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Influence of Privatization Policies on Residential Satisfaction in Military Family Housing

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Abstract

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by

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MA, University of Oklahoma, 2003

BA, Miami University of Ohio, 1997

Dissertation Proposal Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Little published research has examined the post-implementation outcomes of public private partnerships for housing, specifically the Military Privatized Housing Initiative (MPHI) from the perspective of the end user, the Military Family Housing (MFH) resident. Using Mettler and SoRelle's conceptualization of policy feedback theory as the foundation, the purpose of this repeated cross-sectional study was to assess residential satisfaction pre- and post- implementation of the MPHI. The study also addressed the influence of sociodemographic factors on MFH residents' perceived residential satisfaction. Secondary data were collected using 2 Department of Defense surveys administered pre- and post-implementation. An independent-samples *t* test was used to examine residential satisfaction before and after implementation of the MPHI. Multiple regression analysis was used to examine the influence of sociodemographic characteristics on residential satisfaction of MFH residents. Results indicated that privately-managed MFH residents were less satisfied than residents of government-managed MFH ($p < .001$). Results also showed that paygrade, branch of service, ethnicity/race, and having children or dependents in a household were significant determinants of residential satisfaction for government-managed MFH residents ($p < .05$). In privately-managed MFH, residents having children or dependents in the household was a significant determinant of residential satisfaction ($p < .05$). The positive social change implications stemming from this study include recommendations to policy makers to continue examination of MPHI outcomes and improve data collection consistency to ensure current housing policies are meeting the needs of military families.

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Dedication

This dissertation is dedicated to the military families serving on the home front. The sacrifices you make every day are not forgotten.

Acknowledgments

My successful completion of the dissertation process is proof that it takes a village. This journey would not have been possible without the insight and thought-provoking feedback from my committee chair, Dr. Linda Day, and my second member, Dr. Oliva Yu, who encouraged me to learn and grow throughout the process.

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Chapter 1: Introduction to the Study

The test of delivering needed services and staying within Congressionally allocated funding has been a challenge for many U.S. federal government programs. During the mid-1990s, the Department of Defense (DoD) experienced significant reductions in budgets while needing to recruit and retain an all-volunteer military force. These challenges required DoD officials to reevaluate the delivery of installation support services and necessitated the adoption of streamlined policies to create efficiencies, cost savings, and enhanced military member quality-of-life.

One of these initiatives was the privatization of military family housing (MFH) based on the concept of public-private partnerships (PPP), which allow governments to partner with the private sector to deliver essential services while capitalizing on private-sector financing and expertise and protect limited taxpayer dollars (Ewoh, 2007). By the mid-1990s, the DoD MFH program was in a dilapidated state caused by years of underfunding and poor maintenance (Beard, 2003). Using innovative arrangements like those provided by PPPs, DoD officials sought to solve the MFH housing crisis by creating relationships with private-sector companies to revitalize the MFH inventory. The privatization of MFH authorized under the 1996 National Defense Authorization Act created long-term contractual relationships with the private sector to create, restore, operate, and maintain thousands of housing units across the 50 states and District of Columbia. However, despite the lengthy history of privatization, little analysis has been conducted about how the policy has affected the MFH resident.

In this chapter, I present the problem statement, study purpose, research questions, and hypotheses. The chapter also includes the theoretical framework, nature of the study, and definitions of key variables. I also address the assumptions, scope and delimitations, 'limitations, significance of the study, and implications for positive social change.

Background

Housing for military families is not only a fundamental quality-of-life concern but also plays an important role in the overall military readiness of the all-volunteer force (Twiss & Martin, 1998). The U.S. military has been charged with providing shelter to military members, yet it has not always met the needs of military members and their families (Twiss & Martin, 1998). As the United States moved away from compulsory draft military service to the all-volunteer force in the 1970s, DoD leaders continued to face new challenges with recruitment, retention, and readiness (Rostker & Yeh, 2006). To combat challenges with funding and maintenance, the 1996 National Defense Authorization Act directed the DoD to explore new ways to provide quality and affordable housing to military families. The resulting agency policy, the Military Privatized Housing Initiative (MPHI), included contractual partnerships between the DoD and the private sector for the construction/remodeling, operation, and maintenance of MFH (DoD, 2010).

PPP arrangements, like the MPHI, are said to save taxpayer funds and achieve private-sector efficiencies in the construction, operation, and maintenance of government services. However, the PPP literature provides little conclusive evidence that the

arrangements achieved the forecasted benefits (Blanc-Brude, Goldsmith, & Valila, 2009; Hodge & Greeve, 2009). Further research on PPPs after their implementation was needed to understand whether these complex contractual arrangements create the intended value.

Although 20 years have passed since National Defense Authorization Act authorization, research into MPHI policies is still sparse, especially at the post-implementation stage. A survey of the literature indicated most of the research focused on early- to mid-program implementation and included cost-benefit analysis, comparative analysis, and case studies (Beard, 2003; Brandt, 1996; Cano, 2012; Government Accountability Office [GAO], 1998, 2009; Kokocha, 2002; Sorce, 2000; Woods, 2009; Young, 2015). Although each endeavor contributed to the understanding of the decision-making and implementation process, few researchers addressed post-MPHI implementation (Medeiros, 2015; Saul, 2014). Research addressing the satisfaction of the military families residing in privatized MFH is limited (Bissell, Crosslin, & Hathaway, 2010; Parks, Carswell, James, & Russel, 2009), indicating a need for examination of the post-implementation stages of the MPHIs and how the policies affect the residents whom they are intended to serve.

One way to measure the effectiveness of PPP is to investigate customer satisfaction with service delivery (National Audit Office [NAO], 2010). Using determinants of residential satisfaction grounded in the residential satisfaction literature is a mechanism to investigate program effectiveness for privatized MFH. The current study was designed to determine whether the planned outcomes to improve MFH have been achieved.

Examining policies post-implementation encourages their improvement and refinement (Dunn, 2011; Winter, 2003b). In light of the current literature on PPPs and residential satisfaction, I sought to address the gap in the MPHI literature and build on what is known about PPP arrangements as well as the determinants of military members' residential satisfaction. More specifically, I addressed the gap pertaining to the outcomes of MPHI policies and the perceived residential satisfaction of MFH residents.

Problem Statement

The research problem was that although government officials continue to seek alternatives to traditional governance models to stretch limited resources, they do so without a clear understanding of the implications after implementation. Osborne and Gaebler (1992) argued that lawmakers should leverage the private sector for the delivery of government services, recommending that government officials explore opportunities to capitalize on private-sector financing and efficiencies through the establishment of PPPs. The Defense Department's MFH program is one example of the move to alternative service delivery methods. In 1996, to address challenges with funding and the upkeep of the substandard MFH inventory, the U.S. Congress authorized DoD officials to pursue alternatives to government-managed MFH (National Defense Authorization Act, 1996). Following suit with trends in government, the DoD sought to leverage relationships with private-sector developers to provide needed MFH through private-sector financing and property management. The DoD began building partnerships with the private sector to provide quality affordable housing to military families across the continental United

States, Hawaii, and Alaska, but little was known about the outcomes of the program post-implementation.

The literature surrounding PPP arrangements and residential satisfaction is broad, with much of the PPP literature focusing on the planning and decision-making processes predates entry into the complex arrangements. Previous researchers have shown that governments enter PPPs to create value for money (VfM) as they aim to stretch limited budgets and provide needed public services (Organization for Economic Co-operation and Development [OECD], 2008). The potential for creating VfM in the public sector has encouraged entry into a variety of PPP development arrangements, including those for affordable housing across the United States (Corrigan et al., 2005). However, few studies have addressed PPPs post-implementation for populations like the military family. The literature on residential satisfaction is wide-ranging and has addressed determinants of residential satisfaction in the United States and globally (Balestra & Sultan, 2013; Dassopoulos, Batson, Futrell, & Brents, 2012; Day, 2000; James III, 2007; Hur & Nasar, 2014; Lovejoy, Handy, & Mokhtarian, 2010; Lu, 1999; Wilson & Baldasasare, 1996). However, since the DoD first implemented MPHI policies, only four studies have addressed determinants of residential satisfaction in relation to military families (Bissell et al., 2010; Buddin, Gresenz, Hosek, Elliott, & Hawes-Dawson, 1999; Paulus, Nagar, Larey, & Camacho, 1996; Parks et al., 2009). Of these, only two addressed MFH residents' perceived satisfaction with privatized housing, and neither addressed pre- and post-implementation residential satisfaction to gain insight into program outcomes (Bissell et al., 2010; Parks et al., 2009).

Housing for military families emerged as an important consideration for DoD policy makers to maintain overall military readiness by recruiting and retaining a highly skilled all-volunteer military workforce (Rostker & Yeh, 2006). A key to maintaining 'an all-volunteer force is providing housing that meets the needs of military families. However, nearly 20 years after enactment of MPHI policies, little is known about the policy's outcomes, specifically the residential satisfaction of privatized MFH residents. The lack of research indicated a gap in the literature regarding whether MPHI policies are meeting the needs of military families rather than simply adding housing inventory. The study provided an opportunity to understand the implications of the policy change for MFH residents. Findings contributed to the literature on PPPs post-implementation and military family residential satisfaction through the examination of the relationship between MPHI policies and the residential satisfaction of privatized MFH residents.

Purpose of the Study

The purpose of this study was to provide insight into the implications of the MPHI through examination of the relationship between MFH housing privatization policies and residents' perceived levels of satisfaction. *Residential satisfaction* is a broad term used in the social science literature to include multiple housing attributes. In this study, perceived residential satisfaction, the dependent variable, was measured through satisfaction with residence, neighborhood, quality and condition of residence, privacy, livable space, safety, and affordability. To examine the influence of privatization policies on residential satisfaction, I chose MFH policies as the independent variable represented by the type of MFH (government-managed or privately managed housing). To examine

the influence of sociodemographic variables on the dependent variable, I investigated the effects of the following predictor variables: branch of service, paygrade/income, marital status, education level, gender, children/dependents, and race.

Research Questions and Hypotheses

Research Question 1: How does the level of residential satisfaction expressed by active duty military members residing in MFH differ by the type of MFH policy (government-managed or privately managed MFH)?

H_o1: There is no difference between the level of residential satisfaction of active duty military respondents living in privately managed MFH and those living in government-managed MFH.

H_a1: Active duty military respondents living in privately managed MFH are significantly more satisfied than those living in government-managed MFH.

Research Question 2: To what extent does residential satisfaction in MFH vary by sociodemographic factors of military residents?

H_o2: Residential satisfaction in MFH residents does not vary by sociodemographic factors of military residents.

H_a2: Residential satisfaction in MFH residents varies significantly by sociodemographic factors of military residents.

Theoretical Foundation

The theoretical foundation for the study was policy feedback theory. Having emerged in the late 1980s, policy feedback theory is used to explore the outcomes of policies once implemented (Mettler & SoRelle, 2014). This framework allows scholars to

examine how policies influence attitudes and behaviors of citizens and organizations. The theory is grounded in historical institutionalism, which views policies within the context in which they were created, providing a larger framework for understanding the policy's origins and outcomes (Skocpol, 2014). Policy feedback theory addresses the connections between policy choices and the consequences of those choices.

Those in the field of policy feedback research have explored policies from a variety of perspectives uncovering two types of feedback effects: resource and interpretive (Mettler & SoRelle, 2014). According to Mettler and Soss (as cited in Mettler & SoRelle, 2014), resource effects correlate to the influence of tangible policy benefits, such as education and training, on beneficiary behaviors. Interpretative effects help to explain how a policy can influence beneficiary perceptions. Policy feedback literature continues to expand as more is known about the influence of policies on behavior and perception. Policy feedback theory acted as a guide for this study addressing the influence of MPHI policies on the residential satisfaction of privatized MFH residents. I examined the effects of MPHI policies on those whom it was intended to serve: the end user of privatized MFH. Examining the policy feedback effects provided insight into whether privatization policies have created the intended outcomes.

Nature of the Study

I used a quantitative approach to analyze two DoD Defense Manpower Data Center (DMDC) administered surveys related to housing and residential satisfaction. Comparing stratified random samples of active duty military personnel before and after program implementation provided an opportunity to measure policy outcomes from the

end user's perspective (Winter, 2003b). Limitations in real-world policy implementation often restrict the researcher's ability to control for and measure implementation outcomes. Therefore, researchers use a quasi-experimental design to overcome the lack of experimental controls included in program implementation and to measure the differences between planned and actual implementation outcomes (Dunn, 2011).

I used the repeated cross-sectional survey design, also referred to as the separate samples pretest-posttest design, to measure one sample of the population prior to program implementation and one equivalent sample after implementation (see Campbell & Stanley, 1963; Trochim, 2006b). Between 1999 and 2014, the DMDC administered 20 surveys to gauge the attitudes of its active duty military members on a broad range of topics. Of the 20 surveys, two DMDC administered surveys of active duty personnel had items that aligned to measure satisfaction with housing: 1999 (before implementation) and 2005 (after implementation). I used the survey questions to delineate the independent variable (MFH policies represented by the type of military family housing), the dependent variable (residential satisfaction), and predictor variables (sociodemographic characteristics).

Definitions

Using the operationalized definitions listed below, I investigated the influence of privatization policies on residential satisfaction for those residing in MFH.

Independent Variable

MFH policies were represented by the type of MFH: active duty residents of government-managed MFH and active duty residents of privatized MFH. Government-

managed MFH included base housing programs administered by government personnel located on or near a military installation within the 50 states and the District of Columbia owned by the DoD. Privatized MFH included base housing programs established under MFH privatization policies authorized under the 1996 National Defense Authorization Act (10 USC § 2871–2884) for MFH obtained or constructed and maintained by an eligible private-sector entity that can be located on or near military installations within the 50 states and the District of Columbia but not owned by the DoD (DoD, 2010). The independent variable was operationalized through a respondent's survey response to "Where do you live at your permanent duty station (PDS)?" (DMDC, 2000, 2006). Broken into two groups, the first independent variable included residents of MFH prior to housing privatization and was delineated by a survey respondent's selection of either "MFH (on-base)" or "MFH (off-base)" in the 1999 Survey of Active Duty Personnel (DMDC, 2000). The second group included privatized MFH residents identified by a survey respondent's selection of "privatized MFH that you rent, on-base" or "privatized MFH that you rent, off-base" in the August 2005 Status of Forces Survey–Active Duty surveys (DMDC, 2006).

Dependent Variable

The dependent variable, residential satisfaction, was the satisfaction with housing and neighborhood measured through satisfaction with the following indicators: residence, neighborhood, quality and condition of residence, privacy, livable space, safety, and cost/affordability.

Sociodemographic Predictors

I used sociodemographic variables to examine whether there was a statistically significant difference in the influence of branch of service, paygrade/income, marital status, education level, gender, children/dependents, and race on the residential satisfaction of the MFH residents. The following sociodemographic variables were used as predictor variables and were defined in accordance with the two DMDC administered surveys (DMDC, 2000, 2006):

- branch of service: USAF, Army, Navy, Marine Corps;
- age: chronological years;
- gender: male or female;
- paygrade group: rank/individual military income level of respondent;
- marital status: married or not married;
- education level: 11th grade or less; 12 years of school, no diploma, high school graduate or the equivalent (i.e., GED); some college credit, but less than one year; 1 or more years; associate's degree; bachelor's degree; master's, doctoral, or professional school degree;
- children/dependents: children or dependents in household; and
- race: White or non-White.

Military Privatized Housing

Although *privatized housing* was used to describe DoD's MPHI model throughout the literature, the term is a misnomer. The relationships established by the DoD more readily align with the characteristics of a PPP. In a PPP, government and private-sector

goals align, some requirement details and specifications are provided by the government, and project risk is allocated between the parties (OECD, 2008). According to the DoD, the privatized housing private-sector partner is responsible for designing, building, or renovating and then operating and maintaining MFH at select installations (Office of the Deputy Undersecretary of Defense [ODUSD] Installations and Environment, n.d.). However, unlike pure privatization in which the government is not involved, officials at the DoD retain the responsibility for providing quality housing to military families through oversight and management of the contractual relationship.

Assumptions

The philosophical underpinnings of academic research lie in the relationship between a researcher's ontology, or nature of reality, and view of knowledge, known as epistemology (Killam, 2013). The underlying philosophical assumptions for this quantitative study were drawn from the realist ontology, which assumes there is one reality that can be objectively measured. Emerging from realism, the positivist worldview posits that knowledge is absolute and supported by objective hypothesis testing. Therefore, the best way to understand a social phenomenon, like perceptions, is through quantifiable measures such as cross-sectional survey instruments. I took a positivistic view of the world, assuming a phenomenon can be objectively measured on a properly constructed scale. Through the use of variables to examine the perceptions of residential satisfaction among military family housing residents, I defined the construct objectively, examined the relationship between variables, and generalized the findings to the larger population of MFH residents.

Scope and Delimitations

The scope of this study was the perceived residential satisfaction of MFH residents pre-MPHI and post-MPHI policy implementation. At the time of the study, no studies had addressed DMDC survey data pertaining to residential satisfaction before and after MPHI policy implementation. The study had several delimitations. First, I did not attempt to explain residents' perceptions of residential satisfaction; I examined resident perceptions of residential satisfaction determinants before and after MPHI policy implementation. Second, the study encompassed two separate points in time and did not account for or control for historical events occurring during implementation of the MPHI program. Generalizability was limited to the military family population. There was no comparison or control group in the study. The sample was limited to the population of respondents to each DMDC administered survey (1999 and 2005), which included a single stage nonproportional stratified random sample of DoD personnel. When narrowed to MFH residents, the sample did not reflect the larger active duty military population.

Limitations

The study was limited to MFH residents in the 50 states, the District of Columbia and US Territories. The study was designed to measure perceptions rather than actual behavior of MFH residents. The study did not address the efficacy of privatization and PPP in government programs. Consistent with limitations in cross-sectional surveys, sociodemographic differences might have led to differing respondent interpretations of survey questions.

Another important limitation was the potential for researcher bias based on my relationship to the U.S. military. I was raised in a military family and lived in military family housing as a child and later as a former active duty U.S. Air Force officer. I am currently a military retiree dependent spouse and work as a civilian for the Department of the Air Force.

To control for researcher bias in the study, I erected several firewalls. First, I used data sets that were unbiased and were collected by DMDC as part of a larger Status of Forces Survey for active duty military personnel. Additionally, all DMDC surveys were administered by mail or were web-based, eliminating interviewer bias (see Frankfort-Nachmias & Nachmias, 2008). Second, during data analysis, I also took care to address item nonresponses to ensure omitting or imputing a response did not create additional bias (see Dale, Wathan, & Higgins, 2008). Caution was also used when asserting causality. I did not make assumptions when using cross-sectional surveys and instead reported the results without causal implications. Third, the study design and statistical analysis were established prior to the start of the study, limiting my ability to bias the study's outcomes. Although the potential for research bias exists, establishing mechanisms to limit the researcher's influence on the study's outcomes remains an effective way to control for potential bias.

Significance

This study was designed to investigate the relationship between MFH privatization policies and residential satisfaction. Housing is a key component of a military member's perceived quality-of-life and is central to military personnel retention

and readiness (Twiss & Martin, 1998). This study contributed to positive social change by providing insights into privatized housing policy implications for military families and opportunities for institutional learning and program improvement.

Summary

I examined the relationship between policies geared to enhance military member quality-of-life and end user perceptions. I gauged whether residents were more satisfied with privatized MFH than with DoD managed MFH. I leveraged data collected by the DoD to examine the influence of MPHI policies on those whom they are intended to serve: MFH residents.

The study afforded the opportunity to better understand the outcomes of PPP arrangements on end users, and offered institutional learning for policy implementers. In Chapter 2, I provide a thorough literature review on a broad range of topics related to privatized MFH and residential satisfaction. I also justify the theoretical framework: policy feedback theory. Chapter 2 also provides a background on military housing and its associated policies to provide additional context for the study.

Chapter 2: Review of the Literature

As the U.S. military moved to an all-volunteer force in the 1970s, enhancing quality-of-life through improved services became essential for personnel retention. At the time, military family housing (MFH), one major component of quality-of-life, was underfunded, insufficiently maintained, and in a terrible state of disrepair (Brandt, 1996). For military families, MFH is considered "more than a commodity to buy and sell, and more than a basic human requirement [but] a fundamental component of military quality-of-life and the military community" contributing to the readiness of the armed forces (Twiss & Martin, 1998, p. v).

To address concerns about housing, Congress authorized the privatization of MFH through the 1996 National Defense Authorization Act. This act sanctioned the use of private-sector financing through partnerships between the Department of Defense (DoD) and private-sector developers to build, operate, and maintain MFH using long-term real estate lease contracts spanning periods of 25 to 50 years (Medeiros, 2015). More than two decades have passed since the enactment of military privatized housing initiatives (MPHIs), although the DoD program was fully implemented only in 2010. Despite these milestones, little is known about the post-implementation effects of privatized MFH, specifically regarding the residential satisfaction of residents.

The purpose of this study was to provide insight into the implications of MPHI through the examination of the relationship between MFH housing privatization policies and residents' perceived satisfaction. The independent variable, MFH policies, was represented by the type of MFH and included two groups of MFH residents: one before

and one after the implementation of privatization initiatives. The dependent variable, perceived residential satisfaction, was measured through satisfaction with residence, neighborhood, quality and condition of residence, privacy, livable space, safety, and affordability. I also examined the predictive influence of sociodemographic characteristics on the residential satisfaction of MFH residents, which included branch of service, paygrade/income, marital status, education level, gender, children/dependents, and race.

Exploration of privatization policies implemented by DoD officials for MFH required a wide lens and encompassed an array of themes. In this chapter, I discuss the threads leading to the emergent DoD housing privatization policies including the history of MFH programs, the policy cycle and implementation research, and policy feedback theory, which was the theoretical foundation for the study. I address other influential elements, including an analysis of current research into privatization and public-private partnerships (PPPs). The government's entrance into PPPs highlights how advocates believe that such partnerships create value for money (VfM) by introducing cost savings and private-sector efficiencies in the construction, operation, and maintenance of services/facilities. Policies such as MPHIs are implemented to provide better and cheaper services than traditional government-managed services. However, because initial projections of VfM are tied to PPP planning stages, it is essential to gain post-implementation insight into PPP performance through results measurement. The literature indicated that measuring results in PPPs is challenging (Hodge & Greve, 2009). Further analysis was needed to determine whether PPP arrangements are meeting the intended

needs or producing planned savings. A review of previous research on MPHI policies before and during implementation is included in this chapter, as is previous research on residential satisfaction of military families. I conclude with a discussion of methodologies employed to study policy feedback and residential satisfaction.

Literature Search Strategies

The literature review included consultation of numerous databases and electronic libraries available through the Walden University library. These databases and electronic libraries included ebrary, Sage Publications, Elsevier, Springer, ProQuest Central, LexisNexis, EBSCOhost, and ProQuest Central. I also used the Google Scholar search engine and consulted external databases to locate previous research on MPHIs. Most of the previous MPHI research was retrieved from the Defense Technical Information Center, which hosts published research from institutions within the DoD. These institutions include the Naval Post Graduate School (Calhoun School) and the Air Force Institute of Technology.

The search was divided into four categories that included terms related to MFH, residential satisfaction, public-private partnerships, and policy feedback theory. Research into MFH included the terms *privatized military family housing*, *privatized housing*, *military privatized housing initiative*, *privatized public housing*, *Marsh Report Task Force on Quality-of-life*, and *military family housing*. I examined residential satisfaction by searching the terms *residential satisfaction*, *neighborhood satisfaction*, *housing quality*, and *residential satisfaction and privacy*. Public-private partnerships research was parsed using the terms *public-private partnerships*, *evaluation* and *public-private*

partnerships, *end user*, *public-private partnerships*, and *housing*, *incomplete contracts theory*, and *public-private partnerships*. As I identified authors recurring in my searches, I pursued authors' names for a more comprehensive exploration of their work. These authors included Page and Shapiro; Lovejoy, Handy, and Mokhtarian; Hodge and Greeve; Mettler and Campbell; and Beland.

The historical context of the established housing privatization policies required a longer view of the policy literature. Therefore, I did not limit my search to specify date parameters because the implementation of military housing privatization policies spanned the mid-1990s through 2010. However, the literature reviewed included research primarily published in the last 10 years in peer-reviewed journals, as verified in Ulrich's Periodicals Directory.

Policy Analysis and Implementation Research

The actions undertaken in policy analysis directly correlate with the different stages of the policy process. A brief description of the policy cycle provides the basis for the future discussion of the implementation phase, as shown in Figure 1.

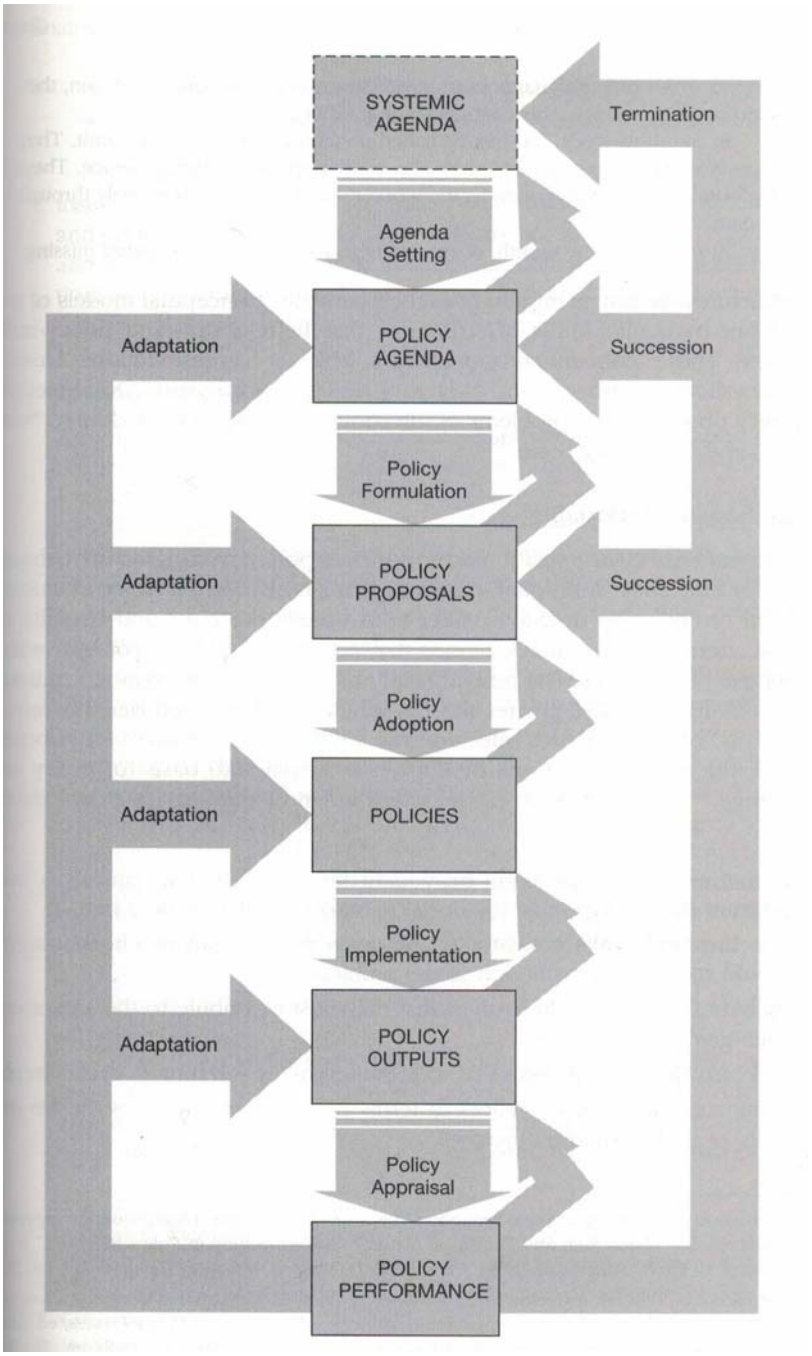

Figure 1. The policy-making process. From W. N. Dunn, 2011, *Public policy analysis: An introduction* (4th ed.). Upper Saddle River, NJ: Pearson Prentice Hall. Copyright 2011 by Pearson Prentice Hall. Used with permission.

The policy process is often depicted in a linear manner with multiple feedback loops (Dunn, 2011; Winter, 2003a). Despite the model's linear representation, the policy process is cyclical, with the different stages running concurrently and sometimes reversing course to address concerns emerging from the various stages of the policy process. The basic stages of the policy process encompass agenda setting, which highlights an issue or area of concern by an interest group, agency, or lawmaker (Dunn, 2011). When the need to act on an agenda item is evident, options and alternatives are devised in the policy formulation stage (Dunn, 2011). When a devised policy is agreed upon through the legislative process, administrative policy process, or the courts, the policy is adopted (Dunn, 2011). In the next stage, the policy moves from adoption to implementation whereby the policy is executed by the responsible administrative agency (Dunn, 2011). The policy process does not end with implementation but continues with compliance and performance evaluations in the policy assessment stage (Dunn, 2011). As the results of these assessments come to light, any necessary policy adaptation may occur, potentially returning the process to a previous stage (Dunn, 2011). Eventually, agencies will assess the mandate to determine whether it remains relevant, requires further adaptation, or has become obsolete in the policy succession stage (Dunn, 2011). Policies that are no longer required enter the policy termination phase at the end of their useful life (Dunn, 2011).

Policy Analysis

The field of policy analysis is superimposed over the policy process. This multifaceted discipline encompasses a diverse array of academic spheres (Dunn, 2011).

Devising insights into the policy process includes definition, prediction, prescription, monitoring, and appraisal (Dunn, 2011). Dunn (2011) divided the policy analysis process into two phases: (a) prospective policy analysis, or analysis before implementation; and (b) retrospective policy analysis, or analysis after implementation. The ex ante analysis of the prospective phase is the analysis of policy problem definition, the forecasted courses of action, and the recommendations made from the devised approaches (Dunn, 2011). The ex post analysis centers on the results outputs and outcomes of the implemented policy (Dunn, 2011).

The current study focused on the retrospective policy phase through analysis of post-implementation aspects of MPHI. Specifically, I examined the implications of the policy outcomes from the perspective of the MPHI resident. Dunn (2011) referred to this stage as monitoring, which focuses on the implications and consequences of policies. Monitoring helps to explain the how, what, and why of implemented policies by examining the outputs and impacts.

Implementation Research

In the 1970s, researchers began asking questions regarding the implications of the policy process (Winter, 2003b). The fundamental purpose of implementation research is exploring the outcomes of policies after administrative agencies create and implement them. Implementation research is a field in which many theories have emerged but has lacked a single agreed-upon research model. According to Winter (2003b), early implementation researchers Pressman and Wildavsky sought to understand welfare policies post-implementation. Their research indicated that minor differences in policy

actors' goals could undermine policy implementation, and they linked policy failures to both implementation and the quality of the policy instrument.

Later implementation researchers explored policy relationships from the top down and bottom up (Winter, 2003b). Sabatier and Mazmanian (as cited in Winter, 2003b) outlined a model that examined policies from the top down delving into the relationships between legislation, political context, and implementation framework established in the legislation. Critics noted that the approach failed to address the political aspects of the policy formation and design processes (Sabatier & Mazmanian, as cited in Winter, 2003b). Therefore, implementation researchers began exploring policy implementation from the bottom-up (Sabatier & Mazmanian, as cited in Winter, 2003b). From this perspective, researchers viewed implementation from the position of the implementer (Sabatier & Mazmanian, as cited in Winter, 2003b. Lipsey (as cited in Winter, 2003b) devised the theory of street-level bureaucracy, considering how practitioners influence policy outcomes by adjusting implantation strategies during the implementation process. Lipsey (as cited in Winter, 2003b) uncovered instances in which administrative discretion resulted in outcomes that were contrary to the legislative intent.

There have also been moves to fuse implementation models. Elmore (as cited in Winter, 2003b) combined forward mapping and backward mapping to examine policy implementation from both directions. Another blended model was Sabatier's advocacy coalition framework, which combined the actors' viewpoint with the legislative and political context to explain changes in policies (Winter, 2003b). Winter's (2003a)

integrated implementation model also provided a basis for identifying key variables in the implementation phase.

Because most early implementation research focused on the inputs to the policy process and the ex ante stages of the implementation process, post-implementation impacts remained unexamined. Winter (2003b) charged that understanding the effectiveness of policy design and implementation requires assessing the impact of the policies on those for whom they were intended. One recommended approach is measuring policy outputs against the goals established in the policy as a mechanism for improving this understanding. Another method is to measure the outcomes of the policy from the perspectives of the end users. These measurements can address whether regulatory policies effectively modified behavior and regulated changes or whether the perceptions of the beneficiaries of the implemented policy align with intended policy goals. Understanding the relationship between policy decisions and those whom they are intended to target may provide insight to improve policy design and implementation.

Theoretical Foundation

Policy Feedback Theory

Developing from the historical intuitionalist discipline, policy feedback theory explores how policy outcomes can influence future policy decisions and illuminate both intended and unintended policy consequences on the individuals and groups they aim to serve (Mettler & SoRelle, 2014). Policy feedback literature identifies both positive and negative feedback effects, encouraging researchers to further investigate implications after the policies are implemented (Mettler & SoRelle, 2014). Researchers can explore

policy feedbacks to evaluate the post-implementation influence and effects of public policies and provides another dimension for improving public policy delivery.

Origins of Policy Feedback Theory

Heclo (as cited in Beland, 2010) conducted early research on political learning and decision-making exploring the field that would later emerge from historical institutionalism as policy feedback theory. Skocpol (2014) noted that the study of historical institutionalism has focused on "timing and sequence, institutional contexts, and policy feedbacks" of the political system (p. 1). Developed in the 1970s, historical institutionalism sought to explore the effects of policies while considering their context. Historical intuitionalists strive to understand policy impacts on "political and social life" (Mettler & SoRelle, 2014). The field takes into account the events and viewpoints surrounding the emergent policy making when assessing public policies. According to Skocpol (2014), the historical institutionalist perspective alters policymaking research from considering policies as the outcome, or dependent variable, to policies as the explanation, or independent variable. Under historical institutionalism, context should guide the questions researchers explore. Considering outcomes and alternatives should be at the forefront of the researcher's inquiry.

Policy Feedback Effects

Previous scholarly research into policy feedback theory divided feedback effects into two categories: interpretive effects and resource effects (Mettler & SoRelle, 2014; Pierson, 1993). Interpretive effects of policy provide the basis for political and attitudinal perceptions about policies (Mettler & SoRelle, 2014). Resource effects are found when a

policy provides the means necessary for individuals and policymakers to take action. Interpretive and resource feedback effects of policies can be found separately or linked, creating interwoven feedback effects (Mettler & Welch, 2004). Further, Campbell (2012) identified a variety of characteristics that generate resource and interpretive feedback effects. These include program size, visibility and traceability, proximity and concentration of benefits, duration of benefits, and the influence of program administration (p. 340). The influence of interpretive and resource effects on policy feedbacks are found in the various streams of policy feedback research.

Streams of Policy Feedback Theory

Policy feedback exploration divides the field into different streams (Beland, 2010; Mettler & SoRelle, 2014). In a survey of the policy feedback literature, Beland (2010) identified six streams of policy feedback that encompass early and emerging policy feedback research. Early in the development of policy feedback theory, researchers sought to understand the effects of policies on state building, interest groups, and lock-in effects (Beland, 2010, p. 570). As the field has grown, researchers have begun to explore public and private policy relationships, the interaction between policy feedback and political behavior, and how policies influence ideas and symbols.

Figure 2. Beland's six streams of policy feedback. Based on text material in D. Beland, 2010, "Reconsidering Policy Feedback: How Policies Affect Politics," *Administration and Society, 42*(5), 568–590.

Early policy feedback streams. Policy feedback effects in the area of so-called state-building explore policy creation and the resulting influence on the construction and expansion of agency and state capabilities (Beland, 2010, p. 570). In effect, implemented policies often create an environment that fosters their respective program's growth. For example, citing the expansion of the U.S. Social Security Administration and its corresponding benefits programs, Beland (2010) found the growth of the Social Security Administration resulted from resource effects emerging from initial agency establishment.

Additionally, as programs expand, researchers also find the emergence of targeted interest groups. Powerful lobbies can create an environment where the feedback effects work to protect benefits resulting from new policies. For example, lobbies such as the

American Association of Retired People (AARP) emerged to sustain and foster social security programs and benefits (Beland, 2010). Beland (2010) further explained that as program establishment occurs, interest groups develop and so-called lock-in effects can also emerge (p. 574). Strong lobbies and entrenched policies develop lock-in effects, creating an environment where it is virtually impossible to change or revise policies (p. 574). Lock-in effects are influenced both by those who administer and those who benefit from the program (p. 574). For example, any proposed Social Security Administration program policy changes with the potential to significantly alter benefits are actively opposed by powerful lobbies like AARP and are seldom implemented. Using Beland's (2010) Social Security Administration program examples, the interwoven nature of these policy feedback effects reflect the emergent influences of policies that may not have been considered preimplementation.

Emerging policy feedback research. The field of policy feedback research continues to evolve in its exploration of the political environment surrounding policy development and implementation. One such area is the influence of policies established in private institutions on public policies (Beland, 2010; Mettler & SoRelle, 2014). For example, the debate over privatizing Social Security benefits is grounded in the transition of the private sector from traditional corporate pensions to market-based retirement accounts (Beland, 2010). The influence of private-sector approaches to retirement fueled the debate over whether the current government guaranteed retirement benefits are the most effective means of providing citizens with retirement income. This debate has

altered the public perception regarding the efficacy of government-provided retirement benefits.

Additionally, exploring the policy feedback effects on mass publics has improved the understanding of policy influence on political participation (Gengrich & Watson, 2016; Guo & Ting, 2015; Mettler & Welch, 2004; Pierson, 1993). Mettler and Welch (2004) conducted an influential policy feedback study of the post-World War II GI Bill education beneficiaries. The authors found that World War II GI Bill education beneficiaries engaged in political activity at a higher rate than veterans who did not participate in the education program. Gingrich and Watson (2016) explored the feedback effects of privatization policies on recipients of disability benefits. Their research indicated a relationship between United Kingdom disability beneficiaries' voting patterns and their experience with privatized service delivery. Guo and Ting (2015) found that the resource effects of public insurance programs created differences in Chinese political participation between public and private-sector employees. Relationships between government benefits and voter participation and preferences continue to emerge in policy feedback research.

Another stream identified by Beland (2010) is the "ideational and symbolic" influence of policies, which describes how ideas and symbols emerge from implemented policies (p. 579). The context and messaging surrounding policies have been found to create policy feedbacks that influence policy and programmatic successes and failures (Beland, 2010). Welfare policies designed in the early 1970s expanded public assistance to low-income families. Steensland (as cited in Beland, 2010) found the effort was

thwarted when opponents framed some of the program's beneficiaries as the "undeserving poor" (p. 580). The inference that the program supported those unworthy of federal aid created an impossible environment for policy changes and ultimately impeded welfare policy implementation.

Policy Feedback Theory and Policy Design

As discussed above, the policy feedback literature includes a variety of perspectives when exploring policy consequences. The study of privatization policy influence on MFH housing residents used policy feedback theory as an analysis framework. This framework served as a guide to understanding the implications of shifts from government-managed family housing to privately managed family housing.

Policy design considerations have a variety of implications for policy feedback. Soss (as cited in Campbell, 2012) found policy designs have implications for political learning. Jordan and Matt (2014) identified differences in the emergence of policy feedbacks between regulatory and social policies, finding that positive policy feedback found in social policies may not correlate to the feedback found in regulatory policies. They also highlighted the importance of planning policy designs in parallel with expected positive or negative feedback effects. Moreover, Lockwood (2014) found policy design can positively or negatively influence policy feedback effects. These findings reinforce the idea that policy design is an important consideration in successful policy implementation.

In addition to the established correlations between policy design and feedback effects, the influence of policy design in some policy feedback research remains

ambiguous. Despite major public opposition to welfare programs, Soss and Schram (as cited in Campbell, 2012) did not find a significant relationship between research design and public perceptions in the shift from traditional welfare program designs to a workfare design construct. Morgan and Campbell (2011) explored aspects of the program design change undertaken with the privatization of Medicare drug benefits, finding that the change in design did not alter program beneficiaries' opinions regarding the reforms or the role of government in service provision.

Although the literature is mixed, research related to policy design changes and its relationship with policy feedback points to the need for further study to better understand the implications of policies. This study does not delve into the political viewpoints or political participation aspects of beneficiaries; however, it captures important policy feedback from the perspective of the policy end user, privatized MFH residents. As such, I explored the implications of program design changes on those most affected. Skogstad's (2016) analysis of EU biofuels policies highlights political learning, noting the importance of assessing both positive and negative feedback effects to improve decision making and policy development. Similarly, the influence of implemented policies on future policy development makes understanding the policy feedback implications key to future policy deployment (Jacobs & Weaver, 2015). Privatization efforts are underway in other facets of DoD without a comprehensive understanding of their implications. Therefore, the policy feedback literature provides a basis to better understand the positive or negative consequences of privatization on MFH.

Rationale and Relationship to Military Privatized Housing Initiative Policies

The objective of this study was to understand whether the change in housing provision resulted in greater residential satisfaction for military families. Policy feedback theory guided the exploration of the long-term implications of the MFH program design changes from a government to privately managed service. In this research, I did not measure program outcomes from the perspective of the number of units built or remodeled but from the residents' viewpoints. As policy makers continue to devise new opportunities for privatization within the DoD and other federal agencies, exploration into the feedback of implemented privatization policies for housing shows whether the program is meeting its mandate or if further consideration or adaptation should be given to the privatized provision of MFH.

Using residential satisfaction data from two DoD administered surveys, encompassing pre- and post-MFH privatization, I measured the feedback effects resulting from changes in residential satisfaction after program implementation. The two surveys contained very similar questions regarding housing and residential satisfaction, as well as sociodemographic characteristics. The approach provided an opportunity to explore the implications of the "institutional change" (Beland, 2010, p. 582) emerging from the shift to privately managed MFH.

Historical Perspective on Military Family Housing

Housing Military Service Members

The remote location of many military installations, paired with Amendment III of the U.S. Constitution prohibiting the quartering of soldiers in the homes of private

citizens during peacetime, established a long commitment to housing military service members in the United States (Beard, 2003). Taking many forms in both war and peacetime, housing policies evolved to consider the changing military family.

From the 1800s to the early 1900s, families were not considered essential components of the military. Despite the lack of official recognition, soldiers were often accompanied by family members better known as "camp followers" (Twiss & Martin, 1998, p. 1). As the U.S. Army's mission changed from exploring the frontier to a more permanent construct, the view and accommodation of military families also changed. In the late 1800s, encampments emerged that provided MFH, initially for officers. Only later in the 20th century did the military accept enlisted members' families or consider providing them housing.

The adoption of policy changes recognizing the presence of military families transpired throughout the 20th century. Early U.S. Army encampments emerged under a similar construct as the company town rising out the industrial revolution (Twiss & Martin, 1998). Company towns sprung from the "welfare capitalist" movement in the 1890s, advocating community planning as a mechanism for providing social structure (Wright, 1983, p.182). The military installations constructed in this period offered similar amenities to those provided in company towns. Hoping to improve conditions and reduce desertion, military planners constructed each military installation utilizing "standardized plans for facilities [including] post exchanges, schools, libraries and gyms" (Twiss & Martin, 1998, p. 5). The amenities provided at these military installations established what some consider the earliest correlation between quality-of-life and retention.

Housing Shortages

The wartime periods of World War I (WWI) and World War II (WWII) highlighted the insufficient housing inventory for military members. Insufficient housing quantity during WWI shepherded the first housing allowance. Labeled basic allowance for quarters, military officers and high-ranking enlisted personnel received funds to off-set the cost of acquiring housing in the local civilian community (Baldwin, 1996). The entitlement was one of the first steps in recognizing the limited availability of housing and established the first of many programs to encourage military members to locate housing off-base in the local community.

As WWII ended, the housing shortage became even more pronounced. Military members returning home found insufficient on-base housing. Few officer family housing units existed and there were no housing units for young enlisted families. Despite the obvious need to house returning military members and their families, government leaders were reluctant to fund the construction of essential housing using taxpayer dollars. According to Baldwin (1996), the period after WWII was the first time government leaders approached the private sector to finance, build, and operate housing for the military. Relationships with the private sector eventually resulted in the establishment of innovative arrangements for providing MFH.

Early Military Family Housing Solutions

The Wherry housing program. The first of the military housing programs emerging from the post-WWII housing shortages was the Wherry housing program established under Title VIII of the 1949 National Housing Act (Baldwin, 1996). This

early version of privatized housing was built by private-sector builders with loans obtained through private lenders. The Military Housing Insurance Fund guaranteed funding for housing on government sites or areas near installations. To incentivize private developers, housing program lifespans ranged from 50 to 75 years. Participating builders were responsible for operating and maintaining the Wherry housing with funding based on the rental rates established by the Federal Housing Authority for each unit. Although some successful ventures emerged, holding developers accountable for housing maintenance under the Wherry program was a major problem. Ultimately, military families had difficulty finding adequate and affordable housing (Twiss & Martin, 1998). Because of this lack of affordability and accountability, DoD officials discontinued the Wherry program and procured approximately 84,000 units under the auspices of a later housing initiative, the Capehart program in the mid-to-late 1950s (Baldwin, 1996, p. 11). This new initiative continued the private sector developer affiliation for providing MFH.

The Capehart housing program. To meet the continuing demand with the needs for housing DoD's military personnel still high, the U.S. Congress offered the Capehart housing program as a replacement for the Wherry program in 1955. Similar to the Wherry program, the Capehart program ensured private developers were responsible for construction and the Federal Housing Authority insured the property mortgages (Twiss & Martin, 1998). However, under this program, postconstruction units were transferred to the DoD to operate and maintain using appropriated funds (Baldwin, 1996). This feature alleviated concerns over inadequate maintenance experienced under the Wherry program. Using the forfeited basic allowance for quarters of military housing residents, the DoD

repaid the mortgage loans for the newly constructed units and added the units to the military housing inventory. While the Capehart program faced challenges with mortgage ceilings and controversy over the inclusion of "costly and desirable, but not essential features, such as air conditioning and dishwashers," the program successfully produced 115,000 housing unit (Baldwin, 1996, p. 12). Thus, the Capehart program, while imperfect, was at least effective.

Transition to military construction. Although the early use of the private sector to produce housing was successful, challenges with maintenance continued. Poor upkeep, paired with government officials' dislike of mortgages, found the DoD in the 1970s returning to the use of traditional appropriated military construction funds for MFH (Baldwin, 1996, p. 15). Simultaneously, the prioritization of funding for construction of on-base housing declined. Additionally, base level housing managers experienced slashed maintenance budgets. Deficient funding for new construction and routine maintenance led to a steady decline in the quality of housing, a problem that would go unaddressed for many years. This combination created an inventory of substandard housing within the DoD (Baldwin, 1996).

With inadequate and insufficient numbers of on-base housing units, the DoD began to rely heavily on local markets. Market forces in the 1970s drove up housing costs as private-sector markets were struggling with high-interest rates. Costly housing caused low-income military families to rely on Department of Housing and Urban Development housing subsidies (Twiss & Martin, 1998). Military families competed for a limited supply of subsidized low-income housing alongside the civilian population and, in

keeping with military tradition, on-base housing assignments were allotted by rank. Therefore, a large volume of lower ranking members lived in deficient off-base housing. These findings alarmed officials at the Government Accountability Office (GAO) and spurred them to advocate for reprioritization of military housing to those with the greatest need (Baldwin, 1996), once more highlighting to lawmakers and DoD officials the challenges facing MFH programs.

Section 801 and 802 housing. In addition to the GAO officials' call for change, the need for increased housing stocks also gained the attention of the Reagan administration. Beginning in the early 1980s, the administration looked to capitalize on private-sector expertise in the provision of traditionally provided government services, including housing (Baldwin, 1996). Searching for cost-effective options, the U.S. Congress, in 1984, authorized DoD officials to pursue long-term leases with private entities as well as rental guarantees for housing (Baldwin, 1996, p. 18). These programs were referred to as Section 801 and Section 802, respectively.

Section 801 authorized DoD officials to pursue arrangements with private-sector entities to build and rent properties exclusively to military personnel on leases spanning up to 20 years (Baldwin, 1996). DoD officials selected contractors to construct housing on government or privately owned land using traditional competitive processes. At the end of the leasing period, the contract afforded the DoD the option to purchase the property. Conversely, Section 802 authorized rental guarantees with local private-sector developers. The rental rates were subject to local market rates with the total rent capped to prevent windfall profits experienced in earlier privatization programs.

Issues with maintenance on Section 801 housing ultimately led to program changes. DoD officials opted to split construction and the operation and maintenance of the housing into two separate contracts (Twiss & Martin, 1998). Although this program did supply much-needed housing, DoD officials preferred ownership of MFH to long-term leases and began moving away from the Section 801 model. One factor Twiss (2012) noted was a new budget scoring requirement established by the Office of Management and Budget requiring the full amount of the lease to be paid by the DoD at the outset of the agreement. Conversely, the rent caps established in Section 802 produced contracts that lacked financial incentives to private developers and the program was less than successful across the DoD (Twiss & Martin, 1998). Both Section 801 and 802 programs provided some needed housing. However, the programs were ultimately phased out because they failed to offer sustainable solutions for housing military families.

All-volunteer force. As quality-of-life issues gained importance for the retention of the all-volunteer force, renewed emphasis on MFH quality emerged. In 1995, Secretary of Defense William Perry established the Task Force on Quality-of-life to assess three main issues: housing, personnel operations tempo, and community and family services. The task force's assessment of housing recommended the establishment of a nonprofit Military Housing Authority to manage and maintain DoD's housing inventory. The proposed Military Housing Authority would have private-sector flexibility without the profit strings of the private sector (Department of Defense [DoD], Defense Science Board, 1995). However, this recommendation was later scrapped. Territorial politics and concerns over the loss of control of base infrastructure, specifically the "how

much, where, and when housing would be constructed," caused the program to remain stalled in debate (Rostker & Yeh, 2006, p. 668). Despite the politically mired Military Housing Authority, housing quality remained an important quality-of-life issue for the retention of the all-volunteer force.

Military privatized housing initiatives. Realizing the value of the concept, the DoD and Congress continued to research alternatives for the provision of MFH. By the mid-1990s, the emerging "reinventing government" movement gained momentum with many Congressional leaders encouraging the implementation of alternative governance models (Osborne & Gaebler, 1992). The new focus for public management promoted merging private-sector practices, touted to gain efficiencies and cost savings, with traditional public management. Based on an institutional history of private-sector use to remedy housing shortfalls, DoD officials considered the MFH program one initiative that could benefit from privatization.

Despite its similarity to the Military Housing Authority, the privatized housing initiatives would gain approval and establish base level housing authorities with each private-sector company (Rostker & Yeh, 2006; Twiss & Martin, 1998). The National Defense Authorization Act of 1996 authorized the MPHI program, establishing DoD's ability to partner with the private sector for construction, renovation, and maintenance of MFH.

The DoD is now empowered to:

- offer guarantees, both for loans and rental occupancy;
- convey (transfer) or lease existing military property and facilities;

• offer differential payments to supplement military members basic allowance for quarters/variable housing allowance (for example, paying the difference between a junior enlisted member's combined basic allowance for quarters/variable housing allowance and the costs of a rental unit);

• make investments, both as a limited partner and as an owner of stock/bonds;

• make direct loans. (Housing Revitalization Support Office, cited in Twiss & Martin, 1998, p. 65).

These new authorities can be used alone or in combination. Privatization using DoD's MPHI model is a PPP. The private sector partner is responsible for designing, building or renovating, and then operating and maintaining MFH at select installations (ODUSD Installations and Environment, n.d.). Ultimately, officials at the DoD retain the responsibility for providing quality housing through oversight and management of the contractual relationship.

The housing privatization initiatives were implemented at the installation level between 1999 and 2010 (Medeiros, 2015). Within DOD, as of July 2009, 187,903 base housing units had been transferred to the private sector (Bissell et al., 2010). The contractual arrangements take many forms, differing at the agency level and the contract level (Godfrey, Sadin, Vogel, Pollarine, & Kryloff, 2012). For example, the U.S. Navy model predominantly features the use of Joint Ventures for the construction, operation and maintenance of MFH (Godfrey, et. al., 2012). Conversely, the U.S. Army and U.S. Air Force adopted a real-estate lease arrangements with terms up to 50 years (see

Medeiros, 2015). Despite differences between the branches, the goal of the MPHI remains to provide quality housing for military families across the DoD.

Public-Private Partnerships

More than 20 years after public introduction in the popular 1992 book titled *Reinventing Government* by Osborne and Gaebler, PPPs continue to be a politically popular concept (Fussell & Beresford, 2009; Lenferink, Tillema & Arts, 2012; Hodge & Greve, 2009; Osborne & Gaebler, 1992). The PPP premise is that the public sector can capture private-sector efficiencies in both schedule and cost while transferring risk to the private sector for the provision of essential government services. From the perspective of cash-strapped organizations, forming PPPs to design, build, finance, operate, and manage public-sector infrastructure is appealing. Although policy makers continue to encourage local, state, and federal governments to explore alternative solutions to the provision of public-sector services, little conclusive empirical data have emerged to support the practice (Hodge & Greve, 2009).

Definition of Public-Private Partnerships

Public-private partnerships are arrangements between governments and private-sector partners that align both government objectives and private-sector profit goals. They also balance risk exposure by transferring risk elements to the parties most capable of effectively managing them (OECD, 2008). Notably, in PPP arrangements the government shares responsibility with its private-sector partner but "retains ultimate responsibility" for providing the public service (Forrer, Kee, Newcomer, & Boyd, 2010, p. 477).

Uses of Public-Private Partnerships

PPP project examples include roads, bridges, large infrastructure projects like stadiums and convention centers, office complexes, hospitals, schools, and utilities. Although different PPP arrangements exist, a common and popular PPP model involves designing, building, operation and maintenance, and transfer back to the public sector. Governments have instituted PPPs for service provision in areas such as health care and education (Fussell & Beresford, 2009). Review of PPP literature reveals the rationale behind PPP entry, including financial and risk transfer incentives, as well as how PPPs are evaluated to determine whether the programs are meeting their intended purpose. The existing literature provided insight into how government officials assess the success of programs underway, including decisions to enter into future PPP arrangements (Forrer et al., 2010; Fussell & Beresford, 2009; NAO, 2010; Sarmento, 2010).

PPPs are an internationally used model, predominantly found in nations with stable political systems and economic marketplaces (Hammami, Rushashyankiko, & Yehoue, 2006; OECD, 2008). Because of the risk sharing involved, stability is a critical foundation to PPP ventures. PPP projects are typically large infrastructure programs that stem from the need to provide services to the public. The aim is to gain the private sector efficiencies for cost and schedule that are difficult to control in traditional government procurement processes. This concept remains popular despite a lack of empirical evidence to support its cost saving benefits (Hodge & Greve, 2009). In theory, the lower costs in turn incentivize the contractor to build and install higher quality systems in the building phase, which will lower their operating costs in the operational phase.

Value for Money

According to OECD (2008), value for money (VfM) occurs when an arrangement provides "maximum quality and features that meet its specifications at the best price possible" (p. 21). In the public sector, PPP arrangements are thought to create VfM by incorporating private-sector efficiencies to achieve cost and schedule savings in the provision of public goods and services. The rationale used by public-sector leaders to enter PPPs should be fact-based and not politically motivated. To this end, leaders must ensure a public infrastructure project is needed, economical, and not an off-books venture attempting to bypass financial regulations or accountability (Sarmento, 2010). Meeting these criteria creates an environment where a complex contractual arrangement like PPPs, bundling construction with the delivery of operations/maintenance, can create VfM.

Bundling in Public-Private Partnerships Projects

It is important to note that the benefits of PPP arrangements are most likely to occur under certain conditions. Bundling in a PPP project occurs when construction is combined with operating and maintaining a service or facility. According to Hart (2003), the appearance of efficiencies that create a "social benefit" in these bundled services corresponds to the complexity of the acquisition (p. C74). These apparent efficiencies are more likely to occur when the service/operation aspects of the project can be well defined, rather than the construction portion. Similarly, in a laboratory experiment undertaken by Hoppea, Kusterer, & Schmitz (2011), the researchers found PPP arrangements encourage a higher investment and lower operating costs. The highest

quality and highest surplus resulted from PPP arrangements when the prime contractor was responsible for construction and subcontracted the operations (Hoppea et al., 2011).

Schedule and cost. The literature discusses two motivators surrounding efficiencies. The first, schedule and cost, are considered inherent in the move from the public sector to the private sector. The private sector is presumed to operate under fewer bureaucratic constraints and can more rapidly advance a project. The literature shows that using PPPs can result in successfully controlling schedule and cost overruns in large road projects (Blanc-Brude et al., 2009). Significantly, these authors found that initial PPP costs were higher than traditional procurement by approximately 24% (p. 21). However, when taking into account frequent cost overruns in traditional procurement, the difference is minimal because in traditional procurement the final costs are approximately 28% higher than initial projected costs (Flyvbjerg et al., as cited in Blanc-Brude et al., 2009, p. 36). Therefore, despite their higher initial costs, PPPs may create VfM through their lower overall costs and schedule management incentives. On-time projects open revenue streams more rapidly, allowing the private sector partner to begin receiving compensation for its investment and service delivery. However, literature related to materialized cost savings in hospital privatization has uncovered little evidence that bundling for hospitals provides greater value than traditional procurement (NAO, 2010). The National Audit Office assessing British privately funded infrastructure hospitals found that all eventualities were not captured in the original arrangement. Thus, the inherent incompleteness of the contracts created the need to modify the arrangement, ultimately decreasing VfM as time passed.

Quality. The second motivational factor behind bundling is creating efficiencies that improve quality and create VfM. The efficiencies emerge when the construction phase includes planning to reduce costs in the operation phase. PPP proponents indicate that cost savings can arise in a variety of areas including lower energy costs or installing higher quality materials that reduce future maintenance costs. Although the concept of improving quality to increase efficiencies appears logical, conclusive evidence of this aspect of bundling is mixed (Blanc-Brude, et al., 2009; Hodge & Greve 2009; Lenferink et al., 2012).

Hoppea et al. (2011) found that the PPP framework, which bundles construction and operations, incentivizes the private sector to take advantages of practices that reduce out-year operating costs. When appropriately applied, these incentives could also improve quality. However, the same conditions may contribute to "quality shading," where the private partner meets contractual parameters but reduces overall VfM by using inferior materials or poor workmanship (Hart, 2003, p. C71). From a qualitative perspective, Blanc-Brude et al. (2009) noted that, although their research did not conclusively indicate that PPPs created VfM, bundling likely would include quality materials to lower operating costs. This, in turn, would improve the profit margin of the operations and maintenance stages. Lenferink et al. (2012) contended that the act of bundling presents an opportunity to maximize the relationship between the construction and maintenance but their findings also concluded that evidence of gains in efficiencies remains ambiguous. Thus, research of improved quality in the implementation of bundled contracts remains inconclusive.

Risk Transfer

As noted above, the government retains ultimate responsibility for the service delivery using the PPP model. However, the PPP construct creates VfM by incentivizing both public and private-sector partners to share the risk associated with the project. PPP risk should be transferred "to the party best able to manage it" (Ross, as cited in Fussell & Beresford, 2009, p. 48). The risks associated with PPPs take many forms. These include project risk, operating risk, demand risk, technical risk, financing risk, regulatory risk, public policy risk, and political legal risk (Fussell & Beresford, 2009, p. 52). As a component of risk sharing, the arrangement must ensure the risks are adequately shared between the parties (OECD, 2008). Failure to achieve this balance can have negative consequences for the public-sector partner and reduce actual VfM resulting from the PPP arrangement.

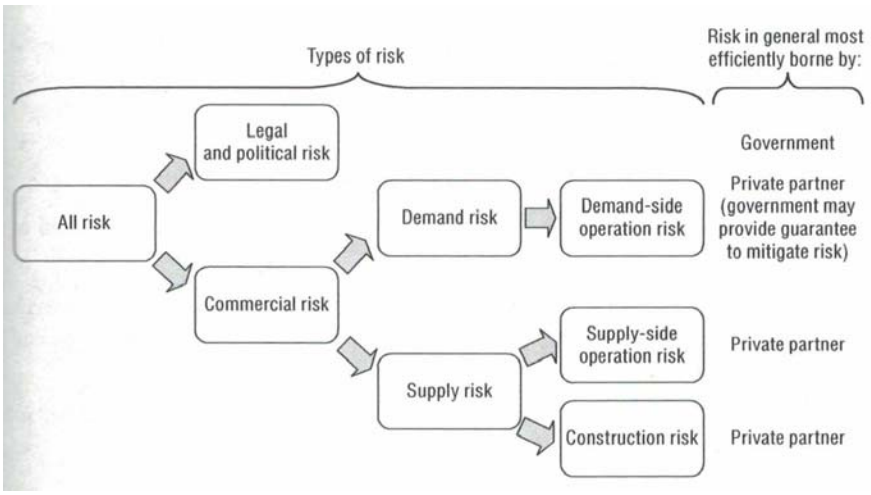

Figure 3. "Categorizing Risk," by Organization for Economic Cooperation and Development (OECD), 2008. *Public-private partnerships: In pursuit of risk sharing and value for money.* Copyright 2008 by OECD. Used with permission.

An important consideration in PPP decision making includes analysis of project specific risk transfer. The risks are often quantified through the use of a public-sector comparator model and assigned dollar values (OECD, 2008). The public-sector comparator model provides the cost-benefit analysis framework for service delivery options. Used to estimate private-sector versus PPP provision lifecycle costs, the model can include a comparison of the competitive vendor proposals. The model provides an estimate only and actual costs of the PPP are not calculated until the post implementation phase.

Some PPP risk results from the inherently incomplete nature of contracts, as described in Hart's incomplete contracts model (Hart, 2003; OECD, 2008). All eventualities cannot be anticipated and external influences can impact long-term PPP ventures (Forrer et al., 2010; Higgins & Huque, 2015; OECD, 2008). Changes in public opinion, political leadership, and requirements can all lead to environments that negatively impact the ability of the public sector to obtain VfM. Additionally, to optimize the VfM created by the PPP arrangement, it must properly incentivize the private sector to invest in higher quality construction that provides the ability to obtain savings in the operations phases (Hart, 2003; Hoppea et al., 2011). Therefore, in the execution of a PPP, a proper balance of risk transfer is sometimes difficult to achieve.

Performance Measurement

Accountability

One of the challenges with the assessment of PPP performance is the proprietary nature of the arrangements. When responsibility is transferred to a private-sector partner,

many of the decisions and processes are not available for public scrutiny. Higgins and Huque's (2015) research into performance and accountability in joint venture PPPs found the sectors measured accountability differently, creating public tension. Although the goal for the joint venture PPP was similar between the sectors, the private sector partner's accountability to its investors clashed with the public-sector partner's need to provide "democratic accountability" (p. 1121). This arrangement created an environment where the public felt it did not possess sufficient visibility of its investment and fostered political risk for the public partners.

Public-Private Partnership Assessment

Public-sector involvement in PPP arrangements necessitates accountability. As such, Forrer et al. (2010) emphasized incorporating planning accountability measures as part of PPP formation to bolster performance. Advocating PPP assessment from the lens of a multidimensional network, the authors proposed including accountability measures, negotiated in advance between the parties, that incentivize and reward superior execution. However, Higgins and Huque (2015) noted that a limitation of PPP arrangements is their proprietary nature. Preventing the disclosure of confidential private-sector practices challenge the traditional notion of public accountability in public-sector projects, making some performance measures impossible. Therefore, most of the performance measures available for PPPs correlate to a project's service delivery outcomes.

One mechanism available to assess service delivery outcomes is the consumer's perspective. As reported by the National Audit Office (2010), in Britain, customer satisfaction was assessed to determine whether the services were meeting consumer

needs at a PPP hospital, also referred to as a privately financed infrastructure hospital. The assessment provided insight into the quality of service delivery and illustrated the lack of differences between traditionally procured and privately financed hospital programs. This study led officials to consider whether the complex PPP undertakings achieved the anticipated benefits.

Perhaps one the best assessments of PPP effectiveness and VfM is contained in Hodge and Greve's (2009) evaluation of long-term infrastructure contracts PPPs. The authors found little conclusive evidence to support the PPPs benefits touted by proponents. According to their assessment, the results of PPP arrangements are mixed with little empirical evidence of successes. Adding to the complexity of program evaluation, comparisons between PPPs are difficult because of the significant differences in nature of each agreement. Hodge and Greve (2009) found a lack of quantitative studies reviewing performance results, a lack of research designs including control groups, and few empirical studies conducted into the life of PPP contracts after implementation.

Although significant research has been accomplished about the decision-making process for governments electing to enter into PPP arrangements, the need for additional research remains to determine if PPPs create VfM for the public-sector partner. The unique and complex contractual frameworks combine to create difficulties for program measurement. There is no universal set of tools for program evaluation to ensure accountability and measure performance. Therefore, each PPP must be assessed within its own context in order to provide valid insight into the concept's overall value. As Hart (2003) noted, social benefit provided by a firm will always be less than that provided by

the public sector (p. C74). Thus, a lack of integrated research into the outcomes leaves the public sector with much uncertainty regarding the benefit of PPP endeavors.

Previous Military Privatized Housing Initiative Research

Following the authorization to pursue privatized housing, students and researchers explored various aspects of the MPHI program. Past research included assessments of program progress, comparative analyses of traditional MFH management programs to the enacted 1996 National Defense Authorization Act privatization efforts, as well as other emerging housing management proposals. Previous inquiry into MPHIs also included cost-benefit analyses and case studies investigating different facets of the program.

Early Military Privatized Housing Initiative Program Analysis

Early GAO (1998) reports on the DoD's MPHI implementation indicated limited progress in several facets of housing privatization and identified obstacles requiring the attention of DoD officials. The challenges included potential shortfalls with the methodology DoD officials used to estimate privatization costs, a lack of comprehensive housing plans within the department, and questions regarding the decision-making processes behind installation specific housing privatization determinations. The assessment provided an initial framework for DoD officials to address and identified policy changes with future implications.

Occupancy. One of the implications of the GAO (1998) report was the importance of future MPHI occupancy rates for program sustainability. Brandt's (1996) analysis of privatization options indicated the key to program success lay in the occupancy rates for each housing program. Under the MPHI construct, private-sector

companies rely on income from the occupied units to fund renovation and new construction. Therefore, housing vacancies negatively affect the ability to revitalize the MFH stock.

Coupled with Brandt's (1996) conclusion, GAO officials found that changes in housing allowance policies could impact the demand for MPHI housing. As Basic Allowance for Housing subsidies incrementally increased, private-sector housing could become more affordable and, perhaps, desirable for military families (GAO, 1998). Concern over the impact of housing vacancies spurred DoD officials to integrate contractual language to allow non-military families to occupy privatized housing if occupancy rates dropped below 90%. This alteration of the traditional MFH construct may have implications on the residential satisfaction of residents.

Cost analysis. Researchers also have delved into cost comparisons between government-managed MFH housing and privatized MFH. Sorce's (2000) comparative analysis of traditional military construction housing, public-private ventures, and complete privatization indicated that privatization would improve the housing inventory and produce cost savings. In contrast, researchers also compared traditional housing management programs with early privatized housing management proposals, finding touted costs savings may not be as forecasted. Kokocha's (2002) comparison of different housing management programs indicated that privatization should produce cost savings in the areas of construction and maintenance for the government. However, instead of realizing any savings, the costs will shift to the military personnel budgets to fund basic allowance for housing which residents then use to pay rent to the privatized housing

developer. Similarly, Beard (2003) found that the government should not rely on privatization alone to produce costs savings but noted the program could help reduce the DoD inventory of substandard housing. The early assessments of the MPHI program pointed to the need for researchers to continue studying the implications of privatization on MFH.

Assessments During Implementation

In line with earlier assessments of MPHI implementation, researchers continued to examine the costs and benefits of privatization to the government. Similar to Beard, Kokocha, and GAO findings, Woods (2009) found that the increase in basic allowance for housing rates resulting from policies championed by Defense Secretary Cohen under President Clinton, later implemented during the Bush administration in 2002, improved housing options for military families. However, policies increasing basic allowance for housing merely shifted costs instead of producing the savings identified in earlier cost assessments. Additionally, the GAO (2009) assessed the impacts of policy changes within DoD on the housing privatization program. GAO again identified concerns over occupancy rates at some installations and their potential effect on program viability. The 2008 financial crisis created private-sector financing challenges for contractors, prompting GAO warnings that, without sufficient income from occupants rent payments, MPHI contractors may be unable to replace substandard housing. Continued concerns over program effectiveness necessitated further investigation into the MPHI program's ability to meet military family needs.

Post-Implementation Military Privatized Housing Initiative Research

As the DoD agencies finished implementing the MPHI program, some case studies and comparative analysis research continued. In a comparative policy analysis of previous and current privatized housing programs, Cano (2012) concluded that the U.S. Congress addressed previous privatization pitfalls, providing the "flexibility" necessary for success (p. 35). Researchers also have explored privatization effectiveness from the viewpoint of historic preservation. Saul (2014) assessed the impact of privatization policies on the U.S. Army's inventory of historic homes. Saul's case study revealed the emergence of effective partnerships between the government and the contractor that enabled compliance with historical housing program standards. The relationships established between the parties ensured the upkeep and renovation of historical properties at two U.S. Army installations. Additionally, Young (2015) explored the influence of DoD's housing policy on local real estate rental and sales markets surrounding military installations for the Department of Housing and Urban Development. The case study concluded that contractual terms allowed privatized MPHI developers to expand residential eligibility beyond the military family and protected the developer's income stream, but influenced demand in local housing markets. The resulting unintended consequence was a housing glut in the communities surrounding some installations. Medeiros's (2015) research into MPHI implementation also included a qualitative assessment of organizational learning that occurred throughout the move to privatization within the U.S. Air Force. Medeiros examined how the organization adapted throughout

the implementation phase of the MPHI program to create approximately 50,000 new and renovated MFH units.

Thus, the research suggests that as the MPHI policy cycles to post-implementation, researchers should continue to explore the implications of these long-term arrangements to determine whether the MPHI program is meetings its intended purpose. Researchers should focus not only on the number of units produced but more broadly on whether privatization has improved quality-of-life for military members in today's all-volunteer force.

Determinants of Residential Satisfaction

The relationship between individual perceptions of residential satisfaction and individual quality-of-life has been widely researched. Therefore, to gain an understanding of the influence of privatization policies on the residential satisfaction of MFH residents, this study draws on previous residential satisfaction determinants research to measure the influence of privatization. Individual perceptions of housing and neighborhood quality, including perceived safety, security and neighborhood upkeep, as well as social ties are significant factors influencing residential satisfaction (Dassopoulos et al, 2012; Hur & Nasar, 2014; Lovejoy, Handy, & Mokhtarian, 2010; Lu, 1999). To help us better understand the significance of these factors, individual determinants of residential satisfaction can be broken down into categories, including housing satisfaction, neighborhood satisfaction, and population specific satisfaction indicators.

Housing Satisfaction

In search of more precise measures of housing satisfaction, Lu (1999) moved the study of residential satisfaction from regression models to ordered logit models. Using the U.S. Census American Community Survey, Lu found sociodemographic factors including age, gender, race, marital status, children/dependents, income, and home ownership along with duration of ownership had significant effects on housing satisfaction. Additionally, factors such as the amount of living space and housing cost were significant determinants of residential satisfaction. Perceptions of privacy were also identified as a significant determinant in both single family and multifamily units. A resident's ability to control privacy in their physical environment and interactions with neighbors improved residential satisfaction ratings in multifamily dwellings (Day, 2000; James III, 2007). Štreimikienė (2015) also identified perceived privacy as an important indicator of housing quality and factor in overall quality-of-life. The previously identified research elements can be used to measure the influence of privatization policies on residential satisfaction.

Neighborhood Satisfaction

When researching residential satisfaction, neighborhood satisfaction is an important consideration because it is a significant predictor of housing satisfaction (Lovejoy et al., 2010; Lu, 1999). Neighborhood conditions affecting appearance, such as litter and neglected structures and yards, influence perceived neighborhood satisfaction (Hur & Nasar, 2014; Lovejoy et al., 2010; Lu, 1999). Additionally, residents' perceptions of neighborhood safety (concerns about crime) and neighborliness also act as predictors

of neighborhood satisfaction (Dassopoulos et al., 2012). Further, similar to the findings that perceptions of privacy influence housing satisfaction, Wilson and Baldassare (1996) conducted early research fusing the fields of sociology and psychology with residential satisfaction. The researchers found a significant relationship between privacy and a resident's sense of community in suburban residential areas. The connection between residential satisfaction and neighborhood satisfaction makes the previously identified determinants important factors when examining the effects of housing privatization policies on residents.

Neighborhood satisfaction research conclusions are inconsistent with regard to sociodemographic factors' influence on perceived neighborhood satisfaction. Lovejoy et al. (2010) argued that only age and income were significant sociodemographic predictors of neighborhood satisfaction, whereas other researchers (see, e.g., Dassopoulos et al., 2012), found their research did not support previous findings that race or income were significant predictors of neighborhood satisfaction. Despite these differences, researchers often test many sociodemographic factors to control for other possible explanations of perceived neighborhood and residential satisfaction. Because determinants of neighborhood satisfaction significantly relate to residential satisfaction, understanding these factors relative to privatized MFH provides the opportunity to improve the understanding of the influence of privatization policies on residential satisfaction.

Previously Identified Determinants of Military Member Residential Satisfaction

In addition to general research on determinants of individual residential satisfaction, researchers have also explored determinants of residential satisfaction in

different populations. Because the military family is a unique population, previous research into military family perceptions of residential satisfaction identified statistically significant elements. Four notable studies pertain to the residential satisfaction of military members and their families. Paulus et al. (1996) found that individual choice in determining one's housing was a significant indicator of residential satisfaction for military members. The desire for choice may be important for military families because, unlike their civilian counterparts who can elect where to live, a military family may be directed to live in a type of housing that is not necessarily consistent with their needs or desires.

Similar to studies of residential choice, Buddin et al. (1999) found that privacy satisfaction is a residential preference for military members electing to live off-base. In addition to residential choice and privacy, research indicates that residential affordability and safety are significant factors in the housing choices made by military members (Bissell et al., 2010; Buddin et al., 1999). As military members residing in privatized housing now pay rent (via their basic allowance for housing) to the privatized property managers, perceptions over the value received for the dollar may influence residential satisfaction. Finally, Parks et al. (2009) found unit "landscaping, office staff and unit quality" were residential satisfaction indicators among junior enlisted in privatized and non-privatized apartment communities (p. 110). However, unlike Bissell et al. (2010), Parks et al. (2009) did not find safety a significant indicator of military member residential satisfaction. These literature variances regarding certain significant determinants of residential satisfaction are worth further exploration.

Examining both general predictors of residential satisfaction and those uncovered by previous research about the unique military family population provided a foundation for measuring the influence of privatization policies on privatized MFH residents. Perceived residential satisfaction offers a unique perspective on the quality of the service from the viewpoint of the end user of privatized MFH.

Previous Research on Residential Satisfaction and Privatized Military Family Housing

A major factor affecting housing privatization initiative implementation was reducing the substandard MFH inventory. Understanding the factors influencing residential satisfaction of military families is one manner of measuring whether the MPHI policies are achieving those goals. MFH resident satisfaction remains an understudied phenomenon. However, after the emergence of privatization policies, researchers have sought to explore the relationship between residential satisfaction and privatized MFH. Parks et al. (2009) sought to determine if there were perceived residential satisfaction differences between junior enlisted personnel residing in privatized MFH and those who did not. Using aggregate level data from a DoD agency administered survey, their research aimed to expand the literature on determinants of residential satisfaction for the military family population. The levels of residential satisfaction for residents living in privatized communities were not higher than those residing in nonprivatized communities. Additionally, the determinants of residential satisfaction for this population were similar to the results of previous research on the satisfaction of the residents of rental properties in the civilian population. Parks et al. found a significant relationship

between landscaping, office staff, and unit quality and residential satisfaction. However, safety, maintenance, and parking were not significant residential satisfaction determinants (pp. 108–110). Based on the results, the authors concluded that DoD's housing privatization policies may not be meeting the needs of the military family population and encouraged further exploration into the effectiveness of privatized housing initiatives using individual level data.

In addition to this peer-reviewed research, the DoD commissioned a study to examine the housing preferences of its military members. Bissell et al. (2010) analyzed the satisfaction of military families and their available housing choices using DoD's annual Status of Forces Survey (SOFS) data from 2007. The researchers found that affordability, security, safety, and neighborhood quality were housing choice determinants for military families (pp. 4-1–4-5). Similar to the civilian population, homeowners were the most satisfied with their housing choices indicating the existence of similarities between the larger civilian population and the military population.

The researchers also compared the responses between residents of privatized MFH and government-managed MFH (Bissell et al., 2010). Their investigation found that there was not a significant difference in the factors leading to housing selection or in the levels of satisfaction with housing options. However, in contrast to Parks et al., the study revealed that residents of privatized MFH had slightly higher levels of satisfaction with the perceived quality and condition of housing than the residents of government-managed MFH (p. 6-2). In addition to these minor differences, the researchers found that residents of privatized and government-managed MFH both had lower satisfaction with housing

affordability. Bissell et al. (2010) noted that this finding might relate to basic allowance for housing increases having a negative influence on the perceived value, or VfM for residents, of MFH when compared to off-base housing. The difference in findings indicates a need for further research to dispel the ambiguities in the overall perceived residential satisfaction of privatized MFH residents and add further depth to the literature regarding privatization policy outcomes.

Studies With Similar Methodologies

Measuring Policy Feedback

The evaluation of policy feedbacks is grounded in historical institutionalism, which explores the context of policies. Using this method, the policy itself becomes the explanatory variable (Skocpol, 2014) and shifts the focus from policy formulation to post-implementation, where policies become inputs in the analytical equation (Pierson, 1993). This approach enables the analysis of policy outcomes and unintended consequences post-implementation.

Policy feedback researchers have employed a variety of approaches to investigate feedback effects. Much of the early research was case study based and provided insight into policy effects but lacked clear causality (Campbell, 2012; Pierson, 1993). Therefore, as the field expanded, researchers incorporated more quantitative and mixed research designs in the study of policy feedbacks.

Several researchers have incorporated mixed methodologies to support the correlation of feedback effects. Researching the influence of social benefit programs on political participation, Soss (as cited in Campbell, 2012) employed multivariate analysis

of national survey data about voter participation. Soss paired interviews and observation with logistic regression and ordinary least squares (OLS) regression analysis to measure the political efficacy of two groups of social benefit recipients (p. 12). Mettler and Welch (2004) explored the influence of GI Bill education policies on political participation using OLS regression to "predict the political participation" of WWII soldiers who participated in the GI bill versus those who did not (p. 504). The researchers conducted qualitative interviews along with the regression analysis to explain the survey results.

In addition to mixed approaches, policy feedback effects have also been measured through purely quantitative research. Soss and Schram (as cited in Campbell, 2012) measured the influence of program design changes on public opinion, using regression analysis to determine if the changes in welfare designs influenced changes in public opinion post implementation. Guo and Ting (2015) studied the influence of social insurance programs in China on voter participation, employing logistic regression to predict voter participation. The authors paired that study with ordinal logistic regression to predict voting priorities by employment sector. Additionally, Gingrich and Watson (2016) conducted a multivariate analysis of social insurance beneficiaries in Great Britain, investigating the effect of privatized job placement policies on voter preferences. Their study applied difference-in-difference regression to measure variances in wellbeing and political support over time. The difference-in-difference design paired with a qualitative component regarding election results. As demonstrated above, policy feedback researchers have expanded the field by using quantitative methodologies to examine the relationships between policies and outcomes. Based on previous policy

feedback research, the use of multivariate analysis was appropriate for this study into the effects of privatization policies on residential satisfaction of MFH residents.

Measuring Residential Satisfaction

Multivariate analysis also has a place in literature measuring residential satisfaction. The nominal and ordinal nature of the residential satisfaction and control variables calls for different forms of regression analysis. Examples of these are found in the literature, illustrating how they are used to aid in controlling for causality, as well as predicting determinants of residential satisfaction.

Lu (1999) compared regression models to ordered logit models (OLM) to measure determinants of residential satisfaction using U.S. Census American Housing Survey data and found that ordered logit models better dealt with the ordinal nature of residential satisfaction variables (p. 282). Wilson and Baldassare (1996) used logistic regression to test the effects of localism, privacy, and urbanization on respondents' overall sense of community on dichotomous dependent variables (p. 35). Balestra and Sultan (2013) used probit regression models to predict the effects of sociodemographic and neighborhood characteristics on housing satisfaction in the European Union. James (2007) used cohort analysis to measure residential satisfaction and account for changes over time. Additionally, James employed cumulative logit models to predict the influence of residential design components on residential satisfaction and ordinary least squares regression to test changes in magnitude over time (p. 477). Dassopoulous et al. (2012) employed ordinary least squares regression analysis to predict neighborhood satisfaction along with binary logistic regression to predict neighborhood quality-of-life. Lovejoy et

al. (2010) explored the relationship between neighborhood characteristics, residential satisfaction, and neighborhood satisfaction using ordered logit models and factor analysis techniques. Similarly, Hur and Nasar (2014) tested the relationship between neighborhood satisfaction and environmental factors using a structural equation model. The structural equation model employed ANOVA regression, factor analysis, covariance analysis, and linear structural equations. Specific to the literature on the residential satisfaction of military families, Paulis et al. (1996) used correlation analysis to test the relationship between housing measures and health and well-being measures. The researchers incorporated multiple regression to assess the impact of environmental quality of residential satisfaction and multivariate regression to compare resident reactions to housing types. Additionally, Parks et al. (2009) measured residential satisfaction of junior enlisted members living in privatized and nonprivatized military housing using ANOVA along with ordinary least squares regression to control for sample variations and community and environmental factors on recommendation levels.

The review of the literature suggests that numerous multivariate analysis techniques have been used to assess determinants of residential satisfaction for the general population, as well as the military family population. As indicated in the preceding paragraphs, the literature supported the use of multivariate analysis to measure residential satisfaction.

Challenges for Studies on Policy Feedback and Residential Satisfaction

The literature on policy feedback and residential satisfaction demonstrates a variety of quantitative measures to assess relationships and determine causality.

However, due to the nature of real-world quasi-experimental studies, most researchers encounter challenges with which they must contend during their research. These challenges include sample population variances, generalizability, operationalizing variables, and causality

Samples. Research into residential satisfaction using non-national survey data can present challenges with oversampling certain groups in the sample population as well as introducing non-response bias (Lovejoy et al., 2010). Additionally, the level of data used (aggregate versus individual) as the basis for the statistical analysis could influence the strength of the study's conclusions (Parks et al., 2009, p. 111).

Generalizability. Similar to samples, studies using non-national survey data or specific policies can introduce challenges for generalizability. The study population may be geographically specific and limit generalizability (Dassopoulous et al., 2012; Hur & Nasar, 2014). Policy feedback studies often focus on the influence of a specific policy on a population, precluding use of the findings beyond that specific policy and its effects or absence of effect on the study population (Guo & Ting, 2015; Mettler & Welch, 2004).

Operationalized variable definitions. The manner used to operationalize variables can also present challenges. Narrow and single measures of a variable can create challenges with measurement (Wilson & Baldassare, 1996). Unclear definitions may also contribute to missed data points in quantitative observation (Hur & Nasar, 2014).

Causality. Models employed to explain relationships may not provide definitive causality. The structural equation modeling used by Hur and Nasar (2014) explained only

44% of the variance, which introduced the potential for spuriousness regarding the influence of perceived environmental features on neighborhood satisfaction. Another challenge to causality is history. Soss and Schram (as cited in Campbell, 2012) explored changes in welfare design using an interrupted time series design, finding that historical events occurring between measurements could have influenced the study's results. Campbell (2012) contended that, to counter challenge, careful consideration of research design and accurate multivariate analyses are vital policy feedback study components. Incorporating qualitative elements in the research design may help confirm and explain the quantitative findings (Mettler & Welch, 2004; Soss, as cited in Campbell, 2012).

Despite the existence of limitations, the researchers discussed above took care to consider these challenges in their conclusions. This effort advanced our knowledge of feedback effects and uncovered key measures of residential satisfaction.

Data Measurement Issues

Before-and-After Designs in the Policy Feedback Literature

Researchers have explored the influence of policies on end users from several approaches. Examples of pre- and post-implementation research include longitudinal designs, such as those employed by Morgan and Campbell (2011), difference-in-difference designs (Gregg, Waldfogel, & Washbrook, 2006), and the simple time-series design using separate samples before and after implementation (Soss & Schram, as cited in Campbell, 2012).

Morgan and Campbell (2011) explored the influence of policy design changes by examining the pre- and post-implementation effects of prescription drug benefits

implemented under the Medicare Modernization Act of 2003 (pp. 168, 170–171). In this case, the researchers employed a longitudinal design surveying the study's respondents repeatedly over three separate periods of time. Employing a difference-in-difference design, Gregg et al. (2006) examined the before-and-after welfare policy reform in the United Kingdom through expenditure data. The researchers created a treatment and control group by dividing welfare recipients into two categories: (a) beneficiaries who received the largest increase in benefits, and (b) recipients who benefited some from the policy changes (p. 732). Both approaches measured the influence of policies before and after the implementation, but such approaches are not always feasible during policy analysis.

When such designs as experimental designs, longitudinal analysis, or the pretest-posttest with control groups are not feasible, researchers can use a repeated cross-sectional design or separate samples pretest posttest design (Campbell & Stanley, 1963; Steel, 2008). The separate samples pretest-posttest design offers a simple interrupted time series design where change can be measured at the aggregate level to explore the before-and-after effects of a policy change or public opinion (Hellevik, 2008). Soss and Schram (as cited in Campbell, 2012) explored the influence of welfare policy design changes on public opinion after implementation of the Temporary Assistance for Needy Families (TANF) program (p. 7). The researchers examined pre- and post-differences in public opinion of welfare policies through public opinion records, which were treated as a simple interrupted time series. Because it was not feasible to employ control groups or conduct a longitudinal analysis, the researchers used separate samples to examine the

influence of policy changes on public opinion of welfare policies. The weaknesses in internal validity in the approach will be discussed in the data analysis plan in Chapter 3. Campbell and Stanley (1963) noted that the approach has merit to aid in understanding the effects of a phenomenon when other designs are not possible.

Addressing Challenges to Measuring Policy Feedback

Researchers experience myriad challenges when designing research in real-world settings. Campbell (2012) suggested policy feedback researchers must plan for causality, traceability, and visibility between the policy and its outcomes. Definitive causality in the repeated cross-sectional survey design is a limitation because identifying and measuring all potential explanations is impossible. The Defense Manpower Data Center (DMDC) sampling design, discussed in detail below, helps to control for variation in the sample members and limit the effects of selection. Mettler and Sorelle (2014) addressed concerns regarding "selection bias" and "endogeneity" by employing advanced statistical methods and modeling to establish a correlation between the policy and feedback effects (p. 173). The repeated cross-sectional design for research into MPHI policies employed an independent samples *t*-test, multinomial regression, and descriptive statistics techniques to establish a statistically significant relationship between the policy and its feedback effects.

In addition to causality, a policy must be visible and traceable. Consideration of the program size, breadth of influence, and length of program benefits provides the "traceability and visibility" of feedback effects to the policy (Campbell, 2012, p. 339; Pierson, 1993). The public beneficiary or those being regulated must recognize the

government's decision-making role in the existence of the program. In the DoD Status of Forces Survey–Active Duty the survey item regarding housing type, respondents differentiated between their living conditions when residing in government-managed MFH, privately managed MFH, and other off-base housing options. This differentiation created a clear relationship between the way housing is provided and their responses to survey items regarding housing and residential satisfaction.

Justification of Variables Selection

The limited scholarly research surrounding MPHI and residential satisfaction of military families points to the need for further examination. Research into policy feedback supported the use of MFH policies, represented by the type of MFH, as the independent variable. Combining this approach with previous research into residential satisfaction laid the foundation for operationalizing key determinants of residential satisfaction as the dependent variable using the two previously administered DoD surveys. Additionally, the literature into residential satisfaction provided the basis for identifying sociodemographic characteristics that may influence residential satisfaction, which allowed me to explore their influence on MFH residents. Moreover, I was able to strengthen the existing literature and fill the gap in understanding how privatization policies for housing influence the residential satisfaction of those directly affected by the policies: military members and their families.

Summary

Exploring post-MPHI policy implementation required a broad lens, including understanding the policy process and role of implementation research and the historical

context behind MPHI policies, as well as recognizing foundational concepts for the implemented PPP policy design. The literature demonstrated a lack of research into the post-implementation phase of PPP policies (Hodge & Greve, 2009) and highlighted the limited scholarly research into the perceived residential satisfaction of the military family population. Building on the need for further research, policy feedback theory guided this study examining MPHI policy outcomes from the perspective of the MFH resident. Using current residential satisfaction literature and what previous research has uncovered about the perceived residential satisfaction of military families, I examined an aspect of MPHI policy outcomes to examine how well the policy is meeting its objective. The research design, methodology, and discussion of threats to validity follow in Chapter 3.

Chapter 3: Research Method

The current study provided an opportunity to fill a gap in the literature pertaining to the post-implementation effects of military family housing (MFH) privatization. The policy feedback theory guiding this study was paired with the literature-based concepts of residential satisfaction. I examined the post-implementation effects of the military privatized housing initiatives (MPHI) policies on the end user's residential satisfaction. The policy feedback literature provided the basis for examining pre- and post-implementation effects on end users. I used a repeated cross-sectional survey design to examine the relationship between the MPHI policy and residential satisfaction using two previously administered DoD surveys. I drew from the surveys' sample subgroups of MFH in the 50 states and the District of Columbia.

In this chapter, I describe the research design, including the variables and methodology. The discussion includes details of the procedures employed by the Defense Manpower Data Center (DMDC) to define the survey population, sample, sampling frame, and sampling strategy, and to administer and execute the two surveys selected for analysis. I also explain how each variable was operationalized. Additionally, I describe the data analysis plan and address threats to validity along with ethical considerations for the study.

Research Question and Hypotheses

The purpose of this study was to examine the relationship between MFH privatization policies and residents' perceived levels of residential satisfaction. To assess this relationship, I examined MFH residential satisfaction pre- and post-privatization. The

independent variable, MFH policies, was represented by the type of MFH and included two groups: MFH residents before and after policy implementation. The dependent variable, perceived residential satisfaction, was measured through satisfaction with residence, neighborhood, quality and condition of residence, privacy, livable space, safety, and affordability. Further, I examined whether there was a statistically significant difference in the influences of branch of service, paygrade/income, marital status, education level, gender, children/dependents, and race on MFH residents. This element of the study provided a better understanding of the influence, if any, of the selected sociodemographic characteristics on the residential satisfaction of MFH residents. The following research questions and hypotheses guided the study:

Research Question 1: How does the level of residential satisfaction expressed by active duty military members residing in MFH differ by the type of MFH policies (government-managed or privately managed MFH)?

H_o1: There is no difference between the levels of residential satisfaction of active duty military respondents living in privately managed MFH and those living in government-managed MFH.

H_a1: Active duty military respondents living in privately managed MFH are significantly more satisfied than those living in government-managed MFH.

Research Question 2: To what extent does residential satisfaction in MFH vary by sociodemographic factors of military residents?

H_o2: Residential satisfaction in MFH residents does not vary by sociodemographic factors of military residents.

H_a2: Residential satisfaction in privatized housing residents varies significantly by sociodemographic factors of military residents.

Research Design and Rationale

I evaluated effects of policy design changes on the MFH program within the DoD. These effects were measured by the MFH residents' satisfaction levels pre- and post-MPHI policy implementation. I employed a repeated cross-sectional design, also referred to as a separate samples pretest-posttest design, to measure before-and-after effects where longitudinal analyses or control groups are not feasible quasi-experimental approaches (see Campbell & Stanley, 1963; Steel, 2008). Secondary analysis of previously collected data was used in hypothesis testing. The sources of the data were two previously administered DMDC surveys of active duty military personnel covering a variety of topics including housing and residential satisfaction survey items. The two surveys were conducted before and after MPHI policy implementation from different samples of the target population. With this repeated cross-sectional design, I measured changes in levels of residential satisfaction to compare residential satisfaction before and after implementation. I then analyzed the sociodemographic factors that may have been associated with residential satisfaction among MFH residents. The survey instruments employed by DMDC in 1999 and 2005 were not identical because the survey structures evolved over time. However, the survey items measuring residential satisfaction and sociodemographic characteristics in each survey were reviewed to ensure alignment between the surveys to enhance validity of the comparison.

Large data sets collected by government agencies provide access to populations not always available to researchers. Secondary analysis also saves time and money on original data collection (Boo & Froelicher, 2013; Dale et al., 2008). However, a researcher must consider constraints when using data collected to answer a different research question. A critical step in secondary data analysis is reviewing available supporting documentation to understand the process and methods used to conduct the original study. Large data sets collected using complex sampling strategies must be considered when conducting a secondary analysis. Understanding the rigor applied, the coding process used, and the treatment of missing data by the original researchers is essential when conducting secondary analysis. Maintaining the confidentiality of survey respondents is critical to data owners and may limit access to microdata. A researcher may have to agree to meet certain data analysis and security conditions established by the data owner to obtain permission to use the data set. The conditions affecting this study, including the permission required to obtain and analyze the data set, are discussed in the following sections.

Defense Manpower Data Center (DMDC) Survey Data

Population

Data from the two DMDC surveys were collected in 1999 and 2005. The target population of the DMDC 1999 Survey of Active Duty Personnel was U.S. Army, U.S. Navy, U.S. Marine Corps, U.S. Air Force, U.S. Coast Guard, and National Guard and Reserve members who had served at least 6 months and were below the rank of flag officer. For the August 2005 Status of Forces–Active Duty survey, the target population

included all active duty members of the U.S. Army, U.S. Navy, U.S. Marine Corps, and U.S. Air Force (excluding National Guard and Reservists) who had served at least 6 months and were below the rank of flag officer. The target population for this study was drawn from the survey population but included only active duty residents of MFH in the U.S. Army, U.S. Navy, U.S. Marine Corps, and U.S. Air Force, excluding members of the U.S. Coast Guard, National Guard, and Reserve forces.

In 1999 and 2005, the military populations were approximately 1.42 million and 1.31 million, respectively (DMDC, 2006; Wright, Williams, & Willis, 2000b). Approximately 65%–70% of military personnel resided in off-base private-sector housing. Approximately 10% were quartered in government-provided bachelor quarters or lodging, and about 25% of the remaining military personnel lived in MFH (Twiss, 2012). Based on these estimates, the approximate average size of the MFH population was 337,500 military families.

DMDC Surveys of Active Duty Personnel

Between 1999 and 2014, the DMDC administered 20 Status of Forces surveys to gauge the attitudes of active duty military members on a wide range of topics. Of the 20 surveys, six measured satisfaction with housing, including two administered before the privatization and four administered after the privatization. Two surveys—1999 and August 2005—were most relevant to the current study. I focused on whether the privatization of MFH influenced the residential satisfaction levels of members residing in MFH by examining the overall satisfaction with residence and the attributes that contribute to residential satisfaction.

Of the surveys administered pre-housing privatization, the 1999 Survey of Active Duty Personnel was the most useful because it included items about satisfaction with MFH and items that addressed attributes contributing to housing satisfaction. Of the post-privatization implementation surveys, the August 2005 survey captured the same attributes of housing satisfaction. Use of the pre- and post-privatization residential satisfaction data available in the 1999 and August 2005 surveys presented an opportunity to understand a major aspect of Congress's and the DoD's decision to privatize MFH: the perceived level of satisfaction with the housing provided to military members and their families.

DMDC Survey Sampling Frame and Sampling Method

The two DMDC surveys were administered to a sample of the U.S Armed Forces active duty personnel. The approaches taken to sample the total active duty military population were similar in both data sets. The sample for the 1999 Survey consisted of the members of Active Duty Personnel in the U.S. Army, U.S. Navy, U.S. Marine Corps, U.S. Air Force, U.S. Coast Guard, and National Guard and Reserve who had served at least 6 months and were below the rank of flag officer (DMDC, 2000). The only difference in the target population in the August 2005 Status of Forces–Active Duty surveys was the exclusion of National Guard and Reserve military personnel in active status and the eligible dates of active duty service. The 1999 Survey of Active Duty Personnel sampling frame included active duty members serving in May 1999 and remaining on active duty through September 1999 (Wright et al., 2000b). The sample of the target population was drawn from the May 1999 Active Duty Military Family and

Reserve Components Common Personnel Data System databases, and eligibility was verified against the Defense Enrollment Eligibility Reporting System database (Wright et al., 2000b). The sampling frame for the August 2005 Status of Forces Survey–Active Duty was drawn 6 months prior to the survey and included only active duty personnel remaining on active duty through August 2005 (DMDC, 2005). The sample of the target population was drawn from the DMDC December 2004 Active-Duty Master Edit File (DMDC, 2005).

Both samples were based on "single stage, nonproportionally stratified random sampling procedures" (DMDC, 2005, p. 9; Wright et al., 2000b, p. 4). DMDC researchers categorized the active duty military population into similar groups, and sample members were randomly selected from each group (DMDC, 2006; Wright et al., 2000b). The 1999 Survey of Active Duty Personnel stratified sample included marital status, branch of service, gender, pay grade, and location (Wright et al., 2000b). The August 2005 Status of Force–Active Duty stratified sample included branch of service, gender, pay grade group, race/ethnicity, duty location, and family status (DMDC, 2005). The number of samples drawn from each group was based on the proportion of the population with small groups containing a higher number of samples to ensure sufficient responses for analysis (DMDC, 2006; Wright et al., 2000b).

DMDC Survey Participant Recruitment and Response Rate

For the 1999 Survey of Active Duty Personnel, the initial sample included 66,040 members and received 33,189 responses, with an observed response rate of 56.2% and an adjusted weighted response rate of approximately 51% (Wright et al., 2000b). The

August 2005 Status of Forces Survey–Active Duty sample consisted of 35,461 members and received 10,406 responses with an adjusted weighted response rate of 35% to correct for nonproportional sampling.

DMDC Survey Administration

1999 Survey of active duty personnel. The 1999 Survey of Active Duty Personnel survey was issued by U.S. mail and administered in stages. First, sample members were mailed an introduction letter. This letter was followed by a questionnaire package with the survey and instructions. Finally, follow-up mailings with letters and questionnaires were sent three times between August 1999 and January 2000 (DMDC, 2000).

The survey instrument designed by DMDC contained seven sections pertaining to military life. The survey instruments were pretested on both officer and enlisted personnel in focus groups from four branches of service by both DMDC and GAO officials (Wright et al., 2000b). The tested survey instruments were revised based on focus group participant feedback and tested again on different focus groups to determine whether the problems had been resolved. Once finalized, the survey instrument was prepared for dissemination in print, and each survey contained a unique lithographed code number that was assigned to the selection sample member. Each completed questionnaire received by mail was scanned to capture raw data that were then converted to a scored data set (Wright et al., 2000b).

August 2005 Status of Forces Survey–Active Duty. The survey was moved to web-based procedures in the August 2005 survey (DMDC, 2005). The survey sample was

initially notified by mail and was then contacted during the survey period of August 19 and 29 September 2005 via e-mail and postal reminders. The survey instrument was designed by DMDC researchers and included 15 topic areas. The web-based survey followed the DMDC standard Status of Forces survey design and sample members logged in with their "unique ticket number" (DMDC, 2005, p. 18). Sample members could navigate the survey using forward and backward arrows while selecting radial buttons to indicate the answer to each survey item. Once completed surveys were submitted through the web-based system, the survey answers were coded using the DMDC officials coding process and documented in five data sets (DMDC, 2005, pp. 12, 22).

Study Sample

I drew the study's sample from the sample members of the two DMDC administered surveys. Steel (2008) noted that repeated cross-sectional survey designs require a good representative sample for each survey administered to control for bias. The stratified random sampling procedures of the target population, discussed above and employed by DMDC researchers, provided a solid basis for secondary analysis of the target active duty military population. The sampling frame for the study included 1999 and August 2005 survey respondents serving on active duty in the U.S. Army, U.S. Navy, U.S. Marine Corps, and U.S. Air Force responding to the survey items "Where is your permanent duty station located?" and "Where do you live at your Permanent Duty Station (PDS)?" (DMDC, 2000, Appendix C, p. 3; 2005, p. A–5). The sampling frame included those sample members indicating the following responses to the above survey items:

- 1999 Survey of Active Duty Personnel. Respondents selecting the following:
  - In one of the 50 states or the District of Columbia; and
  - MFH, on base; or MFH, off base
- August 2005 Status of Forces Survey of Active Duty Personnel: Respondents selecting the following:
  - In one of the 50 states, DC, Puerto Rico, a U.S. territory or possession, and
  - Privatized military housing that you rent on base; or Privatized military housing that you rent off base

The sample population for the study did not contain the same stratification as the active duty military population in the two DMDC surveys when narrowed down to MFH residents (government-managed and privatized) in one of the 50 states and the District of Columbia. However, the large sample sizes of the two original surveys provided enough respondents to allow for analysis of the MFH resident subgroup and associated sociodemographic characteristics.

Power Analysis

Calculating statistically significant findings and identifying real effects from a study's results are essential components of a research design and form the basis for estimating the minimum sample size for a study. The researcher must consider the desired strength of a relationship between the study's variables (effect size), how confident the researcher wishes to be that the results fall within the estimated interval (confidence interval), and the probability that the statistical test will identify meaningful

effects (power) (Ellis, 2010). Ellis (2010) recommended researchers select effect sizes grounded in the literature when designing studies. Previous research measuring residential satisfaction points to effect sizes ranging from medium to large when employing regression analysis (Hur & Nasar, 2014; James, 2007; Lovejoy et al., 2010; Parks et al., 2009).

Considering previous residential satisfaction literature, a medium effect size appeared reasonable for the study. The mean effect size for the study was estimated to be medium for determining differences between groups (d = .50, α = .05) and medium for measuring associations (R^2= .30, α = .05). A commonly accepted alpha level of .05 in the social sciences was selected for this study (Cohen, 1992). Establishing the study's significance level of .05 results in an alpha level of 5% to 95%. The power for the study was estimated at .95 (β = .05) and the confidence interval is 95%. Although the sample sizes were predetermined by the two DMDC administered surveys, a priori G*Power analysis was conducted to estimate a minimum sample size (Faul, Erdfelder, Lang, & Buchner, 2007). The minimum sample size for conducting regression analysis and measuring differences between the two groups ranged from 146 to 210. Estimating that the MFH population is approximately 25% of the total population, the sample sizes of the two DMDC administered surveys should provide enough sample members to meet or exceed the minimum samples sizes calculated using G*Power.

Permission Process and Data Access

Access to the data sets for the study required coordination and approval from the data owner, DMDC, Research Surveys and Statistics Center. Sponsorship from a DoD

policy office was required to request permission to use the DMDC owned microdata. Based on review of the nature of the study and sponsorship, DMDC agreed to allow the use of the required secure microdata.

DMDC limits the release of its nonpublic microdata to protect respondent privacy and requires approved researchers to operate in a secure environment. The secure environment established by DMDC, Person-Event Data Environment, protects the sensitive data and prevents data analysis outside the Person-Event Data Environment system (DMDC, 2016). Additionally, DMDC policies require review and approval from the Research Surveys and Statistics Center prior to release to ensure respondent privacy and anonymity are protected.

Variable Operationalization

The following section describes how the variables were operationalized to measure residential satisfaction of MFH residents.

Independent Variable

The independent variable, MFH housing policies, represented by the type of military housing, was broken into two groups: government-managed MFH and privately managed MFH. Housing type was operationalized through a sample member's response pertaining to his or her location and type of housing. Responses to "Where is your permanent duty station located?" and "Where do you live at your Permanent Duty Station (PDS)?" identified those military personnel residing in either government-managed or privately managed MFH. The first group in the independent variable included respondents to the 1999 Survey of Active Duty Personnel residing in government-

managed MFH. Members of the first group were identified by a respondent's selection of "In one of the 50 states or the District of Columbia;" "Military Family Housing, on base; or Military Family Housing, off base." The second group included respondents to the August 2005 Status of Forces Survey–Active Duty residing in privatized military housing. I identified the members of the second group through a respondent's selection of "In one of the 50 states, DC, Puerto Rico, a U.S. territory or possession" and "Privatized military housing that you rent on base; or Privatized military housing that you rent off base." The categorical variables were coded "1" if both the location and type of housing selected match the survey items identified above or "0" if one or both responses are not selected.

Dependent Variable

The dependent variable, residential satisfaction, was measured by several questions indicating the satisfaction level about residence, neighborhood, quality and condition of residence, privacy, livable space, safety, and cost/affordability. Responses to these questions were measured on a 5-point Likert scale ranging from 1 (*very dissatisfied)* to *5 (very satisfied)*. The answers on the ordinal scale were added into a composite variable, resulting in a discrete/quantitative measure. Survey respondents selecting "Does not apply" or "Not applicable" were treated as missing data.

Sociodemographic Predictors

The following sociodemographic variables were used as predictor variables and were defined in accordance with the two DMDC administered surveys (DMDC, 2000, 2006):

- *branch of service:* USAF, Army, Navy, Marine Corps;
- *age:* chronological years;
- *gender:* male or female;
- *pay grade group:* rank/individual military income level of respondent;
- *marital status:* married or not married;
- *education level:* 11th grade or less; 12 years of school, no diploma, high school graduate or the equivalent (i.e., GED); some college credit, but less than one year; 1 or more years; associate's degree; bachelor's degree; master's, doctoral, or professional school degree;
- *children/dependents:* children or dependents in household;
- *race:* White or non-White.

Data Analysis Plan

I employed the data analysis process in two steps. First, the data was screened and cleaned by checking for data coding errors and missing data, as well as recoding data as required for consistency. During this process, I reviewed the descriptive statistics that summarized the results of the variables of interest (Trochim, 2006a). Second, multivariate analysis was used to test the differences between groups and measure associations.

Both surveys measure the same items related to residential satisfaction through five categories in a Likert response format (Carifio & Perla, 2007). According to Carifio and Perla (2007), survey items constructed using a Likert response format of at least five points, or preferably seven, should be paired with composite scale items, preferably four to eight items, to evaluate a phenomenon at the macrolevel using parametric analysis

techniques. The two surveys are not identical in all questions but provide similar measures of residential satisfaction before and after privatization. The 1999 and 2005 surveys contain seven survey items pertaining to housing and residential satisfaction, all items were reviewed and validated to ensure alignment for the comparison. Percentage ratings at two different time periods were compared, one pre- and one post-implementation, to improve the understanding of the relationship between MFH polices and levels of residential satisfaction.

All analysis was accomplished within the secure Person-Event Data Environment database provided by the DMDC and was analyzed with SPSS (DMDC Defense Research Surveys and Statistics Center [RSSC], 2016).

Addressing Sampling Design Effects

DMDC researchers employed single stage nonproportional stratified random sampling procedures for both surveys. Complex sampling strategies like these utilize oversampling of specific groups in the study's population to improve the probability of adequate responses to apply statistical analysis techniques (Thomas, Heck, & Bauer, 2005, pp. 54–55). Applying these complex sampling strategies may distort the representativeness of the sample, and the process of cluster sampling can increase homogeneity within the clusters and bias estimated population variances (Thomas et al., 2005, pp. 56, 62). To counter the effects of the sampling strategies employed by large-scale surveys, Thomas et al. (2005) recommended the researcher identify this as a limitation of the data and, when able, apply corrective tools to counter the effects. The tools include applying statistical modeling, such as the complex samples function

available in SPSS, to add relative weights into the statistical analysis to address the representativeness of the sample and the influence design effects by estimating standard errors (Thomas et al., 2005). Based on the literature, I considered weighing the two data sets to address selection probability because of the stratification of the samples and nonresponse bias when conducting analysis in SPSS.

Descriptive Analysis and Transforming the Data

In the first stage of analysis, the data was cleaned and checked to verify the values fell within the survey parameters and I identified any inconsistencies or skewed values (Wilson, 2009). In the case of this study, the values for Likert-response categories ranged from 1–5. Any response outside that range indicated that data was incorrectly entered. Similarly, values for categorical and ordinal type questions were validated against their specific ranges (e.g., 0, 1; 1, 2, 3, . . . 16). To accomplish this, I reviewed the descriptive statistics outputs and associated histograms to identify any data that were incorrectly coded or were missing. Survey respondents answering fewer than 50% of the survey items related to residential satisfaction were to be excluded.

The analysis included summary statistics of the key data distribution. I measured the frequency distributions of sociodemographic characteristics to improve my understanding of the stratification of MFH residents in the narrowed sample populations. The mode and median were calculated to measure the most frequently occurring responses and determine the center of the distribution of residential satisfaction survey items. I also assessed the normality of the distribution by reviewing the skew and kurtosis data outputs from SPSS (Trochim, 2006a; Wilson, 2009).

Reliability Analysis

After transforming the data, I analyzed the internal consistency of the scale constructed to measure residential satisfaction to verify that the survey items were measuring the same phenomenon (Laerd, 2013a). Using SPSS to calculate Cronbach's alpha, I looked for Cronbach's alpha levels greater than .7 (> .7) indicating a "high level of internal consistency" (Laerd, 2013a, p. 6). Lower levels of internal consistency may indicate that some of the survey items do not contribute to the scale and may need to be removed. To identify specific survey items, I reviewed Spearman's Correlation to determine if there was a statistically significant correlation ($p < .05$) between survey items (Laerd, 2013c, pp. 3–4). Taking this step allowed me to identify any survey items that did not appear to be measuring the same construct. Survey items determined to be inconsistent were considered for removal from the analysis and the impact and influence on the residential satisfaction scale was assessed and reported.

Inferential Statistics

Using correlational and inferential statistics to investigate the hypothesis, in the final stage of data analysis I examined the relationship between MFH privatization policies and levels of residential satisfaction.

Difference between means. Researchers use the independent-samples *t*-test to determine if there is a statistically significant difference in the average score between two independent groups (Laerd, 2013b). The test does not specify the strength of the mean difference but does demonstrate if there is significant difference between the group means. I conducted an independent samples *t*-test to determine if there was a difference

in the levels of residential satisfaction between the two groups of MFH residents, those residing in MFH in 1999 and those residing in MFH in 2005 after the implementation of the privatized housing initiatives at a 95% confidence level. A *p*-value ($p < .05$) indicated a statistically significant difference between the groups.

Prior to conducting an independent samples *t*-test, six assumptions must be met. If the data do not initially meet the assumptions, steps must be taken to correct the data using tools within SPSS. The first three assumptions relate to research design: the dependent variable must be continuous, the independent variable must be categorical, and the observations (before and after) must be independent (Laerd, 2013b). The ordinal dependent variable, residential satisfaction, was transformed to a numerical scale ranging from 1–5. Correspondingly, the categorical independent variable, type of MFH, were delineated by those residing in MFH before and after the implementation of privatization. To establish the independence of observations on each survey, the survey methodology employed by DMDC included the selection of a random cross-section of the military population. Individual respondents were provided with individual codes and could submit only one response to the survey. Each survey was administered at different year intervals with respondents specifying the type of housing they resided in at the time of each survey ensuring there was no relationship between the individual observations.

Finally, characteristics of the data were tested for significant outliers, normally distributed data, and homogeneity of variance (Laerd, 2013b). Outliers were assessed using boxplots to identify any data points "more than 1.5 box-lengths" outside of the boundary of the box (Laerd, 2013b, p. 9). Because of the anticipated large sample size *(N*

> 50), the data was visually inspected using the normal Q-Q plot instead of the Shapiro-Wilks test for normality (Laerd 2013a). Additionally, I assessed the homogeneity of variance using Levine's test for equality of variance to evaluate whether the significance level was greater than .05 (Laerd 2013a).

Multiple regression. I employed multiple regression analysis on both Status of Forces Survey–Active Duty data sets. This examined the influence of sociodemographic characteristics identified in the literature as potential influences of residential satisfaction on MFH residents. Like the independent-samples *t*-test, multiple regression requires the dependent variable to be measured at the continuous level. Therefore, residential satisfaction, which was measured on an ordinal scale, was transformed and treated as continuous variable (i.e., values 1–5). All sociodemographic variables were treated as nominal variables and transformed into numeric values (i.e., 0, 1). As discussed above, ordinal sociodemographic variables with multiple categories were transformed into numerals (i.e., 1, 2, 3, . . . 16), as required.

In addition to the assumptions previously discussed, multiple regression analysis requires an independence of observations (Laerd, 2013d). To ensure the data met the requirement to have no correlation between residuals, the results of the Durbin-Watson test was checked to verify the data range from 1 to 4 and have an approximate value of 2 (Laerd, 2013d, p. 9). There must also be a linear relationship between the independent variables and dependent variables. The linear relationship was assessed by interpreting a scatterplot created in SPSS to determine if any of the predictor variables and dependent variables do not follow a straight line (Laerd, 2013d, p. 10). Multiple regression also

requires homogeneity of variance. The scatterplot created to assess linearity was reviewed to assess homoscedasticity and determine if the points are approximately even (Laerd, 2013d, p. 11).

Additionally, the data must be checked for multicollinearity to ensure two or more independent variables are not highly correlated. To accomplish this, correlation coefficients using Pearson's *R* and tolerance/VIF values in the Coefficients table were assessed. Correlations must be less than 0.7 to indicate that the predictors are not correlated (Laerd, 2013, p. 12). Along with *R* values greater than 0.7, any tolerance levels below 0.1 and VIF levels greater than 10 indicate that the predictor variables are correlated and may not meet the assumption of multicollinearity (Field, 2013). Casewise diagnostics were also reviewed to verify there were no significant outliers with standardized residuals greater than +/- 3 (Laerd, 2013d, p. 13). Finally, the data set was checked for normal distribution. Review of a histogram plotted by SPSS with a superimposed normal curve when linear regression plots is selected assisted with the determination of normality. An approximate bell-shaped curve in the data will indicate the data are approximately normal and meet the assumption of normality.

Once the assumptions were met or the data were corrected to meet the assumptions, the results of the multiple regression analysis described in the model summary and ANOVA tables produced in SPSS were reviewed to help explore whether residential satisfaction of MFH residents is explained by sociodemographic variables (Laerd, 2013d). First, the overall model fit was assessed using total variance explained (adjusted R^2) to determine if the addition of the sociodemographic variables in the

regression model explained the variability of the dependent variable (residential satisfaction). Next, I examined the ANOVA table to determine if there are any statistically significant ($p < .05$) sociodemographic variables. If the results were statistically significant, the null hypothesis was rejected, and the coefficients of the regression model were interpreted. Finally, using the coefficients table created in SPSS, the model's slope coefficients were examined to assess whether the sociodemographic variables were statistically significant and a linear relationship existed ($p < .05$), and, if so, how much change in the dependent variable, residential satisfaction, each variable represents. For the dichotomous and polytomous independent variables, the slope coefficient represented the distance between the levels to aid in understanding if there is a difference between the residential satisfaction in certain categories of sociodemographic variables.

Validity

Assessing a study's research design for both internal and external validity is paramount in controlling for bias. External validity is key to understanding the generalizability of the results. In the case of this repeated cross-sectional survey design, the approach thoroughly addressed concerns regarding external validity. The design controlled for the interaction of testing because I assume a sample member responded to the cross-sectional survey only one time (Campbell & Stanley, 1963). Through interaction of selection, where generalizability is limited to the narrow characteristics of the study's participants, the study drew on surveys administered to the larger active-duty military population and is limited to generalizing its results to the active duty MFH

population. Similarly, the study's design also addressed the potential for reactive arrangements where a study's generalizability is limited by setting. The study controls for this because, like interaction of selection, generalizability is limited to the active-duty MFH population. Because each cross-sectional survey was administered only once, the influence of multiple treatments on survey respondents is controlled in the study design.

In addition to addressing external validity, a study must also address threats to internal validity. The repeated cross-sectional survey accounts for several threats to internal validity. The most challenging threat, and one for which there are no controls, is the influence of history. Events occurring between the periods of time the surveys were administered must be considered when drawing conclusions but cannot be controlled (Campbell & Stanley, 1963). This is a limitation of the study and, between 1999 and 2005, many events occurred that directly affected the all-volunteer U.S. military population. This limitation must be accepted and factored when reporting the results.

In addition to history, Campbell and Stanley (1963) identified several other threats to internal validity that I considered in the research design. Maturation, where time and aging can influence a survey's results, was controlled in the stratified simple random sampling techniques by drawing separate but similar samples from the populations for both surveys. Concerns over the influence of testing were addressed by the sampling strategy. Each survey allowed only one response per sample member and, as previously discussed, there was a low probability that the same individuals were selected as sample members on more than one survey or would remember the survey items from previous survey responses due to the extended periods between surveys. The

threat of instrumentation bias by survey administrators/interviewers is mitigated by use of self-administered mail or web-based surveys.

Additionally, the sampling strategy addressed concerns of regression bias, where sample members are extremes within the population; selection bias, where sample member characteristics can prejudice survey responses; and mortality, where a separate, single stage stratified simple random sample was drawn to address the possibility of population differences (Campbell & Stanley, 1963). The potential bias created by the interaction of selection and maturation was also mitigated through the sampling methodology employed by DMDC. In this study, I considered content validity in two ways. First, face validity was addressed by the review of the survey items for clarity and ambiguity (Smith et al., 2011). Residential satisfaction and sociodemographic survey items reflected face validity as they are clearly stated and not ambiguous. Second, operationalizing residential satisfaction involved incorporating key determinants identified in the literature as elements of neighborhood and housing satisfaction and matching them to survey items available in the data sets. The composite measure established using the available data sets may not comprise a complete definition of residential satisfaction (Pollack, 1999). Care was taken to account for as many determinants of residential satisfaction identified in the literature as possible. However, the possibility remains that some aspects of residential satisfaction may not be available in selected data sets. Thus, consideration of this limitation was given when reporting the study's results.

A final aspect of designing the research included consideration of statistical conclusion validity. In quantitative studies, the researcher must ensure the study uses sufficient statistical power and does not violate assumptions (Creswell, 2009). In this study, I established a power level of .95 to ensure sufficient power exists to identify real effects. I also set the study's significance of $\alpha = .05$ to establish the strength of the relationship between variables within 95%.

Ethical Considerations

Scholars conducting secondary analysis have important researcher conduct considerations when planning and executing studies to ensure all research is completed in an ethical manner. Preserving the confidentiality and anonymity of respondents and ensuring secure data storage are vital considerations when conducting secondary research. The confidential data sets supporting the study were anonymous and stored in a secure data environment to protect the integrity of the data. The confidential data sets were maintained in a secure database, the DMDC Person-Event Data Environment, which I used to conduct the statistical analysis (DMDC, 2016). However, the database prohibits printing or externally saving the data or analysis without official DMDC Defense Research Surveys and Statistics Center review. Reviews by Defense Research Surveys and Statistics Center personnel were conducted prior to the release of the data analysis results to ensure respondent confidentiality was maintained.

Researchers must also ensure the data are used responsibly. Researchers should understand, as thoroughly as possible, the methodologies used to employ the original surveys, including reviews of all available data on survey methodology (Dale et al.,

2008). The codebooks and statistical methodology reports for the 1999 Survey of Active Duty Members and August 2005 Status of Forces Survey–Active Duty were publicly available. They served as the basis for understanding the processes used to administer, execute, and weigh responses to the surveys (DMDC, 2000, 2005, 2006; Wright et al., 2000a). The tabulated results for both surveys were available via the DMDC secure website (DMDC, 2000, 2005, 2006).

Another important responsible data use consideration was accounting for any complex sampling processes employed by the survey originators (Dale et al., 2008). Both surveys employed single-stage nonproportional stratified simple random sample design (DMDC, 2005; Wright et al., 2000b). Therefore, I planned to consider the inclusion of weights to address selection probability and nonresponses, or address any limitations created, if there were instances where weighing responses was not possible.

The honest reporting of the data analysis results was another important ethical consideration. Presenting unbiased results from this study's data analysis offers DoD policy makers a glimpse into MFH privatization program implementation from the end user perspective. Findings may offer opportunities to apply lessons to other privatization efforts, as well as encourage organizational learning with respect to MFH privatization efforts within the DoD.

Finally, receiving approval to use data and proceed with research was an essential ethical consideration in secondary data analysis. At DMDC's request, I secured a DoD policy office sponsor who granted permission to support my limited access to its secure data set. Additionally, at the request of the Defense Research Surveys and Statistics

Center Disclosure Review Board, I obtained an official legal opinion to ensure no conflict of interest existed between my professional role as the USAF employee and my private role as a student. I also obtained Walden University institutional review board (IRB) approval before analyzing the data sets provided by DMDC.

Summary

In this chapter, I described the research approach as one grounded in the literature of two fields of academic study, policy feedback and residential satisfaction. Using a quantitative, nonexperimental repeated cross-sectional survey design, I examined the relationship between privatization policies for MFH and levels of residential satisfaction. I also analyzed the influence of sociodemographic characteristics on privatized MFH residents post implementation, thereby adding to the residential satisfaction literature on this little researched population.

I provided a summary of the two original DMDC cross-sectional survey designs, including the study populations, sampling frames, survey administration, and data collection processes to lay a foundation for the study. The chapter also included a detailed description of the study's population, sampling frame, and sample, as well as discussing the operationalization of the study's variables. I also outlined how I planned to conduct the secondary analysis of the two DMDC data sets in the data analysis plan. Using an independent-samples *t* test to explore differences between the two groups, along with multivariate multiple regression and descriptive statistics, I planned to study the relationship between privatization policies and levels of residential satisfaction while simultaneously exploring the influence of sociodemographic characteristics on the levels

of residential satisfaction among MFH residents. In this chapter I also addressed considerations regarding the limitations of my study, the acceptance and mitigation of threats to validity, and ethical considerations when conducting this secondary analysis. In Chapter 4, I discuss how the data were collected, screened, and cleaned, as well as the results of this study.

Chapter 4: Results

To more fully understand the post-implementation effects of policy changes on the end user, I examined the relationship between residential satisfaction and the shift in MFH policies from government-managed to privately managed MFH programs. I tested each hypothesis associated with the research questions. An independent samples *t* test was used to determine whether there was a statistically significant difference between the mean levels of overall residential satisfaction of active duty military members residing in MFH, by the type of MFH policy (government-managed or privately managed MFH). The following hypotheses were tested:

H_o1: There is no difference between levels of residential satisfaction of active duty military respondents living in privately managed MFH and those living in government-managed MFH.

H_a1: Active duty military respondents living in privately managed MFH are significantly more satisfied than those living in government-managed MFH.

I also tested the relationship between overall residential satisfaction of government-managed and privately managed MFH residents and sociodemographic characteristics:

H_o2: Residential satisfaction in MFH residents does not vary by sociodemographic factors of military residents.

H_a2: Residential satisfaction in privatized housing residents varies significantly by sociodemographic factors of military residents.

A summary of the variables by research question is presented in Table A1. In Chapter 4, I describe how the data were collected, screened, and cleaned, as well as the results of the study.

Data Collection

Data collection began after I obtained IRB approval from both the data owner, DMDC Office of People Analytics, and the Walden University IRB (Approval Number 08-21-17-0419477). The DMDC Office of People Analytics gave me the requested data sets for the 1999 Survey of Active Duty Personnel and the August 2005 Status of Forces Survey in two separate SAS files via the secure Person-Event Data Environment. I then transferred the two data sets into SPSS to enable my review and analysis. My initial review revealed that the data sets contained all variables, including the self-reported survey results and constructed variables for the complete surveys. The complete data set for the 1999 Survey of Active Duty Personnel contained 66,040 cases with 33,189 usable responses, and the August 2005 Status of Forces–Active Duty survey contained 35,461 cases with 10,406 usable responses prior to narrowing the sample to the population of interest (DMDC, 2005; Wright et al., 2000b).

Adjustments to the Data Analysis Plan

Several items described in the original data analysis plan were adapted based on receipt and analysis of the data sets. First, to align the two data sets, I expanded the sample population of MFH residents to include military families residing in the U.S. territories or possessions. Revising the sample population was necessary because analysis

of the data sets indicated a difference between the way duty location was assessed on the two DMDC surveys.

To address sampling design effects in complex sampling strategies like the processes employed by DMDC in the two surveys, researchers often apply a weight function to prevent potential distortion of the representativeness of the sample (Dale et al., 2008). After the survey respondents were narrowed to the population on interest, I revised the plan to apply weights to the sample population. Analysis of this study's samples indicated the population of interest did not constitute a representative sample of the overall survey population or the overall active duty military population. Rather, the two groups represented the area of interest: residents of a specific type of housing living in the 50 states, the District of Columbia, and U.S. territories. Once narrowed to these criteria, the sample population represented the MFH population and not the overall active duty military population. I analyzed the sociodemographic characteristics during data screening and found only small variations between the two sample populations. Therefore, all cases of interest were included in the analysis without the addition of proportional weighting.

Third, I adjusted the plan for the handling of missing data. After reviewing and analyzing missing data in both the 1999 and 2005 data sets, I decided to use a listwise deletion for missing cases in SPSS. Researchers employ a listwise deletion of cases, which excludes cases that have a variable with a missing value, from the analysis in instances when it is considered appropriate. Listwise deletion is used when the missing data appear randomly and in less than 5% to 10% of the cases (Field, 2013; Langkamp,

Lehman, & Lemeshow, 2010; Rubin, 1976). Additionally, data set review revealed that the covariate age was not included in both surveys, so the variable was removed from the executed analysis.

Screening and Cleaning the Data

The complete data sets were culled to extract the survey items required to support the study, including both self-reported variables and constructed variables available in the data set files provided by DMDC. The self-reported variables were those survey item responses completed by the service member (DMDC, 2005; Wright et al., 2000b). The DMDC-constructed variables combined self-reported responses with DoD records to correct for any missing values and consolidate categories to protect respondent identities or to merge responses into more manageable categories for analysis.

To build the initial two data sets, I marked all self-reported and constructed variables of interest with an *A* and moved them to the top of the SPSS variable view. Once all variables of interest were identified, I deleted all other variables from each data set. Next, I compared the frequencies for each variable in both data sets, via SPSS outputs, with the respective codebook frequencies published in Appendix G of the DMDC codebook and validated the frequencies to ensure there were no differences in total cases (see DMDC, 2005; Wright et al., 2000b). The original value labels did not transfer during the SAS-to-SPSS conversion, so I added them manually during this stage.

Additionally, I reviewed the self-reported and constructed variables for differences. In instances in which the imputed data provided a more complete record of the sociodemographic characteristics of survey respondents, I used the imputed or

constructed variable. However, when the constructed variable did not allow for an equal comparison of the two data sets, I selected the self-reported variable for analysis. A detailed summary of the variables used for analysis is located in Table A2.

Data Transformation

The data were transformed to create comparable sets of data for the statistical analysis. The data transformation process began by removing any variables initially isolated for review in the 1999 and August 2005 data sets that would not be used for analysis. A survey year variable was added to each data set, with 1999 being coded as 0 and 2005 being coded as 1. Transformation of the 1999 data set included reverse coding the variables pertaining to residential satisfaction to match the 2005 data set (M9909A-F and M9939). The recoding changed the value for *very dissatisfied* from 5 to 1 and *very satisfied* from 1 to 5. Additionally, all dichotomous variables were recoded as 0 and 1, including marital status (XMIMPM), gender (XMIMPX), and children or dependents (XM9958). In the branch of service variable (XMIMPS), the Coast Guard members of the 1999 data set were recoded as missing 999 to remove those respondents from the analysis. Similarly, the 2005 data set was transformed to correct any differences between the two data sets. First, level of education (SRED1) was recoded to match the 1999 data set. Additionally, to enable an equivalent analysis of ethnicity and race, I recoded the 2005 data set to five categories combining the remaining non-Hispanic races into one value. The 2005 data set's dichotomous variables were also recoded to 0 and 1 including marital status (XMARST), gender (XSEX), and dependents (DEPDNTS).

Once the data transformation process was completed, I cross-checked each variable value and validated it using the codebook frequencies published in Appendix G of the DMDC codebook to ensure the transformation did not affect the total number of cases (see DMDC, 2005; Wright et al., 2000b). Upon completion of the validation, I narrowed the survey sample to the cases of interest using the Select Cases function in SPSS to isolate survey respondents with duty locations in the 50 states, District of Columbia, and U.S. territories, along with those living in MFH in 1999 and those living in privatized MFH in 2005. Those cases were then saved to a separate data file for each survey year for review and analysis. When possible, I ran frequencies using the SPSS descriptive statistics function and validated them against the codebook frequencies published in Appendix G of the DMDC codebook (see DMDC, 2005; Wright et al., 2000b).

Before the extracted samples could be merged into one data file, two additional data transformations were required. I recoded Value 2 in variable duty location (XDULOC) as Value 1 to match the coding of this variable in the 2005 data set. Additionally, there was a conflict in the value labels between the two data sets pertaining to type of housing. I transformed all 1999 data set MFH values into one value by merging the responses for “on-base” and “off-base” into one value recoded as 4. The 2005 data set also required transformation of the privatized MFH responses for “on-base” and “off-base” into one value, 6. Next, I merged the 1999 data set into the 2005 data set using the SPSS data function to add cases. The transfer was then validated against the premerge individual data sets to ensure all values transferred correctly. Additionally,

transformations for paygrade (XGRADE), race (XRETH), and branch of service (SRVC1) were conducted after the files were merged to ensure cases could be properly validated against Appendix G of the DMDC codebook (see DMDC, 2005; Wright et al., 2000b).

Transforming Paygrade Groups, Postmerge

After validating the paygrade group as individual ranks, I transformed the paygrade variable into five groups. The junior enlisted ranks E–1 through E–4 were grouped into one group labeled 1. E–5 through E–9, representing Noncommissioned Officers, were transformed into the second group, labeled 2. The Warrant Officers W–1 through W–5 were grouped together into one group labeled 3. The junior officers, O–1 through O–3, were grouped into one group labeled 4, and the field grade officers, O–4 through O–6, were grouped into a group labeled 5.

Dummy Coding Race and Service

Next, I dummy coded the two nominal variables with more than one category: race and branch of service. To ensure consistency between the two data sets, I selected the category with the largest frequency in the 1999 data set as the baseline category for each variable and did not create a new variable for that category (see Field, 2013). Additionally, for each new variable, I transformed all primary categories into a value of 1 and all other categories into a value of 0. To address the five categories of race and ethnicity, I created a new variable for Hispanic, non-Hispanic Black, non-Hispanic all other, and non-Hispanic selecting more than one race. For race, I selected non-Hispanic White as the baseline. Finally, branch of service was also broken into individual

variables: Navy, Marine Corps, and Air Force. The Army had the largest frequency and was selected as the baseline for this variable. After each set of dummy variables was created, the frequencies were cross-checked against the frequencies from the two data sets prior to transformation to prevent dummy coding errors.

Missing Data

The 302 U.S. Coast Guard cases, previously transformed into values equal to 999 to be treated as missing data, were removed from the 1999 survey year because those members were not included in the study. After the data sets were successfully merged and validated via the SPSS frequency tables, I identified the missing data and transformed them into standardized missing values: -999 for blanks and -888 for 60, which described *does not apply* to the response. The recoded values were validated by comparing the frequencies before and after the transformation.

Additionally, I conducted an inspection of the missing values patterns for all cases using the SPSS. The analysis by survey year revealed that the frequency of missing residential satisfaction scale items was 2.2% of the 1999 data set, and 1% of scale items were missing for the 2005 data set. The missing residential satisfaction scale items totaled 4.2% of the 1999 and 2005 cases.

Descriptive Statistics & Sociodemographic Characteristics

The next step was to analyze the sociodemographic mix of the cases by survey year. Of the useable responses in the 1999 survey (33,189) and 2005 survey (10,406), 5,302 and 311 cases, respectively, were used in this study. Descriptive statistics were run

using SPSS to review the frequencies and percentages for the sociodemographic variables.

Paygrade. Paygrade was a constructed variable based on official DoD records for both survey years. When compared at the individual paygrade level, the difference between the two survey years did not exceed 8.7%, indicating that the two samples did not vary significantly in paygrade composition.

Marital status. Marital status was a constructed variable. The percent difference between the survey groups for nonmarried members and married members was 7.2%, indicating no substantial difference between the marital status of the two samples.

Education. Education was a self-reported variable for both survey years. There was one missing case reported in this category for the 1999 survey year. When compared at the individual education category level, the differences between the two survey years did not exceed 6.8%, indicating the samples did not vary greatly.

Gender. Gender was a constructed variable for both survey years. The percent difference between the two sample years was 5.6% for both males and females.

Children or dependents. The children or dependents variable was self-reported variable for both survey years. The percent differences between the two sample years for those members without children or dependents was 8.1%, and for those members with children or dependents it was 7.8%. Nineteen cases were reported as missing in the 1999 sample.

Ethnicity/race. The variable ethnicity/race was constructed to merge the respondents into streamlined reportable categories by the data owner. A comparison of

the individual ethnicity/race categories indicated the largest difference was in the non-Hispanic White population, with a decrease of 9.1%, followed by an increase in Hispanic members by 4.8% in 2005. Overall, the small percentage difference indicated there was no significant change in ethnicity/race over time. One case was missing for ethnicity/race.

Branch of service. The branch of service variable was a constructed variable. At the individual branch of service level, the largest difference was in U.S. Air Force members with 8.6% fewer members in 2005, followed by 7.3% fewer U.S. Army members than in 1999. The remaining branches showed an increase in the percentage respondents in the 2005 sample with the U.S. Navy reporting 8.5% more members and the U.S. Marine Corps reporting 7.5% more respondents than in 1999.

Table 1 below presents the results of the analysis of sociodemographic characteristics of the two data sets.

Table 1

Sociodemographic Characteristics of the 1999 and 2005 Survey Samples

	Survey sample	
	Year 1999 (N = 5,302)	Year 2005 (N = 311)
Demographic variable	%	%
Paygrade		
Junior enlisted	13	23
Non-commissioned officer	41.7	41
Warrant officer	7.9	6
Junior officer	17.7	16
Senior officer	20.1	15
Sex		
Male	87.9	82
Female	12.1	17.7
Marital status		
Married	94	86.8
Not married	6	13.2
Children/dependents		
Yes	81.8	74
No	17.9	26
Education		
High school or equivalent	11.4	15.4
Some college, but less than 1 year	13.7	18.6
1 or more years, no degree	20.3	22.8
Associate degree	10.9	6.4
Bachelor's degree	22.1	21.9
Master's degree, PhD, JD, etc.	22.6	14.8
Race/Ethnicity		
Hispanic	8.1	12.9
Non-Hispanic, White	70.5	61.4
Non-Hispanic, Black	13.8	14.5
Non-Hispanic, all other	5.7	5.8
Non-Hispanic, more than one race	2	5.5
Branch of Service		
U.S. Army	38.8	31.5
U.S. Navy	16.3	24.8
U.S. Marine Corps	17.3	24.8
U.S. Air Force	27.6	19

Sociodemographic sample analysis. The sample members were selected based on respondent answers to two survey items pertaining to duty location and housing type. Analysis of the two samples of the populations of interest indicated no striking difference in the sociodemographic mix of the two sample populations, because all sociodemographic variations were less than 10%. The sociodemographic composition showed no major shift in demographic makeup between the two survey years and was considered representative of the population of interest: the residents of government-managed and privately managed MFH.

Residential Satisfaction Scale and Reliability Analysis

The overall residential satisfaction scale comprised seven survey items pertaining to housing and residential satisfaction. The survey items addressed satisfaction with affordability (M9909A, SATHSGA), quality and condition of the residence (M9909B, SATHSGB), the amount of living space (M9909C, SATHSGC), privacy (M9909C, SATHSGD), quality of the neighborhood (M9909E, SATHSGE), safety of the area (M9909F, SATHSGF), and the overall housing satisfaction (M9939F, SATHSGM). Respondents were asked to identify their level of satisfaction by scoring each housing related survey item from 1 to 5 (reverse coding was required as discussed in the data screening and cleaning section above). The overall residential satisfaction composite scores ranged from 7 to 35 and indicated a median score of 25. Additionally, the analysis revealed there were 237 cases of missing data which were subsequently removed from consideration using listwise deletion in SPSS.

Next, I validated that the seven survey items forming the Residential Satisfaction scale were measuring the same construct. The residential satisfaction scale had a high level of internal consistency, as determined by Cronbach's alpha of 0.856. I also conducted a Spearman's rank order correlation to assess the relationship between the seven different constructs: affordability, quality and condition of the residence, the amount of living space, privacy, quality of the neighborhood, safety of the area, and the overall housing satisfaction. There was a statistically significant positive correlation between all seven constructs with the correlations ranging from small to large. Based on the results of the analysis all seven survey items remained in the residential satisfaction scale. The results of the correlation analysis are shown in Table 2 below.

Table 2

Correlations Between Seven Determinants of Residential Satisfaction

Measure	1	2	3	4	5	6	7
1. Cost of residence							
2. Quality and condition of residence	.387						
3. Amount of livable space	.333	.600					
4. Privacy	.266	.463	.455				
5. Quality of the neighborhood	.324	.743	.571	.520			
6. Safety of the area	.291	.343	.268	.387	.420		
7. Housing, in general	.359	.718	.582	.473	.669	.339	

Independent Samples *t* Test

An independent samples *t* test was used to evaluate whether the change in MFH policy from government-managed to privately managed MFH influenced the residential satisfaction of the end users, the MFH residents. The test examined whether there was a statistically significant difference between the mean residential satisfaction scores of the two housing types, government-managed MFH and privately managed MFH.

Independent Samples *t* Test Assumptions

Every statistical test has basic assumptions that, if violated, will influence the interpretation of the results of analysis and can change a study's conclusions (Field, 2013). For the independent samples *t* test I confirmed six assumptions were met:

- the dependent variable was continuous;
- the independent variable was categorical with two groups;
- there was an independence of observations;
- there were no significant outliers;
- the data were normally distributed;
- there was homogeneity of variance (Laerd, 2013b).

The first three assumptions were met by the study's design. First, the dependent variable, residential satisfaction, was a quantitative measure. Second, the two housing types, government-managed MFH and privately managed MFH, were categorical variables. Additionally, the DMDC survey design ensured the independence of observations. Participants were a random cross-section of the military population. Each participant was individually coded to ensure the submission of only one response, and the survey was administered at different year intervals with respondents selecting specific housing types to ensure the observations were independent.

The final three assumptions were tested after the data were reviewed, screened and cleaned, and transformed. I reviewed the boxplots or whisker diagrams that plot any observations indicating unusual scores for both survey years to look for outliers (Field, 2013). Four data points appeared to be outliers on the boxplots in the 1999 data set.

Further inspection revealed they were merely four cases where the respondents were displeased with their housing, having marked all residential satisfaction survey item responses as *very dissatisfied*, producing a low Likert scale score of 7. Normality was assessed via the normal Q-Q plot because of the large size of the data sets. The residential satisfaction scores were normally distributed for each survey year, as assessed by review of the normal Q-Q plot. The final assumption, homogeneity of variance, was violated, as measured by Levene's test for equality of variance ($p < .01$). Therefore, a Welch's *t* test was used to determine if there were differences in residential satisfaction between the two housing types, using equal variances not assumed as reported in SPSS. After correcting for the violation of homogeneity of variance in Levene's test, through the use of Welch's *t* test, there were no violations of assumptions in the data set.

Independent Samples *t*-Test Results

I compared the residential satisfaction means of the two housing types, government-managed MFH and privately managed MFH, using the independent samples *t* test. The procedure employed a listwise deletion for any cases of missing responses to the residential satisfaction scale questions, leaving the 1999 and August 2005 cases at 5,078 and 298 members, respectively.

There was a statistically significant difference in the residential satisfaction scores for privately managed MFH residents (M=22.21, SD=7.15) and government managed MFH (M=23.94, SD=5.95); $t(321.6) = -4.09$, $p < .001$ as reported by Welch's *t* test. The effect size was calculated using SPSS by creating a standardized residential satisfaction scale variable (z-score) and then conducting a second independent samples *t* test using

the z-score. The resulting mean difference was .286. The effect size, $d = .286$, was validated against my manual calculation and the RStats effect calculator, indicating a small effect (Ellis, 2010; Missouri State, n.d.). The results of the independent samples *t* test are presented in Table 3 below.

Table 3

Independent Samples t Test (Housing Types)

Housing types	Year	*N*	*M*	*SD*	*SE*
Privately managed MFH	2005	298	22.21	7.15	.41
Government-managed MFH	1999	5,078	23.94	5.95	.08

Note. All correlations are significant at $p < .001$, one-tailed.

Results, Research Question 1

A statistically significant difference was found between means ($p < .001$); however, the corresponding *t* value of -4.09 indicated that residents living in privately managed MFH were less satisfied than those living in government-managed MFH.

H_o1: There is no difference between the level of residential satisfaction of active duty military respondents living in privately managed MFH than those living in government-managed MFH. (H_o1_a: $\mu_p = \mu_g$).

H_a1: Active duty military respondents living in privately managed MFH are significantly more satisfied than those living in government-managed MFH ($H_1 1_a$: $\mu_p > \mu_g$,).

Therefore, the null hypothesis was rejected because the resulting mean of privately managed MFH residential satisfaction is less than that of government-managed MFH. The results indicated that there was a relationship between MFH policies and the level of residential satisfaction of active duty residents; however, the difference was small and in the opposite direction than hypothesized. Thus, the transition to privately managed MFH did not result in higher levels of residential satisfaction of active duty MFH residents.

Multiple Linear Regression

To examine the influence of sociodemographic determinants of residential satisfaction found in the literature, I used a multiple linear regression analysis for each survey year. The 1999 and August 2005 data sets captured two different types of MFH permitting the examination of residential satisfaction for two different groups of active duty military members. Any occurrences of missing cases were listwise deleted from the analysis.

Multiple Linear Regression Assumptions

Data analyzed using multiple linear regression must meet eight assumptions. Confirmation that the assumptions are met ensures the validity of the test results and supports the study's conclusions (Field, 2013). Prior to reviewing the results of the multiple regression analysis for the individual 1999 and 2005 data sets, I ensured the following assumptions were met:

- the dependent variable was continuous;
- there were two or more categorical or continuous independent variables;

- there was an independence of observations;
- there was a linear relationship between each independent variable and the dependent variable;
- the data showed homoscedasticity of residuals;
- the data showed no multicollinearity;
- there were no significant outliers;
- the data were normally distributed (Laerd, 2013d).

For both data sets, the first two assumptions were met based on study design considerations. The residential satisfaction dependent variable was measured on a continuous scale and the sociodemographic predictor variables (branch of service (XSVC), gender (XSEX), paygrade (XGRADE), marital status (XMARST), level of education (SRED1), children or dependents (DEPDNTS), and ethnicity/race (RETH1) were all measured at the nominal or ordinal levels. To conduct the analysis of the individual survey years, I used the select cases function in SPSS to isolate the cases applicable to the respective survey years.

1999 Survey of Active Duty Personnel. The final six assumptions were reviewed while conducting the analysis. There was an independence of residuals, as assessed by a Durbin-Watson statistic of 1.989. Linearity was evaluated in two steps. First, I reviewed a scatterplot of studentized residuals against the unstandardized predicted values for linearity. The results showed a horizontal band, indicating linearity. Once completed, the partial regression plots were reviewed for the paygrade and education noncategorical variables. The results indicated an approximate linear relationship for the two paygrade

and education level ordinal variables. This assessment was not applied to the branch of service, gender, marital status, children/dependents, and ethnicity/race categorical variables. Homoscedasticity of residuals was assessed using the studentized residuals against the unstandardized predicted values scatterplot. The results indicated that the residuals were evenly distributed.

Next, I assessed the 1999 cases for multicollinearity in two steps and noted correlation values greater than 0.7. The results indicated that the paygrade and education variables had a correlation statistic of .783, indicating the possibility of multicollinearity. To further examine the data set for multicollinearity, I examined the tolerance/VIF values in the coefficient table for all variables. The results showed that there were no instances of tolerance levels less than 0.1 or VIF values greater than 10. Because the correlation coefficient values indicating the possibility of multicollinearity are considered estimates, I determined that the data set met the assumption since tolerance/VIF values are considered stronger indicators of multicollinearity (Field, 2013).

I assessed outliers using casewise diagnostics, which were calculated by SPSS to report any extreme cases of residual statistics, specifically any cases with standardized residuals greater than +/-3 (Laerd, 2013d, p. 13). One case was identified as a possible outlier, but after I reviewed the case, I determined that the score of 7 indicated a high level of dissatisfaction and was not an outlier. The case was not removed from the data set but was annotated for further review, if necessary. Before assessing normality, I first reviewed the data set to ensure there were no leverage values greater than .2 or any Cook's distance values above 1. Normality was assessed to be approximately normal

using a frequencies-against-regression standardized residuals histogram and normal P-P plot of regression standardized residuals. The results indicated that there were no violations of any assumptions in the 1999 data set.

August 2005 Status of Forces Survey–Active Duty. Similar to of the 1999 data set, the assumptions were analyzed while conducting the multiple linear regression analysis on the August 2005 cases. The independence of residuals was determined by a Durbin-Watson statistic of 2.166. Linearity was assessed by a visual review of scatterplots of studentized residuals against the unstandardized predicted values and partial regression plots for the paygrade and education ordinal variables. The scatterplots indicated an approximate linear relationship. Homoscedasticity of residuals was verified using the studentized residuals against the unstandardized predicted values scatterplot which indicated that the results were evenly distributed.

Multicollinearity was assessed in two steps. The correlations table from SPSS was reviewed for any values greater than .7. Similar to the 1999 data set, the correlations between paygrade and education level were above .7, at .733. Next, I reviewed the tolerance/VIF statistics for all variables in the coefficients table. There were no instances of tolerance levels less than 0.1 or VIF values greater than 10. Therefore, despite the correlation value of .733 for the two aforementioned variables, the stronger tolerance/VIF statistics were relied upon to make the determination that there is no multicollinearity (Field, 2013).

I reviewed the data set for outliers via standardized residuals, and there were no cases exceeding +/- 3. I then examined the data set to ensure there were not any leverage

values greater than .2 or any Cook's distance values above 1. Finally, I assessed normality as approximately normal through a visual inspection of regression standardized residuals histogram and normal P-P plot of regression standardized residuals. The results of the analysis revealed that there were no violations of any assumptions in the 2005 data set.

Multiple Linear Regression Results

1999 Survey of Active Duty Personnel. A multiple linear regression was run to determine if any of the sociodemographic variables were statistically significant determinants of the overall residential satisfaction of government-managed MFH residents. The R^2 for the overall model was .028 with an adjusted R^2 of .025, a small effect size (Cohen, 1988). The multiple regression model statistically significantly predicted residential satisfaction $F(12, 5047) = 11.910$, $p < .001$, adjusted $R^2 = .025$. Four sociodemographic predictors, statistically significantly predicted residential satisfaction, $p < .05$. Regression coefficients and standard errors can be found in Table 4.

The model explained only 2.5% of the variance, indicating that the sociodemographic predictors explained a very small amount of the variation in overall residential satisfaction. Of the statistically significant sociodemographic predictors, paygrade made the biggest difference in overall residential satisfaction. Each increase in paygrade resulted in a 0.46 increase in overall residential satisfaction. Branch of service also influenced overall residential satisfaction. Residents of Navy MFH were 1.53 units more satisfied than residents of Army MFH, residents of Marine Corps MFH were 1.48

units more satisfied than Army MFH residents, and residents of Air Force MFH were .077 units more satisfied than Army MFH residents. The results also indicated that overall residential satisfaction decreased by 1.22 units when active duty military members residing in government MFH had children or dependents. Finally, the residential satisfaction of Hispanic residents of government-managed MFH were found to have a 0.8 units higher overall residential satisfaction score than non-Hispanic white residents.

August 2005 Status of Forces Survey–Active Duty. I conducted a multiple linear regression analysis of the August 2005 data set to identify statistically significant determinants of the overall residential satisfaction of privately managed MFH residents. The R^2 for the overall model was .071 with an adjusted R^2 of .031, a small effect size (Cohen, 1988). The multiple regression model statistically significantly predicted residential satisfaction $F(12, 285) = 1.803$, $p = .047$. In this model, one sociodemographic predictor statistically significantly predicted residential satisfaction, $p < .05$. Regression coefficients and standard errors can be found in Table 4 below.

The multiple regression model for the 2005 privatized housing sample explained only 3.1% of the variance in residential satisfaction, indicating that the tested sociodemographic predictors explained a very small portion of the variation in overall residential satisfaction. In this model only one of the sociodemographic predictors was statistically significant ($p < .05$), that is, whether a respondent had children or dependents. The overall residential satisfaction for privatized housing residents with children or dependents is 2.013 units less than those respondents without children or

dependents. The results of the regression analysis for the two data sets are shown below in Table 4.

Table 4

Summary of Simple Regression Analysis for Other Predictors of Residential Satisfaction in Government-managed MFH (N=5,203) and Privately Managed MFH (N=311)

	Government-managed MFH			*Privately Managed MFH*		
Variable	*B*	*SE*	β	*B*	*SE*	β
Education	-0.02	0.08	-0.01	0.04	0.37	0.01
Paygrade	0.46	0.10	0.10**	0.75	0.46	0.15
Marital status	-0.65	0.38	-0.03	-2.41	1.32	-0.11
Gender	0.29	0.28	0.02	-0.89	1.16	-0.05
Children / dependents	-1.22	0.22	-0.08**	-2.13	0.99	-0.13*
Branch of service						
Navy	1.53	0.25	0.10**	2.19	1.13	0.13
Marine Corps	1.48	0.25	0.09**	1.61	1.14	0.10
Air Force	0.77	0.21	0.06**	-0.05	1.23	-0.00
Ethnicity / race						
Hispanic	0.80	0.31	0.04*	1.27	1.33	0.06
Non-Hispanic, black	0.24	0.26	0.02	0.87	1.24	0.04
Non-Hispanic, all other	-0.34	0.36	-0.01	0.46	1.86	0.01
Non-Hispanic, more than 1 race	-0.56	0.59	-0.01	0.03	1.84	0.00
R^2			.028			.071
F			11.9**			1.8*

* $p \leq .05$, ** $p \leq .01$

Results, Research Question 2

1999 Survey of Active Duty Personnel. I conducted a multiple linear regression analysis to evaluate how residential satisfaction in government-managed MFH varies by the sociodemographic factors of MFH residents. The regression model revealed gender, marital status, and education level were not statistically significant predictors to the model ($p > .05$). However, the multiple linear regression analysis showed a statistically significant association between branch of service, paygrade, children/dependents, and race/ethnicity-Hispanic.

Because there was a statistically significant relationship, the null hypothesis was rejected and the alternative hypothesis was accepted. Residential satisfaction in MFH residents varied significantly by the following sociodemographic factors: branch of service, paygrade, children/dependents, and race/ethnicity-Hispanic.

August 2005 Status of Forces Survey–Active Duty. I also conducted a multiple linear regression analysis to evaluate how residential satisfaction in privately managed MFH varies by the sociodemographic factors of MFH residents. The regression model showed branch of service, gender, paygrade, marital status, education level, and ethnicity/race were not statistically significant predictors to the model ($p > .05$). However, the multiple linear regression analysis revealed a statistically significant association with children/dependents on residential satisfaction.

Because there was a statistically significant relationship, the null hypothesis was rejected and the alternative hypothesis was accepted. Residential satisfaction in MFH

residents varied significantly by the following sociodemographic factor: children/ dependents.

Comparison of results. The results of the multiple linear regression analysis indicated that the model explains more variance in the residential satisfaction of active duty residents of privately managed MFH than residents of government-managed MFH. Additionally, the two data sets both indicated that the residential satisfaction of those active duty MFH residents with children was less than those without children. I discuss these results further in Chapter 5.

Summary

The results of the independent samples *t*-test indicated there is a relationship between MFH policies (government-managed or privately managed MFH) and the level of residential satisfaction of active duty military members residing in MFH. The test results indicated the residents living in the privately managed MFH had lower levels of residential satisfaction than those living in the government-managed MFH. A multiple linear regression analysis of the effect of the sociodemographic characteristics on the overall residential satisfaction showed only a few sociodemographic determinants with significance. The multiple linear regression analyses for the two groups of residents were both statistically significant; however, the effect sizes were small. In the regression model for the residents of government-managed MFH, the significant predictors were paygrade, branch of service, whether the member had children or dependents in their household, and whether a member was Hispanic. For the residents of privately managed MFH, the

only significant predictor was whether a member had children or dependents in his/her household.

In Chapter 5, I provide an interpretation of the findings, discuss the limitations of the study, assess the implications for social change, and offer recommendations for future inquiry.

Chapter 5: Discussion, Conclusions, and Recommendations

This quantitative study addressed the implications of Military Privatized Housing Initiative (MPHI) policies through examination of the relationship between MFH housing privatization policies and residents' perceived levels of satisfaction. The study also addressed the influence of sociodemographic factors on residents of MFH. The study findings indicated a significant relationship between the type of MFH and residents' perceived satisfaction. Privatized MFH residents were less satisfied with their housing than residents of government-managed MFH. Additionally, several sociodemographic characteristics influenced the residential satisfaction of MFH residents. In Chapter 5, I interpret the findings, discuss the limitations of the study, and assess the implications for social change. I conclude with recommendations for future inquiry.

Interpretation of the Findings

Research Question 1

The first research question addressed the influence of MPHI policies on the perceived satisfaction of the residents of MFH. Using an independent samples *t* test to analyze two similar groups of MFH residents, I sampled pre- and post-implementation of MPHI policies and found a statistically significant difference in the levels of residential satisfaction; therefore, the null hypothesis was rejected. The alternative hypothesis stated that the perceived levels of residential satisfaction would be higher in privatized MFH residents. The alternative hypothesis was also rejected because the finding was the opposite of what had been hypothesized.

Research Question 2

Multiple linear regression analysis was used to examine the influence of sociodemographic factors on the levels of residential satisfaction of the military family population. The findings indicated that several sociodemographic factors were associated with a small variance in perceived levels of residential satisfaction. Therefore, the null hypothesis that residential satisfaction does not vary by sociodemographic factors was rejected. The alternative hypothesis, that perceived residential satisfaction varies significantly by sociodemographic factors, was not rejected for both survey years 1999 and 2005. The results of the analysis of the 1999 government-managed MFH sample indicated that levels of residential satisfaction were influenced by paygrade, branch of service, having children or dependents, and a resident's race/ethnicity–Hispanic. In the privatized MFH sample from 2005, the only statistically significant determinant of residential satisfaction was residents who had children or dependents.

Interpretation of Results

Independent samples *t* test. The difference between the two groups of MFH residents indicated that privatization as originally conceived may not be meeting the needs of military families. Although the difference was small, the findings suggested that the effectiveness of this policy change should be monitored to examine whether these results signal a decline in perceived residential satisfaction levels for privatized MFH residents. Researchers examining the residential satisfaction levels of privatized military communities called for further exploration into the outcomes of privatization policies. Parks et al. (2009) found no differences between the residential satisfaction levels of

residents of privatized communities and those living in nonprivatized communities. Parks et al. concluded that privatized housing might not be meeting its policy objective to provide better housing for military families and should be examined further. Bissell et al. (2010) found that MFH residents showed no significant difference in satisfaction levels with their housing choice options. Bissell et al. found that privatized housing residents had slightly higher levels of satisfaction with the quality and condition of privatized housing than residents of government-managed housing. As a result, Bissell et al. encouraged DoD officials to continue the examination of housing options for military families as their study could not provide insight into trends over time. The findings in the current study demonstrated a need for additional research on the impact of MPHI policies on families living in privatized MFH. Policy makers should continue to measure the levels of residential satisfaction within privatized housing over time as a method of determining the effectiveness of the policy change and to ensure the policy, which was designed to provide better quality housing, is meeting the needs of military families.

Multiple linear regression. I also examined the influence of sociodemographic factors on the two groups of MFH residents to determine whether sociodemographic factors influenced the residential satisfaction of the unique MFH population. The results indicated that only a small portion of the residential satisfaction of MFH residents was explained by sociodemographic factors. The results of the multiple linear regression on the 1999 and 2005 MFH samples indicated both similarities and differences in the general population. Analysis of the 1999 government-managed MFH sample revealed that ethnicity/race–Hispanic was found to be a significant determinant of residential

satisfaction. Dassopoulos et al. (2012) found that race/ethnicity did not influence residential satisfaction. Conversely, results from the current study indicated similarities with the general population. Analysis of the perceived residential satisfaction of residents of government-managed MFH (1999 sample) indicated that residential satisfaction was influenced by income (or paygrade) and children or dependents. In studying residents of privatized MFH (2005 sample), I found that children or dependents was a significant factor in the levels of residential satisfaction. Having children or dependents was the only significant predictor shared by both groups. Lovejoy et al. (2010) and Lu (1999) also found level of income and children both influence residential satisfaction in the general population. However, in contrast to the general population where satisfaction levels increased with the addition of children or dependents in a household (Lovejoy et al., 2010; Lu, 1999), the results of my study indicated that residential satisfaction decreases for MFH residents who have children or dependents in their households, regardless of housing type. Further exploration into these factors, as well as identification of other factors that influence perceived residential satisfaction of MFH residents, is needed. In the case of having children in the household, it is especially important to determine whether the findings indicate a trend that may need to be addressed by policy makers to ensure MFH meets the needs of its residents.

Although the results in the current study were statistically significant, the findings from both samples indicated that only a small amount of variance was explained by sociodemographic factors. Because statistical significance is affected by sample size, the large samples used for this study could have amplified a small difference in residential

satisfaction levels. Other determinants not covered in this study may influence the perceived residential satisfaction of MFH. Sociodemographic factors may not be a strong gauge of residential satisfaction in any population (Lovejoy et al., 2010); therefore, researchers should continue working to identify other factors that may influence the residential satisfaction of the MFH population over time. Incorporating a qualitative approach could enhance the identification of other determinants of residential satisfaction that matter to residents of MFH. As the privatized MFH program transitions through the post-implementation phase, subsequent research should be conducted to ensure policy makers are aware of such factors.

Results in the Context of the Theoretical Framework

I used policy feedback theory to guide the examination of changes in MFH policy. Using the policy as the independent variable in this study offered a unique approach for measuring the feedback effects of changes in policy designs (see Skocpol, 2014). The literature indicated mixed results in measuring policy design changes to examine policy feedback effects. Researchers examining policy design changes, such as Morgan & Campbell (2011) and Soss and Schram (as cited in Campbell, 2012) have not always found a statistically significant relationship. However, I found a change in end user perceptions after implementation of the new policy.

By measuring the difference in the effects of the shift in policy design on perceived residential satisfaction, I found lower residential satisfaction levels for privately managed MFH residents than their counterparts in government-managed MFH. The findings suggested that the implemented MPHI policies may not be meeting the

needs of military families. The study provided a glimpse into the feedback effects of MPHI policies and its influence on the residential satisfaction of the end user. Researchers should examine whether this snapshot indicates a trend in the perceived residential satisfaction of privatized MFH residents. Further post-implementation examination of the policy feedback effects may indicate the need to adapt the implemented policies to ensure they are meeting military family needs.

Limitations of the Study

The limitations presented in Chapter 1 were consistent with the execution of the study. The findings are limited to MFH residents and cannot be generalized to the larger military family population or to other housing privatization projects. Consistent with the use of cross-sectional surveys, causal inferences cannot be made. The study's results indicated a difference in the levels of residential satisfaction, but the results do not explain the reason for the difference.

Because the study's purpose was to examine the pre- and post-implementation outcomes of MPHI policies, the selected survey items in the two survey years had to be aligned. The resulting residential satisfaction scale included only those housing-related items that were consistent between the two surveys. Despite the strong correlation coefficient of the residential satisfaction scale, the operational definition of the variable may have been incomplete. In future measures of MFH residential satisfaction, it would be beneficial to add additional categories of housing-related items to refine the definition of residential satisfaction.

In addition to the need to align surveys to construct a consistent residential satisfaction scale, the available data sets did not offer consistent measures of housing-related items to enable measuring changes over a longer period. The results of this study offer an overview of the outcomes of the MPHI policy implementation, but the available data do not allow for a longitudinal analysis of the policy's outcomes. Additionally, the use of quantitative methods may have limited findings. Employment of qualitative or mixed methods approaches may be useful in improving the understanding of what residents do or do not like about privately managed MFH. Despite these limitations, the study provided a baseline for understanding the influence of policy changes on the end user, indicating the need to develop tools for capturing consistent housing-related data to better understand the implications of MPHI policies on residents.

Implications for Social Change

The study was designed to investigate the relationship between MFH privatization policies and residential satisfaction to gain a better understanding of the effects of the policy design change on the end user. Housing is a key component of a military member's perceived quality-of-life and is essential to military personnel retention and readiness (Twiss & Martin, 1998). This study contributed to positive social change by showing a lower level of residential satisfaction among privately managed MFH residents. The results indicated a need for further exploration into whether this is a trend or merely a single data point.

Bissell et al. (2010) observed changes from a 1997 RAND study that led them to encourage the DoD to periodically measure housing satisfaction levels through surveys

designed to target housing-related topics. Findings from the current study supported the need for periodic data collection to measure changes over time. Improved data collection would offer policy makers an opportunity to determine whether the MPHI policy is meeting its intended goal of creating value for money and satisfying its end users, military families.

Additionally, the results indicated an emerging challenge facing researchers using big data to aid decision-makers (see Cai & Zhu, 2015). When the available data that could be used to measure overall residential satisfaction of MFH residents pre- and post-implementation were reviewed, only two DMDC administered surveys out of 20 contained housing-related items that aligned. Variations in survey items between the 20 surveys limited the ability to measure trends post-implementation and diminished my ability to provide greater insight into MPHI policy outcomes. I experienced challenges with the collection of big data, including the need for relevant and standardized measures across surveys to improve the post-collection analysis of results. Because surveys are conceptualized by policy makers and implemented by agencies, policy makers must establish consistent survey measures to enable robust longitudinal analyses of critical policy areas.

Recommendations for Future Inquiry

This study addressed the implications of MPHI policies pre- and post-implementation. Researchers should further examine the implications of MPHIs because the number of available housing units resulting from policy implementation does not necessarily indicate that the policy is creating value for money or meeting the needs of

the end user. Future surveys by the DoD should include consistent measures of housing-related items to permit the longitudinal analysis of policy changes on MFH residents. The residential satisfaction of privatized MFH residents may have implications on the occupancy rates of privatized MFH communities. Because housing is a quality-of-life issue affecting overall military readiness, researchers should also explore the implications of occupancy rates on the MFH community. Specifically, researchers should explore the impact of occupancy rates on the reinvestment and housing improvement programs by privatized companies. Also related to occupancy is the introduction of nonmilitary residents to MFH if occupancy rates drop below 90%. Because this change may have implications on residents' perceived satisfaction, the effects of these changes on the military community should be explored (Wilson, 2015). In addition to occupancy rates, further exploration into factors that influence the residential satisfaction of the military family population could help to target improvements to MFH and improve quality-of-life.

Conclusion

MPHI policies were devised by lawmakers as a mechanism to improve housing quality for military families by tapping into the financial and management resources of the private sector to create value for money. The relationship between housing and military family quality-of-life makes it essential to examine the effects of current MFH policies on military readiness. Findings in the current study indicated that residents of privately managed MFH were less satisfied than residents of government-managed MFH. Today's all-volunteer military relies on healthy military families who are supported in their basic needs for shelter. Researchers should continue to examine current MPHI

policies to ensure they are meeting the needs of military families, which could influence the recruitment and retention of today's all-volunteer force. The results also indicated a need for further exploration of the residential satisfaction of MFH residents and the determinants that influence residential satisfaction. Doing so may help ensure that the implemented policy provides military families with the improved housing quality originally conceptualized by policy makers.

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Appendix A: Variables

Table A1

Variables per Research Question

Research questions	Independent variables	Dependent variables	Predictor variables
RQ1	Group 1: MFH residents (1999) Group 2: Privatized MFH residents (2005)	Residential Satisfaction: Satisfaction with residence Neighborhood Quality and condition of residence Privacy Livable space Safety Affordability	
RQ2		Residential Satisfaction: Satisfaction with residence Neighborhood Quality and condition of residence Privacy Livable space Safety Affordability	Privatized MFH Residents (2005): Paygrade/income Marital status Education level Gender Children/dependents Ethnicity/race Branch of service

Table A2

Variables, Survey Questions, and Measures

Variables	Survey variable name	Data set	Survey question	Measure
MFH Residents				
Group 1: Before privatization (1999)	M9905*	1999	In one of the 50 states or the District of Columbia; In American Samoa, Guam, U.S.	Nominal
	M9908		Virgin Island or Puerto Rico Military Family Housing, on base; or Military Family Housing, off base	
Group 2: After privatization (2005)	XDULOC*	2005	In one of the 50 states, DC, Puerto Rico, a U.S. territory or possession	
	SRBAH		Privatized military housing that you rent on base; or Privatized military housing that you rent off base	
Residential satisfaction				
Overall satisfaction	M9939F	1999	How satisfied are you with each of the following? Military Housing	Ordinal
	SATHSGM	2005	How satisfied are you with the following characteristics of your current residence and community at your permanent duty station: Your housing in general?	
Neighborhood satisfaction	M9909E	1999	How satisfied are you with the following characteristics of your current residence and community at your permanent duty station: Quality of housing in the area where you live?	Ordinal

	SATHSGE	2005	How satisfied are you with the following characteristics of your current residence and community at your permanent duty station: Quality of neighborhood?	
Quality and condition of residence	M9909B	1999	How satisfied are you with the following characteristics of your current residence and community at your permanent duty station: Quality and condition of residence?	Ordinal
	SATHSGB	2005		
Privacy of residence	M9909D	1999	How satisfied are you with the following characteristics of your current residence and community at your permanent duty station: Privacy of residence?	Ordinal
	SATHSGD	2005	How satisfied are you with the following characteristics of your current residence and community at your permanent duty station: Privacy?	Ordinal
Amount of livable space in residence	M9909C	1999	How satisfied are you with the following characteristics of your current residence and community at your permanent duty station: Amount of livable space?	Ordinal
	SATHSGC	2005		Ordinal
Safety of residence	M9909F	1999	How satisfied are you with the following characteristics of your current residence and community at your permanent duty station: Safety of the area where you live?	Ordinal
	SATHSGF	2005	How satisfied are you with the following characteristics of your current residence and	Ordinal

			community at your permanent duty station: Safety of the area?	
Affordability of residence	M9909A	1999	How satisfied are you with the following characteristics of your current residence and community at your permanent duty station: Cost of residence?	Ordinal
	SATHSGA	2005		Ordinal
Sociodemographic characteristics				
Pay grade	XMIMPP*	1999	Imputed paygrade	Ordinal
	XGRADE*	2005		
Marital status	XMIMPM*	1999	Imputed Marital Status	Nominal
	XMARST*	2005		
Education level	RSREDHI*	1999	Constructed education level	Ordinal
	SRED1*	2005		
Gender	XMIMPX*	1999	Imputed gender	Nominal
	XSEX*	2005		
Children / dependents	M9958*	1999	Do you have a child, children, or other legal dependents based on the definition above?	Nominal
	DEPDNTS*	2005		
Ethnicity / race	R2XRETH*	1999	Constructed race ethnicity	Nominal
	XRETH1*	2005		
Service	XMIMPS*	1999	Imputed branch of service	Nominal
	XSVC*	2005		

*Indicates variable only appears in the confidential data set