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## Incentivizing Cadaver Organ Donors: How to Increase the Supply of Cadaver Organ Donors among Residents of Illinois Wesleyan University

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## Incentivizing Cadaver Organ Donors: How to Increase the Supply of Cadaver Organ Donors among Residents of Illinois Wesleyan University

### Abstract

Over 6,500 individuals died in 2012 waiting for an organ transplant in the United States. In the context of economics, this phenomenon is called a shortage, and in the world of the affected, this shortage is the difference between life and death. Ever since the passage of the National Organ Transplant Act (NOTA), which prohibits the sale of organs for human transplantation, economists, philosophers, public policy experts, religious leaders, and others have debated the ethical and effective standing of the law. Increasing the supply of organs by introducing monetary incentives to donors (suppliers) is a recent development in the field of economics. The concept has met resistance on ethical and empirical grounds. Regarding ethics, the use of monetary incentives has been criticized for potentially victimizing the poor, leading to the advancement of a black market, and removing the critical role of altruism within society. This paper does not undermine these valid concerns, and it recognizes the importance for the ethical debate. In fact, a small portion of this paper is devoted to these considerations. However, the majority of the paper focuses on empirical findings as they relate to the supply of organ donations.

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# Incentivizing Cadaver Organ Donors: How to Increase the Supply of Cadaver Organ Donors among Residents of Illinois

## Wesleyan University

### Daniel Truesdale

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#### **I. Introduction**

Over 6,500 individuals died in 2012 waiting for an organ transplant in the United States. In the context of economics, this phenomenon is called a shortage, and in the world of the affected, this shortage is the difference between life and death. Ever since the passage of the National Organ Transplant Act (NOTA), which prohibits the sale of organs for human transplantation, economists, philosophers, public policy experts, religious leaders, and others have debated the ethical and effective standing of the law. Increasing the supply of organs by introducing monetary incentives to donors (suppliers) is a recent development in the field of economics. The concept has met resistance on ethical and empirical grounds. Regarding ethics, the use of monetary incentives has been criticized for potentially victimizing the poor, leading to the advancement of a black market, and removing the critical role of altruism within society. This paper does not undermine these valid concerns, and it recognizes the importance for the ethical debate. In fact, a small portion of this paper is devoted to these considerations. However, the majority of the paper focuses on empirical findings as they relate to the supply of organ donations.

The empirical debate regarding the use of monetary incentives to increase the supply of organs has faced unique challenges due to inadequacy of data. With the exception of Iran, China, and India, monetary payments for organs are illegal, leading to a limited quantity of data. As a result, discussion regarding the use of monetary incentives to increase the supply of organs has remained theoretical. This paper examines the impact of monetary incentives with regards to organ supply in an empirical context. The paper develops the research in the following format;

Section II provides a literature review on previous scholarly endeavors regarding the use of monetary incentives to increase the supply of organs, Section III elaborates on the theoretical model utilized in the research, Section IV restates the research question and provides a stated hypothesis, Section V analyzes the significance of the \$30 incentive, Section VI elaborates on the empirical model and if willingness to accept the \$30 fee waiver differs across individuals with different demographic characteristics, Section VII deliberates ethical considerations, and Section VIII delivers a conclusion along with policy ramifications.

#### **II. Literature Review**

##### **A. Titmuss and Arrow**

As previously mentioned, the debate surrounding the use of monetary incentives to increase the supply of organs has remained in the theoretical realm. Richard Titmuss (1971) was the first economist to entertain the idea of offering monetary compensation for human tissue. Titmuss argued that monetary incentives for organs would lead to market failure. In particular, Titmuss saw monetary compensation, specifically in blood procurement, as a health risk due to the inclination of unhealthy individuals to partake in the market. As Thorne restates Titmuss's argument, "One might infer that, in the absence of effective tests for diseases like hepatitis, donated blood is of better quality because donors who are not paid for their blood have no incentive to conceal their illnesses" (Thorne, 2006, p. 1,342). In other words, offering monetary incentives degrades the quality of blood since unhealthy individuals, who before were not enticed to donate out of altruism, now maintain a monetary incentive to partake in the market. Thus, they subject both donors and recipients to health risks. Furthermore, Titmuss argued monetary incentives for

human tissue would cause the number of altruistic donations to wither thereby causing the net supply of organs to decrease (Titmuss, 1971) since an altruistic market and a monetary market could not coexist. This axiom was founded on Titmuss's assertion that monetary markets deny individuals "the right to give" (1971). Another economist, K.J. Arrow, fundamentally disagreed with Titmuss and questioned, "Why should it be that the creation of a market in blood would decrease the altruism embodied in giving blood? I do not find any clear answers in Titmuss" (Arrow, 1972, p.350).

According to Arrow, altruistic and non-altruistic individuals respond to different incentives. Arrow's model proposes altruistic donors respond to exhortation, and non-altruistic individuals respond to monetary incentives. Since the two distinct suppliers respond to unique incentives, neither subset is impacted by the introduction of an alternate incentive.

Extended studies have investigated the debate between Arrow and Titmuss. Leider and Roth's research examined Americans' approval or disapproval of a monetary market for organs. They concluded a majority of Americans approve of a kidney market, especially when the market is regulated by a third party, specifically the government (2010). This conclusion casts doubt on Titmuss's concern of a monetary market withering away altruistic donations .

#### B. Case Studies

As previously mentioned, the absence of data regarding the use of monetary incentives to increase the supply of organs presents analytical issues. Although there are few reliable studies that investigate the use of monetary incentives, there are close approximations which offer limited insight. For instance, Ashkenazi, Stoler, Cohen, and Beyar (2013) investigated The Brain-Respiratory Death Law and The Organ Transplantation Law, and how the two laws have provided additional organs for the state of Israel. The latter implemented penalties for individuals who travelled internationally to receive an organ and were then later reimbursed by insurance companies for such transactions. In addition, the law works to remove disincentives which previous organ donors encountered; (a) earnings loss reimbursement of 40 days based on the donor's average income during the

three months prior to donation, (b) a fixed transportation refund to cover commuting costs, (c) reimbursement for seven days during recovery, (d) five years reimbursement of medical, work capability loss and insurances, (e) reimbursement of five psychological consultations and treatments.

The removal of these disincentives is connected to increasing the supply of organs in Israel. "Compared to previous years, in 2011 there was a significant increase in the number of deceased organ donors directly related to an increase in organ donation rate (from 7.8 to 11.4 donors per million population), in parallel to a significant increase in the number of new registered donors" (Lavee, 2013, p. 780). While the aforementioned are removal of disincentives, the implementation of incentives is a similar, if not identical, concept.

A pseudo-incentivized program was utilized in the state of Georgia until the year 2005. "Until recently, the state of Georgia offered a \$7 discount on driver's license registration fees to individuals who registered as organ donors. The discount was scrapped in 2005 as part of an overhaul of the driver's license registration system. But in 2005, Georgia had one of the highest registration rates for organ donation in the country" (Howard, 2007, p. 30). The program utilized in Georgia gives contextual support suggesting monetary payment could increase the supply of organs.

#### C. Socio-demographics

Scholars have researched how socio-demographic characteristics could impact the supply of organ donations among different subsets of a citizenry. The most substantial argument against the use of monetary incentives is the concern of victimizing the poor. According to Nancy Scheper-Hughes, an anthropologist who tracks global trade of human organs, "the movement and flow of living donor organs -mostly kidneys- is from South to North, from poor to rich, from black and brown to white, and from female to male bodies" (Satel, 2008, p. 59). Furthermore, a Washington Post journalist declared "compensation for organs might exacerbate the differences [between rich and poor] turning the poor into surgical ward slaves or feudal donors for the rich" (Satel, 2008, p. 59). Note the aforementioned concerns are

in regard to living organ donations. This study intends to investigate the use of monetary incentives to increase the supply of cadaver organ donations. Although an ethical concern still exists, the degree of sensitivity is reduced with cadaver organ donations. In addition to socioeconomic status, Satel investigated different religious groups' tolerance towards compensating organ donors. Focusing on Judaism, Islam, and Catholicism, Satel argues Judaism is the most receptive to a market for organs with Catholicism being the most resistant. As she states for Judaism, "Many Jewish scholars accept the idea of rewarding people for donating organs for transplantation. Rabbi Shlomo Goren, the third Ashkenazi chief rabbi of Israel, writes that 'the donation of a kidney in consideration of financial reward does not change its positive characteristic'" (Satel, 2008, p. 158).

In regards to Islam, Satel acknowledges the complexity within the religion. She notes most Islamic scholars condemn the sale of organs because Allah is believed to own the human body. Therefore, humans are not granted the right to sell organs they technically do not possess. However, Satel uncovered that a majority of Muslim scholars approve of such transactions, if the alternative is death. Satel noted, "For example, a survey of thirty-two Muslim scholars found uniform agreement that organ trading is not permissible, yet 68.7 percent of them made an exception if the only alternative was death" (Satel, 2008, p. 159). Although this exception varies throughout the religion, there exists a strong presence within the faith of Islam to tolerate monetary compensation for organ donations, specifically when confronted with death.

Catholicism, according to Satel, is the most resistant to a monetary market for organs. Although individual leaders and scholars within the religion have made attempts to humanize the monetary market, the overall temperance of the Catholic Church towards a market-based system is negative. "The Catholic consensus position endorses Pope John Paul II's opposition to the commercialization of human organs. The United States Conference of Catholic Bishops issued a directive asserting that living donor transplantation is acceptable, 'but economic advantages should not accrue to the donor.' The National Catholic Bioethics Center has stated the posi-

tion even more forcefully, saying it 'strongly opposes any regulated market for organ sales'" (Satel, 2008, p. 162).

As a result, Satel concludes Judaism is the most receptive towards a monetary market for organs, while the Catholic faith is the most resistant.

#### D. Recent Endeavors

The following studies extend from the assumption that monetary incentives can be utilized to increase the supply of organs. Specifically, the following authors investigated the market equilibrium price, which would be needed to remove the organ shortage among living donors. Becker and Elias utilized estimated values to predict the cost of kidneys and livers. They concluded "that monetary incentives could increase the supply of organs for transplant sufficiently to eliminate the large queues in the organ market, and it would do so while increasing the overall cost of transplant surgery by no more than 12%" (Becker and Elias, 2007 p. 3). They estimated the cost of living kidneys and livers by "computing how much additional income or market consumption an individual will require to be indifferent between selling an organ or not" (Becker and Elias, 2007, p. 9). Thus, concluding the average cost for a kidney and liver were \$160,000 and \$335,000 respectively. However, these figures include the entire cost of the procedure, which means the aforementioned is both the price of the organ and the cost of the operation. In addition, the authors relied on estimated values and utilized international comparisons with Iran and India to compute the aggregate cost.

One potential downfall in utilizing international comparisons is that it subjects the researcher to national norms, which are not universal. For instance, the Iranian government has outlawed monetary compensation for cadaver organs on the grounds that it violates the Koran. Although an admirable attempt, utilizing estimates and international comparisons to compute market price equilibrium for living organs subjects the researcher to cultural variation in the data.

Professor Frank Adams (1999) utilized a survey design method to investigate the market clearing price needed to eliminate a market shortage. Adams gathered original data from 392 students attending



Auburn University. The survey contained 20 questions ranging from demographic enquiries to questions regarding an individual's payment of schedule for living organs. Essentially, students were asked at what price they would be willing to sell their organs. Professor Adams concluded the market clearing price for kidneys and liver organs is \$1,000. However, a bias exists in Adams's research because the surveyed sample is not representative of the entire population. College students tend to be more liberal with regard to organ donation when compared to the entire population, which may cause the market clearing price predicted by Adams to be artificially low. Professor Adams's work, along with Howard's, illustrates the degree of difficulty in computing a market equilibrium price for organs due to an inadequate amount of data. Despite empirical fallacies, Thorne acknowledges that a vast majority of economists recognize the absence of a market has led to a quantity shortage. "What economists agree on nearly universally is that the ban on an organ market must necessarily cause shortages and other inefficiencies" (Thorne, 2006, p. 1,341).

E. Illinois Driver's License Fee and Definitions  
Currently in Illinois, persons 21-60 years of age must pay a \$30 fee when they receive and/or renew their driver's license (Illinois Department of Motor Vehicles). This paper examines the possibility that waiving the \$30 fee with the intention to entice organ donation will change a significant portion of non-donors into donors.

### III. Theory

The theoretical construct for this research is based on the Pindyck and Rubinfeld supply and demand model. The model theorizes that an increase in the price of an organ should increase the quantity supplied. The Pindyck and Rubinfeld model contains the following assumptions: (a) the quality of the organs will be the same whether sold or donated, (b) altruists will continue to donate even after a market is introduced (Note: this directly contradicts Titmuss), (c) when markets are banned, not only is the cost of the good zero, but no other costs are required to procure the donated good, (d) nothing can be done to increase the supply of organs when markets are banned (Pindyck and Rubinfeld, 1989).

The above-mentioned assumptions have received criticism from Titmuss, specifically regarding

the assertion that altruistic donations will exist after the introduction of monetary incentives and that the quality of the organs will remain constant. As Titmuss expressed in the blood procurement example, the quality of the good may deteriorate in the market, since individuals now have an incentive to hide any deficiencies. Second, the model assumes there are no costs associated with altruistic organ donations. The model also treats individuals on a dichotomous scale; either as altruistic or non-altruistic. There is reason to believe the introduction of monetary incentives might turn altruistic donors into non-altruistic individuals. Even though the overall number of cadaver organs might increase, the quantity of altruistic donors could wither. Despite the criticisms, this paper will use the theoretical construct of the Pindyck and Rubinfeld model.

This research makes alterations to the Pindyck and Rubinfeld model. Specifically for the residents of Illinois, this paper will investigate the effectiveness of waiving a \$30 driver's license fee. Although a similar concept to a payment of schedules, the incentivized program is unique. For one, respondents are trading a future commodity, which carries a level of uncertainty with regards to the transaction. In addition, unlike the payment of schedules system utilized by Adams, the incentive program is "take it or leave it." Respondents only have one avenue to sell their cadaver organs and it is through the Illinois Department of Motor Vehicles (DMV). Future research might wish to explore how a specific incentivize program, such as the one presented in this paper, compares to an unregulated market where individuals are able to negotiate the price of their cadaver organs. However, this research only examines the effectiveness of the \$30 incentive.

Finally, the model utilized in this research will alter the demand curve for organs. The Pindyck and Rubinfeld model assumes demand for organs is neither perfectly elastic nor inelastic (Pindyck and Rubinfeld, 1989); however this paper assumes perfect inelasticity for organs demanded. This assumption is shared with Adams. Assuming a perfectly inelastic demand curve will simplify any empirical findings. Graph 1 provides the theoretical model.

#### IV. Hypothesis and Research Question

This paper examines the impact of monetary incentives on cadaver organ supply. Using original data, collected from a survey design method, this paper investigates the following questions; 1) Will a specific incentivized program, for instance a waiver of a driver's license fee for \$30, increase the supply of cadaver organs in Illinois? And, 2) Are individuals from certain socio-demographics more likely to respond to the \$30 incentive? This paper makes the following hypotheses: *ceteris paribus* (a) the incentive of the \$30 fee waiver for Illinois residents will increase the supply of cadaver organs significantly, among students at Illinois Wesleyan University (IWU) and (b) this response is constant across all socio-demographic groups.

#### V. Data

Empirical data regarding the use of monetary incentives to increase the supply of organs is nonexistent, except in China, India, and Iran. For this reason, this research relied on a survey design method to collect original data. An IRB approved, online survey was randomly administered to students at Illinois Wesleyan University (IWU). The students had from September 1, 2014 to October 20, 2014 to complete the online survey. Overall, 156 students partook in the survey and 130 student responses were utilized in this research. The remaining 26 were removed since these respondents did not possess an Illinois driver's license, and therefore could not be enticed by the \$30 fee waiver.

The method utilized in this research is similar to the one employed by Adams when he surveyed students attending Auburn University. Similar to Adams, there is a bias in utilizing college students as the sample. Students attending universities are younger compared to the general population and typically display liberal attitudes towards organ donation, surely unrepresentative of the entire population. This research differs from Professor Adams, because it investigates monetary incentives as they relate to increasing the supply of cadaver organs, rather than living organs. In addition, this research investigates the effectiveness of a specialized incentivized program, a take-it or leave-it mechanism.

There are two reasons for studying the phenomenon in this context. First, there exists a lack of empirical data regarding the use of monetary incentives to increase the supply of cadaver organs in the realm of economics, thus allowing this research to add substantial knowledge to the discipline. Second, utilizing monetary incentives to acquire living organs entails policy and ethical ramifications, which are beyond the scope of this study. This paper recognizes there are policy complications for cadaver organs, but such concerns are not the focus of this paper and are not as substantial.

In addition, the survey for this research was designed to study the impact of a particular incentivized program: the \$30 driver's license fee waiver. The respondents were grouped based on specific answers during the survey. First, respondents were separated into two subsets; those possessing an Illinois driver's license and those not possessing an Illinois driver's license. Next, respondents were asked if they were cadaver organ donors. Depending on their response, respondents from both subsets were asked slightly different questions. Respondents with an Illinois driver's license and who were already cadaver organ donors were asked,

*"In Illinois, persons 21-60 have to pay a \$30 fee when they get their driver's license. With this in mind, if the Illinois Department of Motor Vehicles was to waive your fee, only if you became an organ donor, **would you have been more enticed to become an organ donor** in order to cancel the \$30 fee?"*

Likewise, Illinois respondents who were not already cadaver organ donors were asked,

*"In Illinois, persons 21-60 have to pay a \$30 fee when they get their driver's license. With this in mind, if the Illinois Department of Motor Vehicles was to waive your fee, only if you became an organ donor, **would you then become an organ donor** to cancel the \$30 fee?"*

These questions allow the effectiveness of an incentive program, such as the \$30 fee waiver, to be examined. The primary focus of this paper is to investigate the effectiveness of the \$30 waiver for non-organ donors. A completed reproduction of the survey is located in the Appendix.

## A. Summary Data

The following provides summary statistics from the survey administered to the IWU student population. Table 1 provides insight into the total number of individuals possessing an Illinois Driver's license and the distribution of cadaver organ donors and non-donors. Table 2 provides a summary description of gender and Table 3 provides summary data for different religious affiliations across the sample.

This paper investigates how to entice the individuals who are not already organ donors (57 individuals) to become donors. This analysis is furthered by analyzing subsets of the IWU student population. For instance, among the 50 men from the survey, 50% (25) are already organ donors, while 50% (25) are not. Among 81 women, 60.5% (49) are already organ donors, while 39.5% (32) are not. From observing Table 4, women are more likely to be organ donors compared to men.

The number of organ donors across religious affiliations appears to differ. Recall from the literature review, Catholics are the most resistant to being organ donors. However, the survey data for this study illustrates the "other" category as being the most resistant. Although, the differences between the three religious subsets in terms of organ donation are small, it appears Protestants are most likely to be organ donors, while Catholics are the second most likely. The "other" category consists of other major religions as well as individuals not identifying with a major religion. This lack of distinction makes it difficult to analyze the results from the "other" subset. The results are shown in Table 5.

## VI. Significance Tests

As is evident from the summary statistics, differences exist across gender and religious groups in regards to organ donation. This section utilizes a two-sample t-test to distinguish if such differences between the subsets are statistically significant. The null hypothesis states the difference between the two proportions is equal to "0", and is thus insignificant. The alternate hypothesis proclaims the difference in proportions of the two subsets is statistically significant. Table 6 displays the results for gender. Since the p-value is greater than 0.05 this paper fails to reject

the null hypothesis that the difference in gender proportions to be a cadaver organ donor is insignificant. The same procedure is utilized to discern if a difference exists among different religious groups and probability of being an organ donor. The table below explores the phenomenon. From Table 7, there exists no significant difference between religious affiliation and likelihood of being a cadaver organ donor.

After discovering insignificant differences in the likelihood of being a cadaver organ donor among gender and different religious groups, this paper investigates if the \$30 incentive can have a significant impact in increasing organ donors among the different subsets. Before analyzing the significance of the incentivized program, descriptive data alludes the raw change in number when the monetary incentive is presented. According to Table 8, both men and women were responsive to the \$30 incentive. Table 8 provides a summary.

When examining different religions, it appears Catholics, Protestants, and the "other" categories were enticed by the \$30 incentive. Surprisingly, Catholics are also quite likely to respond to the incentive, which contradicts earlier assumptions made in the literature review.

To test if the \$30 incentive has a significant impact amongst the different subsets, this paper utilizes a one sample t-test, as the same sample of respondents is studied before and after the introduction of the stimuli. This research is testing the hypothesis that there is not a statistical difference in the proportion of "yes" responses before the introduction of the \$30 stimuli and after the stimuli is presented, utilizing the identical sample. An additional cause for utilizing a one sample t-test compared to a two sample t-test is because the number of cadaver organ donors is expected to increase once the monetary incentive is offered. This is an inference grounded in previous theoretical frameworks. Table 10 provides data indicating whether the \$30 incentive had a significant impact on population as a whole whereas Table 11 looks at the individual subsets.

Column 1 indicates which subset is being studied and the number in parentheses under the name indicates the total number of individuals in the



specific subset. Column 2 presents the total number of individuals from the specific subsets who are already cadaver organ donors before the introduction of the \$30 incentive. Both the percentage and the raw number are included. Column 3 contains the new percentage of individuals who become organ donors due to the introduction of the \$30 incentive. The equation below the percentage is the equation utilized to obtain the new raw number of cadaver organ donors. The bolded number indicates the value being added to the original. Utilizing a one-sample t-test, Column 4 tests to see if the difference between the original proportion and the new proportion of cadaver organ donors is significant. Recall, the null hypothesis claims the difference between the two proportions is insignificant, while the alternative hypothesis states the difference in proportions is significant. Column 5 takes the total number from Column 3 and adds half of the respondents who indicated a maybe (uncertain) to becoming an organ donor due to the introduction of the \$30 incentive. Column 6 tests to see if the difference from the original proportion and the new proportion is significant. The reason for adding half of the respondents who indicated maybe is grounded in the belief that some of these individuals only require additional information in order to induce them to become organ donors. Remember, the individuals from the maybe category were once a no to being a cadaver organ donor, but after the introduction of the monetary incentive they switched to a maybe. The following section examines the significance among the entire sample of respondents who were not cadaver organ donors.

It appears when analyzing the population as a whole; the \$30 dollar incentive is first significant at the 95% confidence interval level when only including respondents who indicated yes to the \$30 dollar incentive and comparing the new percentage of organ donors with the original percentage. When half of the respondents who were uncertain about becoming organ donors from the \$30 incentive are included, the difference in the percentage is significant at the 99% confidence interval level. This result supports the hypothesis that the \$30 dollar incentive program has a significant impact on increasing the proportion of organ donations. This is critical to the research because it supports the idea that the \$30 incentive can have a significant impact in increasing the overall

number of cadaver organ donors. Although this data set is only cross-sectional and utilizes a small sample, this finding gives positive empirical evidence that a small monetary incentive can increase the proportion of organ donors among a population, in this case the students of IWU.

Next, the research investigated if differences existed across demographics in likelihood to respond to the \$30 incentive. The procedure utilized in Table 11 is identical to the procedure used in Table 10. The results are presented in the Appendix. The results presented in the table are competing. For men, the introduction of the \$30 dollar incentive was significant at the 90% confidence interval when adding just the yes group and remained significant at this level when including half of the maybe respondents. For women, the \$30 incentive was significant first at the 90% confidence interval when only adding the yes group but then became significant at the 95% confidence interval when half of the maybes were added. Among Catholics, the increase in proportion was not significant when only observing the increase in proportion from the yes's but then became significant at the 90% confidence interval when half of the maybe's were added. Among Protestants, the increase in proportion of organ donors was insignificant both for when only the yes's were added and when half of the maybes were added. Finally, among respondents from the "other" religious category, the increase in proportion was significant at the 90% confidence interval, both for when only the yes's were added and when half of the maybes were added to the total.

## VII. Multivariate Empirical Model

Due to the exploratory nature of this research and the relatively low number of cases collected from the survey, executing an empirical model was a difficult task. Even still, examining whether different demographic characteristics impact a respondent's probability of accepting the \$30 monetary incentive was tested. This section of the paper explores if willingness to accept the \$30 monetary incentive is impacted by socio-demographic factors including gender, religious affiliation, and knowledge of an individual on dialysis.

The first two independent variables are self-explanatory, but the third requires clarification. The reason for including a measurement indicating if a re-

spondent knows an individual on dialysis is the belief that knowing someone on dialysis creates sympathy to the cause, increasing the likelihood of accepting the \$30 incentive. Table 12 provides information regarding the regression. Since the dependent measurement, accepting the \$30 incentive and becoming an organ donor, is dichotomous in nature, this research utilized a binary logistic regression to test if the independent variables have a significant impact on the dependent variable.

The results from Regression One are located in Table 13. When all the independent variables were observed in concert with each other (Column 1), it appeared neither variable was significant. This may be a result of the low number of cases present in the survey sample. Columns 2 through 4 investigate if each independent variable in isolation may have a significant impact on increasing organ donations. Again, all the independent variables in isolation were insignificant. However, KNOWLEDGE\_OF\_DIALYSIS appeared to be the closest in significance. Again, the independent variable is insignificant but perhaps a larger sample size would support the theory that knowing someone who is suffering through kidney dialysis creates sympathy for the cause, thereby making them more benevolent to accept the \$30 incentive.

### VIII. Ethical Considerations

Although this paper analyzed the positive significance of the \$30 incentive program, it would be incomplete if it did not mention the normative aspect of incentivizing organ donations. This section does not display an exhaustive list of ethical concerns regarding the sensitive issue, but instead highlights only a few. In her work, *When Altruism Isn't Enough*, Satel (2008) enumerates on the concerns of compensating living organ donors. Although her topic of focus is living organ donations, some of the arguments are transferable to the cadaver organ debate. As Satel records, those opposed to compensating organ donors embody the moral stance against treating the body like a commodity. Although a noble stance, Satel argues society should reward individuals for noble behavior. She relates the concept of paying soldiers for donating their bodies and livelihood in war time and states it would be irrational not to pay soldiers (and policemen and firemen for that matter) for their

work and sacrifice. Are they not sacrificing their bodies, and are we therefore not using their bodies like a commodity? These ideas put forth by Satel offers a unique insight.

The second argument stems from the idea that compensating individuals will inherently lead to a black market. Satel (2008) argues it is the absence of a regulated, legal market, that there exists a black market. The quantity shortage of organs has forced individuals to face an ultimatum, either suffer or obtain an illegal organ. If compensating organ donors can eliminate this market shortage, does it not reason that this should eliminate, not proliferate, a black market?

Again, this section was not intended to answer all of the ethical concerns, but instead offer an alternate view for those concerned with the normative analysis of compensating organ donations. No matter how strong the empirical standing, ultimately this policy will require political will and therefore needs to address normative concerns.

### IX. Conclusion

Overall, the findings in this paper are substantial. Most notably, discovering the \$30 incentive increases the proportion of organ donors on the campus of IWU is significant. This leads to the conclusion that among college students, a small monetary incentive can entice non-organ donors to become cadaver donors. Therefore, the results support the original hypothesis.

However, this paper was unable to discover if willingness to accept the monetary incentive was impacted by socio-demographics. Future research may wish to explore how the independent variables, gender, age, income, marital status, race, religion, etc., may impact the willingness to accept the monetary incentive.

A limitation of this research was that it was confined to the borders of IWU's campus. The next step in this research process is to investigate whether a small monetary incentive program, such as the \$30 license fee waiver, has an impact on a larger group of individuals. I intend to continue this research and survey the City of Bloomington, Illinois. By surveying a city's entire population, the sample will be subject to

greater variance in marital status, income, religion, as well as other independent measures not captured on a college campus. These new measures will add validity to the model.

Discovering that a small incentive program entices citizens to become cadaver organ donors has the potential to save lives. This paper kindled the discussion of how 6,500 individuals died in 2012 due to an organ shortage. If \$30 could have a significant impact in reducing the amount of these deaths, would it not be worth it to implement such a program? Obviously, before exerting the findings of this paper to the entire population, further research needs to investigate whether the \$30 incentive is effective outside the campus of IWU. The findings in this paper are but a stepping stone to greater discoveries that have the potential to save lives.

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### Appendix

#### A. Online Survey

#### **Monetary Market for Organ Donation**

You are invited to be a participant in a research study about monetary markets for organs. You were selected as a possible participant because you are enrolled at Illinois Wesleyan University (IWU). We ask that you read this document and ask any questions you may have before agreeing to be in the study. The study is being conducted by student Daniel Truesdale and Professor Craig Broadbent of Illinois Wesleyan University.

The purpose of this study is to examine if monetary incentives could be utilized to increase the supply of cadaver organs. The length of time you will be involved with this study is approximately 30 minutes, you will be asked to complete a survey.

If you agree to participate, we will ask you to complete a list of questions from an online survey. The records of this study will be kept private. The data will be anonymous and only Professor Broadbent and

Daniel Truesdale will have access to the data. Any sort of report that is published or presentation that is given, will not include any individual specific information.

Your participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Illinois Wesleyan University or any of its representatives. You have the right to refuse to participate or to withdraw at any time without penalty or loss of benefits. At this time, you may ask any questions you have about this study or about the informed consent process. If you have questions later, you may contact the researcher(s) at [dtruesda@iwu.edu](mailto:dtruesda@iwu.edu).

If you have questions or concerns regarding this study and would like to speak with someone other than the researcher(s), you may contact Dr. Brian Brennan, Institutional Review Board Chair, Illinois Wesleyan University, at 309-556-3972, [bbrenna1@iwu.edu](mailto:bbrenna1@iwu.edu).

If you would like a copy of this form for your records please contact Daniel Truesdale and a form will be emailed to you.

I have read and understood the above explanations, and my questions have been addressed. The information that I provide will be used for research purposes only. I understand that my participation is voluntary and that I may withdraw anytime without penalty. If I have any concerns about my experience in this study (e.g., that I was treated unfairly or felt unnecessarily threatened), I may contact the researchers or the Chair of the IWU Institutional Review Board regarding my concerns. I voluntarily consent to participate in this research study. (By clicking "Yes" and advancing to next page, you agree to the study).

Do you wish to participate in the online survey?

- Yes
- No

### **Information on Organ Donation**

There is an enormous need for organ donors throughout the United States. In 2012, more than 6,500 people died waiting for an organ transplant.

**How Cadaver Organ Donation Works:** All lifesaving efforts are made to save a person's life without regard to their status as an organ/tissue donor. It is only after these efforts have failed and someone is declared dead that recovery efforts begin. The staff at the hospital, for which the individual is deceased, is not involved with the recovery process and does not have access to the Secretary of State Organ/Tissue Donor Registry. When death occurs or is imminent, the hospital staff contacts the organ procurement organization (OPO) to report the death. The OPO sends clinical staff to the hospital if it is likely that donation is possible. The OPO contacts the Secretary of State's donor registry hotline to find out if the person is listed in the registry. If the person is in the registry, the trained OPO staff will work with the family, explaining the process, gathering information and provide support. If he/she is not in the registry, family will be educated about the process and asked for consent to donate. Each potential donor is evaluated to see what organs/tissue can be recovered for transplantation. The number of organs/tissue recovered varies from person to person. The United Network for Organ Sharing (UNOS) manages the list of patients waiting for transplants. A computer program matches donor organs with recipients based on certain matching criteria such as blood and tissue type, height and weight, as well as how sick the patient is, how long they have been waiting and distance from donor to patient. About 75 percent of all organs go to local patients. Recovery is a surgical procedure where the donor is treated with dignity and respect, and the body restored to allow for an open-casket visitation. All funeral and burial or cremation options may take place after donation. In order to register as an organ donor in Illinois, you must be at least 18 years old. \*\*If you are younger than 18 years old, your parents, next of kin, or legal guardians have the responsibility of making the decision about organ donation. When an individual registers, the organ donor registry will carry out their wish to donate your organs and tissues upon your death. The individual's family will NOT have to pay any amount for the removal of your organs. Although everyone is eligible for organ donation (regardless of age, race, or medical history), medical professionals make determinations whether the organs are suitable for transplant once an organ donor has deceased.



Below is a list of the top myths regarding organ donation:

Doctors do not work with the same urgency to save an individual's life if they know their an organ donor: Many people are concerned that if they sign up to be an organ donor, they won't get the same level of care should they end up in a life or death situation. However, this is not true. Your doctor is obligated to have one singular aim: to save your life.

If you are a registered donor, a doctor might declare you dead before it's appropriate: This is a common myth that scares many people out of registering to donate. However, the opposite is actually true. Organ donors are given more tests to determine official death than those patients who haven't agreed to organ donation.

Doctors will take all of your organs, even if you only want to donate one: You can specify which organs you are willing to donate. Only the organ(s) you identify will be donated. Organs are sold on the black market: There are many urban legends involving frightening tales of organs being stolen and sold for profit.

The process of donation is so complex and medically involved that this is not viable in the U.S. A transplant necessitates all of the following: Highly trained doctors, modern healthcare facilities, matching of donors to recipients, other medical support.

We would like to ask a few questions about you before we proceed to questions about organ donation.

**All Questions**

Year you were born

Race

- African American/African/Black/Caribbean
- Asian/Pacific Islander
- Caucasian (Non Hispanic)
- Hispanic/Latino
- Native American
- Prefer not to answer

Are you married?

- Yes
- No
- Prefer not to answer

Gender

- Male
- Female
- Prefer not to answer

How many people, besides yourself, live in your household?

- 0
- 1
- 2
- 3
- 4
- 5
- More than 5

What is your personal aggregate annual income?

\*Include income from all external factors: (Parents, Guardians, Scholarships, Part-Time Job, etc.)

- Less than \$10,000
- \$10,000-\$29,999
- \$30,000-\$49,999
- \$50,000-\$99,999
- \$100,000-\$249,000
- \$250,000 or more

Are you a member of an organized religion?

- Yes
- No
- Prefer not to answer

If yes, which organized religion are you a member of?

- Protestant/Other Christian
- Catholic
- Mormon
- Jewish
- Muslim
- Other non-Christian religion
- Prefer not to answer
- Not Applicable



**Organ Donation Questions**

Do you know of a friend or relative who is on dialysis?

- Yes
- No
- Prefer not to answer

Do you know of a friend or relative who has ever been a organ donor?

- Yes
- No
- Prefer not to answer

Do you know of a friend or relative who has ever been a recipient of donor organs?

- Yes
- No
- Prefer not to answer

Would you be offended by the purchase and sale of cadaver organs, even if such transaction saved lives?

- Yes
- No
- Do not know

Would you be offended by a government program which would allow your organs to be removed at death without your explicit permission?

- Yes
- No
- Do not know

If yes, would you still be offended by a governmental policy which would allow your organs to be removed at death without your explicit permission, even if you could prevent such removal by prefilling, prior to your death, a statement denying such permission?

- Yes
- No
- Do not know

Which organs would you be willing to donate after you are deceased?

\*Select "All" if you would donate all your organs

- Heart
- Lungs
- Liver
- Pancreas
- Kidneys
- Small Intestines
- All

Which organs would you not be willing to donate after you are deceased?

\*Select "All" if you would not donate any of your organs

- Heart
- Lungs
- Liver
- Pancreas
- Kidneys
- Small Intestines
- All

Do you have a Illinois driver's license?

- Yes
- No
- Prefer not to answer

If yes to the last question, then the respondents followed this track:

**Monetary Market for Organ Donation Illinois Questions**

If yes, do you know you can become a cadaveric organ donor through your driver's license by joining the First-Person Consent Organ/Tissue Donor Registry by submitting a form online, by calling 1-800-210-2106 or by visiting your nearest Secretary of State facility.

- Yes
- No

Are you already a cadaveric organ donor?

\*You can consult you Illinois Driver's License to verify if you are a cadaveric organ donor

- Yes
- No
- Do not know

If answered no or do not know, respondents were asked the following:

**Illinois Driver Incentive**

In Illinois, persons 21-60 have to pay a \$30 fee when they get their driver's license. With this in mind, if the Illinois Department of Motor Vehicles was to waive your fee, only if you became an organ donor, would you then become an organ donor to cancel the \$30 fee?

- Yes
- No
- Do not know

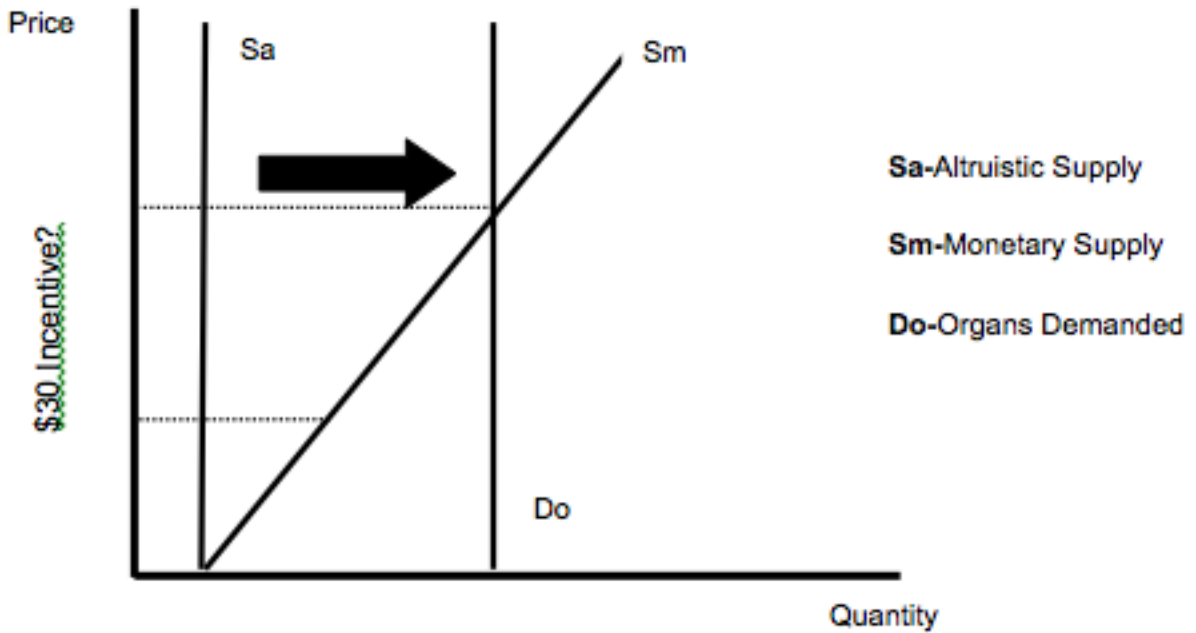
If answered yes, respondents were asked the following:

**Illinois Driver Incentive-For Donors**

In Illinois, persons 21-60 have to pay a \$30 fee when they get their driver's license. With this in mind, if the Illinois Department of Motor Vehicles was to waive your fee, only if you became an organ donor, would you have been more enticed to become an organ donor in order to cancel the \$30 fee?

- Yes
- No
- Do not know

**Graph 1  
Theoretical Model**



**Table 1**  
**Individuals at IWU with an Illinois Driver's License and Distribution of Cadaver Organ Donors**

Cadaver Organ Donor?	Number (Total 131)	Percentage
Yes	74	56.5%
No	57	43.5%

**Table 2**  
**Distribution of Gender**

Gender	Number (Total 131)	Percentage
Male	50	38.17%
Female	81	61.83%

**Table 3**  
**Different Religious Groups IWU**

Religion	Number (Total 127) <sup>2</sup>	Percentage
Catholic	40	31.5%
Protestant	43	33.9%
"Other"	44	34.6%

Cadaver Organ Donor Among Gender?	Number (Total 131)	Percentage
<b>Men</b>	<b>Total (50)</b>	-
Yes	25	50%
No	25	50%
<b>Women</b>	<b>Total (81)</b>	-
Yes	49	60.5%
No	32	39.5%

Cadaver Organ Donor Among Gender?	Number (Total 127)	Percentage
<b>Catholics</b>	<b>Total (40)</b>	-
Yes	23	57.5%
No	17	42.5%
<b>Protestants</b>	<b>Total (43)</b>	-
Yes	29	67.4%
No	14	32.6%
<b>Other</b>	<b>Total (46)</b>	-
Yes	24	52.2%
No	22	47.8%

Gender	Proportion of Cadaver Donors	Results
Men	25/50= 50%	t-statistic=1.178 p-value=0.2411
Women	49/81= 60.5%	

Table 7 Testing for Significance between religion		
Religion	Proportion	Results (Catholic and Protestants)
Catholic	23/40= 57.5%	t-statistic= 0.932 probability= 0.3543
Protestants	29/43= 67.4%	
		Results (Catholic and Other)
Catholic	23/40= 57.5%	t-statistic= 0.492 probability= 0.6237
Other	24/46= 52.2%	
		Results (Protestant and Other)
Protestant	29/43= 67.4%	t-statistic= 1.460 probability= 0.1479
Other	24/46= 52.2%	

Table 8 Men and Women currently not Organ Donors-Introduced to Monetary Incentive				
Gender	Total No's (Per Gender)	Response to \$30 Incentive		
		Become Organ Donors	Stay No	Uncertain (Do not Know)
Men	25	40% (10)	40% (10)	20% (5)
Women	32	46.9 (15)	25% (8)	28.1% (9)

Table 9 Catholic, Protestant, and Other's response to \$30 Monetary Incentive				
Religion	Total No's (Per Religion)	How they respond to \$30 Incentive		
		Become Organ Donors	Stay No	Uncertain (Do not Know)
Catholic	17	8	3	6
Protestant	14	5	5	4
Other	22	10	9	3



Table 10 Is the \$30 Incentive Significant for Population?					
Population	Original Yes-Before Incentive	New Number of Yes because \$30 incentive	Significance (One Sample t-test)	New number of Yes because of \$30 incentive (including half of the uncertain)	Significance (One Sample t-test)
Total	56.49%	75.57%	t-statistic=1.927 Probability=0.0281**	80.9%	t-statistic=2.583 Probability=0.00545***
(131)	74	99=74+25	-	106=74+25+7	-

\*Significant at the 90% Confidence Interval Level, \*\*Significant at the 95% Confidence Interval Level, \*\*\* Significant at the 99% Confidence Interval Level

Table 11 Is the \$30 Incentive Significant for Each Subset?					
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Subset	Original Yes-Before Incentive	New Number of Yes because \$30 incentive	Significance ? (One Sample t-test)	New number of Yes because of \$30 incentive (including half of the uncertain respondents)	Significance ? (One Sample t-test)
Men	50%	70%	t-statistic=1.313 Probability=.09765*	75%	t-statistic=1.622 probability=.0556*
(50)	25	35=25+10	-	37.5=25+10+2.5	-
Women	60.5%	79%	t-statistic=1.427 Probability=.0787*	84.57%	t-statistic=1.836 probability=0.03505**
(81)	49	64=49+15	-	68.5=49+15+4.5	-
Catholics	57.5%	77.5%	t-statistic=1.105 Probability=.13795	85%	t-statistic=1.497 probability=0.0712*
(40)	23	31=23+8	-	34=23+8+3	-
Protestants	67.4%	79.1%	t-statistic=0.637 Probability=.26385	83.72%	t-statistic=0.878 probability=0.1924
(43)	29	34=29+5	-	36=29+5+2	-
"Other Religious"	52.2%	73.9%	t-statistic=1.336 Probability=.09415*	77.17%	t-statistic=1.526 probability=.067*
(46)	24	34=24+10	-	35.5=24+10+1.5	-

The number in the parentheses indicates what total the percentage is calculated from.  
\*Significant at the 90% Confidence Interval, \*\*Significant at the 95% Confidence Interval, \*\*\* Significant at the 99% Level

<b>Variable</b>	<b>Type and Expected Sign</b>	<b>Code</b>	<b>Definition</b>
Become an organ donor because of \$30 incentive	Dependent	1=Yes, becomes organ donor 0=No, does not become an organ donor	If the respondent would become an organ donor because of the \$30 incentive.
Gender (GENDER)	Independent ?	1=Male 0=Female	Indicated the gender of the respondent
Religious Affiliation (RELIGIOUS_AFFILIATION)	Independent +	1=Part of organized religion 0=Not part of organized religion	If the individual is a member of an organized religion or not
Knowledge of someone on dialysis (KNOWLEDGE_OF_Dialysis)	Independent +	1=Knows of organ donation 0=Does not know of	Does the respondent know someone who is on dialysis

	[1]	[2]	[3]	[4]
C	<b>-1.154***</b> (0.001)	<b>-1.482***</b> (0.000)	<b>-1.281***</b> (0.000)	<b>1.124***</b> (0.000)
MALE	<b>0.152</b> (0.741)	<b>0.095</b> (0.834)	<b>Removed</b>	<b>Removed</b>
RELIGIOUS_AFFILIATION	<b>-0.207</b> (0.654)	<b>Removed</b>	<b>-0.260</b> (0.570)	<b>Removed</b>
KNOWLEDGE_OF_DIALYSIS	<b>0.638</b> (0.221)	<b>Removed</b>	<b>Removed</b>	<b>0.643</b> (0.212)
Cox & Snell R Square	0.014	0.000	0.002	0.011
N	57	57	57	57
*Significant at the 90% Confidence Interval Level, **Significant at the 95% Confidence Interval Level, *** Significant at the 99% Confidence Interval Level				