THE IMPACT OF REQUIRED REQUEST LEGISLATION ON ORGAN DONATION IN OHIO

A Thesis

Presented in Partial Fulfillment of the Requirements for the degree Master of Hospital Administration in the Graduate School of the Ohio State University

by

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* * * * *

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THESIS ABSTRACT

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The purpose of this thesis is to determine if the required request legislation passed in Ohio in 1987, which makes hospital administrators responsible for requesting organ donation of the families of dying patients, increased the number of organs procured in 1987 compared to the same period of time in 1986. The data show that the number of organs procured was increased, however, it cannot be concluded that the increase was due to implementation of the legislature. Since the number of requests made in 1986 is unknown, it is not possible to determine if an increased number of requests led to an increased number of organs procured, or other factors were involved in the increased number.

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To David and Heather
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CHAPTER I
INTRODUCTION

Introduction

Solid organ transplantation began in the 1950's with the transplantation of kidneys. The failure rate was extreme because immunosuppressive drugs were not yet available. When surgeons began to transplant kidneys from one identical twin to another, the operations became more successful and kidney transplantation, to save a dying patient, became a reality. Since 1962, all kidney transplants between unrelated persons have been performed with the patient under the influence of immunosuppressive drugs. However, morbidity and mortality rates remained high, until the realization that when kidney rejection was out of control, the kidney had to be removed and the patient placed on dialysis.

Two other events tremendously influenced the field of transplantation. One was the discovery of tissue types and tissue typing and the second was the capability
of directly matching a potential donor and recipient to determine the immune response of the recipient.³ This discovery allowed the prospect of rejection to occur in the laboratory, where it was harmless, instead of in the recipient after surgery.

About 1957, Moore in Boston and Starzl in Chicago separately reported animal experiments involving liver transplants.⁴ The liver is more difficult to transplant than kidneys because the vena cava, the main venous return to the heart must be severed. Without some mechanism for venous shunting, death will occur for lack of cardiac venous return.⁵ In 1987, liver transplantation had progressed only to the point at which kidney transplantation stood in 1970.⁶

In 1967 Barnard, a South African surgeon, first performed heart transplants. Surgeons in other countries soon followed suit. Most of these patients died, and because the benefits of heart transplantation did not seem to justify the use of resources, surgeons as well as the public became disillusioned.

Two major developments have been given credit for the increased number of successful transplants. The first development is the growing acceptance of brain death as the criterion of patient death. Mosby’s Medical and Nursing Dictionary defines brain death as an irreversible form of unconsciousness. There is a
complete loss of brain function, even though the heart continues to beat. The clinical criteria include: (1) absence of reflex activity, movement and respirations, and (2) pupils are dilated and fixed. Brain activity must be evaluated and shown to be absent on two electroencephalograms performed twelve to twenty-four hours apart. Prior to the acceptance of brain death as a definition of patient death, organs had to be quickly harvested from patients immediately after their heart stopped beating and transplanted into a waiting recipient. Organs were not always viable as a result of delays at either end of this process and had to be discarded.

The second development was the approval of the drug cyclosporine by the Food and Drug Administration in 1983. Cyclosporine is an immunosuppressive drug which clinical trials showed increased patient and graft survival rates, decreased hospital stays, and produced fewer episodes of infection and rejection. Cyclosporine significantly reduces both morbidity and mortality.\(^7\) Previously, the donor and recipient had to be crossmatched for compatibility. Organs were wasted because no potential compatible recipient could be found. With the advent of cyclosporine, crossmatch is no longer a problem. The rate of rejection with administration of cyclosporine is so low that most hospitals do not even require a
crossmatch for transplantation. Cyclosporine administration has greatly improved the prognosis of heart transplant patients. Currently, eighty-five percent of all heart transplants will live one year, over fifty percent will live five years and almost twenty-five percent will live for ten years or longer. Even though cyclosporine costs between $5,000 to $7,000 per year to administer compared to $1,000 to $2,000 per year for other immunosuppressives, it remains cost neutral, i. e., when all costs are added, cyclosporine costs no more than other immunosuppressives, as a result of the fewer complications and the decreased length of hospital stay.

Tissue procurement is slightly different from organ donation. Tissue donation may be considered with brain deaths or cardiac arrests. It is not imperative to procure the tissue immediately upon death, but sometime within twenty-four hours. According to a guide distributed by Lifeline of Ohio Organ Procurement (LOOP), the donor does not have to die in a hospital, but must be free of any transmissible disease, cancer, auto-immune diseases, or chronic drug abuse. Virtually all tissue can be donated.

While these developments have greatly increased the hopes of patients waiting for organs an unforeseen problem has been created. The number of patients needing
organs is much greater than the number of patients that are donating organs upon their death. Assuming transplantation is to be supported, the problem then is how to increase the number of available organs.

Transplantation History in Ohio

Ohio was one of the forerunners in the development of a fair and equitable organ procurement and distribution program. A statewide consortium was developed in 1985 to "ensure an optimal and equitable application of transplant services for the broadest public benefit". The consortium is made up currently of five transplant hospitals and various departments of the state government including the Department of Health, the Medicaid program, and the Department of Insurance. A single patient selection committee was developed for the entire state which does not discriminate either racially, economically, or sexually. This egalitarian approach was made possible because Governor Celeste agreed that state Medicaid funds would cover the expenses of heart, liver, and pancreas transplants. Also, third party payers in the private sector agreed that transplants were no longer experimental and would be covered with the selection committee acting as gatekeeper. A unique part of this plan is that both the participating hospitals and physicians have agreed that twenty-five percent of all professional fees and institutional gifts
from transplant recipients will create a fund to cushion the impact of transplant costs on those families that fall through the cracks.\textsuperscript{15}

Once patients have been selected for the waiting list they are divided into urgent (those who would die within one week) and semiurgent. If two urgent patients can both use the same donor organ, the patient who has been on the list the longest receives the organ. If Ohio has no urgent patients, the organ will go to an urgent patient in Pennsylvania, Tennessee, or Minnesota.\textsuperscript{16} However, even though Ohio is well organized in the field of organ procurement and distribution, the problem of how to increase the number of organs available has become serious.

\textbf{Legislature}

After the successful transplantation of corneas in the 1950's, states began to pass laws that allowed donation of organs to science for study or for therapeutic purposes. Much of the prevailing policy concerning voluntary organ donation originated prior to the mid 1960's when the number of transplant surgeries was small and often unsuccessful. Transplantation was a fairly new experimental process and legislators were careful to protect the rights of donors. The laws were concerned with coercion of living donors and the riskiness of surgery that very often was not beneficial
to the recipient. These laws differed from state to state. To correct this disparity, a model law called the Uniform Anatomical Gift Act was drafted. By the early 1970's, this law had been adopted by all fifty states. This law allows anyone over eighteen years of age to make known their intention to donate all or part of their body for medical purposes effective after death. It also allows the next-of-kin to give permission for donation if the potential donor did not object before death.\textsuperscript{17} The question now is whether these laws, that were passed more than fifteen years ago, are adequate for our needs today. The answer would appear to be no.

**The Scarcity of Organs**

It has been found that only about fifteen percent of people who suffer brain death actually donate organs. The rest are buried, taking with them 34,000 kidneys and half as many hearts, pancreas, livers, and pairs of lungs each year.\textsuperscript{18} In 1984 there were approximately 20,000 patients on dialysis waiting for kidney transplants,\textsuperscript{19} while in 1986, 200 patients were waiting for heart transplants and another 15,000 patients could have benefited from a heart transplant.\textsuperscript{20} Nancy Holland, director of the American Council on Transplantation, says that statistics show one out of every seventy-five deaths should result in organ donation.\textsuperscript{21}
A 1985 Gallup Survey commissioned by the Dow Chemical Company indicated that while seventy-three percent of the people surveyed were willing to donate organs, only fifteen percent of the potential donors actually donated organs. There may be several reasons for the lack of follow through. The next-of-kin may not know the desires of the patient and be reluctant to donate if they are not sure the patient would have made that choice. It is estimated that only twenty percent of the population have signed donor cards to make their wishes known. Also only about fifty-four percent of the people who expressed a desire to donate organs in the same Gallup Survey have talked with family members about their decision.

**Required Request**

However, it appears that the major reason that organs are not donated is that the family is not asked. There are several reasons why this could happen. First, many physicians are reluctant to ask a grieving family to donate organs. Also the physician who was the primary care giver may not want to be the one to ask because he fears that the family may believe he was more interested in the donation than in providing the proper care for their loved one. Again, the physician may not want to accept the fact of implicit failure at the death of one in his care. Other hospital personnel may simply not
want to get involved in organ procurement, whenever the decision to ask is entirely at their discretion.

Many states are now passing required request laws. These laws require a hospital to request permission for organ and tissue donation from the next-of-kin upon declaration of death. In a report published by Dow Chemical, it was estimated by organ procurement agencies that sixty to eighty percent of all families that are asked do approve a donation. However, since many brain deaths occur suddenly, organ donation is seldom at the forefront of the family's thoughts and they must be asked to donate.

A required request law was passed by the state of Ohio and became effective on March 19, 1987. The law places the responsibility for asking for organ donations on the shoulders of hospital administrators. They are required to either ask personally, or to appoint another responsible person to request the bereaved next-of-kin to approve a donation of the tissue and/or organs of the deceased for transplantation. This study examines whether the number of organs donated in the state of Ohio in the first six months following enactment of required request legislation increased, compared to the same six months of the previous year. Variables which may influence the rate of donation and the number of requests made within various institutions will also be examined.
References Chapter I


2. Ibid., p. 7.

3. Ibid., p. 8.

4. Ibid.

5. Ibid.

6. Ibid.


12. Ibid., p. 162.

13. Ibid.


15. Ibid.
16. Ibid.


20. Ibid., p. 25.


CHAPTER II

LITERATURE REVIEW: METHODS TO INCREASE THE NUMBER OF ORGANS PROCURED

Introduction

There is an argument to support the continuation of the scarcity of organs available for transplant. The cost of transplants is very high and it can be argued that there are greater health care priorities to be met. According to this argument, limited health care resources should be spent on prevention or other interventions with better benefit-cost relationships rather than organ transplants for patients with end stage disease.\(^1\) The number of transplants has been limited in the past by the number of centers available to perform transplants, the patient selection criteria and the few number of donors.\(^2\) The question of the cost effectiveness of transplants is widely discussed and while the benefits are obvious, whether or not they justify the costs is not so obvious. However, the benefits of preventive health measures are also debatable.\(^3\) The technology for organ transplants is
growing rapidly and the survival rate is increasing, as discussed in Chapter I. Given those circumstances and the fact that 66.3 percent of the living heart transplant patients have no complaints of disease and 23.2 percent are able to carry out normal activities with only minor signs and symptoms of disease, it appears beneficial to provide the option for a transplant. Therefore the problem of the scarcity of donors must be addressed.

The current system of encouraged voluntarism does not result in the number of organs demanded for transplant. In Ohio alone, eighteen patients died in 1987 and seventeen patients died in 1986 while awaiting a heart transplant. The average wait for a heart has increased from seven to nine days in 1984 to more than three months in 1987.

The Current Scarcity of Organs

Chapter I presented the two major reasons for the increase in the number of transplants, i.e., the increased use of brain death as the definition of death and the advent of the use of cyclosporine. There are other reasons why the transplant programs today face an increasing shortage of organs. One of these reasons is the increased number of third party payers. In 1987, HHS announced that heart transplants were no longer experimental surgery and a poll of private insurers showed that eighty-five percent had already adopted a
policy of paying for cardiac transplantation. Based on the experience to date, a continuing shortage of available organs can be predicted. In 1972, Medicare began to pay for all treatment for patients with permanent renal failure. The waiting list for kidneys has been increasing ever since that time. The list has grown by 3500 names since 1980, with 1400 of those names added in 1984. In that same year, 1984, the number of nonrenal transplants was only thirteen percent of the number of renal transplants, so that an adequate number of potential organs were available. (Usually nonrenal organs are obtained from patients who also donate kidneys). However, as the financing of nonrenal transplants increases, the demand will also increase and the number of organs available will decrease relative to the demand as experienced in the past with kidneys.

Another reason for the scarcity is the increased number of centers which perform transplants. Previously, the number of beds available and the number of surgeons who possessed the skills to perform the transplants limited the number of patients who could access this aspect of health care. Not only has the proliferation of the number of centers increased the scarcity of organs overall, it is instrumental in increasing the scarcity within particular states. Over forty percent of the organs transplanted are not obtained in the locale where
they are transplanted. For example, if a "sicker" patient is available outside Ohio, that patient will receive the organ leaving a shortage of transplantable organs in Ohio. The increased rate of success has been instrumental in the increased number of patients who are willing to undergo a transplant and also in the number of doctors who will recommend a transplant to their patients, leading to a greater demand for organs. One other development is the artificial heart, which can be transplanted into patients who are waiting for transplants. This innovation has increased the lifespan of patients who need transplants to the point where they are more likely to be alive when an organ becomes available. Previously, more patients died awaiting a heart, so the need for organs was not as great.

It was hoped that voluntary organ donation would succeed as blood donation had in the past. However, as the gap between the number of organs needed and the number donated widens, it is evident that voluntarism has not worked. Reasons put forth for this failure include: the lack of massive publicity, the lack of trained staff, the low rate of public participation in carrying donor cards, and the fear of litigation by hospitals and physicians. (The latter, I assume, is the fear of litigation with the use of the definition of brain death as the criterion for death and the fear that the family
will sue because they believe that the physician has not done all he could have to save the patient because the prospect of an organ donation was more important). The primary factor for the gap, however appears to be the failure of the donor card to act as an effective mechanism for encouraging donation. This fact may be a function of the reluctance of people to carry donor cards for fear of receiving less than maximal care should a traumatic accident occur.\(^{12}\) Rudy Morgan, senior transplant coordinator for Organ Recovery, Inc. in Cleveland, says he has never had a family refuse to donate organs in the presence of a signed donor card.\(^ {13}\) This compliance with the deceased's wishes as stated on a donor card leads one to believe that an increase in the number of signed cards, would lead to an increased number of donations. There are, however, several alternatives to procure an increased number of organs which are discussed below.

**Buying and Selling Organs**

Probably the most controversial of these alternatives is the proposal to buy and sell organs. The central issue appears to be whether a person "owns" his body and can therefore sell body parts or whether it is immoral to sell something that is essential to another person's well being.\(^{14}\) Those who support the market for organs say that the general mark of a free society is the
liberty that adults have to enter into a contract for mutual advantage that does not harm others. People would decide to sell their organs in a free market because it was in either their or their heirs’ best interests. Buyers who would otherwise die would be willing to pay a sum of money large enough to encourage the person to donate a body part. Blood and hair are already sold in the market place, why not organs? Physicians, hospitals, and drug companies are already making a profit from transplants, the recipient receives other benefits, however the donor gets nothing. This anomaly would be fixed by allowing a payment of the organ’s worth to the seller.

There are many arguments against the selling of body parts. First, people in desperate situations may consent to debilitating surgeries to get medical care or food for their children. This windfall profit could cause this family’s welfare benefits to be removed, (a man with a $50,000 kidney would be the same as a man with $50,000 in the bank, i.e., ineligible for welfare benefits) even though the surgery caused disability. The realization of a profit could lead to murder of others to sell their organs. The development of an organ market would also be a disadvantage for the poor. In an open market, scarce organs would be too expensive for the poor to afford and the poor would become universal sellers while the rich
became universal buyers. There may also be quality control problems because people with diseases would want to be able to sell their organs too. These organs could be potentially dangerous to the health of the recipient. Since it is unlikely that a market system and a donor system could coexist, much of the common good that surrounds us, as a group of people, would be destroyed. The stories of lives saved through donation of an organ are part of what binds us all together in this materialistic world. The number of organs may not even be increased. People would sell organs, but the donation of organs would decrease because most people will not give away items that could be sold. The number sold may not be greater than the number currently donated.

Physician resistance to the for-profit market has been strong. The American Society of Transplant Surgeons and the International Transplantation Society have both said they will expel any of their members who remove or transplant purchased organs. Discussion of this option, for the current period of time, is however irrelevant. The National Organ Transplantation Act, passed in 1984, contains a provision which prohibits the purchase of human organs and provides for a maximum penalty of $50,000 and five years in prison or both.
**Implied Consent**

Another alternative is to assume that all organs are to be donated. Public policy could be changed to place the burden of consent on the people that do not want to be organ donors. If wishes were not made known, the organs would automatically be taken without additional permission. Twelve states currently have a similar law for the procurement of corneas. There have been very few complaints and thousands of corneas have been collected.\textsuperscript{22} This policy would almost assuredly increase the supply of available organs. However, the price that would have to be paid in assuring the rights of each person over their body would be high. Those who did not want to donate organs would have to indicate their objection publically. A central computer would have to contain the names of each person who objected so that no rights would be violated.\textsuperscript{23} Serious discussion of this possibility for major organs has not progressed.

In France a strong presumed consent, i. e., an assumption that organs are to be donated unless otherwise stated, is the law in effect. However, some patients continue to receive hemodialysis while on waiting lists for transplants. There may be two explanations for the apparent lack of increased organ donations. First, the number of cadaver kidney donations has actually increased, but these cadaver organs are now used instead
of live donor organs, so that the number of actual transplants has not increased. Previously, in France, approximately one third of the transplanted kidneys were supplied by live donors. Today ninety percent of all kidney transplants are from cadavers. Live donors continue to supply one third of the kidney transplants performed in the United States and Great Britain. Second, physicians are reluctant to take organs without the permission of the family, even though they are protected by law.24 There is a general feeling that taking organs without permission will affect negatively the attitudes of the public on the medical profession and specifically on transplants.

Weak Presumed Consent

A slightly different alternative is weak presumed consent, what the French practice in actuality. It is assumed that the organs are to be donated, but the surgery is not performed without first asking the family. It is estimated that only about ten percent of the families asked object.25 Other European countries, including Sweden, Spain, Finland, Greece, Italy, and Norway maintain this practice. However, although Swedish statistics are not readily available, their ratios of kidney transplants to the number of patients maintained on dialysis compares favorably to those of the United States.26 It appears that the number of organ donations
is the same whether presumed consent is used or voluntary consent. With either method, the family must be asked, and apparently the same problems identified earlier for voluntary consent exist with presumed consent.

There exist several reasons for a basis of consent. Philosophically we prefer a society of givers rather than takers. Paul Ramsey concludes that "A society will be a better human community in which giving and receiving is the rule, not taking for the sake of good to come" and that:

The moral sequels that might flow from education and action in line with the proposed Gift Acts may be of far more importance than prolonging lives routinely. The moral history of mankind is of more importance than its medical advancement, unless the latter can be joined with the former in a community of affirmative consent.27

Hans Jonas stressed the need for the public to believe in the physician's respect for life. The patient must be absolutely sure that the physician cannot and does not become his executioner.28 William May concluded that:

While the procedure of routine salvaging may, in the short run, furnish more organs for transplants, in the long run, its systemic effect on the institutions of medical care would seem to be depressing and corrosive of that trust upon which acts of healing depend.29

**Required Request**

One alternative that appears to meet the requirement of request and at the same time increase the number of available organs is that of required request. Laws that
require requests of families to donate organs place the responsibility of the request on the hospital, and not on the physician. Therefore, whatever concerns the physician may have about bringing up the subject of organ donation to a grieving family are no longer relevant. When a potential donor is identified, an expert in the field of organ procurement can approach the family.

Laws of this type were first passed in New York and Oregon in 1985. Since that time more than half of the states have some type of required request law in place. The Executive Director of the New York State Task Force on Life and the Law says that the number of available donor organs has increased substantially in New York.\(^3^0\) Required request laws address many of the failings of the other systems. These laws still allow the family to make a gift of an organ in their time of grief and, in fact, maximize the opportunity to do so. The laws assure that the family will be asked and are additional protection to families who fear that an organ will be taken without their consent. The right to refuse to donate is always honored, and families are required to honor the objections of their loved one. As these laws become common knowledge, people will expect to be asked about organ donation upon the death of a loved one. The level of awareness may increase to the point that discussions concerning organ donation are carried out in the home
prior to the occurrence of a tragedy. Knowing the wishes of the loved one, will make the family's decision easier. One family, in fact, expressed their appreciation at being asked to donate, saying that they would not have thought of it in their time of grief; and they felt that by allowing their son to donate organs they were able to make some sense of his death.\textsuperscript{31}

The major problem with required request appears to be that of enforcement. New York's bill carries a fine of 1,000 dollars for noncompliance, however it may be difficult to know if a hospital has complied or not. It has been suggested by Arthur Caplan that a two step process could eliminate the problem. First, all death certificates could be marked as to whether or not a donation was requested. Some accrediting agency could monitor these certificates and also look at the number of donations received during a particular time period. If the number was not at least equal to the average number received at similar institutions, further study of the facility could be made.\textsuperscript{32}

The laws in many states carry no penalty, but have been passed to make medical institutions and personnel more aware of the need to ask for organ donations. It has been estimated that a mere two percent increase in the number of organs received from hospital deaths would result in an additional 25,000 kidneys per year.\textsuperscript{33}
Late in 1986, the Ohio General Assembly passed House Bill number 770 (see Appendix A) which required hospital personnel to request consent for anatomical gifts in particular circumstances. It requires that each hospital set up an organ procurement protocol in conjunction with an organ procurement agency. The bill requires that someone from the organ procurement agency, the hospital administrator, or his designated appointee ask families to make a gift of appropriate organs, except in cases where it is known that the family is opposed to donation. A certificate of request must be filled out stating whether or not a request was made, the names of the people asked and their relationship to the patient, and whether or not a gift was made. These certificates must be kept on file for a period of three years and must be made available to the Director of Health or his representative. The bill carries no penalty for noncompliance. Guidelines for training personnel to make requests for gifts of organs were also established by this bill.

It would appear that required request is the direction that organ procurement is taking in the United States. More and more states are passing bills to that effect. Weak and strong versions of implied consent that are prevalent in Europe are not discussed seriously here and the buying and selling of organs is currently
prohibited. As stated previously, sixty to eighty percent of the requests for donation are granted, so it would appear that increasing the number of families asked would increase the number of available organs.

**Thesis Hypothesis and Variables Selected for Study**

My hypothesis is that the implementation of the required request legislation in Ohio increased the number of organs procured in the second and third quarters of 1987 compared to the same period of time in 1986. Oregon, the first state to pass a required request law, reported that corneal donations increased 250 percent over the previous year.\(^{34}\) Stanford University Medical Center had a thirty-eight percent increase in heart and heart-lung donations since the enactment of the law in California; New York reports that total organ donations have increased forty-eight percent.\(^{35}\) There is no apparent reason why Ohio should not also have an increase in the number of donations.

The organ procurement agency in Northeast Ohio gave questionnaires to neurosurgeons practicing in that area. Neurosurgeons usually make the pronouncement of brain death and are thus often the first contact with the family concerning organ donation. Sixty-five percent of those surveyed believed that required request legislation would increase the number of organs donated.\(^{36}\) The survey reported that those who said the legislation would
not help were those who did not want to be told what to do.\textsuperscript{37} Seventy-five percent wanted to maintain control by being the person to discuss organ donation with the family.\textsuperscript{38}

This same agency tracked the number of organs donated for a twenty-seven month period from 1983-1985. This study showed that the largest group of donors were white males between the ages of sixteen and forty-five years of age.\textsuperscript{39} There were 659 potential donors during this period of time, but only 175 or twenty-seven percent were referred for organ donations.\textsuperscript{40} Of those referred, fifty-four percent or ninety-four people actually became donors.\textsuperscript{41} If all potential donors had been referred and the percent of donors from referrals remained the same, 356 organs would have been procured. There are four other organ procurement agencies in Ohio, who presumably have the same potential to increase the number of organs donated in their areas. If this potential is a reality, the required request law should increase the number of organs donated.

This study will also look at variables which may influence the rate of donation. There may be characteristics that can predict that a hospital will provide a greater or smaller ratio of donors to deaths than other hospitals. It appears to be logical that innercity hospitals, which have the most active Emergency
Rooms and ICU's would produce a greater number of organs than rural or suburban hospitals. A great number of organs come from victims of traumatic accidents. The innercity hospitals see a large percentage of these accidents, i.e., gunshot and knife wounds; however, a study performed by the University of Illinois organ procurement agency showed that sixty percent of the referrals and eighty percent of the retrievals come from suburban hospitals. The report stated further that the innercity hospitals have a greater population of Hispanics and blacks than the suburban hospitals do. These groups of people traditionally have a greater resistance than whites to organ donation. Their study showed that refusal rates among blacks was sixty percent, fifty-eight percent among Hispanics, and twenty-nine percent among whites. Clive Callender, MD says that this resistance is a result of a lack of information and cultural attitudes. He said, "Blacks have many deep-seated fears resulting from religion, myth and superstition and also they have a basic distrust of the medical community." Another reason why the donation rate may be lower in the innercity hospitals is because the people who frequent these hospitals have lived with malnutrition and unsanitary conditions all their lives. They are already in a debilitated state when they seek
medical care and their organs may be unsuitable for transplantation.

It would also appear that teaching hospitals would have more organ donor referrals. A teaching hospital is usually at the forefront of technology and the issue of organ donations should be on the minds of all who work there. However, small community hospitals are better providers of donor organs than are major medical centers and teaching hospitals in particular. This decrease in the expected number of donations may be a result of all the people who have responsibility for a particular patient. Perhaps when brain death is pronounced, each care giver assumes another has already talked with the family.

To determine if these findings hold true for Ohio, I will compare the number of donations with hospital size, teaching and nonteaching hospitals, transplant and nontransplant centers, etc. The methodology will be discussed in Chapter III.
References for Chapter II


2. Ibid., p. 613.


4. Ibid., p. 68.


6. Ibid.


9. Ibid.

10. Ibid., p. 365.


25. Ibid.

26. Ibid.

27. Ibid.


29. Ibid.

30. Ibid.


37. Ibid.

38. Ibid.

39. Ibid., p. 58.

40. Ibid.

41. Ibid.


43. Ibid.

44. Ibid.

45. Ibid.
CHAPTER III
METHODOLOGY

Introduction

House Bill number 770 (see Appendix A) requires each hospital to develop an organ and tissue procurement protocol in consultation with a certified organ and tissue procurement organization. The protocol should identify the circumstances in which it is appropriate to give the family of a dying patient the opportunity to make an anatomical donation. When a patient is determined to be appropriate, it is the responsibility of the designated organ procurement agency, the hospital administrator, or his designated representative to make a request of the family, unless it is known that a donation of tissue and/or organs is against the patient’s wishes.

It would appear that by requiring the hospital administrator to be responsible for requesting an anatomical donation, the purpose of House Bill number 770 was to increase the availability of organs and tissue for
has, in fact, been an increase in the quantity of organs procured since the passage of this bill. Data were collected from April 1, 1987 to September 30, 1987, the six month period directly following enactment of the bill on March 19, 1987, and the same two quarters in 1986. The number of organ donations obtained, as a percent of deaths, will be determined for both periods. If there is a change in 1987, it will be tested for statistical significance.

Calculations

The test of significance that will be performed on the results will be a two tailed test of proportions. The formula used is as follows:

$$s_{p1-p2} = \sqrt{pq(1/n_1 + 1/n_2)}$$

where: $s_{p1-p2}$ = estimated standard deviation

$p = (n_1p_1 + n_2p_2) / (n_1 + n_2)$;

$q = 1 - p$ and

$n$ = the number of observations in the sample.

The hypothesized proportion $p$ under the null hypothesis is unknown and must be estimated by a weighted mean of the observed sample proportions. If these proportions come from populations that are alike, i.e., if the null hypothesis is true and $p_1$ and $p_2$ are equal, there will be no significant difference. A significant difference shows that something is present in one population that is not present in the other one. For
example, if the number of donors per request is significantly greater in transplant centers compared to nontransplant institutions, there is something present in the transplant centers which promotes a greater proportion of donors to requests.

A two tailed test must be used because the hypothesis of equal proportions must be rejected for values that fall significantly above or below zero. In other words, a proportion may be significantly different if it is much higher or much lower than the other proportion.

The significance level of .05 says that there will be a five percent chance of making a Type I error, i.e., the null hypothesis will be rejected when it is actually true. In other words, if the two proportions are significantly different, one is ninety-five percent confident that the null hypothesis is false and that the samples did in fact come from different populations. A significance level of .05 gives a greater chance for the null hypothesis to be true, i.e., the difference in the populations will have to be large to be statistically significant, than a .20 level and a smaller chance than a level of .01. If a significance level of .20 were used, the range for the the null hypothesis would be smaller allowing smaller differences in the sample populations to become statistically significant. Therefore, more
Regression and correlation analysis will be used to determine if the number of beds in a hospital is related to the number of deaths, requests for organ and tissue donations, and donations received. Two ratios, requests per death and donors per death, will also be correlated to the number of beds. The relationship between the number of requests and donors and the relationships between deaths (independent variable) and donations and requests (dependent variables) will also be determined.

A two variable linear regression uses the equation of a straight line, \( y = a + bx \) where \( a \) and \( b \) are numbers, to describe the average relationship that exists between the two variables and to carry out the estimation process.\(^4\) The factors that we wish to estimate, i. e., requests, deaths, and donors are the dependent variables and the number of beds is the independent variable. These terms do not necessarily imply a cause and effect relationship, but only that an estimate of the value of the dependent variables can be obtained for a given value of the independent variable from a mathematical formula.\(^5\) The independent variable may or may not be causing the changes in the dependent variable.\(^6\) It would appear that the number of beds in a hospital would have a
relationship with the number of deaths, i.e., it would appear that a large hospital would have a greater number of deaths than a small hospital due to the fact that there would be more patients and therefore more potential for patient deaths. This hypothesis assumes that the percent of deaths per patients admitted in a general acute care hospital is fairly constant. It could also be assumed that a greater number of deaths should lead to a greater number of donations, if the request for a gift were made. This test will determine if a relationship exists between the number of beds and the dependent variables and, if so, the strength of the association.

The coefficient of determination will be used to measure the amount of correlation that exists between x and y. This measure can be developed "in terms of the relative variation of the y values around the the regression line and the corresponding variation around the mean of the y variable". The coefficient of determination may be interpreted as the percent of variation in the dependent variable that is explained by its association with the independent variable. Usually the value of the coefficient of determination falls between zero and one. A value close to one indicates a stronger linear relationship between the two variables than a value close to zero.
Teaching institutions and nonteaching institutions will be compared to determine if there is a difference in the number of requests made or the quantity of organs and tissue procured as a percent of the number of deaths and the quantity of organs procured as a percent of the number of requests made. If a difference exists, the statistical significance will be determined. As previously discussed, the literature shows that teaching hospitals usually have fewer donations than nonteaching hospitals, even though it would appear that teaching hospitals should have more donations because they are at the forefront of technology and should be more in tune with the transplant programs and the need for donations.

Transplant centers will be compared to all other acute care institutions to determine if there is a statistical difference in the number of requests made or the quantity of organs and tissue procured as a percent of the number of deaths in the specialized centers. The number of organ donations as a percent of requests made will also be studied. It appears that transplant centers would have the highest number of requests, if not donations, per death. The personnel who work in these centers should be very aware of patients who are hospitalized awaiting transplants and the need for donors.
Trauma centers will also be compared to other acute care facilities to determine if there is a statistically significant difference in the number of requests made and the number of donations received per death and the number of donations received per request. Designated trauma centers should be the major source of organs and tissue. It is here that the brain dead patient is most likely to receive treatment because the brain dead are often victims of traumatic accidents and are automatically expressed to these centers.

Rural hospitals will be compared to urban hospitals concerning the number of requests made and the quantity of donations obtained per death. The statistical significance of the results will be calculated. Literature shows that patients in rural hospitals are more likely to make a donation than their counterparts in urban hospitals. However; if transplant and trauma centers, which are located in the urban areas, produce more donations than other institutions, then urban rather than rural areas should have a larger number of requests and donations.

If a patient is medically unsuitable as a donor, a request is usually not made. Reporting hospitals documented this information for this data collection period. These data will be examined to determine the number of organs not available for donation regardless of
the required request law. The percent of organs not donated as a result of family objection will also be calculated. This percent will show the number of potential donors that could result from increased education and awareness of the public concerning the need for organ and tissue donation.

The calculations above, excluding the first one which compares 1986 and 1987 organ donations, will be formulated from 1987 data only. Detailed information on the remaining variables is not available for 1986.

The five Organ Procurement Agencies (OPAs) in Ohio will also be evaluated to determine if there is a significant difference in the number of organs procured by each one in 1986 and 1987. Perhaps certain OPAs became more aggressive after the enactment of House Bill 770 and had a much higher procurement rate in 1987 compared to 1986. OPAs could be expected to procure more organs in 1987 than in previous years because they were responsible for instructing the hospitals in their areas on procurement. If they performed this activity well, conceivably more organs were donated in their particular area. More likely, those OPAs which had a high procurement rate in 1986 and had already established a good rapport with the hospitals in their area would continue with a higher rate in 1987 because there was no
time between the enactment of the bill and the beginning of this data collection to teach hospital personnel.

Definitions

For the purposes of this paper, the following definitions will be used:

1. Hospital is the term used for a general acute care facility. There are 200 such facilities in Ohio which were required to comply with the required request legislation. These facilities care for all inpatients, but do not include mental health facilities, rehabilitation hospitals, long term care facilities, or nursing homes.

2. Teaching hospital is used to describe a hospital with a residency program. A resident is a person at any level of a graduate medical education program accredited by the Accreditation Council for Graduate Medical Education. Within this category is a more exclusive category of the Council of Teaching Hospitals of the Association of the American Medical College. Not all teaching hospitals belong to the Council of Teaching Hospitals. All teaching hospitals will be examined, then those hospitals included in the Council of Teaching Hospitals will be examined again separately.

3. Transplant center is defined by Audrey Bohnengel, executive director of the Ohio Solid Organ Transplantation Consortium, in her report to the Ohio
Department of Health, as the eleven Medicare approved kidney transplant facilities in Ohio. A portion of these facilities also transplant other solid organs. This is the definition used in this paper also.

4. Trauma centers are difficult to define in Ohio because the standards are only being developed and hospitals are currently in the process of being approved as trauma centers. Therefore there may be hospitals used as trauma centers that do not yet have the official designation. Audrey Bohnengel, for her report mentioned above, asked the coordinators of the OPAs to determine which hospitals in their districts were the most likely to receive trauma victims. These coordinators presumably know their areas well enough to determine which facilities the police and ambulance drivers use as a first resort for accident victims. In lieu of a better designation, the identification by these coordinators is used in this thesis as the definition of a trauma center. According to their lists, there are twenty-two such institutions in Ohio.

5. Organ Procurement Agencies are the organizations which coordinate the donation of organs between the family and the potential organ recipients. All organs obtained in Ohio must pass through one of these agencies. Each agency is responsible for certain hospitals. The hospital contacts the appropriate agency when it has a
potential donor. An agency member usually talks with the family and then assists in the operating room to remove tissue and/or organs. These agencies belong to a network which will give the organs to the most critically ill patient on the waiting list. Ohio residents are served first, if their need is the most urgent. According to a paper distributed by the Lifeline of Ohio Organ Procurement Agency (LOOP) of Columbus, Ohio, the hospital usually donates an operating room for the tissue or organ extraction, while the procurement agency supplies the personnel and instruments for the operation. There is no charge to the family.

6. Urban areas are defined as the Primary Metropolitan Statistical Area (PMSA) and the Metropolitan Statistical Areas (MSA) as shown in Appendix B. All areas outside these boundaries are defined as rural.

7. Tissue is defined by Black's Medical Dictionary as the simple elements from which various parts and organs are found to be built. There are five groups: Epithelial, which is skin; Connective, which consists of fat, bone, and cartilage; Muscular; Nervous; and wandering corpuscles of the blood and lymph.

Description of Data

Most of the data used in this thesis were originally collected by the Ohio Department of Health for the purpose of determining the effectiveness of House Bill
Appendix C contains a copy of the request for data which the Department of Health sent to the acute care facilities in Ohio. The hospitals were requested to gather the information for the summary form from the certificates of requests for anatomical gifts. The form requires information concerning the number of deaths in the facility and how often a request for gifts of both organs and tissue was or was not made. If a request was not made, the reason was to be reported. If a request was made, the individual, i.e., parent, sibling, spouse, etc. to whom the request was made had to be recorded. The last piece of information requested was the number of times a request for organs and tissue was granted. This form specified that data were to be collected from April 1, 1987 to September 30, 1987.

The Ohio Solid Organ Transplantation Consortium collected data from the Organ Procurement Agencies in Ohio for the same period of time in 1986 and 1987. This information allowed a comparison of the number of organs acquired in the two periods of time. These data were not hospital specific, but OPA specific. In other words, it is not possible to determine if specific hospitals have improved their collection efforts since the enactment of House Bill 770. These data can only determine if specific OPAs have increased the quantity of organs procured, or if there has been an increase in the total
number of organs procured in Ohio in 1987 over 1986. Among the information collected from the OPAs for 1987 is the number of referrals they received, broken into the number of organ and tissue referrals; the number that were medically unsuitable; the number in which the family objected to a donation; and the total number of referral tissue and organ donations accepted. Information was also supplied as to the distribution of the tissue and organs, i.e., locally, Ohio resident, regionally, etc.; the number discarded; and the number of organs imported. The term organs was broken down by the OPAs to specific organs, i.e., hearts, pancreas, livers, etc. Information concerning the distribution and use of organs is beyond the scope of this thesis and was not incorporated.

The last piece of data was received from the Ohio Department of Health. It contains the number of deaths by hospital for the second and third quarters of 1986. (The same data for 1987 will not be available until July 1988, too late for this thesis deadline). This information will be used to compare the number of organs obtained in the two years, as a percent of the total number of deaths. To determine if there is a difference between OPAs, it will be necessary to match each hospital to a specific OPA, then total the number of deaths per
OPA and obtain a percent of the number of organs procured by each OPA.

Summary

These data should show an increase in the number of organ donations in 1987 after enactment of House Bill 770. However, measurement of the only requirement of this bill, a donation request, is not possible as there are no data available from 1986 concerning the number of requests made. If the number of organ donations increased, it may be assumed that the increase resulted from an increase in the number of requests made; however, it cannot proven that these two variables have a positive relationship. The assumption of a relationship can only be made if outside forces remained the same. For example, that there are no public awareness campaigns concerning organ donations that may cause families to volunteer donation rather that wait to be asked. This voluntarism would increase the number of organs and tissue without necessarily increasing the number of requests made. Of course, the end result would be the same, an increased number of organs and tissue procured.
References Chapter III


2. Ibid.


5. Ibid.

6. Ibid.

7. Ibid., p. 269.

8. Ibid., p. 270.

CHAPTER IV
FINDINGS

Data

There are 200 acute care hospitals in Ohio, according to a report from the Ohio Department of Health, all of which were potential respondents. A total of 176 replies to the questionnaires were received, an eighty-eight percent rate of return. Of these returns, six contained no information concerning deaths, requests made for donation, or the number of organs or tissue donated. These replies were not included in this report. Thus the data from a total of 170 reporting hospitals, eighty-five percent of the total hospitals required to comply with House Bill 770, were used in the analysis for this thesis. Forty-two of these hospitals had no documentation to indicate that any family member was ever approached concerning organ or tissue donation. The two major reasons given for noncompliance were that the protocols to request donation were not set up until late in the data collection period and that all patients who died were medically unsuitable for donation. These
nondocumented hospitals comprised 24.71% of the total number of hospitals reporting; however, they represent only 18.21% of the total acute care beds in Ohio and 15.93% of the total number of deaths which occurred in acute care facilities during the data collection period. Therefore a majority of the deaths that occurred during the data collection period are accounted for in this thesis.

House Bill 770 requires that a certificate be filled out on each patient who dies indicating whether or not a request for donation was made. Certificates were completed on 64.48% of the total deaths reported. (Some hospitals which had protocols in place, did not make out certificates on all deaths.) All calculations, using deaths as a base, however, were made from the total number of deaths during the data collection period, rather than on the number of deaths with certificates. It would have been impossible to make a valid comparison with 1986 if only deaths with certificates were used in 1987, because there is no record of the number of certificates completed in 1986. It may also be reasonable to assume that it is more likely that a certificate would be completed if a request were made than if no request were made. If this is the situation, most requests made are included in this report.
To make the two data collection periods more comparable, deaths that occurred at any hospital in 1986 that did not participate in this study were subtracted from the total number of deaths in acute care facilities in 1986. Therefore the sample of hospitals, used in measuring both requests and deaths, was identical for both periods of time.

The data concerning the quantity of organs and tissue donated in 1987 were supplied by two different sources and the numbers do not agree. These figures are shown in Table 1.

**TABLE 1: 1987 DONATIONS AS REPORTED BY HOSPITALS AND OPAS**

<table>
<thead>
<tr>
<th>AGENCY</th>
<th>ORGANS DONATED</th>
<th>TISSUE DONATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOSPITAL</td>
<td>223</td>
<td>483</td>
</tr>
<tr>
<td>OPA</td>
<td>144</td>
<td>113</td>
</tr>
</tbody>
</table>

To make the calculations for the hospitals, the numbers gathered from the data collection forms sent out by the Ohio Department of Health to acute care institutions and displayed in Table 1 under hospitals were used. The Organ Procurement Agencies supplied the data used for the calculations completed for OPAs and shown in Table 1 under OPA. There are several reasons why the numbers might not coincide. First, all organs obtained in Ohio must pass through an OPA. Therefore, data supplied by
the OPAs included organs that were obtained from hospitals even if they did not complete a request form for the Ohio Department of Health. This would tend to cause hospital-based measures to understate true donations. (In this case, the hospital figures were higher than the OPAs' numbers. This will be explained later.) It was not possible to subtract these organs from the totals the OPAs reported because they did not supply hospital specific data. Second, the OPAs supplied data concerning organs and tissue in two different categories: organs/tissue referred and organs/tissue accepted. The referrals indicated any time a family was approached to make a donation by the agencies, whether or not a donation was actually made. Organs/tissue accepted is the actual quantity of organs/tissue that was procured. Hospitals supplied information concerning the quantity of organs/tissue donated. These figures were compiled by the hospitals from the certificates completed for each patient who died. For the purpose of these certificates, when a family agrees to a donation, the hospital indicates on the certificate that a donation has been made. However, the organ may in fact never actually be donated for various reasons (e.g., no compatible candidate can be found for transplantation, maintenance of the patient's status at the level necessary to procure a usable organ may be impossible, or the organ may be
determined to be unacceptable after surgery). Therefore, hospital figures would be overstated. A third reason is that not all tissue passes through the OPAs. There are tissue banks in Ohio which have no OPA affiliation, so it would be expected that the amount of tissue procured by the OPA would not agree with the hospital data. In this case the hospital-based data would tend to overstate donations relative to the OPAs. The differences in the data can be explained; and although the data cannot be interchanged between the hospitals and OPA's, the numbers used for each group are thought to be accurate within that particular group.

Another appearance of discrepancy in the data is that the total for the number of organ donors plus tissue donors does not equal the total number of donors, which is 691. This difference can be explained by the fact that fifteen of the total donors gave both tissue and organs and these fifteen donors are counted in both the tissue and organ totals.

One other consideration is that even though eighty-five percent of the hospitals which must comply with House Bill 770 reported data, the total number of organs procured was only 223. Therefore, some of the differences were statistically significant when the actual difference in the number of organs donated was less than fifteen.
Most of the tables below are comparisons concerning the percent of tissue and organs donated and the number of requests made as a percent of deaths in various types of institutions. In most cases, the percent of donors per request is also provided in the table.

The totals for the donations, requests, etc. that were supplied by the hospitals and used in this thesis are shown in Table 2. These activities are also displayed as a percent of the number of deaths.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>TOTAL</th>
<th>PER DEATH</th>
</tr>
</thead>
<tbody>
<tr>
<td>DONORS</td>
<td>691</td>
<td>3.27%</td>
</tr>
<tr>
<td>ORGANS</td>
<td>223</td>
<td>1.06%</td>
</tr>
<tr>
<td>TISSUE</td>
<td>483</td>
<td>2.29%</td>
</tr>
<tr>
<td>REQUESTS</td>
<td>3046</td>
<td>14.43%</td>
</tr>
<tr>
<td>DEATHS</td>
<td>21105</td>
<td>100%</td>
</tr>
</tbody>
</table>

Organ Procurement Agency Findings

Table 3 shows the number of organs procured per death during the same periods in 1986 and 1987 by each Organ Procurement Agency.
<table>
<thead>
<tr>
<th>AGENCY</th>
<th>1986</th>
<th>1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPA #1</td>
<td>0.40%</td>
<td>1.43%*</td>
</tr>
<tr>
<td>OPA #2</td>
<td>0.56%</td>
<td>0.94%</td>
</tr>
<tr>
<td>OPA #3</td>
<td>0.25%</td>
<td>0.57%</td>
</tr>
<tr>
<td>OPA #4</td>
<td>0.26%</td>
<td>0.36%</td>
</tr>
<tr>
<td>OPA #5</td>
<td>0.51%</td>
<td>1.04%*</td>
</tr>
<tr>
<td>TOTAL</td>
<td>0.37%</td>
<td>0.68%*</td>
</tr>
</tbody>
</table>

* 1986-1987 difference is significant at p < .05.

Each Organ Procurement Agency increased the percent of organs procured in 1987 over 1986, leading to a total increase; however, only the total increase and the increases in two OPAs, i.e., #1 and #5 were significant at the ninety-five percent confidence level. (As discussed in Chapter III, at the ninety-five percent confidence level, one is ninety-five percent certain that the samples did come from different populations, i.e., the null hypothesis is false. In the above case, something was different between the second and third quarters of 1986 and the same time period of 1987.) The two significant increases could have occurred as a result of those two agencies having been better prepared for the enactment of House Bill 770. The OPAs were responsible for assisting the hospitals to establish the protocols for required request. Better preparation by a particular
OPA to assist with protocols and the instruction of hospital personnel, would have allowed the hospitals in that area to implement the required request legislation earlier in the data collection period. Conceivably, this early start could have led to an increase in the number of organs procured.

The total number of organs procured increased eighty-six percent from 3.67/1000 deaths in 1986 to 6.82/1000 deaths in 1987, a statistically significant increase. OPA directors claim that the number of organs procured had increased in the mid 80's over the early part of the decade; however, the recent trend had been fairly flat. The rate of organ procurement jumped dramatically after enactment of House Bill 770.

The same data are not available for tissue donation because information on tissue was reported for 1987 only. Data on tissue are difficult to collect because, unlike organs which must pass through an OPA, tissue is procured by many different agencies. These agencies are not responsible to the same authority, and it is difficult to monitor each of them. In the past, tissue and organ procurement agencies have not worked closely, but the trend recently appears to be going toward increased cooperation between these agencies. Some agencies now have a hot line which notifies both the organ and tissue procurement agency of a possible donor.
An indication of the organ procurement effectiveness of an OPA is the number of donations received per request. These results are shown in Table 4. OPAs which train hospital staff to screen patients before making a request, usually receive more donations per request; however, they receive fewer donations per death than OPAs which do not teach the staff to screen patient families before making a request. (When staff screen families, they make a judgment as to whether or not the family will donate organs. If they believe the family will refuse, they do not make a request and the family has no opportunity to donate.)

<table>
<thead>
<tr>
<th>AGENCY</th>
<th>DONATIONS/ REQUEST</th>
<th>REQUESTS/ DEATH</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPA # 1</td>
<td>16.53%</td>
<td>19.91%</td>
</tr>
<tr>
<td>OPA # 2</td>
<td>57.40%</td>
<td>3.89%</td>
</tr>
<tr>
<td>OPA # 3</td>
<td>29.65%</td>
<td>7.89%</td>
</tr>
<tr>
<td>OPA # 4</td>
<td>20.42%</td>
<td>15.38%</td>
</tr>
<tr>
<td>OPA # 5</td>
<td>37.04%</td>
<td>12.26%</td>
</tr>
</tbody>
</table>

The fifty-seven percent conversion rate of OPA #2 indicates, to some authorities, that hospital personal are screening the families of their patients to determine if they are amenable to donation before making a request. In other words, the families are not given the
opportunity to donate if the staff believes they would refuse to donate. Table 4 indicates that patient selection is practiced in Ohio. OPA # 2 not only has the greatest number of donations per request, but also has the fewest number of requests per death. In fact, the three OPAs with the largest percents of donations granted per request are also the OPAs with the fewest requests per death.

**Potential Available Donors**

The extremely small percentage of deaths resulting in organ donation leads to the question of how many donors are actually available. Table 5 shows the number of organ donors that would have been potentially available during the six month period of April 1, 1987 to September 30, 1987.

<table>
<thead>
<tr>
<th>TABLE 5: POTENTIAL AVAILABLE ORGAN DONORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Deaths</td>
</tr>
<tr>
<td>Organs Medically Unsuitable</td>
</tr>
<tr>
<td>Family Objection</td>
</tr>
<tr>
<td>Age: Too Young/Old</td>
</tr>
<tr>
<td>Physician Objection</td>
</tr>
<tr>
<td>No Family Available to Approve</td>
</tr>
<tr>
<td>Coroner's Case</td>
</tr>
<tr>
<td>Dead on Arrival</td>
</tr>
<tr>
<td>Potential Organ Donors</td>
</tr>
<tr>
<td>Organs Donated</td>
</tr>
<tr>
<td>Potential Donors Available</td>
</tr>
</tbody>
</table>

^a Includes deaths in reporting hospitals only.
Sixty percent of the deaths neither contributed organs nor were medically or otherwise unsuitable to contribute. There appears to be a large untapped potential for organ donation in Ohio. Only 1.72 percent of the potential donors actually donated organs. This study shows that 7.32 percent of the requests for organ donation resulted in a donation. (There were a total of 3046 requests during this time period.) If 7.32 percent of the other potential donors (12757) donated organs, the result would be 934 more organs procured. Over 600, i.e., the sum of family/physician objections from Table 5 above, families were not approached because of family or physician objection. An increase in public education concerning organ donation should decrease the number of objections to donation. As more families are made aware of required request legislation, the percent of donations per request may escalate, increasing the number of donations. Even if the donations per request remain at 7.32 percent, when the families of all medically suitable patients are asked to donate, the number of available organs should increase dramatically. As discussed in Chapter I, the Gallup Poll Survey conducted for The Dow Chemical Company indicated that seventy-three percent of those polled expressed a willingness to donate organs, however only fifteen percent of potential donors actually make a donation. If these figures are applied to the total number of deaths
above, 15407 patients would have shown an interest in organ donation and 2311 patients would have actually donated organs. The number of organs donated, however, is less than ten percent of the proposed figure. If the Gallup Poll Survey can be used as a guideline for the number of potential organ donors, Ohio has far fewer donors than would be expected.

Nancy Holland was quoted in Chapter I as saying that one out of every seventy-five deaths presents an opportunity for organ donation. It could not be determined from the article if the calculation of deaths was total deaths or consisted only of deaths which occurred in a hospital setting. If all deaths are included, the percent of donations received from hospital deaths would higher. For example, if ten of these seventy-five deaths occurred outside a hospital, one out of every sixty-five hospital deaths would present an opportunity for donation. (Deaths that occur outside the hospital are not eligible to make a donation.) If only hospital deaths were included, however using this figure, only 281 donations could have been expected in Ohio during this period of time. Ohio residents actually donated eighty-three percent of this number.
Urban/Rural Findings

Table 6 shows the number of donations and requests made per death and the number of donations received per request in both urban and rural hospitals.

**TABLE 6: 1987 DONATIONS AND REQUESTS AS A PERCENTAGE OF DEATHS REPORTED BY URBAN AND RURAL HOSPITALS**

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>URBAN</th>
<th>RURAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>REQUESTS</td>
<td>14.79%</td>
<td>12.55%*</td>
</tr>
<tr>
<td>DONORS/REQUEST</td>
<td>23.40%</td>
<td>18.18%*</td>
</tr>
<tr>
<td>DONORS</td>
<td>3.46%</td>
<td>2.28%*</td>
</tr>
<tr>
<td>ORGANS</td>
<td>1.19%</td>
<td>0.36%*</td>
</tr>
<tr>
<td>TISSUE</td>
<td>2.35%</td>
<td>1.98%</td>
</tr>
</tbody>
</table>

* Urban/rural difference significant at p < .05.

In all activity categories, the urban hospitals outperformed the rural institutions. The differences in all categories, except tissue donation, were statistically significant at the ninety-five percent confidence level. Not only do urban hospitals make more requests, they receive a higher percent of donations per request. Some possible reasons for this donation rate in urban institutions might be that a screening method is used so that a positive response is more certain when a request is made, a more positive manner of making the request, or a more acute public awareness of transplantation in urban settings. However, the percent
of donations and requests per death is very low in both the urban and rural settings and a large untapped donation potential exists.

Table 7 shows the number of donations and requests per total deaths in Ohio in the second and third quarters of 1987, allocated between urban and rural institutions.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>URBAN</th>
<th>RURAL</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>REQUESTS</td>
<td>86.28%</td>
<td>13.72%</td>
<td>100%</td>
</tr>
<tr>
<td>DONORS</td>
<td>89.00%</td>
<td>11.00%</td>
<td>100%</td>
</tr>
<tr>
<td>ORGANS</td>
<td>94.62%</td>
<td>5.38%</td>
<td>100%</td>
</tr>
<tr>
<td>TISSUE</td>
<td>86.34%</td>
<td>13.66%</td>
<td>100%</td>
</tr>
<tr>
<td>DEATHS</td>
<td>84.21%</td>
<td>15.79%</td>
<td>100%</td>
</tr>
</tbody>
</table>

This table, which displays the percent of total activity allocated to the urban and rural sector, shows more dramatically the differences between these institutions. It is difficult to determine if these results confirm those found in the literature and discussed in Chapter II. Those results showed that suburban hospitals made eighty percent of the donations; however, that comparison was made to inner city hospitals. In Table 7, suburban and inner city hospitals are grouped together. While the group containing the suburban hospitals did make over eighty percent of the donations, it is not known what
percent of those contributions were made by inner city hospitals. The percent represented by the urban institutions is expected to be greater because over eighty-four percent of the deaths occurred in these hospitals.

**Trauma/Nontrauma Center Findings**

As discussed previously, trauma centers have more opportunity to receive the patients that are most likely to be pronounced brain dead. Therefore, if they take advantage of these opportunities to request a donation from the family, these institutions should receive more donations. The trauma centers had thirty-one percent of the deaths and thirty-three percent of the total donations, whereas, the nontrauma centers had sixty-nine percent of the deaths and sixty-seven percent of the donations. These figures suggest that the trauma centers may treat patients that have a greater potential for donation. Table 8 shows the number of donations and requests per death and the number of donations received per request in trauma centers and nontrauma centers.
TABLE 8: 1987 DONATIONS AND REQUESTS PER DEATH REPORTED BY TRAUMA/NONTRAUMA CENTERS

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>TRAUMA</th>
<th>NONTRAUMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>REQUESTS</td>
<td>12.53%</td>
<td>15.73%*</td>
</tr>
<tr>
<td>DONORS/REQUEST</td>
<td>29.50%</td>
<td>20.39%*</td>
</tr>
<tr>
<td>DONORS</td>
<td>3.70%</td>
<td>3.21%</td>
</tr>
<tr>
<td>ORGANS</td>
<td>1.86%</td>
<td>0.75%*</td>
</tr>
<tr>
<td>TISSUE</td>
<td>1.96%</td>
<td>2.51%*</td>
</tr>
</tbody>
</table>

*Trauma/nontrauma difference significant at p < .05.

The greater number of requests made by nontrauma centers was statistically significant at the ninety-five percent confidence level. However, the fewer number of donations per requests in nontrauma centers was also statistically significant at the same confidence level. As discussed above, this result may indicate that the trauma centers have a screening process in place or perhaps have personnel who are better trained in the art of making requests. These results, however, are not in the direction predicted. The trauma centers, even though they presumably had more opportunities to ask, made fewer requests. There are several possible explanations for the lack of requests in the trauma centers. First, because many of these patients are victims of accidents, family may not accompany the patient to the facility and may be difficult to locate. It seems likely that a greater number of patients seen in the trauma centers may
be from an area outside the vicinity than those patients generally served by the nontrauma centers. A second reason could be the ethnic background of the patient population generally surrounding the inner city trauma centers. As discussed previously, Blacks and Hispanics are less likely to make an anatomical donation. A third possible reason is because traumatic accidents are unexpected and very often the victims are young, the family may be so distraught that hospital personnel, thinking that the family has too much stress already with which to cope, hesitate to approach them concerning the issue of donation. However, the requests made by the trauma centers did result in a greater number of donations, although that number was not statistically significant. Another interesting result is that the trauma centers had a statistically significant, at the ninety-five percent confidence level, greater number of organ donations, but a statistically significant fewer number of tissue donors. One possible reason for this finding is that the patients who arrive at a trauma center are relatively younger than the average patient in an acute care setting. A request to donate organs would be more likely to be made to the families of these young patients, whereas the older patient in the nontrauma setting may be considered suitable for tissue donation only.
Transplant/Nontransplant Center Findings

Transplant and nontransplant centers were also studied separately. Transplant centers had only thirteen percent of the deaths, but seventeen percent of the donations. This figure may indicate that transplant centers are more aware of the issue of donation and make a conscious effort to obtain donations. Table 9 shows the results of the analysis of the number of requests and donations per death and the number of donations made per request.

**TABLE 9: 1987 REQUESTS AND DONATIONS PER DEATH REPORTED BY TRANSPLANT/NONTRANSPLANT CENTERS**

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>TRANSPLANT</th>
<th>NONTRANSPLANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>REQUESTS</td>
<td>8.62%</td>
<td>15.31%*</td>
</tr>
<tr>
<td>DONORS/REQUEST</td>
<td>49.79%</td>
<td>20.78%*</td>
</tr>
<tr>
<td>DONORS</td>
<td>4.29%</td>
<td>3.12%*</td>
</tr>
<tr>
<td>ORGANS</td>
<td>1.69%</td>
<td>0.96%*</td>
</tr>
<tr>
<td>TISSUE</td>
<td>2.92%</td>
<td>2.19%*</td>
</tr>
</tbody>
</table>

*Transplant/nontransplant difference significant at p < .05.

The differences in all activities are statistically significant at the ninety-five percent confidence level. The transplant centers outperform the nontransplant centers in all activities, except the number of requests made per death. The transplant centers show a higher percent of donations per request, which possibly is a
result of the same factors discussed above. However, when transplant centers are involved, another factor may be present. The families of the patients, being aware that it is a transplant facility, may be more conscious of the need for donation and be more amenable to a request for one. In other words, the hospital personnel may not have to "work as hard" to get a donation. Surprisingly, transplant centers have a significantly lower rate of requests per death than nontransplant institutions. One possible reason for this lower than expected rate is that at least some of these deaths were patients awaiting transplants. These same patients would not have been good candidates for organ donation. Also, many of these transplant hospitals are the tertiary care centers for their area. The patients who are admitted here may have, on the average, a higher acuity, i.e., be "sicker", than a patient in a nontertiary center. This high level of acuity could conceivably cause these patients to be medically unsuitable for donation. The advanced stage of the disease process would have caused their organs to deteriorate to a level unsuitable for another's use.

Teaching/Nonteaching Hospital Findings

The teaching hospitals were broken into two categories, i.e., teaching institution not a member of the Council of Teaching Hospitals and members of the
Council. These were compared to each other and to nonteaching institutions. Table 10 will display the number of requests and donations per death and the number of donations received per request by the two categories of teaching institutions. Table 11 will display the same information for all teaching and nonteaching institutions.

**TABLE 10:** 1987 DONATIONS AND REQUESTS PER DEATH REPORTED BY BOTH CATEGORIES OF TEACHING INSTITUTES

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>TEACHING/NONMEMBER</th>
<th>MEMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>REQUESTS</td>
<td>12.84%</td>
<td>9.33%*</td>
</tr>
<tr>
<td>DONORS/REQUEST</td>
<td>17.45%</td>
<td>39.46%*</td>
</tr>
<tr>
<td>DONORS</td>
<td>2.24%</td>
<td>3.68%*</td>
</tr>
<tr>
<td>ORGANS</td>
<td>0.84%</td>
<td>1.73%*</td>
</tr>
<tr>
<td>TISSUE</td>
<td>0.14%</td>
<td>2.09%*</td>
</tr>
</tbody>
</table>

*Significant difference between the two categories of teaching institutions at p < .05.

These results show all activities to be statistically significant at the ninety-five percent confidence level. A greater number of total donors and organ and tissue donors are supplied by the institutions that are members of the Council. If, as discussed in Chapter II, teaching hospitals are more aware of the need for donation, then it may also be logical to assume that teaching institutions that are members of the Teaching Council may have an even more acute awareness. The one statistically
significant result which does not appear as predicted is the number of requests per death. A possible reason for the lower yield of member hospitals is that the institutions in the Council tend to be larger hospitals that are also the designated tertiary care centers for their areas. To qualify as a teaching hospital, according to the definition used here, the hospital must have at least one resident. Thus many small, rural hospital qualify. As discussed above, a greater percent of the patients who are admitted to the tertiary centers may be medically unsuitable for donation and a request is never made. The small teaching hospitals conceivably have a greater number of suitable organ donors and should make more requests.

TABLE 11: 1987 DONATIONS AND REQUESTS PER DEATH REPORTED BY ALL TEACHING/NONTEACHING INSTITUTIONS

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>TEACHING</th>
<th>NONTEACHING</th>
</tr>
</thead>
<tbody>
<tr>
<td>REQUESTS</td>
<td>10.71%</td>
<td>18.16%*</td>
</tr>
<tr>
<td>DONORS/REQUESTS</td>
<td>29.09%</td>
<td>18.90%*</td>
</tr>
<tr>
<td>DONORS</td>
<td>3.12%</td>
<td>3.43%</td>
</tr>
<tr>
<td>ORGANS</td>
<td>1.38%</td>
<td>0.73%*</td>
</tr>
<tr>
<td>TISSUE</td>
<td>1.82%</td>
<td>2.76%*</td>
</tr>
</tbody>
</table>

*Significant difference between teaching/nonteaching institutions at p < .05.

The findings in Table 11 show that nonteaching hospitals supply more donors as a percentage of deaths; however,
this difference is not statistically significant at the ninety-five percent confidence level. (Actually while teaching and nonteaching institutions both had approximately fifty percent of the deaths, nonteaching hospitals received slightly more than fifty-two percent of the donations.)

These same institutions do, however, provide a statistically significant greater amount of tissue and a smaller number of organs than teaching hospitals. Therefore the teaching hospitals in this study do function as the forerunners of organ procurement and acquire more organs than other institutions. This finding is not supported by the literature, but appears to be logical, given that teaching hospitals should be more attuned to the state of the art in the medical profession and be most aware of the problem of the scarcity of organs. Again the number of requests per death is smaller in the specialty hospitals and the percent of donors per request is larger. This is a pattern seen all along with the specialty, i.e., trauma, transplant, and teaching institutions. The same reasons discussed previously could be given here.

Regression Analysis

Figures 1, 2, and 3 in Appendix D show graphs of the least squares linear regression of the number of hospital beds, the independent variable, to the dependent
variables, deaths, donors, and requests for donations, respectively. The coefficient of determination, explained in Chapter III, for the dependent variable deaths is a fairly high positive number of 0.7535. This correlation is predictable because, given that all other variables are constant, the greater the number of beds in a hospital, the greater should be the number of deaths. The ratio of the number of donors to deaths was correlated to the number of beds. The coefficient of determination was extremely low at 0.0112. The coefficient of determination for the dependent variable donors was higher at 0.3208. The positive number shows that a greater number of beds does lead to a greater number of organ donations, as would be expected. Since a greater number of beds is positively correlated to both deaths and donors, it would appear that the coefficient of determination of the correlation of the ratio of donors to deaths to the number of beds would be a higher value. There is, however, almost no relationship between this ratio and the number of beds. It would appear that the hospitals that have the greatest opportunities to receive donations do not. The ratio of requests to deaths was also correlated to the number of beds. This coefficient of determination was even lower at 0.0026. The coefficient of determination of the number of requests correlated with the number of beds was only
slightly higher at 0.1573. This is a positive relationship, but explains little of the variation between the number of beds and the number of requests made. Again, as discussed previously, these larger facilities are often the tertiary care centers for their geographic areas and patients with higher acuities, who are not considered suitable for donation by hospital personnel, are admitted there. This screening by personnel leads to a decrease in the number of requests for donation made.

Other regression analyses were also performed, however, the coefficients of determination were low in all cases. The number of requests made correlated to the number of deaths, in hospitals that made requests, had a coefficient of determination of only 0.1668. If required request were a part of the death process, the number of deaths should affect the number of requests made, i.e., the greater the number of deaths, the greater should be the number of requests made. This correlation says that there is little relationship between the number of deaths and the number of requests made. When the number of donors was correlated to the number of deaths, in hospitals which made requests, the coefficient of determination was higher, but only 0.2784. This correlation may have been slightly better than the correlation of requests to deaths, either because some
requests which resulted in a donation were not recorded, or some families may have offered to make a donation without a request having been made. When the donations from all reporting hospitals, i.e., those which reported making requests and those which did not, were correlated with the number of deaths, the coefficient of determination was even higher at 0.3144, which would support the above hypotheses. The highest coefficient of determination, 0.3789, was a result of the correlation between the number of donations and the number of requests made. Although, this coefficient is not high, it is in a positive direction and the regression does show some association between these two variables.

Summary

Teaching hospitals and urban hospitals outperformed nonteaching and rural hospitals respectively. These findings are not in agreement with the literature. Trauma and transplant centers did produce a statistically significant greater amount of organs for transplantation, as expected.

The one finding that really stands out is that hospitals, particularly the specialty institutions, i.e., trauma, teaching, etc. are screening their requests. The number of requests granted is high compared to the number made. Not all families are given the opportunity to make a donation because, for whatever
reason, the staff may decide not to make a request. I have no figures predicting the number of requests expected per death; however, the fourteen percent request rate obtained in this study seems low. Until a larger number of families are allowed to donate, the procurement rate will not increase.

These findings do show that the number of organs procured in the second and third quarters of 1987 was greater than in the same period during 1986. However, it may be premature to attribute this increase to the required request legislation, especially since we do not know if the number of requests increased or if only the number of organs obtained increased. It may have been only a coincidence that the number of organs procured increased after the implementation of the required request legislation. Until it is known that the actual number of requests made increased, leading to an increase in the supply of organs, we cannot be certain that required request makes a difference.
CHAPTER V

CONCLUSIONS

Overview of Findings

The significant increase in the number of organs procured per 1000 deaths in the first quarter of 1987, almost double the number procured in 1986, should indicate that House Bill 770 is a success. Discussions with the directors of four of the five Organ Procurement Agencies in Ohio, indicate that the number of organs procured in the mid 80's had increased over the quantity of organs donated in the early years of the decade; however, the quantity had been fairly stable during the last few years. The enactment of the legislation preceded a dramatic increase in the number of organs procured, and this trend continued through 1987. One OPA doubled the number of organs procured in 1987 over the quantity in 1986. However, it is difficult to determine if this increase can be attributed entirely to the Required Request Legislation. One director commented
that the agency had been in the process of implementing a community prodonation campaign for several years. This program consists of involving interested community leaders from various occupations in discussions with the public concerning organ donation. These efforts also include talks given by organ recipients. The director believes that, at least, some of the increased donation rate, must be attributed to this community effort jelling about the same time as the legislation went into effect.

The data collection period began only two weeks after the bill became effective, making it even more difficult to attribute the increase in the number of organs procured entirely to the legislation. Eighteen of the reporting hospitals indicated that they did not implement their required request protocols until late into the study period, and other hospitals are only now implementing protocols, a full year after enactment of required request. Without protocols in place, personnel were not fully trained to request donation and the flow of information through hospital channels to the OPAs was not functioning properly. If data for the study were collected now, after all protocols are implemented, it might be easier to attribute an increase in the quantity of organs procured to the legislation.

A certificate was not completed on each death that occurred in Ohio during the reporting period, making the
exact number of families asked to donate unknown. No records of the number of requests made in previous years are available either, so it cannot be determined if implementation of the legislation increased the number of requests made, resulting in more donations, or if the increase in donations during this period of time is the result of other factors.

One of the most important findings is that some facilities are screening families before making a request for donation. This policy will decrease the number of donations made. Hospital staff may be too involved in the specific case to make an accurate judgment as to the disposition of the family toward donation. OPAs should encourage hospital staff to call them, to talk with the family and give them the opportunity to make a donation, any time a potential donor’s death is imminent. Allowing the OPA staff to make the request appears to be desirable for all, i.e., more organs should be received and hospital staff will not have to make the request.

Increasing Quantities Procured May be Difficult

Even though the number of organs retrieved increased dramatically, the total number of organs donated did not meet the projections established by the American Council on Transplantation, i.e., one organ donation for every seventy-five deaths. It would be unrealistic to expect House Bill 770 to increase organ donation in Ohio to this
level during its first six months in effect. This figure, an estimate only, may be unrealistic and not attainable. Some experts believe that it would be very difficult to increase the number of kidneys retrieved by even twenty-five percent.¹ (Most families donate kidneys first, then may choose to donate other organs also.) Dr. Leeber says that it is not the desire and willingness of families that are lacking, but the fact that the donor must die of certain diseases in a controlled environment to be a qualified donor.² This situation automatically limits the number of suitable donors.

There are other reasons which could prohibit the number of organs donated from meeting the number required for transplantation. Most organ donations are obtained from accident and suicide victims. In 1973, a study projected that 12,000 hearts would be available annually for transplantation. However, in North Carolina alone, 661 fewer people died in traffic accidents than expected in the ten year period of 1972-1982.³ The increased number of lives saved could be the result of advanced technology; the use of an increased number of helicopter flights that enable medical assistance to arrive at the scene more quickly; the increased number of states which require seat belts to be worn in cars, decreasing the severity of injury sustained in a auto accident; the crackdown on drunk drivers; or a combination of any of
these possibilities. The increased use of seat belts, helicopter flights, etc. appear to be a national trend, which, in turn, could cause the number of organs for transplantation to decrease.

Another possible cause of the decrease in the number of traffic fatalities may have been the fifty-five mile per hour speed limit, however, the speed limit has been increased in some states during the past year. As a result, many believe that traffic fatalities may escalate, which could provide more organs.

A problem may also originate at the level of the individual OPA. These organizations do not employ an unlimited number of personnel. At the same time, each OPA serves many hospitals. It may happen that the procurement team is engaged in another organ recovery when a call is received and many OPA's do not have the personnel available to manage two retrievals at the same time. Another possibility is that they may have recently finished a recovery and be too exhausted to begin another one in a timely manner. The question is the cost effectiveness of having enough staff available so that an organ donation is never refused due to a lack of personnel. This practice would increase the cost of transplantation, an already expensive procedure, and one which some experts believe is not presently cost effective. In light of the already rising medical costs,
it would be difficult to justify this increased expense, except on an ethical basis.

It may be found that the potential recipient is too ill to have a transplant at the time the organ is available.\textsuperscript{5} If no other recipient can be contacted, the organ is not recovered because it can be saved for only a short period of time. The potential donation is refused.

Factors Leading to Increased Donation that Can be Changed

There are also other reasons why the quantity of organs donated may never reach the projected proportion, but these reasons can be tackled and alleviated. First, the public has found it easier than physicians to accept the concept of brain death.\textsuperscript{6} As this study showed, sixty-six times families were not asked to donate because the physician objected. Many physicians still consider the heart to be the organ that marks the seat of life, despite the legal definition that death can be determined by criteria applied to the brain.\textsuperscript{7} The removal of a beating heart deeply disturbs professionals. Until the concept of brain death is a fully accepted idea, organ retrieval cannot reach its maximum level.\textsuperscript{8} Physicians will not be able to instruct the public concerning the necessity of donation, until they themselves are comfortable with the concept. It is inconceivable that physicians will continue to object to organ donation in the future.
Motivating nurses to ask for donation is one of the key steps towards increasing the number of organs donated. Nurses are dedicated to saving lives. A dead patient not only represents a failure, but the care of a dead patient is not particularly rewarding professionally. A conflict often arises when the patient arrives at the hospital. At that time, the decision can be made that a patient is terminal, and nature is allowed to take its course. However, if organs are to be retrieved, medical and nursing intervention is required. This additional attention often prolongs the patient’s demise and takes more staff time and effort. The staff may also resent the fact that resources are allocated to a donor, when none are given to a similar patient who is not a donor.

Nurses receive no information concerning their role in organ donation in their professional education. Unless the nurse is employed in a transplant center, there is no reinforcement by direct contact with either transplant recipients or patients waiting for transplantation and efforts must be intrinsically motivated. If organ donations in a particular institution are infrequent, the potential may be overlooked in the daily routine of patient care. The staff may think that one or two donors per year is not worth the effort required to identify those
individuals.\textsuperscript{13} One hospital, realizing the problem, began to work more closely with the OPA transplant coordinator. The individual hospital employee who identifies the donor is now kept abreast of the progress of the recipient. This practice helps to increase the staff's sense of participation and interest in the process.\textsuperscript{14}

Organ wastage is a problem which may not affect the number of organs donated, but does effect the number of organs transplanted. (It may also become a donation problem if the public learns of the wasted organs and decides not to donate organs because they are not used to save lives.) If organ wastage rates in the United States were as low as in Europe, ten to twelve percent more kidney transplants could be performed each year.\textsuperscript{15} Part of the problem lies in the U.S. organ sharing programs. The primary difference between the American and the European systems is the strength and centralization of interagency organ sharing which is present in Europe.\textsuperscript{16} Other causes of wastage, which appear to be the responsibility of the OPAs, are poor nephrectomies, poor preservation, and poor donor management.\textsuperscript{17} These problems should be less prevalent in the future. The Required Request Legislation brings organ donation into the forefront, and it follows that donations, retrievals, transplantations, etc. will be more closely monitored.
If the number of donations increases, but the number of organs available for transplantation decreases, monitors will begin to look at the OPAs for an explanation.

High permission rates per request represent a failure on the part of the OPA to fully educate hospital staff in the principles of organ procurement. Jeffrey M. Prottas claims that this relationship indicates that the staff is making a judgment on the receptivity of the family to a request for donation. There is a strong negative bias in their judgment and they tend not to refer potential donors rather than risk asking for a donation and getting a refusal. The OPA specific data reported in Chapter IV concerning the percent of organs donated per request shows that one OPA has a fifty-seven percent rate of positive responses. According to Mr. Prottas, less effective OPA's convert approximately fifty-one percent of their requests to donations, whereas more effective ones convert less than forty-five percent. He goes on to say that there is a strong negative correlation between percentage of referrals that lead to a donation and the number of organs procured per capita ($r = -0.33, p = .02$). The success rates of donation per request must begin to fall in order to realize the full potential of organ donations. This decrease will indicate that more families are being given the opportunity to donate organs.
The results presented here show that in every instance, the specialty institutions, i.e., teaching, trauma, and transplant centers, had fewer requests per death, but had more donations per request than nonspeciality hospitals. However, only transplant centers had a conversion rate close to fifty percent. This high percentage could possibly be a result of patients and families being more aware of the need to donate organs in a transplant setting and, as a result, being more receptive to the idea of donation. The hopeful recipient may be in the next bed in ICU. Families may interact in the waiting room, and the decision to make a donation may be easier if a known individual, rather than an anonymous person among thousands of others, will be the recipient. (Media support of specific people in need of an organ donation frequently leads donor families to specify that organs go to that person, if possible. An organ may have been donated anyway, but there seems to be a conscious desire to give the organ to someone the family "knows".)

An increase of almost eighty-six percent in the number of organs procured per 1000 deaths, after enactment of House Bill 770, could hardly classify this legislature as a failure. However, Ohio continues to lag behind the projected number of organs that could be procured per death. It would appear that along with the
required request enforcement, the public must be evaluated concerning their beliefs and attitudes toward donation. If the public perceives organ transplantation and donation as experimental and unnecessary, an increased number of requests will not lead to an increased number of organs donated.

Evaluation of Attitudes to Donation Behavior

The Gallup Poll discussed previously, revealed that while seventy-three percent of the people polled expressed a desire to donate organs, only fifteen percent of the people actually donate organs. It would be beneficial to examine why a difference exists between the attitudes of people toward donation and the behavior of donating. What happens between the desire to give and the action of choosing not to make a donation? Do people merely answer the question "yes" because they believe it is a nice idea and they will never be in the situation where that decision will have to be made? What can be done to determine if the action to donate will follow the attitude of wanting to donate?

Ajzen, in his Theory of Reasoned Action, says that three things must happen to make a strong association between verbal intention and actual behavior. First the level of generality of the question must correspond to the level of generality in the action, e.g., if the desired outcome is to donate parents' organs, the question
must be, "Would you donate your parents organs for the purpose of transplantation upon their death?" Second, the intention must not have changed between the time of the question and the time for the behavior. If a long time elapses, unforeseen events could occur to make the person change his mind. Third, the behavior must be completely under the person's control.\textsuperscript{22}

It is not difficult to see that any survey concerning the intention/behavior to donate organs may be deficient in any one or all three of these requirements. Perhaps we can never expect seventy-three percent of the people to donate organs. The third requirement, i.e., the studied behavior is totally under one person's control, Ajzen considers to be the most important.\textsuperscript{23} The decision to donate organs would seldom be totally under one person's control. Much of the time, at least one other person's attitudes and beliefs will have to be considered. There may be a surviving parent, other siblings, aunts, uncles, etc. who all want to be part of the decision making process. Therefore, Ajzen's most important requirement for measuring intentions which lead to behavior is often missing entirely in organ donation decisions. People may have every intention of following through with the donation, only to be stopped by others having equally strong, but conflicting beliefs.
The second requirement allows only a short span of time to pass between the question of intention and the resulting action for the answer to be considered valid. If a long period of time passes, the intention may change or weaken. This requirement would be very difficult to satisfy when conducting a survey concerning organ donation. Since most donations are received from victims of trauma, it would be impossible to determine which families to survey. It is reasonable to assume that the people who conduct the surveys do not perform them in hospitals when organ donation is imminent. So it is probable that a lot of time passes between the question concerning intention to donate and the actual decision making process. The easiest solution to this dilemma would be to poll people at random concerning the intention to donate and use statistics of donation for behavior. Of course, if two different populations are used, the theories of intention leading to behavior do not apply.

The other component of Ajzen's model, i.e., the questions asked must be related to a specific situation, would be fairly easy to apply in a survey for organ donation intentions. Various questions pertaining to intention to donate if the victim were a spouse, sibling, child, etc. could be asked. It would also be important to ask specifically about tissue and organs, because they
may represent different issues to the person being surveyed.

The Health Belief Model of Becker and associates holds some widespread popularity in health care situations. The people most likely to perform the action are those who perceive themselves to be the most vulnerable to the situation. This model is predictive of health behavior and uses three sets of beliefs. The following are the three criteria: (1) perceived susceptibility to the disease, (2) perceived severity of the disease, and (3) perceived benefits/barriers of the preventive care. Although this model is used to predict health behavior, perhaps it could be modified to predict the actual donation tendency of those who profess a desire to donate. When it is used to predict a specific behavior to prevent disease, those most likely to perform the behavior are those with a perceived increased susceptibility to a particular disease, a belief that the disease is severe if contracted, and the perception that the benefits of the behavior outweigh the costs. If people believe that some day they may need an organ transplant, would they be more likely to sign a donor card? An increased belief in one's own vulnerability, may cause one to sign a donor card, hoping that if the situation were reversed, an organ would be available for them.
The model above is similar to Fishbein's Multiattribute Model. In Fishbein's model the attitude toward a behavior is based on the set of beliefs about the salient consequences of engaging in that behavior, weighted by the evaluation of these consequences.\textsuperscript{25} If a person believes that donating an organ will produce good consequences, he will be more inclined to make a donation. Attitudes and intentions formed through actual experience are stronger predictors of behavior than those formed through exposure.\textsuperscript{26} If an individual has already had an experience with organ donation, he will be more likely to make another donation, assuming he had a rewarding experience the first time.

Calnan says that normative beliefs must be added to Becker's model.\textsuperscript{27} Normative beliefs are our perceptions of how others, that are important to us, believe we should behave. He says that normative beliefs play a highly significant role in our behavior. The normative beliefs together, with the "private" beliefs predicted in the Health Belief Model, predict behavioral intentions more successfully than "private" beliefs alone.\textsuperscript{28} It is easy to understand that if someone intended to donate a loved one's organs, but a family member was adamantly against donation, it is highly probable that no organs would be donated. Even though the intentions of the advocate for donation were strong, if many disagreed, the
advocate would probably go along with the majority, given the circumstances under which the decision would have to be made. A decision to not donate would occur especially if the person advocating donations, did not have a vested interest in the outcome of the disagreement.

A behavior model that not only asked what one’s intentions towards donation were, but also what did friends and family feel towards donation would be a more reliable predictor of behavior. The Fishbein Behavioral Intention Model does exactly that.

The Fishbein Behavioral Intention Model can be expressed as:

\[ B - BI = W_1(A_B) + W_2(SN) \]

where:

- \( B \) = behavior
- \( BI \) = behavioral intention
- \( A_B \) = attitude toward performing behavior \( B \)
- \( SN \) = subjective norm (influence of others)

\( W_1 \) and \( W_2 \) = empirically determined weights representing the components’ relative influence.\(^{29}\)

Attitudes and subjective norms both influence the behavior intention which, in turn, influences behavior. Attitudes can be broken down into two parts, i.e., the belief that performing a behavior leads to a consequence and the evaluation of that consequence. To measure an attitude two steps have to be taken. First outcomes of
the behavior (organ donation) would have to be identified. One example of an outcome is "whether a life is prolonged". The question would say, "Prolonging a life is:" and would use a range of answers from very good to very bad and a Likert Scale of +3 to -3 to measure the replies. Then the belief that a behavior would lead to this consequence would be evaluated. This question asked would be, "Organ donation will prolong life" and would use a range of answers from very likely (+3) to very unlikely (-3). The two results are multiplied to determine that particular attitude.

Likewise, subjective norms also have two parts. The first part deals with the person’s belief that the significant other thinks he should perform the behavior. One example of this type of question is "Significant other thinks I, should (anchors one end of the scale), should not (anchors the other end of the scale) donate an organ". The second part measures how important the significant other’s opinion of the behavior is to the person completing the survey. This question could be posed, "In general, I want to do (at one end of the scale), I want to do the opposite (at the other end of the scale) what significant other thinks I should do. These answers are also multiplied.

The weights are determined by how much a particular intention is influenced by norms or attitudes. If a
behavior is influenced by norms alone, then attitudes would be given a weight of zero.

After completion of the entire questionnaire, the intention to donate an organ could be measured. It may also show where influence could be used to change behavior, whether it be attitudes or subjective norms. This type of survey could be used to determine the intention to donate organs or to sign a donor card. A survey to measure the intention to sign a donor card may be a more reliable predictor of behavior than the intention to donate organs, because the measure of intention to sign a donor card could immediately precede the actual signing of the card, if the intention were positive. The questionnaire could be completed and donor cards made available for those who desired to sign one so that no time would elapse between the intention and the behavior. As discussed in Chapter II families usually do not refuse a donation when a donor card has been signed. This behavior would contribute to the success of required request legislation. This type of survey would be an excellent next step to help determine why donations are not made and the actions that could be taken to increase the supply of organs to meet the demand.

One Year Later

Prior to completing this thesis, I talked once more to a few OPA directors. The discussions, while providing
some hope, were discouraging. No one was ready to give up on required request legislation, but the prospects for 1988 do not appear as bright as they were in 1987. While there was an increase in the number of organs donated in 1987, the number procured in the first quarter of 1988 has decreased. This decrease occurred directly before the Federal Required Request Legislation went into effect in April. This law requires that organ donation protocols be put into effect in hospitals which receive Medicare reimbursement. If the hospital is not in compliance with the law, they will not receive reimbursements. The Joint Commission of Accreditation of Healthcare Organizations (JCAHO) will begin to monitor compliance as part of their accreditation criteria. However, the need to comply will not affect all hospitals for several years, either because they may have recently been accredited, or they may be due to be surveyed in the near future. It is doubtful that JCAHO will begin immediately to monitor compliance, as the law only became effective.

Even though the number of organ donations is down from the same period last year (which was actually before House Bill 770 went into effect), the number of tissue donations, especially from rural hospitals has increased. This fact is encouraging because it implies that more rural hospitals are requesting a donation. Patients in a
rural hospital may not be good candidates for organ donation because they are probably too old to make a donation for transplantation. Very often, the critical trauma victims, who are often young, are evacuated to large tertiary care centers because the small hospitals are not equipped to care for these patients. The rural hospitals therefore lose many of their opportunities for organ donation.

It appears that physicians are supporting the legislation. Their medical societies are encouraging them to participate and not to hinder the donation process.

There is a push by the OPAs to make the donation request a part of the death process. They are taking a stronger stand and telling hospital personnel to call them in all cases of impending death. They want to make the decision to request or not request a donation from the family, instead of the hospital staff. The OPAs believe this action will decrease the judgmental bias of current request process.

The bill does carry a provision for monitoring hospitals and holding them accountable for requesting donations. There is some discussion that monitoring may be enforced in the future, especially in facilities that send in the same report each time. Some hospitals
continue to report that all deaths were medically unsuitable for donation.

The required request legislation is a good first step; unless a donation is requested, the family will probably not think of it in their time of crisis. However, it is necessary to determine the public attitude toward donation and take the necessary measures to assure a positive attitude. Only with doctors, nurses, and the public fully supporting organ and tissue donation, will the supply ever come close to meeting the demand.
References Chapter V


2. Ibid.


5. Ibid.


7. Ibid.

8. Ibid.


10. Ibid.


12. Ibid., p. 262.

13. Ibid.


16. Ibid.

17. Ibid., p. 369.

18. Ibid., p. 375.

19. Ibid., p. 373.

20. Ibid., p. 375.

21. Ibid.


23. Ibid.


26. Ibid., p. 137.


28. Ibid.

APPENDIX A

HOUSE BILL 770
AN ACT

To enact section 2108.021 of the Revised Code to require hospital personnel to request consent for anatomical gifts in specified circumstances to make clear that the Certificate of Need Law remains fully operational until July 1, 1987, to create the Certificate of Need Study Committee, and to declare an emergency.

Be it enacted by the General Assembly of the State of Ohio:

SECTION 1. That section 2108.021 of the Revised Code be enacted to read as follows:

Sec. 2108.021. (A) AS USED IN THIS SECTION, "CERTIFIED ORGAN AND TISSUE PROCUREMENT ORGANIZATION" MEANS A NONPROFIT ORGAN OR TISSUE PROCUREMENT ORGANIZATION THAT HAS ITS PRINCIPAL PLACE OF BUSINESS IN THIS STATE AND IS CERTIFIED UNDER TITLE XVIII OF THE "SOCIAL SECURITY ACT," 49 STAT. 620 (1935), 42 U.S.C. 301, AS AMENDED, OR BY THE EYE BANK ASSOCIATION OF AMERICA.

(B) EVERY HOSPITAL SHALL DEVELOP AN ORGAN AND TISSUE PROCUREMENT PROTOCOL IN CONSULTATION WITH A CERTIFIED ORGAN AND TISSUE PROCUREMENT ORGANIZATION. THE PROTOCOL SHALL ENCOURAGE REASONABLE DISCRETION AND SENSITIVITY TO THE FAMILY CIRCUMSTANCES IN ALL DISCUSSIONS REGARDING DONATIONS OF TISSUE OR ORGANS. THE PROTOCOL SHALL IDENTIFY THE APPROPRIATE CIRCUMSTANCES UNDER WHICH A REQUEST FOR ORGAN OR TISSUE DONATION IS MADE OR NOT MADE AND SHALL REQUIRE THAT FAMILIES OF POTENTIAL ORGAN DONORS BE INFORMED OF THE OPTION TO DONATE TISSUE OR ORGANS. SUCH NOTIFICATION
SHALL BE THE RESPONSIBILITY OF THE CERTIFIED ORGAN AND TISSUE PROCUREMENT ORGANIZATION UNLESS OTHERWISE DESIGNATED. IN ANY CASE IN WHICH A HOSPITAL PATIENT IS SUITABLE AS AN ORGAN OR TISSUE DONOR BASED ON THE HOSPITAL'S PROTOCOL, THE CERTIFIED ORGAN AND TISSUE PROCUREMENT ORGANIZATION, THE HOSPITAL ADMINISTRATOR, OR HIS DESIGNATED REPRESENTATIVE SHALL REQUEST ONE OR MORE OF THE PERSONS DESCRIBED IN DIVISION (B) OF SECTION 2108.02 OF THE REVISED CODE TO MAKE A GIFT OF APPROPRIATE PARTS OF THE PATIENT'S BODY, EXCEPT THAT THE CERTIFIED ORGAN AND TISSUE PROCUREMENT ORGANIZATION, THE HOSPITAL ADMINISTRATOR, OR HIS DESIGNATED REPRESENTATIVE SHALL NOT MAKE SUCH A REQUEST IF HE HAS ACTUAL NOTICE OF CONTRARY INTENTIONS BY THE PATIENT, ACTUAL NOTICE OF OPPOSITION BY ANY OF THE PERSONS DESCRIBED IN DIVISION (B) OF SECTION 2108.02 OF THE REVISED CODE, OR REASON TO BELIEVE THAT A GIFT FOR PURPOSES DESCRIBED IN SECTION 2108.03 OF THE REVISED CODE IS CONTRARY TO THE PATIENT'S RELIGIOUS BELIEFS.

OR SHALL PROVIDE A SUMMARY OF THE INFORMATION CONTAINED IN THE CERTIFICATES TO THE DIRECTOR ON A FORM PRESCRIBED BY THE DIRECTOR. ALL COPIES OF SUCH CERTIFICATES OR SUMMARIES IN THE POSSESSION OF THE DIRECTOR, EXCEPT FOR ANY PATIENT-IDENTIFYING INFORMATION CONTAINED IN THEM, ARE PUBLIC RECORDS AS DEFINED IN SECTION 149.43 OF THE REVISED CODE.

(C) THE DIRECTOR OF HEALTH SHALL ISSUE GUIDELINES ESTABLISHING:

(1) RECOMMENDATIONS FOR THE TRAINING OF PERSONS REPRESENTING CERTIFIED ORGAN AND TISSUE PROCUREMENT ORGANIZATIONS, HOSPITAL ADMINISTRATORS, AND REPRESENTATIVES DESIGNATED TO MAKE REQUESTS FOR ANATOMICAL GIFTS UNDER THIS SECTION;

(2) COMMUNICATION AND COORDINATION PROCEDURES TO IMPROVE THE EFFICIENCY OF MAKING DONATED ORGANS AVAILABLE. THE GUIDELINES SHALL INCLUDE PROCEDURES FOR COMMUNICATING WITH THE APPROPRIATE CERTIFIED ORGAN AND TISSUE PROCUREMENT ORGANIZATION.

SECTION 2. The Director of Health shall make a study of organ donation and transplantation in Ohio and shall prepare projections of the future need for organ donations for transplantation and of the availability of organ donations. On or before January 1, 1988, the Director shall submit to the Governor and the General Assembly a report on the results of the implementation of this act and on the results of the study required under this section. The report shall include such recommendations as the Director finds appropriate.

SECTION 3. Sections 1 and 2 of this act shall take effect ninety days after the effective date of this act.

SECTION 4. Notwithstanding the repeal of the federal "National Health Planning and Resources Development Act of 1974," 88 Stat. 2225, 42 U.S.C. 300k, the provisions of Chapter 3702. of the Revised Code shall remain in effect and fully operational until July 1, 1987, and until that date the Department of Health shall continue to carry out all of its responsibilities under Chapter 3702. of the Revised Code, the "National Health Planning and Resources Development Act of 1974", and federal regulations adopted under that act, as they were in effect on October 1, 1986.
SECTION 5. There is hereby created the Certificate of Need Study Committee, consisting of eight members. Within thirty days of the effective date of this section the President of the Senate shall appoint three members of the Senate, not more than two of whom shall be of the same political party, to the Committee, and the Speaker of the House of Representatives shall appoint three members of the House of Representatives, not more than two of whom shall be of the same political party, to the Committee. The Director of Health and the Director of Mental Health shall be members of the Committee but shall have no vote. The President of the Senate shall designate from among the legislative members of the Committee a chairman of the Committee, and the Speaker of the House of Representatives shall designate from among the legislative members of the Committee a vice-chairman. Any vacancy in the membership of the Committee shall be filled in the same manner in which the original appointment was made.

The Certificate of Need Study Committee shall study the effectiveness of Chapter 3702. of the Revised Code. On or before April 15, 1987, the Committee shall submit to the President of the Senate and the Speaker of the House of Representatives its conclusions and recommendations for legislation. After the submission of its report, the committee shall cease to exist.

SECTION 6. A certificate of need issued under the authority of Section 3 of Amended Substitute S.B. 256 of the 116th General Assembly by the State Health Planning and Development Agency shall be valid for one year. For a construction project, if the holder of the certificate fails to obligate the project within one year of the granting of the certificate the certificate shall lapse. The State Health Planning and Development Agency shall have no authority to grant an extension of the obligation period. For a construction project, the holder of the certificate must commence continuous construction within ninety days of the date of the signing of the construction contract. For a conversion of existing rest home beds, the holder of the certificate must make application for licensure under Chapter 3721. of the Revised Code within one year of the date the certificate is granted. No extension of this time shall be permitted. In a given health service area, if the holder of a certificate granted under the authority of Section 3 of Amended Substitute S.B. 256 of the 116th General Assembly fails to obligate on a timely basis, fails to commence continuous construction on a timely basis, or, for a conversion of beds, fails to make timely application for a license under Chapter 3721. of the Revised Code, the
State Health Planning and Development Agency shall have the authority to reconsider all applications denied a certificate of need under Section 3 of Amended Substitute S.B. 256 of the 116th General Assembly for the purpose of awarding a new certificate in lieu of the certificate which has lapsed.

SECTION 7. This act is hereby declared to be an emergency measure necessary for the immediate preservation of the public peace, health, and safety. The reason for such necessity lies in the fact that the repeal of federal certificate of need statutes leaves unclear the authority to continue the Ohio certificate of need program under Chapter 3702. of the Revised Code. Therefore, this act shall go into immediate effect.

[Signature]
Speaker of the House of Representatives.

[Signature]
President of the Senate.

Passed November 21, 1986

Approved__________, 19__

[Signature]
Governor.
APPENDIX B

CONSOLIDATED METROPOLITAN STATISTICAL AREAS
APPENDIX C

DATA COLLECTION INSTRUMENT
September 1, 1987

Dear Hospital Administrator:

I would like to thank you and your hospital staff for your cooperation and hard work in making Ohio's required request for anatomical gifts law a success. While some difficulties have arisen in implementing the law, the end result has been an increase in awareness. Although it is still too early to say with any certainty, hopefully a corresponding increase in donations has taken place as well.

In order for the Ohio Department of Health (ODH) to meet the full requirements of the law, we must make a study of organ donation and transplantation in the state and also prepare projections of the future need for and the availability of those organs. This study is to be included in the report on the results of the implementation of the law, which is required on or before January 1, 1988 to be submitted to the Governor and the General Assembly. To better gauge the effectiveness of the required request law I need your hospital's assistance in completing the enclosed summary form. In addition, I would like a copy of your written protocols for organ donation.

The form requests that information gathered between April 1 and September 30 be summarized. I realize that the certificate of request formulated by ODH was not ready until May 1, but please provide what information you may have already been maintaining to fill in the gap from April 1 to when you began using the department's form. So that we may have our report prepared in time, please send the completed summary form and your protocols to my office no later than October 15, 1987. Also, any other comments you have about the new law or forms we have prescribed would be most welcome.

Once again, thank you for your sincere efforts to make Ohio a leader in this area. If the department can be of further assistance on this or any other matter, please don't hesitate to contact me.

Sincerely,

Ronald L. Fletcher, M.D.
Director of Health

RLF/JY/egf

Enclosure
OHIO DEPARTMENT OF HEALTH
SUMMARY FORM
CERTIFICATES OF REQUEST FOR ANATOMICAL GIFTS
(INSERT YOUR HOSPITAL NAME)

This form is to be completed by compiling and totaling information contained on the individual certificates of request for anatomical gifts for the period beginning April 1 to September 30, 1987.

1. Is your hospital currently filling out a certificate of request for anatomical gifts for all deaths? Yes _____
   No _____

2. How many total hospital deaths occurred between April 1 to September 30, 1987? ________________

3. Please indicate the total number of times a request was made: ________________

4. Please indicate the total number of deaths where a request was not made: ________________

What was the number of times each of the reasons below were given when a request was not made:

ORGAN:                         TISSUE:
--- Medically unsuitable       --- Medically unsuitable
--- Patient or family objection --- Patient or family objection
--- Other (please list separately those "others" occurring more than 5 times.)
   occurring more than 5 times.)

5. Please indicate the frequency with which the individual listed below were asked for consent for donation.
   --- Spouse
   --- Son/Daughter
   --- Either Parent
   --- Brother/Sister (18 or older)
   --- Guardian of the deceased
   --- Other person authorized or under obligation to dispose of the body.

6. In how many instances was a request granted?
   Organ: Yes No Tissue: Yes No
   Total number granted ________________

Identification of person completing summary form:
Name: _______________________________ Title: _______________________________
Signature: ____________________________

HEA 0104 9/87

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APPENDIX D

REGRESSION ANALYSIS FIGURES
CORRELATION BETWEEN THE NUMBER OF BEDS AND DEATHS

Figure 1
Figure 2
CORRELATION BETWEEN THE NUMBER OF BEDS AND DONORS
CORRELATION BETWEEN THE NUMBER OF BEDS AND REQUESTS

Figure 3
BIBLIOGRAPHY


Cerilli, G. James, M.D. Organ Transplantation and Replacement. Philadelphia: J. B. Lippincott


Jones, Linda. LOOP. Columbus, Ohio. Interview, 3 May 1988.


Prottas, Jeffrey M. Ph.D. "The Structure and Effectiveness of the US Organ Procurement System." _Inquiry_, 22 (Winter, 1985), 365-76.


