



**CONTRIBUTING FACTORS FOR SHELTER RETURN OF HOMELESS VETERANS**  
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Abstract

This paper seeks to identify factors within the population of homeless veterans that indicate a higher likelihood of return stays at shelters. The study uses information from the Road Home Shelter collected from July 2011 to December 2015. The data, which was collected at intake, excludes those who returned to the shelter following this time period as well as those who were entering the shelter at a time prior to July 2011. This data was assessed using correlation matrices, Bayesian model averaging (BMA), logistic regressions, classification and regression trees. Software used for analysis was R and Tableau. The federal definition of chronic homelessness being “either (1) an unaccompanied homeless individual with a disabling condition who has been continuously homeless for a year or more, OR (2) an unaccompanied individual with a disabling condition who has had at least four episodes of homelessness in the past three years.”. There are questions on the means of collection given that data was obtained in a high-pressure situation where even though it was stressed to respondents that factors such as drug use or mental illness will not lead to refusal of service, responses may have been influenced by a fear to disclose sensitive information.

### *Purpose*

This study was done with the intent to determine factors that lead to return stays of Veterans at homeless shelters. Previous literature has examined factors that lead to veterans becoming homeless, but there is a lack of focus on those returning to shelters more than once. Understanding these factors is crucial to ending homelessness among Veterans, who have been heavily represented in the homeless population for decades.

### *Background*

Background literature was examined at on both statewide and national levels. The literature was used to contextualize the general composition of homeless veteran populations and to gain a further understanding of state-wide actions that may have changed the makeup of the sample.

Veteran homelessness has been a national public health concern since the 1980s when veterans were overrepresented in the homeless population. This substantial growth in homeless veterans had to do with the high inflation and recession of the 1980's, when even low paying jobs became hard to find (The New York Times). The National Coalition for Homeless Veterans stated that roughly 11% of the homeless adult population are veterans and about 20% of the male homeless population are veterans. The nation's homeless veteran population is comprised primarily of single men, and approximately 50% suffer from a mental illness. Also, around 70% suffer from substance abuse problems. Homeless veterans also tend to be older, with about half over the age of fifty-one. Approximately 57% are white, and roughly 45% of homeless veterans African American or Hispanic. Veterans are already more likely to experience mental health problems because of their exposure to combat, which may cause trauma, and also because of

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being far away from home for military deployment. Therefore, it is concerning that veterans are underrepresented among the homeless population because homelessness is also associated with serious medical problems including mental health and substance abuse.

In 2009, the then US Secretary of Veterans Affairs, Eric Shinseki, introduced a five-year plan to end homelessness among veterans. Some of the actions taken included discharge planning for incarcerated veterans re-entering society, more services for low-income veterans and their families, financial assistance for those who are qualified and wanted to pursue a college degree at a state university, collaboration with the Small Business Administration to certify veteran-owned small businesses for listing on the Federal Supply Register-making their businesses more competitive and creating more jobs for veterans, spending more money on housing for Veterans, and more (U.S. Department of Veterans Affairs).

However, three years into the plan, Shinseki resigned as Secretary of the VA after a scandal in which VA hospital systems employees were hiding months-long wait times that veterans faced when seeking care. Shinseki's former aids claim that the long wait times for Veterans to receive care were caused by the use of outdated technology in the VA hospitals, poor leadership and the hospitals, and a large number of veterans using the health care system at once that they could not handle (Washington Post, 2014). If a large number of veterans are waiting for care when there are a significant number of them that need care, as noted earlier, it's important that this is communicated and reflected accurately for funding purposes. Up until Shinseki's resignation, homelessness among veterans had decreased and the VA had helped tens of thousands of veterans secure housing and access more support services. Pushes for permanent housing, financial assistance, and everything else that the plan included, proved to be successful.

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Unfortunately, with Shinseki's resignation, the five-year plan slowed down and as we've seen in recent years, veteran homelessness hasn't had any significant reduction.

### *Literature Review*

Previous studies have found consistent risk factors for homelessness among veterans. A meta-analysis of seven studies looking at risk factors for homelessness among veterans found that substance abuse problems was the risk factor with the greatest magnitude of effect (Tsai & Rosenheck, 2014). The meta-analysis also found that six of the seven studies identified low income/poverty and income-related variables including military pay grade and unemployment as high-risk factors for homelessness. A less common factor that has been proven significant is lack of social support. Three of the seven articles found that social isolation after discharge had a direct effect on homelessness. Van den Berk-Clark and McGuire, 2013, reported that lack of social support was associated with a longer duration of homelessness. Similar to lack of social support, Blackstock, Haskell, Brandt, and Desai, 2012, found that males who identified as unmarried were at higher risk for being homeless. A unique variable that proved to be significant in determining factors for homelessness among veterans was personal money management issues (Elbogen, Sullivan, Wolfe, Wagner, Beckham, 2013). In their study, personal money management issues represented a bigger risk factor than low income and mental health problems.

However, there has not been a lot of research to analyze what factors cause veterans to return to a shelter more than once. One study compared three different groups of homeless veterans; one being participants that had ever been a part of HUD-VASH, another with participants who had intensive case management, and a third group with participants who received standard care. Out of these three groups, the HUD-VASH group was at lower risk for

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returning to homelessness over a five-year period, even after the analysis controlled for significant differences between the groups. In identifying variables that significantly predicted loss of housing, the greatest risk factor was drug abuse and the next most significant factor was post-traumatic stress disorder (PTSD). Variables that they found to be significant in lowering the risk of discontinuing housing included having a psychiatric problem or mood disorder at time of intake for housing (O'Connell et al, 2008). A second study that specifically looked at chronic homelessness among veterans found that poor employment history and diminished social support appeared to be an important indicator of chronic homelessness (Wenzel, Gelberg, Bakhtiar, Caskey, Hardie, Redford, & Sadler, 1993). It was difficult to find more studies that focused on finding predicting factors for chronic homelessness among Veterans. Most focused-on factors that put veterans at risk for homelessness yet we found a significant gap in the literature of explaining why veterans return to shelters more than once.

### *Ten-year plan*

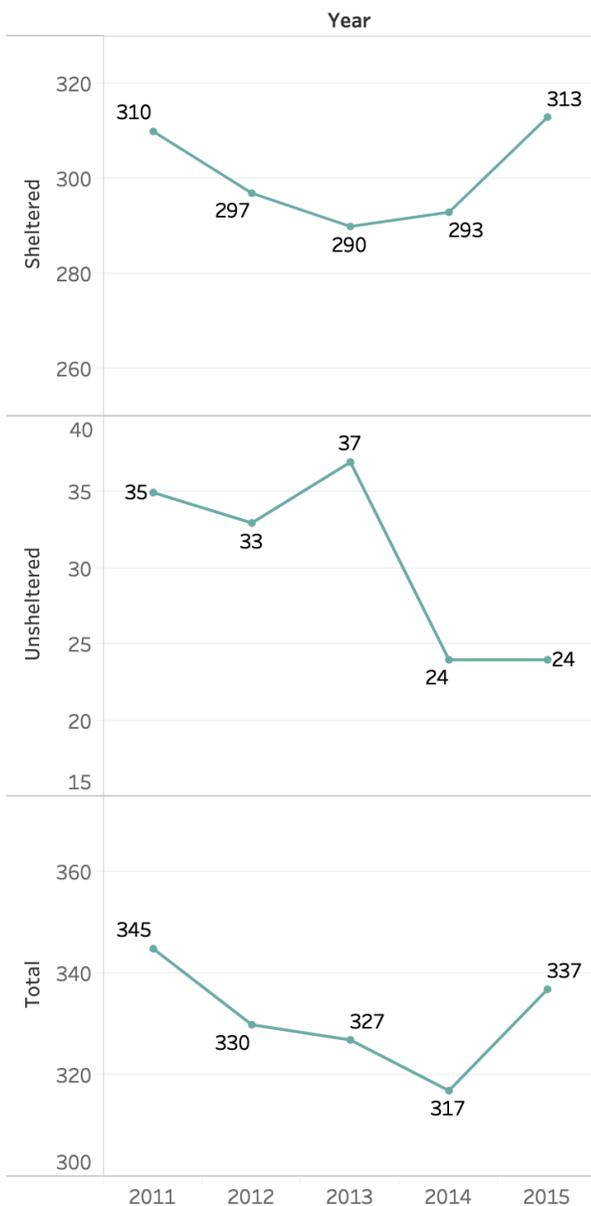
Started in 2003 and implemented in 2005; Utah had a ten-year plan to eradicate chronic and veteran homelessness by the end of 2015. The ten-year plan utilized the housing first approach, which aimed to have quick access to permanent housing resources. The recipients of housing first services agree to regular visits by case managers and are given the opportunity to access addiction and mental health services. The ten-year plan had four steps: prevention, rapid rehousing, support and data collection. Utah made national headlines for having a 91 percent decrease in chronic homelessness, but this figure was a misrepresentation of data as the 2015 figure was the raw HUD data while the years prior was annualized. In other words, the HUD count was annualized, or multiplied by a factor (legislator auditor general of Utah). Additionally,

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the state stopped counting individuals in transitional housing as chronically homeless and more verification was used for determining who counted as chronically homeless by Continuum of Care regions. The population of chronic homeless stated to be assisted by the ten-year plan included chronically homeless veterans.

Housing and Urban Development has designated that regional boards allocate resources to best suit homeless communities. The regional Continuum of Care board administers the Point-in-Time count. The state of Utah has three Continuums of Care. There are 13 regional Local Homeless Coordinating Committees. There is a HUD requirement for Continuums of Care to work with local communities in the creation, implementation and monitoring of strategic plans.

### Veteran Point-in-Time Counts



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There are issues with the Point-in-Time count given that it occurs during winter, and that the definitions used by state agencies vary. The Utah homeless population for the years 2011-2015 based on the HUD Point-in-Time count during the time of the study are visualized above.

### *Operation Rio Grande*

Following the time of the data collection, Salt Lake City, Salt Lake County and the state of Utah implemented Operation Rio Grande, which sought to relocate homeless populations and increased the amount of policing on Rio Grande Street. This was done with the long-term goal of having shelters on the street close in July of 2019. Operation Rio Grande is a three-phase approach: “public safety and restoration of order,” “assessment and treatment,” and “dignity of work.” The stated goals of this action were reduction of crime, and reduction of criminals on the street. Operation Rio Grande has had a drastic impact on the homeless population of Utah and will have the end goal of having less concentrated populations of homeless in the State of Utah.

### *Study*

This study utilized data analysis and visualization methods to explore the homeless veteran data and find determining factors to repeat stays at the Road Home shelter by veterans. The goal of the study was to create a model the Road Home could use to predict which veterans are at a higher risk of returning to the shelter. This process can be broken down into three main components: data preparation and cleaning, data analysis and determining the most relevant variables, and data visualization. These three tasks were repeated throughout the research to refine the data and models and gain understanding of trends in the data.

### *Means of collection*

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The data collected by the Road Home included veterans that were in shelter from July 2011- the end of 2014. It was collected at the veteran's intake to the shelter, before they received a bed.

### *Data Preparation and Cleaning*

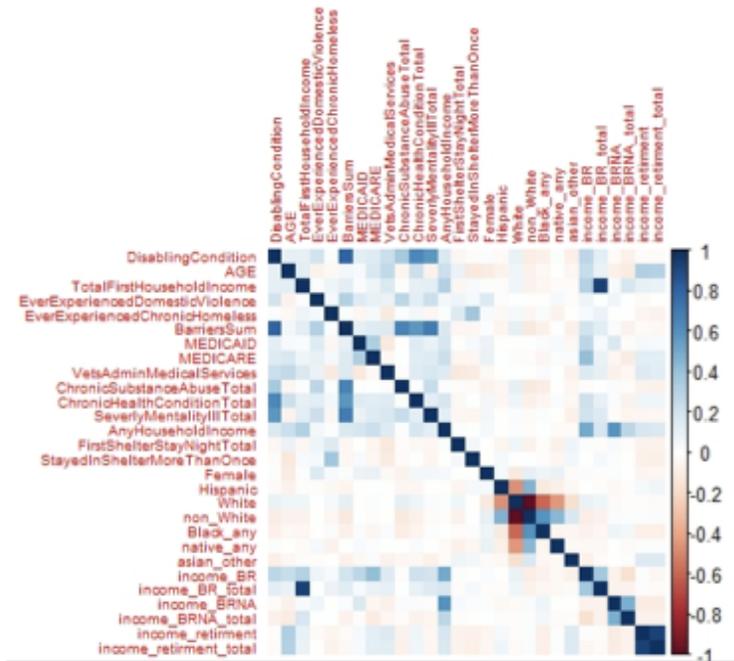
The original homeless veteran data provided by The Road Home needed to be cleaned for data analysis. Variables with zero variance were deleted from the data set, as were variables that provided no useful information for the purpose of this study, such as dates and identification numbers. All categorical variables such as gender and race were turned into binary variables so that the data set contained only numeric values to make the data analysis simpler. The original dataset was brought down from 88 to 26 usable variables.

### *Data Analysis and Variable Relevancy*

We used correlation matrices, Bayesian model averaging (BMA), logistic regressions, and classification and regression trees (CART) to determine which variables were the most important indicators of veteran returns to shelter. Most data analysis was done using R. These methods were selected to best accommodate the data based on its structure and the dependent variable. The independent variable, if an individual has stayed in the shelter multiple times (StayedInShelterMoreThanOnce), is a binary variable, as are most of the dependent variables. Some variables, such as age and income variables, are continuous. To avoid overfitting data while creating classification trees, random forests were used to test different models on training groups. Cross validation was used with the logistic regression models for the same purpose. In order to get an understanding of the relationship between the 26 possible dependent variables and the independent variable a correlation matrix was created. This shows the correlation between variables. The darker the color, the stronger the correlation is. The visual shows highly correlated

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variables that are likely giving the same information and would lead to redundancy in the final model. For example, the Barriers Sum and Disabling Conditions have high correlations so they shouldn't both be included in a final model.



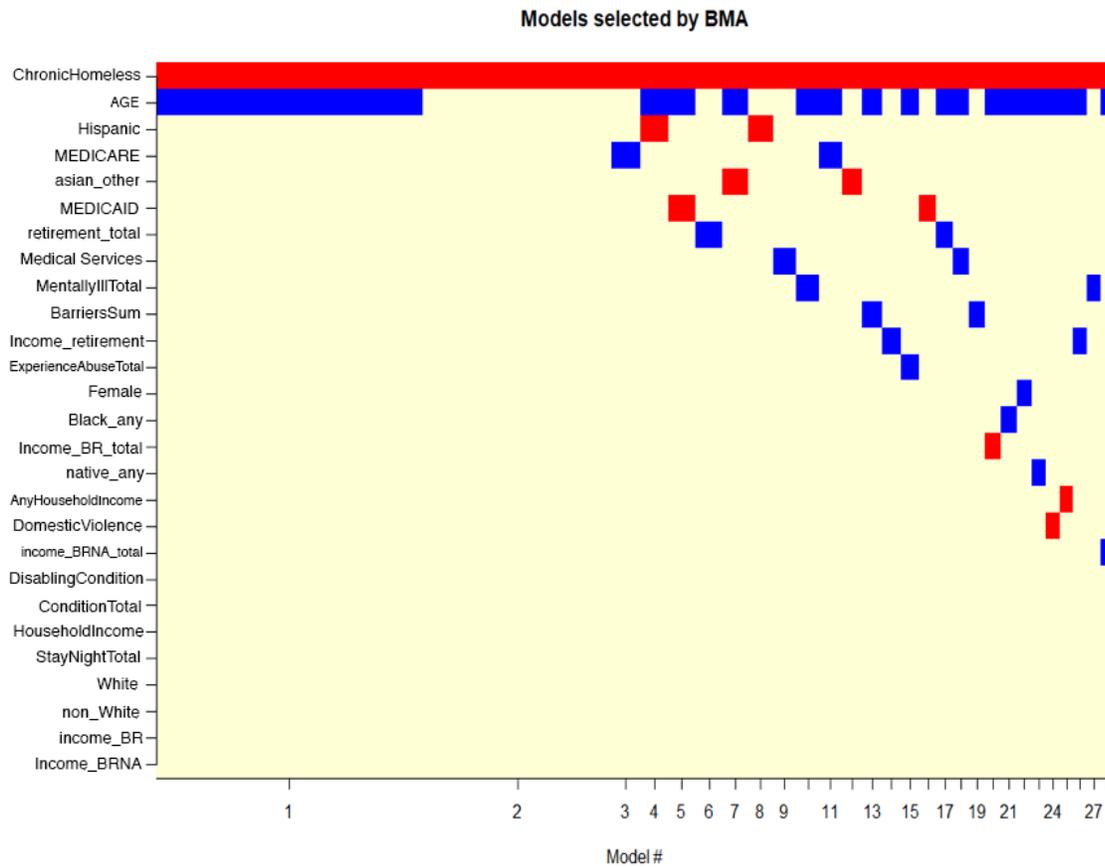
The variables with the highest correlation to multiple stays at the shelter can be seen in the following table:

Var1	Var2	Freq
15 A	StayedinShelterMoreThanOnce	1.000000000
5 A	EverExperiencedChronicHomeless	0.377165521
2 A	AGE	-0.126235999
9 A	VetsAdminMedicalServices	-0.103067295
28 A	income_retirement_total	-0.088464119
27 A	income_retirement	-0.073481245
14 A	FirstShelterStayNightTotal	0.059420114
12 A	SeverlyMentalityIllTotal	-0.057545672
22 A	asian_other	0.054737637
8 A	MEDICARE	-0.049365528
24 A	income_BR_total	0.049018806
17 A	Hispanic	0.048430392
21 A	native_any	-0.046380090
4 A	EverExperiencedDomesticViolence	0.041843803
6 A	BarriersSum	-0.041346735

Chronic Homelessness

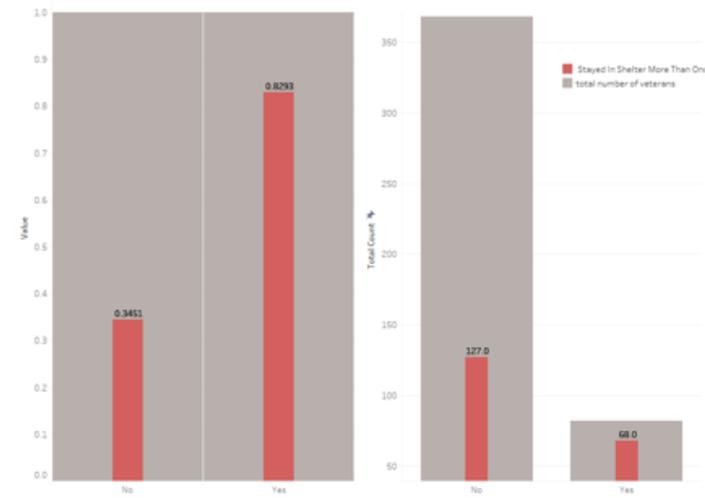
(EverExperiencedChronicHomeless) has the highest correlation coefficient, 0.377. The next highest correlation was AGE with a negative correlation of 0.126.

Bayesian Model averaging is more helpful in selecting which variables to use for maximization of the accuracy for the final models without overfitting with too many variables. The BMA generated from the 27 possible dependent shows that experiencing chronic homelessness and age are the top two predictor variables.



A closer look at the relationship between these two variables and veteran return is necessary.

### Experienced Chronic Homelessness

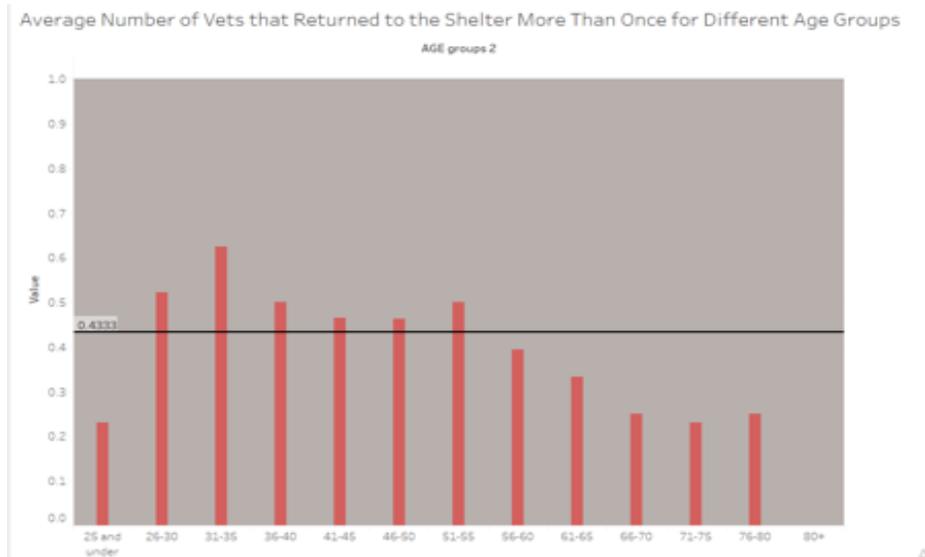


Of the eighty-two veterans that had experienced chronic homelessness, sixty-eight or around 82% returned to the shelter more than once within the three years that the data was recorded. There were 368 veterans that had not experienced chronic homelessness and 127, or 35%, returned to the shelter more than once.

Using `EverExperiencedChronicHomeless` in a classification tree means that if they have ever experienced chronic homelessness they would be predicted to return to the shelter, and if they haven't they would be predicted not to return to the shelter. The majority of the veterans that returned to the shelter more than once had not previously experienced chronic homelessness. Experiencing chronic homelessness is only helpful to predict about one-third of the veterans that stayed in the shelter more than once for this data set.

## Age

Age is the next best predictor, as indicated by the models. It is not a very strong indicator with a negative correlation of 0.126 and a high degree of variance. The visual below shows the average number of veterans returning to shelter more than once sectioned by age.



If the population of veterans who had previously experienced homelessness is omitted, the correlation with age increases slightly. There are some general patterns that are visible between age and whether the veteran returned to the shelter more than once. However, the correlation isn't strong enough to seriously consider in a model. The best predictor, if they've previously experienced chronic homelessness, is fairly obvious since being chronically homeless means that you have either been homeless for over a year or have had multiple episodes of homelessness. As for the population that has not experienced chronic homelessness, it is far more challenging to predict whether they will return to the shelter. Veteran age is also a weak predictor. We did not find that most predictive factors for recidivism to homeless shelters in the

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literature applied to this data. This could be attributable to issues with the data collection methods since much of it is self-reported. There may be a reluctance for veterans to candidly disclose their health conditions as a result of their perception that it could affect their eligibility for different programs.

### *Recommendations*

In summary, the few articles that also examined factors that predicted returns to a shelter had four variables that proved to be significant: drug abuse, Posttraumatic Stress Disorder (PTSD), poor employment history, and lack of social support. Unfortunately, our data only included information on drug abuse problems. We are unable to compare information from The Road Home with previous similar studies on any variables found to be significant other than drug abuse problems. Below are recommendations and connections with previous chronic Veteran homelessness broken down into the four variables mentioned:

#### **Posttraumatic Stress Disorder (PTSD)**

In our study, we did not find mental illness to be a significant determinant for return to the shelter. However, only 28% of our participants identified as having a mental illness, which may not be reliable considering that nationally, about 50% of all Veterans suffer from a mental illness. The literature that specifically examined factors that cause returns to shelter more than once included a variable to measure PTSD which proved significant in predicting that a veteran would return. Therefore, it would be beneficial to include a variable that helps us look at PTSD alone instead of using an umbrella term for all mental illnesses. Afterward, we can see if our findings on PTSD are consistent with others that found it to be significant in predicting veteran return to shelters.

## **Drug Abuse**

Previous literature suggested that drug abuse was an important factor when looking at homelessness among veterans, while only 7% in our study reported having drug abuse problems. We didn't find this variable to be significant in predicting returns to shelter, however, we assume that at the time of collecting the data, many answered inaccurately to this question. National data suggests that around 70% of all Veterans have some sort of substance abuse problem. We predict that the reason for few veterans reporting mental illnesses and substance abuse problems is that their information is collected at intake when they are first entering the shelter. We suggest that The Road Home be more transparent about their policy of not discriminating against those who disclose drug or alcohol problems and make it clear that they still have the same opportunity to receive a bed at the shelter so that more clients can answer truthfully.

## **Poor Employment History**

The few studies that included previous employment history found that veterans were more likely to return to a shelter after successful housing if they had a history of poor employment. Especially if veterans were deployed for a long time, it can be very difficult to feel confident in job search and interviewing, writing a resume, and filling out applications. We believe it would be beneficial to implement new strategies and efforts to focus on career services. For clients seeking employment, having a designated place or person to prepare them and conduct mock interviews would help them build interviewing skills and feel more confident and supported. Additionally, teaching clients how to format a resume to look more professional could increase their chances of being recognized by employers and motivate them to keep applying

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since they know they have the support. With improved career services, veterans who had a poor employment history will likely be more resilient and persistent.

### **Lack of Social Support**

Previous literature on chronic homelessness among veterans has shown that diminished social support is relevant in determining why Veterans return to shelters more than once. They included questions about marital status, if they had family around, and about how much time they spent with family and friends. Our data didn't include this information. It would be beneficial to include similar questions to see if this finding is relevant for The Road Home clients as well.

Finally, the Road Home should reconsider its measures of success. While it may seem like a good thing that a veteran hasn't returned to the shelter more than once, many of those individuals stayed more than 100 nights on their first stay. If The Road Home is trying to prioritize their resources, return to shelter shouldn't be the only parameter.

### *Conclusion*

Overall, there have not been many efforts to determine why veterans return to a shelter more than once. This study, along with few others that have been done, is important considering that veteran homelessness has been a national public health concern for decades. We did not find variables of large significance in this data to explain what causes veterans to return more than once. Age and prior experience of homelessness were the most relevant variables, but were not strong predictors of returns, and also were not aligned with any of the previous literature. Recommendations for future study include adding more specific questions that relate to social

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support and PTSD, more transparency from The Road Home towards their clients on nondiscrimination policies, and more efforts on career preparation. The Road Home has been an active leader and innovator in ending Veteran Homelessness as shown by their previous actions. However, stronger cooperation and support from the State would tremendously help their actions.

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