

**AN EVALUATION OF THE PREDICTORS OF PLACEMENT IN PERMANENT
SUPPORTIVE HOUSING IN THE DETROIT METROPOLITAN COMMUNITIES**

by

ANDREA KING-JIMENEZ

DISSERTATION

Submitted to the Graduate School

of Wayne State University

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

DOCTOR OF EDUCATION

2016

MAJOR: EVALUATION AND RESEARCH

Approved By:

Advisor Date

ProQuest Number: 10192895

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



ProQuest 10192895

Published by ProQuest LLC (2017). Copyright of the Dissertation is held by the Author.

All rights reserved.

This work is protected against unauthorized copying under Title 17, United States Code
Microform Edition © ProQuest LLC.

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 – 1346

© COPYRIGHT BY
ANDREA KING – JIMENEZ
2016
All Rights Reserved

DEDICATION

To the Lord for without him I can do nothing. To Felipe my husband who has always encouraged me to follow my dreams. To my children William, Tineka, Miguel, and Jasmine for understanding all the day's mom was in classes late in the evening. To my mother and father for always telling me I could do anything I wanted as a child. To my sister, Mona, thank you for reading my papers, and going through the evaluation and research program with me. We finally made it. To all my siblings, nieces, nephews, grandchildren, I love you all so very much.

ACKNOWLEDGEMENTS

To Professor Shlomo Sawalowsky, my advisor, for all the encouragement you gave to me when I was taking your classes, completing my preliminaries, and writing this dissertation. I would also like to thank my other committee members Dr. Barry Markman and Dr. Monte Piliawsky for your advisement in the pursue of my doctoral degree. To all lectures, instructors, professor, and those I have worked with at Wayne State University, thank you for the all assistance, encouragement, and motivation you gave me. I appreciate all of you so very much.

TABLE OF CONTENTS

| | |
|--|------|
| Dedication | ii |
| Acknowledgments..... | iii |
| List of Tables | vii |
| List of Figures | viii |
| Chapter 1 Introduction | |
| Local CAM | 4 |
| Program Description | 5 |
| Purpose of the Study | 7 |
| Research Questions | 7 |
| Population | 8 |
| Dependent Variable | 8 |
| Independent Variables | 9 |
| Assumptions | 9 |
| Limitations | 9 |
| Important of the Study | 10 |
| Definition of Terms | 10 |
| Chapter 2 Literature Review | |
| The McKinney-Vento Act | 12 |
| Housing First..... | 13 |
| The Continuum of Care | 13 |
| Homeless Management Information System | 14 |
| HEARTH ACT | 15 |

| | |
|---|----|
| Emergency Solution Grant | 15 |
| Coordinated Assessment Model | 15 |
| Chapter 3 Methodology | |
| Research Design..... | 17 |
| Population | 18 |
| Survey Variables..... | 18 |
| Data Collection | 20 |
| Missing Values and Descriptive Statistics | 20 |
| Data Analysis | 20 |
| Chi-Square | 21 |
| Discriminant Function Analysis | 21 |
| Logistic Regression | 22 |
| Limitations | 23 |
| Chapter 4 Results | |
| Discriminant Function Analysis | 24 |
| Logistic Regression | 28 |
| Chi-Square | 30 |
| Chapter 5 Discussion and Conclusion | |
| Research Question 1 | 34 |
| Research Question 2 | 35 |
| Research Question 3 | 35 |
| Research Question 4 | 36 |
| Research Question 5 | 37 |

| | |
|--|----|
| Limitations | 39 |
| Recommendation for Future Research..... | 39 |
| Appendix: CAM – PSH Match Flow Chart 2015..... | 41 |
| References..... | 42 |
| Abstract | 47 |
| Autobiographical Statement..... | 48 |

LIST OF TABLES

| | |
|---|----|
| Table 1: Service Prioritization Decision Assistance Tool (SPDAT) | 3 |
| Table 2: Providers of PSH in Detroit Metropolitan Communities | 6 |
| Table 3: Comparison means and standard deviation of dependent variable “Housed” “Not Housed” | 24 |
| Table 4: Discriminant Function Analysis | 25 |
| Table 5: Totals of Canonical and Structure Coefficient for Discriminant Function Analysis..... | 26 |
| Table 6: Discriminant Function Analysis classification table | 28 |
| Table 7: Statistical significant of the Logistic Regression..... | 29 |
| Table 8: Chi-Square results..... | 33 |
| Table 9: Logistic Regression multicollinearity test | 38 |

LIST OF FIGURES

| | |
|--|----|
| Figure 1: SPDAT scores for each Dummy variables..... | 31 |
| Figure 2: Total of SPDAT scores in each dependent variable | 32 |

CHAPTER 1 INTRODUCTION

Many people in North America are homeless; they do not have suitable housing. They live in abandoned buildings, shelters and on the street. “Housing is a basic necessity that provides shelter from elements” (Anderson, et al., 2003). The homeless populations, including children, adolescent, men, and women number approximately 578,424 people are homeless each night (Henry, et al., 2014). Reasons contributing to homelessness include but are not limited to domestic violence, economic hardship, natural disaster, and war. The federal government has allocated resources for the elimination of homelessness; the United States Department of Housing and Urban Development (HUD) oversees this funding.

The HUD department does not provide direct assistance to the homeless, it offers funding to agencies that are assisting the homeless in the form of grants, loans and stipends. To facilitate these resources within each city, there are agencies that specialize in certain areas of homelessness. These agencies are permanent and temporary providers; the temporary providers house the homeless for a limited time normally 30 to 60 days. The permanent providers have permanent supportive housing (PSH) for the homeless. Permanent Supportive Housing (PSH) is where the government pays a portion of the cost or the cost is greatly reduced for the homeless person to reside at these residences.

A family or single individual can be homeless; the state of homelessness may be classified as chronic or non-chronic. A person is considered chronically homeless if he/she is single and has lived on the streets for at least one year or has lived on the street four times over the course of three years. A family with an adult member that fits this description is also considered chronically homeless. A non-chronically homeless individual is someone who has lived in a shelter or on the streets for less than a year (Homeless assistance program, 2007).

Research indicates the majority of chronically homeless people suffer from a mental illness. Assisting these individuals can be difficult. Tsemberis and Eisenberg, (2000) reviewed a program in New York City, called "Housing First." This program was the first of its kind; it allowed a homeless person with mental illness to receive a referral for housing and then have their illness addressed. The research was conducted over a five-year period using a modified Assertive Community Treatment (ACT) model. Participants of "Housing First" were interviewed to determine what effect this program had on their lives; findings indicated participation in the ACT program showed a decrease in the number of homeless people.

The success of this program led to Congress passing the Homeless Emergency Assistance and Rapid Transition to Housing (HEARTH) Act 2009. This mandate created the Coordinated Assessment Model (CAM). The purpose of CAM is to monitor and record the process of the homeless, from the initial contact to the resolution, which can range from being declined housing to receiving permanent supportive housing (PSH). CAM acts as the central organization between the homeless and the agencies providing permanent supportive assistance (U. S. Interagency Council on Homelessness, 2010)

To assist with providing housing, the Coordinated Assessment Model uses the Service Prioritization Decision Assistance Tool (SPDAT). This tool determines the level of assistance received by a homeless person. The SPDAT is a set of questions with a score; there are two SPDAT forms, one for families, and one for individuals (Levitt, 2015). The homeless are assigned a rating of need based on the total score. A score of 35 and higher signified a need for PSH (Table 1)

Table 1
Service Prioritization Decision Assistance Tool (SPDAT)

| <u>Housing Outcomes</u> | <u>Family Scores</u> | <u>Individuals Scores</u> |
|------------------------------|----------------------|---------------------------|
| No Housing | 0 - 26 | 0 - 19 |
| Rapid Re-Housing | 27 - 53 | 20 - 34 |
| Permanent Supportive Housing | 54 - 80 | 35 - 60 |

The Coordinated Assessment Model is not the first program created to support the homeless. The process of succoring the homeless requires change. Evaluation and research of a program is necessary to determine its success; it must be determined if the program successfully serves the intended population. Tsemberis, Gulcur and Nakae, (2004) reviewed the Continuum of Care (CoC), based in New York City. It was based on giving individuals a choice of how they receive services. They followed 225 homeless individuals from initial contact, to treatment, transitional housing, and finally permanent supportive housing.

The participants were randomly separated into two groups, control and experimental. The assumptions for this study were that the experimental group would show a decrease in the number of people who were repeatedly homeless. They would report greater consumer choice over time, they would experience the same or less rates of substance use, they would participate in less substance-abuse treatments, and the experimental group would experience rates of psychiatric symptoms similar to or lower than the control group.

Interviews were conducted to establish a baseline for the result and all other were conducted in various ways. To determine significance, a Repeated-measures analysis of variance (ANOVA) was performed. Although the results for this experiment were mixed, several propositions were supported because the experimental group indicated a feeling of greater consumer choice, reported less time spent homeless during this study, and participated in less

substance-abuse treatments. They determined the CoC was effective in regards to helping the chronically and dually diagnosed homeless people in some areas but in the assumptions of substance use and psychiatric symptoms, the control and experimental group were equal. According to Tsemberis, Gulcur & Nakae (2004), the results indicated the process of requiring psychiatric treatment and sobriety was not necessary for housing placement. Although not all statistical hypotheses tested were significant, it was nevertheless shown there was a need for this type of homeless assistance. Hence, the Coordinated Assessment Model was established on their paradigm.

Although personnel at the agencies using the Continuum of Care approach were not required to track its success, the HEARTH Act 2009 required the Coordinate Assessment Model (CAM) to demonstrate its progress. It must demonstrate its success by documenting the number of homeless people it assists within its communities (Berg, 2013).

Local CAM

In January 2015, the communities of Detroit, Hamtramck, and Highland Park implemented CAM. It was developed to improve collaboration between the provider agencies and the homeless. The Coordinated Assessment Model is within the Southwest Solution Agency, which is located in Southwest, Detroit. This agency is also a provider of permanent supportive housing for the homeless. CAM monitors the homeless to determine if they are receiving housing in a timely manner. CAM has a Coordinator Assessment Specialist who is responsible for monitoring the progress of the homeless and the providers.

Monitoring progress is conducted through an internal database called PSH Tracker. The specialist, employed and trained by Southwest Solution agency, enters the information

concerning the homeless person and the assigned provider into the database. The CAM specialist will update the homeless person outcome when it is received from the provider.

Program Description

The Coordinated Assessment Model program consists of three points of contact including the initial contact, the Coordinated Assessment Specialist, and the providers (see flow chart in appendix A). The initial contact happens in several different scenarios. These circumstances are groups or individuals, called navigators, conducting searches in shelters and on the streets. A homeless person can also make the first contact by walking into a provider agency or temporary shelter seeking assistance.

This contact allows for the collecting of information about the homeless families or individuals. The homeless individual(s) complete a set of documents, which includes information about their homeless situation, and medical history; the SPDAT forms are administered at this time. This information is compiled into a file to be sent to the Southwest Solution Coordinated Assessment Model. This information is entered in the Homeless Informational Management System (HMIS) government database. It contains information concerning the homeless families or individuals. It is accessible by any provider agency in the country. This information will facilitate support of the homeless by allowing agencies to know the history, and support received by the homeless previously (HMIS: Homeless management information system, 2014).

The second interaction is CAM where the homeless person's files are sent. The Intake Coordinator reviews these files. This person is responsible for reviewing the SPDAT scores. Homeless files with a score 35 or higher are assigned to permanent solution housing (PSH). 'Match Meetings', are held twice a month at the Southwest Solution, the Coordinate Assessment Specialist leads them. This is where the homeless individual is matched to a provider. During the

meetings, providers receive the homeless information for securing permanent supportive housing (PSH). The CAM Specialist monitors the homeless progression through the PSH Tracker database by continual updates from the providers.

The final interaction in the Coordinated Assessment Model is with the providers. There are currently eleven providers for the communities of Detroit, Hamtramck, and Highland Park (see list in Table 2). The providers contact the homeless individual(s) and sets up a consultation to discuss their needs and then begin the process of housing selection. Once a PSH is obtained, the information is relayed to the CAM Specialist who will then update the database.

Table 2
Providers of PSH in Detroit Metropolitan Communities

| <u>Agency Name</u> | <u>Acronym</u> |
|--|----------------|
| Cass Community Social Services | CASS |
| Coalition on Temporary Shelter | COTS |
| Detroit Central City | DCC |
| Gateway Detroit East | GDE |
| Detroit Rescue Mission Ministry | DRMM |
| Development Center Inc. | DCI |
| Neighborhood Service Organization | NSO |
| Southwest Solution* | SW |
| Traveler Aid Society of Metropolitan Detroit | TASMD |
| Veteran Administration | VA |
| Veteran Affairs Supportive Housing | VASH |

*Southwest Solution agency houses CAM and is also a provider of permanent supportive housing for the homeless.

The Coordinated Assessment Model is a new program developed to bridge the gap between the agencies and the homeless they serve. It was designed to allow the homeless to

obtain services in one location, according to Culhan and Metraux (2008). Elimination of homelessness requires an organizational approach. Many communities are attempting to address this issue alone but are not accurately documenting those it is serving. The Homeless Action Network of Detroit (HAND) is the overseer of the Coordinated Assessment Model for the communities of Detroit, Hamtramck, and Highland Park in Michigan. These three communities have approximately 14,000 homeless people; 60 percent are families with children.

Purpose of the Study

An evaluation of the Southwest Solution agency program is necessary to determine its impact (Gewirtz, et al., (2009); Rosenheck et al., (2003); Bassuk, Volk & Olivet, (2010). Therefore, the purpose of this study is to evaluate the predictors of placement in permanent supportive housing within the process of the Coordinated Assessment Model. Three statistical approaches will be used and compared for their efficacy: (1) the Logistical Regression (LR) Model, (2) a Discriminant Function Analysis (DFA), and (3) Chi-Square.

The Logistic regression model is designed to describe, estimate, model, and predict causal relationship between dependent and independent variables. It is used when the dependent (outcome) variable is dichotomous (e.g. success vs. failure). The Discriminant Function Analysis is used to derive a variate, which will discriminate the best between the outcomes (Hair et al., 2010) and is most useful when those outcomes are dichotomous. The Chi-Square is used to compare the difference between the observed and expected value of the outcome (Hair et al., 2010).

Research Questions

The United States Department of Housing and Urban Development (HUD) mandated social service agencies to develop innovative approaches to providing housing and supportive

services to the homeless (Washington, 2002). The Coordinate Assessment Model is designed to provide accurate updates to the Homeless Action Network of Detroit (HAND) regarding the status of the homeless they are assisting. This program was implemented in January 2015; continuous funding for a program is based upon demonstration of services, required by the Homeless Emergency Assistance and Rapid Transition to Housing (HEARTH) Act 2009. The research questions therefore are:

1. Is Coordinate Assessment Model (CAM) accomplishing its task?
2. Is CAM an efficacious evaluation model?
3. Based on logistic regression and discriminant function analysis, what are the best predictors of success vs. failure of effective housing?
4. What are the strengths and weaknesses of logistic regression and discriminant function analysis in this application?
5. Based on Prioritization Decision Tool scores (SPDAT) a good predictor of placement in housing?

Population

The population consists of 280 homeless people that used the Southwest Solution Coordinated Assessment Model (CAM). These homeless clients used the CAM system from January to June 30, 2015. This includes all homeless individuals who used the program during this time.

Dependent Variable

The dependent variable, housed, is dichotomous (no or yes). The homeless individual either secured permanent supportive housing or did not secure permanent supportive housing.

Independent Variables

The independent variables will be chronic. According to HUD chronic represents an adult individual with a disabling condition who has been continuously homeless for a year or more, family, veteran status and Service Prioritization Decision Assistance Tool scores (SPDAT). The SPDAT is an assessment tool designed to be used by providers to assess the health and social need of a homeless person. Each person is assigned a score based on this assessment. (Levitt, 2015)

Assumptions

It is assumed that the Southwest Solution agency has accurate and complete information. Because the Coordinated Assessment Specialist compiles the information into the internal database PSH Tracker, it is expected the homeless information is complete. Another assumption is the policies and procedures for CAM were implemented consistently and precisely. Lastly, the Coordinator Assessment Specialist and the providers reported information on the homeless served accurately and completely for this study and the information, concerning the homeless outcome has been relayed by the providers to the CAM Specialist within the established timeframe.

Limitation

The HEARTH Act did not stipulate the location or organization of the Coordinated Assessment Model (CAM). Therefore, this CAM is unique to the Southwest Solution agency. Therefore, all homeless who used the Southwest Solution Agency during January through June 30, 2015 were included. However, this geographic area was not randomly selected; therefore, results from this study may not be generalized to a CAM located in a different geographical location.

Importance of the study

It is anticipated that this study will allow improve understanding of who is using the Coordinated Assessment Model (CAM) and what makes them successful in obtaining permanent supportive housing (PSH). It will serve as a benchmark for further research in these communities. Furthermore, it is anticipated that the practical application of logistic regression and discriminant function analysis will highlight strengths and weaknesses of the two statistical approaches to the analysis of dichotomous outcome variables.

Definition of Terms

The following are terms with identified definitions used in this study.

Chronically Homeless: is an unaccompanied homeless individual with a disabling condition who has been continuously homeless for a year or more or an unaccompanied family or individual with a disability condition who has had at least four episodes of homelessness in the past three years. A family who has an adult member that meets these criteria's is also consider chronic.

Continuum of Care (CoC): the process by which communities identify local needs, develop strategies, and submit a single application to HUD for funding for programs designed to meet the needs in the community.

Coordinated Assessment Model (CAM): the Continuum of Care approach to organizing and providing services to persons experiencing a housing crisis within a specific geographic area.

Coordinator Assessment Specialist: the individual who receives the complete homeless file and presents the applications at the bi-weekly Match Meeting.

Emergency Solution Grant Program (ESG): program that promotes Housing First through prevention and rapid re-housing activity such as supplying security deposit, paying several months' rent.

Homeless Action Network of Detroit (H.A.N.D.): the lead agency for the support of homeless shelters in Detroit.

Homeless Management Information System (HMIS): a web-based database used by service organizations to collect and record information on the people they serve.

Intake Coordinator: responsible for receiving the homeless applications from the navigator and ensuring the file is complete before giving to the Coordinator Assessment Specialist.

Match Meeting: where agencies that have permanent housing available come to receive applications of families, individuals and veterans.

Navigators: an individual, group, or shelter that has first contact with a homeless person.

Permanent Supportive Housing (PSH): an effective means of reintegrating homeless families, individuals, and veterans into the community by addressing their basic need for housing and providing ongoing support.

Rapid Re-Housing Program: a program to help those who are experiencing homelessness to be quickly re-housed and stabilized.

Service Prioritization Decision Assistance Tool (SPDAT): an evidence-informed approach to assessing an individual's or family's acuity.

United States Department of Housing and Urban Development (HUD): a department within the federal government assigned with developing strong, sustainable, inclusive communities and quality affordable homes for all.

CHAPTER 2 LITERATURE REVIEW

Gewirtz et al. (2008) indicated there is a strong correlation between poverty and homelessness. The inability of a family or individual to obtain an adequate wage in this economy is directly correlated to homelessness. Liou, Nutt, Dunnhan, & Sanchez, (2011) noted approximately twelve million Americans were spending more than 50 percent of their income on housing and renting cost. This means these American's residency may be at risk.

There were many changes to homeless policies over the course of the last fifty years. The United States Government, in the 1960s - 1970s created subsidized housing projects. These neighborhoods housed low-income families. Families on federal assistance were placed in a housing complex with others in the same situation. They allowed families and individuals to live in nice neighborhoods without spending abundance on housing. An evaluation of these complexes indicated they included high rates of crime, drugs, high school dropouts, and teenage pregnancies (Goetz, 2003).

The McKinney –Vento Act

Many federally funded housing projects were shut down in the early 1980s when federal funding was cut, although there was an increase in the number of homeless people during that time. In response to this rising need, Congress passed the McKinney-Vento Homeless Assistance Act (1987). It was the first homeless assistance policy. It created twenty different programs to assist with homelessness; these included but were not limited to education, emergency food, job training, mental health care, permanent, and temporary housing. The Act allowed families and individuals to obtain government funded resources.

However, the Act left a disconnect between the designated population and the program. It did not address how the homeless would qualify and receive housing services. The federal

government realized the original Act was not accomplishing its task. The program needed to be revised (Czerwinski, 2002). During this period, New York City introduced a program called “Housing First” designed to meet the needs of people who had severe psychiatric disabilities and concurrent addiction disorders (Tsemberis and Eisenberg, 2000).

Housing First

Housing First was developed and introduced in 1992 by Pathways to Housing, a nonprofit agency in New York City. It allowed the homeless to receive housing first and then all other assistance later. New York City was the first state to use this method (Tsemberis & Eisenberg, 2000). However, homeless people with mental illness and providers of permanent supportive housing had different views of how services should be executed. Homeless individuals felt they should receive housing first, whereas providers felt issues of mental health and substance abuse should be addressed before housing. The agencies using the housing first approach saw an increase in the number of homeless being served. With the results of Pathways to Housing, many other cities initiated the Housing First model and saw positive results (Bassuk & Geller, (2006); Gerber, Haradon & Phinney (2008); Gerwartz, Hart-Shegos & Medhanie (2008); Stefancic & Tsemberis (2007); Tsemberis, Gulcur & Nakae (2004).

The Continuum of Care

In response to an evaluation of the McKinney Vento Act, in 1998 the federal government introduced the Continuum of Care (CoC) program. CoC combined supportive housing for the homeless with case management and housing resources. It promoted collaboration between communities and non-profit providers to ensure quick housing or re-housing of the homeless population. It assisted them with services to allow the maintaining of their current housing. The

needs of the homeless were vast; many-needed physical and mental assistance while others needed assistance with housing. (CoC: Continuum of Care Program, 2015.)

An evaluation of the Continuum of Care (CoC) by Poole and Zugazaga (2003) indicated many people needed assistances prior to becoming homeless. They interviewed 81 residents at the Coalition Homeless Center concerning their experience in the CoC program. They noted the CoC did not afford the preventive measures needed to address homelessness. They concluded individuals had sought assistance but were unable to received help before they became homeless. This review caused a change in how homelessness was documented, specifically, with the federal Homeless Management Information System (HMIS).

Homeless Management Information System

The Homeless Management Information System was introduced in 1999. It was a governmental online database designed to take homeless management from paper-based to computer (Cornley & Patterson, 2010). It facilitated a better system for tracking homelessness. The HMIS created an online technique for collecting data, which allowed all communities to enter information on a homeless person into the system. Communities were then able to access this information to determine the status of a homeless individual and what services they have received previously. The HMIS also allowed the federal government to receive a complete detailed report showing how many people were assisted. In a subsequent evaluation of the HMIS system, it was determined 91% of homeless service providers were using this system for documenting their assistance of the homeless (Cornley & Patterson, 2010).

In 2008, HUD announced the joining of Continuum of Care (CoC) and Housing First (Gerber et al., 2008). This change created the Homeless Emergency Assistance and Rapid

Transition to Housing (HEARTH) Act, which combined these programs to assist in quickly removing homeless people from the shelters and streets to permanent supportive housing (PSH).

HEARTH ACT

The HEARTH Act of 2009 was congressional legislation that changed the federal government's policies and practices for serving the homeless, and it redefined the policies and procedures for the support of homelessness. The policy focus was to eliminate homelessness, to move people from temporary shelter to permanent housing as soon as possible. This act changed the name of the ESG grant into Emergency Solutions Grants and created the Coordinated Assessment Model (CAM) (Berg, 2013).

Emergency Solution Grant

The ESG addressed the needs of people in danger of becoming homeless by providing financial assistance. This assistance allowed them to receive information and resources to prevent homelessness such as emergency funds to pay gas, electricity, rent, and security deposit payments. This policy changed the focus of communities from a gradual approach to housing, to Rapid Re-Housing. It allowed the homeless to receive permanent results for their situation rather than a temporary solution (Berg, 2013). Although the Emergency Solution Grant (ESG) focused on families and individuals who were not homeless, the Coordinated Assessment Model (CAM) was dedicated to those who were homeless. (Emergency shelter grants program requirements, 2012).

Coordinated Assessment Model

The Homeless Emergency Assistance and Rapid Transition to Housing (HEARTH) mandated communities funded through Emergency Solutions Grant (ESG) and Continuum of Care (CoC) have a Coordinated Assessment Model (CAM). (HUD/U.S. 2015) It was the

responsibility of CAM to monitor the progress of the homeless from match meeting, to provider and finally permanent supportive housing (PSH). The organization of CAM's system design was unique to each community, the only requirement the federal government had was a detailed reporting of the number of people assisted. Communities, utilizing CAM, must have an approach to measure its result to determine if it is meeting the goals of the federal government. In 2010, a decision was made by the congressional legislation to end certain types of homelessness within a ten-year period. (Coordinated Intake, 2015).

Several goals were identified: the elimination of all homeless veterans by the end of 2015, end chronic homelessness within five years, and end and prevent homelessness for families, youth, and children within ten years. The elimination of homelessness requires a great deal of resources and information. The changes in the policies and procedures, which have dominated the homeless plight, were based on analysis and evaluations. The changes made were a result of detailed studies; the federal government's goal of ending homelessness requires communities to evaluate the programs used when providing services to the homeless population (Berg, 2013).

CHAPTER 3 METHODOLOGY

The process of evaluating the homeless is not new; numerous evaluations were conducted on this population. The research has been in the form of case studies, longitudinal studies, and regression using qualitative and quantitative statistical methods. As stated in the literature review changes in government policies and procedures concerning the homeless have been the result of evaluations. (Bassuk (2010); Caton et al., (2005); Rosenheck et al., (1998); O'Connell, Kaspro & Rosenheck, (2008). Therefore, the evaluations of new programs are necessary to determine if they are beneficial in assisting homeless individuals. The aim of this study was to develop a theoretical benchmark for the Coordinated Assessment Model. To determine the negative and positive predictors of placement in permanent supportive housing by comparing and contrasting the differences in the results of the Discriminant Function Analysis (DFA) and Logistic Regression(LR) statistical methods and review of the Chi-square statistical method.

Research Design

In 1972, the Southwest Solution Agency was established in Southwest, Detroit to assist homeless people with finding (PSH). It houses the Coordinated Assessment Model (CAM) which is a new federal program implemented to act as a central organization center for the Detroit Metropolitan area. Its purpose is to coordinate services between homeless individuals, temporary shelters, and permanent supportive housing agencies. This study was conducted via a survey design of secondary data collected by the Southwest Solution agency of homeless individuals that sought assistance from January 2015 through June 30, 2015. Employees of Southwest agency and temporary shelters conducted a twenty to thirty-minute face-to-face interview with each homeless person, where general information and the Service Prioritization Decision Assistance Tool (SPDAT) survey were completed.

Population

The population for this study was all homeless individual who used the Southwest Solution Agency between the months of January 2015 to June 30, 2015. It consisted of N=280 clients for whom there exist completed files based on using the services of the Coordinate Assessment Model. The homeless individuals were not required to complete an informed consent form or sign a waiver. Hence, the homeless in the Wayne County area have a similar demographic as the homeless in the Southwest Solution Coordinate Assessment Model.

The number of cases remaining after removal of incomplete or missing data for the discriminant function analysis and logistic regression the sample size was n=277, Housed (74) and Not Housed (203) using the independent variables (IV) chronic, family and veteran status. Although the removal of incomplete or missing data for the chi square analysis resulted in a sample size of n= 229, Housed (69) and Not Housed (160), with the IV SPDAT.

Survey Variables

For the purpose of this evaluation, the data collection instrument was modified. The variables contained within the permanent supportive housing tracker were first and last name, HMIS, identification number, family, gender, veteran status, chronic, submitting agencies, date matched, agency matched to, date of full SPDAT, full SPDAT score 35+, status and outcome. For the purpose of this study, first and last name, gender, HMIS, identification number, submitting agencies, date of full SPDAT were omitted.

The dependent variable for this study, outcome, was modified. The original variable was divided into six possible conclusions, AWOL, ineligible, housed, pending, refusal of services, and returned to CAM. For this study, AWOL, ineligible, pending, refusal of service and returned to CAM were classified as not housed. The independent variables used for this study were

chronic, family, veteran status and SPDAT score 35+. The variables chronic, family, veterans' status all have been used in previous research (Tsember & Eisenberg, (2000), Gerber, Haradon & Phinney, (2008) Bassuk, Volk & Olivet, 2010).

SPDAT was a new method of identifying the need of the homeless and limited research has been conducted using this variable (Assessment tools allocating homelessness assistance: State of the evidence, 2015). Although chronic, family, and veteran status were categorical; SPDAT was a continuous variable. For the purpose of this study, all variables were coded into dummy variables.

Chronic. Is an accompanied or unaccompanied individual with a disabling condition who has been continuously homeless for either a year or more or has had at least four episodes of homelessness in the past three years (Gerber, Haradon & Phinney (2008). It will be coded as No= 0 and Yes= 1

Family. This is any adult who has a child under the age of seventeen. According Gerwitz et al., (2009) this category is comprised of single women who have more than one child under the age of six and are more likely to be a victim of domestic violence and may or may not have completed high school. This variable will be coded as No = 0 and Yes = 1.

Veteran status. A person who served in the active military, naval or air service. The variable veteran status, will be coded as Yes=1, No=0

SPDAT score 35+. There are two Service Prioritization Decision Assistance Tool (SPDAT) forms, one for families, and one for individuals. Each consists of six topics of questions, genders, history of housing and homelessness, risk, socialization and daily functions, wellness and family units (families only). The individual is given a one if they answer "Yes" to a question, then the totals are combined. (Table 1). The SPDAT scores are listed in a range from

zero to 80 for PSH the minimum score is 35. For this evaluation, this variable will be coded into two groups 46 and under=0,47and higher=1.

Outcome: The variable outcome which is the dependent variable, currently has five possibilities: AWOL, Ineligible, Housed, Returned to CAM and pending. For the purpose of this study, the variables AWOL, Ineligible, Returned to CAM and pending will be coded as Not Housed. The outcome Housed and Not Housed will be coded as Housed=1 Not Housed =0.

Data Collection

The Director of the Homeless Action Network of Detroit (HAND) gave permission for the evaluation of the Coordinated Assessment Model (CAM). Part of an already existing data collection instrument, Permanent Support Housing Tracker (PSHT) was used. The PSHT variables for this evaluation were divided into three categories, homeless classification, and shelter and provider agency information.

Missing Values and Descriptive Statistics

The general survey results were presented in charts, graphs, and tables. It was anticipated there may be some incomplete or missing records among the population of $N = 280$, or missing responses for a particular record. In order to compute a 95% confidence interval for the substantive survey results, a minimum sample size of $n = 163$ was required (<http://www.raosoft.com/samplesize.html>), assuming a ± 5 margin of error and 50% response distribution.

Data Analysis

The Statistical package for Social Science (SPSS) 23 was used for analyzing the data. An alpha level of .05 was used to determine any statically significance of the results.

Chi-Square

A Chi-Square analysis is used with discrete data in the form of frequencies. This method was used to evaluate the predictor SPDAT to determine its ability in correctly classifying placement in the CAM. This is a non-parametric test designed to determine the differences between observed and expected frequency. This method has several expectations according to Kothari (2007), observation recoded and used are collected on random basis, all variables in the sample must be independent, and no group should contain less than five observations.

A Discriminant Function Analysis (DFA) and Logistic regression (LR) statistical modeling techniques were used to examine the predictors of permanent supportive housing within the Coordinated Assessment Model (CAM). These methods are used for clarifying groups and populations using various independent variables (Leog & Foo, 2012). The (DFA) and (LR) were designed to be used with dichotomous variables; these methods will predict distinct groups within the data. This comparison showed the importance of these predictors in the CAM model. Although (DFA) and (LR) are multivariate statistical techniques, they have different assumptions and limitations, which must be addressed to ensure an accurate evaluation.

Discriminant Function Analysis

The DFA is a statistical method used for categorical dependent variables (DV) and non-metric independent variables (IV). This method is used when a researcher wants to predict if there is a difference between two or more group means. Normally, this method is used with continuous variables; however, it can be used when independent variables are recoded into dummy variables. DFA is the reverse of a (MANVO) which uses metric DV and categorical IV. DFA involves finding a variate, which is the linear combination of two or more independent variables that will discriminate best between the objects (Hair, 2010). When using the DFA

method, there are several assumptions and limitations that must be addressed: multivariate normally distributed homogeneity of variance/covariance, multicollinearity, and sample size.

DFA is sensitive to violations in the data, the data must be normally distributed, and it is relatively sensitive to outliers. Homogeneity of variance/covariance requires the variance between and within the groups to be equal. Multicollinearity indicates that each individual variable is independent of each other; they are not correlated. The sample size for the DFA is very important; it must be a minimum of five cases for every variable or twenty cases per each independent variable.

Logistic Regression

Logistic Regression is a statistical method used when the dependent variable is binary, meaning the response is one or zero.

The Logistic Regression uses what is called a best-fit model. This is similar to a Chi-Square in this model; this is accomplished by the Hosmer-Lemeshow test. This test determines if the data fit the model. There are two methods for creating a best-fit model. One is entering all independent variables (IV) at one time for an exploratory progress or in a stepwise method, which is entering IVs one at a time. Logistic Regression has all of the limitations of ordinary least squares regression, such as homogeneity of regression slopes. However, it is not as dependent on the normality requirement as in the general linear model, because the conditional distribution is Bernoulli. In current statistical theory, it is claimed that logistic regression has fewer assumptions than discriminant function analysis, but there is little evidence in practice that supports a practical difference between the two approaches. Thus, the secondary purpose of this study, as discussed above, is to compare the two procedures with a practical example using homeless data.

Limitations

The substantive finding from this study will only represent the homeless individuals using the Coordinate Assessment Model (CAM) located at the Southwest Solution Agency. The data characterizes homeless individuals who used this service between the months of January 2015 and June 30, 2015, even though data was available from January 2015 to August 2015. This evaluation design for collecting data has several limitations. There is the possibility that not all homeless individuals within the Detroit, Hamtramck, and Highland Park communities were interviewed. Data for this program were available from January 2015 to August 2015. This evaluation only used data to June 30, 2015 because of the 30 to 60 days required for placement in housing. A homeless person may have refused to answer all or some of the questions. Lastly, when entering the data into the system, there exists the chance the information was entered incorrectly or data were missing.

CHAPTER 4 RESULTS

The purpose of this study was to evaluate the predictors of placement in the Coordinated Assessment Model. This model used the dependent variable housed and not housed and the independent variables (IV) chronic, family, Service Prioritization Decision Assessment Tool (SPDAT) and veteran status. The statistical methods used were chi square, discriminant function analysis (DFA) and logistic regression (LG). This evaluation compared and contrasted the results of the multivariate procedures (DFA) and (LR) in their ability to predict group membership and the chi square in determining if the SPDAT score had an effect on housing placement. This chapter will present the result of each statistical method.

Discriminant function analysis

The sample size was N=277. The means and standard deviations for “Housed” and “Not Housed” are compiled in Table 3.

Table 3
Comparison of mean and standard deviation of dependent variable “Housed” “Not Housed” (N=277)

| IV | <u>Housed</u> | | <u>Not Housed</u> | |
|----------------|---------------|-----------|-------------------|-----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Chronic | .594 | .494 | .596 | .492 |
| Family | .162 | .371 | .034 | .183 |
| Veteran Status | .014 | .116 | .138 | .345 |

Box’s test was employed to test the underlying assumption of the equality of variance between the dependent groups housed and not housed. The $p < .001$, was statistically significant, indicating a violation of the assumption of homogeneous variances. Tabachnick and Fidell (2001) opined this violation should be noted, but does not necessarily invalidate the results,

because the test is very sensitive to unequal groups and large sample size. Nevertheless, the results must be accepted with caution.

The univariate ANOVA compared the mean value for each group to determine if the difference between them was statistically significant. Although the model was statistically significant, its power was very low with a canonical correlation of only .08%. The Wilk's Lambda, associated F statistic, and the p value are compiled (Table 4). Family and veteran were statistically significant.

Table 4
Discriminant Function Analysis, $\alpha = .05$, N=277

| <u>Variables</u> | <u>Wilk's Lambda</u> | <u>F</u> | <u>Sig.</u> |
|------------------|----------------------|----------|-------------|
| Chronic | 1.00 | .000 | .983 |
| Family | .950 | 14.461 | .000 |
| Veteran | .968 | 9.189 | .003 |

The standardized Canonical discriminant function coefficient function was important because it was similar to the standard regression coefficient in showed which independent variables were contributing the most to the analysis of group membership in the predicting of placement in permanent supportive housing in this model (Table 5). The variable family was .772, which was the highest, with veteran slightly lower at .614 and finally chronic at .161. This is similar to the beta weight in a regression model. The value for each variable can be used to create the discriminant function equation:

$$DF = -.772 (\text{family}) + .614 (\text{veteran}) + .161 (\text{chronic}) = 0.003$$

Holding all other variables constant, a standard deviation increase in family will result in a -.79 decrease in standard deviation in the predictive value on discriminant function 1. Holding all other variables constant, a standard deviation increase in veteran status will result in a .63

increase in the predictive value on discriminant function 1. However, the variable chronic was not used in predicting group membership in this model.

Table 5
Totals of Canonical and Structure Coefficient for Discriminant function Analysis (N=277)

| <u>Variables</u> | <u>Canonical Coefficient</u> | <u>Structure Matrix</u> |
|------------------|------------------------------|-------------------------|
| Chronic | .161 | .005 |
| Family | -.772 | -.792 |
| Veteran | .614 | .632 |

The discriminant function analysis correctly classified 75.1% of all the cases, which was better than classifying placement in permanent supportive housing on chance alone (Table 6). Of the cases, correctly, classified 97% were for the variable “Not Housed” and only 3% were in the “Housed” category. This indicated this model was very sensitive to the data and correctly classified the majority of the cases.

Table 6
Discriminant Function Analysis Classification Table (N=277)

| | | | <u>Predictive Group Membership</u> | | |
|------------------|-------|------------|------------------------------------|-----------------------|------------------|
| | | | Housed or Not Housed | Not Housed (n=203) | Housed (n=74) |
| Original | Count | Not Housed | 196 | 07 | 203 |
| | | Housed | 62 | 12 | 74 |
| | % | Not Housed | 96.6 | 3.4 | 100.0 |
| | | Housed | 83.8 | 16.2 | 100.0 |
| Cross –Validated | Count | Not House | 196 | 07 | 203 |
| | | Housed | 62 | 12 | 203 |
| | % | Not Housed | 96.6 | 3.4 | 100.0 |
| | | Housed | 83.8 | 16.2 | 100.0 |

This discriminant function analysis was conducted to evaluate the predictor of placement in permanent supportive housing. The predictor variables were chronic, family and veteran, a significant means differences were observed on family and veterans. The Box's M indicated the assumption of equality of covariance matrices was violated, however, because of the large sample size this was not considered a problem. The DFA discovered a significant association between the groups and the predictors. The analysis of the structure matrix revealed two significant predictors, family (-.792) and veteran (.632), with chronic (.005) a poor predictor. The cross-validated classification showed overall 75.1% of cases were correctly classified. In classifying each group, the discriminant function analysis correctly classified 97% of the not housed cases and 16% of the housed cases.

Logistic Regression

Next, a similar analysis was undertaken using Logistic regression, with the dependent variable coded as “Housed” = 1 and “Not Housed” = 0. The sample size was N=277. An evaluation of the model’s coefficient was used to test the independent relationship between the predictors and predictive ability of this model in the rejection of the null hypothesis. It found there was not a relationship between the dependent variables and the independent variables. The -2LL showed a decrease from the Log-likelihood, and based upon the p value it was statistically significant ($X^2 = 298.637$, $df = 3$, $p < .001$). The null hypothesis was rejected in favor of the alternative. These predictors do have an effect on placement in permanent supportive housing.

The Cox and Snell R and Nagelkerke R accounted for about 8% to 12%, respectively, of the variance in this model. The Hosmer and Lemeshow test, a goodness of fit model, indicated no difference between the observed and expected values ($p = .955$), which indicated the model fit the data.

The cases predicted to be “Not Housed” were 196, and 62 cases were predicted to be “Housed.” However, the model misclassified seven observed cases as “Not Housed,” and twelve observed cases as “Housed.” The predictive accuracy of the logistic regression model was 75.1%, which was an increase of 1.8 % over the null model, which did not, included any predictive variables.

For the log ratio are compiled in Table 7, holding all other variables constant on average a one- unit increase in chronic, there was expected -.213 decrease in the log odds of placement in permanent supportive housing. The statistical significance was $p \geq .463$, which was not statistically significant. This model indicates there was a no relationship between these variables.

For the log ratio holding all other variables constant, on average, a one-unit increase in family there was expected a 1.583 increase in the log odd placement in permanent supportive housing. The statistical significance was $p \leq .002$, which was statistically significant. Therefore, the null hypothesis was rejected. This model indicates there was a relationship between these variables.

For the log ratio holding all other variables constant, on average, a one-unit increase in veteran there was expected a -2.371 decrease in placement in permanent supportive housing in a permanent supportive housing. The significance was $p \leq .022$, which was statistically significant so the null hypothesis was rejected. This model indicated there was a relationship between these variables. The model is:

$$\text{Log}(p/1-p) = -.213 * \text{chronic} + 1.583 * \text{family} + -2.371 * \text{veteran}$$

The final results of the model indicated the independent variables “family” ($p \leq .002$) and “veteran status” ($p \leq .022$) were statistical significant in predicting placement in permanent supportive housing. Although “chronic” was not statistically significant at ($p \geq .463$), this was further confirmed by the confidence interval.

Table 7

Statistical significant of the logistic regression model, $p \leq .05$, $N = 277$.

| IV | B | Wald | Sig. | 95% CI | |
|----------|--------|--------|------|--------|--------|
| | | | | LL | UL |
| Chronic | -.213 | .539 | .463 | .457 | 1.428 |
| Family | 1.583 | 9.970 | .002 | 1.822 | 12.998 |
| Veteran | -2.371 | 5.284 | .022 | .012 | .705 |
| Constant | .885 | 15.212 | .000 | | |

Note: CI confidence interval, LL=lower limit, UL=upper limit

A logistic regression model was conducted to evaluate the predictors of permanent supportive housing using the Coordinate Assessment Model. The predictors of the model were chronic, family and veterans. The statistical method showed family and veterans were predictors of placement in permanent supportive housing, however chronic was not. The omnibus test of model coefficient indicated the model with the predictive variables was significant, which indicated this model predicting some aspect of the placement in permanent supportive housing.

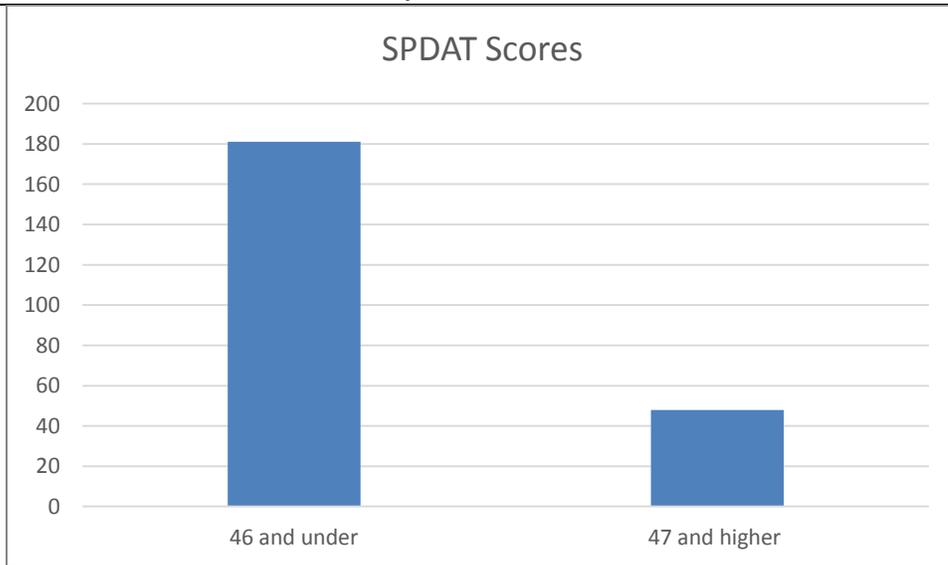
The pseudo R^2 Cox and Snell and Nagelkerke statistics showed the model was predicting 8% to 12% of the variance in the model, respectively. The Hosmer and Lemeshow test was a better indicator of the model is fit, the result was based on a chi-square, it should not be significant, and the result was $p \geq .955$. This indicated this model was a good predictor of the data. The log odd for the logistic regression further confirmed the independent variable “family” (1.583) and “veteran” (-2.371) were statistically significant predictor of placement in permanent supportive housing, but “chronic” (.213) was not a statistically significant predictor of housing.

Chi-Square

The chi -square analysis of the Service Prioritizations Assessment Decision Tool (SPDAT), model was conducted using a 2 x 2 cross tabulation and the exact procedure to determine if there was a difference between the expected and observed in regards to the dependent variable outcome. The SPDAT score was separated into two groups using dummy coding 46 and under = 0 and 47 and higher =1. This is presented in figure 1. Of the 229 SPDAT scores, 79% of the cases were in the 46 and under category, but only 21% was in 47 and higher category. The statistical descriptive for this data “Housed” was (M =.210, SD =.408), and “Not Housed (M=.301, SD = .460). Each group contain more than five cases, this indicated theses

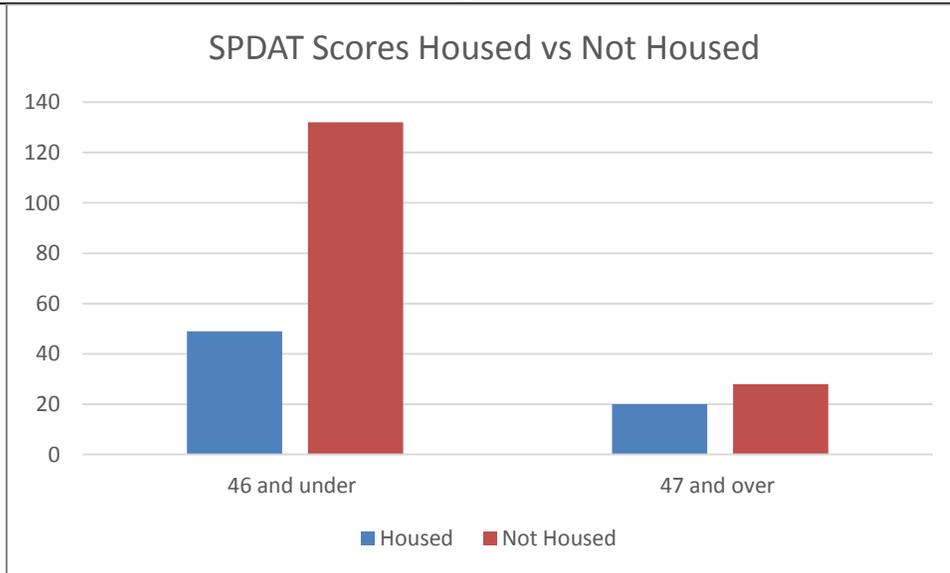
variables were independent of each other, which was an assumption of conducting the chi-square analysis.

Figure 1
SPDAT Scores for each Dummy Variables (n=229)



Totals of Service Prioritizations Assessment Decision Tool scores are presented in figure 2. Based on this data, a large proportion of people approximately 132 (82%) of the Not Housed” scores were in the 46 and under category. Although within the dependent variable “Housed” 48 (71%) of the cases scores were in this category. This would seem to indicate there was a distinct difference between these two groups.

Figure 2
Totals of SPDAT Scores in each Dependent Variable (n=229)



Within the dependent variable “Not Housed,” it was expected to have 126.5 cases; however, there were accurately 132 observed cases. This was also evident in the “housed” with 54 cases being expected but only 49 were presented, which indicated the differences were counted in the “Not Housed.” The results indicated a difference between the expected and observed, with the dependent variable in predicting placement in permanent supportive house compiled in Table 8. There was a significant relationship between the Service Prioritization Assessment Decision Tools (SPDAT) and placement in permanent supportive housing for both the asymptotic and exact, $X^2(1) = 3.84$, $p = .050$, however, for the exact $X^2(1) = 3.839$, $p = .054$.

Table 8
Chi- Square result $\alpha=.05$ (N=277)

| | Housed or Not Housed | | 46 and under | 47 and higher | Total |
|----------|----------------------|------------|--------------|---------------|-------|
| | (n=69) | (n=160) | (n= 181) | (n=48) | |
| Original | Count | Not Housed | 132 | 28 | 160 |
| | Expected | Not Housed | 126.5 | 33.5 | 160 |
| | Count | Housed | 49 | 20 | 69 |
| | Expected | Housed | 54.5 | 14.5 | 69 |
| Total | Count | | 181 | 48 | 229 |
| | Expected | | 181 | 48 | 229 |
| | % within outcome | | 79.0 | 21.0 | 100.0 |
| | % within SPDAT | | 100.0 | 100.0 | 100.0 |

There was a significant association between the Service Prioritizations Assessment Decision Tool (SPDAT) scores and placement in permanent of supportive housing $X^2(1) = 3.84$, $p=.05$, for the exact method. This seems to indicate based on the odds ratio, the odds of not being placed in permanent supportive housing was 1.93 times higher based on the SPDAT score category 46 and under than the category scores 47 and higher.

CHAPTER 5 DISCUSSION AND CONCLUSION

The purpose of this study was to evaluate the Coordinated Assessment Model located in the Southwest Solution agency using quantitative data to answer the following research questions:

1. Is the Coordinated Assessment Model (CAM) accomplishing its task?
2. Is CAM an efficacious evaluation model?
3. Based on discriminant function analysis and the logistic regression, what are the best predictors of success vs. failure of effective housing?
4. Is Service Prioritization Decision Assessment Tool (SPDAT) a good predictor of placement in housing?
5. What are the strengths and weaknesses of discriminant function analysis and the logistic regression in this application?

The answers to the research questions are listed below:

Research Question 1: Is the Coordinated Assessment Model (CAM) accomplishing its task?

The statistical methods indicated of the 277 cases evaluated 73% of them were “not housed” in permanent supportive housing by the CAM model. Because only 27% were housed during the months of January 2015 to June 30, 2015, this evaluation would seem to indicate the Coordinate Assessment Model was not accomplishing its task. It must be noted the dependent variable “Not Housed” included the categories, AWOL and Ineligible, which may have affected the final results.

CAM is model after the Continuum of Care program, which was designed as an all-inclusive process. This program does not actually place an individual in permanent support

housing but instead obtains the necessary information and then gives this information to the providers who have (PSH). According to Gerber, Haradon & Phinney (2008), programs modeled after the COC technique assist and house a larger quantity of homeless people than the traditional program, which does not allow for housing first.

Research Question 2: Is CAM an efficacious evaluation model?

Is the CAM an efficacious evaluation model, based on the six months of data assessed by these statistical methods, there was dissimilarity between the numbers of cases housed vs. not housed. There were a substantial number of homeless individuals waiting for housing. This model would seem to indicate the Coordinated Assessment Model was not effective in the placement of permanent supportive housing.

According to Fitzpatrick, Sanders & Worthen (2012) there are two types of evaluation formative and summative. Formative evaluation is performed when the primary purpose is to provide information for program improvement, whereas summative evaluation is concerned with providing information to serve decisions or assist in making judgments about program adoption. The Federal government has required agencies with homeless programs to demonstrate they are benefiting this population in order for the continuation of funding. To make a determination of a program benefits with only six-months' worth of data would not be theoretical impossible. This model has assisted 27% of its target population. Perhaps a review of what makes this population different from those who have not received housing would be a more effective question.

Research Question 3: Based on discriminant function analysis and the logistic regression, what are the best predictors of success vs. failure of effective housing?

In reviewing the function analysis and the logistic regression, both statistical methods indicated the independent variables family and veterans were statistically significant (Table 2 & 5).

The discriminant function analysis indicated loading of $-.792$ and $.632$ and the logistic regression had p values $.022$ and $.002$ respectfully for the same predictors. These statistical methods illustrated the predictor chronic was not a significant predictor of housing. The DFA only assigned a structure matrix of $.005$ and the logistic regression a $p \geq .463$.

Family and veterans were the best predictors of success in placement in permanent supportive housing. Both models indicated the predictors had an inverse effect on placement in (PSH). The discriminant function analysis and the logistic regression did not place the same value to the predictors in respect to the positive and negative effect they had on the dependent variable.

Research Question 4: Is Service Prioritization Decision Assessment Tool (SPDAT) a good predictor of placement in housing?

The chi-square analysis of the SPDAT yielded $X^2 (df = 1) = 3.84$, $p = .05$, indicated it is statistically associated with placement in permanent supportive housing. However, there was dissimilarity between the SPDAT groups. The Service Prioritization Decision Assessment Tool (SPDAT) was divided into group one (46 and under) and group two (47 and higher). There were 229 cases evaluated, 181 were in the first group, this group had a disproportion number of cases. However, of the 181 cases, only 27% received housing.

According to Levitt (2015), the scores are designed to show the level of need for a homeless individual: this model further supported this process by indicating individuals with scores higher than 47 were placed in permanent supportive housing almost two times more than a person with a score 46 and under. The Service Prioritization Decision Assessment Tool (SPDAT) is a new method of assisting the homeless. The scores are based upon six categories

genders, history of housing and homelessness, risk, socialization and daily functions, and wellness.

The analysis of the SPDAT by the chi-square statistical method indicated there was a difference, but it did not show why there was a difference or what factors affected the scores of the individual. The United States Department of Housing and Urban Development (HUD) did not require the use of the Service Prioritization Decision Assessment Tool; however, it does require some form of assessment to determine the needs of a homeless individual. The evaluation of this assessment tool will serve as a benchmark for further studies into the effectiveness of this process.

Research Question 5: What are the strengths and weaknesses of discriminant function analysis and the logistic regression in this application?

The discriminant function analysis required smaller sample sizes, from five to twenty cases for each independent variable. It correctly determined the best predictors of placement in permanent supportive housing (PSH) by order and rank. According to Cohen (1988), R^2 of .08 is \approx d of .05, which explains about 8% of the variance in the model. It had an overall classification of 75%, which was certainly better than chance alone.

The discriminate function analysis in comparison to the logistic regression is designed to classify the cases being observed into groups this is represented by the classification matrix, which uses the “hit ratio” to determine the correct number of cases correctly placed within the groups. According to Hair (2010), this allows the researcher to review the data beyond the statistical significance to determine if the predictive accuracy in the cases classified is better than chance along at 50%. The discriminant function analysis uses the classification matrix, which simplifies the relevant information of how the cases were separated into groups by offering the

explanation in non statistical variables that can be communicate to those not of the research community.

The weaknesses of the discriminant function analysis (DFA) were it assumptions, Box's M was significant indicated a violation of equality of variance, and hence, the results must be interpreted with caution. This model correctly classified 16% of the housed cases, which was very low, although its specificity was very high for this data. Therefore, the discriminant function analysis was not very effective in term of it group classification in placement of permanent supportive housing.

The logistic regression analysis strengths were it correctly identified the best predictors of placement in (PSH). It provided more details in the analysis concerning these predictors, which was similar to multiple regression. To determine if the assumption of multicollinearity was violated, a linear regression test of collinearity was conducted (Table 9). According to Midi, Sarkar & Rana (2010), a tolerance level less than 0.1 should be considered a problem. The values for these predictors are all higher than .9, which indicated multicollinearity was not present in this model. Also according to Midi et al. (2010), a variance inflation factor (VIF) which exceeds 10 for stronger model or 2.5 for weaker models may have multicollinearity problems.

Table 9
Logistic Regression multicollinearity test, $\alpha = .05$, N=277

| <u>Collinearity Statistics</u> | | |
|--------------------------------|------------------|------------|
| <u>Model</u> | <u>Tolerance</u> | <u>VIF</u> |
| Chronic | .973 | 1.028 |
| Family | .987 | 1.013 |
| Veteran Status | .971 | 1.030 |

The LR required a larger sample size. The analysis indicated this model was a weak predictor of placement in permanent supportive housing using these variables. This model misclassified the same number of cases as the discriminant function analysis, 84% of the “housed” cases were placed in the “not housed” category, which according to Pohar, Blas, & Turk (2004) is not uncommon when conducting a comparison between the methods.

These statistical methods each determined the variables family and veterans were good predictors for this analysis. However, how they affected the dependent variable were different, the discriminant function analysis indicated family had a negative impact on the dependent variable, but in the logistic regression, it had a positive impact.

Limitations

When assessing the finding of this evaluation various limitations must be considered. Only considered individuals who were homeless and for whom the Coordinated Assessment Model (CAM) located in the Southwest Solution Agency in the Detroit, Hamtramck, and Highland Park communities were used. CAM does not place individuals directly into permanent supportive housing but relies on providers within the cities. Providers were not contacted for this study, and therefore, information concerning the policies and procedures they have for placing individuals in permanent supportive housing was not obtained.

Recommendations for Future Research

This study was meant to serve as an analysis of who used the Coordinated Assessment Model located at the Southwest Solution agency in the cities of Detroit, Hamtramck, and Highland Park. It was also to provide a theoretical benchmark for the Service Prioritization Decision Assessment Tool (SPDAT) in determining placement in the permanent supportive housing (PSH). A possible area for future research is the SPDAT score. Although the United

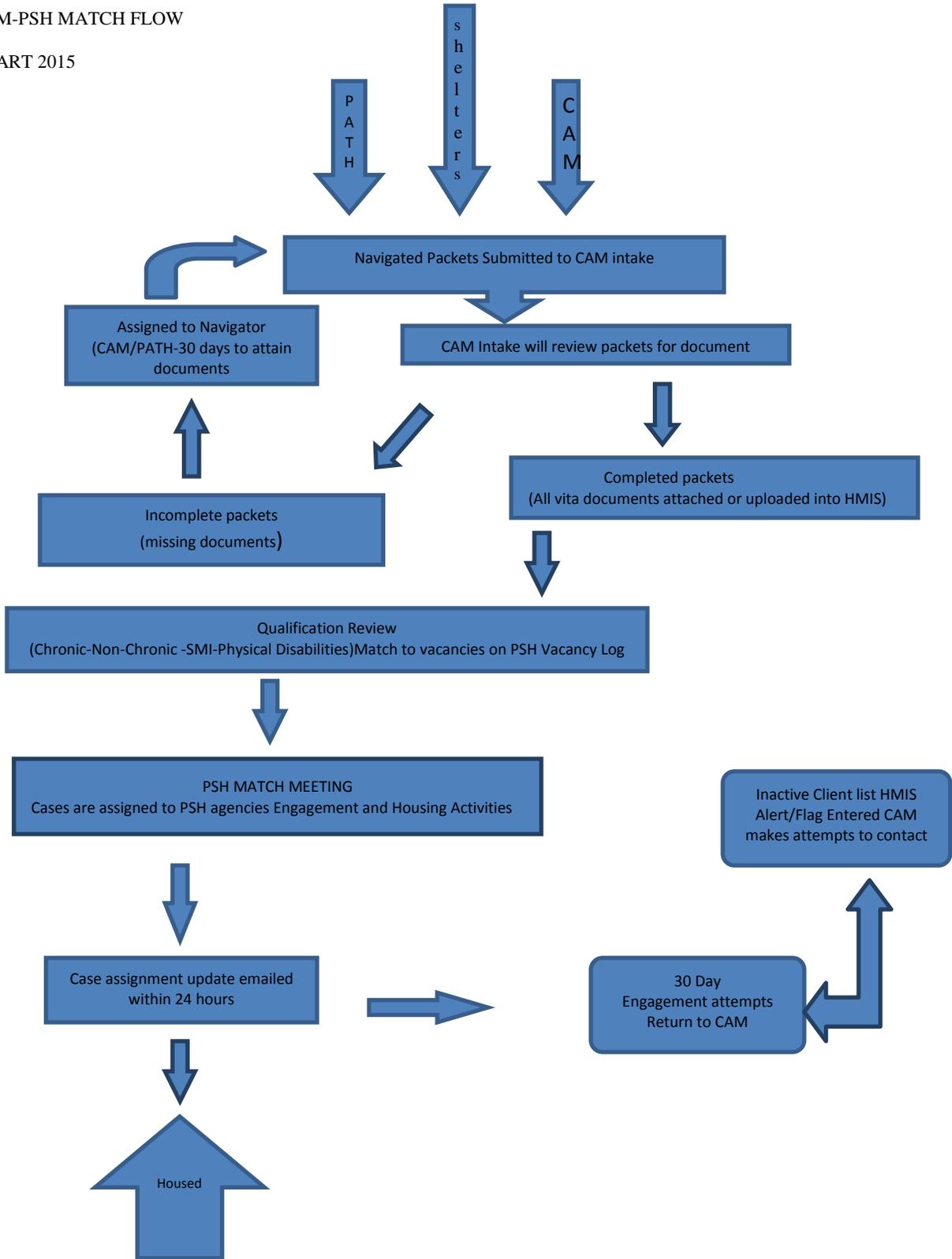
State Department of Housing and Urban Development (HUD) requires assessment, it does not specify this method of assessment. According to Levitt (2015), Coordinated Assessment Models are also using the Alliance Comprehensive Assessment Tool and the Hennepin County Eligibility Criteria and Rating Tool and Vulnerability Index. A comparison of these methods would be beneficial as there is very limited research in this area. Future research should include more data collected from this CAM, which consist of at least two or more years of data.

Although this evaluation consisted of quantitative data, a study, which consisted of qualitative and quantitative data, might be used where the participants are interviewed to determine if they continued in (PSH). Another area for research is the “Not House” category. It was a product of five possible outcomes: AWOL, Ineligible, Pending, Refusal of Service, and Returned to CAM. These categories should be reviewed to determine the reasons why a homeless individual would be placed in a particular classification.

APPENDIX

CAM-PSH MATCH FLOW

CHART 2015



REFERENCES

- Anderson, L. M., Charles, J. S., Fullilove, M. T., Scrimshaw, S. C., Fielding, J. E., & Normand, J. (2003). Providing affordable family housing and reducing residential segregation by income. *American Journal of Preventive Medicine*. doi:10.1016/S0749-3797(02)00656-6
- Bassuk, E. L. (2010). Ending child homelessness in America. *American Journal of Orthopsychiatry*, 80(4), 496-504. doi:10.1111/j1939-0025.2010.01052.x
- Bassuk, E. L., & Geller, S. (2006). The role of housing and services in ending family homelessness. *Housing Policy Debate*, 17(4), 781-806.
doi:10.1080/10511482.2006.9521590
- Bassuk, E. L., Volk, K. T., & Olivet, J. (2010). A framework for developing supports and services for families experiencing homelessness~!2009-08-20~!2009-09-28~!2010-03-22~! *The Open Health Services and Policy Journal*, 3, 30-40.
doi:10.2174/1874924001003020034
- Berg, S. (2013). The HEARTH Act. *Cityscape*, 15(1), 317-323.
- Caton, C. L., Dominguez, B., Schanzer, B., Hasin, D. S., Shrout, P. E., Felix, A., ... Hsu, E. (2005). Risk factors for long-term homelessness: Findings from a longitudinal study of first-time homeless single adults. *American Journal of Public Health*, 95(10), 1753-1759.
doi:10.2105/AJPH.2005.063321
- Continuum of Care Program. (2015.). Retrieved from <http://portal.hud.gov/hudportal/HUD>
- Coordinated Intake*. (2015). Retrieved from <http://www.homelesshub.ca/solutions/emergency-response/coordinated-intake>

- Cronley, C., & Patterson, D. (2010). How well does it fit? An organization culture approach to assessing HMIS use among homeless service. *Administration in Social Work, 34*(3), 286-303.
- Culhane, D. P., & Metraux, S. (2008). Rearranging the deck chairs or reallocating the lifeboats? Homelessness assistance and its alternatives. *Journal of The American Planning Association, 74*(1), 111-121. doi:10.1080/01944360701821618
- Emergency Shelter Grants Program Requirements -. (n.d.). Retrieved from <https://www.hudexchange.info/programs/emergency-shelter-grants/emergency-shelter-grants-program-requirements/>
- Gerber, E. R., Haradon, S., & Phinney, R. (2008). *Reforming the system of care: a review of the literature on housing and service arrangements for homeless populations* (12). University of Michigan.
- Gewirtz, A., Hart-Shegos, E., & Medhanie, A. (2008). Psychosocial status of homeless children and youth in family supportive housing. *American Behavioral Scientist, 51*(6), 810-823. doi:10.1177/0002764207311989
- Goetz, E. (2003). Housing dispersal program. *Journal of Planning Literature, 18*(1), 3-16. doi:10.117/0885412203251339
- Hair, J. F. (2010). *Multivariate Data Analysis* (7th ed.). Upper Saddle River, NJ: Prentice Hall.
- Henry, M., Cortes, A., Buck, K., & Abt Associates. (2014). *The 2014 Annual Homeless Assessment Report (AHAR) to Congress*. Retrieved from The U.S. Department of Housing and Urban Development website: <https://www.hudexchange.info/resources/documents/2014-AHAR-Part1.pdf>

- HMIS: Homeless Management Information System - HUD Exchange. (2014). Retrieved from <https://www.hudexchange.info/hmis/>
- Levitt, R. (2015). *Assessment tools for allocating homelessness assistance: state of the evidence*. Retrieved from U. S. Department of Housing and Urban Development website: <http://dx.doi.org/10.2139/ssrn.2563149>
- Liong, C., & Foo, S. (2013). *Comparison of Discriminant Analysis and Logistic Regression for data classification* (1522). Retrieved from AIP Publishing LLC website: <http://dx.doi.org/10.1063/1.4801262>
- Liou, A., Nutt, C., Dunnhan, A., & Sanchez, M. (2011). *Approaches to Homelessness Prevention*. Hanover, NJ: Nelson A. Rockefeller Center.
- McKinney-Vento Act. (1987). Retrieved from <http://www.nationalhomeless.org/publications/facts/McKinney.pdf>
- Midi, H., Sarkar, S., & Rana, S. (2010). Collinearity diagnostics of binary logistic regression model. *Journal of Interdisciplinary Mathematics*, 13(3), 253-267. doi:10.1080/09720502.2010.10700699
- National Alliance to end homelessness, & U. S. Department of Housing and Urban Development. (2015). *Assessment tools allocating homelessness assistance: State of the evidence*. Retrieved from PD & R Expert Convening Report website: http://www.huduser.gov/publications/pdf/assessment_tools_Convening_Report2015.pdf
- O'Connell, M. J., Kaspro, W., & Rosenheck, R. A. (2008). Rates and risk factors for homelessness after successful housing in a sample of formerly homeless veterans. *Psychiatric Services*, 59(3), 268-275. doi:10.1176/appi.ps.59.3.268

- Pohar, M., Blas, M., & Turk, S. (2004). Comparison of Logistic Regression and Linear Discriminant Analysis: A Simulation Study. *Metodoloski Zvezki, 1*(1), 143-161. Retrieved from proquest.com/openview/9bf9ffabf75a465e2fd0bd2ae613198b/1?pq-origsite=gscholar
- Poole, D. L., & Zugazaga, C. B. (2003). Conceptualizing prevention as the first line of offense against homelessness: Implications for the Federal Continuum of Care Model. *The Journal of Primary Prevention, 23*(4), 409-424.
- Rosenheck, R., Kaspro, W., Frisman, L., & Liu-Mares, W. (2003). Cost-effectiveness of supported housing for homeless persons with mental illness. *Arch Gen Psychiatry, 60*, 940-951.
- Rosenheck, R., Morrissey, J., Lam, J., Calloway, M., Johnsen, M., Goldman, H., Teague, G. (1998). Service system integration, access to services, and housing outcomes in a program for homeless persons with severe mental illness. *American Journal of Public Health, 88*(11), 1610-1615. doi:10.2105/AJPH.88.11.1610
- Stefancic, A., & Tsemberis, S. (2007). Housing First for long-term shelter dwellers with psychiatric disabilities in a suburban county: A four-year study of housing access and retention. *The Journal of Primary Prevention, 28*, 265-279. doi:10.1007/s10935-007-0093-9
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics*. Boston, MA: Pearson/Allyn & Bacon.
- Tsemberis, S., & Eisenberg, R. F. (2000). Pathways to Housing: Supported housing for street-dwelling homeless individuals with psychiatric disabilities. *PS, 51*(4), 487-493. doi:10.1176/appi.ps.51.4.487

Tsemberis, S., Gulcur, L., & Nakae, M. (2004). Housing First, consumer choice, and harm reduction for homeless individuals with a dual diagnosis. *American Journal of Public Health*, 94(4), 651-656.

United States Interagency Council on Homelessness. (2013). End veterans homelessness HUD-VASH makes housing first a priority. Retrieved from http://usich.gov/population/veterans/veterans_homelessness_in_focus/ending_veterans_homelessness_hud_vash_makes_housing_first_a_priority

Washington, T. A. (2002). The homeless need more than just a pillow, they need a pillar; An evaluation of a transitional housing program. *The Journal of Contemporary Human Services*, 83(2), 183-188.

ABSTRACT**AN EVALUATION OF THE PREDICTORS OF PLACEMENT IN PERMANENT SUPPORTIVE HOUSING IN THE DETROIT METROPOLITAN COMMUNITIES**

by

ANDREA KING-JIMENEZ**December 2016****Advisor:** Dr. Shlomo Sawilowsky**Major:** Education Evaluation and Research**Degree:** Doctor of Education

This was a quantitative evaluation of the predictors in placement of permanent supportive housing using the Coordinated Assessment Model (CAM) located in the Southwest Solution Agency. The statistical methods used were chi-square, discriminant function analysis and the logistical regression. The dependent variables were housed and not housed and the independent variables were chronic, family, Service Prioritization Decision Assessment Tool, and veteran status. There were 277 cases used for this study, the statistical methods showed there was a difference between the numbers of cases housed verse not housed. The discriminant function analysis and the logistic regression indicated the independent variables family and veteran were statistically significant. The chi-square showed the SPDAT scores 47 and higher was statistically significant. The data indicated family, veterans, and Service Prioritization Decision Assessment Tool (SPDAT) are predictors of (PSH).

AUTOBIOGRAPHICAL STATEMENT

My formal education beginning in the Detroit Public Schools system, I graduated from Redford High School. I received a certificate from the International Business Machines Corporation (IBM). I was employed as a Computer Operator before attending Wayne State University to obtain my Bachelor of Arts in History and Master of Education in Educational Leadership. While completing my studies I married a wonderful man and had four beautiful children. I worked as a computer operator for several years before obtaining a position at WSU in the Office of Records and Registration, Oakland Center and finally the School of Social Work. I was employed by Wayne State University for eleven years while working for the School of Social Work; I discovered my passion for evaluation. I look forward to working in the program evaluation field. I present this dissertation, which was a quantitative evaluation of the predictors of placement in the permanent supportive housing using the Coordinate Assessment program. I cannot wait to see what the future will bring.