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Need and Cost Assessment: Transplant House of Lexington

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Need and Cost Assessment: Transplant House of Lexington

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Capstone

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I. Executive Summary

Introduction

The University of Kentucky Healthcare administration is currently considering the creation and organizational structure of a transplant house. A transplant house would operate in a manner similar to the Ronald McDonald House, meaning that it would house caregivers and patients who have been accepted into the UK transplant program. The questions that this paper sought to answer were whether a transplant focused hospitality house would be cost effective and whether there is sufficient demand to justify offering the service.

Hospitality House Organizational Structure

Two academic studies discussing the impact and setup of a hospitality house are discussed, as well as an overview of several transplant hospitality house models. The two studies use Maslow's needs hierarchy as the foundation of their work. The first study concludes that Maslow's needs hierarchy was a sufficient method to standardize the format of a hospitality house. The second disagrees, providing a case study that does not fall in line with the findings of the first report.

The models were taken from three different independent nonprofit institutions. The hospitality houses vary in size and revenue systems and provide excellent examples for a possible University of Kentucky hospitality house. The three transplant houses are the Transplant House of Seattle, the Gift of Life House, and the Transplant House of Cleveland.

Cost and Demand Estimates

The cost and demand estimates provide an analytic look at the potential financial aspects of a transplant-focused hospitality house. The cost estimate is based on the operational budget of the Hope Lodge, a cancer focused hospitality house in Lexington, Kentucky. The demand assessment was developed using transplant volume in order to gauge present and future demand.

Findings

Provided the assumptions in this paper prove true, St. Agnes House is a more cost effective option than House2Suites. Based on the cost and demand estimations St. Agnes House is \$96.53 cheaper per night. Even if St. Agnes requires a \$250,000 investment, this is paid off within 6 months. The demand study found that transplant rates are rising 3.3% annually. If this trend remains constant, demand should be sufficient for a transplant house.

Recommendation

My recommendation is UK Healthcare invest in St. Agnes house because it is cost effective and demand is steadily rising. There are many ways to approach developing a transplant house. I recommend a capital campaign that allows local institutions to donate their goods or services to stretch the \$250,000 investment as well as approaching previous transplant recipients who have the capacity to donate.

II. Problem

A. Background

University of Kentucky Health Care is considering the feasibility of a transplant focused hospitality house that would provide low-cost housing to transplant patients and their caregivers of UK hospitals. In order to facilitate the provision of low income transplant housing this paper does a cost analysis of the two options under consideration by UK Health. The first option is to utilize Home2Suites by Hilton, a hotel that specializes in providing long-term facilities. The second option is to assist in the renovation of the St. Agnes House and utilize that facility for transplant housing. St. Agnes House is similar in concept but not specialized to transplant patients. The two options here represent the main possible choices for UK Healthcare: a private supplier, or a publicly funded nonprofit. The cost assessment is followed by a basic demand estimate based on other transplant houses near Lexington or affiliated with other academic institutions. The demand estimate is supplemented by an overview of several transplant house models.

Only 4% of American medical centers offer transplant surgeries leaving many patients in a difficult situation. Some patients must travel great distances in order to receive life-saving care. This not only creates a financial burden on the patient, but also adds additional emotional strain to an already stressful situation. A Transplant House of Lexington could act to alleviate these stressors for the patients and their families.

The transplant process varies from organ to organ, but there is a basic transplant methodology.¹ The first step in the organ transplantation process is the patient's development of need for a new organ. The most common diagnosis for those awaiting organ transplant is end-stage organ failure. Some diseases that can cause this are cardiomyopathy, cirrhosis, and hepatitis.² Once a doctor determines that the patient is in need of an organ, they write a referral so that a transplant program can evaluate the patient. The transplant program can be chosen by the patient, but is usually determined by distance, cost, and insurance considerations. The program then determines if the patient is a good candidate for transplantation. A patient must then be registered with the Organ Procurement and Transportation Network (OPTN). OPTN is monitored and operated by the United Network for Organ Sharing (UNOS). These organizations will look for donors, but there is greater patient need than organ availability and so there is a waitlist. The time involved in this process can span weeks to months or even years of waiting and compatibility testing. If the patient is matched with a suitable organ they are called immediately and prepped for surgery.

Once the transplant is completed there are a series of required hospital visits to ensure that incisions heal correctly and the organ is functioning properly, and that is if everything goes well.³ Transplants have the added dimension of organ rejection, which

¹ The University of Kentucky Transplant Center provides heart, lung, kidney, liver, and pancreas procedures. Which of these patient groups will have priority has yet to be determined.

² <http://organdonor.gov/about/transplantationprocess.html>

³ Harris, Tom. "How Organ Transplants Work" 05 February 2002. HowStuffWorks.com. <<http://health.howstuffworks.com/medicine/modern-treatments/organ-transplant.htm>> 18 May 2015.

means the patient's body attacks the foreign organ. This can range from hyper-acute which occurs immediately to chronic rejection, which can last for years.

B. Research Questions

There are two key research questions addressed in this capstone. The first question is whether there appears to be sufficient demand in Lexington to fill the rooms of a transplant house on a regular basis. Due to a lack of accessible information specific to transplant hospitality houses, the primary method used is a comparison with the Markey Cancer Center and the Hope Lodge, a cancer focused hospitality house. The second question is given the two alternatives for implementing a transplant house under consideration by UK HealthCare, whether one is more effective than the other.

C. Literature Review

What are the metrics by which a hospitality house should be measured? Occupancy and service cost are only one side of the coin; the goal at the end of the day is to provide a beneficial service for the patient. *Maslow's Needs Hierarchy as a Framework for Evaluating Hospitality Houses' Resources and Services*⁴ developed a standardized metric by which to gauge the success of hospitality houses in alleviating stress and providing a welcoming environment. However, there is disagreement with the idea of a standardized approach to rating hospitality houses. *Understanding Hospitality House Guests' Needs: A Brief Case Report*⁵ written by Mary Duncan and Ann Blugis

⁴ <http://www.sciencedirect.com/science/article/pii/S0882596310001077>

⁵ <http://www.sciencedirect.com/science/article/pii/S0882596310001120>

analyze a case study using Maslow's theory as a framework to describe the complexity and fluidity of one patient's ordeal during her stay at a hospitality house.

Information concerning transplant focused hospitality houses is difficult to find, and as such this literature review uses studies based on pediatric centered hospitality houses. While the illnesses and psychological profiles are indeed different when dealing with adult transplant patients and pediatric patients, there are nonetheless some lessons that can be gleaned from these studies. In addition to this fundamental learning there are similarities between the clientele. Hospitality house occupants are generally less financially stable and live further away from medical institutions than other patients. In order to draw guidance from these two studies the common ground for hospitality houses needs to be analyzed.

Maslow's Needs Hierarchy as a Framework for Evaluating Hospitality Houses'

Resources and Services

This article investigates the possibility of developing of a standardized theory to guide hospitality houses understanding in guests' needs through Maslow's hierarchy. The authors, Mary Katherine Waibel Duncan and Ann Blugis, present findings from their sample 284 adult guardians staying at the Ronald McDonald House. They gauge the quality of these houses by their ability to meet their guests' needs and describe the best practice standards for these institutions.

The authors used surveys to gauge the patients' satisfaction. The participants included 284 adult guardians. Of the 284 participants 57% of the occupants were mothers, 14% were fathers, and in 29% of the cases both parents used the house. Of

these occupants 48% resided more than 100 miles away from the hospital. These occupants filled out a guest satisfaction survey that measured guest satisfaction from 47 Ronald McDonald Houses in North America. The surveys revealed that 84% of respondents reported their stay as excellent with respect to their mental and physiological needs. Of those who made recommendations, 51% suggested a television in the bedroom, and 15% recommended a bedside lamp. Guests wrote that these comforts would assist in providing a sense of normalcy and relaxation.

The study breaks down the hospitality house's objectives using Maslow's needs hierarchy. These categories are physiological, safety, belonging, and self-esteem. The study breaks down physiological need into nourishment, personal hygiene, and rest. Programs such as the Volunteer Meal Program, Heart of the Home campaign, Staple Food Program, and Personal Care Closet addressed nourishment. These volunteer meals programs treat families to home-cooked breakfasts, lunches, and dinners. The house's Personal Care Closet covered the occupants' hygiene needs. This is a closet full of toiletries for the occupants funded by private and corporate donations. The restfulness metric was addressed with furniture placement and house quiet rules.

Guests' safety needs were met through house policies. The safety metrics were the availability of low or no-cost lodging, clearly stated and strictly enforced house rules and policies, thorough security measures, and the House staff's vigilance and preparedness. Seventy-nine percent of respondents reported that the hospitality house relieved their stress more than other places and another nineteen percent reported that the House relieved their stress about the same as other places.

The respondent's reports on belonging and esteem were measured through guests written evaluations. Guests' belonging needs were satisfied by the presence of social spaces, such as the playroom, living room, dining area, and playground that were designed to encourage interaction. One guest wrote that, "Our son was very comfortable here. Usually, he does not do well with change but the House really helped with the playroom. He was very happy and so were we."⁶ Self-Esteem was not formally addressed in this study's survey; some respondents noted that the House afforded them opportunities to contribute and improve their feelings of self-worth. The study indicates that opportunities for guests to contribute to the effectiveness of the house not only assist the house, but also improve the physiological state of the guest.

*Understanding Hospitality House Guests' Needs: A Brief Case Report*⁷

Maslow's theory is one of the most widely used theories of human motivation, but empirical support for its hierarchy is lacking, and there are alternative theories. One such example is Alderfer's Existence/Relatedness/Growth theory that reduces human motivations to three levels: physiological and safety needs, social and internal esteem needs, and external esteem and self-actualization needs. Unlike Maslow's theory, Alderfer's theory suggests that lower order needs do not have to be totally satisfied before a person attempts to satisfy higher order needs.

Jalicia, the mother of fraternal twins who were born the day before Mother's Day at 24 weeks' gestation, had been residing at the House for 91 days and counting when the

⁶ <http://www.sciencedirect.com/science/article/pii/S0882596310001077>

⁷ <http://www.sciencedirect.com/science/article/pii/S0882596310001120>

authors of *A Brief Case Report* interviewed her. Jalicia spoke about the importance of her relationships with the staff, volunteers, and other guests at the House. Jalicia described her desire for companionship and empathy during this most difficult time as well as her daily attempts to give and receive affection from others. In terms of internal and external esteem needs, Jalicia talked about cooking meals for others at the House and her skill at cleaning and organizing public areas of the House. She expressed her hope that by taking care of others, they would be better able and willing to nurture her.

Consistent with Alderfer's assertions, Jalicia was simultaneously motivated by more than one need, and in addition, Jalicia appears to be pursuing a higher order need before her lower order needs have been completely satisfied. Specifically, when Jalicia could not nurture her children to build her esteem as a mother, she resorted to seeking love from the staff and other guests at the hospitality house. Finally, Jalicia's story supports Alderfer's hypothesis that individuals may intensify their focus on a lower order need if they become frustrated in their attempt to meet a higher order need.

In sum, Jalicia's story provides a valuable example of the complexity and fluidity of guests' needs. As the House's Board of Directors, staff, and volunteers continue to heed Kazak's call to employ theory-driven programs in service of strengthening the competencies of families affected by pediatric illness, we are reminded that theories are most useful when they guide our understanding in response to the needs of patients and their families which can be applied across the broad spectrum of hospitality house management.

There is one fundamental lesson from these two studies that can be applied to the future transplant house in Lexington. This lesson is the importance of nurturing community in a hospitality house setting. I chose this concept because both authors came to the conclusion that a sense of community was pivotal, despite their differing conclusions on Maslow's theory. This is discussed in the Waibel articles self-esteem section. They suggest that the presence of common rooms and the patient's ability to contribute enhance the guest's stay and provide a psychological benefit. The community environment does not only consist of community spaces, the staff must also facilitate a strong community. In *A Brief Case Report* Jaliccia discusses how important the presence and empathy of the staff was to her stay at the Ronald McDonald House. The purpose of the transplant house is not only to provide convenient housing, it is also meant to provide the community support these articles discuss.

III. Methodology

A. Qualitative Research Methods

The method used to estimate operational costs is based on the example of the Hope Lodge in Lexington Kentucky. The Hope Lodge is a nonprofit organization that provides a hospitality house for cancer patients. Its financial information was used as a baseline to estimate the costs of a transplant house in the same city. It is assumed that the Hope Lodge and the potential transplant hospitality house would have comparable costs because they operate under the same regulations, serve the same region, and neither the Hope Lodge nor the potential transplant house would offer patient care. The relationship between the Hope Lodge and a potential Transplant House is extrapolated from the number of patient visits to the University of Kentucky cancer center to the utilization of

the Hope Lodge by University of Kentucky cancer patients. Using the ratio of patient visitation to operational costs for the cancer population was used to estimate the costs of the potential transplant house compared to the University of Kentucky transplant center. Because neither institution provides patient care, there should not be much relationship between cost and the patient base they serve. It is assumed that the transplant house would have two people per room, one patient and one caregiver.

The Hope Lodge and the potential transplant house populations do not match perfectly in terms of size and require scaling to establish a base for comparison. The hospital is considering partnering with the St. Agnes House, an independent nonprofit organization in Lexington, in order to avoid the costs of constructing a new facility. The St. Agnes House would be renovated with an initial donation of \$250,000 from the hospital. There are thirty-two rooms at the Hope Lodge, while St. Agnes House currently only has nine rooms. Once the price for a single room was estimated considering the related costs it was multiplied by the number of transplant rooms the hospital's patients would be projected to fill.

The number of rooms is estimated from the visit and room ratios. The visit ratio is the number patient visits to the Markey Center divided by the patient visits to the Transplant Center. The room ratio is the number of rooms in the Hope Lodge divided by the number of rooms in St. Agnes House. Using these two ratios and the cost per room will be compared to the Home2Suites rental cost and the amount of money UK Health is willing to invest in this project. The final step in the cost assessment is to measure the savings the hospital accumulates. The hospital would in principle recoup the cost by reducing the length of stay of patients. Patients might also ultimately save costs, but that

would not be a saving to the hospital. The results should estimate the difference in cost between the two potential choices available to UK Healthcare above, the private supplier Home2Suites and the publically funded nonprofit St. Agnes House. Then the results provide a timeline for how long St. Agnes would need to be in operation for the hospital to recoup its initial investment. This requires estimates of capacity in rooms and cost per room.

This analysis focuses on the number of transplants performed by other institutions with transplant centers and their growth rate. This analysis assumes the growth rate for the University of Kentucky's transplant program will continue current trends. These factors were weighed to determine the current and potential future demand for transplant housing.

B. Local Hospitality Houses

There are two institutions that are the focus of my sample, the St. Agnes House and the Hope Lodge. The St. Agnes house is discussed because it is a frontrunner for renovation as a future transplant house. The Hope Lodge is the primary focus because it is the model on which a transplant house would be based according to UK HealthCare managers. The two institutions are the foundation on which the cost and utilization estimations are built.

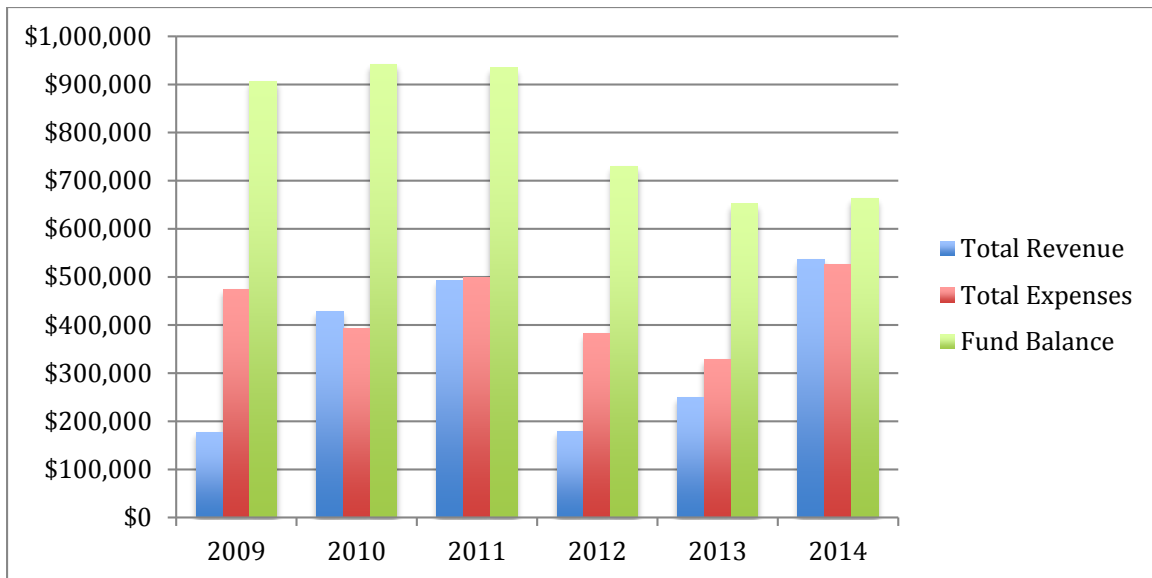
The Hope Lodge provides low-income housing to those seeking cancer treatment in the Lexington area. The Hope Lodge is a service offered by the American Cancer Society that provides free overnight lodging for cancer patients and their caregivers. They seek to create an environment that reduces the stress of travel during the treatment

process. The Hope Lodge has 32 private rooms, a dining room, kitchen, library, and laundry facility. The Hope Lodge only serves the cancer population.

The St. Agnes House is an independent nonprofit in Lexington, Kentucky that offers low-cost lodging to low-income people seeking medical care. The house provides sleeping rooms, TV and kitchen space, and most importantly emotional and spiritual support. The St. Agnes House has nine rooms.

C. Data Collection

The primary source of data for the cost assessment was the institutional and operational budgets for the Hope Lodge. The Hope Lodge provided the details of its operational budget. There is no source of data on the economic cost to a hospital of operation of Hope Lodge apart from the operational budget, which is assumed to be a reasonable estimate. The operational budget is discussed later on in the cost assessment, but the institutional budget is summarized in the chart below. This chart was derived from the financial data given in the IRS 990 forms from 2009 to 2014. The initial takeaways are revenue and expenses are both increasing, with expenses increasing more rapidly, so the fund balance is declining.



There are three other comparison organizations that are discussed in this capstone. The first is the Transplant House of Seattle. This organization was chosen because it is an independent nonprofit that works jointly with a specific hospital rather than as a part of that hospital. The facility is considerably larger than the potential UK transplant house, but provides services similar to those considered by UK. The Gift of Life House in Minnesota was chosen due to its revenue structure. The Transplant House of Cleveland is the last model analyzed. It was chosen based on its size and the fact that it is a new facility. The Transplant House of Cleveland is facing many problems in its infancy, and UK could learn from its example.

The volume of transplant patients, Hope Lodge occupancy, and ambulatory visit rates were all essential parts of this analysis. The transplant patient volume came from the Organ Procurement and Transplantation Network, which is a service of the U.S. Department of Health and Human Services. The Hope Lodge's 2014 program summary

provided the Hope Lodge occupancy rate. The visit rates were provided from the University of Kentucky transplant center.

IV. Organization Comparison

Transplant House of Seattle

The Transplant House of Seattle was founded in 2006 as an independent nonprofit organization. This 501(c)3 organization has three permanent staff members and twelve people on its board of directors. There are usually twenty or more active volunteers at any given time and they assist in maintaining twenty-five apartment units. The typical stay is sixty to ninety days. A one-bedroom unit rents for \$2,000 per month or \$66 per day. A two-bedroom unit rents for \$2,500 or \$81 per day. These figures are the total amount due as utilities, cable, furnishings, and Internet are included. This transplant house is part of a larger nonprofit organization called the Seattle Foundation and the apartments are available on a first-come first-serve basis. There is no housekeeping or food provided. The Transplant House of Seattle serves the Seattle Children's Hospital and the University of Washington.

Gift of Life Transplant House-Independent Nonprofit

The Gift of Life Transplant House is an independent nonprofit in Rochester, Minnesota founded in 1984 to provide transplant housing. This facility only allows transplant patients and their designated care providers to stay in the facility. The Gift of Life House has eighty-seven rooms, each with two beds with a private bathroom. It costs thirty dollars per night for long-term lodging and forty dollars for a overnight visit. This facility does not provide meals, toiletries, or other consumables. The Gift of Life House

requires a support companion for lodgers and does not allow children under the age of fourteen due to the immune suppression of its occupants. The Gift of Life Transplant House serves St. Mary's Hospital, Rochester Methodist, and Mayo Clinic.

Transplant House of Cleveland-Independent Nonprofit

The Transplant House of Cleveland is an independent nonprofit organization with eight apartments: seven one-bedroom units and one two-bedroom suite. The private apartments and the suite all include bath, kitchen, living room, and porch. There is also a community space for the families and patients in the office area. There are facilities to do laundry, wireless Internet, and free parking. The rooms cost sixty dollars a day and seventy-five dollars a day for the two-bedroom suite. The Transplant House of Cleveland serves the Cleveland Clinic and the University Hospitals of Cleveland.

Facility	Number of Rooms	Patient Rent Per Day	Location
Transplant House of Seattle	25	\$66	Seattle, Washington
Gift of Life Transplant House	87	\$30	Rochester, Minnesota
Transplant House of Cleveland	8	\$60	Cleveland, Ohio

V. Operational Cost Assessment

This cost assessment is based on the 2014 operational budget of the Hope Lodge, which is a proxy for the economic cost to the hospital. Despite the similarity of the Hope Lodge and the proposed transplant house, the facilities had cost elements that needed

adjustment to estimate the future cost of a transplant house. The cost elements used to adjust the cost figures were the number of rooms, number of visits to their respective University of Kentucky medical centers, and nights utilized. The Hope Lodge has 32 rooms in its facility, while St. Agnes House only has 9. This means that Hope Lodge has 3.5 rooms for every room at St. Agnes. The Markey Cancer Center had 49,925 visits in 2014. The Lexington transplant center had 13,609 visits in 2014. There was roughly a 3.6 to 1 ratio of cancer patient visits to transplant patient visits. The Hope Lodge served 1,228 people in 2014, and after adjusting this number with the ratio of the visits to the respective centers I estimated that there would be 341 patients utilizing the St. Agnes House annually. This estimate works out to nine days per patient, and currently the average number of nights per room use at St. Agnes House is roughly seven. The range of patient utilization of St. Agnes is one night to one hundred and fifteen nights.

The Hope Lodge provided 14,621 nights to cancer patients and caregivers in 2014. This number was scaled down by the visits ratio to find that a potential transplant house could have been utilized 4,061 nights in 2014. This number was found by reducing the Hope Lodge's utilization by the visit ratio. The current total number of nights St. Agnes House can be utilized is 3,285. Every night the transplant house is utilized costs \$12.47, which is \$4,222.45 dollars a month. UK Healthcare spends \$369.47 every day, \$207.66 of that is the cost of nursing labor and \$161.82 is average supply cost. This means that for every night that a patient spends in the transplant house instead of the hospital saves the hospital \$357 dollars. Note that two people might be in a room, which counts as two person-nights, and the counts below are from Hope Lodge.

	Hope Lodge	St. Agnes House
Number of Rooms	32	9
Number of Visits to Centers	49,925	13,609
Person Nights Provided (up to two at a time)	14,621	4,061
Patients Utilizing the Service	1228	341
Cost Per Night	\$12.12	\$12.47
Patient Utilization by Month	102	28
Average Rooms Needed Monthly	51	14
2014 Annual Cost	\$177,343.00	\$50,669.42
Cost Per Month Total	\$14,778.58	\$4,222.45
Cost Per Room Per Month	\$461.83	\$461.83

*Note that a patient with additional person counts as two person nights.

The next step is to determine the difference in price between House2Suites and St. Agnes and how long it would take UK hospitals to recoup a \$250,000 investment in renovating St. Agnes. House2Suites medical rate is \$109. This is high compared to St. Agnes' low cost of \$12.47; despite this UK Healthcare is considering this alternative.

The estimated rooms per month come from the visit ratio. Length of stay varies greatly depending on severity and type of treatment and condition. Ideally, an existing transplant house would be used for data, but such institutions are rare. As a comparison the Hope Lodge, which houses cancer patients, is used. This assumes that the mean length of stay is similar. The mean length of hospital stay for cancer is slightly higher than the mean length of stay for all other conditions, but transplants also have a higher length of stay than average.⁸ The absence of data on transplant houses in similar healthcare facilities forces some assumption here. If the Markey Cancer Center receives 3.6 visits for every one that the Kentucky Transplant Center receives then using this ratio we can scale the Hope Lodge's utilization by cancer patients to the potential utilization of

⁸ <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb125.jsp>

a transplant house by transplant patients. The Hope Lodge serves roughly 102 constituents a month. Using the ratio of 3.6 to 1, the transplant house would be expected to serve 28 people, requiring 14 rooms.

The St. Agnes House currently only has nine rooms and so the hospital's initial investment could be used to expand the facility or only have nine rooms to ensure high occupancy rates. This is an investment that in principle could be recouped by reduction in length of stay in the hospital and the increased patient pool. This is a judgment call for the hospital, and so this analysis will continue with the assumption that the future transplant house will expand to cover as many patients as possible. The price of 14 rooms at House2Suites is \$45,780, which compares to St. Agnes' cost of \$5,237 a month. UK Healthcare patient population saves \$40,452 by having UK Healthcare subsidize the expansion of St. Agnes House. The cost to UK Healthcare of paying the rental fee for Home2Suites would be substantial and is not currently being considered as an option.

	House2Suites	St. Agnes
Cost Per Night	\$109.00	\$12.47
Estimated # rooms per month	14	14
Estimated Cost Per Month Per Room	\$3,270.00	\$374.10
Cost Per Month Total	\$45,780.00	\$5,237.40

VI. Caveats

This cost assessment only works if several assumptions are made about the Hope Lodge, transplant house, and transplant trends. The most vital assumptions are that number of room's correlates with total cost and visits to centers is an accurate estimate

for the use of hospitality houses. These two assumptions are the foundation upon which the cost assessment is built. The assumption that cost per room is transferable from hospitality house to hospitality house is based on both necessity and practicality. It was necessary to establish a base number that could be used as a comparison and the percentage of operational cost per room satisfied this requirement. It was practical because each building will have similar costs due to the fact that they must satisfy the same legal requirements set on medical housing.

The visitation ratio was also necessary to compare the two institutions. Cancer patients and transplant patients are very different medically speaking, requiring different regimens and treatment. This does not even factor in the wide range of different cancers and their treatments or the different processes for different organ transplantation. In order to compare these two patient populations and minimize the difference between the illnesses I chose to focus on the utilization of the Hope Lodge compared to the number of patient visits the Markey Center received. This provided a figure that eliminated as many variables as possible. The next key assumption is that the Hope Lodge operational budget is a reflection of a future transplant house budget. This assumption was made with the understanding UK Healthcare wished to emulate the Hope Lodge model. These assumptions are used to provide a snapshot of the estimated costs of a transplant house in Lexington, Kentucky.

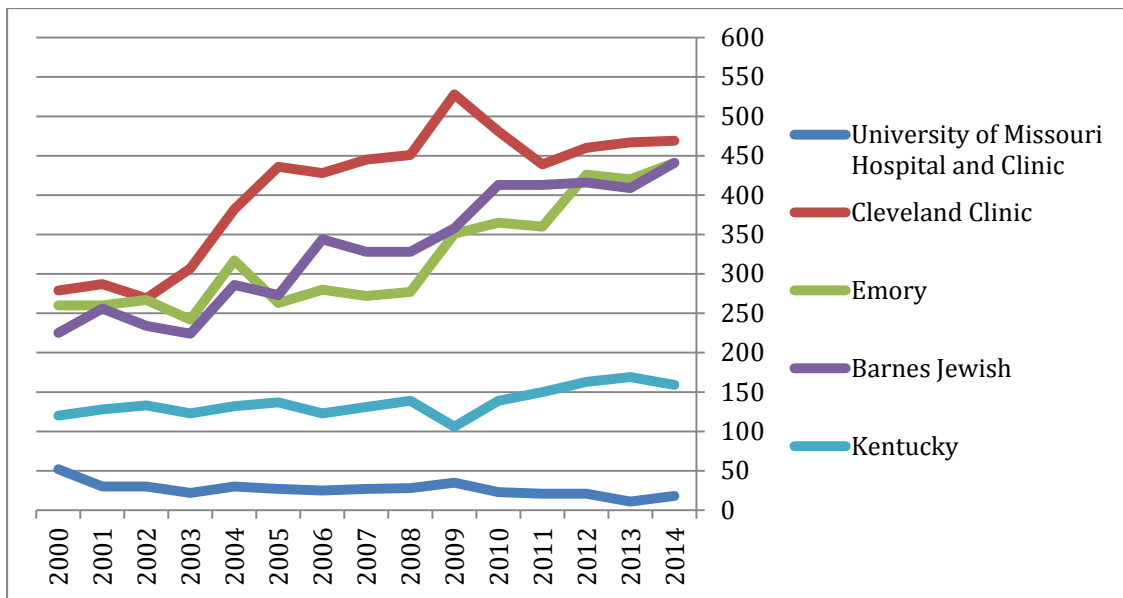
VII. Assessment of Demand for Transplant Services

And Associated Housing

The demand assessment is based on transplant volume by center over 15 years. The data set starts in 2000 and ends in 2014, the last year with complete numbers. The

study includes the University of Missouri, Cleveland Clinic, Emory, Barnes Jewish, and University of Kentucky Healthcare. Based on the mean by years, which grows from 187 to 305 over 15 years, and on the relatively stable growth on average, the annual growth rate is about 3.3% per year.

Projecting trends into the future is always uncertain; there are too many variables to account for, but transplants are likely to increase given the state of health in Kentucky. Assuming a 3.3% rate of increase for University of Kentucky Hospitals, the demand can be projected based on the 159 completed transplant procedures in 2014. This estimate is an average, and so for some years it may be low, and other high, but the overall trend is growth.



VIII. Recommendations

After analyzing the literature on hospitality house benefits, the costs involved in operating hospitality houses, and the demand projections this analysis points toward the creation of a transplant based hospitality house. While the initial investment is daunting

the potential benefit to both the patient population and the hospital is well worth the expense. The cost to patients is reduced by thousands of dollars and potentially provides a ready-made transplant support community. The hospital will gain by increasing the number of beds available by having a low cost alternative for patients who need to be close to the hospitals, but not actually in a hospital bed. So, with proper management a transplant focused hospitality house would benefit the entire Lexington community.