C from their experiment.

between repugnance and efficiency for each system rather than considering the cost to the taxpayer or other unintended consequences.

For this paper's experiment, restricting participants' focus to the employment effects of minimum wages is more challenging. The best illustration of the problem comes from the optional comments participants provided. In the comments, some participants defended their choices by explaining that other policies could be implemented to deal with unemployed

workers. The participants in Elias et al.'s experiment can't make these kinds of claims. Further, some participants suggested their answers would be contingent on the size of the social safety net provided. Others inserted their own dynamic equilibrium analysis along the lines of "a higher minimum wage would encourage education and skills training" or "higher wages for employed workers would lead to higher spending and job creation." It could be argued that these comments suggest a more consequentialist view of the issue than our findings suggest. At the same time, there is a difference between being able to offer an explanation for a particular choice and being willing to make a different choice if that explanation doesn't work out as imagined.

To keep the experiment as simple as possible (but no simpler), we restrict our experimental variation to only two systems. Each system mirrors one of the systems in Elias et al.'s set up but a key difference is that the systems are designed to create a different quantity demanded rather than quantity supplied. We considered adding a third system where the inefficiency caused by minimum wages is mitigated by a demand side subsidy to employers. This has merit as a test of the source of deontological preferences. That is: are workers paid too little or are employers not paying enough? A subsidy to workers from a third party (such as government) could solve one of those problems but does not solve the other.

To mirror Elias et al., our third system would have to reinstate a minimum wage while employers are encouraged to hire workers via a subsidy. The simplest, but not simple, version of this would be a demand-side payroll subsidy paid to employers who hire workers. Alternatively, we could encourage a change in labor supply via something like the Earned-Income Tax Credit. Under such a system, workers would take home the mandated minimum wage but part of that would come from a tax credit. Explaining the details of this approach to participants in a way that allows them to easily compare it to the other systems is not trivial. In addition, it's not clear where the money would come from for such a system: there is nothing comparable to the savings from reduced dialysis spending that Elias et al. proposed as a source of funds for third-party subsidies in the kidney market.

Ultimately, we decided against this approach because a third system has less bite here compared to the Elias et al. approach. In Elias et al.'s experiment, varying the identity of who

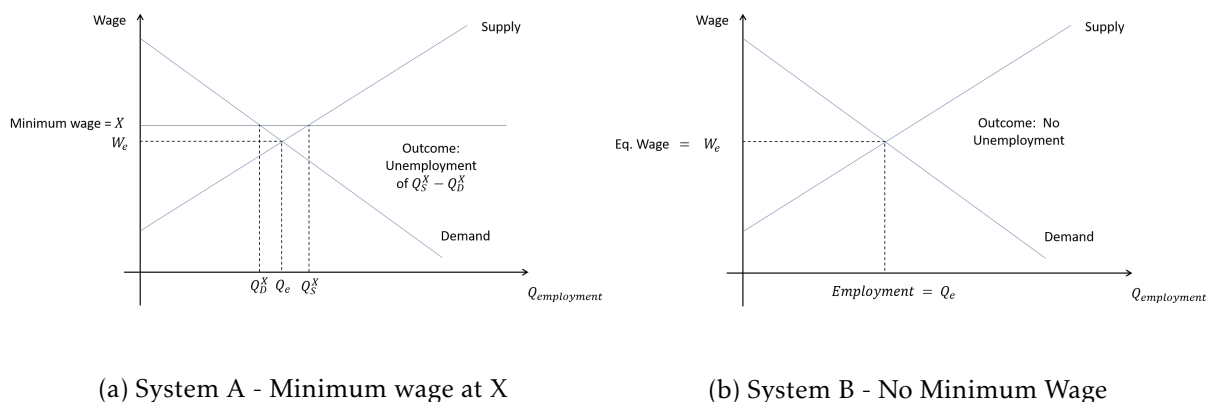


Figure E.2: Alternative Labor Market Systems

The systems presented to participants in our choice experiment are graphically depicted in the above supply and demand diagrams. System A represents a system with a binding minimum wage, implying some level of unemployment. System B eliminates the minimum wage. The employment effect of this change in the minimum wage was varied both within and across participants. Note that  $X$  is randomly chosen to be either \$7.25, \$10.10, or \$15 with probabilities of 20%, 40%, and 40% respectively.

pays makes sense because payments are currently not allowed and payment from a third-party might be a crucial component in the kidney payment debate. It makes less sense for this paper to pursue such an alternative: payment from an employer and from the government are clearly already morally permissible. Having just two systems allows participants to focus on the trade-off we are interested in examining.<sup>E.1</sup> Each of the systems presented to our experimental participants are depicted in Figure E.2.

<sup>E.1</sup>In a future extension, we intend to examine if preferences on this issue are caused by workers being paid too little or if employers are viewed as not paying enough. Specifically, we are working on a version of our experiment where we ask respondents to consider policy options for boosting low-skill workers wages where the responsibility for paying those wages varies between employers and government. These will be compared only to a minimum wage policy rather than both a minimum wage policy and a laissez-faire labor market.