EXPLORING PATHWAYS TO INDEPENDENCE

A DATA MINING STUDY TO RESEARCH PREDICTORS OF LONG-TERM STAY
AMONG HOMELESS MEN IN THE
NEW YORK CITY FAMILY SHELTER SYSTEM

BY LOUIS RODRIGUEZ

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This manuscript has been read and accepted for the
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dissertation requirement for the degree of Doctor of Philosophy.

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Abstract

Exploring Pathways to Independence

A Data Mining Study to Research Predictors of Long-Term Stay Among
Homeless Men in the New York City Family Shelter System

by

Louis Rodriguez

Adviser: Irwin Epstein

This research used a clinical data mining study to examine long-term stays of 811 homeless men in the New York City family shelter system. The overall goal of the project was to examine what predictors influenced long-term stay defined as more than 291 days in shelter. Survival analysis was used to measure how long it took for men to discharge from shelter. Cox regression analysis was used to assess whether predictor variables influenced length of stay of the men in the sample. Data was collected from administrative records. There were several key findings. Discharge patterns among the men slowed after 400 days in shelter. Exit disposition, age and family size were among the best predictors of long-term stay. Old men took longer time to discharge from shelter as compared to young men in the sample. Homeless men in large families also took longer to discharge from shelter as compared to men in small families. Efforts should be made to accommodate the service needs of large families. These families, identified at intake, need more support than others in finding housing, completing applications for housing, and minimizing barriers to relocation from shelter.

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June 9, 2009

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Re: *Exploring Pathways to Independence: A Data Mining Study to Research Predictors of Long-Term Stay Among Homeless Men in New York City Family Shelter System.*

Dear Mr. Rodriguez:

The DHS Institutional Review Board ("IRB") reviewed your above-referenced dissertation draft on June 4, 2009. After its review, the committee agreed that you followed the protocol set forth in the Memorandum of Understanding (MOU) entered for the project. The DHS IRB committee does not have any major comments on your draft dissertation. As part of the MOU, the committee requests that you include the following disclaimer in your final dissertation draft:

> "Louis Rodriguez obtained permission from the New York City Department of Homeless Services (DHS) to conduct this study. The analyses and interpretations expressed herein represent the opinions of Louis Rodriguez and do not necessarily reflect the opinions of DHS or its staff."

With this letter, I also would like to remind you that Article 7 of the MOU states that you agreed "to provide a draft of any document or prepared comments for conferences or other oral presentations, letters, analytical and journal articles to DHS for review prior to publication or further release of information." We ask that you follow this protocol for all possible publication projects related to any data you received from DHS for your dissertation project. Please call me at 212-232-0830 with any questions you might have. Thank you for your attention to this important matter.

We congratulate you on the near completion of your dissertation project and wish you the best of luck in your future endeavors.

Sincerely,

Merih Anil

Merih Anil

cc: Jay Bainbridge
Wendy Chan
Dova Marder
Kristen Mitchell
Elizabeth Needham Waddell

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Much gratitude to Irwin Epstein for encouragement and your guidance, I could not have done this without your help. I also want to thank you for introducing me to the world of clinical data mining. I am convinced there is much to be learned about the service needs of homeless men, and that data mining has been-and will continue to be-extraordinarily useful in that pursuit. Michael J. Smith and Paul Kurzman, you provided much encouragement and help and I am extremely appreciative.

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1. Homeless Men and the Need for Shelter

This research will use a data mining approach to examine long-term stays of homeless men in the New York City family shelter system, and to discuss strategies for minimizing their time there. Homeless men with children who take longer than nine months (and adult families who take longer than twelve months) to relocate from emergency shelter are classified as "long-term stay" clients. A shelter is not the proper place for these men and their families to live. Unfortunately, family homelessness has increased in recent years and has been a persistent problem over the past two decades. (Culhane et. al. 2008, Shinn, et. al, 1998, Piliavin, 1996, Culhane, 1992, Bassuk & Rosenberg, 1988). To address this problem, efforts should be made to minimize the time it takes to relocate men and their families from shelter. A retrospective study of homeless men in the New York City family shelter system was conducted over a four-year period to determine if long-term stay in shelter is a random phenomenon, or if there are factors that explain why some men take longer to relocate from shelter than others. In conducting this study, I hoped to discover how patterns of discharge vary among homeless men. Data was to be collected from administrative records. This approach to research, also known as clinical data mining (CDM), is an effective strategy for using available, but often unused, information.

Through CDM, researchers can use information available in organizational records for the purposes of conducting research which leads to knowledge discovery. According to Epstein (2001), "....available clinical information can be "mined" and converted into retrospective, quantitative databases for practice-based research studies".

Researchers conduct data mining studies to identify hidden patterns and relationships within the data (Groth, 2000). In the data mining approach for this project, I researched the case records of 811 homeless men in the New York City family shelter system to search for patterns of shelter use and client characteristics which may or may not be associated with long-term stays.

The research is organized as follows. In the first chapter, a foundation for this inquiry is established. After reviewing basic concerns about homeless men and their need for shelter, a statement of the problem is presented and is followed by a rationale for the study. Included in this section is a description of how I will approach this inquiry. The problems and challenges homeless men have faced in the past are also reviewed in this section. The second chapter describes how a literature review was conducted to determine how other researchers have studied the path taken by the homeless to shelter and their shelter exits. The third chapter sets the policy context. Policy changes that influenced shelter discharges of homeless men in families are discussed. The fourth chapter details the research design. The choice of methodology and other related topics such as sampling, data collection, data analysis, validity and reliability are included. The fifth chapter explains the statistical measures used in this inquiry. Results are reported in the sixth chapter. Chapter seven concludes with discussion and recommendations for future research.

1.1 Basis of Concern:

My first task was to examine the magnitude of the homelessness problem. The emergency shelter system in New York City is operated by the Department of Homeless Services (DHS). When I began this inquiry, I looked at how DHS measured levels of homelessness and then researched other sources. I researched the New York City Department of Homeless Services Critical Activity Reports (2003) to determine the levels of homelessness in the New York City family shelter system. The numbers of homeless families reported in fiscal year 2003 were clearly a cause for concern given the enormity of the problem and the amount of funds spent to house homeless families. The average daily census of families in the shelter system in fiscal year 2003 was 9,165 families. Through additional inquiry, I found that there were thousands of individuals who required shelter on an annual basis. A report issued by the United Way of New York City (2005) indicated that in 2003, more than 38,000 people were living in shelters funded by DHS, resulting in annual costs of approximately one billion dollars by New York City agencies to address the needs of this population.

I then researched the percentage of long-term stay families in fiscal years 2003 and 2004. I reasoned this would provide some insight into the long-term stay problem. I also wanted to research how long-term stay changed from year to year. According to Department of Homeless Services Critical Activity reports (2004), the percentage of long-term stay families increased from 14% in fiscal year 2003 to 19% in fiscal year 2004, a 36% increase from the prior year.

Despite the numbers of homeless families in shelter that have been documented in recent years, the magnitude of the problem is not yet fully understood. The real need for shelter has been difficult to determine because of the problems associated with measuring the actual numbers of the hidden homeless: individuals living on the streets or doubled up. Several authors call attention to this issue. Street surveys often miss the hidden homeless (Hopper, 1997, Cordray and Pion 1997, Link, et. al.1994). Another challenge is definitional. How do we determine who is homeless? For the purposes of this research, I chose the definition of homeless individual as described in the McKinney Act (1987) which states that:

> "The term homeless or homeless individual include an individual who (1) lacks a fixed regular and adequate nighttime residence that is (a) a supervised, publicly or privately operated shelter designed to provide temporary living accommodations (including welfare hotels, congregate shelters, and transitional housing fore the mentally ill, (b) an institution that provides a temporary residence for institutions intended to be institutionalized, or (c) a public or private place not designed for, or ordinarily used as a regular sleeping accommodation for human beings."

While the numbers in shelter and those in need of shelter indicate the enormity of this problem, changes in the homeless population over time best illustrate who is impacted by it. The homeless population has changed in the past 30 years. The population has changed from a homogeneous group of single white older men to a more heterogeneous group of minorities and families (Rossi, 1990). This latter group has been referred to in the literature as the "new homeless." The average age of the new homeless was mid 30's as compared to mid 50s of the older homeless population (Hodnicki, 1990). Stefi (1987) suggests that the new homeless are more diverse and more likely to be members of minority groups.

Arrighi (1997) and Nunez (2004) have reported on family homelessness that occurred between the early 1970's and 1980's. The largest increase occurred among young families. This group is likely to contain minority families headed by single mothers with children. The reasons for homelessness among this group can be attributed to failed educational systems, government cutbacks and extreme poverty.

After researching the issue of homelessness, I decided to focus on the problem of homeless men who experience long-term stays in shelter. In this inquiry I found that homeless men reside in the family shelter system in different family configurations. There are some homeless men who are single fathers with children. Some men live with a spouse without children while others reside in the family shelter system with spouses and their children. I chose to conduct this inquiry because my assumption is that these men and their families should not live in shelter. Research which explores this problem is essential from a public policy standpoint. This problem should be studied to explore solutions to minimize the amount of time men spend in shelter. When I inquired as to why homeless men resort to shelter, I found a problem that was not easily explained nor easily solved.

1.2 Statement of Problem:

Why do men use shelter? Are there individual barriers to self-sufficiency or are there other factors which cause homelessness? When I researched this problem I found that there are a number of barriers that prevent homeless men from living stable lives in community settings. Some barriers are client-related. These include past history of incarceration, substance abuse or mental illness while other barriers are associated with the lack of affordable housing. Unemployment is also a cause for homelessness. The lack of support services in community settings is another reason why homeless men have difficulty staying out of the shelter system. This section provides an overview of these barriers.

Individual Barriers:

It has been documented that the homeless shelter population is filled with clients with special needs. Clients with special needs represent a large proportion of the homeless shelter population. Among the homeless are people that have individual barriers and weak ties to community (Hopper, 1990, Wright and Rubin, 1997,Odell and Commander, 2000). The ranks of street homeless and homeless in shelters are filled with individuals who have problems with substance abuse, alcoholism and mental illness. These individuals typically have poor social functioning and limited access to resources. Poor social functioning can mean inability to manage finances, poor daily living skills and inability to manage medication. Some authors have challenged conventional means for describing the problem of homelessness (Baum and Burnes,1993, Giamo & Grunberg ,1992). These authors raise the concern that more efforts should be made to educate the public about the level of disability of the men who are homeless. Their level of disability would impact their ability to a range of functioning associated with independent living (Lamb and Lamb, 1990, Drake et. al., 1989).

Lack of Affordable Housing:

An adequate supply of affordable housing is needed to reduce the risk of homelessness among low-income people. Several authors have studied the factors which affect the availability of low-income housing and its effect on low-income renters (Burt, 1997, Mulroy and Ewalt 1996, Drier and Applebaum, 1992). Key factors that have been cited as reasons for the lack of affordable housing includes the replacement of low income-housing with luxury housing, the federal government's decision to reduce the amount of housing subsidies available to the poor, and the rise in the cost of housing in relation to rise in personal income.

The federal government's role in addressing the issue of housing shortages can be traced to 1944 when Congress passed the Serviceman's Re-Adjustment Act which enabled veterans returning home from World War II to purchase homes. In 1968, it passed the Housing and Urban Development Act (Aaron, 1972) to address housing shortages precipitated by the children of baby boomers who sought housing. These two examples illustrate how housing shortages can occur due to unexpected demographic changes. The federal government's response in both cases was to expand its role in meeting the housing needs of low-income renters.

Serious significant structural changes in the housing markets in the United States have occurred in the last twenty five years. Since the beginning of the 1980's there has been a decline in affordable rental housing and single room occupancy hotels. In their place was an increase in the development of market-rate housing which was far more expensive in comparison to housing stock which it replaced. Salins (1996) reported that only 12,000 to 15,000 new dwelling units were added to New York City's housing stock in the mid-1980's. This development fell far short of the needs of families thereby resulting in a housing gap. Salins estimated that New York City needed to develop 40,000 units of housing per year to keep housing prices in line with other cities.

During the period 1978 to 1991, the federal government's role in housing declined significantly. By 1991, appropriations for housing fell to 11.1 billion, down from 32.2 billion in 1978 (Jenks, 1994). Less affordable housing available due to market-rate conversions of low-income housing resulted in housing shortages for the poor. Low-income renters typically need access to affordable housing. Without this access, these families are at greater risk for becoming homeless. It is not uncommon for low-income renters to pay a greater portion of their income towards housing than they can afford. Thirty percent of a family's income is considered to be affordable. Left to their own devices, low-income renters face two realities associated with their ability to afford housing. First, to remain permanently housed, residents must have jobs that sustain their ability to pay rents. Second, rents are expensive in tight housing markets and always seem to rise.

In the 1970's and the 1980's the costs associated with housing rose dramatically. The average price of a home increased 45% from 1977 ($42,900) to 1980 ($62,000) and mortgage rates increased from 9 to 15% (Feins and Lane Saunders, 1981). Low-income renters paid a rising fraction of their incomes some in excess of 40% during the period 1973 to 1989. It is evident that low-income people faced difficulty in finding and retaining affordable housing. The dwindling supply of affordable housing and the fact that rents rose faster than their incomes presented a challenge for low-income people.

The loss of housing can also play a factor in the homeless man's loss of community. Gifford (1987) writes about the loss of place that occurs through the destruction of buildings. Lofland (1976) suggests that housing for homeless men can disappear when urban planners determine where and how homes can be built. The desire of the emerging middle class to separate itself from the "dangerous classes" is one reason why developers use zoning to protect the value of homes**.** When communities have too many homeless men that need housing or shelter, the result is overload. According to Milgram (1976), "It refers to a system's inability to process inputs from the environment because there are too many system inputs to cope with." Too many men seeking housing and not enough housing results in a homeless crisis in which men lose their homes and eventually their communities (Blau, 1989, Hopper and Hamburg, 1984).

Unemployment:

Unemployment is one of the leading factors that cause homelessness. Consider the economic and social impact when men become homeless. Burt (1992) has documented the fact that men become homeless when their work skills are no longer relevant to the market. Diblasio et. al (1993) reported that individuals become homeless because of economic circumstances and these include but are not limited to underemployment, temporary jobs, and plant closings, mergers and layoffs. Akabas and Kurzman (2005) suggest that the social contract between employer and employee has been broken wherein (…workers are seen as expense and not capital). This translated into falling wages and fewer benefits for workers. This change in the relationship between workers and employers was evident in the 1990's when jobs were available but with low pay and little or no benefits.

The fact that homeless men cannot compete for jobs because of lack of skill level has been well-documented. In her book, "Over the Edge," Martha Burt writes about a study of homeless men on skid row in Nashville Tennessee. The first step towards homelessness for these men is unemployment. They lost their jobs because their skills were no longer relevant to the market. Life stories are used to describe their descent into homelessness:

> " In case after case, we see men who have lost skills, men for whom past job experience is now unavailable or irrelevant for their current job seeking and their ways of life. The exigencies of their lives have caused them to become deskilled

and cut off from the supports of home and family. Rather than gaining human capital through job experience, they are cumulatively disadvantaged so that jobs for which they can successfully compete are successively less desirable, lower paying, more physically dangerous and less secure." (Burt, 1992)

Loss of Jobs in Community:

The opportunities that homeless men have to find work may depend on the availability of jobs in their communities. Wilson has written about the loss of jobs in inner-city communities. The author describes what happens when work disappears. He refers to these communities as the new urban poverty "…that consist of poor segregated neighborhoods in which a substantial number of adults are either unemployed or have dropped out of the labor force altogether" (Wilson, 1996). In his book, "The Truly Disadvantaged," Wilson (1987) describes the impact to cities. The decline in demand for unskilled labor was most severe in urban cities such as New York, Chicago and Detroit. These communities also had employment problems because they lacked informal employment networks. If businesses and related institutions that employ poor, low- income individuals leave, where do the poor go to find work? If Wilson is correct in asserting that inner city communities have undergone changes that result in less opportunity for low-income, unskilled workers, how will homeless men find work when the opportunity is not there?

While Wilson suggests communities can suffer from a lack of jobs, Loury examined how "social capital" can be used to describe the purpose of social networks and their role in helping individuals.

> "The term emphasizes the economic development of non-economic resources. It refers to the aspects of social organization (families, social networks, and adolescent peer groups) that help individuals to act for their own economic benefit. The term also captures the idea that institutionalized infrastructure within a given community (civic and religious organizations) helps to empower individuals for participation in economic and political life." (Loury, 1996)

If Loury suggests that the quality of relationships between citizens and their communities can be conceived of as an economic asset, then communities with unemployed homeless men are undercapitalized. This suggests a reality that communities in which homeless men reside may not have the capacity, or the infrastructure, to encourage employment if there is a lack of jobs. These conditions can lead to homelessness among men who were either unable to find work or work that pays enough to live independently. Economic development in these communities can serve as a form of social development if it helps to employ homeless men. Similarly, helping homeless men to become job ready is a way of increasing the social capital of the community in which homeless men reside. It is also a way to improve the chances that homeless men have of remaining attached to a community, of staying employed, and of remaining permanently housed.

1.3 The Setting:

The New York City emergency family shelter system is operated by the Department of Homeless Services (DHS) which was established in 1993 as an independent mayoral agency. DHS works with over 150 non profit providers which serve homeless New Yorkers. There are over 140 non-DHS and 7 DHS operated residential facilities for homeless families. These include Intake Centers, Overnight facilities, Reception Centers, Hotels and Scatter Site Apartments. There are also Tier II shelters which serve families with children and Adult Family Residences which serve homeless couples without children.

All stakeholders have a role in producing successful outcomes if the shelter system is to work as planned. Shelter providers have an obligation to provide quality care that is cost- effective and which leads to successful client outcomes, including relocation to permanent housing in a timely manner. Public officials have a role in setting policies that enable the shelter system to operate as a short-term emergency housing option, one which makes the best use of scarce public dollars. Clients have a role in assuming personal responsibility for their relocation to housing. Below illustrates how homeless men and their families access and leave shelter.

Moving Into Shelter:

If a family with children becomes homeless, it can apply to DHS for emergency shelter. The Intake is conducted at the Prevention Assistance and Temporary Housing (PATH) Office. Adult Families, a homeless couple with no children, can apply at the Adult Family Intake Center. When families apply for shelter, information is collected including, but not limited to, demographic information, housing history, economic information (i.e. work history, income) and prior history of homelessness. This information is stored in a central database and a record is created for each family. The family's record is updated as it moves through the shelter system. DHS makes an eligibility determination for transitional housing. If eligibility is established, the family is referred to a residential facility. If eligibility is not established, the family will be referred to a residential facility on a conditional basis. If the family is found ineligible, it must leave the shelter system.

Moving Through Shelter:

Homeless men must complete applications for permanent housing if they are single fathers. Or they can file joint applications for permanent housing if they enter the shelter system with a spouse. All families are required to cooperate with shelter staff to find and accept permanent housing. The application for housing will depend on the types of subsidies that are available at the time and for which the families qualify.

The family's life circumstances could affect the family's application for permanent housing. There are homeless men who enter the shelter system that are either unemployed, or have a medical problem or mental health and substance abuse problems that may limit their chances of seeking gainful employment, making them unable to afford market-rate housing. These men must rely on housing subsidies available to their families in order to leave the shelter system. Other factors may come into play. Landlords typically conduct credit checks. Homeless men with poor credit may be harder to place in permanent housing as compared to those with good credit.

During the initial months in shelter, families are expected to complete applications for housing, and keep in-person appointments to re-certify their benefits. Families that work will be required to save money. When the families obtain their next apartment, their transition will be easier if they have money saved. The time required to complete the application can vary depending on the application type. Families are expected to search for housing and cooperate with staff while they remain in transitional housing. Shelter staff provides a range of services to facilitate the family's relocation from shelter. These services include case management, housing relocation assistance and transportation assistance. DHS provides technical assistance and support to providers as needed.

Moving Out of Shelter:

Relocating from shelter is a result of many factors. These include the availability of housing, the availability of a housing subsidy, and a landlord willing to accept homeless families. Once the family is certified for housing and has found a suitable apartment, leases must be signed, rent and security checks obtained, and transportation must be arranged for the family. There are some homeless families that leave shelter without a housing subsidy. These include working families and families that re-unite with relatives. Shelter providers assist the family throughout the relocation process. This includes establishing a plan for discharge, assisting the family in completing all required tasks and referring the family to community-based agencies. In some agencies, follow-up for clients at risk of returning to shelter may also be provided.

1.4 Project Rationale:

The above-mentioned process describes how families move in and out of shelter, a process which can unfortunately and often does result in long-term stay in shelter. I have concluded that there are three reasons to justify this inquiry. First, minimizing the use of shelter stay is good public policy, and research that creates knowledge enables effective use of public resources. Second, it is my belief that men and their families should reside in the least restrictive settings possible. They should live independently without public housing subsidies in their own homes. Based on this belief I think efforts should be made to discover solutions for timely shelter exits. Third, there is a need for a predictive model that describes how long-term stay varies among different clusters of homeless men in families, so that we can achieve better shelter performance and timely placement of long-term stay clients.

1.5 Project Goals:

Three goals for this inquiry were established. The first was to estimate and interpret how long men in the sample stayed in the emergency family shelter system, their survival time. Survival time is measured in days. It is the time that a family resides in shelter before discharge. The distributions of survival times are reported by using Survival curves. By tracking the survival times of men over time, it is possible to determine the rate at which homeless men fail to leave shelter. It is also possible to examine the proportion of men who remain in shelter at various intervals. This revealed the proportion of long-term stay homeless men that was included in the sample.

The second goal was to compare survival times among different groups of men. I wanted to know why some homeless men remained longer in shelter as compared to others. If there are differences in the proportion of men that remain over time, how do they compare among different groups of homeless men? Survival time from shelter was examined across several variables including, but not limited to, ethnicity, reason for homelessness, marital status and medical problems. By conducting this analysis, I sought to discover if long-term stay in shelter is concentrated in a particular group of homeless men or if all men in the sample are at risk of long-term stay.

The third goal was to determine the influence of predictor variables on the survival times of homeless men in the emergency family shelter system. Cox regression analysis was used to determine the influence of predictor variables on long-term stay. I hoped to discover if some variables had a greater influence on long-term stay as compared to others. I also hoped to create a model that would explain what makes men more or less likely to remain in shelter.

1.6 History:

I researched three prevailing themes in the history that explain how men are impacted by homelessness. First, the homeless man's relationship to work is poor and is one of the primary reasons that he becomes homeless and unable to remain permanently housed. This poor relationship to work is further defined by the notions that homeless men are either unqualified to work, unable to get work because of their marginal skills, or unable to sustain work. Second, the process by which men become homeless is a downward spiral that they attempt to reverse by seeking to become upwardly mobile. In their attempts to do this, the locations to which the men re-settle often become re-defined. Third, loss of home and community among homeless men result in negative labels. The homeless man's identity is derived by the communities in which he lives or by his migratory existence. The factors and conditions which contribute to homelessness among men were tracked over time to examine how the reasons for homelessness changed. The places in which men lived and the reasons why men lost housing are described, and social and economic conditions that led to homelessness are explained. The influence of community and the role it played in the perceptions of homeless men is also presented.

1700's:

The history of homeless men can be traced back to colonial times when the commitment to care for the poor was handled at the local level. The social contract between the poor and their communities defined who was to receive aid and how aid was to be delivered. Poor individuals and their families were labeled as paupers. Assistance varied depending on the needs of the poor. For example, the death of a husband often left families stranded and in need of assistance (Hopfesberger,1996).

Living arrangements of the poor varied based on need. While married men rented their own dwellings, single men lived with their employers (Cray, 1988). Living arrangements were often a function of the individual's need for privacy. The ability for homeless men to take control of their living arrangements was not easy. According to Saegert, (1985) the idea of dwelling "…describes the physical, social and psychological transactions by which a person maintains his or her own life, joins that with others, creates new lives and gives new meaning to the process." Fried (1963) suggests that loss of home "…results in fragmentation of routines, and of expectations." The ability to form attachments to place was interrupted when work was no longer available. It was the unavailability of work that prompted the men to seek aid.

Homeless men were among the individuals who appeared before local officials to petition for aid when they were out of work. There were standards that were used to identify these dependent poor. "They had few if any savings, they had amassed no capital, they had no servants or slaves to work for them. Their situation was inherently precarious because, if they lost their capacity to work, they faced starvation and destitution" (Guest, 1984). The relief these individuals received was termed "border relief." Throughout this process, one can see how the men were labeled as borders— part of an undesirable group because of their dependence on society.

The attachments to place that homeless men made as borders were tenuous because residing in someone else's home meant that they had no security. Brown and Perkins (1992) shed some light on this issue by describing the conditions that should exist in order for place attachment to occur. The authors write that attachment to place evolves when the individual forms a bond to the environment. Factors that affect place attachment include the way that place meets the individual's needs, and the role of affiliations to others in the area. When there is a positive relationship between the ability for the place to meet one's needs and role affiliations, the person remains attached. When this relationship is negative, the person is displaced.

Place disruption was common given the precarious conditions under which paupers lived. Migration among this population was common. Cray (1988) writes that "betterment migration" was used to improve one's economic position while "subsistence migration" was used to search for work wherever it could be found. It was the availability of work that determined when the pauper would migrate. As Cray and Guest both suggest, the working and living arrangements for paupers were not secure. Paupers who were unable to work faced a lifetime of hardship.

There were several principles that characterized welfare policies towards the poor throughout the colonial period. Handler (1992) wrote that the three functions of welfare policy were to deal with disorder, relieve misery, and to control labor markets. These principles were designed to discourage dependency and to structure relief so that it was less attractive than seeking work. The latter point referred to the principle of less eligibility, meaning that relief had to be less desirable than the lowest paid labor. "Although those who were given relief were clearly not employable—-the aged, the sick, the children─ the conditions of relief and particularly the work requirements, were so onerous as to deter those who were seeking relief." (Handler,1992)

1800-1929:

Given the scarcity of work in some communities during the 1800's, thousands of homeless men migrated north to find jobs. They were not well received. There were economic panics during the mid to late 1800's. Many able-bodied men were already out of work. The presence of migrating homeless men presented a threat to local men who were already struggling. It was also during this time that the label "tramp" was applied to homeless men, invoking negative images of idle lifestyles. Homeless men were also perceived as hobos and loners (Caplow, 1970). Their ties to community were weak, they were not married, and had few relationships.

The formation of the public image of homeless men often depended on the places in which they lived. As Rivlin (1992) suggests, place participates in the creation of a sense of self. For example, homeless men who lived in slums were the target of reformers because, as Fried and Gleicher (1976) have reported, older urban dwellings provided a locus for social pathology. Since urban planners assumed there are moral problems associated with the slums, the slum environment is viewed as a home to undesirables and, therefore, must be replaced. In this sense, the negative stereotypes associated with communities are sometimes reinforced by the negative stereotypes of the inhabitants. That is, the relationship between place and individual are mutually reinforcing.

Proshansky et. al (1983) suggests this as well. By focusing on the meaning of place, the authors note that physical settings usually have a primary purpose. That is, a physical setting assumes an identity that defines what the setting is and how individuals and others are supposed to behave. According to Hummon, (1992) this means that places are imbued with personal and social meanings. When homeless men relocate, sometimes the temporary spaces they inhabit become redefined. This was the case for homeless men who wound up in police stations in the late 1800's.

In the late 1800's, homeless men who migrated to the northern cities became the focus of welfare reformers. Rigenbach (1973) writes about the homeless men who migrated to New York City and the reformers who tried to discourage the men by limiting the number of inexpensive places in which they could live. It was not uncommon for reformers to cooperate with the police to reduce street begging. Katz (1986) wrote about the conditions homeless men faced in trying to find housing. Locked out of traditional places of residence such as almshouses, homeless men were put up in police stations and were classified as "lodgers". The spaces the men occupied were called "tramp rooms." Eventually, new forms of residence such as lodging houses were developed in the late nineteenth and early twentieth century.

Given their transitory nature, it is not surprising that homeless men were not embraced by the cities. During the early part of the twentieth century, it was not uncommon to refer to homeless men as hobos who traveled the country aimlessly. Cohen and Sokolovsky (1989) described the experience of the men as the "…yearning to see new places, the thrill of new sensations, to encounter new situations and to know the freedom and the exhilaration of being a stranger." written by Jack Kerouac (1975) in his book, "On the Road."

In the 1920's there was a rising number of homeless men migrating to eastern cities looking for jobs. The economy was in a post-war depression. Care for the homeless was determined by residency as social agencies resorted to administering a work test for homeless men. Yet transients who are not tied to the community found it hard to qualify for aid, work or shelter. According to Feder, (1936), the amount of work that could be offered to these men was limited. Employment agencies were one of the primary sources of referral for homeless men looking for work. Anderson (1923) examined efforts by public and private employment agencies located in Chicago. The employment agencies had jobs advertised in the windows of their storefronts. The task of finding a job was likened to window-shopping because homeless men would walk past the storefronts of the employment agencies and look at the jobs that were posted in the windows.

1930's -1940's:

The 1930's were a period of economic depression in which men stayed on the move in search of employment. There were few opportunities for homeless men to find work. As compared to the 1920's there was an increase in the 1930's of the number of men who migrated in search of jobs. By the 1930's the numbers of men riding freight trains increased to 150,000 (Rooney, 1970). According to Webb (1935), the Transient Relief Program was established to classify homeless men as either local residents, in-state residents, or out-of state residents based on length of residency. Services to this population were measured in terms of the number of meals served, and the number of lodgings provided. The social and economic changes that occurred during this period influenced the homeless man's access to aid and shelter. The social changes were best characterized by a change in government's approach to the needs of the poor. With the adoption of the New Deal, the social contract was re-defined by shifting aid to the poor from the local counties to the federal government.

There were three general types of social policies that have been used for homeless men: repression, individualization and mass relief. Repression referred to the legislation and methods that were designed to deter men from seeking relief. Throughout history homeless men have migrated to seek either relief or work. Repressive policies were designed to discourage these migrations. When repressive policies did not work, individualization approaches were used to rehabilitate homeless men. Treatment was offered by religious and social service agencies. Night shelters were offered to the homeless under the auspices of religious organizations. Later, social work agencies offered casework services. Individualization policies were replaced by mass relief policies during the height of the depression in the 1930's.

With such high unemployment, it was not uncommon in the 1930's for many men to resort to the shelter system (Crouse, 1986). Sutherland and Locke (1971) conducted a study of homeless men in the Chicago shelter system in 1934 to examine their life experiences. The authors used informal interviews to construct life histories and sought to examine the reactions of the men to the relief policies that were in effect. The shelter population consisted of unskilled laborers that were unable to find work because of the way in which the availability of jobs changed in response to technological changes.

Faced with uncertain prospects for finding work and limited access to aid, homeless men wound up in communities of last resort (Bahr, 1973). During the 1930's and 1940's, these communities became known as skid row. The term is derived from the "skid road," a structure that loggers used to move logs that were skidded down to a sawmill in Seattle Washington. In his book, the Demolition of Skid Row, Miller describes how the term evolved.

> "As the term Skid Road came to describe comparable business areas in other cities, it became Skid Row implying the bottom of a downward path of social mobility, the skids, and the limited geographical area in which persons in such circumstances find themselves. "the row". The downward path most often has been from youth, health, hope and a series of temporary unskilled jobs to age, discouragement, layoffs and wine drinking." (Miller,1982)

1950's-1960's:

Homeless men continued to face hardships during the 1950's and 1960's. The economic changes that followed the Second World War resulted in the disappearance of agricultural and seasonal jobs. This loss of jobs was due to mechanization and the lack of support from unions, which left the men without protection. A new group of homeless men emerged in the 1950's. Prior to World War II, the skid row population was transient and employed. The post World War II hobo was less transient and prone to chronic drinking and public drunkenness. Bogue's (1963) study of the homeless population in the 1950's documents this behavior, and the revolving door nature of homeless men. This behavior has been described well by Cohen and Sokolovsky (1989) who wrote about the endless cycles of arrest, detention in the drunk tank, arraignment, conviction of homeless men.

The public's response to the presence of homeless men in urban cities was not a positive one. Programs were initiated to rid the streets of chronic drunkards. It was also not uncommon to deny these men rehabilitation services. According to Rivlin (1986), the "… stereotypic Bowery bum is a chronic marginal kind associated with alcoholism and drug abuse, with life on the street most of the day, and with just enough money for a flophouse bed." His identification with place puts him in a group of undesirables that is defined by location. As Twigger and Uzell (1996) suggest, it is through place identification that individuals assume membership in a group.

Deinstitutionalization of the mentally ill in the 1950's played a major role in contributing to conditions that led to homelessness among men. It was around this time that policy decisions regarding the treatment of the mentally ill changed. Hospitalization was the favored policy for the care and treatment of the mentally ill prior to the 1950's. The policies before and after deinstitutionalization are examined to underscore the impact of this major change.

Bechtel (1977) described two periods of treatment of the mentally ill─, custodial and deinstitutionalization─ that explain how the discharge policy of mental hospitals dictated when and how the mentally ill could be discharged. In the custodial period, (1880-1950) hospitals had a very low discharge rate (9%) and, as such, the treatment of mental patients was seen as "warehousing." By restricting patients to the hospital, they were dependent on the institution to meet all of their needs.

Alternatively, in the deinstitutionalization period, (1955 - 1989) mental patients were treated with drugs and discharged into the community. Large numbers of clients were discharged from hospitals. Critics referred to this practice as "dumping." Unfortunately, the traditional housing stock that was available to mental patients, Single Room Occupancy (SRO) hotels, were converted in large numbers into luxury housing, leading to a growing number of men seeking shelter.

Deinstitutionalization was not without controversy. The care and treatment of the mentally ill was debated, with some in favor of hospitalization and others opposed to it. Proponents for the hospitalization of the mentally ill argued for a paternalistic approach. These proponents claimed that hospitalized care was in the best interest of the patient. The argument for paternalism put the rights of the community over those of individuals. Opponents of the paternalistic view adopted a libertarian view. They argued that people should have the right to an unimpeded life.

Up until the 1950's, the prevailing view was for a policy that favored hospitalization of the mentally ill. Two significant factors altered this policy. First was the advent of psychotropic drugs which made it possible for the mentally ill to reside in the community. Then, in the 1960's, there were court decisions that favored deinstitutionalization over hospitalization, arguing for care to be based in least restrictive settings. According to Krieg (2001), Shelton versus Tucker made involuntary commitment of the mentally ill more difficult. Long-term hospital stays were seen as undesirable because they resulted in dependency. Thus, two major obstacles to community living for the mentally ill were removed.

The mentally ill who were discharged from hospitals should have had access to services that would have assured their successful re-integration into community settings (Accordino, et. al., 2001, Sullivan, 1992, Mechanic & Rochefort, 1990). The Community Mental Health Centers Act of 1963 provided funding to train community mental health workers and funds for research to improve the quality of care of existing programs. Despite these services, French (1987) suggests that deinstitutionalization was a failed policy which resulted in increased levels of homelessness among this population. Community treatment was seen as inadequate.

Bahr (1973) examined the nature of employment for homeless men on skid row in the 1960's in Chicago. The nature of the work that the men could perform was low-status and poorly paid. One of every five skid row men was restaurant workers, waiters or counter men. Without employment, the cost of caring for homeless men who relied on welfare would have to be assumed by the states and counties when the men applied for aid, making employment for skid row men an important priority. Bogue (1963) described some key factors that explain why it was so hard for homeless men to find work.

1. Some of the men work in seasonal occupations
2. Many are disabled, handicapped or sick
3. Many of the men are old and cannot work, and the older men who can work have difficulty competing with younger men for jobs
4. Many are chronic alcoholics or heavy drinkers who work only enough to get by.

1970's-1980's:

In the 1970's homelessness became an increasing problem. In addition to a slow economy, Blau (1989) offers three reasons for the rise in homelessness: (1) the absence of low-income housing, (2) inadequate mental health services and (3) the deinstitutionalization of mental patients from psychiatric hospitals. Hopper and Hamberg (1984) examined the economic conditions during the 1970's that led to increased levels of homelessness among men. The authors noted that the economy during the 1970's was characterized by economic stagflation. This meant that there were persistently high levels of unemployment. Inflation rose as evidenced by the rapid rise of housing prices, and real wages declined. These economic forces led to increased incidence of homelessness in the 1980's that Ropers described as the social and economic displacement that precipitates homelessness. His description of court testimony of an unemployed cabinet worker from Tucson helps to illustrate the relationship between unemployment and homelessness:

> "I am 36 years old. I am homeless. I came to Los Angeles with my wife from Tucson, Arizona. I came to find work. On the same day we came to Los Angeles, we were robbed at knifepoint by four guys. They took all our money. ($112.00) and my identification. We have never been on welfare. I have worked as a cabinetmaker in Tucson. I want to work. There just isn't any work. For now, I have to sit here with my wife, waiting to see what will happen."
>
> (Ropers, 1988)

It was not uncommon to find persistent levels of unemployment among homeless men. Because of their marginal work skills, there was no guarantee that they could find work. There are at least three types of unemployment that have been portrayed in the literature (Baummer and Van Horn, 1985; Sherraden, 1985, Gilberto, 1997).Cyclical unemployment is unemployment which is caused by cyclical trends in economic activity. Structural unemployment lasts longer and occurs when workers lack the skills needed to obtain a job. Chronic unemployment is caused by a lack of labor demand.

According to Yates, (1994) there was a steady increase in the unemployment rate that lasted from World War II up to the1980's. In the 1950's and 1960's average unemployment was 3 to 4 % respectively. In comparison unemployment grew to an average of 7% during the 1980's. Cottie (2001) reported that workers who are idle longer than six months are labeled long-term unemployed and may spend months if not years seeking re-employment.

Even if homeless men were willing to work, there were structural changes in the job market that made it increasingly difficult for them to stay employed. There was a steady decline in the number of blue-collar jobs in the United States. There were two trends that intensified in the early 1970's. One trend was the disappearance of jobs from communities due in part to cheaper labor that became available in foreign countries. Another was the mechanization of the workplace. With increased automation due to the emergence of new technologies, jobs disappeared because new efficiencies made it possible to manage the production process with fewer workers.

These trends changed the labor markets that were historically open to homeless men. The disappearance of jobs from the United States economy took place over a 25-year period (1970-1995). Pulley (1997) describes how the transformation of the economy from a manufacturing-society to a knowledge-based society resulted in job losses that were caused by organizational downsizing and restructuring. Other authors (Wallulis, 1998, Drucker, 1993) also wrote about labor market conditions in the 1970's and observed how the economy changed to one that provided less opportunity to blue-collar workers. According to Wallulis, (1998) "…in less than a decade, the economy changed from one in which blue-collar workers outnumbered professionals, technical and managerial workers by 30% to one in which the workforce was almost evenly divided."

The reduction in the number of jobs available in the workplace has also been documented. Bridges (1994) writes about the de-jobbing of America in his book "JobShift." Because of the impact of technology, many jobs that used to exist in businesses have disappeared. Homeless men faced increasing difficulty getting jobs because those jobs that became available required some technical background or because fewer jobs were required by businesses that increasingly relied on production methods that required skilled workers.

Homeless men resorted to public spaces for their housing in the 1980's. It was not uncommon to find these men living in makeshift shelters or sleeping on park benches in New York City (Hope and Young 1986). Francis (1989) refers to this phenomenon as "public space as home." The author writes that the people populate public areas such as plazas and streets in increasing numbers. While the extent to which people personalize their spaces may determine how attached they may become to their spaces, it is the control factor that urban planners focus on to discourage the men from occupying these spaces. The issues here relate to the role of the users of space and their accessibility to it. For example, if homeless men, occupy space in public plazas- when does the perception of their presence change from regular citizen to homeless person? What criteria are used to make these decisions that will result in eviction?

1990's-2000's:

By the early 1990's, homeless men living on the streets of New York City became a common sight. Similar to how jail cells were renamed "tramp rooms" in the 1800's, the relocation of homeless men once again resulted in the redefinition of space. It was common for the homeless to take over vacant lots and convert them into dwelling spaces. These encampments could be found throughout the city. Mayor David Dinkins proposed a plan to develop single shelters that would be spread throughout the city but it was met with furious neighborhood opposition (Purdum, 1991).

Zube (1976) offers some insight into the terms landscape and land use that highlight the issues associated with homeless man's use of public space. The author defines landscape as the combined physical attributes of the environment while land use is defined as the activity that is carried out in a given piece of land. By settling into spaces and converting them to shantytowns or encampments, homeless men redefined the spaces into which they settled. Given that these spaces were public spaces, they were not meant to be places of residence. Therefore, it was not surprising that during this period the public was opposed to the presence of homeless men in such places, and it was not uncommon for the public to call for their removal.

According to Bernstein (2001), the number of people "lodging in NYC shelter system rises above 25,000" by the year 2001. Homelessness in New York City reached an all time high. This number is the largest since the 1980's. Despite efforts in the 1990's to reform welfare policy to promote self-sufficiency among the poor, record numbers of homeless people wind up in the emergency shelter system. The high cost of housing in New York City is cited as one of the prime reasons for the rise in homelessness. Yet, I also believe that the inability of homeless men to find work must also factor into the ranks of the men that must resort to emergency housing.

2. Literature Review

This chapter reviews the literature of the homeless who transition into and out of shelter. My aim was to obtain information that would explain the reasons why the homeless seek shelter, and the barriers that prevent them from exiting the shelter system. I researched studies that provided insight into a wide range of issues including, but not limited to, the relocation of mentally ill and substance abusers, prevention, recidivism, and shelter reform. The organization of this chapter is as follows. First, I report on studies that describe the determinants of shelter use. These include the characteristics of the homeless. Next is a description of the reasons why they apply for shelter and the process involved in seeking shelter. Then, I describe the factors which affect shelter exits. This section covers a wide range of issues that examine discharging special needs clients from shelter. The relationship between homelessness and incarceration is reviewed next, followed by a section that discusses the prevention of recurrent homelessness.

2.1 Determinants of Homelessness:

Research studies tell us a great deal about shelter residents in terms of their needs, and what services should be offered. Multiple issues need to be considered when planning services for the homeless. Research conducted by Breakey and Fischer (1990) informs us that the homeless are not a homogeneous population. There is evidence in the literature that suggests that homelessness is not limited to one subgroup, and that individuals from different backgrounds are at risk of homelessness (Humphreys and Rosenbeck, 1995, Morse, et. al. 1992). These studies identify different categories of the homeless: alcoholics, those who are psychiatrically impaired, best functioning and multiproblem subtypes, and poor. They shed insight on the relative risk of shelter as it is associated with demographic characteristics. There are also homeless individuals who are high functioning with access to resources. These are homeless individuals even though they have higher rates of employment and access to a social network.

As I researched the issue of homelessness, I found common themes that were studied by many authors. Researchers want to know who the homeless are and why they use shelter. There is interest in understanding the path that people take to shelter. There is also considerable interest in understanding why some homeless take longer to relocate from shelter than others, and factors that might cause a return.

Studies have shown that a disproportionately high number of applicants for shelter come from a relatively small number of communities (Culhane et. al. 1997, Smith at al 2005). The Culhane et. al. study examined the neighborhood of origin of shelter users and found that the rate of shelter admission is positively related to the concentration of poor and female-headed households. Working with census tract data in Philadelphia and New York City, the Culhane. et. al. study determined that homeless users were concentrated in inner-city neighborhoods with high concentrations of poverty. Smith et. al. (2005) also used census tract data to report the incidence of families seeking shelter in New York City, with findings similar to the Culhane et. al. study. These findings suggest that patterns of poverty mirror patterns of shelter use. Applicants who apply for shelter come from communities where there are high concentrations of poverty.

Focusing on the social drift among the homeless, Belcher (1994) conducted a study of the homeless in Baltimore over a three-month period during the summer of 1989. The study identified three phases of homelessness, and described common characteristics of homeless men during various lengths of time. In phase 1, the connection of individuals to a home is episodic. As they move in and out of poverty, they tap their social network of family and friends. At this stage, anxiety and fear are common. Phase 2 consists of individuals who have been homeless for nine months or less. These individuals continue to identify with the mainstream population. Phase 3 comprises individuals who have been homeless for longer periods of time. These individuals accept their life experiences as normative.

A study of 444 homeless persons in Richmond, Virginia supports the notion that people drift into homelessness. The 333 homeless men that participated in the survey drifted into their situation after "…a history of crime, substance abuse or mental illness" (Benda and Dattalo, 1990). However, there were gender differences as men tend to become homeless after years of crime, while women are more likely to become homeless after abusing prescription drugs.

A study conducted by Diblasio and Belcher (1995) reported on differences in the use of shelter between singles and families. While there were few differences between single men and single women in the number of services requested, women and men who had children with them during their stay in the family shelter system required far more services than the singles. They needed help with child care, placement in public schools for school- aged youth, and health care for their family members.

Studies have also been conducted on how race impacts services for homeless adults. North and Smith (1994) investigated racial differences among 600 homeless men and 300 homeless women in St. Louis. Of these 900 homeless, approximately 75% were African American. The path to homelessness was viewed differently by the African

Americans and Whites, with African American men more likely to blame the economy for their unemployment than their White peers. While both African American and White men cited substance abuse as a contributing factor towards their homelessness, White men were more likely to cite alcohol problems while African American men cited drug abuse.

Researchers examined turnover rates and re-admissions in Philadelphia and New York City from 1988-1992 to determine patterns of shelter admissions (Culhane et. al., 1994). The results showed that approximately one percent of Philadelphia's population and more than one percent of New York City's population used the public shelter systems in these cities. Although both cities had comparable one and three- year rates of shelter utilization, there were differences in length of stay due to differences in shelter policies. Philadelphia achieved shorter length of stays through more restrictive shelter policies which required co-payments.

Results from the study also provided insights into the way that families used shelter. The authors concluded that most people used shelter on short-term basis, that homelessness was not a chronic condition, and that linking services to shelter may actually increase the length of stay. Burt's (1994) comments on the Culhane, et. al study pointed out the need for housing assistance for those at the lowest end of the income scale. Factors contributing to this need were inadequate educational preparation, fewer well-paying jobs and lack of purchasing power. Burt also emphasized the need for long-term solutions for the long-term homeless, including permanent supportive housing and related services. Rossi (1994) supported the recommendations made by Culhane, et. al.

(1994) that even those who use shelter for short periods of time would benefit from programs targeted to those at high risk of homelessness.

Researchers have questioned the role that transitional shelters play in addressing the problem of homelessness (Culhane, et. al. 2008). The authors suggest that transitional shelters do not address the causes of homelessness and they present alternative strategies which re-allocate resources to community-based programs. This research extended prior inquiry conducted by Culhane et. al that studied the service needs of homeless families and their patterns of shelter utilization. In the earlier study, Culane, et. al. (2007) used administrative data on public shelter admissions in four jurisdictions: New York City, Philadelphia, Columbus, Ohio and the state of Massachusetts. Cluster analysis was used to examine the family shelter populations of these four jurisdictions in order to develop a typology of homeless families. Three clusters were found: (1) the transitional homeless used shelter once and relocated on the average in less than nine months; (2) the chronic homeless, the long-term stay group, typically have one episode of shelter that exceeds nine months; and (3) the episodically homeless experience multiple episodes of shelter of brief duration. The results showed that of the three groups, the episodically homeless had the highest rates of intensive service utilization, disability, and unemployment. In contrast, long-term stay families had lower rates of intensive service utilization, disability and unemployment.

It has been argued that, with the exception of the episodically homeless, families that resort to shelter could be better served in the community. To support this contention, the results of the Culhane, et. al. study showed no evidence that long-term stay families were associated with intensive service needs. The main conclusion which can be drawn from the Culhane, et. al. research is that program and policy factors are the keys to understanding how families use the shelter system. It suggests that program design, the services connected to program, and the policies governing the use of shelter are the keys to understanding length of stay. The research also showed that half of the resources were used by a small percentage (20%) of the clients. Resources which currently are devoted to a large shelter system could be redirected to a community-based system of programs which could offer preventive services. Then families would be offered a combination of rental assistance and services designed to prevent their entry into the shelter system.

The approach that Culhane et. al. (2007) advocated differed from an approach to homelessness which prevailed in the early 1990's. This approach is in direct contrast to federal policy in the late 1980's and early 1990's, which increased funding for family homelessness to create transitional shelters for homeless families. Then, the common policy response was to add services to shelter. Now, the preferred and more cost-effective solution is to help families maintain their housing. Emphasis is placed on providing community-based services.

The health and well-being of homeless adults, and the factors that influence transition in and out of homelessness, have been researched extensively. These studies have provided me with a general understanding of the service needs of homeless adults, the factors that facilitate discharge, and the circumstances that contribute to longer shelter stays. Studies have looked at patterns of HIV infection, drug use (Somlai et. al., 1998), stress, and exposure to trauma (Kim and Arnold, 2004, Kim and Roberts, 2004). These studies provide insight into the interventions that are needed for homeless individuals in poor health. Health issues can also influence the time it takes to discharge from shelter, with length of stay often extended for several months. Follow-up health care is often either not available or used by shelter residents after they leave the shelter system, and many are not employable when they leave the shelter.

There have been studies that have focused on the prevalence of HIV and high-risk sexual behavior among the homeless mentally ill. One study examined HIV infection among 90 psychiatric patients in the New York City men's shelter system (Susser et. al, 1993). The results showed that there was a high prevalence of HIV infection among the patients. To respond to the needs of homeless men, shelters should adopt educational services that emphasize HIV prevention, offer individual and group counseling, distribute educational materials, and engage in public education campaigns, and should do so early in an individual's stay (Somlai, et. al., 1998). Programs to promote safe sex practices for men in both single and family shelters should be developed. It would also suggest different intervention strategies are needed depending on the severity of illness among men.

Researchers have also investigated the influence of predictor variables on the health status of homeless individuals (Streuning and Padgett, 1990). Substance and mental health disorders resulted in very high rates of poor health, raising the concern that discharge could take far longer for homeless men who suffer from dual addictions. Co-occurring illnesses, such as substance abuse and mental illness, may in fact have implications for discharge from shelter. Researchers also have documented the service needs of homeless men and found that their backgrounds included exposure to stressful life events, unstable family environments, and physical abuse (Kim and Roberts, 2004, Devine and Wright, 1997). Faced with the obvious housing problem, caseworkers must also ensure that these men are connected to services so that they can remain stable once they discharge to permanent housing. This often means working across professions and between mental health and substance abuse sectors to ensure that client services are accessible and coordinated.

Mental illness is a significant, far-reaching problem which impacts how homeless men use shelter services, as demonstrated by the difficulties that outreach workers experience when they encourage the street homeless to seek shelter. Shelter workers are often faced with the challenge of connecting the homeless mentally ill to community-based services, and after-care workers must find services in the community for the homeless when they are discharged. At each stage in these transitions, breakdowns in service delivery increase the risk of recidivism.

Throughout the literature there is research which explains why the mentally ill become homeless. Odell and Commander (2000) employed a matched case control study of 39 pairs of homeless and never homeless and concluded that "…substance use difficulties and lack of family support were key factors contributing to homelessness to people with psychotic disorders." Caton et. al. (1994) hypothesized that schizophrenic men who became homeless would have poorer pre-illness social functioning, greater abuse of drugs and alcohol, and more anti-social personality disorder. The authors concluded that poor family support is a more important risk factor of homelessness than childhood antecedents.

The service needs of the mentally ill homeless can vary based on the severity of the illness, and the individual's status as a single person or member of a family. In order to better understand this, researchers have attempted to develop profiles of the mentally ill homeless. They have examined the psychological stressors associated with psychiatric disability and housing status, and looked at the impact. They have also examined the responsiveness of available programs. The vast array of service needs is sometimes complicated by substance abuse and other disabling conditions, and has prompted inquiries into how mental illness intersects with homelessness. In one study, (Goldstein, et. al., 2008) a cluster analysis was used to develop psychiatric profiles among homeless veterans with mental illness. Data was collected on 3,595 homeless veterans and 46% resided in shelters. The results of cluster analysis showed that there were three subgroups among the subjects- Addiction, Psychosis and Personality Disorder. The results also showed homeless veterans with criminal backgrounds had more severe illnesses as compared to veterans without criminal backgrounds.

Past and present studies also sought to determine how mental illness impacts the path into homelessness (Goldstein, et. al., 2008, Sullivan, et. al. 2000, Bean, et. al., 1987), and the magnitude of the problem. There is general consensus among researchers that the prevalence of mental illness is greater in the homeless population than the general population. There is also evidence that the homeless mentally ill have multiple disabilities that include alcohol and substance use, dependency, mood disorders, and personality disorders. In their examination of the road to homelessness, Sullivan, et. al. (2000) found that the mentally ill homeless have more in common with the non-mentally ill homeless than the mentally ill housed.

Street homelessness has also drawn considerable interest among researchers, who are interested in exploring issues of engagement and service delivery. For example, in a study of the service needs of homeless men, the results showed that there were no significant differences among men who were low, moderate and high users of shelter, However, the street sample was harder to engage and required more support than the other two groups of homeless men (Hannapel, et. al.,1989).

In a later study which assessed how the feasibility of service models could meet the needs of street-dwelling individuals with psychiatric disabilities, researchers tested alternative approaches for organizing and delivering services (Shern, et. al., 2000). Two groups of homeless men in New York City were referred either to (1) standard treatment such as outreach, drop-in centers, soup kitchens, case management, health and mental health services or (2) an experimental program called CHOICES which offered a respite bed, assistance in finding and maintaining housing, and other resources. The CHOICES program simulates services which are offered in an intensive case management program.

The results showed that the experimental program "…was more successful in serving and housing individuals with severe mental illness who lived on the streets than was the standard treatment system in Manhattan" (Shern, et. al., 2000). The experimental group spent less time on the street and were more likely to use shelter as compared to the standard services group. The results have implications for program planners serving this population. Several questions can be raised when designing programs for the street-dwelling homeless persons with severe mental illness. They include: what is the best mix of services that is needed to meet the needs of street-dwelling homeless persons? How can these services be coordinated to meet their needs? How can service providers be effective in engaging this population?

Mayes and Handley (2005) offer some tips that might be helpful in addressing the needs of street homeless. First, engage consumers to create a user-friendly program which is flexible and empowers the consumer to have a say in how the program will operate. Second, treat consumers as individuals. This approach seems to make sense when considering the hard-to-serve nature of street homeless individuals. What better way to encourage homeless consumers to buy into a program than creating respectful relationships that acknowledge their daily struggles?

How the mentally ill manage transitions has been the subject of inquiry among researchers who have explored the risk of homelessness. Researchers want to know what factors translate into the most effective transitions, helping to ensure that an individual with mental illness remains stably housed. The mentally ill who transition from hospital settings face a number of challenges and are at high risk of homelessness. Their chances of maintaining stable housing in community settings often depend on their support network and their access to resources. In a study that examined the discharges of 132 patients from an acute care state hospital, Belcher (1989) found that non-homeless persons were more likely to have access to resources and the support of family and friends, as compared to homeless persons who were discharged from the hospital. Discharge of the mentally ill to community settings without appropriate supports can result in many problems. These individuals need help managing medication, applying for and re-certifying benefits, and applying for and maintaining housing.

The homeless are more at risk of re-hospitalization after discharge from hospital settings. When Rosenfeld (2006) examined the relative importance of housing services versus psychiatric factors as determinants of re-hospitalization, the results showed that homeless patients were more likely to return to the hospital within one year of discharge. Moreover, the intervention which played the greater role in preventing re-hospitalization was housing. The more emphasis that was placed on the provision of housing and services, the fewer re-hospitalizations there were.

Access to services is one of several issues that must be resolved if the mentally ill are to live independently in community settings. Some communities struggle to get the right mix of services in place (Cunningham, et. al., 2006). Homeless individuals typically have many service needs, so it is not uncommon for them to have to deal with a variety of bureaucracies. They need family and friends who can help them, and mental health professionals who can provide counseling and intervene in times of crisis. They may need to access treatment for psychiatric disabilities, substance abuse problems, medical problems and entitlements. Surber, et. al. (1988) suggests that lack of coordination and the need for service integration are two hurdles which must be overcome. Service providers can help the homeless mentally ill overcome these obstacles by providing coordinated information, access to services, follow-up, and direct advocacy.

Different service models have been used to provide services to homeless clients. Housing First is one type of service delivery model which appears in the literature and which could have an impact on the way that providers work to locate the homeless mentally ill in community settings (Greenwood, et. al., 2005, Tsemberis, et. al., 2004 and Hurlburt, et. al. 1996). The Housing First approach implies that clients would be better off learning the skills they need to learn while they are living in community settings. Alternatively, another approach, Housing Readiness, requires that homeless mentally ill clients resolve their treatment issues <u>before</u> accessing housing. Both approaches have the same goal: to relocate the client to stable housing.

Whatever model service providers choose to implement, they should strive to help clients achieve enduring placements in stable housing that will minimize the possibility of repeat shelter use –the “revolving door syndrome” when clients cycle in and out of programs. The homeless mentally ill will face many challenges when they discharge from shelter. The severity of their illness, the availability of resources to meet their needs and the follow up which is needed to coordinate services will play a key role in ensuring that the client stays permanently housed.

There is clearly a trade off between the two service delivery models. Housing First can maximize resources by minimizing time in shelter. This approach can and often does work when the client is engaged, housing resources are available, and the client is connected to sufficient community resources. However, there are a number of factors that should be considered. Is there a sufficient amount of affordable housing that must be in place for the Housing First model to be successful? Are there sufficient services in the community and can they be properly coordinated? If housing is not available and services are not coordinated, the client could remain at risk for returning to shelter.

Another concern that has been studied is the stress associated with transitions to housing. Wong, et. al., (2002) studied the effects of psychological distress among the homeless mentally ill to examine how distress varies when psychiatric disabilities and housing status are compared. Serious mental illness affects how individuals cope with changes in housing status. The homeless mentally ill who cycle in and out of shelters often rely on a patchwork of housing offered by family and friends who frequently obtain and lose housing of their own. This article describes how researchers explored the effects of psychological distress to the mentally ill in comparison to the general population.

The prevalence of psychological distress among the mentally ill can be measured by using the using the Center for Epidemiologic Studies –Depression Scale (CES-D) to estimate the prevalence of clinical depression among the homeless population. Studies using this scale showed the prevalence of clinical depression among the homeless mentally ill was two to four times higher than the general population.

The lack of family support as a reason for homelessness among the mentally ill has been cited in the literature. This has also been contrasted by the need for these clients to be independent when they relocate from shelter. The Caton (1994) study illustrates the importance of family support. Schizophrenic men who came from dysfunctional families were more likely to be in the homeless group than in the never-homeless group. Dordick (2002) raises the concern that shelter exits should also include some level of autonomy in order to promote stable housing and to prevent returns to homelessness

Client responsiveness may also play a big role in the success or failure in relocating homeless men from shelter. The severity of their illness can impact their willingness to accept services. Wuerker and Keenan (1997) suggested that knowledge of service patterns which describe how the homeless mentally ill use services will inform how service providers should intervene. There has been extensive research which demonstrates the impact of lack of services on the homeless mentally ill. However, what happens when services <u>are</u> available and they are not used by the homeless mentally ill? Attempts to answer this question involve looking at service patterns and then comparing differences in service use.

It is essential that clients who are unable to use services which have been offered not lose touch with caregivers. Nuttbrock, et. al. (1997) examined pre- and post-admissions of mentally ill chemical abusers to predict attrition at residential treatment programs in New York City. Differences depended on the program model to which clients were referred. Of the clients referred to either Therapeutic Communities (TC's) or Community Residences (CR's), there were high levels of attrition. Of 694 clients included in the study, only 42 % started treatment and only 33% completed the program.

The results found in the Nuttbrock, et.al. study is not atypical; others who have researched this population arrived at a similar conclusion. This population is clearly difficult to treat, and service providers need to embrace a wide range of strategies to engage them. Additional staff training for working with this population has been recommended. Providers should also consider conducting comprehensive assessments, and creating teams of mental health professionals with dual diagnosis workers who are familiar with this population's service needs.

With regard to homeless veterans, researchers have studied them from many different perspectives, providing insight into their use of, and access to, social services. In my inquiry I discovered that veterans are overrepresented in the homeless population, their service needs are high, and that substance abuse is a key barrier to overcoming homelessness (Rosenbeck et. al. 1994, Tessler, et. al. 2002). There is a significantly greater likelihood of homelessness among male veterans who are 20 - 34 years old compared to non-veterans in the general population. In this age group, overrepresentation in the shelter system is more likely to occur among Caucasians than Blacks. However, when age is adjusted to account for men in the 45 - 54 range, both Caucasians and Blacks are overrepresented as compared to non-veterans in the general population.

These studies also showed that substance abuse among homeless veterans is a major barrier to self-sufficiency. When combined with lack of resources and low self-esteem, homeless veterans, face minimized chances of becoming independent. Untreated substance abuse problems result in hospitalizations, prevent the homeless veteran from seeking and obtaining gainful employment, and delay the individual's ability to secure and sustain permanent housing. However, homeless veterans do have access to significant medical services that may not be available to non-veterans, including doctors and health professionals at VA hospitals, and satellite clinics. The implications for practice are clear. Emphasis should be placed on connecting veterans to substance abuse treatment programs and connecting them to community-based services after discharge from shelter to avoid re-hospitalization.

Another theme which emerges in the literature is the tension between the disaffiliation and re-affiliation of homeless men (Shin and Weitzman, 1990). According to Bahr (1970), disaffiliation involves both loss of family and friends and a withdrawal by the individual from society. This can take several paths, possibly caused by external changes, which leave the individual with no affiliations and estranged from other organizations to which he formerly belonged. In the literature I found studies that describe the structure of social networks and the factors that contribute to homelessness when support is not available. According to Jones (1991), a "…person's social network can be conceptualized as a series of concentric rings, with the nuclear family in the smallest circle, relatives, and then followed by neighbors, friends, fellow workers, and organizational affiliates and so forth". Shinn et. al. (1998) raises the concern that impoverished social networks contribute to homelessness. Individuals typically rely on social networks for social support. Hopper (1998) suggests that there is a need to enhance the supportive quality of social networks as compared to reliance on the need for a larger shelter.

2.2 Transitioning from Shelter:

A common strategy of many studies is to examine the influence of predictor variables on the duration of homelessness. Research among homeless subjects often covers a wide range of variables including, but not limited to, social functioning, family history, and receptiveness to treatment. By examining the influence of these variables, researchers can study their impact on the duration of homelessness, providing useful information on what impacts entry and exit patterns from shelter; and varying lengths of time in shelter, and why the population census rises and falls. The knowledge created from these studies informs how services can be better targeted to long-term stay clients.

Researchers have shown considerable interest in studying the process of shelter exits in the New York City shelter system (O'Flaherty and Wu, 2006; Wong et. al, 1997 and Piliavin, et. al., 1996). Studies of the city's shelter system during the 1990's - 2003 show a wide range of variables that could influence the rate of exit and reentry, including, but not limited to, family structure, reason for homelessness, type of housing placement and community of origin prior to becoming homeless.

The role of predictor variables on shelter stays has been a rich source of study. Areas examined include placement in permanent housing; the transition between homeless and domiciled states; and the relationship between communities of origin and homeless services. The lessons learned from these studies shed insight into the interventions needed to minimize time in shelter. The following summarizes some of these lessons and their implications for practice.

Wong et. al. (1997) report that the likelihood of leaving homelessness decreases the longer the family stays in shelter, a finding that has profound implications for the discharge of families from shelter. If the relationship between time in shelter and the rate of discharge is inversely related, this suggests that early intervention can be an effective strategy in discharging families in a timely manner. In this case, shelter providers must quickly assess the family's need for housing and take into account the factors that define the family's life circumstances, including family size, number of adults, number of children, and unemployment. Three conclusions are drawn by the authors:

<u>First, family size seems to have an impact on the time families spend in shelter</u>. The larger the family size, the greater the likelihood the family will spend more time in shelter. The number of adults also impacted where families discharged. More adults were associated with greater likelihood that the family would discharge to known family arrangements. In another study, Piliavin et. al. (1996) confirmed that an additional adult was associated with a 27% increase in the likelihood of re-admission to shelter. The number of children also impacted the time families spent in shelter. An additional child was associated with an approximately 20% decline in the likelihood that the family will leave shelter.

<u>Second, age is a factor in the time families spend in shelter</u>. The family's time spent in shelter is inversely related to the age of the head of household. As the age of the head of household increases, the likelihood that the family will discharge from shelter

decreases. Specifically, a one year increase in age of the head of household was associated with an approximately two percent decline in discharge to permanent housing.

Third, families who receive subsidized housing are less likely to re-enter the shelter system as compared to families who do not obtain subsidized housing. Shelter providers should strive to ensure that the families discharge to permanent housing. Families who experience planned discharges are preferable to families who leave shelter on their own with no potential for follow-up by the shelter provider. Planned discharges enable the family to be connected to community-based services, and to benefit from the services of after-care workers if available.

The increasing age and poor health of homeless individuals has been studied by researchers who seek to understand the influence of these variables on the homeless as they move through shelter system (Tracy et. al., 2007; Gilbeau, 2001). These studies looked at homeless individuals young and old, with a range of health problems including diabetes, pneumonia, HIV, substance abuse and psychiatric disorders. Among the elderly (65 or older), the effects of health and mental health problems add difficulty to the task of finding them permanent housing. Gilbeau's (2001) inquiry sheds some light on these issues. The client's individual characteristics, the services they need, their adjustment to the shelter setting, and the availability of housing all must be considered. While health and mental health problems can potentially delay discharge from shelter, these problems can be addressed if clients can be connected to community- based services while still in shelter.

Although the multitude of service needs creates some degree of difficulty in the discharge of elderly clients, there are interventions that shelter providers can take to facilitate their discharge: (1) stabilize clients' health care problems while they are in shelter; (2) provide access to health care services in the community; (3) ensure that services are well coordinated so as to minimize duplication and disruption; and (4) help the client adjust to the idea of leaving shelter through effective discharge planning which helps to ease anxiety.

One theme in the literature describes risk factors that affect shelter exit and re-entry by the homeless. Piliavin et al. (1993) studied transitions between homeless and domiciled states by focusing on four frameworks that explain why individuals are at risk of homelessness. They reported that institutional disaffiliation, human capital deficiencies, personal disability and acculturation were central factors that influenced discharge from shelter. The results of the study confirmed that institutional disaffiliation, (i.e. time in foster care as a child) resulted in longer homeless careers. It also confirmed the human capital hypothesis that less time worked resulted in longer homeless careers.

In a more recent study, Dworsky and Piliavin (2000) studied the type of housing to which homeless people moved to determine the likelihood of becoming homeless again. Emphasis was placed on factors that influenced the type of shelter exits. The authors analyzed what enabled some sample members to exit to their own residences, and compared them to sample members who experienced other exit outcomes. The results showed that recent employment increased the likelihood of exit to one's own residence, while mental illness decreased that likelihood. The authors further concluded that the type of housing to which sample members exited significantly affected the likelihood of their becoming homeless again.

Hopper (1997) suggests the relocation of homeless men can be difficult even when human capital approaches such as job training are offered to these men. Re-affiliation of homeless men into the labor force will depend on many factors. Three key variables are age, education and work experience, defined as number of jobs the individual has held and number of years worked. Several authors have documented the importance of age as predictor variable. In a study which examined human capital and social alienation as predictors of length of stay, Calsyn and Roades (1994) concluded that age was the most powerful predictor. Research conducted by (Foltman, 1968) showed that the older men become, the harder it is for them to find a job.

Weitzman et. al. (1992) offer one possible solution to achieving re-affiliation among homeless men by suggesting that the solution to homelessness must vary depending on the pathway taken. Eviction prevention can be offered to families who lost stable housing, and job training for those who lost jobs. The chances of these men and their families to become re-connected to housing and job markets will depend on their abilities. The more educated individuals will have more choices when they look for work. Those individuals who have more work experience are more likely to have developed work skills, thereby improving their chances of getting a job.

Caton et al. (2005) hypothesized that a shorter duration of homelessness would be associated with personal assets such as educational achievement, and that longer duration of homelessness would be associated with factors that compromise personal assets. The authors used a Kaplan Meier survival analysis to assess risk variables associated with homelessness. They then used Cox Regression analysis to identify predictors of homelessness duration. The results of this study showed that age and arrest history were the strongest predictors of duration of homelessness. Sosin et. al. (1990) also examined predictors of shelter exits and returns and concluded "… that there is no clear evidence of deteriorating chances of obtaining a stable exit as a result of previous episodes of homelessness or a longer spell of homelessness." The authors acknowledge that the study's lack of information beyond six months and relatively small sample size calls for restraint in interpreting the results.

Another factor associated with length of stay in shelters involves programmatic issues. Ogborne (1978) examined the influence of program stability by assessing the length of stay of clients who moved into shelters. The results showed that new recruits would discharge more rapidly when the existing clients had relatively long lengths of stay because older residents did not welcome new recruits. The effect of peers, although not a part of the programmatic efforts designed to relocate homeless clients, can influence length of stay, yet it is not clear how this influence varies from shelter to shelter.

Shelter providers often employ different strategies to relocate homeless adults. Susser et. al. (1997) writes of a study which used a bridge strategy to relocate 96 homeless mentally ill men. The mean number of homeless nights for two groups of homeless mentally ill men, one receiving additional support services (Critical Time Intervention) and the other standard services, was compared. Although there was reduced shelter use among the group of homeless men that received CTI, more research is needed to determine if the intervention will lead to independent living while discouraging re-institutionalization. Korloff and Anderson (2001) examined the relocation of alcoholics and hypothesized that clients who successfully terminated from the program would use fewer sobering and detoxification services after leaving than those who did not complete the program. In this study, the importance of housing before and after treatment proved to be a key factor. Enhanced services, combined with housing, appear to be a successful combination in relocating special needs clients.

2.3 Homelessness and Incarceration:

It has been documented by researchers that homelessness and the criminal justice system have a direct relationship. Studies have examined the number and duration of homeless episodes, the nature and scope of homelessness, and the types of problems experienced by inmates, and provided insight into the challenges formerly incarcerated inmates face when they discharge from shelter. More than one researcher used data from national surveys, and several examined which predictor variables were associated with homelessness. Implications for the clients' capacity to discharge from shelter were discussed and illustrate the challenges of working with this population.

An attempt to document the relocation of former inmates has been made by several authors (Metraux and Culhane 2004, Roman 2004) who reported the explosive growth in prison and homeless populations. In 1982, there were 400,000 prisoners; in 1999, the number increased to 1.3 million. Kushel et. al. (2005) studied the relationship between homelessness and imprisonment and concluded that it was bi-directional. This meant that imprisonment precipitated homelessness because it disrupted family and community contacts, and homelessness precipitated imprisonment because of shared risk factors that increased the likelihood of arrest.

In a later study, Greenberg and Rosenheck (2008) examined the rate of homelessness among 17,565 adult state and federal prison inmates as compared to the general population. Using logistic regression analysis (Wright, 1995), the authors examined the association of demographic characteristics, mental illness and previous criminal justice involvement. They reported that 9% of adult state and federal prison inmates reported an episode of homelessness in the year prior to the arrest. This rate of homelessness was four to six times greater than the general U.S. population. Demographic characteristics showed that young, single males who were minorities and poorly educated were most at risk of homelessness and involvement in the criminal justice system.

In a study which examined characteristics of homeless individuals who were inmates with mental health and substance abuse problems, Calysn et. al. (2005) found that prior criminal behavior was the strongest predictor of all variables. The researchers investigated several types of criminal offenses. both major and minor: substance abuse related offenses, summons, and arrests. Results show that repeat offenses are common among dual diagnosed inmates, and the follow- up that these inmates receive when they leave prison is lacking. One recommendation is to provide specialized interventions over a one-year or two-year period that will help the inmate re-integrate into the community (health care and drug treatment, housing, other related supports, etc.).

Homeless men with histories of incarceration have difficulties re-integrating into communities. Metraux and Culhane (2004) researched the interrelationship between shelter use and re-incarceration among a cohort of 48,424 persons who were released from New York State prisons to New York City from 1995-1998. The results showed that 11.4 % of the study group entered a New York City homeless shelter. Of this group, 32.8% were imprisoned again. In a later study, Roman and Travis (2006) highlight the issues inmates face when they re-integrate into the community thereby leading to implications for service delivery. For example, to address the needs of inmates with HIV, they must have access to health care and housing.

There is a higher rate of criminal activity among the homeless mentally ill as compared to the general population (Solomon and Draine, 1999). This group, which is considered among the hard to serve, has diverse needs including problems with drugs and alcohol. When drugs and alcohol are combined, an individual on psychiatric probation is nearly four times more likely to be homeless. While their risk for homelessness is high, so is their resistance to treatment, making discharge to the community a challenge.

The problems faced by former inmates who seek to reintegrate into the community bring into question how housing, homeless prevention, and criminal justice systems can work together effectively to minimize the possibility of a return to shelter. Hughes et. al. (2001) reported that 12% of state prisoners who were released at the end of 1999 reported being homeless at the time of their arrest. How can the cycles of recidivism into shelter and re-incarceration be broken for this population? Access to permanent supportive housing would be one option well-suited for this population.

2.4 Preventing Recurrent Homelessness:

Some individuals experience multiple episodes of homelessness. Although there may be many reasons why repeat episodes occur, there appear to be common themes as well as macro level issues that contribute to this inability to live in the community. These include factors associated with poverty, a lack of affordable housing, a lack of resources associated with unemployment, and limited access to social support. Repeat shelter use has also been attributed to the individual's inability to live independently due to physical and mental disability, lack of job readiness and substance abuse. When the homeless enter shelter, these service needs are assessed and discharge plans are typically designed to ensure that clients remain permanently housed. Yet, for some individuals, discharge from shelter is a temporary solution which often results in loss of housing.

Weitzman et. al. (1990) has argued that homelessness is a manifestation of extreme poverty. Their recommendations for preventing homelessness illustrate this point. The authors advocate for comprehensive, individually-targeted measures such as job training, social services and affordable housing. This approach would accomplish several objectives. First, access to employment via job training could improve the individual's chances of exiting shelter. Wong (1997) has suggested that access to material resources has a strong influence on facilitating exit from homelessness, as well as preventing recurrent episodes. Second, with the right mix of social services, homeless individuals can address their many service needs in community settings, thereby preventing a crisis which can precipitate a return to shelter. Third, discharge from shelter to affordable housing can play a key role in ensuring that the individual remains stably housed. Since it is unlikely that the homeless individual will experience a significant increase in income while they are in the shelter system, the path from shelter discharge to housing must include affordable rent.

Research studies have examined the influence of social support networks, and valuable strategies for discharging the homeless from shelter using these networks. Passero et. al., (2006) conducted a study of homeless and non-homeless men who had difficulty maintaining housing to compare differences in their social networks. The results showed that non-homeless men had significantly larger social support networks and more positive interactions with them as compared to homeless men. Moreover, non-homeless individuals were more likely to seek out assistance when they needed it.

The resources that homeless men can tap into after they leave shelter can play an important role in stabilizing their place in the community. When homeless men enter the shelter system, they may be geographically separated from family and friends. The location to which homeless men are discharged may then be very helpful if near family or friends. Solarz and Bogart's (1990) study of adult males in a mid-western shelter underscores this point. The authors reported that individuals with limited resources exhausted their support systems. One helpful strategy for discharge planners, as suggested by Tsemberis at. al. (2007), is to trace the residential history of the individual. By investigating the number of times and the duration of residential stays in between homeless spells, discharge planners can identify patterns of residential instability and can develop services accordingly.

Exploring patterns of residential instability between shelter stays would also inform service providers of the social networks that were available to an individual before seeking shelter. The homeless often rely on formal and informal forms of support before seeking shelter. While formal networks such as shelters, soup kitchens and churches are easy to identify, less is known about the informal networks of family and friends that may also provide shelter. Gotlieb (1985) has suggested that it is possible to assess the sources and types of informal support that people use in times of crisis. Using a strategy that relies on mapping primary networks, it is possible to determine the size of the individuals support network. This would provide valuable information about the number of contacts in the support network, the perceived value of the contact by the homeless individual, the frequency in which these contacts are made, and the types of support (i.e. resources, emotional support) that are available.

There are many factors that will determine if programs designed to prevent homelessness will be effective. Sosin and Grossman (1991) conducted a study of homeless and domiciled former psychiatric patients and found that access to treatment and a lack of tangible resources were key predictors of homelessness. Programs must incorporate a number of strategies in order to prevent homelessness. Getting patients connected to benefits and treatments are necessary, vital interventions. The availability of programs is often not sufficient. This was especially true for young patients who were more likely to be homeless.

Preventing the return to shelter of formerly homeless men will depend on several factors. Homeless men who are able to work will have a different path from shelter as compared to those with psychiatric disabilities. Single men will also require different housing options as compared to men with families. Permanent supportive housing has proven to be a valuable housing option because of its affordability and because of the services connected to it.

There has been considerable interest from researchers and advocates in the role that permanent supportive housing plays in preventing a return to homelessness (The Supportive Housing Network, 2006, The Council on Homeless Services and Policies and Services and the Supportive Housing Network, 2003, Culhane, 2002, Nelson, et al., 1997). The value of support services in permanent supportive housing cannot be underestimated. The individual finally has access to a stable, reasonably priced source of housing with services. He/she lives a better quality of life with access to benefits and entitlements. Project staff can help to facilitate positive relationships between residents and their family and friends and act as support systems for their clients. This type of help can lead to improvements in physical and mental health, and help to foster a sense of independence. The benefits to society are also clear. Homeless adults who remain stably housed in permanent supportive housing are at reduced risk of returning to shelter. This desired housing outcome (as compared to shelter or jail) translates into fewer emergency room visits, fewer shelter episodes, and a lower rate of incarceration.

Although there are obvious benefits to permanent supportive housing, there are also issues of control which can create tensions. This may crop up in conflicts with assigned roommates, and/or in coming to terms with a living environment that has rules and regulations that must be followed. Residential facilities that serve the homeless often have to strike a balance between maintaining a feeling of home as compared to institution. How the rules are set and how they are enforced will determine how this balance is achieved.

Some advocates have pointed out the need for permanent supportive housing for families, which is currently quite limited in supply. Similar to the barriers faced by homeless men with disabilities, men in families may also face multiple barriers to independence. These include histories of substance abuse, serious and persistent mental illness, chronic unemployment and problems with the child welfare system. During any given year there are families that enter the shelter system that are prior users of shelter. Sometimes their relocation from shelter is not easily accomplished and results in an extended shelter stay in excess of a year or longer. Both the family and society would be better served if there was more access to permanent supportive housing. Homeless men in families would remain stably housed and their risk of returning to shelter could be minimized.

According to a report issued jointly by the Council on Homeless Policy and Services and the Supportive Housing Network (2003), two types of permanent supportive housing models are available to homeless consumers. The first is supportive housing which offers a wide array of services on-site. In the supportive housing model, programs can be single-site residences for families with special needs or single site residences with mixed tenancy for singles and families. Scattered site apartments and affordable housing developments are two other supportive housing programs with strong linkages to community services. All of these models are seen as cost effective in that they reduce the amount of emergency services used by the homeless consumer.

While steady employment might increase the chances of homeless men to stay out of shelter, there are overwhelming barriers to help them find jobs. While job training and social services may be available in shelter programs, extensive research documents the struggle to increase the human capital of homeless men, particularly in the area of employment. Some authors have focused on the reasons why homeless men lose jobs. There are several deterrents that prevent these men from overcoming barriers to employment.

One deterrent is disability. First (1988) examined the work ethic of homeless men and was able to categorize them into three groups ranging from severely disabled to moderate to low. Group 1 individuals have a long-term need. These men are severely disabled with past hospitalizations for mental illness and alcoholism. Group 2 have a moderate need and are moderately disabled. Group 3 are defined as a short-term needs group. These men are homeless because they have an economic crisis. They have the fewest disabilities and their homelessness is described as "episodic."

Another deterrent is that many workers are not job ready. In the literature, job readiness is often described along two dimensions: the work skills one has, and the extent to which one is ready to work. Homeless men typically are low-income individuals who have marginal work skills in the sense that they have limited work experience and qualify only for entry-level work. Job readiness is also measured by the "soft skills" one brings to the job. Leigh et. al. make the following observation.

> "Low-income individuals with limited exposure to the world of work may lack the soft skills" needed to get a job, stay employed and advance. Soft skills are the non-technical skills, abilities and traits that workers need to function in a specific environment. They include four sets of workplace competencies: problem solving and other cognitive skills, oral communication skills, personal qualities and work ethic, and interpersonal and teamwork skills."(Leigh et.al, 1999)

2.5 Implications of the Literature Review for This Study

The role of the shelter comes into play when considering the needs of the homeless who require emergency shelter, and length of stay is at the heart of the issue. Given that emergency shelter is designed to provide temporary assistance to homeless families, a homeless spell of six months or less seems to fit this description. However, when shelter stays extend to a period of years, shelters are not functioning as facilities that offer emergency housing, and ultimately play a different role. In the latter, they become semi-permanent facilities that address not only the housing needs of the homeless but other barriers to independence. Culhane (1992) points out that whether shelters are to be emergency or custodial care, municipalities need to reduce the incidence rate and the length of stay of persons in shelter.

After reviewing the literature I came to three conclusions.

(1) <u>The service needs of homeless men are complex and not easily resolved</u>. A combination of factors explains why these individuals seek shelter. Among the severely mentally ill, the combined effects of physical and health problems, substance abuse and unemployment create an overwhelming impediment which makes it difficult for them to compete in housing and job markets. There needs to be adequate, easily accessible services in the community to address this. Homeless men who are dually diagnosed or those with criminal involvement require service plans developed in collaboration with the criminal justice system and the substance abuse network so that sectors can work in tandem to keep these individuals out of shelter and out of jail.

(2): <u>Homeless men face many barriers to relocation from shelter which require further study</u>. Research must look at variables from several domains: demographic, use of services and economic, health and mental health. Studies should investigate the problem from several vantage points and should include qualitative and quantitative research. The majority of studies that reviewed the relocation of homeless from shelter were conducted over short periods of time, usually six months with relatively small samples of up to 200 clients. Most researchers have recommended that inquiries should focus on a longer time frame and should be longitudinal.

(3) <u>The successful relocation of men from shelter depends on a combination of housing and support services at the shelter that must work in unison and be balanced in the number and types that are offered</u>. The timing when services should be offered is

important. Services should be offered as soon as clients arrive in shelter. It is also important to link clients to permanent housing with community-based services while they are in shelter thereby minimizing return to shelter after discharge.

Chapter 3

The Policy Context:

2001-2008

This chapter examines the changes in policy that influenced the demand for shelter in the New York City emergency family shelter system. It reviews policy changes at the federal level, including the Bush tax cuts that were enacted in 2001, how those changes impacted the economic conditions of New Yorkers, and how New York City re-shaped housing subsidies offered to homeless families. An overview of the family shelter system census from 2004-2008 is also presented.

3.1 Changes in Housing Policy

During the period 1996 to 2003, spending on Section 8 housing increased steadily at a rate of approximately four percent per year (Sard and Fischer, 2004) and the federal government's share of average voucher costs rose due to a decline in household income and an increase in program costs. The share of vouchers used by state agencies rose from 90.5% in 2001 to 96% in 2003. Thereafter, there were dramatic changes in housing policy and economic conditions which impacted millions of low-income renters nationally. Over a four year period, from 2003 - 2007, funding for low-income housing was severely reduced. There were cuts in major federal housing programs (Khadduri, Jill, 2003, Basgal & Villareal, 2001, Katz, & Austin Turner, 2001). The programs which were cut were Housing Choice Vouchers, Public Housing, and Section 8 (Section 8 includes both a project-based housing assistance program and a voucher).

In 2004, during a period of substantial federal budget deficits, the Bush administration reduced spending for low-income housing and over the next four years funding in this category was cut by two billion dollars. These reductions severely limited access to affordable housing. Why did the federal government cut funding for low-income housing? The federal government had other priorities. Rising defense costs and tax cuts created fiscal pressures.

As funding for low- income housing was decreasing, there were also a rising number of families paying a large portion of their income to rent. I found several surveys which described this problem. According to Brennan and Lippman (2007), a critical housing need exists when a family pays more than 50% of its income to rent, or if they live in inadequate housing conditions. The authors reported that over an eight-year period, from 1997 to 2005, the number of families across the country paying more than half of their income for housing increased 87%, from 2.4 million to 4.5 million. Wardrip and Pelletiere (2006) investigated housing cost burdens for renters and found that between 2001- 2005, the incidence of severely cost-burdened renters paying more than 50% of their income to rent increased from 22% to 26%. And, in 2006, 39 million households were cost burdened (paying more than 30% of income on housing) and nearly 18 million were severely cost burdened (paying more than 50%) (Joint Center for Housing Studies of Harvard University, 2008).

Cost burdens were not the only challenges that low-income families faced in accessing rental housing in New York City during this period. Low vacancy rates and overcrowding were also a serious, persistent problem. New York City historically has low vacancy rates (less than 5%). The 2005 New York City Housing Vacancy Survey indicated a vacancy rate for rental housing of 3.09% (New York City Department of Housing Preservation and Development, 2006). With such a tight rental market, it is easy to understand why overcrowding would be a problem.

The results of the 2008 Housing Vacancy Survey issued by the New York City Department of Housing Preservation and Development (2009), showed how the vacancy rate continued to drop further: from 3.09% in 2005 to 2.88% in 2008. It also showed the combined impact of fewer turnovers in rental housing at a time when there is less funding for affordable housing. As funding for affordable housing declined due to federal reduction in spending, the tight low-income rental market in New York City showed no sign of loosening. Contract rents were also reported in the New York City 2008 Housing Vacancy Survey. Over a three-year period, the median rent, excluding utilities and fuel, increased from $850 to $950, an increase of 11.8%. This increase was even higher (14.6%) when factoring in fuel and utilities.

The Housing Vacancy Surveys, provide keen insight into the challenges that New York City low-income residents have in staying housed, but they do not tell the complete story. Rent is but one expense item that families face monthly. They must also cope with rising utility costs, as well rising costs for transportation and food (Brennan and Lipman, 2008). Simply put, New York City's housing market has an inadequate supply to meet the overwhelming demand for affordable housing. In response, New York City developed a plan to address this problem including encouraging the creation of public/private partnerships to invest in affordable housing.

In 2003 New York City announced a five-year plan to build or rehabilitate 65,000 apartments in New York City (New York City Independent Budget Office, 2003). New

York City amended its plan and increased it to ten years (New York City Department of Preservation and Development, 2004). The ten-year plan increased the commitment to 68,000 units. Strategies to increase the supply of affordable housing were discussed, including finding new land for affordable housing, providing incentives to develop housing, helping the private sector to develop affordable housing, and preserving government-assisted affordable housing. A key component of the plan was the New York/New York III agreement between the City and State which financed the creation of 9,000 new units of permanent supportive housing in New York City. The City proposed to add an additional 3,000 units of supportive housing, making a substantial investment which would benefit New Yorkers who were among the neediest: homeless single adults, people with mental illness, and people with AIDS.

There are several promising aspects of the City's ten-year plan which will specifically benefit homeless men. Homeless men discharging from institutions, such as those exiting prison or aging out of foster care, typically have few housing options if they are unemployed or without family and friends who can shelter them. These men would greatly benefit from housing that is affordable and that creates a bridge from the institutional setting to the community.

It was clear homeless men could benefit from New York City's efforts to expand the supply of affordable housing. However, there were additional pressures which could impact the ability of homeless men to exit shelter. Most notably: the loss of housing through foreclosures. Since 2005 there have been considerable changes in housing markets. This next section focuses on the impact of the changes in the housing market and the reasons that led to foreclosures.

Nationally, more than two million foreclosures were reported in 2007 (Erlenbusch et. al., 2008, Lang, et. al. 2008) although foreclosures did not only impact homeowners. Foreclosures affected renters in multi-family properties, a serious issue since more than 20% of the foreclosures nationwide were rentals. Renters are in a different position as compared to homeowners. While homeowners know when they have fallen behind on mortgage payments, renters do not usually have knowledge that a building is at risk of the foreclosure.

The reasons for the mortgage crisis were attributed in part to inappropriate appraisals and loans to families who could not afford to re-pay them and the increased use of sub-prime lending were factors as well. Quencia and Ratcliffe (2008) reported on how sub-prime lending grew. While a conventional loan amortizes over 30 years and has no pre-payment penalties, sub-prime loans include pre-payment penalties with adjustable payments which can double after the loan's origination. Sub-prime mortgages increased from 8% of originations in 2003, to 20% in 2005 and 2006 (Joint Center for Housing Studies of Harvard University, 2008).

The most often-cited solution to addressing homelessness has been to increase the supply of permanent housing. Burt (2007) has argued before Congress that the federal appropriations to meet the needs of the poorly housed were inadequate. Khadduri (2008) has suggested that Congress should add 100,000 units per year to the Housing Choice Voucher program. Adding housing vouchers would provide immediate relief, since building new units or rehabilitating existing units will take much longer. If the federal government were to respond favorably it would represent a much-needed reversal of policy.

It has been argued that families that discharge to permanent housing with a housing voucher are more likely to be placed in permanent housing and to remain stably housed (Bassuk, 2006). Additional measures such as job training and prevention, which emphasize early intervention for at-risk families, have also been recommended. Providing more housing options for families with psychiatric and substance abuse problems could facilitate faster move outs from shelter. Discharging these families to community-based agencies with support services and after-care plans would greatly increase their chances of remaining in permanent housing.

3.2 Changes in Economic Policy

Given the fundamental changes that occurred in the housing market from 2001 2008, I decided to examine economic policy that occurred at the national and local levels. This section begins with a review of fiscal policy initiatives enacted by the Bush administration, and continues with a review of changes in unemployment at the national and local levels. This review is intended to inform how homeless men in families were impacted by economic policy. The implications for homeless policy are then presented.

The Bush administration's fiscal policies, which emphasized tax cutting, was a policy that favored wealthy Americans while offering little to the bottom fifth of the country's households. Shapiro and Friedman (2004) reported that the bottom fifth of households received an average tax cut of $27, while the top one percent received $35,000. The average tax cut for households with income in excess of one million dollars was approximately $123,000. The Bush tax cuts in 2001- 2003 did little for low- income workers since those earning under $25,000 already paid little or no taxes.

This fiscal policy was created in a time when there were federal surpluses. Long range estimates of surpluses were decidedly optimistic. A rationale for the Bush tax cuts is that they would strengthen the economy and create jobs. The 2003 tax cut proposal included a plan described as an economic growth package that was in excess of $700 billion over ten years (Shapiro and Friedman, 2004). It was anticipated cutting taxes would lead to substantial job growth in future years. However, this did not happen. Job growth was substantially below what was projected. In fact, job creation in 2004 was only half of what was projected by the Bush administration. According to Kamin and Shapiro (2004) only 144,000 jobs were created in August 2004, half of what was projected, and only 1.6 million jobs (38%) had been created as compared to the 4.3 million jobs that were anticipated since tax cuts were enacted in 2003.

It was clear from the outset of the Bush administration that its tax policies would favor the wealthy at the expense of low-income families. Greenstein and Shapiro (2001) cautioned that low-income families could be hurt if the tax cuts failed to spur economic growth and necessitated cuts in programs which benefited the poor. The authors also cautioned that estimates of projected surpluses were not expected to materialize for several years. If the reduced revenues translated into deficits, budget reductions in future years would be required.

When there is a recession, employment falls, and later picks up when there is a recovery in economic activity (Congressional Budget Office, 2005). This occurred in 2001 when 1.6 million jobs were lost. As economic activity picked up, employment continued to lag, a phenomenon that has been described as a jobless recovery. One possible reason for this is improved productivity. In this case, employers can increase output without hiring workers.

Another economic measure which weakened during the 2001 recession was the rate of labor force participation – defined as the percentage of the adult population that is either employed or looking for work. During the period 2000-2005, the labor force participation rate declined from 67.3 % in early 2000 (Bradbury, 2005) to 65.8 % in early 2005 (Congressional Budget Office, 2005). It should be noted that the 2001 - 2005 period followed the late 1990s, a period of strong economic growth, so it was not surprising that the 67.3% participation rate would be hard to sustain. The four-year slide provided an indication of the trouble we were facing.

Another concern of economic analysts is that poor economic performance in the early part of the decade may have occurred due to structural changes in the market. There are two indicators that economic analysts use to measure structural changes in the job market: permanent job loss and job relocation. Economists measure the rate of payrolls before, during and after recessions. Groshen and Potter (2003) observed differences in the 1991 and 2001 recessions and concluded that these recessions were more structural as compared to past recessions. These are important contextual factors that could affect employment chances of homeless men. Cyclical changes in job markets provide some hope that employers will increase hiring after a recession. When this happens, decline in economic activity will be short-lived. By comparison, structural changes suggest that the decline in economic activity could be enduring.

The above-mentioned economic trends represented unfavorable conditions for homeless men who had limited access to jobs. Three patterns of economic activity seemed to work against them. Despite poor results, tax cuts were emphasized as the right policy to strengthen the economy from 2001 to 2003, although they did not create jobs at the levels that had been anticipated. In addition, the declining pattern of labor force participation was not a good sign. As Bradbury (2005) observed, men and women with higher levels of education had higher rates of participation in the labor force. This also did not favor homeless men with low levels of academic attainment. Further, the declining rate at which employers hired also did not favor homeless men. Fewer jobs meant tighter competition for employment.

After researching the impact of federal policies since 2001, I examined how New York State and New York City was impacted. I found several troubling trends that impacted working families. I first refer to general observations that affected working families in New York State, and then review the implications for families in New York City.

The employment prospects for working families in New York State were very poor after 2005. There were three troubling trends. First, wages did not keep pace with productivity. While wage increases followed productivity increases in the 1990s, this was not the case after the 2001 recession. According to the Fiscal Policy Institute's State of Working New York 2007 report (2007), productivity grew in New York grew by 1.8% yet total wage growth averaged only .02% since 2000. Moreover, the wage gains that were achieved were achieved by high wage workers. Second, employees were increasingly classified as independent contractors which changed the terms of their employment. While employees historically receive a package of social benefits (i.e. unemployment insurance, employer social security co-payments, and health care), independent contractors receive none. The third trend cited in the report was the fact that in 2006 New York had the widest income gap between the rich and poor of all fifty states.

It is clear that poor working families in New York State had several obstacles to overcome after 2001-2007. Job growth in the earlier part of the decade did not meet expectations. Benefits were no longer guaranteed. Only high wage earners were likely to see substantial gains in pay. There were also signs from the 1991 and 2001 recessions that structural changes had occurred in the job market, meaning that families would have to work harder to maintain their standard of living. Becoming employed was no longer a guarantee of escape from poverty. In fact, permanent job losses could result in families living on the edge, moving down the economic ladder into poverty.

As I researched further, I found many telling signs that poverty was increasing nationally. Parrott (2008) reported that food stamp caseloads increased 9.6 % between August 2006 and August 2008, while unemployment also increased. Low-income workers age 25 were hardest hit. This group's unemployment rate increased from 6.3 % in September 2006 to 10.3% in October 2008.

In New York City, I examined trends in the unemployment rate from 2001 - 2008 to compare differences with the national trend. For most of the decade, New York City's unemployment rate exceeded the national average. Unemployment in New York City was increasing, even though New York City's seasonally adjusted unemployment rate (5.7%) was lower than the national rate in October 2008 according to a report issued by the Fiscal Policy Institute (2008). The report also indicated that it is likely that unemployment in New York City will continue to rise and eventually catch up to the national unemployment rate.

Poverty in the United States is likely to increase over the next few years, which can be explained by a closer look at past economic activity. During the last thirty years, the number of Americans living in poverty has increased, with the majority of the increases occurring in times of recession when there was high unemployment (Sard, 2009). In September 2008, the collapse of the financial markets was evidence that another recession was inevitable, suggesting further hard times for low-income families. The most recent difficulties in the financial markets suggests that this recession could be one that could last for several years, thereby placing more families that are living on the edge of poverty into homelessness.

The recent economic trouble has led to increases in homelessness across the country. Nationally, nineteen cities reported an increase in homelessness with an average increase of 12% (The US Conference of Mayors, 2008). In New York City, there was a 40% increase in the number of families that entered the family shelter system from July - November 2008 versus the same period in 2007 (Sard, 2009).

What should be the policy response to maximize the chances of low income families avoiding shelter? It is clear that the choices made by the Bush administration in housing and economic policy did little to improve the prospects of low-income families to remain stably housed or employed. As federal budget deficits became a reality in 2004, the policy choice was to cut federal expenditures for affordable housing while continuing tax cuts which favored the wealthy (Rice and Sard, 2009). The review conducted by Dine et. al. (2008), which examined economic performance from 2001-2007, confirms this.

During this period, six indicators of economic performance declined in comparison to periods following prior recessions. They were GDP, consumption, investment, net worth, wages and salaries and employment. Growth was only seen in corporate profits. Other policy choices could have been made for several reasons. Structural changes in the economy provided less opportunity for low-income families. There was less access to jobs that paid a living-wage with benefits. Forecasts also suggest that current economic troubles could be very deep.

What are some possible policy responses that would benefit homeless men in low-income families? A number of economic analysts have suggested that an economic stimulus package would be effective if properly carried out (Stone and Cox, 2008, Congressional Budget Office, 2002, Orszag and Stiglitz, 2001). One of the principles of a stimulus is to increase aggregate demand. The core problem in a recession is the lack of demand for products or services. In such cases, employers respond to the lack of demand by laying off workers. The across-the-board tax cuts that were implemented by the Bush administration were not targeted and were thus not effective in stimulating demand.

Although there has been much written in the literature about ways in which to stimulate the economy, let me describe three that would directly benefit homeless men and their families. First, expand unemployment benefits. This population typically has difficulty paying bills. They are not likely to save. Any funds they receive through stimulus efforts would be spent immediately. In order for a stimulus package to be effective, it should be targeted, timely and temporary. Expanding unemployment benefits meet these criteria. As unemployed workers continue to spend, the workers who produce these goods and services remain employed. According to Orszag and Stiglitz (2001), this results in a win-win situation. Both the unemployed have some benefit from the cash they receive while at the same time, more remain employed, keeping unemployment lower than would be the case if unemployment benefits were not extended. In effect, unemployment benefits serve to minimize job losses in hard economic times.

Second, provide relief for state government. Stone and Cox (2008) argue that fiscal relief for state governments is yet another effective form of stimulus. In hard economic times, tax receipts typically decline, thereby placing a strain on state budgets. This usually results in reduced state spending which can lead to further reductions in demand. Thus, the problem is mutually reinforcing. Increased spending by state government on a time-limited basis can be more effective than tax cuts (Elmendorf & Reifschneider, 2002). Of the two policy choices, increased spending is more likely to come from government spending.

Third, increase food stamps on a temporary basis. Temporary increases in food stamps may also be an effective means for stimulating spending. This measure could help to supplement the incomes of homeless men who are unemployed and underemployed. Spending on basic items would meet the requirements for an effective stimulus. It would be fast acting, would increase aggregate demand, and would be targeted to the group that needs it most: low-income families.

The drastic changes that occurred in housing and the economy highlighted how homeless families are affected disproportionately in difficult economic times and explains why they are at risk of homelessness. It is customary for the economy to go through cyclical changes which result in temporary periods of increased unemployment. For low-income workers, such economic cycles offers hope that they can return to the job market within a short period of time. The changes in the economy and in the housing market after 2001 seemed to indicate a fundamental change that would impact low-income families in profound ways. There were a number of factors that suggested the future for low income families was not rosy. These factors directly influence why families seek shelter.

An effective policy which creates and sustains a strong economy is essential in preventing homelessness. As discussed earlier, policy decisions which promote economic growth and which devote adequate resources to affordable housing are essential. Homeless men are typically less equipped to compete for jobs and for housing in the best of economic times. In hard times, they struggle even more.

How did these changes in housing and economic policy impact homeless policy in New York City? I researched several aspects of homeless policy. There were many changes that occurred. The City instituted a strategic plan that was designed to reduce homelessness; housing subsidies to homeless families changed; and spending on family homelessness increased. This next section provides an overview of these changes.

3.3 Changes in New York City Homeless Policy

The six-year period prior to 2004 provided some insights into the challenges faced by service providers in addressing homelessness. O'Flaherty and Wu (2006) reported that the family shelter census rose to 9,303 in 2003. Two factors are cited for this increase: an annual decline in the rate of move-outs, and a recession. Given this increase in the family shelter census, it made sense that New York City would create a strategic plan to reduce homelessness. The five-year plan, "Uniting for Solutions Beyond Shelter," included a set of principles that embraced the belief that individuals and families at risk of homelessness are better served in the community, and was designed to reduce homelessness by two-thirds (NYC Department of Homeless Services, 2004). The plan proposed to lessen and prevent homelessness through the re-direction of funds to alternative solutions, with a focus on providing community services.

There are several reasons why preventing shelter makes sense. Resources can be allocated more efficiently if services are provided in the community. Shelter resources are costly; it is more expensive to house a family in shelter than to house a family of four in a two-bedroom apartment. Keeping homeless men and families stably housed in community settings enables them to maintain existing systems of social support; remain in contact with family and friends, and stay connected to social service providers that help them to avoid shelter.

This review is intended to examine how changes in the shelter system impacted homeless men in the family shelter system during the period July 2004 - June 2008. This period is chosen for two reasons. It immediately follows the 2001-2003 period which included federal tax cuts that were intended as economic stimulus. It also coincides with major policy changes in the field of homeless services that were enacted in 2004. A brief reference is made to changes which occurred in the adult singles shelter system to compare how its change in census differed from that of the family shelter during this period.

The shelter system typically faces many challenges. Core challenges that apply to this project are preventing at-risk men and their families from entering the shelter system and minimizing their time there. When these challenges are met, homeless men and their families should benefit because they avoid loss of place, loss of contact with family and friends. The public benefits through better and more efficient use of resources.

Helping families avoid shelter provides many tangible benefits. Fewer families placed in shelter keeps the census down. The shelter census is a function of the rate of admissions relative to the rate of move-outs. If more families leave than enter shelter, the census will go down. If more families enter than leave, the census goes up. Allocating resources at the front end to prevent shelter admissions is therefore an ideal strategy for achieving a preferred outcome.

A Special Master's Panel (2003) was convened in New York City and issued a report which recommended actions the City could take to address family homelessness. Key findings cited included targeting communities with the highest needs, making early identification of families with housing problems, taking early intervention before a crisis occurs, and creating diversion units to keep families out of shelter. It was also recommended that prevention services be targeted beyond those receiving public assistance. Families with risk factors associated with homelessness, young heads of households, non-leaseholders with a history of child welfare involvement, and victims of domestic violence should also receive prevention services. The report concluded that preventing family homelessness should be a high priority.

New York City's five-year plan to reduce homelessness embraced the recommendations in the Special Masters report. Prevention services for families were expanded. A new Intake Center, Prevention Assistance and Temporary Housing (PATH) Office was created, prevention resources were increased, and the City's Human Resource Administration workers were assigned to provide prevention services at PATH. In fiscal year 2004, New York City spent $160.6 million on homelessness prevention. By fiscal 2007, that number increased to $191.2 million, an increase of 19.1% from fiscal year 2004, according to a report issued by the New York City Independent Budget Office (2008). Prevention services were provided by several city agencies. The following is a summary of the prevention services offered by these agencies.

Human Resources Administration (HRA) has a number of programs that are designed to prevent homelessness. The Family Eviction Prevention Supplement (FEPS) provides a rent supplement to families facing eviction. A predecessor to FEPS, Jiggets, provided cash assistance to families facing eviction. Other programs include One Time Grants, targeted to families not receiving cash assistance and used to pay back rent, broker fees and security deposits. Additional funding is provided by HRA for diversion teams. Of the eviction prevention programs provided by HRA, more than 50% of the funds were allocated for a One-Time Grant from 2004 to 2007. One Time grants provide families with money to pay rent arrears in order to avoid eviction.

Department of Homeless Services: From 2004 - 2008, the Department of Homeless Services increased funding of prevention services from $10 million to $19.2 million. The majority was spent on eviction prevention through two programs: Home Base and Anti-Eviction Legal Services. Home Base provided funds to community-based organizations to prevent the at-risk homeless from entering the shelter system. Programs were strategically located throughout New York City in communities with high concentrations of poverty. Anti-Eviction Legal Services provided legal representation at administrative hearings. Legal services included, but were not limited to, cash benefits advocacy, legal research and on-going client contacts.

Other prevention funding was awarded through the New York City Department of Housing Preservation and Development, which provided anti-eviction prevention and referrals for legal services, and Administration for Children's Services, which provided rental assistance to prevent foster care placements that are the result of inadequate housing. In every category, eviction prevention funding in fiscal year 2008 exceeded funding in fiscal year 2004.

Consistent with the belief that people are better served in community settings as compared to shelter, minimizing the duration of homelessness is a core strategy of New York City's five-year plan. New tools were developed to encourage providers to be more effective in minimizing shelter stays. These included a strategy to monitor client move outs, and a Performance Indicator Program to track provider effectiveness. The Performance Indicator Program included housing targets along with provider incentives to reach these targets. The Performance Indicator Program also included several indicators which rated providers, including success with minimized stays.

During the period 2004- 2008, there were environmental influences which would also impact the demand for shelter. Changes in housing policy at the federal level reduced the supply of affordable housing, and there was a downward shift in the economy. These changes would negatively impact access to affordable housing among low-income renters, an enormous problem since homeless clients need access to affordable housing to make shelter exits possible. This same period was replete with changes in homeless housing policy that had profound effects on the resources available. Section 8 housing was only available in short supply. In its place, the City developed a new housing subsidy, Housing Stability Plus (HSP), which was later replaced by another subsidy, the Advantage program. This section will first examine the impacts on the shelter system as Section 8 changed to Housing Stability Plus. Next follows a description of the change to the Advantage program. I then review the influence of a worsening economy on the shelter system.

Section 8 has long been one of the most stable forms of housing subsidies available to homeless families. Prior to 2003, families that qualified for and received Section 8 housing were able to guarantee the landlord a steady stream of rental income that was renewable every year. Families paid 30% of their income. This type of subsidy was ideal for homeless families. It meant that their rents would be affordable. There was also security in the fact that the subsidy would be renewed. Although Section 8 was ideal for families, discharge from shelter was often delayed. Housing standards were attached to the program in the form of occupancy requirements (a minimum number of bedrooms based on family size), room sizes, and inspections to make sure the apartments were up to code. The process between application and approval for Section 8 could take several months, and when clients finally secured the Section 8 voucher, they then had to find a landlord to accept it, usually not a difficult task.

All in all, Section 8 housing was a highly effective program. There was a strong likelihood that the discharge would be a permanent one, and reduced the chance that the family would have to re-apply for shelter as long as appropriate support services were received. As long as the family continually re-certified, rents would remain affordable.

In 2003, New York City developed a new subsidy to replace the reduced supply of Section 8 housing vouchers that were previously available to homeless families. The new subsidy, Housing Stability Plus (HSP) differed in several ways from Section 8.

Unlike Section 8, which was permanent, the HSP subsidy had a five-year time limit. The subsidy also declined by 20% each year for five years. This meant that after year one, formerly homeless clients would pay an increasing portion of the rent until year five, when they would have to assume the entire rent. In comparison, in Section 8, the client's portion of the rent did not exceed 30% during the lifetime of the subsidy.

Several issues of implementation were associated with HSP. Advocates expressed concern that some formerly homeless clients would not be able to meet the increasing rent obligation. There was also a disincentive to work since in order for clients to qualify for the program, they had to be on public assistance. There were also concerns that the rents set for the HSP subsidies did not match market conditions. And, unlike Section 8, there were no occupancy requirements. This resulted in large families having to rent smaller apartments because their HSP housing subsidy did not afford them the opportunity to obtain an apartment that met their occupancy requirements.

It is hard to argue with the intent of the HSP program. It encouraged clients to assume more responsibility for their housing after they left shelter. It also placed time limits on the subsidy thereby creating an incentive for families to achieve independence. However, in 2007, in an effort to incorporate the best of HSP with solutions to its problems, the City shifted to a new housing subsidy, the Advantage Program.

Advantage Programs emphasized work for those who were able, while also offering subsidies for families who are not. Short-term subsidies are available for working families with enough income to afford rents once they discharged from shelter. There are four subsidies included in the Advantage Programs that are indicated in New

York City's progress report on the five-year plan. (New York City Department of Homeless Services, 2008):

1. Work Advantage Program (WAP) requires homeless adults to be in shelter for a minimum of 90 days and to work a minimum of 20 hours a week at minimum wage for 30 days to qualify. The subsidy is guaranteed for one year, during which time clients are required to open a checking account, save up to 20% of the rent, and pay $50 a month towards the rent in order to qualify for a one year renewal. The City matches the client's savings. The WAP subsidy expires at the end of the second year. Clients who comply with the savings requirement would have some funds which they could use to meet living expenses after the WAP subsidy discontinues. Clients are also eligible to receive after-care services including job training, job search and job retention. Clients must maintain an active public assistance case.
2. Children's Advantage Program (CAP) provides rental assistance to families with open Administration for Children's Services (ACS) cases. Families are eligible to receive a one- year CAP subsidy when their stay in shelter reaches 60 days. Because families with an ACS case are a special needs population, these families are eligible for Section 8 housing program priority. Section 8 applications are then forwarded to the New York City Housing Authority. Families are not required to contribute $50 a month towards the rent, and not required to open a savings account and save 10% of their income. The subsidy is continued for one year or longer or until Section 8 is approved.

3. Fixed Income Advantage Program (FIAP) provides rental assistance to families receiving Social Security disability insurance. Families that receive FIAP are also designated as a special needs population and have the same renewal options as families receiving CAP. They are not required to open a savings account or save 10% of their income. The subsidy is continued for one year or longer or until Section 8 is approved.
4. Short-Term Assistance Advantage Program provides rental assistance to families with income to facilitate rapid discharge from shelter. Families in shelter for 60 days and who have incomes that are between 150 and 200% of the Federal Poverty Level qualify. They receive a one-time, four-month rent allowance which is intended to get them back on their feet. No ongoing rental subsidies are made available to these families.

There are several positive features of the Advantage Programs. Homeless adults who can work are required to seek work in order to receive the subsidy. Families that met this requirement would then receive a WAP certificate which enabled them to find housing. Exit from shelter can be accomplished more quickly in the Advantage Programs as compared to the Section 8 process. Homeless adults who meet the time in shelter requirement and who work immediately qualify and after a brief period (90 days), can immediately begin looking for housing.

There are tradeoffs associated with the Advantage Programs. Homeless adults with minimal job skills are likely to obtain entry-level jobs with little or no job security. Will the placement to permanent housing be a lasting one? When formerly homeless families were placed with a Section 8 voucher, it was certain that rent would remain affordable. Will clients be able to contribute towards their rent in their first two years after shelter? Will they be able to afford rents after the two-year WAP subsidy expires?

Several challenges were implied in New York City's five-year plan. Perhaps the biggest was the goal to reduce homelessness by two-thirds. Despite increases in spending in both prevention and homeless services, the two-thirds reduction was not achieved. The average family daily shelter census in fiscal year 2004 (9,347), declined to 9,100 in fiscal year 2008, a 3% decrease (NYC Department of Homeless Services, 2008). In comparison, the average daily adult shelter census declined from 8,445 in fiscal year 2004 to 6,850 in fiscal year 2008, a 23% decline (NYC Department of Homeless Services, 2008).

Another challenge implied in the plan was reducing length of stay. In my inquiry I found that length of stay had increased. In 2004, the average length of stay for families was 341 days. In 2008, it was 350 days (Department of Homeless Services, 2008). This increase in the length of stay is a cause for concern. Given the changes which occurred in housing and economic policy during this period, the results are not surprising. Homeless men living on the edge will have a hard time remaining stably housed in the best of times. In poor economic times, the challenge to avoid homelessness becomes even more difficult. With limited access to jobs which pay low wages and minimal benefits, it becomes that much harder for homeless men to sustain a standard of living that keeps them out of the shelter system. The limited access to affordable housing also adds to this problem. It also is not surprising that families struggle to remain permanently housed when increasingly they are paying in excess of 30% of their income on rent.

Despite these setbacks, some progress has been made. Advantage subsidies are a step in the right direction. It is correct to emphasize work as a condition for receiving rental subsidies for men and women in the family shelter system that can work. It is correct to encourage clients to save money. It is wise to provide them with access to financial literacy and aftercare services, all of which are proven, effective strategies that help families remain permanently housed once they leave shelter. The length of the WAP subsidy is a concern because of its relatively short timeframe (two years). In times of relative prosperity, there might be less pressure for homeless men to keep their jobs once they become employed. However, in the current economic climate, holding a job may become increasingly difficult. One indicator of economic performance which could be a telling sign is the unemployment rate. If the unemployment rate continues to rise in 2009 and beyond, homeless men who relocated from shelter to WAP housing may need additional rental assistance and supports beyond the two- year timeframe.

Another positive development was the increased investment in prevention. The creation of the Home Base Program was evidence of the City's commitment to finding cost-effective solutions to homelessness. However, since homelessness increased during a time when there were simultaneous increases in prevention spending, the effectiveness of these efforts should be evaluated. According to a progress report issued by the NYC Department of Homeless Services (2008) an evaluation of the Home Base program was scheduled to take place towards the end of calendar year 2008.

It is clear that there will continue to be many challenges associated with the effective delivery of services to homeless families. From this review it became clear that the emergency family shelter system does not operate in a vacuum. Housing policy at the federal, state and city levels must provide resources to keep families from entering shelter and help them to leave shelter when homelessness cannot be avoided. Economic policy which encourages job growth and stimulates the economy is also essential. Initiatives that promote self-sufficiency, such as financial literacy and employment training among homeless men and women are also needed. Most important is the need to expand access to affordable housing. Any formula for successfully addressing the needs of homeless men in families that does not include access to affordable housing will most likely have limited success.

4. Research Design

The chapter will begin with the choice of methodology. The argument for a quantitative approach to inquiry is presented. The hypotheses in this inquiry are next presented. This is followed by a discussion of the plan for sampling. Next follows a discussion on data collection. Since this project is a data mining study, a review of the data mining process is presented, followed by a discussion of other design elements including a review of the issues associated with data analysis. Each of these design elements helps the reader to understand the types of statistics that were generated. The feasibility of the design for this project is explained by examining issues associated with validity and reliability.

4.1 Methodology:

A quantitative approach was used for this inquiry. The research design emphasized clinical data mining and involved the application of statistical analyses (Epstein, 2010). These statistical analyses were applied to large databases. No subjects were to be interviewed. The research design included several phases of analysis in order to increase understanding of the survival times of homeless men. There is interest from researchers who want to know about the path the homeless take from shelter and research that examines shelter discharge patterns over a multi-year study period met this need. To facilitate this type of inquiry a broad array of data was analyzed over a period of time. A predictive model was created to explain the effects of predictor variables on long-term stay in shelter.

4.2 Hypotheses:

The following null hypotheses were tested to assess how survival times varied among the families of homeless men.

1. *The results would show that there is no difference in the survival times among three groups of homeless men.* The men in the sample were broken down into three groups of families- Single Fathers, Adult Families (Homeless Men with a Spouse and no children) and Partners with Dependents (Homeless Men with a Spouse and Dependents). The length of time in shelter for each family was measured in days. I hoped to discover if some family types remained longer in shelter as compared to others.
2. *The results would show that there is no difference in survival times between old and young homeless men.* The survival times of old and young men were compared. This inquiry was conducted to determine if age influenced the amount of time homeless men in families spent in shelter.
3. *The results would show that there is no difference in the survival times between small and large families.* Comparisons were made of the survival patterns of homeless men families based on family size.
4. *The results would show that there is no difference in the survival times between Black and Non Black homeless men.* After analyzing the ethnicity of all men in the survey, the survival times of the different ethnic groups of men were compared.

5. *The results would show that there is no difference in the survival times of homeless men based on medical condition.* The medical condition of family members was analyzed. Two family groups were created. These included families with no medical problems and those with medical problems. The survival times of these families were then compared.

6. *The results would show that there is no difference in the survival times of homeless men based on reason for homelessness.* Reason for homelessness was first analyzed. Comparisons were then made of the survival times of men based on their reason for seeking shelter.

7. *The results would show that there is no difference in the survival times of prior users of shelter and those men who never used shelter.* Comparisons were then made of the survival times of men who were prior users and those who were not prior users of shelter.

8. *The results would show that there is no difference in the survival times of homeless men based disposition category.* Exit disposition refers to the discharge location of each family in the sample. Some families moved to permanent housing while others moved to non permanent housing. A comparison of the survival times of men was made based on discharge location.

4.3 Sampling:

There were several discussions with the Department of Homeless Services (DHS) to review the scope of the project, the variables of interest pertaining to this study, and the timeframe from which client case records were to be selected. Three core issues were addressed: the availability of data, the sample size, and the type of long-term research being proposed.

I first inquired as to where administrative records of homeless families are stored and learned that DHS has a computerized Client Tracking System (CTS) for all families who enter the New York City Emergency Family Shelter system. The CTS database includes administrative records on each family and each family member. Information is organized in a series of tables which track individual family movements through the shelter system. Information includes family dates of intake and discharge, number of adults, number of children, prior use of shelter, medical condition, and the reason for seeking shelter. Information for each individual family member is also available, including date of birth, gender and relation to the head of household.

After some discussion, the proposed sample size was set at 1,000. A sample this large was possible because of the commitment by DHS to extract data from the CTS database. There were few limitations with the exception of DHS time and effort in extracting the data. Data was first de-identified to preserve confidentiality, exported to an Excel file and then placed on a disk which was made available to me. There were practical considerations to consider in the amount and type of data that was made available. With a sample size that included 1,000 men and their family members, there were over 29,000 individual records that had to be collected. It was therefore practical for DHS to include only those variables that could be easily transferred to an Excel file.

DHS also had to consider the type of long-term research I was conducting. Since the aim of the study was to analyze survival patterns of long-term stay homeless men, and to assess the influence of predictor variables on survival time in shelter, it was agreed that the men to be included in the survey would be those who entered the shelter system as far back as 2003. The study period chosen was four years beginning January 1, 2003 (Origin Date) and ending on December 31, 2006 (End Date). Records of homeless men who entered the shelter system in 2003 and 2004 were selected. By setting a four-year window, it would be possible to determine which men took longer than nine months to discharge from shelter.

The target population for this project was adult men in the New York City Emergency Family Shelter system. Homeless men who were 18 and over and either the head of household or co-head of household were the two criteria for sample selection. Limiting the selection of men to heads of households and co-heads of households enabled the identification of three types of families. These were Single Fathers. In these families men entered shelter with dependent children. A second family type was Adult Families, men with Partners and no children. A third family type was Men with Partners and Dependents. In these families homeless men entered shelter with a partner and dependents. These families included both dependent children and dependents who were adults.

A multistage sampling procedure was used (Crisanti and Lowe, 1999). First, I stratified by adult males, and selected those records. There were 29,888 records in the

CTS database that DHS provided to me. Of the 29,888 records, there were 8,107 adult homeless men. Next, I systematically selected every 8th record resulting in a sample of 1,013 homeless men. Of the 1,013 homeless men, there were 814 that were classified as head of household or co-head of household (legal union or non legal union). Of the 814 records, 3 included cases with 2 men in the same family. These 3 records were dropped and this resulted in a final sample of 811 men.

4.3 Data Definitions of Predictor Variables:

Eight predictor variables were created (See Appendix 1 for a complete list of definitions). Some variables were extracted directly from the DHS CTS database and required no transformations. Others required some transformation, either through re-coding or calculations. The following is a description of each predictor variable. (A complete variable list is available in Appendix 2).

1: Age-indicates the age of homeless men as calculated from the date of their intake into the shelter system. DHS uses the Investigation date as the date of intake. From the date of intake, the subject's date of birth was subtracted to arrive at the subject's age. Age was used to make comparisons of the survival time of young and old men in shelter.

2: Ethnicity- indicates the ethnicity of the head of household. All family members receive the same ethnicity as the head of household.

3: Family Size- indicates the number of members in the family, and is arrived at by adding the total number of adults and the total number of children in the family. It is common for some family members not to reside in shelter during a family's homeless spell. DHS tracks this occurrence with a variable called In/Out. Given that it is possible for family members to move in or out during the family's stay in shelter, I included all family members regardless of their In/Out status.

4: Reason- indicates why families are applying for shelter, using 37 reasons in the CTS database. Several indicators are organized by applicant, parent and relative. These were collapsed into overcrowding, eviction, discord not domestic violence, domestic violence, fair hearing overturned, unlivable condition, eligible client logged out, financial strain, out of town client and other.

5: Relation- indicates the relation of the individual to the head of household. There are 28 categories that define the variable relation. The first three categories in the CTS database are coded as (1) head of household, (2) legal union, (3) non legal union. Other categories include, but are not limited to, son, daughter, step-son and step-daughter.

6: Prior Eligibility- indicates the number of times the family has been previously found eligible for shelter.

7: Medical Condition- indicates the medical status assigned to the family at Intake.

8: Exit Disposition- indicates the destination to which families are discharged. There are 72 codes in the CTS database.

Appendix 3 provides a complete description of categories for the variables ethnicity, reason for seeking shelter, medical condition, relation to head of household, and exit disposition code. Exit disposition code was re-coded into a new variable, disposition category. Appendix 4 provides a complete description of the coding for disposition category.

4.5 Dependent Variable:

The dependent variable in this inquiry is long-term stay in shelter, defined as shelter stays that exceeded 291 days. 291 days represented the median of the survival times of the 811 men. The median survival time was chosen as a representative measure of long term stay of men in families with children (270 days) and men in adult families (365 days). The dependent variable is constructed as follows. In survival analysis, researchers measure the time it takes subjects to reach an event. The event in this inquiry is discharge from shelter. When the discharge of a large sample of men is studied, it then becomes possible to analyze the survival time of each subject, how long they stayed in shelter from admission to discharge. I also hoped to discover how the survival patterns of long-term stay homeless men varied as compared to men who were not long-term stay. All inquiry in this project seeks to build further understanding of the problem of long-term stays which result when men in families don't discharge from shelter.

4.6 Data Collection:

The research approach in this project was data-driven. The intent was to explore data to discover patterns of exits from shelter by homeless men in families. This inquiry was conducted by reviewing client and administrative records of homeless men and their family members. A data mining approach was used to collect data. In a data mining project, there are large physical structures of databases which have been described in the literature as containing "mountains of information." This is why mining metaphors have been used to describe this research approach (Epstein 2001). For this project I was provided with data from the DHS data warehouse (Client Tracking System).

Data mining as a management tool has received considerable attention in recent years (Chou and Chou, 1999). The data mining process has been described by Chan (2002) as a process which includes problem identification, gathering information about a problem and its potential solutions, and generating models (hypotheses) that are central to the solution. According to Firestone (2005), a model is "…a description of the historical database from which it was built that can be successfully applied to new data in order to make predictions about missing values or to make statements about expected values." There can be two types of models. They can be descriptive. These describe patterns in the data. They can also be predictive. Predictive models predict future outcomes based on past records. The goal is to explain the values of a predictive field when using the predictive model. The researcher does this by selecting a target field and then directs the computer to estimate, classify, or predict it (Shmueli et. al. 2006).

The benefits of data mining have been documented in the literature. Chen and Sakguci (2000) have argued that data mining provides better information, adds value to a data warehouse, increases operating efficiency, and reduces costs. Managers can also enhance the quality of the way in which information is produced and stored. The data mining process creates potential for increased opportunities to integrate information and, possibly, better decision-making. While these benefits of data mining are obvious, it is important to point out that knowledge created from data lacks important contextual information about the subjects of inquiry. For example, although data mining can be used to describe the percentages of men who live in shelters as single fathers or in adult families, it may not permit researchers to obtain in-depth information of how men perceive their roles in the family. Qualitative techniques which allow researchers to conduct in-depth interviewing of subjects may be better suited to obtain this information.

After the data was transferred, a data collection instrument was used to build a case record for all of the subjects. The data collection instrument was used to record information extracted from the Client Tracking System (See Appendix 5). Data was collected on 811 men for each variable. The data collection instrument was also used to record variables that were transformed, either through calculation or re-coding.

4.7 Data Analysis:

Preliminary tasks prior to data analysis were conducted. First, I reviewed the data and verified that it was in reasonable condition. The values of all variables were checked to determine that there were accurate ranges for each variable. Next, variables were re-coded, using Excel. A software package (SAS 4.1) was used to conduct the statistical analysis. SAS (4.1) includes descriptive statistics which are standard in most statistical packages. SAS (4.1) also includes Survival Analysis, the Cox Proportional Hazards model, and the log-rank test. The SAS (4.1) software package also included graphics which can be used as evidence to support conclusions about the data.

Demographic information was collected on all of the subjects to create a profile of the men. Descriptive information included age, medical condition, and family composition (i.e. number of adults and children in the family and the relationships of family members to the head of household). There were four phases of analysis:

First, descriptive statistics were generated for each of the three categories of homeless men in order to provide a snapshot of them. Frequency distributions were used to examine the data structure. This involved generating measures of central tendency (mean, median, and mode) to summarize the data. Tables were used to illustrate how long-term stay varied by variable. Frequency distributions were graphed to provide a visual display of the data set, and to detect the presence of outliers.

Second, bivariate analysis was conducted to expand on what I learned from the descriptive analysis. While descriptive analysis can be used to determine how homeless men compare based on a single variable, bivariate analysis can be used to test if two or more variables are related. Cross classification tables, also known as contingency tables, were used to illustrate the relationships between variables.

Third, Survival Analysis was conducted on the 811 men in the sample. In this phase of the analysis, survival patterns were examined. This enabled me to examine the percentage of families that remained in shelter at different time intervals. SAS (4.1) software enabled the researcher to generate survival curves that measured survival patterns as they changed over time (Allison, 1995, Johnson and Johnson, 1999). The log rank test was used to test hypotheses about the differences in the distributions of the survival times among the men. A complete list of the survival times is provided in Appendix 6.

Fourth, I used Cox Proportional Hazards regression analysis to determine the influence of predictor variables on long-term stay. By doing so, I examined which variable(s) had the most influence on long-term stay.

4.8 Validity and Reliability Issues:

Issues of validity and reliability are important to any research design. Validity refers to how well the concepts in the study are defined, and how well the research measures what it intends to measure. Reliability refers to consistency of the research, i.e.

if the research were to be conducted again, would it yield the same results? The following section describes the issues of validity and reliability that applied to this research design, followed by a brief discussion about the threats to validity and reliability.

An important issue in Cox Regression Analysis is the need to assess if the hazard ratio is constant over time. If it is, this means that the predictor variables are time-independent. It is often necessary to extend the Cox proportional hazards when the hazard ratios do not meet the test of proportionality. Several measures can be used to test the proportional hazards assumption. I used two: log-log survival curves and the Extended Cox model with time-dependent covariates.

Log-log survival curves are transformations of survival curves that can be generated by taking the natural log of an estimated survival probability twice (Kleinbaum and Klein, 2005). If the log-log survival curves are parallel, then the hazard ratios are proportional. Log-log survival curves were generated for each predictor variable, with results used to determine which hazard ratios met the proportional hazards assumption. The results of the log-log survival curves generated for this research are included in Appendix 7. The Cox Extended model was used to assess if each predictor variable, when combined with some function of time, was time-dependent. If the results were significant, the predictor was not proportional. The product of each predictor variable and the log of survival time were analyzed individually to assess if the variable was time-dependent. The results of the time-dependent variables that were analyzed in the Cox Extended model are included in Appendix 8.

There were several measures taken to assure that data was accurately measured. Once data was entered into SAS (4.1), the data collection instrument was used to verify the accuracy of data input. I also checked the accuracy of the data that was compiled in the data collection instrument by cross-checking each record in the CTS database.

There are many threats to the validity and reliability of any research design. Statistical regression capitalizes on chance. This problem occurs when the variables that are included are dependent " …potentially on minor differences in statistics computed from a single sample, where some variability in the statistics from sample to sample is expected" (Tabachnick and Fidell, 2001). Other problems cited by the authors occur in statistical regression, when it overfits data, resulting in problems of generalization. Overfitting occurs when too many variables are added to the sample size. According to Tabachnick and Fidel (2001), another concern involves multicollinearity (when variables are too highly correlated). The authors point out that most software programs allow researchers to protect against multicollinearity by computing the squared multiple correlation of a variable.

Another important consideration is the reliability of the covariates chosen for the inquiry. Are the selected covariates reliable measures? In my inquiry I found that it was possible to verify the accuracy of the data. DHS does take measures to verify client demographic data and the reasons for seeking shelter. Applicants for shelter must provide appropriate documentation (birth certificates) which establishes proof of age. They are also required to provide documentation of medical problems that have been reported by family members. In the DHS tracking system, it is possible to track with accuracy client dates of admission and discharge. It is also possible to track with accuracy the discharges of clients that move to permanent housing as well as those who leave shelter to unknown locations.

5. Statistical Measures

This chapter begins with a description of the measures and statistical procedures that were used in this research. As is the case with any research project, data rarely exists in the exact form needed to produce reports. It is often necessary to transform the data before analysis can begin. Calculations to create new variables out of the data may also be necessary. Next the methods used to conduct bivariate analysis are reviewed. These are followed by the methods that were used to conduct Survival Analysis and Cox Regression analysis.

5.1 Data Transformations:

It is often necessary to re-code variables before they can be used in research. In this case, both continuous and categorical variables were re-coded. The median was used to re-code continuous variables (age, survival time, family size) into two categories. Prior eligibility was re-coded as never used shelter and prior users of shelter. Re-coding was also necessary to facilitate Cox regression analysis. Two dummy variables were created. In variables that were dummy- coded, the category with the greatest numbers of observations was designated as the reference category. Below is a description of the re-coded variables:

1. *Survival Time* was re-coded into a new variable, survtmed (Median Survival Time). Median survival time (291 days) was used to create two categories of survival time. Not a long-term stay was a survival time that was less than or equal

to the median survival time, and was coded 0. Long-term stay, coded 1, included survival times greater than the median survival time.

2. *Age* was re-coded into a new variable, agerecod (Age Re-code). Two categories, young and old, were created. The median age (33) of the 811 homeless men was used to dichotomize this variable. Homeless men whose age was equal to, or less than the median, were coded 0 for young. Homeless men whose age was greater than the median were coded 1 for old.
3. *Relation* was re-coded. Each family record was analyzed. Homeless men who were classified as head of household were coded 1 as single fathers. Homeless men who were classified as either head of household or co-head of household (legal union or non legal union) and who had a partner who was similarly coded and who had no children were classified as adult families and were coded 2. Adult families always have only two family members. Homeless men who were classified as either head of household or co-head of household (legal union or non legal union) and who had a partner who was similarly coded, and a dependent who was either an adult or a child, was coded 3, partners with dependents.
4. *Family Size* was re-coded into a new variable, fmszrec (Family Size Re-code), which included two categories, small families and large families. Small families were coded 0 and included families whose size was equal to, or less than, the median family size (3). Large families were coded 1 and their family sizes were greater than the median family size (3).

5. *Prior eligibility* was re-coded into prirelig (Prior Eligibility Re-code). Two categories were created. Homeless men who never used shelter were coded 0, and homeless men who previously used shelter were coded 1.
6. *Ethnicity* – was recoded into ethncrc (Ethnicity Re-code). Two categories were created: Black was coded 1 and Non-Black was coded 0.
7. Medical Condition (prcode) was re-coded into prcrec (Medical Condition Re-code). Homeless men in families that reported no medical condition were coded 1, and men who reported family members with a medical condition were coded 0.
8. *Reason* was re-coded into a new variable rezrec (Reason re-code). Two categories were created. Overcrowded was coded as 1, and Not Overcrowded was coded as 0.
9. Exit disposition was re-coded into dispcat (Disposition Category). There were 72 different exit disposition categories in the CTS database. These were re-coded into five categories as follows: dispcat1 (Unresolved/Unknown) coded 1; dispcat2 (Housing Stability Plus) coded 2; dispcat 3 (Other) coded 3; dispcat4 (Earp/Section 8 Earp) coded 4 and dispcat5 New York City Housing Authority (NYCHA) coded 5.

Dummy variables were also created to facilitate Cox regression analysis. Categorical variables with more than two categories were re-coded into dummy variables and were included in the Cox regression model. Both the relation and disposition categories were re-coded into dummy variables. Relation was re-coded into a dummy variable called rela (Relation Dummy Variable). In the relation variable there were three categories: single fathers, adult families and partners with dependents. Since partners with dependents had the largest number of subjects, it was designated as the reference group. The rela1 (Relation dummy variable 1) variable was constructed to compare the effects of the time in shelter of single fathers to the time in shelter of partners with dependents. The rela2 (Relation dummy variable 2) variable was constructed to compare the effects of the time in shelter of adult families to partners with dependents. Table 1 shows the coding for the relation dummy variable is as follows:

Table 1

Coding for the Relation Dummy Variable

	Rela1	***Rela2***
Rela1 (single Fathers)	1	0
Rela2 (Adults Families	0	1
Reference (Partners with Dependents)	0	0

Table 2

Coding for the Disposition Dummy Variable

	Dispcat2 HSP	Dispcat3 Other	Dispcat4 Earp/Sec 8 Earp	Dispcat5 NYCHA
Ref Var (Dispat1) Unknown	**0**	**0**	**0**	0
Disp 1 (Dispcat2) HSP	**1**	**0**	**0**	0
Disp2 (Dispcat3) Other	**0**	**1**	**0**	0
Disp3 (Dispcat4) Earp/Sec 8 Earp	**0**	**0**	**1**	0
Disp4 (Discat5) NYCHA	**0**	**0**	**0**	1

A dummy variable disp (Disposition Category dummy variable) was constructed to re-code the disposition category variable. Table 2 shows the coding for the disposition dummy variable. The variable dispcat 1-Unknown/Unresolved (Unknown) was designated as the reference group since it had the largest number of observations. This left four variables to be re-coded. Dispcat2 (Housing Stability Plus) was re-coded disp1 (disposition dummy variable 1) and compared the time in shelter of homeless men who discharged to Housing Stability Plus to those who discharged to locations Unknown. Dispcat3 (Other) was re-coded disp2 (disposition dummy variable 2) and compared the time in shelter of homeless men who discharged to Other locations to those who discharged to locations Unknown. Dispact4 (Earp/Section 8 Earp) was re-coded into disp3 (disposition dummy variable 3) and compared the time in shelter of homeless men who discharged to Earp/Section 8 Earp to those who discharged to places Unknown. Dispcat5 (NYCHA) was re-coded disp4 (disposition dummy variable 4) and compared the time in shelter of homeless men who discharged to NYCHA to those who discharged to places Unknown.

5.2 Bivariate Analysis:

Contingency tables were used to examine the relationship between long-term stay and relation to family, age, family size, reason for homelessness, exit disposition, ethnicity, prior eligibility and medical problem. Bivariate analysis was conducted to assess if there was an association between the predictor variables and long-term stay. A summary of the results is first provided, followed by several cross-classification tables.

It is common when testing for relationships among variables to determine the direction and strength of the relationship between the variables. If there is a linear relationship between variables, the direction can either be positive or negative. In a positive relationship, an increase in one variable corresponds with an increase in the second variable. The reverse is true if there is an increase in one variable and a corresponding decrease in the second variable. In the latter case, the two variables would be negatively correlated. The correlation coefficient is used to measure this. Correlation can be measured along a continuum of -1 to 1. The closer to – 1 or + 1, the stronger the correlation (Weinbach and Grinnell (1997). Scores that are closer to zero indicate that there is no correlation at all.

5.3 Survival Analysis:

Survival analysis was used for studying the timing of events (shelter discharges) in order to analyze the survival times of homeless men (Paggiaro and Torelli 2004, Campbell, 2001). The survival time measured the number of days men spent in shelter before discharging. Survival in the context of this project means the client has not relocated from shelter. Failure to remain in shelter means the client has relocated and not survived. Kaplan-Meier survival analysis was applied by analyzing the distribution of survival times of homeless men. The survival times of homeless men was illustrated in graphical terms through the use of survival curves. The log-rank test was used to test the statistical significance of differences between the survival curves associated with different groups of homeless men.

The following is a demonstration of the procedures for measuring survival times that was selected from the literature (Kleinbaum and Klein, 2005). The data is not extracted from the sample survey. It is presented to demonstrate the procedures for interpreting survival analysis data. A four-year study period is used for this demonstration. Figure 1 is a sample analysis of survival time that tracks six subjects over a four-year period. Each subject is tracked to determine when they enter the study period and also to measure how long they survive.

Figure 1

Survival Time

in Days

YR1	YR2	YR3	YR4	
365	730	1095	1460	Study End
T=365 A===========X				
B=======================X	T=730			
C	===========X T=365			
D===================================X		T=1095		
E	======================= X	T=730		
F	==================================== X		T=1095	

Person A is followed from the start of the survey until being discharged. The survival time of Person A is 365 days. Person B is followed from the start of the survey until discharge from shelter. The survival time for Person B is 730 days. Person C enters the survey in the second year and is followed until discharge. The survival time for

Person C is 365 days. The survival times of the remaining subjects are calculated in the same manner.

Table 3

List of Survival Times

Persons	**Survival Times In days**	**Status Failed (1) Censored (0)**
A	365	1
B	730	1
C	365	1
D	1095	1
E	730	1
F	1095	1

The relationships among the six participants in Figure 1 are displayed in Table 3. Individuals who discharge are coded 1 (Failed). This means they discharged from shelter or in other words, they failed to survive. Individuals who do not discharge are censored and are coded 0. Notice how all the subjects in Table 3 are coded 1. This is because they all discharged from shelter. If one of the subjects had stayed in shelter for more than four years (1460 days), then that subject would not have experienced the event. They would have been censored and coded 0.

Measuring the Distribution of Survival Times:

At each interval, the researcher assesses how many subjects discharged from shelter and determines how many persons were at risk. Table 4 below provides an illustration of this analysis. The *Time* column describes the number of days to discharge from shelter. For example, in Table 4, three homeless men were discharged in 100 days, one within 200 days, one in 300 days, and so on. The *Status* column indicates if the subject experienced the event (discharge from shelter) or was censored.

The concept of risk is an important one in survival analysis. For this project, homeless men in shelter are at risk until they leave the shelter. They are referred to as the *Risk Set*. *Prior Number at Risk* describes the number at risk in the prior time interval. The Risk Set changes in later intervals as subjects discharged from shelter. Those subjects that remained are indicated in the *Number Remaining*. *Proportion at Risk* is the ratio of the number remaining in shelter divided by the prior number at risk. At time 0, it is 10/10 which equals 1 or 100% of the risk set. The *Cumulative Survival* is the product of two or more survivals. It is calculated by multiplying the current probability by all of the preceding probabilities.

Table 4

Sample Life Table

Time	Status	Prior No. At Risk	Number Remaining	Proportion At Risk	Cumulative Survival
0	**O**	**10**	**10**	**1**	1
100	**3**	**10**	**7**	**.7**	.7
200	**1**	**7**	**6**	**.86**	.60
300	**1**	**6**	**5**	**.83**	.5
400	**1**	**5**	**4**	**.80**	.40
500	**1**	**4**	**3**	**.75**	.30
600	**1**	**3**	**2**	**.67**	.20
700	**2**	**2**	**0**	**0**	0

The survival time of subjects in this example was reported in days. The method for calculating the survival time at each time interval is given by the formula 5.1:

$$S(t_i) = \frac{r_i - d_i}{r_i} \times S(t_{i-1}) \tag{5.1}$$

where $S(t_0)$ = Survival time. Given the number of events (discharges from shelter), d_i, at time t_i and the number remaining in shelter, r_i, just before t_i. The following calculations explain how cumulative survival times are arrived at in Table 4.

Survival time at 100 days= $\frac{(10-3)}{10} \times .7 = .70$

Survival time at 300 days= $\frac{(6-1)}{6} \times .6 = .50$

Survival time at 500 days= $\frac{(4-1)}{4} \times .4 = .30$

The estimates of survival probability used in the Kaplan-Meier curve were computed from the cumulative product. This is the product of each conditional probability with all previous conditional probabilities. The survival curve started at 100% when, at time 0, no clients have been discharged from shelter. Then, as clients discharged at different time intervals, the survival curve continued to decrease until all subjects in the study period eventually experienced the event. The researcher can then determine whether there is a significant difference among the survival curves using a Log rank test**.**

Two statistics can be used to interpret the distribution of survival times. Mean survival time is the area under the survival curve for uncensored cases. Median survival time is the time at which the survival function for a group of subjects is equal to .5. This means that half of the subjects have not yet experienced the event of interest. Statistics were generated using the Kaplan-Meier procedure in SAS (4.1). Kaplan-Meier generates survival estimates for each variable along with the log-rank statistic which tests for the equality of distributions. Survival curves are also produced. From the survival analysis I was able to test several hypotheses about the distributions of survival times.

5.4 Cox Proportional Hazards Model of Analysis:

The Cox Proportional Hazards model was used to analyze the effect of several predictor variables on survival. The proportional hazard model measures the hazard rate as a function of the predictor variables (covariates). The Cox regression model uses the hazard function to estimate the relative risk of failure. The hazard function is an estimate for the potential of getting the event per unit time at a particular instant, given that the case has survived until that instant. The hazard function in this project indicates the rate at which homeless men will discharge from shelter. The formula for the hazard function is:

$$\mathrm{h}\,(\mathrm{t},\mathbf{X}) = h_0(t)\, e^{i=1\,\sum \beta_i X_i} \tag{5.2}$$

Kleinbaum, and Klein (2005) inform us that the hazard is the product of two quantities. These are the baseline function h_{0t} multiplied by the exponential expression $e^{\{BX\}}$. *B* is a regression coefficient. According to Tabachnick and Fidell (2001), regression coefficients give the relative effect of each covariate on the survivor function. The regression coefficient is estimated by maximizing partial likelihood. *e* is the base of the natural logarithm and $h(_{o})t$ is the baseline hazard function when x is set to 0 (the expected risk without treatment or condition).

The Cox proportional hazards method computes a coefficient for each predictor variable that indicates the direction and degree of flexing that the predictor has on the survival curve. Zero means that a variable has no effect on the curve; it is not a predictor at all. A positive variable indicates that larger values of the variable are associated with greater influence. Knowing these coefficients, the researcher could construct a "customized" survival curve for any particular combination of predictor values. More importantly, the method provides a measure of the sampling error associated with each predictor's coefficient. This lets the researcher assess which variables' coefficients are significantly different from zero.

Likelihood-based methods provide researchers with the means to estimate survival data. Likelihood refers to the probability that the observed values of the dependent variable may be predicted from observed values of the independent variables. The likelihood varies from 0 to 1. From the likelihood measure a Log- Likelihood (LL) statistic can be generated. Log-likelihood is a negative number which is calculated through iterations by using Maximum Likelihood Estimation (MLE). Maximum Likelihood Estimation "… is carried out by taking partial derivatives of Log L with respect to each parameter in the model, and then solving a system of equations…"(Kleinbaum, & Klein, 2005, Cox, & Oakes, D. 1984, Vermunt, 1997 Wright, 1995). This process can be conducted in a stepwise manner beginning with a guessed value which is modified with a better estimate after iterations have been completed (Menard, 2002). Maximum Likelihood Estimates determine the size and direction of coefficients which increase Log Likelihood.

Log-Likelihood is an important concept because it is a building block that is used to facilitate hypothesis testing. The Likelihood ratio is a function of Log-Likelihood (Maller and Zhou, 1996). Also referred to as the 2LL statistic and the Goodness of Fit, the Log-Likelihood ratio reflects the unexplained variance in the dependent variable. This statistic is the basis for the Likelihood ratio test.

The Cox proportional hazards model was used to determine the influence of covariates on the length of stay of homeless men. (Hosmer and Lemeshow, 2000, Lee and Wang, 1992, Peterson, 1990) This analysis was conducted to determine which variables were the best predictors of long-term stay, and to study the influence of the covariates on the survival times of homeless men**.** There were twelve variables that were included in the model: relation dummy variable 1 (rela1), relation dummy variable 2 (rela2), disposition dummy variable 1 (disp1), disposition dummy variable 2 (disp2), disposition dummy variable 3 (disp3), disposition dummy variable 4 (disp4), age, ethnicity, prior eligibility, family size, reason for homelessness and medical condition.

A forward stepwise procedure was used for this study. Lee and Wang (1992) suggest that the Cox proportional hazards model can be fitted by using a stepwise procedure. SAS (4.1) uses the PHREG procedure, which results in the ranking of the predictor variables. This means that the model seeks to find the best relationship among the variables to explain long-term stay. Criteria were set for variables to enter and then stay in the model.

Stepwise regression consists of a series of step up and step down phases (SAS Institute, 2008). In the step up phase, variables are added into the model. In order to enter the model, variables have to be significant at the .25 level. In the step down phase, variables must be significant at the .15 level to remain in the model. Individual Chi square test scores are produced for each variable. The variable which is the most significant and which satisfies the .25 selection criteria is the first to enter the model. The Cox model then looks for the next variable which is the most significant and repeats this procedure until there are no variables left that satisfy the .25 selection criteria.

6. Results

6.1 Descriptive Analysis:

Table 5

Summary Statistics for Homeless Men in Families

	Single Fathers (n=61)	**Adult Families** (n=89)	**Partners with Dependents** (n=661)
Age			
Mean	**40**	**40**	**33**
Median	**40**	**41**	**31**
Mode	**45**	**44**	**26**
Family Size			
Mean	**3**	**2**	**4**
Median	**2**	**2**	**3**
Mode	**2**	**2**	**3**
Ethnicity			
Black	**41%**	**58%**	**53%**
Others	**59%**	**42%**	**47%**
Reason			
Overcrowding	**28%**	**29%**	**64%**
Other	**72%**	**71%**	**36%**
Prior Eligibility			
Prior use of Shelter	**15%**	**34%**	**34%**
Never use Shelter	**85%**	**64%**	**64%**
Medical			
No Condition	**79%**	**63%**	**54%**
Other	**21%**	**37%**	**46%**
Survival Time (In Days)			
Mean	**353**	**300**	**356**
Median	**317**	**233**	**296**
Mode	**237**	**21**	**257**

Homeless men were grouped by the relation category to facilitate comparisons. Table 5 provides summary statistics for single fathers, adult families and partners with dependents. The biggest group was partners with dependents (661). Those groups classified as single fathers (61) and adult families (89) were much smaller in number. Of the seven variables in Table 5, age, family size, and survival time are continuous. Age was reported in years, family size according to the number of family members, and survival time in days. Percentages are provided for the four categorical predictor variables- ethnicity, reason, prior eligibility and medical condition.

There was little variation in the ages of two groups of men when comparing the mean median, and mode. Single fathers and men living in adult families averaged 40 years of age. In comparison, men with partners and dependents were much younger (33). A more complete analysis of the age distribution is explained later in the chapter.

Family size also varied little among the three groups of men. Predictably, there was no variation in the sizes of adult families. Adult families by definition were always adult male and an adult co-head of household. Partners with dependents had the biggest average family size (4).

Survival times showed some notable differences. Adult families reached median survival time in 233 days. In comparison, the median survival time for single fathers was 317 days. Partners with dependents had a median survival time of 296 days. This was the closest to the median survival time (291 days) for all men in the survey. Further inquiry between the relationships of survival time and the relation category was conducted to assess whether or not these two variables were related.

It should be noted that the sample sizes of the single fathers and adult families were small in comparison to those men whose families were partners with dependents. A smaller sample size is more prone to variation because of the low number of observations. Outliers present in these groups will skew the results more than in groups with large sample sizes. The median was used in later analysis as a more reliable measure to counter the effects of sample size.

The majority of the men were minorities. Among the three groups of men, there was a majority of Black men in adult families (58%). There was also a majority (53%) of Black men among men who had partners and dependents. This was not the case for single fathers. Although there was not a majority, the percentage of Black men among single fathers was 41%.

I examined reasons for homelessness among the three groups of men. The percentage (28%) of Single Fathers who indicated overcrowding as the reason for seeking shelter was approximately the same as the percentage (29%) of Adult Families. The percentage (64%) of Partners with Dependents who cited overcrowding as the reason for seeking shelter, however, was much higher as compared to the other two groups of men. There was more than a two to one difference when comparing overcrowding among men with partners and dependents to the other two groups of men.

Prior eligibility was next examined. Approximately one third of the men in adult families were prior users of shelter. The same was true for partners with dependents. In contrast, only 15% of the single fathers had used shelter in the past.

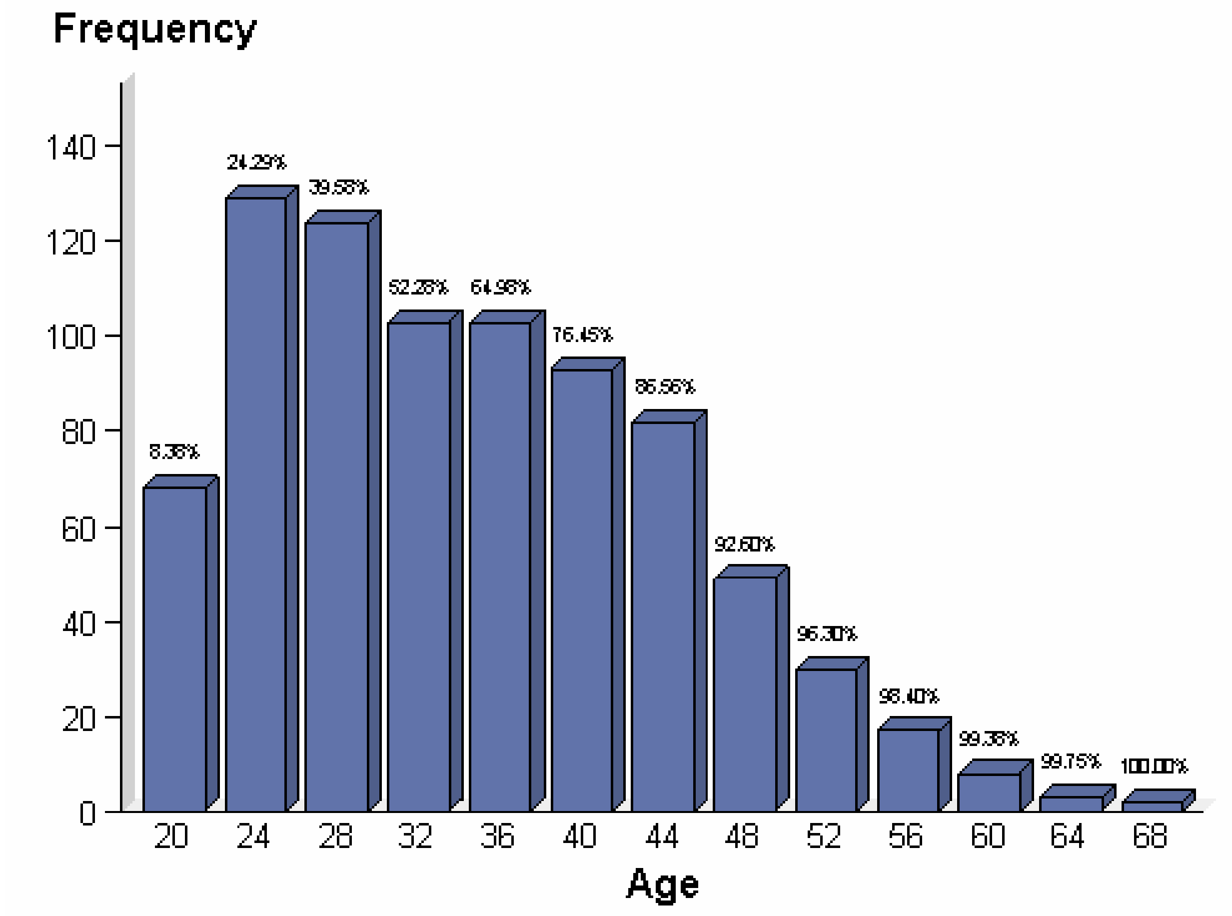
I then examined medical condition. I noticed that 46% of partners with dependents reported at least one medical condition. The percentage of families who reported at least one medical condition was much lower among those classified as single fathers (21%) or adult families (37%).

Descriptive data analysis was conducted on the entire sample of 811 men to get a more detailed snapshot. Frequency distributions were generated to examine variability in the data. The data is presented in graphs and tables for the variables of age, ethnicity, prior eligibility, reason for homelessness, family size, exit dispositions and survival time.

Figure 2

Age of Homeless Men in Families

n=811



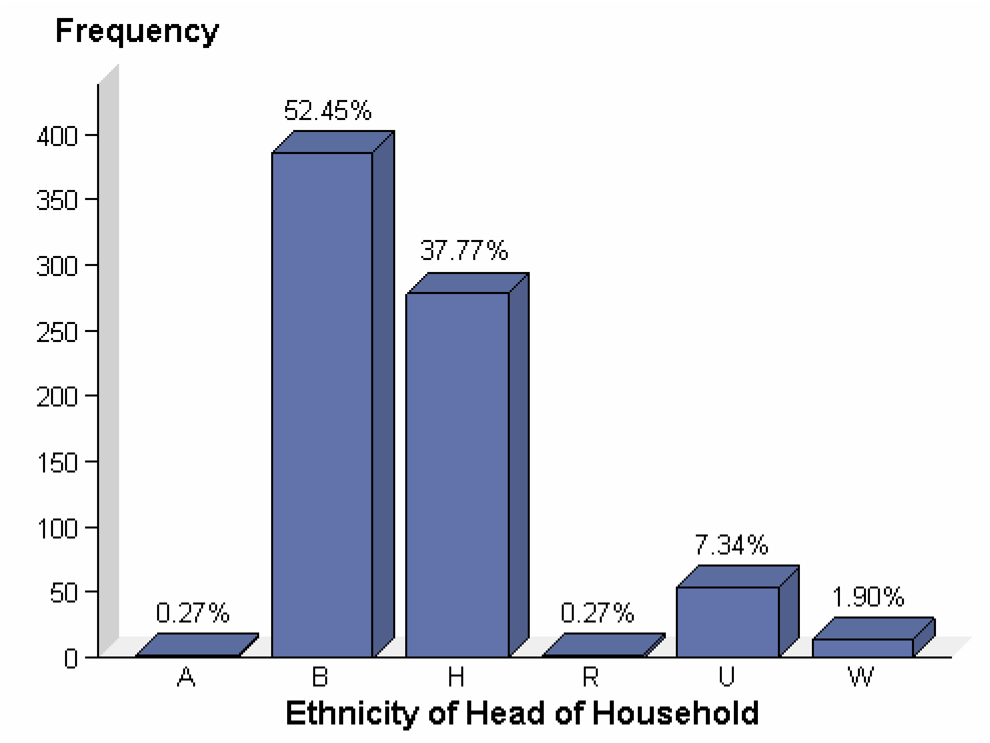
Mean =34, Median= 33, Mode= 26

Figure 2 shows the distribution of the ages of the 811 homeless men in the sample. The average age was 34, with the majority under 40. The distribution is skewed to the right. The distribution of ages provided some insight into the variability of the men in the sample, and the range (51) suggested that homelessness was not limited to one age group. Approximately one percent (1%) were 60 years or older. Approximately eight percent of the men were 20 or younger.

Figure 3

Ethnicity of Homeless Men in Families

n=811



Ethnicity was reported for the head of household in the family (Figure 3). The distribution of the data confirmed results previously reported in the literature. Shelter users were predominantly minority (90%), either Black or Hispanic. Approximately two percent were White, and less than one percent was Asian. For a small percentage (7%), the ethnicity was unknown. There were also some subjects who refused (R) to identify their ethnicity. This number was less than one percent.

Table 6

Prior Eligibility of Homeless Men in Families

Number of Times Family Has Been Found Eligible				
Prirelig	**Frequency**	**Percent**	**Cumulative Frequency**	**Cumulative Percent**
0	542	66.83	542	66.83
1	153	18.87	695	85.70
2	45	5.55	740	91.25
3	28	3.45	768	94.70
4	20	2.47	788	97.16
5	5	0.62	793	97.78
6	9	1.11	802	98.89
7	3	0.37	805	99.26
8	2	0.25	807	99.51
10	2	0.25	809	99.75
11	2	0.25	811	100.00

Patterns of shelter use prior to the current homeless spell were analyzed to determine the percentage of repeat users of shelter (Table 6). The prior eligibility column indicates the number of times families were previously eligible for shelter. The majority of the families were not repeat users. Five hundred and forty two families (66.83%) had no prior shelter experience. One hundred and fifty three families had one (18.87%) shelter experience. This was contrasted by two families who had been previously found eligible eleven times. Knowledge of these patterns of shelter eligibility could be useful in examining the impact of prior shelter use on long-term stay. For example, do families that are heavy users (more than five) of shelter stay in shelter longer as compared to families with no prior shelter eligibility? The impact of prior eligibility on long-term stay is examined later in this chapter.

Table 7

Reason Homeless Men in Families Apply for Shelter

	Reason	Count	Percent	Cumulative Percent
1	Overcrowding	278	0.34	0.34
2	Eviction	174	0.21	0.56
3	Discord not DV	92	0.11	0.67
4	Domestic Violence	42	0.05	0.72
5	Fair Hearing Overturned	39	0.05	0.77
6	Unlivable Condition	37	0.05	0.82
7	Eligible Client Logged Out	37	0.05	0.86
8	Financial Strain	12	0.01	0.88.
9	Out of Town Client	12	0.01	0.89
10	Other	88	0.11	1.00
	Total	811		.

Table 7 depicts the reasons for homelessness among the men in the sample. Overcrowding and eviction were the top two reasons for seeking shelter. Family discord and domestic violence were also cited by families as contributing factors leading to homelessness. Some men (5%) also sought shelter because of inadequate housing. Their housing was classified as unlivable. A majority (57%) of the men were not living in their own apartments prior to entering the shelter system. Some lived with parents (40%) and relatives (10%) while others (7%) lived with non-relatives. There were 88 families who classified their reasons for homelessness as other. Of these families, information was not available for 76 families. Of the remaining 12 families, the reasons cited for homelessness were family reunification, crime situations, aging out of foster care, or release from prison.

Table 8

Distribution of Family Sizes

Famsize	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	10	1.23	10	1.23
2	284	35.02	294	36.25
3	193	23.80	487	60.05
4	141	17.39	628	77.44
5	97	11.96	725	89.40
6	43	5.30	768	94.70
7	17	2.10	785	96.79
8	15	1.85	800	98.64
9	8	0.99	808	99.63
10	3	0.37	811	100.00

Mean=4 Median=3 Mode=2

An analysis of family size was conducted. The data in Table 8 provides important descriptive information about the families in the sample. The range (9) of family members provided a measure of the variability of family size. Homelessness was not limited to one particular family size. The median family size was 3 while the average for the number of families in the sample was higher (4). There were 10 families that had a family size of one. It is not uncommon for families to reside in shelter for a brief period while awaiting for dependent to be reunited.

Table 9

Frequency Distribution of Homeless Men in Families by Disposition Category

n=811

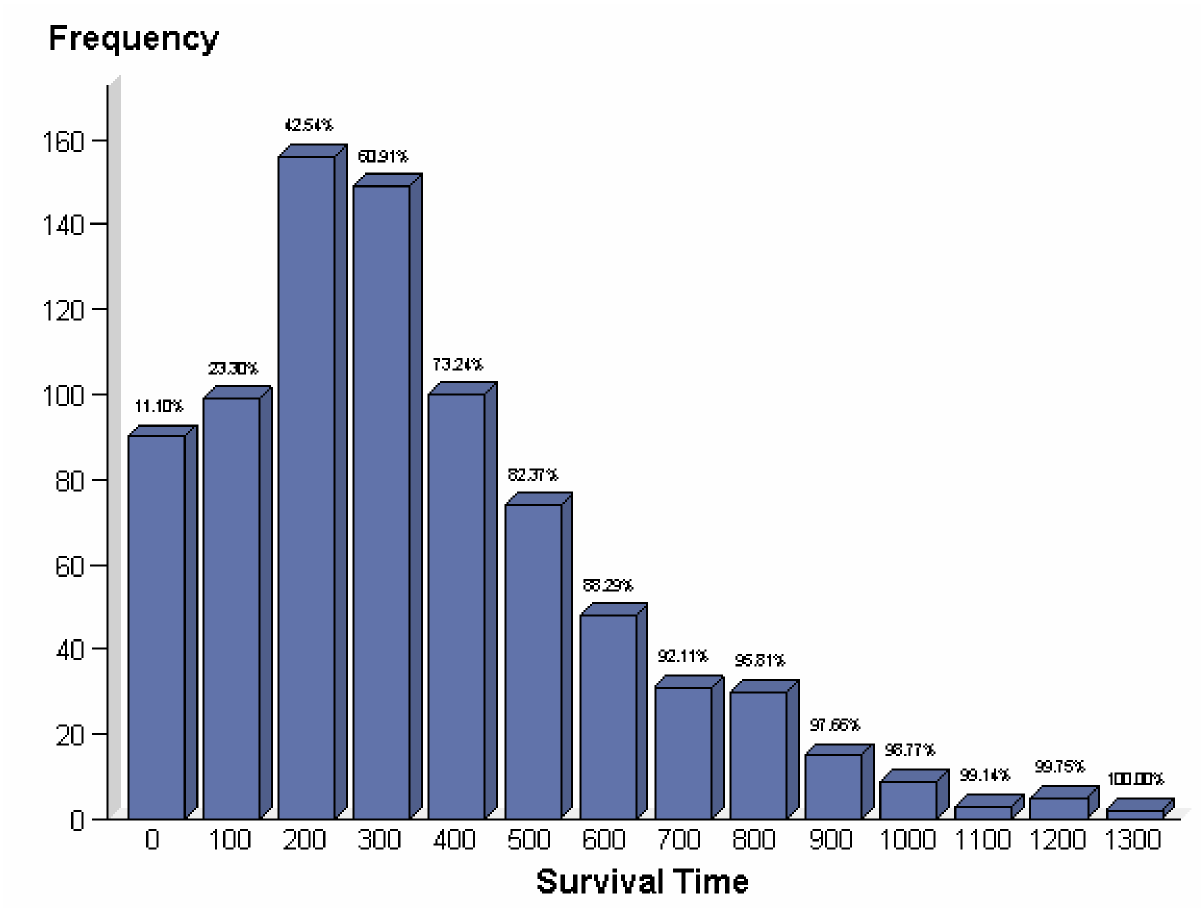
Group Category	Dispcat1 Unkown	Dispcat2 HSP	Dispcat3 Other	Dispcat4 Earp/Sec8 Earp	Dispcat5 NYCHA	Total
Single Fathers	15	9	17	4	16	61
Adult Families	46	8	18	3	14	89
Partners with Dependents	174	158	121	118	90	661
Total	**235**	**175**	**156**	**125**	**120**	**811**

Of the five disposition categories, three were clear pathways to permanent housing (Table 9): Housing Stability Plus (HSP), Earp/Section 8 Earp and New York City Housing Authority (NYCHA). The total number of men who discharged to these three permanent housing locations was 420, 52 % of the men: In comparison 25% of Single Fathers, 52% of Adult Families and 26% of Partners with Dependents discharged to locations Unknown. The path from shelter to Unknown locations for Single Fathers (25%) was comparable to Partners with Dependents (26%) while the percentage of Adult Families (52%) that discharged to Unknown locations was twice as much as compared to the other two groups of men.

Figure 4

Frequency Distribution of Survival Times of Homeless Men in Families

n=811



Mean=350 Median=291 Mode=21

A cumulative frequency distribution of the survival times of the 811 men in the sample shows the percentages that remained in shelter during the study period (Figure 4). The mean survival time was 350 days. The distribution of survival times is skewed to the right. The majority of the men (61%) discharged from shelter within 300 days. Of the 811 men, 73% discharged within 400 days in shelter. The remaining 27% took much longer to discharge, with discharge patterns that exceeded 1,000 days. A description of survival times for all variables is available in Appendix 6.

Table 10

Life Table Analysis of Homeless Men in Families

Stratum 1: relation = Single Fathers										
Life Table Survival Estimates										
Interval		Number Failed	Number Censored	Effective Sample Size	Conditional Probability of Failure	Conditional Probability Standard Error	Survival	Failure	Survival Standard Error	Median Residual Lifetime
[Lower,	Upper)									
0	200	21	0	61.0	0.3443	0.0608	1.0000	0	0	300.0
200	400	19	0	40.0	0.4750	0.0790	0.6557	0.3443	0.0608	216.7
400	600	12	0	21.0	0.5714	0.1080	0.3443	0.6557	0.0608	175.0
600	800	4	0	9.0	0.4444	0.1656	0.1475	0.8525	0.0454	233.3
800	1000	3	0	5.0	0.6000	0.2191	0.0820	0.9180	0.0351	166.7
1000	1200	1	0	2.0	0.5000	0.3536	0.0328	0.9672	0.0228	200.0
1200	1400	1	0	1.0	1.0000	0	0.0164	0.9836	0.0163	.
Stratum 2: relation = Adult Families										
Life Table Survival Estimates										
Interval		Number Failed	Number Censored	Effective Sample Size	Conditional Probability of Failure	Conditional Probability Standard Error	Survival	Failure	Survival Standard Error	Median Residual Lifetime
[Lower,	Upper)									
0	200	42	0	89.0	0.4719	0.0529	1.0000	0	0	223.8
200	400	21	0	47.0	0.4468	0.0725	0.5281	0.4719	0.0529	235.7
400	600	14	0	26.0	0.5385	0.0978	0.2921	0.7079	0.0482	185.7
600	800	3	0	12.0	0.2500	0.1250	0.1348	0.8652	0.0362	320.0
800	1000	5	0	9.0	0.5556	0.1656	0.1011	0.8989	0.0320	180.0
1000	1200	1	0	4.0	0.2500	0.2165	0.0449	0.9551	0.0220	.
1200	1400	3	0	3.0	1.0000	0	0.0337	0.9663	0.0191	.
Stratum 3: relation= Partners with Dependents										
Life Table Survival Estimates										
Interval		Number Failed	Number Censored	Effective Sample Size	Conditional Probability of Failure	Conditional Probability Standard Error	Survival	Failure	Survival Standard Error	Median Residual Lifetime
[Lower,	Upper)									
0	200	190	0	661.0	0.2874	0.0176	1.0000	0	0	307.7
200	400	261	0	471.0	0.5541	0.0229	0.7126	0.2874	0.0176	180.5
400	600	112	0	210.0	0.5333	0.0344	0.3177	0.6823	0.0181	187.5
600	800	60	0	98.0	0.6122	0.0492	0.1483	0.8517	0.0138	163.3
800	1000	30	0	38.0	0.7895	0.0661	0.0575	0.9425	0.00905	126.7
1000	1200	7	0	8.0	0.8750	0.1169	0.0121	0.9879	0.00425	114.3
1200	1400	1	0	1.0	1.0000	0	0.00151	0.9985	0.00151	.

The survival times of the three groups of men were analyzed to determine how they differed (Table 10). The data should be read as follows. At the beginning of the study period at time 0, the risk set for single fathers, adult families, and partners with dependents was 61, 89 and 661 respectively. The number failed indicates the number of men that discharged at various time intervals. It should be interpreted that the men failed to survive their stay in shelter because they discharged. At time 0 there was 100% survival. Gradually, as subjects failed, the percentage that survived decreased until it eventually reached 0, when all subjects failed. The shortest survival time was one day. The longest survival time among the three groups of men was 1200 days for single fathers, 1,259 days for men in adult families and 1,321 days for men in families classified as partners with dependent children.

The survival patterns were similar among the three groups of men. The majority of all families discharged within the first two time intervals (0-400 days) according to the data in Table 10. In each group of men, the percentage who remained in shelter after 400 days was approximately 34% of single fathers (21/61=34%): 29% of adult families (26/89=29%): and 32% of partners with dependents (210/661=32% %). Discharges of men after 400 days were over a much longer period of time as compared to the men who discharged within 400 days. The men in the latter group took more than twice as long to discharge from shelter as compared to men in families who discharged within 400 days.

Note that no subject in Table 10 is “censored”. Censoring occurs when the subject has not experienced the event, is lost to follow up, or withdraws from the study (Johnson, and Johnson, 1999). Subjects that left the shelter because they moved to permanent housing or left unannounced were treated as discharged from shelter regardless of the reason. The study period was set at four years (1,460 days). The longest survival time among the three groups of men was 1,321 days. Thus none of the 811 subjects in this study was censored

6.2 Bivariate Analysis:

This section will analyze if long-term stay is correlated with client predictor variables. There were eight variables compared to long-term stay, defined as shelter stays that exceeded 291 days. Two were continuous: age and family size. Six were categorical: relation to head of household, ethnicity, reason for seeking shelter, medical condition, prior use of shelter and disposition category. Bivariate analysis was conducted on the predictor variables to determine if there was an association between them and long-term stay at the .05 level. Cross classification tables were created to illustrate variations in long-term stay among homeless men.

First, I compared the association between age and long-term stay. This analysis showed the percentages of old and young men that experienced long-term stay. Second, I examined the relationship between long-term stay and relation. This resulted in the percentage of long-term stay that occurred among the three groups of homeless men. Third, I looked at the relationship between prior use of shelter and long-term stay. Fourth, I examined the relationship between long-term stay and disposition category.

Table 11

Long Term Stay * Homeless Men in Families Cross Tabulations

Variable	χ	***DF***	**Significance**	**Pearson's R**
Age	2.2787	1	0.1312	0.0530
Relation	2.8575	2	0.2396	0.0594
Fam Size	2.5788	1	0.1083	0.0564
Prior Eli	5.2318	1	0.0222	-0.0803
Ethnty	2.9616	1	0.0853	0.0604
Reason	0.3810	1	0.5371	0.0217
Medical	0.7961	1	0.3722	0.0313
Dispcat	46.580	4	0.0001	0.2397

Table 11 shows the results of bivariate analyses between the eight predictor variables and long-term stay. Of the eight tests conducted, two were significant: prior eligibility and disposition category. The relationship between disposition category and long-term stay was highly significant, p=.0001. The correlation between long-term stay and disposition category was also the strongest, *r-0.2397*.

Notice the direction of the association between long-term stay and prior eligibility. It is negatively correlated. This means that the more times men used shelter in the past the less likely they were to be long-term stay clients. Cross classification tables were used to examine these relationships further.

Table 12

Age of Homeless Men in Families Cross-Classified by Long-Term Stay

Table of svtmed by agemed			
Svtmed(Survival Time Median)	**Agemed(Age Median)**		
Frequency Percent Row Pct Col Pct Cumulative Col%	**Young**	**Old**	**Total**
Not a Long Term Stay	219 27.00 53.94 52.64 52.64	187 23.06 46.06 47.34 47.34	406 50.06 50.06
Long Term Stay	197 24.29 48.64 47.36 100.00	208 25.65 51.36 52.66 100.00	405 49.94 100.00
Total	416 51.29	395 48.71	811 100.00

Approximately half (405) of the 811 homeless men selected for this study had long-term stays in shelter (Table 12). There was no significant difference in long-term stay between old men as compared to young men χ= .022787 (1), p=0.1312. Chi square values were reported with one degree of freedom at the .05 level. Long-term stay was not associated with the age of homeless men, *r*=.0530, N=811. There were more old homeless men (208) who were long-term stays as compared to those that were young (197).

Table 13

Homeless Men in Families
Cross-Classified by Long-Term Stay

Table of svtmed by relation				
Svtmed(Survival Time Median)	**relation(Relation to Head of Household)**			
Frequency Percent Row Pct Col Pct Cumulative Col%	**Single Fathers**	**Adult Families**	**Partners with Dependents**	**Total**
Not a Long Term Stay	29 3.58 7.14 47.54 47.54	52 6.41 12.81 58.43 58.43	325 40.07 80.05 49.17 49.17	406 50.06 50.06
Long Term Stay	32 3.95 7.90 52.46 100.00	37 4.56 9.14 41.57 100.00	336 41.43 82.96 50.83 100.00	405 49.94 100.00
Total	61 7.52	89 10.97	661 81.50	811 100.00

According to the data in Table 13, Single fathers had the highest percentage of long-term stays (52%) followed by partners with dependents (51%) and then adult families (42%). As expected the most (336) long-term stay families were found in the partners with dependents groups. This group had the most families (661) in the sample. Even though there were differences in the sample sizes of the three groups of men, the percentage of long-term stay families in each ranged between 42% (Adult families) and 52% (Single Fathers). This suggested that long-term stays were not unique to one group.

Bivariate analysis confirmed that was no significant difference between relation and long-term stay among the three groups of men χ= 0.28575 (2), p=0.2396 (Table 11). Moreover, I did not find a strong association between long-term stay and relation, r=.059, n=811. The homeless man's status in the family seemed not to be related to long-term stay.

Table 14

Prior Eligibility of Homeless Men in Families Cross Classified by Long-Term Stay

Table of svtmed by prelrc			
svtmed(Survival Time Median)	**Prelrc(Prior Elgibility Recoded)**		
Frequency Percent Col Pct Cumulative Col%	**Never Used Shelter**	**Prior Users of Shelter**	**Total**
Not a Long Term Stay	256 31.57 47.23 47.23	150 18.50 55.76 55.76	406 50.06 50.06
Long Term Stay	286 35.27 52.77 100.00	119 14.67 44.24 100.00	405 49.94 100.00
Total	542 66.83	269 33.17	811 100.00

Table 14 indicates that 52.77% of the men in the emergency family shelter system who had never used shelter were long-term stay clients as compared to 44.24 % of long-term stay clients who were prior users of shelter. The relationship was significant, χ= 0.52318 (1), p=0.0222, and not anticipated. There was an inverse relationship between prior eligibility and long-term stay, r= -0.0803, n=811. I noted this outcome but chose to conduct further analysis before concluding that prior use of shelter is associated with long-term stay.

Table 15

Disposition Category of Homeless Men in Families Cross-Classified by Long-Term Stay

Table of svtmed by dispcat						
Svtmed(Survival Time Median)	**dispcat(Disposition Category)**					
Frequency Percent Row Pct Col Pct Cumulative Col%	**Dispcat 1 Unknown**	**Dispcat 2 HSP**	**Dispcat 3 Other**	**Dispcat 4 Sec 8**	**Dispcat 5 NYCHA**	**Total**
Not a Long Term Stay	153 18.87 37.68 65.11 65.11	60 7.40 14.78 34.29 34.29	72 8.88 17.73 46.15 46.15	72 8.88 17.73 57.60 57.60	49 6.04 12.07 40.83 40.83	406 50.06 50.06
Long Term Stay	82 10.11 20.25 34.89 100.00	115 14.18 28.40 65.71 100.00	84 10.36 20.74 53.85 100.00	53 6.54 13.09 42.40 100.00	71 8.75 17.53 59.17 100.00	405 49.94 100.00
Total	**235 28.98**	**175 21.58**	**156 19.24**	**125 15.41**	**120 14.80**	**811 100.00**

Long-term stay was compared by disposition category to determine if the two variables were associated. Of the eight tests for correlation with long-term stay, disposition category resulted in the strongest correlation (r=0.2397, n=811), as summarized in Table 11. There was a highly significant relationship between long-term stay and disposition category, χ= 46.580 (4), p=0.0001. Among the five discharge categories, men who discharged to Housing Stability Plus had the greatest percentage (28%) of long-term stayers (Table 15). Housing Stability Plus also had the greatest percentage (65.7%) of men that moved to permanent housing. The greatest number of men that discharged during the study period discharged to places Unknown. Of the 235 men that discharged to places Unknown, 153 (65%) discharged before 291 days.

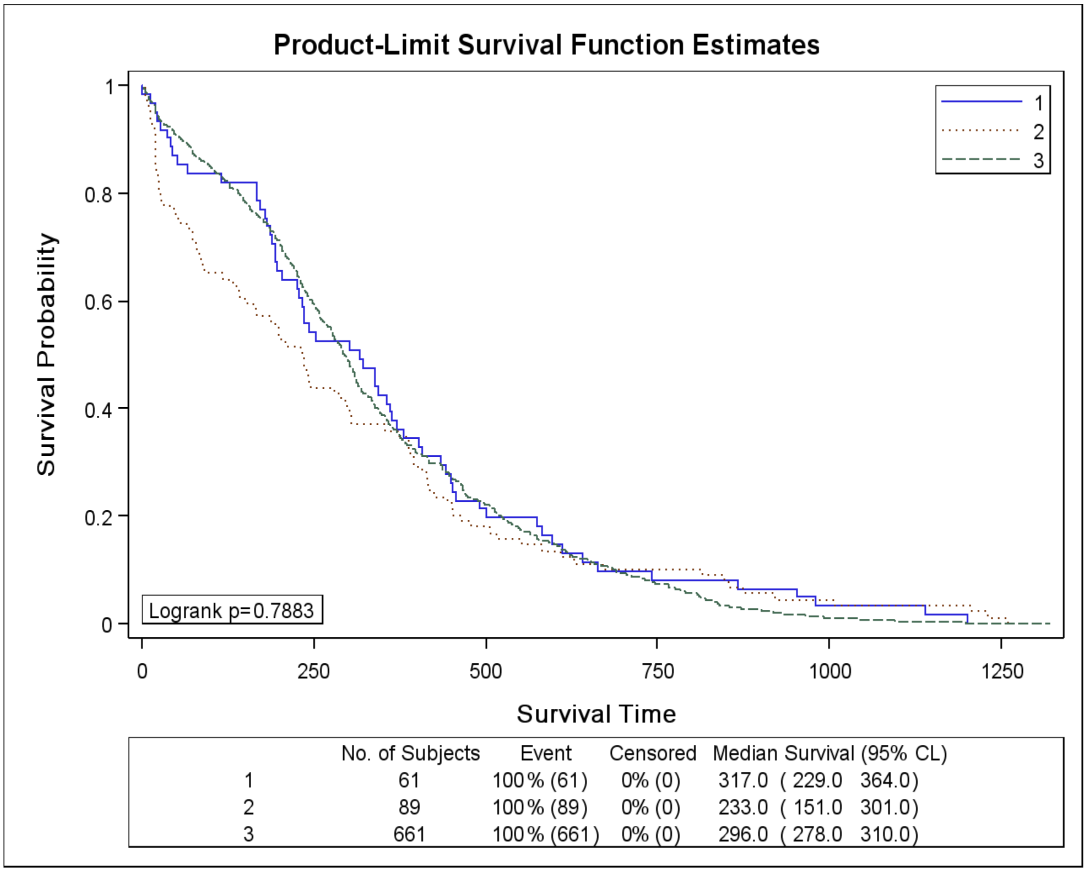
6.3 Survival Analysis:

The test results are reported in the following order: relation, age, family size, ethnicity and medical condition. These are followed by tests of survivorship for homeless men based on their use of shelter. These tests include reason for seeking shelter, prior eligibility for shelter and where they discharged from shelter (disposition category). Graphical evidence (survival curves) is provided to illustrate how survival times change over time. An a priori decision was made to use the log rank test to compare the equality of two or more Kaplan-Meier Survival curves. The log rank test is used to determine if the differences among survival curves are statistically significant. Test results for the log rank test are included in each graph and are reported at the .05 level.

Hypotheses #1: *The results would show that there is no difference in the survival times among the three groups of homeless men.*

Figure 5

Survival Curves of Homeless Men in Families by Relation



(1) Single Fathers (2) Adult Families (3) Partners with Dependents

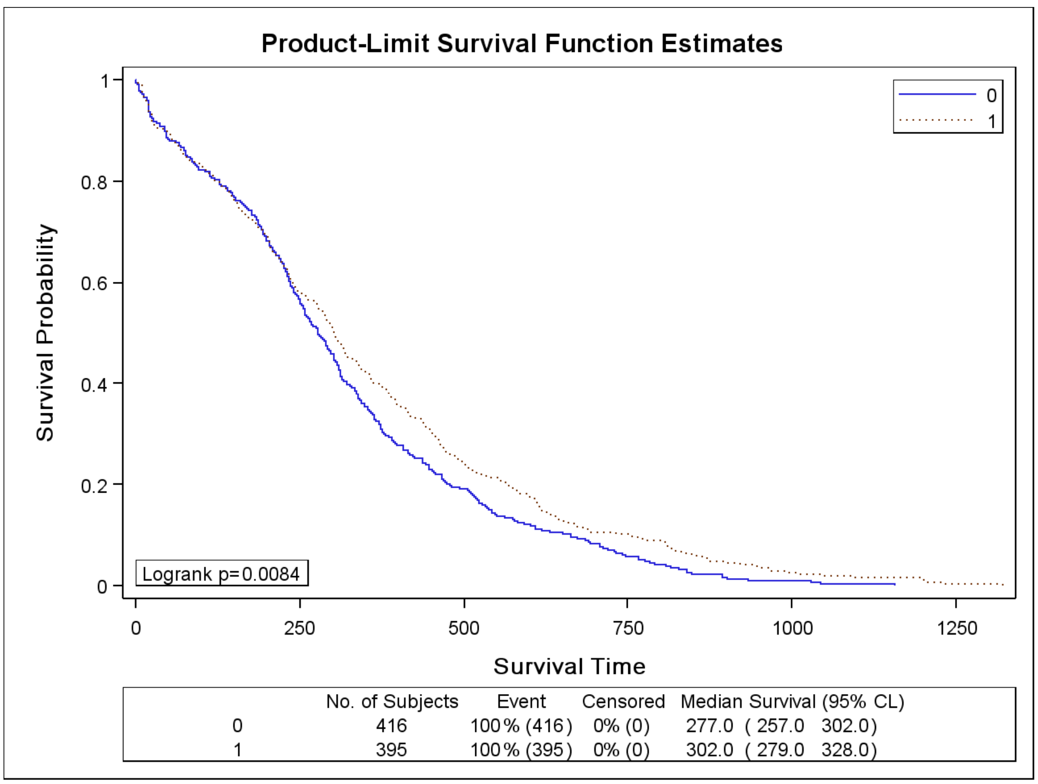
The results of the survival analysis for the first hypothesis showed that there was no significant difference in the distribution of survival times among the three groups of homeless men, log rank= 0.4759 (df 2), p=0.7883 (Figure 5). Adult families had the fastest median survival time of 233 days. In comparison, single fathers had the slowest median survival time (317 days). The survival functions showed that adult families had faster survival times as compared to the other two groups of men. This meant that

Adult families left shelter at a much faster rate, up to 600 days, after which, their survival experience was similar to the other two groups of men. Based on the results of the log rank test, I accepted hypothesis #1. There was insufficient evidence to conclude different survival experiences among the three groups of men.

Hypothesis # 2: *The results would show that there is no difference in survival times between old and young homeless men.*

Figure 6

Survival Curves of Homeless Men in Families by Age



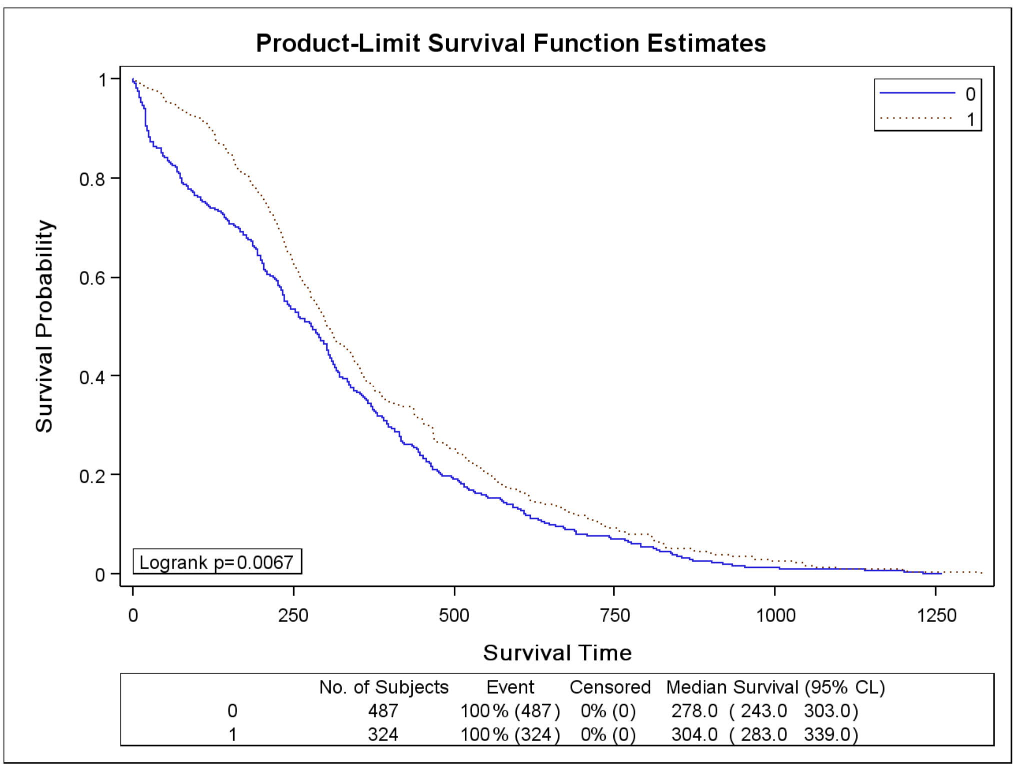
(0) Young Men (1) Old Men

There was a significant difference in the distribution of the survival times of young and old men by the log rank 6.9478 (df1), p. =.0.0084 (Figure 6).Young men reached median survival time (277) faster as compared to old men (302). The graphical evidence supports this conclusion. The survivorship of the old and young men seemed similar up to 250 days in shelter. There was a noticeable difference in the survival times of young men as compared to old men after 250 days in shelter. Old men survived longer in shelter as compared to young men. I rejected the null hypothesis and concluded there was a difference in the distribution of survival times between old and young men.

Hypothesis # 3: *The results would show that there is no difference in the survival times between small and large families.*

Figure 7

Survival Curves of Homeless Men in Families by Family Size



Small Families (0) Large Families (1)

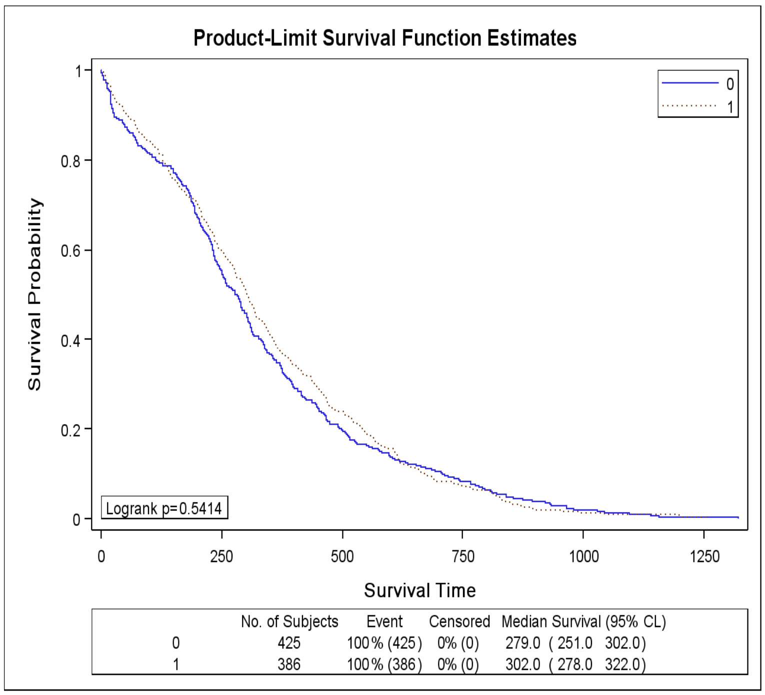
Figure 7 illustrates the difference in the distribution of survival times among small and large families, log rank=11.6259 (df=1), p.0067. Large families took longer to discharge from shelter as compared to small families. This difference was noticeable throughout the survival function. The biggest difference occurred within the first 200 days in shelter. Large families survived longer in shelter up to 1,000 days. Thereafter, there was little or no difference in the rate of survivorship. I concluded that there was sufficient evidence to reject the null hypothesis. There is a difference in the distribution of survival times between large and small families.

The survival times of both groups led to some interesting observations. The rate of survival for both small and large families followed a steady pattern up to the time that 75% discharge, after which the rate of discharge slowed considerably. Seventy-five percent of small families discharged after 444 days. Seventy-five percent of large families discharged after 505 days. Thereafter, the remaining 25% for both small and large families took considerably longer to discharge: small families discharged from shelter after 1,259 days, while large families discharged from shelter by 1,321 days.

Hypothesis # 4: *The results would show that there is no difference in the survival times between Black men and Non Black men.*

Figure 8

Survival Curves of Homeless Men in Families by Ethnicity



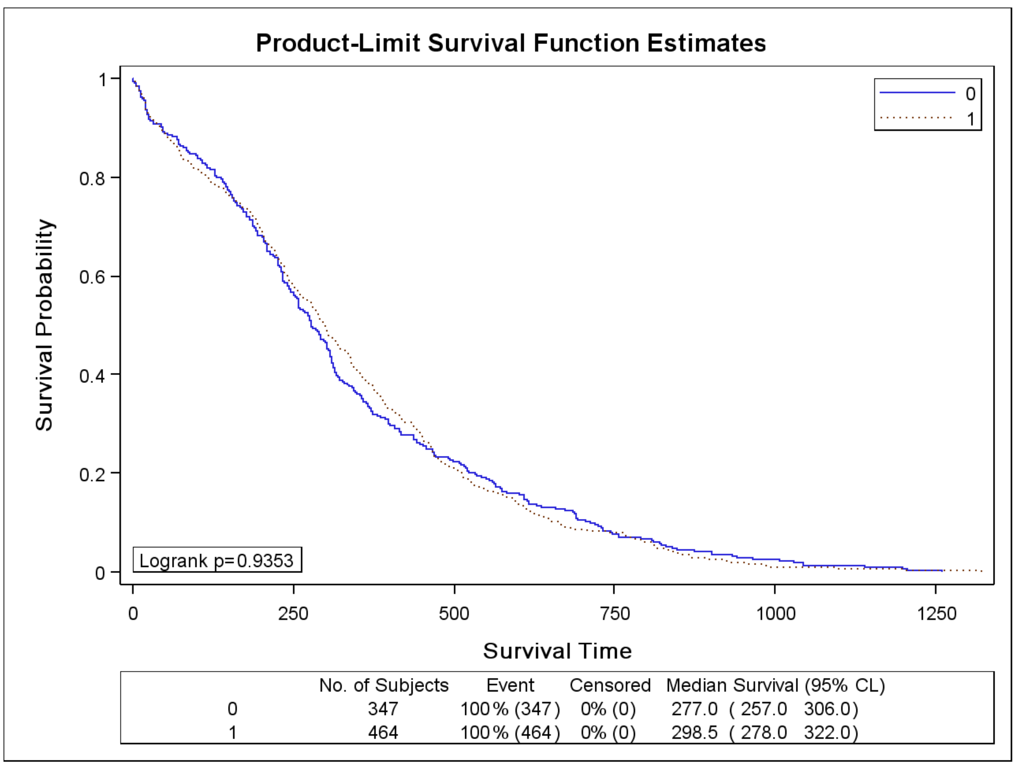
Non Black (0) Black (1)

Figure 8 indicates no difference in the survival times of Black men as compared to Non Black men in the sample, log rank=.6895 (df=1), p=0.54514. However, there were some differences in the distribution of survival times among the two groups of men. After approximately 250 days in shelter, Black men survived longer in shelter as compared to non- Black men. The graphical evidence in Figure 8 supports this conclusion. Among 811 men, the median survival time for Black men was 302 days as compared to 279 days for non Black men. However, these differences were small and not significant. This led me to conclude that there were no differences in the distribution of survival times between Black and Non Black men. I therefore accepted the fourth hypothesis.

Hypothesis # 5: *The results would show that there is no difference in the survival times of homeless men based on medical condition.*

Figure 9

Survival Curves of Homeless Men in Families by Medical Condition



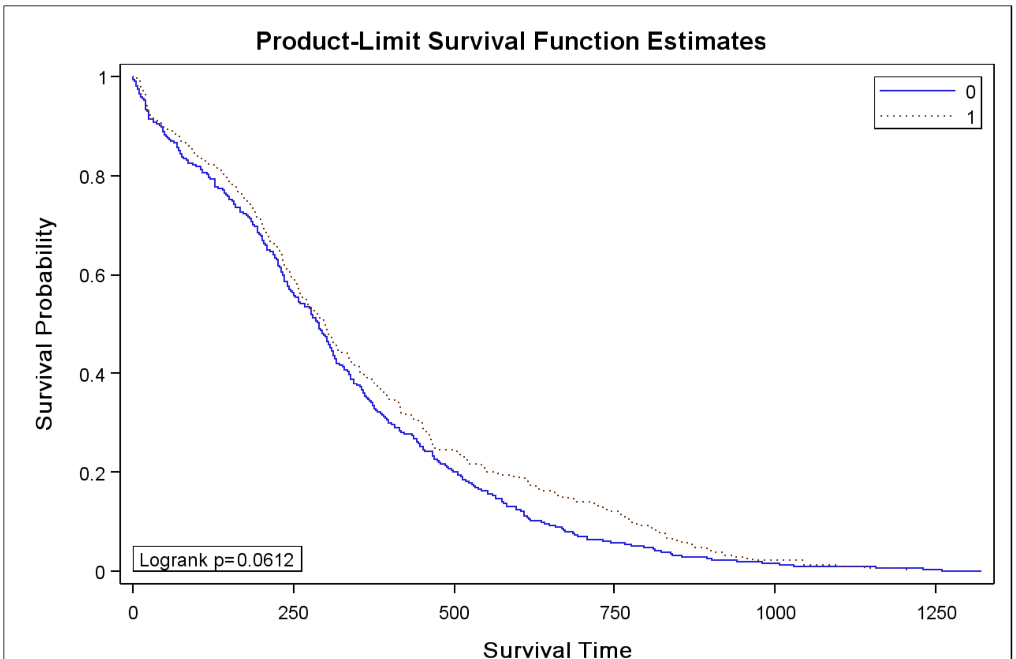
Other (0) No Medical Condition (1)

Figure 9 shows that there was no difference in the distribution of the survival times of men based on medical condition, log rank test=3.4703 (1), p=0.9353. The result was highly non-significant. The rate of survivorship was approximately the same from beginning to end. Of the two groups of men, those with no medical conditions survived longer. The median survival time for these men was 299 days as compared to median survival time (277 days) for Other men (men in families with medical conditions). As a result, I accepted hypothesis number 5. There is no difference in the survival times of homeless men based on medical condition.

Hypothesis # 6*: The results would show that there is no difference in the survival times of homeless men based on reason for homelessness.*

Figure 10

Survival Curves of Homeless Men in Families by Reason



	No. of Subjects	Event	Censored	Median Survival (95% CL)
0	533	100% (533)	0% (0)	289.0 (260.0 307.0)
1	278	100% (278)	0% (0)	299.5 (262.0 333.0)

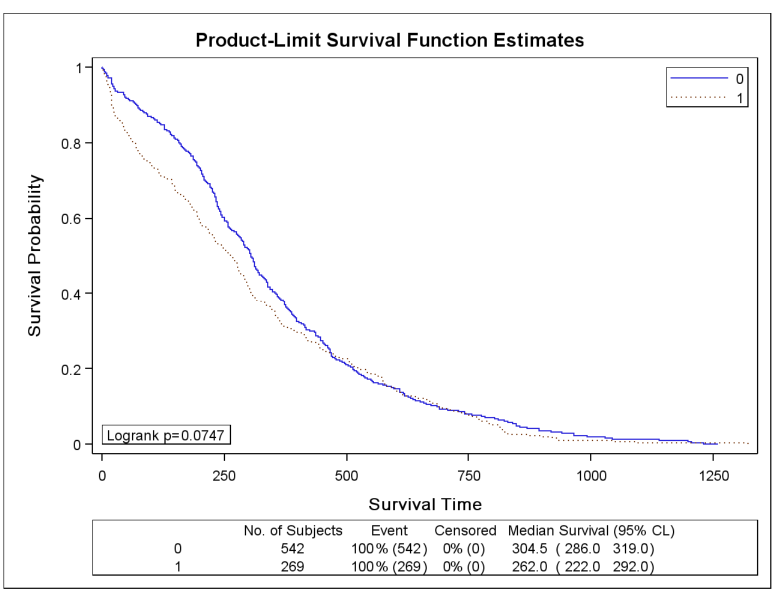
Other (0) Overcrowding (1)

Figure 10 shows that there was no difference in the distribution of survival time between homeless men who sought shelter because of overcrowding and homeless men that sought shelter for other reasons, log rank test=3.4703 (1), p.=.0612. The result was marginally not significant. Of the two groups of men, homeless men who entered shelter due to Overcrowding reached median survival time (300 days) slower as compared to Other homeless men (289) who sought shelter for different reasons which included but were not limited to eviction, domestic violence and financial strain.

Although the results were marginally not significant, I did observe some differences in the survival patterns of the two groups of men. Up to 1,000 days, homeless men who discharged for reasons other than overcrowding discharged faster as compared to those who sought shelter for overcrowding. However, the differences in the distribution of survival patterns were small. I therefore accepted the sixth hypothesis. There is no difference in the survival times of homeless men based on reason for homelessness.

Hypothesis # 7:*The results would show that there is no difference in the survival times of prior users of shelter and those men who never used shelter.*

Figure 11
Survival Curves of Homeless Men in Families by Prior Eligibility



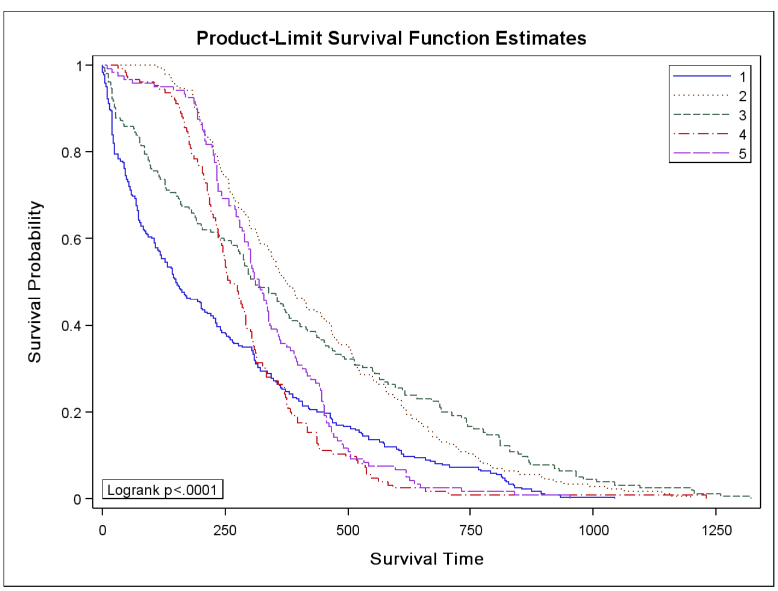
Never Used Shelter (0) Prior Users of Shelter (1)

Figure 11 shows no difference in the distribution of the survival times of men who were prior users of shelter as compared to those men who never used shelter, log rank test=3.4703 (1), p=0.0747. The median survival time for homeless men who never used shelter was 305 days. This survival pattern was slower as compared to men who were prior shelter users who reached median survival time 262 days. In the first 250 days, there is a noticeable difference in the survival patterns between the two groups of men. After 500 days, the rate of survivorship was approximately the same. I concluded that there was insufficient evidence to reject the null hypothesis. There is no is difference in the distribution of survival times between prior users and men who never used shelter.

Hypothesis # 8: *The results would show that there is no difference in the survival times of homeless men based on disposition category.*

Figure 12

Survival Curves of Homeless Men in Families by Disposition Category



Unknown/Unresolved (1) Housing Stability Plus (2)
Other (3) Earp/Section 8 Earp (4) NYCHA (5)

Figure 12 shows a significant difference in the survival times of homeless men when comparing all five disposition categories, log rank test=42.4892 (4), p. =.0001. The results were highly significant. I rejected the null hypothesis that there was no difference in the survival times of men based on disposition category. This means that at least one survival function had a different distribution in comparison to the others.

6.4 Cox Regression Analysis:

After I completed the survival analyses, I used Cox Regression analysis to assess if the predictor variables influenced long-term stay. Output 1 displays model information, summarizes the number of events and censored values, and provides initial chi square test scores of variables before they were entered in the model. There were 12 variables that were evaluated for inclusion in the stepwise regression. According to the data in Ouput1, disposition dummy variable 1 (disp1) was the most significant variable and was therefore selected as the first variable to enter the model.

Output 1

Cox Proportional Hazards Model

Model Information		
Data Set	Data Mining Study of Homeless Men	
Dependent Variable	Long-Term Stay	Hazard Rate
Censoring Variable	Status	0=In shelter 1=Discharge
Censoring Value(s)	0	
Ties Handling	EFRON	

Number of Observations Read	811
Number of Observations Used	811

Summary of the Number of Event and Censored Values			
Total	**Event**	**Censored**	**Percent Censored**
811	811	0	0.00

Analysis of Variables Not in the Model			
Variable	**Score Chi-Square**	**Pr > ChiSq**	**Label**
rela1	0.3537	0.5520	Effect of single father to partner with dependents
rela2	0.1744	0.6763	Effect of adult family to partner with dependents
disp1	19.6779	<.0001	Effect of HSP to unknown
disp2	14.2800	0.0002	Effect of Other to unknown
disp3	9.7858	0.0018	Effect of Earp to unknown
disp4	0.6567	0.4177	Effect of NYCHA to unknown
rezrec	3.4874	0.0618	Reason
fmszrec	7.3462	0.0067	Family Size
prelrc	3.1677	0.0751	Prior Eligibility
prcrec	0.0065	0.9358	Medical Condition
ethnrec	0.3748	0.5404	Ethnicity
agemed	6.9755	0.0083	Age

Residual Chi-Square Test		
Chi-Square	**DF**	**Pr > ChiSq**
76.3956	12	<.0001

The First Model in the Stepwise Selection Process

Step 1. Variable disp1 is entered. The model contains the following explanatory variables: Disp1

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	**Without Covariates**	**With Covariates**
-2 LOG L	9251.127	9230.324
AIC	9251.127	9232.324
SBC	9251.127	9237.022

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	20.8036	1	<.0001
Score	19.6779	1	<.0001
Wald	19.4234	1	<.0001

Analysis of Maximum Likelihood Estimates									
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**Chi-Square**	**Pr > ChiSq**	**Hazard Ratio**	**95% Hazard Ratio Confidence Limits**		**Variable Label**
disp1	1	-0.37746	0.08565	19.4234	<.0001	0.686	0.580	0.811	Effect of HSP to Unknown

Analysis of Variables Not in the Model			
Variable	**Score Chi-Square**	**Pr > ChiSq**	**Label**
rela1	0.7533	0.3854	Effect of single father to partner with dependents
rela2	0.0016	0.9683	Effect of adult family to partner with dependents
disp2	31.7361	<.0001	Effect of Other to unknown
disp3	4.3480	0.0371	Effect of Earp to unknown
disp4	0.0938	0.7594	Effect of NYCHA to unknown
rezrec	4.0819	0.0433	Reason

Analysis of Variables Not in the Model			
Variable	Score Chi-Square	Pr > ChiSq	Label
fmszrec	6.2020	0.0128	Family Size
prelrc	2.5836	0.1080	Prior Eligibility
prcrec	0.0852	0.7704	Medical Condition
ethnrec	0.2559	0.6129	Ethnicity
agemed	10.7101	0.0011	Age

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
53.5552	11	<.0001

Disposition dummy variable 1 (Disp1) had the highest chi square (19.6779). Disposition dummy variable 1 (Disp1) compared the effects of homeless men who discharged to Housing Stability Plus in comparison to those men who discharged to locations Unknown. It was the first variable selected because it was significant at the .25 level, establishing the criteria for entry into the model. It also met the .15 criteria for staying in the model. The parameter estimate (-0.3774 6) is exponentiated to yield a hazard ratio of 0.686. The hazard ratio shows that the rate of discharge of men who discharged to Housing Stability Plus was .686 times that of men who discharged to Unknown locations. An alternative interpretation is that men who discharged to Housing Stability Plus discharged from shelter .314 less than the rate of men who discharged to locations unknown. After the first step, there were eleven variables not in the model. These are evaluated for selection.

The Second Model in the Stepwise Selection Process

Step 2. Variable disp2 is entered. The model contains the following explanatory variables:

disp1 disp2

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Without Covariates	With Covariates
-2 LOG L	9251.127	9196.709
AIC	9251.127	9200.709
SBC	9251.127	9210.105

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	54.4184	2	<.0001
Score	54.3174	2	<.0001
Wald	53.1979	2	<.0001

Analysis of Maximum Likelihood Estimates									
Variable	DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	95% Hazard Ratio Confidence Limits		Variable Label
disp1	1	-0.53941	0.08920	36.5663	<.0001	0.583	0.490	0.694	Effect of HSP to unknown
disp2	1	-0.53217	0.09540	31.1151	<.0001	0.587	0.487	0.708	Effect of Other to unknown

Analysis of Variables Not in the Model			
Variable	Score Chi-Square	Pr > ChiSq	Label
rela1	0.1213	0.7276	Effect of single father to partners with dependents
rela2	0.0528	0.8182	Effect of adult family to partners with dependents
disp3	0.1365	0.7118	Effect of Earp to unknown
disp4	4.6252	0.0315	Effect of NYCHA to unknown
rezrec	4.5490	0.0329	Reason
fmszrec	4.8525	0.0276	Family Size
prelrc	2.0799	0.1493	Prior Eligibility
prcrec	0.1212	0.7278	Medical Condition
ethnrec	0.1032	0.7481	Ethnicity
agemed	4.6365	0.0313	Age

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
21.0466	10	0.0208

In the second model, the next variable to enter the model was disposition dummy variable 2 (disp 2). Disposition dummy variable 2 (Disp2) was constructed to measure the effect of homeless men who discharged to Other locations to those men who discharged to locations Unknown. It had the next highest chi square (31.7361); met the .25 selection criteria, and the .15 criteria for remaining in the model. By exponentiating the parameter estimate (-0.53217) I ended up with the hazard ratio .587, meaning the rate of discharge of men who discharged to Other housing was .587 times that of men who discharged to locations Unknown. Alternatively, the rate of discharge of men who discharged to Other locations is .413 less than the rate of men discharging to locations Unknown. Notice the change in the hazard ratio of disposition dummy variable 1 (Disp1) as it moves from the first model (.686) to the second model (.583). This means that the hazard ratio for disp1 in the second model controls for the effects of other variables in the model.

The Third Model in the Stepwise Selection Process

Step 3. Variable fmszrec is entered. The model contains the following explanatory variables:

disp1 disp2 fmszrec

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	**Without Covariates**	**With Covariates**
-2 LOG L	9251.127	9191.820
AIC	9251.127	9197.820
SBC	9251.127	9211.914

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	59.3076	3	<.0001
Score	59.2263	3	<.0001
Wald	58.0945	3	<.0001

Analysis of Maximum Likelihood Estimates									
Variable	DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	95% Hazard Ratio Confidence Limits		Variable Label
disp1	1	-0.52680	0.08936	34.7539	<.0001	0.590	0.496	0.704	Effect of HSP to unknown
disp2	1	-0.52177	0.09543	29.8946	<.0001	0.593	0.492	0.716	Effect of Other to unknown
fmszrec	1	-0.15853	0.07204	4.8425	0.0278	0.853	0.741	0.983	Family Size

Analysis of Variables Not in the Model			
Variable	Score Chi-Square	Pr > ChiSq	Label
rela1	0.7428	0.3888	Effect of single father to partners with dependents
rela2	0.0865	0.7686	Effect of adult family to partners with dependents
disp3	0.6508	0.4198	Effect of Earp to unknown
disp4	5.1890	0.0227	Effect of NYCHA to unknown
rezrec	4.1535	0.0415	Reason
prelrc	2.2024	0.1378	Prior Eligibility
prcrec	0.6618	0.4159	Medical Condition
ethnrec	0.2082	0.6481	Ethnicity
agemed	4.5059	0.0338	Age

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
16.2183	9	0.0625

The third variable to enter the model was family size. Family size measures the effects of large families in comparison to small families. Notice the change in the chi square value for family size. At the beginning of the model building process, its chi square value (7.3462) was fourth highest. However at the end of the first two models, the chi square value (4.8525) was highest among the variables not in the model. The hazard ratio tells us that the rate of discharge of large families was .853 times that of men in shelter as compared to small families. This also means that the rate of discharge for men in large families is .147 less than the rate of discharge for men in small families.

After the third model there were nine variables not in the model. The chi square values of the remaining variables were lower as compared to what they were at the beginning of the model building process. Also, note that only four of the remaining nine variables were significant at the .25 level. These were disposition dummy variable 4 (Disp4), reason for seeking shelter, age and prior eligibility. Model building will continue until there are no variables remaining that meet the .25 selection criteria for entry into the model.

The Fourth Model in the Stepwise Selection Process

Step 4. Variable disp4 is entered. The model contains the following explanatory variables:

disp1 disp2 disp4 fmszrec

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	**Without Covariates**	**With Covariates**
-2 LOG L	9251.127	9186.457
AIC	9251.127	9194.457
SBC	9251.127	9213.250

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	64.6701	4	<.0001
Score	65.8179	4	<.0001
Wald	64.4073	4	<.0001

Analysis of Maximum Likelihood Estimates									
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**Chi-Square**	**Pr > ChiSq**	**Hazard Ratio**	**95% Hazard Ratio Confidence Limits**		**Variable Label**
disp1	1	-0.59058	0.09291	40.4053	<.0001	0.554	0.462	0.665	Effect of HSP to unknown
disp2	1	-0.58326	0.09844	35.1082	<.0001	0.558	0.460	0.677	Effect of Other to unknown
disp4	1	-0.24053	0.10605	5.1440	0.0233	0.786	0.639	0.968	Effect of NYCHA to unknown
fmszrec	1	-0.16798	0.07213	5.4236	0.0199	0.845	0.734	0.974	Family Size

Analysis of Variables Not in the Model			
Variable	Score Chi-Square	Pr > ChiSq	Label
rela1	0.2115	0.6456	Effect of single fathers to partners with dependents
rela2	0.1396	0.7087	Effect of adult family to partners with dependents
disp3	0.0033	0.9545	Effect of Earp to unknown
rezrec	3.8056	0.0511	Reason
prelrc	1.2071	0.2719	Prior Eligibility
prcrec	0.4839	0.4867	Medical Condition
ethnrec	0.3113	0.5769	Ethnicity
agemed	4.7456	0.0294	Age

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
11.0711	8	0.1977

In the fourth model, disposition dummy variable 4 (disp4) enters the model. It compared the effects of homeless men who discharged to the New York City Housing Authority (NYCHA) and men who discharged to locations Unknown. Disposition dummy variable 4 (disp4) was significant at the .25 level and also met the criteria for staying in the model. The hazard ratio tells us that the rate of discharge of homeless men who discharged to NYCHA is .786 times (or .214 less than) that of homeless men who discharged to locations Unknown. Note how the hazard ratio for disposition dummy variable 1 (disp1) has now changed from when it first entered the model (.686) to .554.

This shows the rate of discharge from shelter for homeless men who discharged to Housing Stability Plus when controlling for the effects of other variables in the model.

The Fifth Model in the Stepwise Selection Process

Step 5. Variable agemed is entered. The model contains the following explanatory variables:

disp1 disp2 disp4 agemed fmszrec

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	**Without Covariates**	**With Covariates**
-2 LOG L	9251.127	9181.711
AIC	9251.127	9191.711
SBC	9251.127	9215.202

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	69.4163	5	<.0001
Score	70.5510	5	<.0001
Wald	69.1379	5	<.0001

Analysis of Maximum Likelihood Estimates									
Variable	DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	95% Hazard Ratio Confidence Limits		Variable Label
disp1	1	-0.60323	0.09306	42.0212	<.0001	0.547	0.456	0.656	Effect of HSP to unknown
disp2	1	-0.54556	0.09990	29.8215	<.0001	0.580	0.476	0.705	Effect of Other to unknown
disp4	1	-0.24581	0.10609	5.3691	0.0205	0.782	0.635	0.963	Effect of NYCHA to unknown
fmszrec	1	-0.16556	0.07211	5.2715	0.0217	0.847	0.736	0.976	Family Size
agemed	1	-0.15832	0.07274	4.7369	0.0295	0.854	0.740	0.984	Age

Analysis of Variables Not in the Model			
Variable	Score Chi-Square	Pr > ChiSq	Label
rela1	0.0017	0.9670	Effect of single fathers to partners with dependents
rela2	0.0220	0.8821	Effect of adult family to partners with dependents
disp3	0.0489	0.8250	Effect of Earp to unknown
rezrec	4.7756	0.0289	Reason
prelrc	1.0178	0.3130	Prior Eligibility
prcrec	0.1306	0.7178	Medical Condition
ethnrec	0.0350	0.8517	Ethnicity

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
6.2807	7	0.5074

Age is the fifth variable to enter the model. It too is significant at the .25 level and will also remain in the model because it meets the .15 criteria required for variables. Age compares the effects of old men who relocate from shelter to young men. The hazard ratio tells us that the rate of discharge of old men is .854 times (or .146 less than) that of young men. The level of significance for age (.0295) was not as significant as the other four predictors that preceded it. The relative importance of the predictor variables thereby indicates the best predictors.

The Sixth Model in the Stepwise Selection Process

Step 6. Variable rezrec is entered. The model contains the following explanatory variables:

disp1 disp2 disp4 agemed fmszrec rezrec

Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Without Covariates	With Covariates
-2 LOG L	9251.127	9176.871
AIC	9251.127	9188.871
SBC	9251.127	9217.061

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	74.2559	6	<.0001
Score	74.9330	6	<.0001
Wald	73.4991	6	<.0001

Analysis of Maximum Likelihood Estimates									
Variable	DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	95% Hazard Ratio Confidence Limits		Variable Label
disp1	1	-0.61226	0.09318	43.1731	<.0001	0.542	0.452	0.651	Effect of HSP to unknown
disp2	1	-0.54457	0.09992	29.7057	<.0001	0.580	0.477	0.706	Effect of Other to unknown
disp4	1	-0.23751	0.10616	5.0054	0.0253	0.789	0.640	0.971	Effect of NYCHA to unknown
Rezrec	1	-0.16380	0.07504	4.7650	0.0290	0.849	0.733	0.983	Reason
fmszrec	1	-0.15864	0.07213	4.8371	0.0279	0.853	0.741	0.983	Family Size
agemed	1	-0.17501	0.07318	5.7200	0.0168	0.839	0.727	0.969	Age

Analysis of Variables Not in the Model			
Variable	Score Chi-Square	Pr > ChiSq	Label
rela1	0.0030	0.9563	Effect of single fathers to partners with dependents
rela2	0.0254	0.8735	Effect of adult family to partners with dependents
disp3	0.1026	0.7487	Effect of Earp to unknown
prelrc	1.0936	0.2957	Prior Eligibility
prcrec	0.1577	0.6913	Medical Condition
ethnrec	0.0409	0.8397	Ethnicity

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
1.5058	6	0.9591

Note: No (additional) variables met the 0.25 level for entry into the model.

The sixth variable to enter the model is reason for seeking shelter. Reason for seeking shelter measures the effects of homeless men who entered shelter because of Overcrowding to those men who entered for Other reasons. Reason is significant at the .25 level and stays in the model because it meets the .15 criteria. The hazard ratio of homeless men who entered shelter due to Overcrowding is .849. This tells us that the rate of discharge of men who entered shelter for Overcrowding is .849 (or .151 less than) that of men who entered shelter for Other reasons. After the sixth step, model building terminates. Of the remaining six variables that are not in the model, none meet the .25 selection criteria for entrance. These were rela1 (Effect of Single Father to Unknown), rela2 (Effect of Adult Family to Unknown), disp3 (Effect of EARP to Unknown), prelrc (Prior Eligibility), prcrec (Medical Condition) and ethrec (Ethnicity).

Summary of Stepwise Selection							
	Variable						
Step	Entered	Removed	Number In	Score Chi-Square	Wald Chi-Square	Pr > ChiSq	Variable Label
1	disp1		1	19.6779	.	<.0001	effect of HSP to unknown
2	disp2		2	31.7361	.	<.0001	effect of Other to unknown
3	fmszrec		3	4.8525	.	0.0276	Family Size
4	disp4		4	5.1890	.	0.0227	effect of NYCHA to unknown
5	agemed		5	4.7456	.	0.0294	Age
6	rezrec		6	4.7756	.	0.0289	Reason

Stepwise regression shows the effect of the covariates individually as each covariate is entered into the model. Based on this step by step process, there are six predictors that are included in the final model and of these six, three are dummy variables. The dummy variables in the final model compare the rate of men who discharged to Housing Stability Plus (disp1), Other locations (disp2) and NYCHA (disp4) to men who discharged to locations Unknown. The other three variables in the final model are family size, age and reason for seeking housing. At each step during the model building process, the hazard ratios for the covariates are adjusted when other covariates enter the model. This tells how the rate of discharge for each covariate impacts survival time.

It is customary to include confidence intervals for the hazards (See page 164). They can be interpreted as follows. For the disposition dummy variable 1 (disp1), the hazard ratio in the sixth and final model is .542 with a confidence interval that ranges from .452 to .651. This means that the rate of discharge of men who discharged to Housing Stability Plus is .542 times that of men who discharged to Unknown locations. This decrease in the rate of discharge could be as little as 45% or as much as 65% with 95% confidence. Disposition dummy variable 2 (disp 2) is interpreted in the same way. The final hazard is .580 with a confidence interval that ranges from .477 to .706. This means that the rate of discharge of men who discharged to Other locations is .580 times that of men who discharged to Unknown locations. This decrease in the rate of discharge could be as little as 48% or as much as 70% with 95% confidence. The other confidence intervals for the predictor variables in the model can be interpreted in the same way.

What is the impact when considering the cumulative effect of all the covariates in the final model? The combined effect of all the covariates can be measured if we consider the following model by Kalbfleisch and Prentice (2002).

$$\lambda\ (t;x) = \lambda\ \exp\ (Z`B) \qquad 6.1$$

The model in 6.1 indicates to the researcher that the log rate failure is a linear function of the covariate vector Z. Then 6.1 is written to reflect log survival time (Y=log T) to yield

$$Y=\alpha - Z` B + W. \qquad 6.2$$

where α is – log T and W has the extreme value distribution. According to Kalbfleisch and Prentice (2002), the extreme value distribution "…derives its name from its appearance as the limiting distribution of a standardized form of the minimum of a sample selected from a continuous distribution…).

To describe the combined effect of the covariates in the final model (See Page 164), take the parameter estimates, add them and then exponentitate. Of the six parameter estimates, three were dummy variables. Thus only the first dummy variable to enter the model (disp1) is included in the final calculation. Combining the parameter estimates disp1 (.612), agemed (.175), fmszrec (.158) and rezrec (.164) resulted in a baseline hazard of 1.109 and when exponentiated, the combined hazard rate is 3.03. The hazard rate 3.03 tells us that the discharge rate of old homeless men who lived in large families that entered the shelter system due to Overcrowding and who discharged to Housing Stability Plus stayed 1.92 times longer in shelter as compared to young men who lived in small families who entered the shelter system for reasons other than Overcrowding and who discharged to locations other than Housing Stability Plus.

7: Discussion

This chapter is organized as follows. First, I discuss issues associated with the project design and its impact on the research. Next, there is a discussion of the findings from descriptive and bivariate analysis. The data in these two phases of analysis provided a snapshot of the men and also described the proportion of men that experienced long-term stays in shelter. Findings from survival analysis and Cox regression analyses follow. Key findings of the above-mentioned four levels of analyses are then presented.

The chapter continues by focusing on the challenges to understanding long-term stays among homeless men and their families. I look at ways in which survival analysis and Cox regression analysis can be used to research long-term stays, and the different ways in which to use the methods in this inquiry. Practice implications are discussed. I then review factors associated with the role of the shelter, followed by a discussion of policy implications. The chapter ends with a discussion of limitations in the research and recommendations for future research.

7.1 Design Choices:

A key design choice that influenced the measurement of the survival times involved the length of time for the study period. The study period for this research was set at four years (1,460 days). In this project, all subjects discharged within 1,321 days. What would have happened if the study period were set at three years (1,095 days) or two years (730 days)? In either of these two projects, many subjects would have been censored. This means they would have survived the event of interest in this inquiry, discharge from shelter. Results can therefore vary based on the length of the study period.

The results in this inquiry would have been different. As compared to 100% that discharged, some percentage of families would have survived and been censored.

The scope of the research was impacted by the choice of predictor variables that were included in the project. Predictor variables in this project were age, relation, family size, and prior eligibility, and ethnicity, reason for seeking shelter, medical condition and disposition category. These are by no means comprehensive. Because of the amount of time required, it was not possible to collect data on other variables that may have had an impact on long-term stay in shelter. These could include, but are not limited to, education, family income, rent paid prior to entering shelter, substance abuse and mental health problems. Therefore, it should be understood that additional inquiry into long-term stay is possible if a broader array of variables were included in the research.

Another key design choice was to exclude facility location from the analysis. Of the 811 records in the sample, information was available on the facility from which each family discharged. Had I included this variable, it would have been possible to make comparisons of the survival times of families from different shelters. The percentages of clients that discharge from shelters are tracked monthly by DHS, but little is known how predictor variables impact the distribution of families' survival times in those shelters. While this information would have added to my understanding of length of stay in shelter, I chose to study the influence of predictor variables on long-term stay, ignoring how long-term stay varied from shelter to shelter.

7.2 Key Findings:

The results from the descriptive analysis confirmed that homelessness was not concentrated in one particular group of men. Among those in the sample, homelessness was found in young and old, in families large and small, and in families from different ethnic backgrounds, the majority of them minorities. Men who were prior users of shelter and those who never used shelter were also included in the sample. The majority (57%) of the men in this sample that entered the shelter system did not live in their own homes. Many were housed with families or friends before entering the shelter system. The majority cited overcrowding as the reason for seeking shelter.

I observed similarities and differences among the men in the sample. The majority of the men were in their 30s and 40s. A small percentage (approximately 4%) was 52 or older. The frequency distribution in Figure 3 confirmed that the majority (90%) were either Black or Hispanic. Approximately five percent of the men had family sizes with six or more members. The differences were also clear. There was variability among the men based on prior eligibility, reason for homelessness, and medical condition. For the majority of these men (86%), homelessness was limited to one homeless spell. Approximately 14% had more frequent spells. For 1% of the men who were homeless seven or more times, their risk of homelessness appeared to be high. Another indicator which stood out was medical condition. It was clear that among the three groups, partners with dependents reported the most medical conditions. In contrast, single fathers reported the least.

A prominent indicator was disposition category. The disposition category provided useful information that described the path from shelter for those in the sample. According to the data in Table 9, 52% (420) of the men discharged to Housing Stability Plus, Earp/Section 8 Earp and NYCHA and their discharges were to clear pathways to permanent housing. In comparison, 29% (235) of all men in the sample discharged to locations Unknown. This tells us that approximately 30% of the families are leaving shelters without discharge plans and we have no knowledge if their exits will be stable.

At the bivariate level, cross tabulations and chi-square tests were conducted to determine if there was an association between long-term stay and the predictor variables. The analyses were conducted to determine which predictors were associated with long-term stay. Of the eight predictors that were compared with long-term stay, there was an association with two predictors: prior eligibility (p-value=0.0222) and disposition category (p-value=0.0001). Exit disposition had the strongest association with long-term stay. Future inquiry into how time in shelter varies depending on the types of discharges and the application process involved may add understanding to the problem of long-term stay.

There were several key findings from Survival Analysis and Cox Regression analysis. The findings showed which variables had the strongest influence on long-term stay. The findings also raised a number of important issues about the way in which men in families used shelter. They provide some insight into the differences in the survival patterns among the men.

1: The distribution of Survival Times is not uniform.

The distribution of survival times of the men in the survey is a cause for concern. Survival times ranged from 1 day to 1,321 days. While 73 % of all men discharged within 400 days, the rate of discharge for the remaining 27% was over a period that extended to more than three years. The pattern for discharge among men in families who leave shelter within 400 days is noticeably different for men in families who discharge after 400 days. As compared to a steady rate for men who discharged within 400 days, the rate of discharge after 400 days is much more gradual (slower).

According to Hosmer et. al., (2008), when subjects have longer survival times the curve descends more slowly. In effect, this means the longer the time spent in shelter the slower the rate of discharge. Pliavin et. al. (1996) supports this conclusion. The graphical evidence in Figure 4 confirms this. It would behoove program staff who seek to minimize long-term stays to engage homeless men and their families early and often. Providers should examine the intake process to determine its effectiveness. Are clients engaged from the first day they enter the shelter? Can the orientation process be revised to ensure clients receive the help they need at the earliest stage possible? These are questions that shelter providers should be asking.

2: Age was a significant predictor of long-term stay

The ages of the men in the sample raised a concern. When the survival times of old men were compared to young men, old men took more time to discharge from shelter. This finding was used to reject hypothesis # 2. This result was consistent with the literature that has documented that age is a predictor of length of stay in shelter. Wong, et. al. (1997) has reported that a one year increase in the age of the family head was associated with a decline in discharge from shelter. It is interesting to note that for the first eight months in shelter, the survivorship of old and young men is approximately the same. After eight months the rate of discharge of old homeless men slows considerably. It would suggest that as time in shelter increases, it takes longer for old men to discharge.

3: Family size was a significant predictor of long-term stay

It was clear from survival analysis that large families took longer to discharge as compared to small families. Based on this finding hypothesis #3 was rejected. There are many reasons why family size is important when relocating homeless families to permanent housing. It is possible they may have more difficulty obtaining the right amount of subsidy to accommodate the number of family members. It is also possible that other factors such as reuniting family members may delay the discharge of families from shelter.

4: *Disposition category had the strongest influence on long-term stay.*

The most significant finding was that disposition category had the strongest influence on long-term stay. When long-term stay was compared with disposition category in bivariate analysis, it had the strongest correlation as compared to the other predictor variables. When survival analysis was conducted to test hypothesis # 8, the results showed that there was a highly significant difference in the distribution of survival times based on the disposition category. The same result, that disposition category was the strongest predictor variable, was found in Cox regression analysis.

The aim of Cox regression is to examine the effect of predictor variables simultaneously to determine their effect (or lack of effect) on survival time**.** A review of the survival times of the men showed that of the eight predictors used in this study, some influenced length of stay while others had no impact. Among the twelve predictors, disposition dummy variable 1 (disp1), discharge to Housing Stability Plus, was the strongest predictor of long-term stay in the Cox proportional hazards model. This meant that men who discharged to Housing Stability Plus had the most impact as a predictor of long-term stay. The order of the predictors is important because they provide a road map to the problem of long-term stay. Based on the final model, the most important predictors were disposition category, followed by family size, age, and reason for homelessness.

After I finished the research and analyzed the findings, I came to the conclusion that much more could have been done. The analyses that I conducted could have included many more predictor variables and a larger sample. When I began this research project, I was interested in discovering if mental health and substance abuse problems were predictors of long-term stay. I was also interested in discovering if variables in the economic domain such as family income and rent paid prior to entering shelter also impacted long-term stay. After conducting the analyses, I learned that increasing the number of variables in a predictive model is feasible. The statistical software (SAS 4.1) could have easily handled additional variables.

To put this inquiry in perspective, I questioned how a predictive model could be used to investigate long-term stay. I reasoned that the findings were a doorway to further inquiry. The Cox regression model, which analyzes the effect of multiple predictor variables, can provide a useful tool for researchers and practitioners to understand long-term stays of homeless families. There are ways in which the predictive model informs practice, as well as ways in which it can strengthen inquiry. I have provided some examples below. First, I comment on the numerous challenges to understanding long-term stay implied in the findings, and then I point out how the methods used in this inquiry can handle these challenges.

The findings from this inquiry demonstrated that there were many differences among the families served, suggesting that long-term stay is influenced by a variety of factors. Families varied in size. Families were headed by single fathers and two parents. Families were headed by both young and old heads of households. There were also differences in the way in which families discharged from shelter. Some discharged to locations unknown, while others discharged to permanent housing through various subsidy programs which were offered to them. Length of time in shelter also varied. Some families discharged within days of entering shelter while others took several months longer. The complex nature of the findings suggested several reasons why a predictive model would be useful in studying this problem as discussed below. This research showed how the effects of exit dispositions can be measured when holding the effects of other variables constant. By examining the impact of several variables simultaneously, it increases our understanding of the outcomes.

Survival analysis can be used in a number of ways which could increase our understanding of long-term stay. For example, do families that discharge to permanent housing stay longer in shelter as compared to families whose discharges are unplanned? Of the families that discharged to locations unknown, how long did they stay in shelter? How do the discharge patterns of families that move to permanent housing vary as compared to those who discharge to unknown locations? Does the rate of discharge decrease as time in shelter increases? If so, what are the differences in the rate of discharge? Survival analysis can be used to answer these questions.

Survival analysis can also be used to measure other aspects of shelter performance by redefining the event. If the event were redefined as discharge to permanent housing, it would be possible to measure not only the time to discharge, but the percentage of families that are moving to permanent housing as well. Other events could also be studied. Survival analysis could be use to track the time it takes for families to discharge to different types of permanent housing. This would enable providers to compare differences in long-term stay clients when factoring in all discharges from shelter by exit to permanent housing.

Although this inquiry did not include censored observations in the results, survival analysis can provide useful information to policy makers and practitioners in its capacity to analyze subjects who do not experience an event. Given that all families in this inquiry discharged and that no family spent more than four years in shelter, there were no censored observations. But what if the project were designed differently? Why not measure the survival time of families who only move to permanent housing and limit the study period to six months? There would be three possible outcomes: (1) families that discharge to permanent housing, (2) families that discharge to places unknown, and (3) families that do not discharge. In this inquiry, the event of interest would be discharge to permanent housing. Families who do not discharge to permanent housing or do not leave shelter would be censored. Redesigning the inquiry in this way would enable the researcher to measure the percentage of families who do not experience the event (discharge to permanent housing) and their patterns of discharge could also be studied.

Differences in survival patterns could also be compared across several shelter programs, thereby increasing our understanding of long-term stay. For example, how do survival patterns vary in big shelters as compared to small? Do some shelters have greater percentages that move to permanent housing and lower lengths of stay? These questions could also be answered using survival analysis.

Many factors come into play in relocating families from shelter. The reasons noted above make a strong case for using a predictive model to examine the influence of predictor variables on long-term stay. These reasons for extending the inquiry into long-term stays of homeless men and their families in shelter also suggest that much more could be accomplished. A predictive model could provide a useful tool in future inquiry. The complex service needs of families which include multiple barriers to self-sufficiency could be studied to determine their influence on long-term stay.

The factors that contribute or don't contribute to long-term stay of homeless men in families should not be limited to studies which emphasize quantitative methods. Qualitative research which explores the concerns of homeless men in family shelters would also be valuable and should be included in future research. This inquiry shed some insight on three groups of homeless men, but is lacking in in-depth information of the day-to-day experiences of these men. There is no question that qualitative inquiry, which lends a voice to the concerns of homeless men, and an expanded selection of predictor variables would extend further understanding of long-term stays of men in homeless families.

An important part of this inquiry is the role that shelters play in addressing homelessness. There are several implications for practice and for minimizing or failing to minimize long term stays. In the literature I found considerable interest in developing new approaches to re-structure services for homeless families. The Culhane, et. al. (2007)

research has made important contributions to understanding family homelessness. The service patterns of families showed that the majority used shelter for a brief period of time and that approximately 20% were long-term stay families. Karnas (2007) has commented that the Culhane, et. al. research has initiated discussions on optimal policies that are needed to address family homelessness. Other researchers have examined the service needs of homeless families (Bassuk, 2007) and commented that the Culhane et. al approach which advocates for re-structuring services to serve fewer families in shelter, overlooks high levels of traumatic stress in homeless families.

Inquiry into the role of the shelter system raises several issues that should be addressed in order to arrive at the proper configuration of shelter services and to ensure that the right mix of services is developed. Two key arguments are implied from this review. The first argument suggests that the shelter system is larger than necessary and services that are now devoted to shelter would be better offered in the community. The second is that families should be discharged from shelter as soon as possible and should receive services once placed in the community. Let me comment on each argument.

To suggest that the shelter system is larger than it needs to be assumes that there are too many families in shelter who should not be there and who would be better helped by preventing their entry into shelter. This suggests that they should have been diverted before entering shelter. It further suggests that prevention services can be used to redirect families before they enter shelters and that there is an adequate supply of affordable housing. New York City did take steps to increase the supply of affordable housing and increase prevention services, and also invested heavily by increasing spending on prevention. The value of prevention was illustrated in the Special Master’s report (2003).

Prevention services which stabilize families in community settings maintain social ties. Yet, as the report issued by the NYC Independent Budget Office (2008) showed, despite increases in spending on prevention after fiscal year 2004, there was only a 3% decline in the average daily census in the family shelter system in fiscal year 2008 (9100) as compared to the average daily census in 2004 (9347). If families in need of transitional housing could be better served in community settings, this would clearly be a preferred outcome. However, achieving this goal could be difficult.

Suggesting that homeless men and their families should leave shelter as soon as possible raises a number of concerns. I believe that minimizing time in shelter by rapid placements in permanent housing with services would be preferable to shelter. However, rapid discharge from shelter which does not result in permanent housing placement could lead to increases in recidivism. Also, across-the-board policies which call for rapid discharge from shelter suggests that there should be one shelter model. What if other models of housing were available to homeless families? A permanent supportive housing model might meet the needs of homeless men and their families who have special needs. The benefits to families would be substantial. Access to services would be included in the housing placement given that the permanent supportive housing model includes both on-site and off-site services that are offered in connection with housing.

If the shelter census is reduced in the future and results in the need for a smaller shelter system, why not re-invest funding into an expanded permanent supportive housing system? This could be accomplished by converting shelters which have been downsized into permanent supportive housing. The conversion would be seamless. There would be an available supply of experienced housing operators with trained staff, and an expanded supply of permanent supportive housing, all of which would increase the capacity to place hard to serve families in community settings.

Shelter providers play an important role in minimizing the duration of homelessness. In virtually every activity involved in transitioning clients from shelter, the homeless family must be matched to a range of services designed to help in the transition to permanent housing. If different programs have different lengths of stay, what causes these differences? Are there differences in the clients served or the programs and services which are offered to clients? Do some providers use different strategies that are more effective? Do some providers serve a greater percentage of hard-to-place families as compared to others? In order for homeless service providers to successfully transition families from shelter, they must have knowledge of their service needs. The results of this inquiry can be used to effectively transition families from shelter. For example, the discharge patterns in this inquiry showed that the rate of discharge decreased as time in shelter increased. This suggests that an early intervention strategy is needed. Providers should re-examine how families are engaged from day one. Orientation materials should be reviewed to assure families receive the right information at Intake.

Minimizing time in shelter means helping families become eligible for housing and maintaining this eligibility. This requires effective coordination with city agencies that administer the public benefits associated with homeless services. To prevent delays, there should be ongoing communication between all agencies. For example, Team building, often considered an effective strategy within agencies, might also be applied <u>across</u> agencies where there is joint responsibility for moving families from shelter. Joint case conferences between public and private agencies which share responsibility for placing families in shelter may also be effective.

Collaboration among providers to determine which practices work best can inform effective strategies for helping clients leave shelter. It makes sense to encourage providers to share their expertise. Best practices can take many forms. Do some providers use data more than others? Do some have better information systems than others? How do the cultures in some programs vary as compared to others? Are they more or less effective in helping clients? Establishing a forum for providers to share information about best practices makes good sense, and would create a stronger system which allocates resources more effectively and which would increase the help clients need to leave shelter.

There is a tension that is implied when considering the merits of minimizing the duration of homelessness and thereby minimizing long-term stay. I refer to the way in which providers choose or don't choose to use data to facilitate client discharges. Several questions come to mind. How should providers use data to minimize the duration of homelessness among men in homeless families? Should programs be numbers-driven or should they be mission-driven? Should program effectiveness be measured exclusively on length of stay? To effect any meaningful change in the shelter system which would result in reduced length of stay, how providers respond to the above-mentioned questions may determine if they survive in an environment in which resources will become increasingly scarce. Let me address each of these questions.

How should providers use of data to minimize the duration of homelessness among men in homeless families? I recommend an effective data management system which monitors the steps families must complete to discharge from shelter while minimizing delays. Shelters would use data to track the completion of applications, to schedule searches for permanent housing, and to flag delays in lease signings. The relocation of families from shelter in many ways transcends the worker-client relationship. There are multiple agencies involved. Various departments within those agencies must coordinate activities associated with application approvals. At each step in the relocation process, delays often occur. An effective system which tracks the completion of each step would prevent unnecessary delays in family discharges.

Should programs be numbers driven or mission driven? I believe it is a false argument to suggest that the use of data and meeting client needs are mutually exclusive choices. Providers need effective data management strategies. Without this capacity, it will be difficult to monitor the myriad tasks needed to facilitate client move outs. Alternatively, people are not numbers. That is, the discharge process for families is not always linear. They don’t always move forward and the reasons could be entirely beyond their control.

Should program effectiveness be measured exclusively by length of stay? This could depend on a number of factors including, but not limited to, program size, type of clients served, and family size which may affect discharge patterns. I think the more important question is the definition of a reasonable standard. Is a six months shelter stay a reasonable norm or could this in fact be lowered with a combination of effective monitoring, effective policies and client incentives? All stakeholders should examine the above and be thinking outside the box to address the enduring problem of long-term stays in shelter which has persisted despite considerable investments of hundreds of millions of dollars over the past five years.

What does the future hold for the New York City family shelter system and what strategies should be considered to minimize shelter stays? As resources become increasingly scarce and the need grows to emphasize rapid discharges of homeless families, I can think of three strategies that providers should consider implementing. First, assess the needs of homeless men in the family shelter system. Second, use available information in case records to find best practices. Third, providers should consider investing in technology that strengthens data management. That is, help providers build better information systems to improve productivity. Each of these strategies could improve the rate of shelter discharges of homeless men in families and possibly lead to shorter shelter stays.

Providers can use data mining to develop a profile of service needs of homeless men. There is a wealth of information in agency records that can be used to develop client profiles of homeless men. Their past history of substance abuse and mental illness, their health status and their work histories are typically included in case records. This information would be useful in several ways. It would enable providers to better understand the service needs of homeless men. This information would also be useful in identifying areas for future inquiry. For example, use data mining as a discovery tool to explore the service needs of homeless men. Several positive outcomes are possible. Gaps in services may be identified. Breakdowns in coordination of services may also be discovered. Most important, areas for future inquiry may be identified.

Another advantage to using data mining is its potential to generate reflective thinking among shelter staff. There are undoubtedly best practices that exist in agencies and these practices are often documented in case records. Families that are successfully discharged in a timely manner and men that get referred to and then follow up with job placements are examples of positive outcomes. The methods to engage clients, the referrals that were made and the strategies used to overcome client barriers are typically recorded in case records. Shelter staff can be trained to identify which interventions are successful and how to think through how these interventions should be implemented in other cases.

Providers with limited capacity to mine data, to monitor performance or evaluate programs would benefit from a variety of technical assistance initiatives. Let me list a few. First, I would teach providers how to improve monitoring of program data. Teach providers how to set benchmarks and show them how to design systems to collect, analyze and report on program information. Next, invest in staff development. Ongoing maintenance and supervision will be required once appropriate systems to monitor program data are in place. Finally, involve top management in the process when implementing the above-mentioned data management strategies. This sends the right message to staff. Families benefit because providers have used data to increase their knowledge of client service needs.

A key message I hope to convey is that clinical data mining is a tool to understanding the complex service needs of homeless men in families. It is by no means capable of addressing all of the challenges involved in minimizing shelter stays. It is an untapped resource that providers should use to support the work that shelter staff do to facilitate client discharges. It provides the means to use information to achieve desired outcomes, minimizing long-term stays. But I raise the concern that clinical data mining is no substitute to research that investigates the services needs of homeless families. Data mining cannot accomplish this.

When considering the above-mentioned strategies to use data to reduce length of stay, I raise the concern that some families may not respond well to a rapid re-housing shelter model. According to Bassuk (2007) and Goldstein (2007), some families will take longer to discharge from shelter as they struggle to overcome the effects of depression, trauma or other disabling illnesses. Whether or not these services should be provided while the client is in shelter or in the community will be determined by the client's path from shelter and the type of subsidy that will be used to secure permanent housing. For example, clients with disabling conditions who are required to work may take longer to discharge. In such cases, it would seem that effective screening to ensure that client service needs are properly diagnosed is essential. Clients who require services to stabilize their condition should have access to these services while they are in shelter so that the chances of remaining permanently housed after they leave are improved.

It is also unlikely that the homeless problem in New York City can be solved unless there is an adequate supply of affordable housing. Several conditions must be present for successful shelter exits to permanent housing to occur. Housing must be available and affordable. The apartment conditions should meet minimum standards. Private landlords must be knowledgeable of the City's housing subsidy programs. They must also be willing to accept homeless families. In addition, service providers must have effective strategies in place to connect homeless families to housing. This means the capacity to help clients become housing ready and find appropriate housing as well.

7.3 Limitations

There are limitations in this study. Qualitative research was not included. For example, interviews of the homeless men would have enabled us to learn how they experienced life in shelter and what it took for them to leave, including the quality of interventions to help them. Although my research documents the times at which homeless men in families leave shelter, there is no way of assessing which shelter services were most effective in facilitating a discharge to permanent housing.

Another limitation stems from not extending the Cox model. In order to use predictor variables in a Cox proportional hazards model, the hazard ratio of the predictors must be constant over time (Kleinbaum & Klein, 2005, Allison, 1995). Of the twelve predictor variables that were tested for proportionality, seven were not proportional and five were. The seven variables that did not meet the test of proportionality included all four categories in the disp dummy variable: disp1 (discharge to HSP), disp2 (discharge to Other), disp3 (discharge to Earp/sec8 Earp) and disp4 (discharge to NYCHA) and one category in the rela dummy variable, rela2 (adult families); fmszrec (family size) and prirelig (prior eligibility). The five variables that met the test of proportionality were ethnrec (ethnicity), agemed (age), reznrec (reason), prcrec (medical) and one category in the rela dummy variable, rela1 (single fathers). I chose not to extend the Cox model to assess the effects of the predictors on survival time. The Cox Proportional Hazards model is robust and should provide a close approximation of the hazards. Also, of the seven covariates that did not meet the test of proportionality, four covariates were associated with discharge category which was not likely to change during the family's stay in shelter. Of the remaining three variables, neither the family status variable rela2 (adult families) nor the eligibility variable before families entered shelter prirelig (prior eligibility) were likely to change during the family's stay in shelter. What would change is perhaps the family size as family members move in and out of the shelter system during a family's stay. Thus for the covariate family size the proportional hazards model may not be appropriate but I chose to live with this limitation because the proportional hazard model should provide a close approximation of the effect of family size on the rate of discharge.

Another limitation is the lack of follow up. Successful discharge to permanent housing is only one indicator of independence. There is no way to tell if the men that discharged this way stayed permanently housed. Research could be strengthened by following up on clients who discharged from shelter to determine the percentage of repeat users.

7.4 Recommendations

This project demonstrated the utility in using data to create knowledge about the influence of predictor variables. As I stated earlier, much more could have been done. The scope of the research could have been expanded. In addition, I am making the following recommendations:

1. *Conduct further research to confirm if the rate of discharge found in this study would be the same for other cohorts of men.* While it is unlikely that the same results which showed the percentage of men that discharged within 400 days (73%) would be

found in other research, there would be some utility in replicating this project to examine how patterns of discharge vary across shelters. Providers with lengths of stay above the shelter system average and with a high percentage of long-term stay families would benefit from this research. It would provide valuable information of how rates of discharge vary between low performing and high performing providers.

2. *Conduct further research to verify if large families take longer to discharge and to discover the factors involved*. Based on the results of this study, efforts should be made to accommodate the service needs of large families. These families, identified at intake, need more support than others in finding housing, completing applications for housing, and minimizing other barriers to relocation. This could be another variable where comparisons should be made across several shelters. (Some shelters, because of their physical configurations, can only serve small families). Future inquiry could compare how discharge patterns of small and large families vary across several shelters which accommodate a range of family sizes.

3. *Conduct further research to determine the influence of age on shelter move outs*. The next priority would be to examine the service needs of men based on their age. Age was a predictor of long-term stay in Goldstein's (2007) study of homeless women in the emergency family shelter system and in this inquiry. This relationship should be studied further.

4. *Conduct further research to determine the influence of exit disposition on long-term stay*. The strongest predictor of long-term stays was the location to which men were discharged. The influence of exit dispositions to long-term stays should be studied further to determine how they vary for discharge to known versus unknown locations. I cannot

overstate the need for additional inquiry to examine the nature of shelter discharges. It represents an important measure of shelter performance.

5. *Conduct further research which includes an expanded array of predictor variables.* There is strong interest in the special needs of clients and their impact on the use of shelter. If information is available on the mental health and substance abuse problems of homeless men in families, it should be included in future research. I am convinced that future inquiry which includes an expanded list of variables that provide insight into the special needs of homeless men and their families would add further to our understanding of long-term stays in shelter.

6. *Conduct research on the long-term stay patterns of homeless men which includes follow up of men after they leave shelter.* This type of research would be strengthened if additional inquiry were made to determine if men that leave shelter remain stably housed.

7. *Conduct qualitative research to obtain more in-depth knowledge of the experiences of homeless men in the family shelter system*. Adding qualitative research would lend voice to homeless men in family shelters. The various roles of husband and father could be explored. Data extracted from administrative records cannot begin to tell the whole story about the experiences of men in the family shelter system.

8. *Expand the supply of affordable housing:* It does not seem possible to reach a solution to the problem of long-term stay in shelter without a commitment from the federal government to invest in affordable housing. The reduction in federal spending in this area has placed an increasing burden on states and cities. It is obvious that the federal government's reduced role in funding affordable housing programs for low-income

families over the past five years has had a devastating effect. The federal government should reverse a five-year trend of reducing expenditures for low-income families. The Housing Voucher program should be expanded and vouchers should be fully utilized. Funds should also be allocated to preserve public housing which includes funding for capital repairs.

9. *Expand the supply of permanent supportive housing for families.* The City of New York proposed to re-direct funds for shelter expenses to preferred solutions including, but not limited to, prevention and supportive housing. If the City is successful in reducing the shelter census, convert shelters which are downsized to permanent supportive housing. I am convinced that discharge of families with special needs could be accelerated with an adequate supply of permanent supportive housing.

10. *Offer technical assistance to providers:* The following are some possible examples:

- Establish a data mining group to provide technical assistance with management information systems and monitoring tools to track program activity and measure client need for services. I would recommend that groups be formed to include large and small shelters. A pilot project could be formed which would develop a model to be replicated by other providers. The pilot project could develop a uniform tracking system that would track the survival times of families. Comparisons can then be made by agencies in the pilot group to determine if there are differences in the survival times among the agencies and if so, what accounts for these differences.

- Teach providers how to use data from administrative records to improve operations. For example, by using data to develop a typology of service needs of homeless men, information can be extrapolated which can be useful in identifying service gaps and needs and to facilitate client referrals. I would begin by focusing on the service needs of large families, and then monitor how families use services. This line of inquiry would examine if there are differences in the survival times of families based on the services they use.
- Conduct annual evaluations of program operations so that practices which worked and did not work can be identified. Program effectiveness can be evaluated, and evaluative data can also be used to determine if services need to be expanded or eliminated.
- Create a buddy system in which effective providers are paired with providers that require technical assistance. Technical assistance can be extended in various forms and an important mentoring relationship could be established.
- Create cluster groups of providers to serve as support groups for each other and to share best practices such as tips on client engagement, effective strategies for locating landlords, and efficient use of resources. Best practices should be shared often. I would also recommend a data mining symposium be held once a year to share how to improve knowledge creation through the use of data.

Appendix 1

Survival Analysis Definitions

Censoring- occurs when we have some information about individual survival time but we don't know the survival time exactly.

Cox's Proportional Hazard Model- the proportional hazard model is the most general of the regression models because it is not based on any assumptions concerning the nature or shape of the underlying survival distribution. The model assumes that the underlying hazard *rate* (rather than survival time) is a function of the independent variables (covariates

Cumulative Events is a count of terminal events that have occurred up to and including the current time. It is not incremented for censored events.

Cumulative Survival is an estimate of the probability of surviving longer than the time listed in the Time column. It is not computed for censored events.

Estimated Survival Curves- these curves are actually step functions that allow us to compare the treatment and placebo groups over time

Event= Failure- the event of interest in this example is discharge from shelter. In survival analysis, an **X** is used to denote that individual got the event.

Hazard Function- h (t) – gives the instantaneous potential per unit time for the event to occur, given that the individual has survived up to time t

Likelihood- is a probability, specifically the probability that the observed values of the dependent variable may be predicted from the observed values of the independent variables. The likelihood varies from 0 to 1.

Log-Likelihood (LL*)*- is its log and varies from 0 to minus infinity. It is negative because the log of any number less than 1 is negative. LL is calculated through iteration, using Maximum Likelihood Estimation. Log likelihood is the basis for tests for a logistic model.

Log-Rank- a test for comparing the equality of survival distributions.

Likelihood ratio- is a function of log likelihood. The 2 LL statistic is the likelihood ratio. It is also called the Goodness of Fit. It reflects the significance of the unexplained variance in the dependent variable. The likelihood ratio is not used directly in significance testing but it is the basis for the likelihood ratio test.

Maximum Likelihood Estimation (MLE)- is the method used to calculate the logit coefficients. This contrasts to the use of ordinary least squares (OLS) estimates of coefficients in regression. OLS seeks to minimize the sum of squared distances of the data points to the regression line. MLE seeks to maximize the log likelihood (LL) which reflects how likely it is (the odds) that the observed values of the dependent may be predicted from the observed values of the independents.

Mean Survival Time is not the arithmetic mean. It is equal to the area under the survival curve for the uncensored cases.

Median Survival Time. This is the survival time at which the cumulative survival function is equal to *0.5*.

Number Remaining is the number of patients still in remission after the specified time. It is decremented for censored events.

Right Censored- occurs when the study period ends or the person is lost to follow up.

Risk Set- the collection of individuals who have survived to time T

Standard Error is the standard error of the Cumulative Survival estimate.

Status indicates whether the subject has experienced the terminal event or has been censored. It contains values or labels, depending how you have the options set for the output labels.

Survival Analysis- a statistical procedure for data analysis for which the outcome variable of interest is time until an event occurs.

Survivor Function S (t)- the survivor function gives the probability that a person survives longer than some specified time t. The survivor function is fundamental to a survival analysis because obtaining survival probabilities for different values of t provides crucial summary information from survival data.

Time = Survival Time (T) – gives the time that an individual has survived over some follow up period.

Appendix 2
Variable List

adultflg- flag that person is an adult male

adults- number of adults in the family at the time of lodging stay

age – age of the subject

agemed- median age used to re-code age

birthdt – date of birth of the person

child- indicates the subject's number of children in the family at the time of lodging stay

dispcat- disposition category that describes the discharge location

disp1- compares the survival time of homeless men who discharged to Housing Stability Plus to men who discharged to locations Unknown

disp2- compares the survival time of homeless men who discharged to Other housing to men who discharged to locations Unknown

disp3- compares the survival time of homeless men who discharged to Earp/Section 8 Earp to men who discharged to locations Unknown

disp4- compares the survival time of homeless men who discharged to NYCHA to men who discharged to locations Unknown

ethcty- ethnicity of the head of household

ethncrc- ethnicity re-coded

exitdisp- exit disposition code

exitdsdt- date family received disposition code

fackey- facility code

familyid- unique identifier for a family

famsize- describes the total number of members in the family

Appendix 2
Variable List

fmszrec- family size re-coded

indivd- unique identifier for a family

in/out- tracks the movement of family members who move in and out of shelter during the current homeless spell

investdt- date family became eligible

prcode- medical condition assigned to family at application for shelter placement

prcrec- medical condition re-coded

prelig- number of times family has been previous found eligible

prelrc- prior eligibility re-coded

reason- reason family is applying for emergency shelter

relation- relation to head of household

rezrec- reason re-coded

rela1- compares the survival time of single men to partners with dependents

rela2- compares the survival time of adult families to partners with dependents

status- records the presence or absence of events in survival analysis

survt- indicates the subject's length of stay

survtm- median survival time

Appendix 3
Variable Codes

Variable	Variable Code	Coding
ethcty	A	Asian Pacific Islander
	B	Black
	H	Hispanic
	I	Native American /Alaskan
	U	Unknown
	W	White
	R	Refused to Answer
reason	1	Events not used
	2	School tests not used
	3	Central Office not used
	A	Applicant Prime Illegal Lockout
	B	Applicant Prime DV
	C	Applicant Prime Eviction
	D	Applicant Prime Crime Situation
	E	Applicant Prime Unlivable Condition
	BB	Parents Prime DV
	BC	Parents Prime Eviction
	BD	Parents Prime Crime Situation
	BE	Parents Prime Unlivable Condition
	BF	Parents Prime Discord Not DV
	BG	Parents Prime Overcrowding
	BH	Parents Prime Financial Strain
	CB	Relative Prime DV
	CC	Relative Prime Eviction
	CD	Relative Prime Crime Situation
	CE	Relative Prime Unlivable Condition
	CF	Relative Prime Discord Not DV
	CG	Relative Prime Overcrowding
	CH	Relative Prime Financial Strain
	CR	Conference Remand
	DB	Non Relative Prime DV
	DC	Non Relative Prime Eviction
	DD	Non Relative Prime Crime Situation
	DE	Non Relative Prime Unlivable Condition
	DF	Non Relative Prime Discord Not DV
	DG	Non Relative Prime Overcrowding
	DH	Non Relative Prime Financial Strain

Appendix 3
Variable Codes

Variable	Variable Code	Coding
reason	FC	Foster Care child aged out
	FH	Fair Hearings Overturned Decision
	FR	Family Reunification
	LO	Eligible client logged out from facility
	NU	New Union
	OT	Out of Town client
	RP	Release from Prison
prcode	1	No Medical Condition
	2	Contagious Illness
	3	Medically Frail
	4	Newborn
	5	Immunization Verification Required
	6	Pregnant Women
	8	Contagious Illness with Pregnancy
	9	Medically Frail and Pregnant
relation	1	Head of Household
	2	Legal Union (Spouse)
	3	Non Legal Union
	4	Son
	5	Daughter
	6	Step-Son
	7	Step-Daughter
	8	Niece/Nephew
	9	Grandson/Granddaughter
	10	Grandmother/Grandfather
	11	Aunt/Uncle
	12	Essential Person
	13	ADC Eligible Relative
	14	Non ADC Eligible Relative
	15	Legal Guardian
	16	Ward
	17	Cousin

Appendix 3
Variable Codes

Variable	Variable Code	Coding
relation	18	None
	19	Parent
	20	Sister/Brother
	21	Step-Parent
	22	Step-Sister/Step-Brother
	23	Half-Sibling
	24	Putative Father
	25	Acknowledged Father
	26	Great Grandparent
	27	Great Grandchild
	28	Domestic Partner
Exit disposition code	1	Ref -EAU
	2	Ref-Path After hours
	3	Made Own Arrangements
	4	Refused Immunization
	5	Currently at the EAU
	6	Own Arrangements- fiscal
	7	EA eligible
	8	Post Midnight Arrival-(inactive)
	9	Referred to another agency
	10	Accepted overnight
	11	Accepted offer
	12	Arrived at facility placement
	13	Arrived at overnight facility
	14	Arrived at reception annex
	21	Rejected- offer
	22	Rejected-no show
	23	Refused offer-stayover inactive
	24	Rejected by Facility
	25	Rejected by facility-new fac req
	30	Await transfer

Appendix 3
Variable Codes

Variable	Variable Code	Coding
Exit disposition code	31	Transfer-facility
	32	Transfer-room
	33	Transfer-involuntary (inactive)
	34	Returned from overnight
	35	Returned from overnight-transfer tracker
	36	Family Made Conditional
	40	Family Composition Change
	50	Exit HPD-Damp (inactive)
	51	Exit-Priority NYCHA
	52	Exit-INREM
	53	Exit-EARP
	54	Exit-Apartment found
	55	Exit-Out of City
	56	Exit-Institution
	57	Exit-Share
	58	Exit-Client Died
	59	Exit-unknown
	60	Exit-adults to 1 adult
	61	Exit-family with child to 1 adult
	62	Exit-client arrested
	63	Exit-involuntary transfer- tier II
	64	Ineligible discharge-hotel/ scatter
	65	Ineligible discharge-recpt/assmnt
	66	Exit-returned to batterer
	67	Exit-returned to former apt
	68	Exit-moved with relative
	69	Exit-to HOMES from VDV
	70	Exit-Section 8 Non EARP
	71	Exit-28 day break
	72	Exit-CWARP (inactive)
	73	Exit-Mitchell Lama
	74	Exit-Private apt Jiggets
	75	Exit-sanctioned case (inactive)
	76	Exit-Non Priority NYCHA
	77	Exit-Long-Term Rent Supplement

Appendix 3
Variable Codes

Variable	Variable Code	Coding
Exit disposition code	78	Exit-48 hour curfew violation
	79	Exit-involuntary discharge facility
	80	Exit facility-transfer tracker facility
	81	Exit (FRAP)
	82	Exit-EIHP
	83	Exit-room vacated w/o final legal
	84	Exit-Sanction Family MOA
	85	Exit-Unresolved
	86	Exit-Sanction Family- NYCHA
	87	Exit-Sanction Family -EARP
	88	Exit Sanction Family- LTSP
	89	Exit-Sanction Family-EIHP
	90	Exit-Sanction Family-SIP
	91	Exit- Sanction Family-FRAP
	92	Exit-Sanction Family-other housing program
	93	Exit-HPD TIL- Pilot Housing Program
	94	Exit Housing Plus Program
	99	Error

Appendix 4

Disposition Category Re-Codes

(Exit Dispositions were recoded into five disposition categories)

A: Dispcat1- Unresolved Unknown

a- 59- Exit Unknown

b- 85- Exit Unresolved

B: Dispcat2- Housing Stability Plus (HSP)

a- 94- HSP

C: Dispact3- Other

a- 3- Made Own Arrangement

b- 12- Arrive at Facility Placement

c- 22- Rejected No Show

d- 52- Exit In REM

e- 54- Exit Apartment Found

f- 55- Exit Out of City

g- 56- Exit Institution

h- 62- Exit Client Arrested

i- 68- Moved with Relative

j- 71- Exit 28 Day Break

k- 77- Long Term Rent Supplement

l- 78- Exit 48 Hour Curfew

m- 82-Exit EIHP

Appendix 4

Disposition Category Re-Codes

n- 93- Exit HPD TIL Program

D: Dispcat4- Earp/Section 8 Non Earp

a- 53- Exit Earp

b- 70- Section 8 Non Earp

E: Dispcat5- NYCHA

a- 51- Exit Priority NYCHA

b- 76- Exit Non Priority NYCHA

Appendix 5

Data Collection Instrument

Record No: 1 Coded By: Louis Rodriguez Date Coded: August 1, 2007

No:	Variable	Data
1	Adult Flag	
2	Adults	
3	Age	
4	Age Median	
5	Birth Date	
6	Child	
7	Disposition Category	
8	Disp1	
9	Disp2	
10	Disp3	
11	Disp4	
12	Ethnicity	
13	Ethnicity Re-coded	
14	Exit Disposition Code	
15	Exit Disposition Date	
16	Facility Key	
17	Family ID	
18	Family Size	
19	Family Size Re-coded	
20	Individual ID	
21	In/Out	
22	Investigation Date	
23	Priority Code (Medical Condition)	
24	Medical Condition Re-coded	
25	Prior Eligibility	
26	Prior Eligibility Re-coded	
27	Reason	
28	Relation	
29	Reason Re-coded	
30	Rela1	
31	Rela2	
32	Status	
33	Survival Time	
34	Survival Time Median	

Appendix 6

Summary Statistics of the Survival Times of Homeless Men (Reported in Days)

1: Relation

Single Fathers (61)	
Mean	**353**
Median	**317**
Mode	**237**
Adult Families (89)	
Mean	**300**
Median	**233**
Mode	**21**
Partners with Dependents (661)	
Mean	**356**
Median	**296**
Mode	**257**

2: Age

Young Men (416)	
Mean	**318**
Median	**277**
Mode	**21**
Old Men (395)	
Mean	**356**
Median	**302**
Mode	**21**

3: Family Size

Small Families (487)	
Mean	**312**
Median	**278**
Mode	**21**
Large Families (324)	
Mean	**373**
Median	**304**
Mode	**127**

Appendix 6
Summary Statistics of the of Survival Times of Homeless Men
(Reported in Days)

4: Prior Eligibility

Never Used Shelter (542)

Mean	**351**
Median	**305**
Mode	**21**

Prior Users of Shelter (269)

Mean	**308**
Median	**262**
Mode	**21**

5: Ethnicity

Other (425)

Mean	**330**
Median	**279**
Mode	**21**

Black (386)

Mean	**344**
Median	**302**
Mode	**20**

6: Reason

Other (533)

Mean	**324**
Median	**289**
Mode	**21**

Overcrowding (278)

Mean	**360**
Median	**300**
Mode	**21**

7: Medical

Other (347)

Mean	**337**
Median	**277**
Mode	**21**

Black (464)

Mean	**336**
Median	**299**
Mode	**21**

Appendix 6

Summary Statistics of the of Survival Times of Homeless Men
(Reported in Days)

8: Disposition Category

Disp1 (235)

Mean	**246**
Median	**151**
Mode	**21**

Disp2 (175)

Mean	**435**
Median	**375**
Mode	**257**

Disp3 (156)

Mean	**392**
Median	**313**
Mode	**27**

Disp4 (125)

Mean	**296**
Median	**260**
Mode	**292**

Disp5 (120)

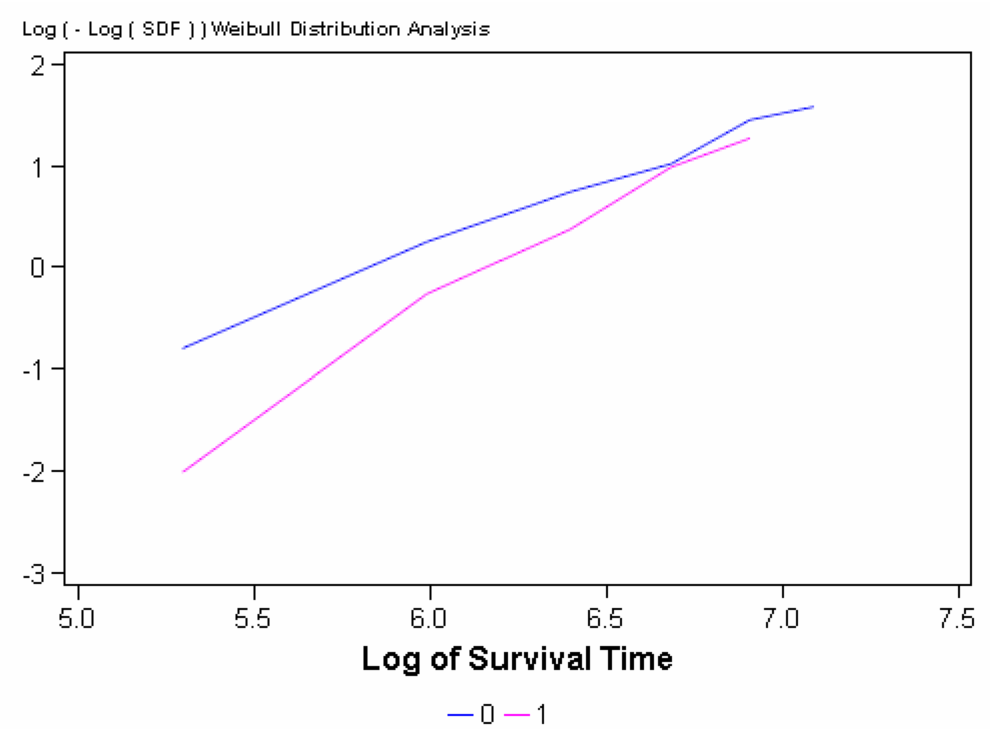
Mean	**340**
Median	**319**
Mode	**234**

Appendix 7

Predictor Variables Tests of Proportionality

Log- Log Survival Curves

Disp1 (Housing Stability Plus)



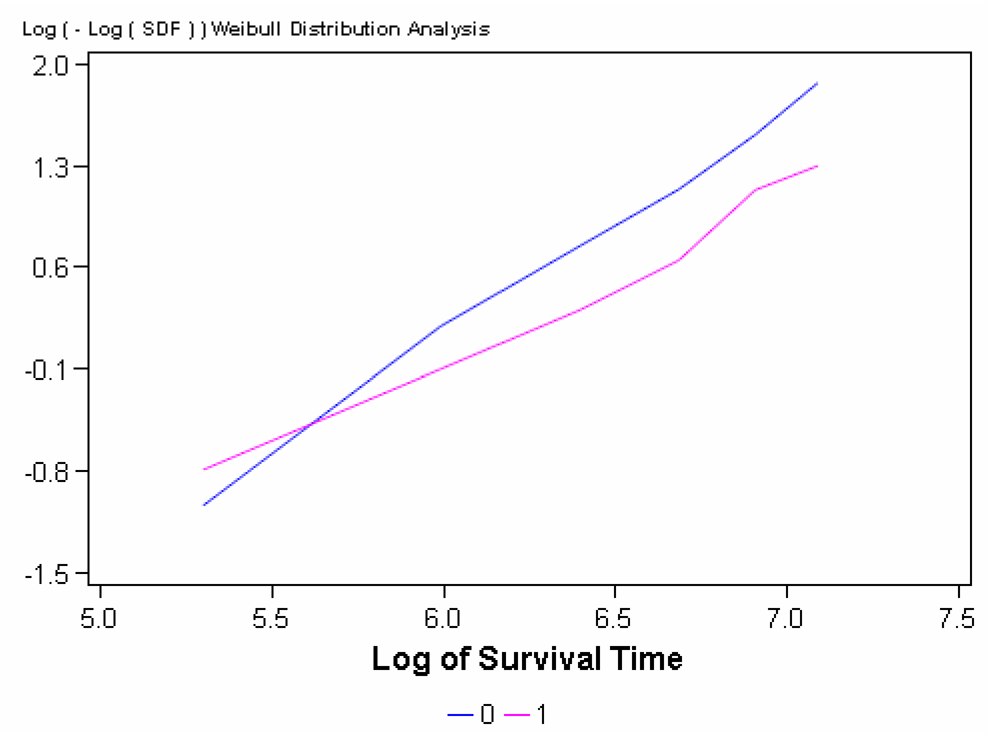
0=Unknown 1=Housing Stability Plus

Appendix 7

Predictor Variables Tests of Proportionality

Log- Log Survival Curves

Disp2 (Other Housing)



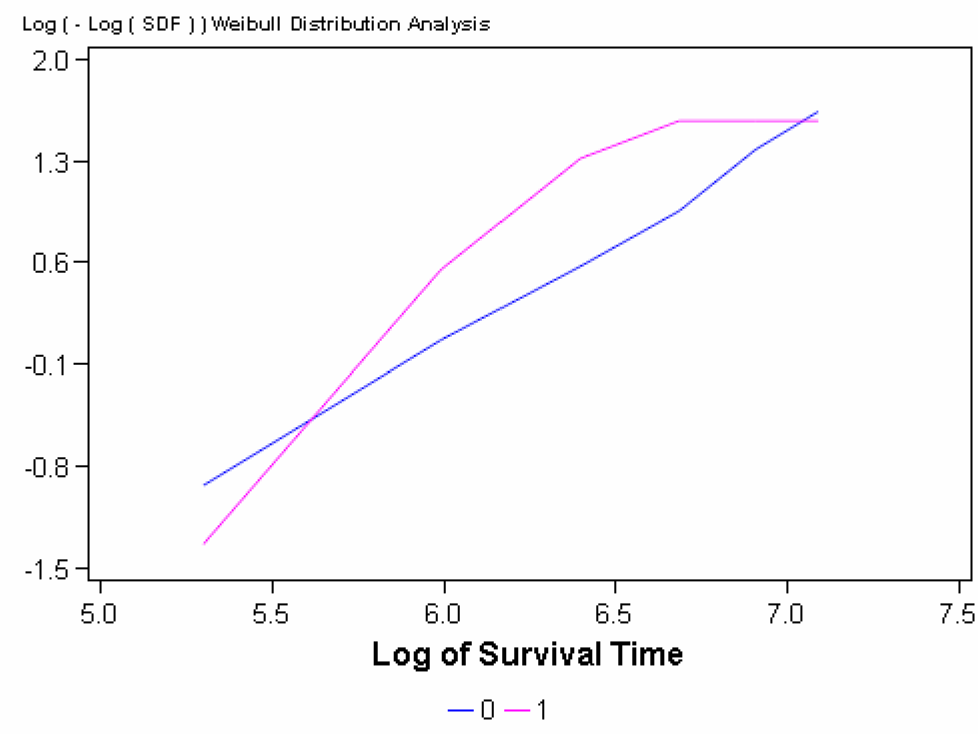
0=Unknown 1=Other Housing

Appendix 7

Predictor Variables Tests of Proportionality

Log -Log Survival Curves

Disp3 (Section 8 Earp/Earp)



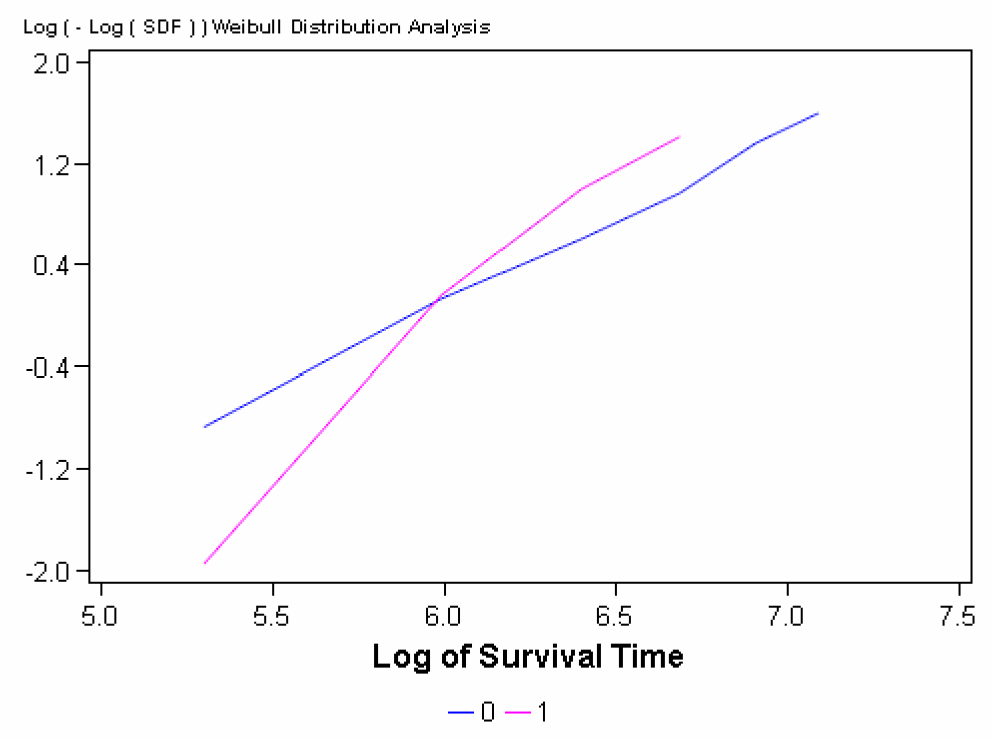
0=Unknown 1=Section 8 Earp/Earp

Appendix 7

Predictor Variables Tests of Proportionality

Log- Log Survival Curves

Disp4 (NYCHA)



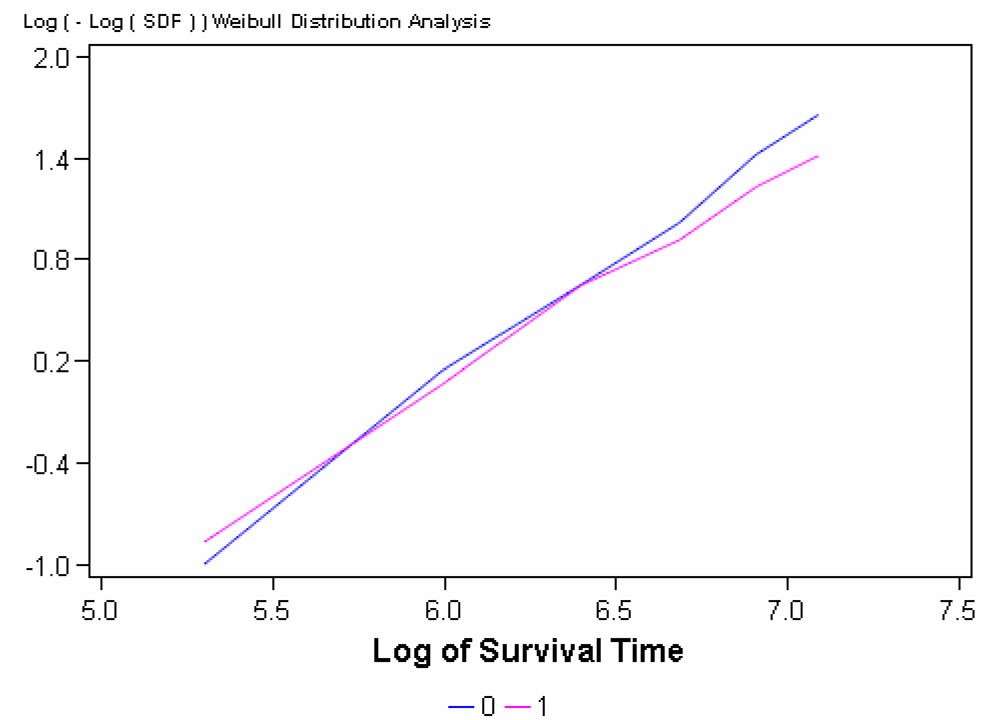
0=Unknown 1=NYCHA

Appendix 7

Predictor Variables Tests of Proportionality

Log- Log Survival Curves

Rela1 (Single Fathers)



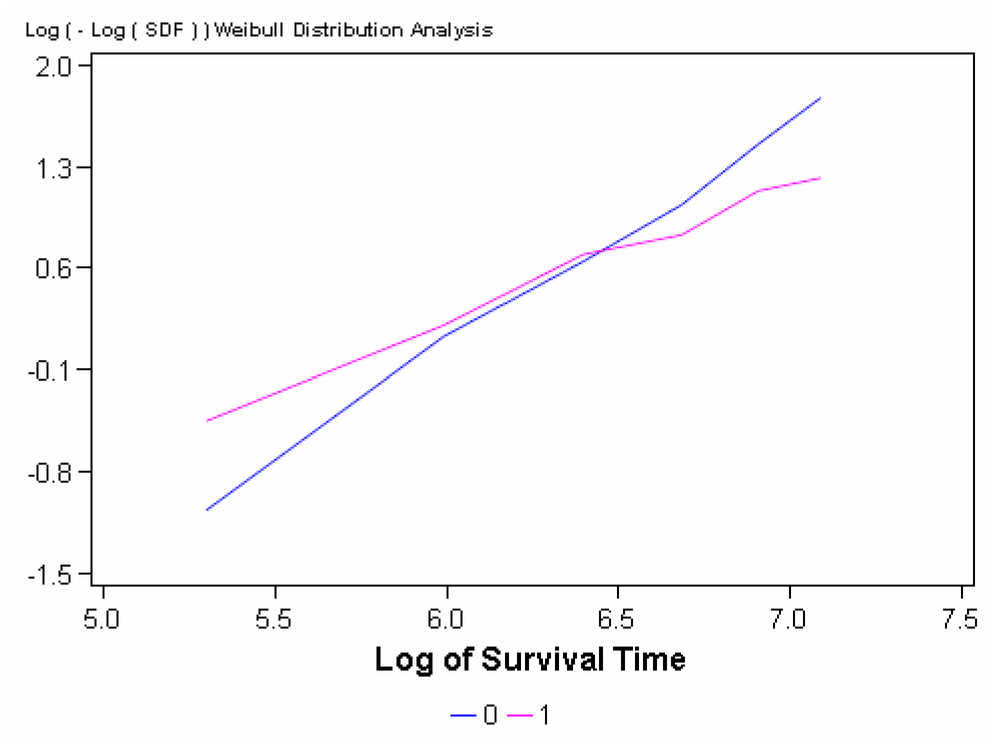
0= Partners with Dependents 1=Single Fathers

Appendix 7

Predictor Variables Tests of Proportionality

Log- Log Survival Curves

Rela2 (Adult Families)



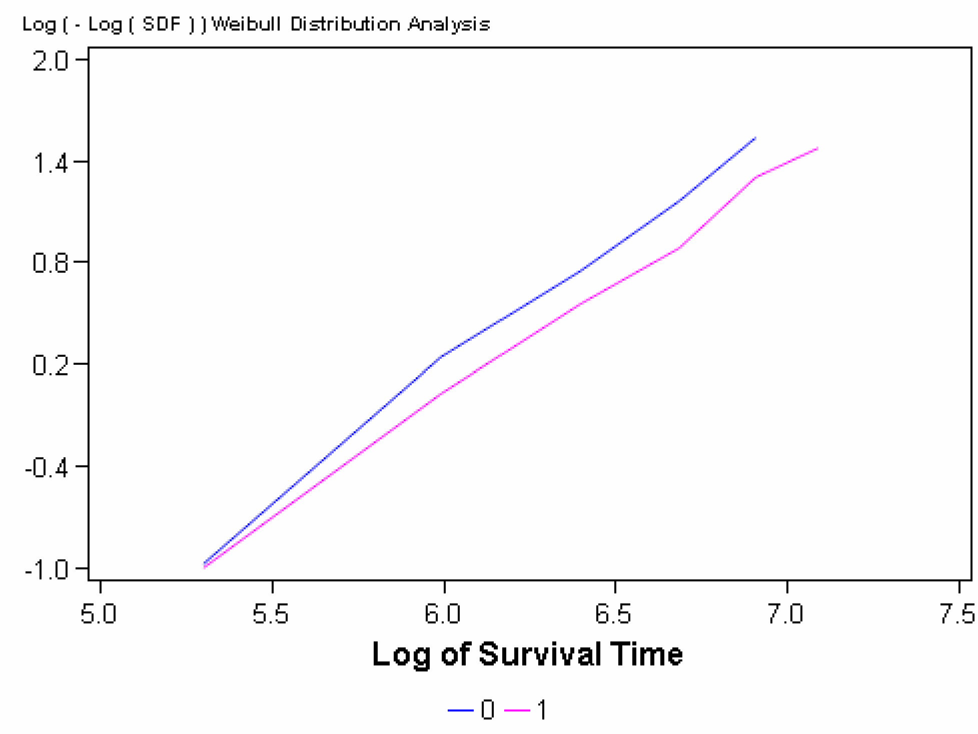
0= Partners with Dependents 1=Adult Families

Appendix 7

Predictor Variables Tests of Proportionality

Log- Log Survival Curves

Age



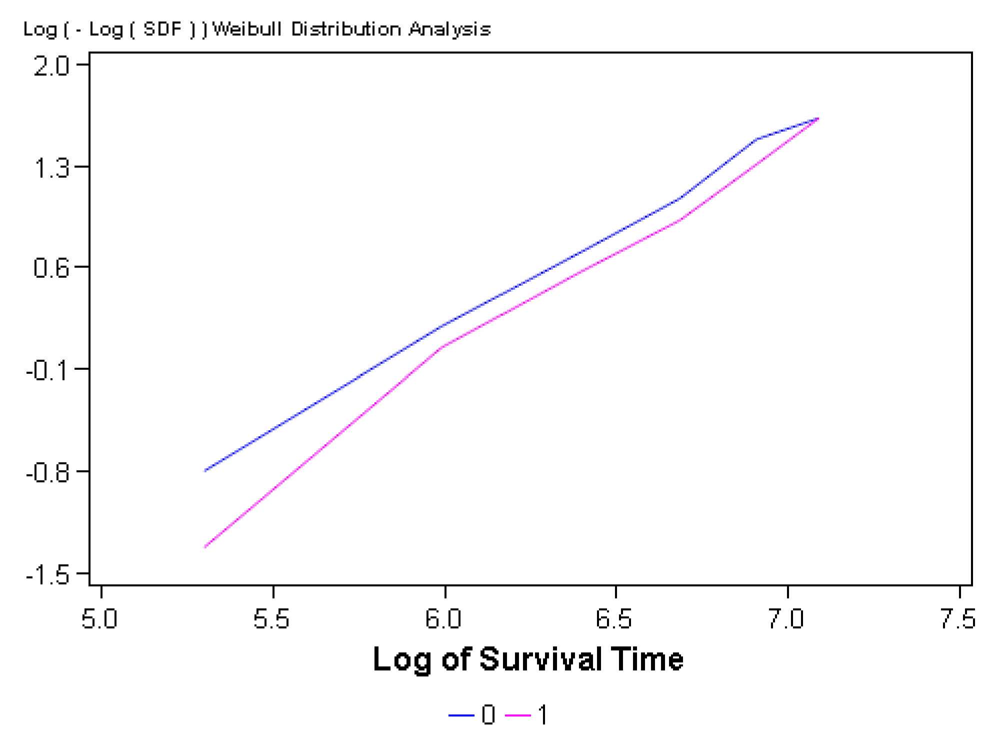
0=Young 1=Old

Appendix 7

Predictor Variables Tests of Proportionality

Log- Log Survival Curves

Family Size



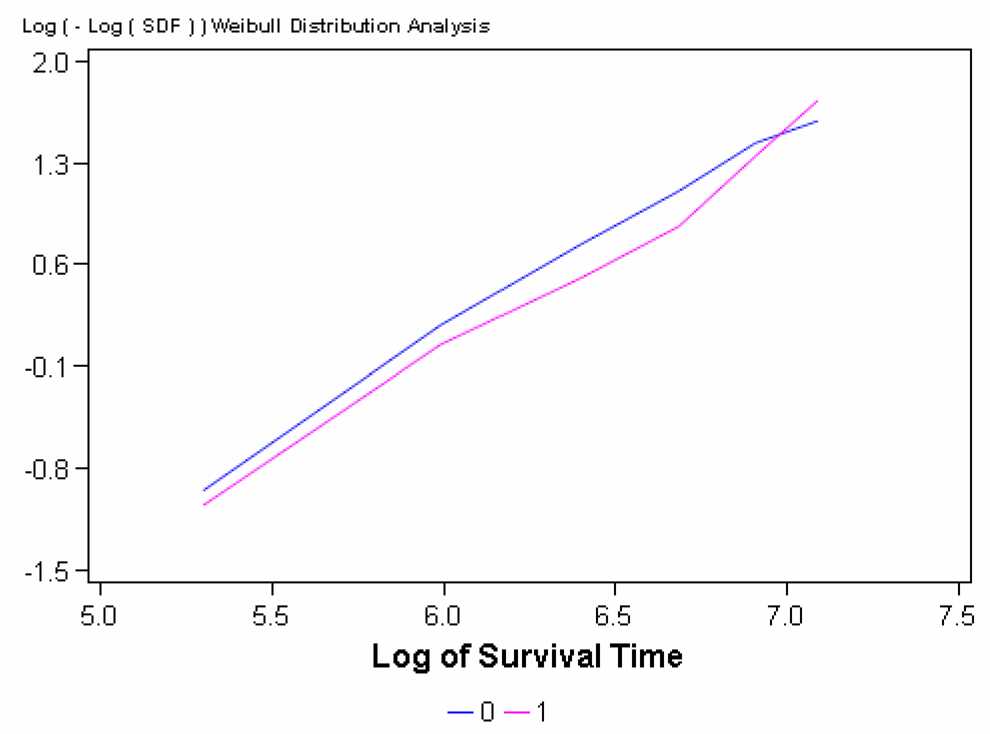
0=Small Family 1=Large Family

Appendix 7

Predictor Variables Tests of Proportionality

Log- Log Survival Curves

Reason for Seeking Shelter



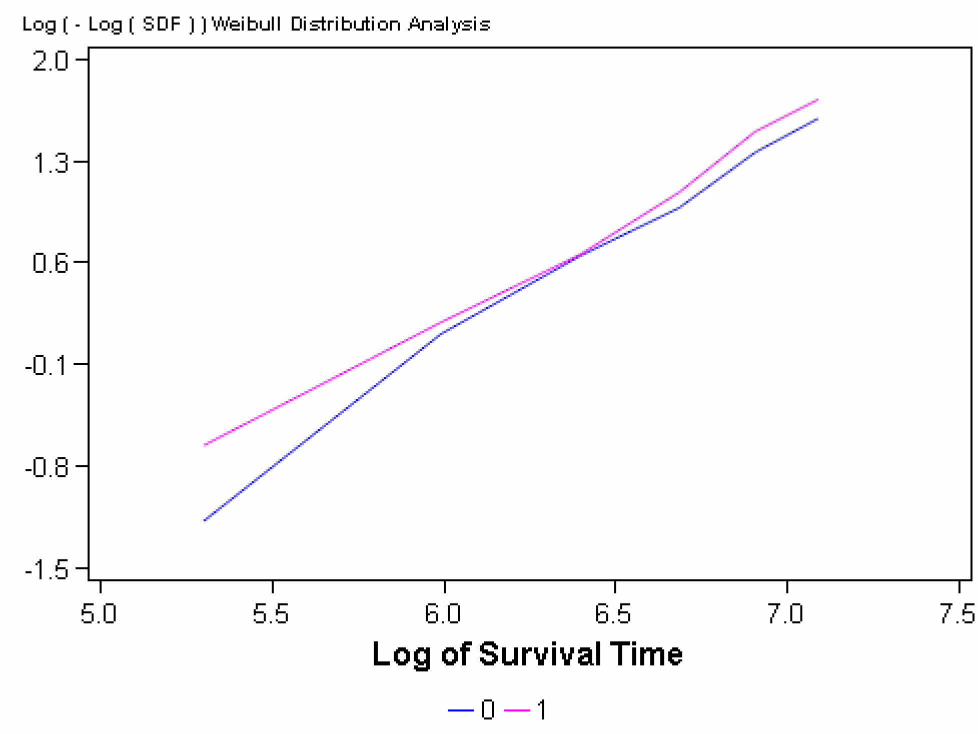
0=Other 1=Overcrowding

Appendix 7

Predictor Variables Tests of Proportionality

Log- Log Survival Curves

Prior Eligibility



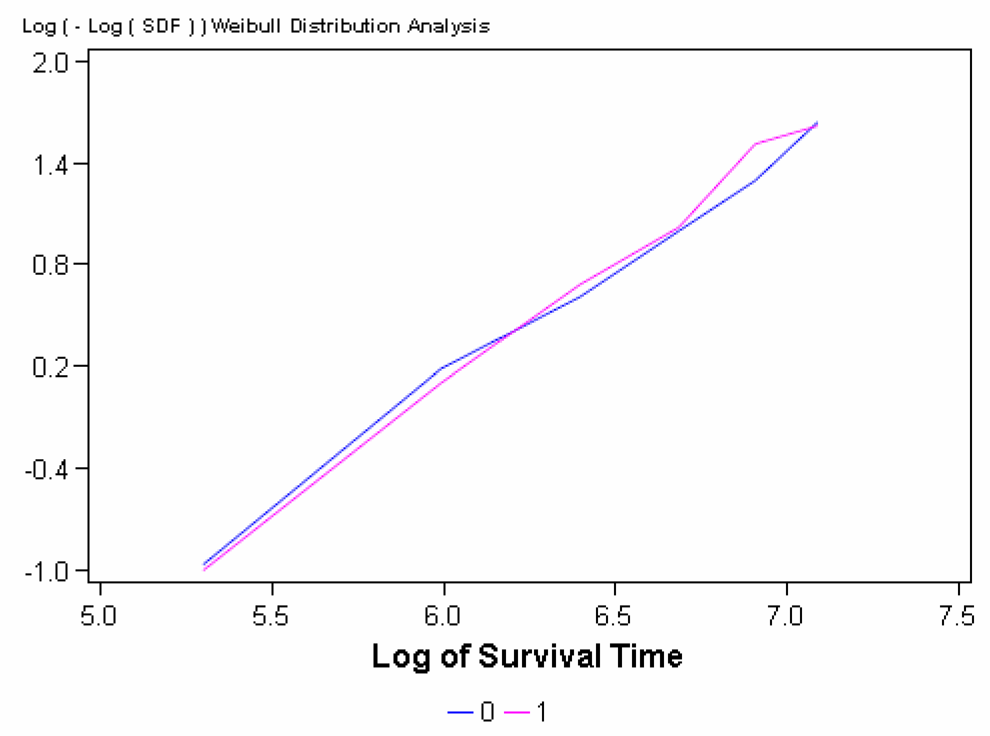
0=Never Used Shelter 1=Prior Users of Shelters

Appendix 7

Predictor Variables Tests of Proportionality

Log- Log Survival Curves

Medical Condition



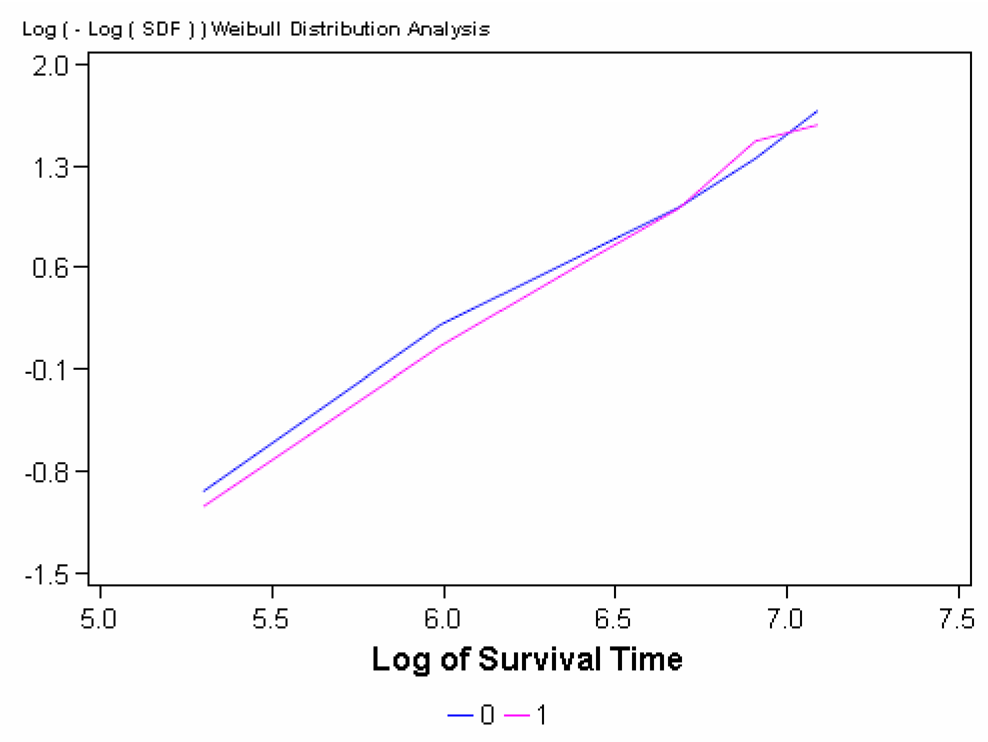
0=Some Medical Condition 1=No Medical Condition

Appendix 7

Predictor Variables Tests of Proportionality

Log- Log Survival Curves

Ethnicity



0=Non Black Men   1=Black Men

Appendix 8

Predictor Variables Tests of Proportionality

Cox Extended Model

Disp1 (Housing Stability Plus)

Analysis of Maximum Likelihood Estimates							
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**Chi-Square**	**Pr > ChiSq**	**Hazard Ratio**	**Variable Label**
rela1	1	0.02051	0.14814	0.0192	0.8899	1.021	Effect of Single Father to partner with dependent
rela2	1	0.03686	0.12499	0.0870	0.7681	1.038	Effect of Adult Family to partner with dependent
disp1	1	-4.47612	0.75391	35.2505	<.0001	0.011	Effect of HSP to Unknown
disp2	1	-0.49759	0.10830	21.1103	<.0001	0.608	Effect of Other to Unknown
disp3	1	-0.04665	0.11710	0.1587	0.6903	0.954	Effect of Earp to Unknown
disp4	1	-0.25166	0.11771	4.5712	0.0325	0.778	Effect of NYCHA to Unknown
rezrec	1	-0.15300	0.07497	4.1644	0.0413	0.858	Reason
fmszrec	1	-0.16033	0.07995	4.0213	0.0449	0.852	Family Size
prelrc	1	0.09656	0.07893	1.4967	0.2212	1.101	Prior Eligibility
prcrec	1	-0.02503	0.07453	0.1128	0.7370	0.975	Medical Condition
ethnrec	1	-0.00829	0.07288	0.0129	0.9094	0.992	Ethnicity
agemed	1	-0.17032	0.07969	4.5675	0.0326	0.843	Age
logtdisp1	1	0.67945	0.12789	28.2243	<.0001	1.973	Disp1 x log survival time

Appendix 8

Predictor Variables Tests of Proportionality

Cox Extended Model

Disp2 (Other Housing)

Analysis of Maximum Likelihood Estimates							
Variable	DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	Variable Label
rela1	1	0.03829	0.14857	0.0664	0.7966	1.039	Effect of Single Father to partner with dependent
rela2	1	0.03733	0.12581	0.0881	0.7666	1.038	Effect of Adult Family to partner with dependent
disp1	1	-0.61853	0.10317	35.9430	<.0001	0.539	Effect of HSP to Unknown
disp2	1	0.85570	0.39543	4.6828	0.0305	2.353	Effect of Other to Unknown
disp3	1	-0.00496	0.11744	0.0018	0.9663	0.995	Effect of Earp to Unknown
disp4	1	-0.21348	0.11819	3.2626	0.0709	0.808	Effect of NYCHA to Unknown
rezrec	1	-0.16601	0.07517	4.8779	0.0272	0.847	Reason
fmszrec	1	-0.15448	0.07966	3.7602	0.0525	0.857	Family Size
prelrc	1	0.09423	0.07894	1.4251	0.2326	1.099	Prior Eligibility
prcrec	1	-0.04523	0.07451	0.3685	0.5438	0.956	Medical Condition
ethnrec	1	-0.02019	0.07272	0.0771	0.7813	0.980	Ethnicity
agemed	1	-0.15592	0.07983	3.8145	0.0508	0.856	Age
logtdisp2	1	-0.25539	0.07061	13.0823	0.0003	0.775	Disp2 x log survival time

Appendix 8

Predictor Variables Tests of Proportionality

Cox Extended Model

Disp3 (Earp/Section 8 Earp)

Analysis of Maximum Likelihood Estimates							
Variable	DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	Variable Label
rela1	1	0.04857	0.14865	0.1068	0.7438	1.050	Effect of Single Father to partner with dependent
rela2	1	-0.04590	0.12806	0.1284	0.7201	0.955	Effect of Adult Family to partner with dependent
disp1	1	-0.59655	0.10308	33.4959	<.0001	0.551	Effect of HSP to Unknown
disp2	1	-0.51957	0.10824	23.0431	<.0001	0.595	Effect of Other to Unknown
disp3	1	-3.12841	0.68948	20.5876	<.0001	0.044	Effect of Earp to Unknown
disp4	1	-0.23401	0.11788	3.9410	0.0471	0.791	Effect of NYCHA to Unknown
rezrec	1	-0.13568	0.07548	3.2311	0.0723	0.873	Reason
fmszrec	1	-0.13948	0.07997	3.0422	0.0811	0.870	Family Size
prelrc	1	0.09731	0.07895	1.5191	0.2177	1.102	Prior Eligibility
prcrec	1	-0.04956	0.07461	0.4413	0.5065	0.952	Medical Condition
ethnrec	1	-0.01984	0.07283	0.0742	0.7852	0.980	Ethnicity
agemed	1	-0.16273	0.08001	4.1365	0.0420	0.850	Age
logtdisp3	1	0.58154	0.12293	22.3794	<.0001	1.789	Disp3 x log survival time

Appendix 8

Predictor Variables Tests of Proportionality

Cox Extended Model

Disp4 (NYCHA)

Analysis of Maximum Likelihood Estimates							
Variable	DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	Variable Label
rela1	1	-0.01918	0.14958	0.0164	0.8980	0.981	Effect of Single Father to partner with dependent
rela2	1	0.05461	0.12571	0.1887	0.6640	1.056	Effect of Adult Family to partner with dependent
disp1	1	-0.59598	0.10312	33.4041	<.0001	0.551	Effect of HSP to Unknown
disp2	1	-0.52106	0.10836	23.1233	<.0001	0.594	Effect of Other to Unknown
disp3	1	-0.04599	0.11716	0.1541	0.6947	0.955	Effect of Earp to Unknown
disp4	1	-4.85880	0.90646	28.7317	<.0001	0.008	Effect of NYCHA to Unknown
rezrec	1	-0.17628	0.07539	5.4669	0.0194	0.838	Reason
fmszrec	1	-0.15439	0.07972	3.7507	0.0528	0.857	Family Size
prelrc	1	0.08987	0.07889	1.2978	0.2546	1.094	Prior Eligibility
prcrec	1	-0.05497	0.07472	0.5412	0.4619	0.947	Medical Condition
ethnrec	1	-0.02751	0.07277	0.1429	0.7054	0.973	Ethnicity
agemed	1	-0.17436	0.08009	4.7396	0.0295	0.840	Age
logtdisp4	1	0.84681	0.15860	28.5076	<.0001	2.332	Disp4 x log survival time

Appendix 8

Predictor Variables Tests of Proportionality

Cox Extended Model

Rela1 (Single Fathers)

Analysis of Maximum Likelihood Estimates							
Variable	DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	Variable Label
rela1	1	0.23686	0.61788	0.1470	0.7015	1.267	Effect of Single Father to partner with dependent
rela2	1	0.02242	0.12573	0.0318	0.8585	1.023	Effect of Adult Family to partner with dependent
disp1	1	-0.60839	0.10307	34.8398	<.0001	0.544	Effect of HSP to Unknown
disp2	1	-0.54482	0.10856	25.1879	<.0001	0.580	Effect of Other to Unknown
disp3	1	-0.01778	0.11722	0.0230	0.8794	0.982	Effect of Earp to Unknown
disp4	1	-0.22598	0.11791	3.6730	0.0553	0.798	Effect of NYCHA to Unknown
rezrec	1	-0.16614	0.07516	4.8865	0.0271	0.847	Reason
fmszrec	1	-0.16083	0.07980	4.0617	0.0439	0.851	Family Size
prelrc	1	0.08459	0.07886	1.1507	0.2834	1.088	Prior Eligibility
prcrec	1	-0.03808	0.07450	0.2613	0.6093	0.963	Medical Condition
ethnrec	1	-0.01994	0.07270	0.0753	0.7838	0.980	Ethnicity
agemed	1	-0.16855	0.07999	4.4405	0.0351	0.845	Age
logtrela1	1	-0.03862	0.11147	0.1200	0.7290	0.962	Rela1 x log survival time

Appendix 8

Predictor Variables Tests of Proportionality

Cox Extended Model

Rela2 (Adult Families)

Analysis of Maximum Likelihood Estimates							
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**Chi-Square**	**Pr > ChiSq**	**Hazard Ratio**	**Variable Label**
rela1	1	0.01041	0.14903	0.0049	0.9443	1.010	Effect of Single Father to partner with dependent
rela2	1	1.72350	0.41959	16.8719	<.0001	5.604	Effect of Adult Family to partner with dependent
disp1	1	-0.59204	0.10350	32.7195	<.0001	0.553	Effect of HSP to Unknown
disp2	1	-0.51852	0.10886	22.6874	<.0001	0.595	Effect of Other to Unknown
disp3	1	0.03143	0.11824	0.0707	0.7904	1.032	Effect of Earp to Unknown
disp4	1	-0.21408	0.11802	3.2906	0.0697	0.807	Effect of NYCHA to Unknown
rezrec	1	-0.16421	0.07514	4.7766	0.0288	0.849	Reason
fmszrec	1	-0.16630	0.08012	4.3084	0.0379	0.847	Family Size
prelrc	1	0.08063	0.07883	1.0464	0.3063	1.084	Prior Eligibility
prcrec	1	-0.04083	0.07446	0.3007	0.5834	0.960	Medical Condition
ethnrec	1	-0.02140	0.07270	0.0866	0.7685	0.979	Ethnicity
agemed	1	-0.15478	0.07968	3.7737	0.0521	0.857	Age
logtrela2	1	-0.32374	0.07894	16.8197	<.0001	0.723	Rela2 x log survival time

Appendix 8

Predictor Variables Tests of Proportionality

Cox Extended Model

Age

Analysis of Maximum Likelihood Estimates							
Variable	DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	Variable Label
rela1	1	0.02901	0.14859	0.0381	0.8452	1.029	Effect of Single Father to partner with dependent
rela2	1	0.03020	0.12588	0.0575	0.8104	1.031	Effect of Adult Family to partner with dependent
disp1	1	-0.60715	0.10312	34.6647	<.0001	0.545	Effect of HSP to Unknown
disp2	1	-0.53648	0.10902	24.2167	<.0001	0.585	Effect of Other to Unknown
disp3	1	-0.01424	0.11733	0.0147	0.9034	0.986	Effect of Earp to Unknown
disp4	1	-0.22320	0.11798	3.5791	0.0585	0.800	Effect of NYCHA to Unknown
rezrec	1	-0.16503	0.07518	4.8183	0.0282	0.848	Reason
fmszrec	1	-0.15809	0.07979	3.9257	0.0476	0.854	Family Size
Prelrc	1	0.08311	0.07889	1.1100	0.2921	1.087	Prior Eligibility
prcrec	1	-0.03670	0.07454	0.2424	0.6225	0.964	Medical Condition
ethnrec	1	-0.02206	0.07272	0.0921	0.7616	0.978	Ethnicity
agemed	1	0.13145	0.34361	0.1464	0.7020	1.140	Age
logtagemed	1	-0.05612	0.06253	0.8055	0.3694	0.945	Age x log survival time

Appendix 8

Predictor Variables Tests of Proportionality

Cox Extended Model

Family Size

Analysis of Maximum Likelihood Estimates							
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**Chi-Square**	**Pr > ChiSq**	**Hazard Ratio**	**Variable Label**
Rela1	1	0.05794	0.14842	0.1524	0.6963	1.060	Effect of Single Father to partner with dependent
Rela2	1	0.02707	0.12471	0.0471	0.8282	1.027	Effect of Adult Family to partner with dependent
Disp1	1	-0.60006	0.10339	33.6860	<.0001	0.549	Effect of HSP to Unknown
Disp2	1	-0.54279	0.10858	24.9895	<.0001	0.581	Effect of Other to Unknown
Disp3	1	0.04113	0.11785	0.1218	0.7270	1.042	Effect of Earp to Unknown
Disp4	1	-0.21768	0.11804	3.4006	0.0652	0.804	Effect of NYCHA to Unknown
rezrec	1	-0.16899	0.07516	5.0551	0.0246	0.845	Reason
fmszrec	1	-1.89237	0.41664	20.6297	<.0001	0.151	Family Size
prelrc	1	0.08116	0.07897	1.0564	0.3040	1.085	Prior Eligibility
prcrec	1	-0.03168	0.07459	0.1804	0.6711	0.969	Medical Condition
ethnrec	1	-0.02216	0.07265	0.0930	0.7604	0.978	Ethnicity
agemed	1	-0.17468	0.07996	4.7720	0.0289	0.840	Age
logtfmszrec	1	0.31653	0.07387	18.3617	<.0001	1.372	Family Size x log survival time

Appendix 8

Predictor Variables Tests of Proportionality

Cox Extended Model

Reason for Seeking Shelter

Analysis of Maximum Likelihood Estimates							
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**Chi-Square**	**Pr > ChiSq**	**Hazard Ratio**	**Variable Label**
Rela1	1	0.02759	0.14868	0.0344	0.8528	1.028	Effect of Single Father to partner with dependent
Rela2	1	0.02371	0.12564	0.0356	0.8503	1.024	Effect of Adult Family to partner with dependent
Disp1	1	-0.60816	0.10317	34.7456	<.0001	0.544	Effect of HSP to Unknown
Disp2	1	-0.54575	0.10855	25.2751	<.0001	0.579	Effect of Other to Unknown
Disp3	1	-0.01730	0.11748	0.0217	0.8829	0.983	Effect of Earp to Unknown
Disp4	1	-0.22632	0.11793	3.6829	0.0550	0.797	Effect of NYCHA to Unknown
rezrec	1	-0.23029	0.36644	0.3949	0.5297	0.794	Reason
fmszrec	1	-0.15999	0.07976	4.0231	0.0449	0.852	Family Size
prelrc	1	0.08456	0.07894	1.1472	0.2841	1.088	Prior Eligibility
prcrec	1	-0.03782	0.07460	0.2570	0.6122	0.963	Medical Condition
ethnrec	1	-0.02041	0.07268	0.0789	0.7788	0.980	Ethnicity
agemed	1	-0.16883	0.07999	4.4541	0.0348	0.845	Age
logtrezrec	1	0.01175	0.06605	0.0317	0.8588	1.012	Reason x log survival time

Appendix 8

Predictor Variables Tests of Proportionality

Cox Extended Model

Prior Eligibility

Analysis of Maximum Likelihood Estimates							
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**Chi-Square**	**Pr > ChiSq**	**Hazard Ratio**	**Variable Label**
rela1	1	0.01107	0.14867	0.0055	0.9407	1.011	Effect of Single Father to partner with dependent
rela2	1	0.01192	0.12587	0.0090	0.9245	1.012	Effect of Adult Family to partner with dependent
disp1	1	-0.61865	0.10329	35.8712	<.0001	0.539	Effect of HSP to Unknown
disp2	1	-0.54169	0.10859	24.8827	<.0001	0.582	Effect of Other to Unknown
disp3	1	-0.02603	0.11705	0.0495	0.8240	0.974	Effect of Earp to Unknown
disp4	1	-0.22688	0.11783	3.7072	0.0542	0.797	Effect of NYCHA to Unknown
rezrec	1	-0.15314	0.07520	4.1471	0.0417	0.858	Reason
fmszrec	1	-0.15414	0.07979	3.7319	0.0534	0.857	Family Size
prelrc	1	1.27049	0.35112	13.0924	0.0003	3.563	Prior Eligibility
prcrec	1	-0.03207	0.07454	0.1851	0.6670	0.968	Medical Condition
ethnrec	1	-0.02597	0.07278	0.1274	0.7212	0.974	Ethnicity
agemed	1	-0.17711	0.08007	4.8924	0.0270	0.838	Age
logtprelrc	1	-0.22227	0.06444	11.8983	0.0006	0.801	Prior Eligibility x log survival time

Appendix 8

Predictor Variables Tests of Proportionality

Cox Extended Model

Medical Condition

Analysis of Maximum Likelihood Estimates							
Variable	DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	Variable Label
rela1	1	0.02812	0.14869	0.0358	0.8500	1.029	Effect of Single Father to partner with dependent
rela2	1	0.02374	0.12568	0.0357	0.8502	1.024	Effect of Adult Family to partner with dependent
disp1	1	-0.60898	0.10307	34.9107	<.0001	0.544	Effect of HSP to Unknown
disp2	1	-0.54646	0.10849	25.3728	<.0001	0.579	Effect of Other to Unknown
disp3	1	-0.01891	0.11730	0.0260	0.8719	0.981	Effect of Earp to Unknown
disp4	1	-0.22694	0.11791	3.7047	0.0543	0.797	Effect of NYCHA to Unknown
rezrec	1	-0.16643	0.07520	4.8984	0.0269	0.847	Reason
fmszrec	1	-0.15971	0.07978	4.0081	0.0453	0.852	Family Size
prelrc	1	0.08524	0.07886	1.1683	0.2798	1.089	Prior Eligibility
prcrec	1	-0.04778	0.34138	0.0196	0.8887	0.953	Medical Condition
ethnrec	1	-0.02030	0.07270	0.0780	0.7801	0.980	Ethnicity
agemed	1	-0.16855	0.08000	4.4391	0.0351	0.845	Age
logtprcrec	1	0.00172	0.06188	0.0008	0.9778	1.002	Medical Condition x log survival time

Appendix 8

Predictor Variables Tests of Proportionality

Cox Extended Model

Ethnicity

Analysis of Maximum Likelihood Estimates							
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**Chi-Square**	**Pr > ChiSq**	**Hazard Ratio**	**Variable Label**
Rela1	1	0.02271	0.14875	0.0233	0.8787	1.023	Effect of Single Father to partner with dependent
Rela2	1	0.02254	0.12567	0.0322	0.8577	1.023	Effect of Adult Family to partner with dependent
Disp1	1	-0.60569	0.10303	34.5570	<.0001	0.546	Effect of HSP to Unknown
Disp2	1	-0.54794	0.10852	25.4959	<.0001	0.578	Effect of Other to Unknown
Disp3	1	-0.02003	0.11720	0.0292	0.8643	0.980	Effect of Earp to Unknown
Disp4	1	-0.22814	0.11789	3.7451	0.0530	0.796	Effect of NYCHA to Unknown
rezrec	1	-0.16809	0.07516	5.0018	0.0253	0.845	Reason
fmszrec	1	-0.16214	0.07973	4.1358	0.0420	0.850	Family Size
prelrc	1	0.08889	0.07888	1.2701	0.2597	1.093	Prior Eligibility
prcrec	1	-0.03798	0.07451	0.2598	0.6102	0.963	Medical Condition
ethnrec	1	-0.52876	0.34629	2.3315	0.1268	0.589	Ethnicity
agemed	1	-0.16245	0.08006	4.1173	0.0424	0.850	Age
logtethnrec	1	0.09385	0.06240	2.2615	0.1326	1.098	Ethnicity x log survival time

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