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THESIS

**A PLAN FOR ACTION: HOW THE DOD
BEGINS SYSTEMATICALLY ADDRESSING
THE HOUSING FAILURES OF TODAY TO PRESERVE
THE NATIONAL DEFENSE OF TOMORROW**

by

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March 2021

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ADDRESSING THE HOUSING FAILURES OF TODAY TO PRESERVE
THE NATIONAL DEFENSE OF TOMORROW**

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ABSTRACT

Military family housing programs are in crisis, the product of a policy-strategy mismatch resulting from competing interests among the United States Congress, Department of Defense, private real-estate developers, and the military members and families who rely on military housing. Through a policy-centered literature review, survey instrument, and analysis, this thesis investigates the mismatch and its impacts on military member and family health and readiness. Responses to this study's survey and research sample suggest that few differences exist between respondents of military family housing and residents of local civilian community housing, with the most significant supported finding being that military housing respondents' air-filtration maintenance occurs less often than that of local community housing. The overall findings suggest that the survey instrument, with minor improvements, could be used to acquire accurate and actionable data related to occupant health, well-being, and readiness, with the intrinsic benefit of serving as a rubric to gauge achievement of current housing and readiness policies. Succinctly put, the study's survey instrument could easily be used by housing tenants, providers, and support staff as a near-definitive physical inspection diagnostic tool to identify physically observable indicators and building assemblage characteristics commonly observed, known, and associated with unsafe and unhealthy housing conditions.

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LIST OF ACRONYMS AND ABBREVIATIONS

ADSM	Active Duty Service Member
CBO	Congressional Budget Office
CJCS	Combined Joint Chiefs of Staff
CONUS	Continental United States
COTS	Commercial Off The Shelf
DMDC	Defense Manpower Data Center
DODD	Department of Defense Directive
DODI	Department of Defense Instruction
DODIG	Department of Defense Inspector General
DODM	<i>Department of Defense Manual</i>
EO	Executive Order
EPA	Environmental Protection Agency
FY	Fiscal Year
GAO	Government Accountability Office
HRMA	Housing Research Market Analysis
HVAC	Heating, Ventilation, and Air Conditioning
IAW	In Accordance With
IRB	Institutional Review Board
ISO	In Support Of
JP	Joint Publication
M&IE	Meals and Incidental Expenses
MFAN	Military Family Advisory Network
MFH	Military Family Housing
MHPI	Military Housing Privatization Initiative
MILCON	Military Construction
NAHB	National Association of Home Builders
NCHH	National Center of Healthy Housing
NDAA	National Defense Authorization Act
NDS	<i>National Defense Strategy</i>
NPS	Naval Postgraduate School
NSS	<i>National Security Strategy</i>
OMB	Office of Management and Budget
OPM	Office of Personnel Management

PG	Prospective Gain
QoL	Quality of Life
RAA	Responsibility, Accountability, Authority
RC	Reserve Component
SECDEF	Secretary of Defense
SME	Subject Matter Expert
SOP	Standard Operating Procedures
TFM	Total Force Management
UFC	United Facilities Criteria
UH	Unaccompanied Housing
USA	United States Army
USAF	United States Air Force
USC	United States Code
USCG	United States Coast Guard
USMC	United States Marine Corps
USN	United States Navy

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I. INTRODUCTION

Our installations remain critical components of our ability to fight and win wars. Our warfighters cannot do their job without bases from which to fight, on which to train, or in which to live when they are not deployed. Our installations support our families — many of which live there and all of which use their support services. The bottom line is that installations support our military readiness. Our primary focus in our FY 2018 budget request is to ensure that our military installations are capable of supporting the missions of our forces, today and in the future.

—Statement of Mr. Peter Potochney Acting Assistant Secretary of Defense (EI&E) before the U.S. Senate Appropriations Committee, 2017, p. 1.

A. STUDY OVERVIEW

Since 1775, the military services have had an enduring mission to defend the security of the United States. More than 245 years later, the Department of Defense (DOD) is charged with the duty and responsibility of ensuring the sovereignty of this great nation and has been since the signing of the National Security Act of 1947. The department seeks to accomplish its primary mission first through deterring war by providing the requisite combat-credible military forces necessary to ensure the president of the United States and U.S. diplomats negotiate U.S. terms of diplomacy from a position of strength. However, should deterrence fail, the service members of the United States Army (USA), Marine Corps (USMC), Navy (USN), Air Force (USAF), and as prescribed by higher authorities, Coast Guard (USCG) stand poised. The nation's military services are prepared; they have been adequately manned and organized with warfighters appropriately trained and equipped to address emerging challenges, resolve conflict, and if necessary, win wars.

What if this is not the case?

Numerous Reuters, Military Family Advisory Network (MFAN), Government Accountability Office (GAO), and DOD Inspector General (DODIG) reports citing unsafe and unhealthy military housing conditions have recently garnered Congressional and DOD-wide concerns that military service member and family health and welfare is being

jeopardized by “painfully inadequate living conditions” in military housing as noted by U.S. Senate Committee on Armed Services Ranking Member, Senator Reed (*Hearing to receive testimony*, 2019, p. 6). The conditions described in these reports are prejudicial to U.S. *National Security Strategy* (NSS) and *National Defense Strategy* (NDS) initiatives and contravene myriads of current DOD and service-specific directives and policies. Examples and explanations of these issues are covered in this study for demonstrational purposes. Given the historic positive correlation between the condition of military family housing (MFH) and DOD readiness (*Statement of Mr. Peter Potochney Acting Assistant Secretary of Defense (EI&E) before the U.S. Senate Appropriations Committee*, 2017, p. 1), the threat and risk to National Defense are real, the concerns of Congress, DOD leadership, and the American people warranted.

This study focuses on both identifying, as well as prioritizing, key housing and readiness program policy objectives and analyzing the strategies in place to achieve policy objective desired end states. Measurement tools, techniques, and rubrics will also be evaluated. This analysis, in theory, will highlight factors and circumstances principally responsible for the inadequate living conditions of MFH as noted by Senator Reed and echoed by the committee members of the U.S. Senate Armed Services Committee (*Hearing to receive testimony*, 2019). Lastly, this study aims to understand the impacts to service member and family health and well-being to better gauge the overall effects to force readiness. This information will provide policymakers, decision-makers, and program managers with improved knowledge, insight, and proven best-business practices that result in lasting policy, strategy, and program improvements that support today’s NDS to preserve the National Defense of tomorrow.

Military housing has been supported by various funding authorities, efforts, or programs over the last century. Pre-1996 funding efforts are not the focus of this study but will be covered as needed to provide background, context, and lessons learned.

The Military Housing Privatization Initiative (MHPI) was signed into law by President Clinton February 11, 1996, at the DOD’s request. MHPI was the DOD’s housing solution to address and resolve military recruitment, retention, and readiness concerns (Gebicke, 1996, p. 12). The MHPI enabled the DOD to rebuild, replace, or modernize its

antiquated housing inventory much quicker than traditional methods through leveraging both private [real estate] developer capital and workforce expertise. As the DOD was able to provide affordable, quality military housing to its eligible beneficiaries as required by department policy, Department of Defense Instruction (DODI) 4165.63 DOD Housing, the private developer would receive fair and equitable financial compensation for services rendered (*Hearing to receive testimony*, 2019, p. 2). Theory being, as the quality and availability of military housing improved, the expectation was service member recruitment, retention, and readiness would inherently follow suit (Gebicke, 1998, p. 2). Additionally, to incentivize private developers to exceed requirements, most of the MHPI projects included financial bonuses and awards that were payable to the private developer for providing above-average services (Field, 2019, p. 8)

While initial MHPI efforts were off to a slow start (Gebicke, 1998, p. 20), MHPI briskly picked up its pace through the early 2000s. By February 2009, the DOD had privatized nearly 188,000 of its MFH units with another 31,000 units projected to be privatized shortly thereafter. By the end of 2012, 98% of the department's housing inventory was projected to be privatized (Lepore, 2009, p. 18).

GAO reports on the MHPI over the last decade demonstrate that the DOD achieved its goal of privatizing 99% of its MFH. Unfortunately, these same GAO reports also show the MHPI is beleaguered with various data and reporting discrepancies, financial challenges, and fraud-prone business practices and processes (Field, 2019, pp. 5–14). These GAO reports are concerning given that an underperforming MHPI project can negatively impact service member and military family health and well-being, and detrimentally degrade a supporting unit's ability to provide critical installation services, support, and logistics. Either or both circumstances result in unnecessary negative impacts to installation mission success. Ultimately, overall military readiness is degraded, and combat effectiveness is diminished. Further supporting the MHPI without instituting appropriate measures of reform and accountability is synonymous with accepting unnecessary risk and is prejudicial to DOD principles.

The 2018 NDS calls for three lines of effort (LOE) in support of (ISO) Pillar III of the 2017 NSS:

1. Rebuild military readiness and enhance warfighter lethality.
2. Attract new like-minded strategic partners, strengthening current alliances.
3. Improve Enterprise processes; create fiscal efficiency and improve results.

This study will use a policy-based approach centered on NSS and NDS strategic initiatives to both identify and prioritize key housing and readiness program policy objectives and analyze the strategies in place to achieve program and policy objective desired end states. Measurement tools, techniques, and rubrics will also be evaluated for suitability. Additionally, this study designs, develops, and conducts its own policy-based survey designed to acquire objective feedback regarding respondent's current housing, health, and well-being to better gauge the overall effects to readiness.

B. BACKGROUND

While military housing has been supported or provided by various funding authorities, efforts, or programs over the last century, key traits of those funding mechanisms serve as hallmarks for identifying and dividing the last 100 years of military housing into two separate and distinct "eras." Beginning first with the World War to pre-1996 era programs, regardless of the means, authority, or entity that constructed and/or managed the housing unit(s), the entirety of the military housing inventory was essentially viewed as government-owned and government-controlled (GOGC), which included government-leased housing (Reishauer, 1993, p. 1). The pre-1996 era is not the focus of this study but will be used to provide background, context, and lessons learned.

During the late 1980s and early 1990s the department was afflicted with unstable government budgets, military base closures, and low service member morale. Ultimately, poor service member recruitment and retention rates were among the department's highest concerns. The DOD conducted numerous studies that ultimately determined substandard and antiquated military housing was detrimentally impacting the department's ability to recruit and retain enough service members to maintain the force resulting in reduced military readiness (Marsh, 1995, p. 15–16).

In 1996, Congress passed, and the President of the United States signed, the MHPI into law at the DOD's request. The MHPI was the DOD's housing solution. In theory, the MHPI would rebuild, replace, or modernize its antiquated housing inventory much quicker than traditional methods by leveraging both private real estate developer capital and expertise. As the DOD was able to provide affordable, quality housing to its eligible beneficiaries as required by department policy, Department of Defense Instruction (DODI) 4165.63 DOD Housing, the private developer would receive fair and equitable financial compensation for their services (*Hearing to receive testimony*, 2018, p. 2., Chairman Inhofe). Consequently, as the quality and availability of military housing improves, service member recruitment and retention, and readiness would follow suit (Gebicke, 1998, p. 2). Additionally, to incentivize private developers to exceed expectations (theoretically further enhancing readiness, most of the MHPI projects included financial bonuses and awards that were payable to the private developer for providing above-average services (Field, 2019, p. 8)

Initial MHPI efforts were off to a slow start (Gebicke, 1998, p. 20), but briskly picked up pace through the early 2000s. By February 2009, the DOD had privatized nearly 188,000 MFH units with another 31,000 units projected to be privatized by the close of 2012 amounting to 98% of its housing inventory being privatized (Lepore, 2009, p. 2).

GAO reports on the MHPI over the last decade demonstrate the DOD succeeded in achieving its goal of privatizing 99% of its MFH. Unfortunately, these same GAO reports also show the MHPI is beleaguered with various data and reporting discrepancies, financial challenges, and fraud-prone business practices and processes. These GAO reports are concerning given that an underperforming MHPI project can detract from service member or military family health and well-being, or worse, degrade a supporting unit's ability to provide critical instillation services or logistics, resulting in a negative impact on installation mission success, ultimately degrading overall military readiness. Additionally, 2019 and 2020 GAO reports to include U.S. Senate Armed Services Committee hearing testimony demonstrate that not only did many of the private developers who are the helm of the MHPI projects fail to meet the minimum performance requirements, many if not most of them still received incentive or performance awards that were not warranted based

on reports of health, life, safety or other form of violation (Field, 2020a, p. 7). If current measurements and indicators are of little to no value in determining a measurable indication of MHPI project success as it relates to achieving military housing and readiness objectives, a thorough review of department housing and readiness policies and directives is necessary to identify best sources of measurement and indicators for gauging the achievement of housing and readiness policy desired end states. Given one third of the department's service members historically reside in privatized housing, there is significant risk the DOD's actual readiness could be much lower than initially reported since the DOD currently has no reliable means of acquiring this data across the force.

C. PROBLEM STATEMENT

The military family housing program is currently in crisis, the product of a policy-strategy-mismatch that has resulted from the competing interests among the DOD, private real estate developers, and the military families that rely on MFH. This policy-strategy-mismatch is characterized by policies that fail to establish clear objectives and priorities resulting in misaligned strategies that have failed to provide safe, affordable, quality military family housing.

D. RESEARCH OBJECTIVE AND RESEARCH QUESTION

1. Research Objective

This study aims to identify and prioritize key housing and readiness program policy objectives and analyzing the strategies in place to achieve policy objectives. Measurement tools, techniques, and rubrics will also be evaluated for suitability and establishment of best practices. Additionally, this study seeks to identify common causal housing factors that affect military member and family readiness. Analysis that results in a high correlation could be used to assist program managers, policymakers and decision-makers to identify, develop, and institute controls that resolves or mitigates the probability and severity of the risk and threat of negative impacts to military readiness caused by unsafe, unhealthy, or uninhabitable MFH.

2. Research Question

Have housing and family readiness program policy-strategy-mismatches impacted the health, well being, and readiness of service members and their families?

E. SCOPE OF RESEARCH, LIMITATIONS, AND ASSUMPTIONS

1. Scope

This study briefly reviews military housing's history. Pre-MHPI military housing funding efforts are discussed sparingly and only as needed to add background, context, and lessons learned. Evaluating the MHPI's role in providing MFH since its 1996 inception and what most likely lies ahead based on the analysis of this study are the focus of this research. This study will evaluate and analyze the principal inputs and outputs related to the MHPI to identify applicable lessons learned that support development of best business practices and improved policy and strategy development and alignment.

Establishment of clear, prioritized policy objectives and desired end states supported by strategies developed from lessons learned and best business practices that incentivize superior performance and disincentivize poor performance will, in theory, effectively mitigate delivery of substandard products and services that detract from military readiness thus ensuring the DOD's ability to provide the National Defense of tomorrow.

2. Limitations

The responsibilities of the DOD and its branches of military service to provide housing for eligible personnel and dependents varies significantly on a variety of factors. Some of the more prevalent and larger order of magnitude factors include:

- The branch of service the individual serves in or is employed by and whether the individual is assigned as Active Duty (AD), Reserve Component (RC), or a retired member of the Armed Forces (Army, Marine Corps, Navy, Air Force, and Coast Guard), or a DOD civilian (includes appropriated and non-appropriated funded employees, etc.). This study will focus solely on the AD assigned service members and their eligible beneficiaries.

- The geographic location the service member is assigned (inside or outside the Continental United States; CONUS or OCONUS, respectively).
- The individual's assignment status as "Accompanied" (assignment includes eligible dependents), or "Unaccompanied" (assignment does not include dependents).
- Due to limited resources, this study does not exclusively and exhaustively research and report on the housing characteristics associated with each of the factors and personnel categories. Given the historic correlation between the condition of MFH and service member recruitment and retention rates in the DOD (*Statement of Mr. Peter Potochney Acting Assistant Secretary of Defense (EI&E) before the U.S. Senate Appropriations Committee*, 2017, p. 2), the focus of this study is on MFH and MFH tenant health, well-being, and readiness.
- Due to time limitations this study will not acquire DOD-wide approval to survey all branches of the Armed Forces that receive annual National Defense Authorization Act (NDAA) funded appropriations (i.e., USA, USN/USMC, USAF). This study will acquire Department of the Navy (DON) approval from the Navy Research and Survey Office, Operations of the Navy (OPNAV), N1, to conduct research utilizing DON personnel at various CONUS locations. This sampling is intended to be statistically relevant, generalizable, and representative of the DOD population.

3. Assumptions

- Adequate survey results will be received per the NPS Institutional Review Board (IRB)-approved research proposal. Results of this study will be generalizable given a CONUS-wide sampling strategy that acquires representative samples from each of the nine U.S. Census Bureau Divisions comprised of the U.S. contiguous states forming the four major U.S. Census Bureau Regions: West, Midwest, South, and Northeast. This

survey rationale is further explained in Chapter III-Methodology. (*US Census Bureau Regions and Divisions*, 2015)

- This study will not specifically research other forms of housing provided by the DOD, such as “Unaccompanied Housing” (UH).
- Factors that negatively affect MFH safety, health, and habitability result in a detriment to MFH tenant readiness. UH and UH tenant readiness will be similarly negatively affected.
- Most MFH MHPI project agreements and land conveyances consist of 50 year lease terms that were issued after 1996. (Schuster, 2000, p. 7)
- MFH and MHPI project Business Agreements currently in place will remain in place. Major or material changes will only occur per mutual agreement of the parties involved or as directed by law.
- Housing occupants and potential housing occupants will desire affordable, safe, healthy, habitable housing regardless of whether they reside off base in residences located in the local community or use on-base housing. Base housing occupant preferences will be provider agnostic, indiscriminate of DOD-owned and/or managed or Joint Venture/Public Private Venture (JV/PPV) partnership owned and/or managed (i.e., MHPI project owned/managed by private developers).
- Basic Allowance for Housing (BAH) entitlements will remain in effect and will not be materially changed.
- Building and construction industry characteristics such as state and local building codes, building materials, and building practices, etc., will remain relatively like that of previous years with no significant changes.

F. BENEFITS OF RESEARCH

Currently, 99% of MFH has been privatized with a third of the AD armed forces relying on privatized MFH to keep their families safe both while the service member supports National Defense and readiness initiatives in garrison in preparation for deployment, as well as while forward-deployed (Lepore, 2018, pp. 1, 5). Ensuring MFH is affordable, safe, healthy, and habitable will effectively mitigate negative mission impacts allowing our servicemen and servicewomen to focus on their mission.

These hallmark readiness requirements must be fully met. Otherwise, unnecessary risk is assumed, unnecessarily jeopardizing mission success. Accepting unnecessary risk is prejudicial to the department's Operational Risk Management (ORM) framework and contrary to the DOD mission. This research reinforces these principles and aims to enhance support through strategies that provide objective analysis and enhance feedback mechanisms through policy-based measurement criteria to facilitate and enable immediate action to preserve, protect, and cultivate service member and family health, well-being, and readiness.

With one third of the nation's armed forces reliant on privatized housing, the MHPI, as an individual program effort, has a direct and decisive effect on the nation's ability to provide the combat-credible military forces that are required to protect the sovereignty and security of the nation. The well-renowned credibility and capability of the United States' joint forces has deterred many would-be United States adversaries, achieving, and maintaining peace, through strength. The current privatized military housing crisis erodes both the nation's credibility as well as its capability to provide combat-credible military forces. End result, the United States' credibility and capability to project power is diminished, and the president of the United States and the United States' elected representatives lack positional strength and empowerment to negotiate U.S. terms of peace.

The benefits of this research supports and can affect positive change in each of the following three NDS LOEs (White House, 2018, p. 5):

1. Rebuild military readiness and enhance warfighter lethality.
 - Safer, healthier homes provide:
 - Improved military member and family readiness.
 - Enhanced cognitive functions, increasing innovation, adaptability, lethality.
2. Attract new like-minded strategic partners, strengthening current alliances.
 - A stronger, more lethal, and adaptable military fighting force, similar in values and ideologies, will attract new partner nations as well as new business partners. These effects alone will strengthen current alliances.
3. Improve Enterprise processes; create fiscal efficiency and improve results.
 - Improved financial accountability and auditability of MHPI projects will create fiscal efficiencies providing improved financial performance across the force. As lessons learned and best business practices are shared across the force, the department benefits, creating synergistic-like increases in new available funding and opportunities to benefit from.
 - Given the significant percentage of discretionary government appropriated funds allocated to housing the department's joint forces, more efficient use of DOD housing dollars has the potential to result in significantly increased funding for other capabilities or readiness programs.

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II. LITERATURE REVIEW

We must demonstrate to our men and women in service that their quality-of-life needs will be taken care of so that they can dedicate their full attention to the mission. When military members worry unduly about personal finances and whether their families are properly cared for, morale and efficiency decline with corresponding effects on retention and readiness.

— Major General R. Dean Tice,
Deputy Assistant Secretary of Defense for Personnel Policy and Force
Management (Twiss & Martin, 1998, p. 38)

A. INTRODUCTION

In the late 1980s to early 1990s, the DOD took special note of its older, obsolete, and ill-maintained GOGC housing inventory (Reishauer, 1993, pp. 1–3). Based on preceding research and studies anchoring on the Office of the Undersecretary of Defense for Acquisition and Technology (OUSD A&T) Defense Science Board’s Task Force on Quality of Life (QoL) report published in October 1995, the DOD determined employing traditional military construction (MILCON) practices to replace or revitalize its current antiquated GOGC housing inventory would not suffice due to time and funding resource constraint challenges at a minimum. (Marsh, 1995, pp. 15–16)

The DOD feared traditional housing construction strategies would consistently fail to provide access to affordable, quality housing with the speed and urgency required, which would inevitably result in the department’s inability to achieve the required recruitment and retention goals necessary to provide ready, combat-capable military forces. The dawn of the second and current era of military housing, the MHPI era, begins to take shape as the DOD determined it needed to look to privatization to leverage the private sector real estate development skills, knowledge, and abilities, but most importantly, private capital, to overcome the department’s housing and financial challenges. The DOD’s preferred solution, or as the department saw it, the only feasible solution that provided the immediate housing improvements the department needed, was authorized February 11, 1996, with

President Clinton signing the Fiscal Year (FY) 1996 Nation Defense Authorization Act (NDAA) (Gebicke, 1998, pp. 2–3).

The signing of the FY 1996 NDAA marks the birth of MHPI. The MHPI’s principal objective was to enable the DOD to provide affordable, quality housing to its eligible beneficiaries as required by department policy. By leveraging private capital and expertise, MHPI was expected to accomplish its principal objective at greater speed and at reduced risk to readiness compared to other alternatives (e.g., MILCON). Given the fluid and unstable state of government funding as a result of persistent budget cuts and funding reallocation, utilizing traditional MILCON practices would force the DOD to accept significant risk (Reishauer, 1993, p. 11), which the department was avoiding at all costs.

By leveraging private sector capital and expertise as authorized by the MHPI, the DOD aimed to quickly rebuild and revitalize over 200,000 existing antiquated and/or dilapidated MFH units at the cost of approximately \$20 billion (Gebicke, 1996, pp. 2–3). While initial MHPI efforts were off to a slow start (Gebicke, 1998, p. 20), MHPI briskly picked up its pace through the early 2000s. By February 2009, the DOD had privatized nearly 188,000 of its MFH units with another 31,000 units projected to be privatized by end of 2012 amounting to 98% of the DOD’s housing inventory being transferred to private companies (Lepore, 2009, p. 18).

B. POLICY

The following directives, instructions, manuals, laws, etc., establish requirements and expectations related to military service, housing, and service member and military family health and readiness. These mandates were identified as the prevailing influential policies related to this study’s housing, health, and readiness research literature review, many of which were principally referenced in the development of this study’s survey.

1. 2017 National Security Strategy (NSS)

The President of the United States’ vision for strategic Congressional and agency-level planning and forecasting. Government and agency heads (e.g., Congress [legislative branch], Secretary of Defense (SECDEF), Food and Drug Administration, etc.) use this

strategic guidance as the basis for planning factors. Many other subordinate agencies use the NSS as one of their key planning and reference documents also (e.g., Office of Management and Budget (OMB), Congressional Budget Office (CBO), Combined Joint Chiefs of Staff (CJCS), etc. Pillar III of the 2017 NSS, Preserve Peace Through Strength, calls for a renewed focus on revitalizing and rebuilding military readiness and capabilities (White House, 2017, p. 25).

2. 2018 National Defense Strategy (NDS)

The SECDEF's strategic guidance to the leadership and service members of the military services. The NDS typically codifies a warfighter vision of how the DOD will support the nation in achieving the goals outlined in the NSS. It is not a step by step, checklist. Like a civilian for-profit corporation's "Mission/Vision" statement, the NDS lays out how the DOD fits into and supports the NSS.

The 2018 NDS calls for three distinct LOEs (White House, 2018, p. 5) ISO Pillar III of the 2017 NSS:

1. Rebuild military readiness and enhance warfighter lethality.
2. Attract new like-minded strategic partners, strengthening current alliances.
3. Improve Enterprise processes; create fiscal efficiency and improve results.

3. Oath of Office; Oath of Enlistment

While to many in uniform the oaths represent more than just written policy, more a call to, and sense of, duty, the oaths are nonetheless written policy.

Oath of Enlistment:

I, _____, do solemnly swear (or affirm) that I will support and defend the Constitution of the United States against all enemies, foreign and domestic; that I will bear true faith and allegiance to the same; and that I will obey the orders of the President of the United States and the orders of the officers appointed over me, according to regulations and the Uniform Code of Military Justice. So help me God." (Title 10, U.S. Code; Act of 5 May 1960 replacing the wording first adopted in 1789, with amendment effective 5 October 1962).

Oath of Office:

I ____, do solemnly swear (or affirm) that I will support and defend the Constitution of the United States against all enemies, foreign and domestic; that I will bear true faith and allegiance to the same; that I take this obligation freely, without any mental reservation or purpose of evasion; and that I will well and faithfully discharge the duties of the office on which I am about to enter. So help me God. (Title 5 U.S. Code 3331, an individual, except the President, elected or appointed to an office of honor or profit in the civil service or uniformed services).

The intrinsic value each individual service member of the military assigns to the oath they take may vary; however, every branch of the military service also maintains a set of core values that every service member pledges strict adherence to in all that they do. Regardless the acronym, slogan, or phraseology used, the purpose each of the service's core values serves is essentially the same: to instill pride, commitment, esprit de corps and to create a common and deeply shared identity founded on principles of integrity, respect, courage, ethics, and selflessness (DOD, 2009).

Given the requirements of military service and the myriads of people that must come together at a moment's notice and put their faith, trust, and confidence, possibly even their life, in the hands of someone they may hardly know, requiring these attributes requires little explanation.

4. DOD Directive (DODD) 5124.02 Under Secretary of Defense for Personnel and Readiness (USD(P&R))

DODD 5124.02 is the principal source of delegated *authority* from the SECDEF to the USD(P&R); the office charged with sharing the responsibility with the SECDEF for Total Force Management (TFM) as it relates to the implementation of the NSS. Simply put this relates to both the expressed and implied duties and responsibilities associated with providing the appropriate human capital to implement the NSS; that the human capital requirements are appropriately met as it relates to their organization, manning, training, and equipping of U.S. service members to carry out the duties and obligations required ISO the NSS' implementation.

The authority, or authorities, as it relates to this directive, the associated offices to which it applies, and further requirements of the offices, are included in United States Code (USC) Title 10, sections 113 and 136. CJCS Joint Publication (JP) 3-0 provides a high-level outline and explanation of some of the associated roles and responsibilities on pages II-1 and II-2 (CJCS, 2020, p. 1,2).

The relevance is that every service member in the military has in the very least a basic understanding of the “R-A-A” concept given it is incorporated into each of the service’s professional development and advancement programs:

Responsibility. State of being accountable; see “accountability.”

Accountability. Accountability for results; unambiguous responsibility for clearly established expectations for achieving specific, achievable, and measurable results (degree of accountability varies with the level of control or influence the individual or unit has on or over the results) (CJCS, 2019, p. 5).

Authority. Most frequently refers to the legal empowerment to issue commands, enforce compliance, or make positionally-based decisions. An instrument, legally binding or otherwise, that authorizes or limits policies and directives (e.g., laws, regulations, Executive Orders (EO), court decisions and judicial rulings) (CJCS, 2019, p. 76).

5. DOD Instruction (DODI) 4165.63 – DOD Housing

This instruction serves as the principal policy guidance for DOD housing policy matters. All military services are subject to it as it is DOD policy, not a service-specific policy (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2010a). Policies set requirements and expectations, but do not typically provide the “how-to” guidance. (CJCS, 2019, p. 734). “Manuals” typically provide the “how-to” guidance, such as standard operating procedures (SOP) (CJCS, 2019, p. 915).

In addition to assigning responsibilities for the management of DOD housing in accordance with (IAW) the authority it derives from other DOD Directives and mandates, DODI 4165.63 establishes four key DOD housing policy desired end states:

To ensure that eligible personnel and their families *have access to affordable, quality housing* facilities and services consistent with grade and dependent status and *generally reflecting contemporary community living standards* [emphasis added].

- A. To ensure that eligible personnel and their families *have access to affordable, quality housing* facilities and services consistent with grade and dependent status and *generally reflecting contemporary living standards* [emphasis added].
- B. To use a consistent DOD-wide analytical methodology for calculating the need to provide housing.
- C. That the Commander of an installation shall be responsible for the military housing programs with broad authority to decide the best use of resources to provide access to housing for eligible personnel and their families. (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2010a)

DODI 4165.63 contains a list of 12 references included as an enclosure that provide additional amplifying guidance ISO ensuring compliance with these four key housing policies; however, there is no discernible priority or ranking established to guide a reader as to which references take priority over the others in the event of a conflict or constrained resources. See Figure 1.

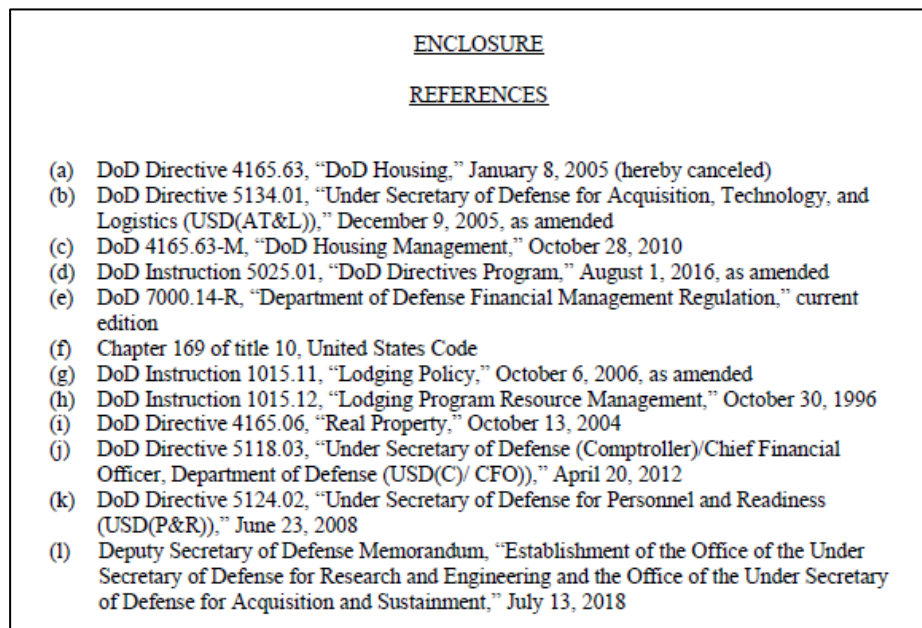


Figure 1. DODI 4165.63 List of references. Source: Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (2010a).

6. DOD Manual (DODM) 4165.63 – DOD Housing Management Manual

The general “how-to” guidance for the military services regarding housing management. Like its sibling DODI 4165.63, the DODM also assigns responsibilities as it relates to DOD housing management, yet the DODM includes authorities for the implementation of housing policy as well as providing procedures for matters related to DOD housing and further establishes requirements for standardized processes across the military services (i.e., SOP). DODM 4165.63 provides numerous procedural instructions regarding how to accomplish various requirements related to supporting the four key housing policies specified by DODI 4165.63.

For the housing management matters DODM 4165.63 supports either directly or indirectly but does not specifically cover, Enclosure (1), References, Enclosure (2), Responsibilities, and Enclosure (3), Procedures, are included. See Figure 2 and Figure 3.

ENCLOSURE 1

REFERENCES

- (a) DoD 4165.63-M, "DoD Housing Management," September 1993 (hereby cancelled)
- (b) DoD Instruction 4165.63, "DoD Housing," July 21, 2008
- (c) DoD Directive 5134.01, "Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L))," December 9, 2005, as amended
- (d) Deputy Secretary of Defense Memorandum, "Establishment of the Office of the Under Secretary of Defense for Research and Engineering and the Office of the Under Secretary of Defense for Acquisition and Sustainment," July 13, 2018
- (e) DoD Directive 5118.03, "Under Secretary of Defense (Comptroller) Chief Financial Officer, Department of Defense (USD(C)/CFO)," April 20, 2012
- (f) DoD Instruction 1015.11, "Lodging Policy," October 6, 2006, as amended
- (g) DoD Instruction 1015.12, "Lodging Program Resource Management," October 30, 1996
- (h) DoD Directive 5124.02, "Under Secretary of Defense for Personnel and Readiness (USD(P&R))," June 23, 2008
- (i) DoD Directive 1020.1, "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of Defense," March 31, 1982, as amended
- (j) Deputy Secretary of Defense Memorandum, "Access for People with Disabilities," October 31, 2008
- (k) Sections 3601-3631 and 4154 of title 42, United States Code
- (l) DoD Instruction 4001.01, "Installation Support," January 10, 2008, as amended
- (m) DoD Directive 4270.5, "Military Construction," February 12, 2005
- (n) Unified Facilities Criteria 4-711-01, "Family Housing," July 13, 2006
- (o) DoD Instruction 1400.25, Volume 1230, "Employment in Foreign Areas and Employee Return Rights," July 26, 2012
- (p) Office of Management and Budget Circular No. A-45, "Rental and Construction of Government Quarters," October 20, 1993, as amended
- (q) Sections 902-907 of title 20, United States Code
- (r) DoD Instruction 1000.15, "Procedures and Support for Non-Federal Entities Authorized to Operate on DoD Installations," October 24, 2008
- (s) Sections 504 and 794 of title 29, United States Code
- (t) Sections 401 and 403 of title 37, United States Code
- (u) Title 10, United States Code
- (v) DoD Instruction 4165.65, "Shelter for the Homeless Program," October 30, 1987
- (w) National Association of Home Builders Research Center, "Military Family Housing Standards Study," August 2001
- (x) Deputy Secretary of Defense Memorandum, "DoD Housing Inspection Standards for Medical Hold and Holdover Personnel," September 18, 2007
- (y) DoD Instruction 1344.07, "Personal Commercial Solicitation on DoD Installations," March 30, 2006
- (z) DoD Instruction 4715.16, "Cultural Resources Management," September 18, 2008

Figure 2. DODM 4165.63, enclosure 1: List of references (page 1 of 2).
Source: Office of the Under Secretary of Defense for Acquisition,
Technology and Logistics (2010b).

- (aa) Sections 470-470x-6 of title 16, United States Code (also known as “The National Historic Preservation Act of 1966, as amended”)
- (ab) DoD Directive 5105.53, “Director of Administration and Management (DA&M),” February 26, 2008
- (ac) Office of Management and Budget Circular No. A-94, “Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs,” October 29, 1992
- (ad) DoD Instruction 7041.03, “Economic Analysis for Decision-Making,” September 9, 2015, as amended
- (ae) Under Secretary of Defense (Comptroller)/Chief Information Officer, Department of Defense, Memorandum, “Family Housing Improvement Fund Financial Management Policies and Procedures,” July 15, 1996¹
- (af) Office of Management and Budget Circular No. A-129, “Policies for Federal Credit Programs and Non-Tax Receivables,” November 2000
- (ag) DoD Instruction 1342.22, “Military Family Readiness,” July 3, 2012, as amended
- (ah) DoD Instruction 1100.16, “Equal Opportunity in Off-Base Housing,” August 14, 1989
- (ai) DoD Directive 4165.50E, “Homeowners Assistance Program (HAP),” February 7, 2014, as amended
- (aj) Office of the Chairman of the Joint Chiefs of Staff, “DoD Dictionary of Military and Associated Terms,” current edition
- (ak) Defense Base Closure and Realignment Commission Final Report, “2005 Defense Base Closure and Realignment Commission Report,” September 8, 2005

Figure 3. DODM 4165.63, enclosure 1: List of references (page 2 of 2).

Source: Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (2010b).

Note there are 37 supporting references listed. Between DODI 4165.63 and DODM 4165.63 there are nearly 50 supporting references, none of which have any discernable prioritization as to which takes precedence over the other outside of DODI 4165.63’s fourth key housing policy, which is echoed by DODM 4165.63, stating that installation Commanders bear the responsibility for the military housing programs with which they have been entrusted, “... *with broad authority to decide the best use of resources to provide access to housing for eligible personnel...*”

DODM 4165.63’s purpose and policy statements essentially mirror DODI 4165.63’s outside of these covered exceptions.

7. DOD Instruction (DODI) 1342.22 – Military Family Readiness

It is commonly accepted that military families can face challenges ISO national defense, and that the general civilian population of the United States, while certainly not

devoid of challenges, is not subject to the same rigors and challenges as those associated with duties and obligations of military service. Hence, DODI 1342.22 serves the need and benefit to the military to provide for and protect military family readiness through an array of support services which are centrally aimed at improving service member and military family quality of life (QoL).

DODI 1342.22's purpose statement assigns responsibilities and includes the establishment of policies and procedures for ensuring adequate and appropriate military family readiness services such as relocation assistance and financial education and counseling. Requirements and guidelines for Emergency Family Assistance (EFA) in the case of emergent or all-hazard displacement are also included, as are protocols for RC personnel support to ensure and support surge capability should it be needed). The policy requirements included below are but a few of those listed in DODI 1342.22 Military Family Readiness:

- A. The role of personal/family life shall be incorporated into organizational goals related to recruitment, retention, morale, and operational readiness of the military force.
- B. Service members and their families have primary responsibility for their well-being. Family readiness services enhance Service members' and families' abilities to fulfill that responsibility.
- C. The type and level of family readiness services provided to Service members and their families shall be correlated to needs resulting from the unique challenges associated with military service across three domains of family readiness:
- D. (1) Mobilization and deployment readiness.
- E. (2) Mobility and financial readiness.
- F. (3) Personal and family life readiness.
- G. Promote military recruitment and retention, and support commanders' ability to maintain a mission-ready force consistent with DODI 4001.1 Installation Support.
- H. Provide compassionate, coordinated assistance and support to DOD personnel and their families in the event of an all-hazards incident. (Office of the Under Secretary of Defense for Personnel and Readiness, 2012)

8. United States Code (USC) Title 10, Chapter 169, Military Construction (MILCON) and Military Family Housing (MFH)

Unique to USC Title 10, Chapter 169 in comparison to the other policies is the basis of USC Title 10's authority. USC Title 10 is Public Law, as passed by Congress and signed by the president. As with any U.S. Code, its premise and purpose is to communicate objectives and initiatives that Congress has expressly and specifically authorized the use of appropriated funds for; USC Title 10 Chapter 169 relates to supporting Military Construction and Military Family Housing (Military Construction and Military Family Housing, 2019).

DOD policies do not carry the same level of authority as USC; therefore, DOD policy's reach does not extend beyond the office which the policy was signed and published under. The Tenant Bill of Rights is the focus of USC Title 10 Chapter 169. See Figure 4.



Military Housing Privatization Initiative Tenant Bill of Rights

The Department of Defense is fully committed to ensuring our Nation's most valued resource—its military service members and their families—have access to safe, quality, and well-maintained homes and communities on DoD installations.

The National Defense Authorization Act for Fiscal Year 2020 set out eighteen rights of military service members and their families (Tenants) residing in privatized housing. The Department of Defense commits to ensuring that privatized housing Tenants receive quality housing and fair treatment from the Military Housing Privatization Initiative project owners (MHPI companies) that operate and maintain privatized housing.

It is paramount that residents receive the full benefit of each right. The Department of Defense, through each of its Military Departments, will work diligently and expeditiously to develop the processes and procedures needed to implement these rights and make Tenants aware of them. However, many of the rights set forth by Congress pertain to legal matters that do not lend themselves to unilateral action by the Department. To the extent it is not already the case, the Military Departments commit to working with the MHPI companies to incorporate these rights and procedures into appropriate project legal documents. In some cases, more work is required before the benefits of these rights are fully available to tenants.

The Department commits to providing the full benefit of the following 15 rights by May 1, 2020.

1. The right to reside in a housing unit and a community that meets applicable health and environmental standards.
2. The right to reside in a housing unit that has working fixtures, appliances, and utilities and to reside in a community with well-maintained common areas and amenity spaces.
3. The right to a written lease with clearly defined rental terms to establish tenancy in a housing unit, including any addendums and other regulations imposed by the Landlord regarding occupancy of the housing unit and use of common areas.
4. The right to a plain-language briefing, before signing a lease and 30 days after move-in, by the installation housing office on all rights and responsibilities associated with tenancy of the housing unit, including information regarding the existence of any additional fees authorized by the lease, any utilities payments, the procedures for submitting and tracking work orders, the identity of the military tenant advocate, and the dispute resolution process.
5. The right to have sufficient time and opportunity to prepare and be present for move-in and move-out inspections, including an opportunity to obtain and complete necessary paperwork.
6. The right to report inadequate housing standards or deficits in habitability of the housing unit to the Landlord, the chain of command, and housing management office without fear of reprisal or retaliation, including reprisal or retaliation in the following forms: (A) unlawful recovery of, or attempt to recover, possession of the housing unit; (B) unlawfully increasing

Figure 4. Tenant Bill of Rights (page 1 of 2). Source: Military Construction and Military Family Housing (2019).

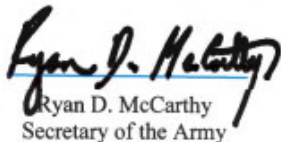
the rent, decreasing services, or increasing the obligations of a Tenant; (C) interference with a Tenant's right to privacy; (D) harassment of a Tenant; (E) refusal to honor the terms of the lease; or (F) interference with the career of a Tenant.

7. The right of access to a Military Tenant Advocate or a military legal assistance attorney, through the housing management office of the installation of the Department at which the housing unit is located to assist in the preparation of requests to initiate dispute resolution.
8. The right to receive property management services provided by a Landlord that meet or exceed industry standards and that are performed by professionally and appropriately trained, responsive and courteous customer service and maintenance staff.
9. The right to have multiple, convenient methods to communicate directly with the Landlord maintenance staff, and to receive consistently honest, accurate, straightforward, and responsive communications.
10. The right to have access to an electronic work order system through which a Tenant may request maintenance or repairs of a housing unit and track the progress of the work.
11. With respect to maintenance and repairs to a housing unit, the right to the following: (A) prompt and professional maintenance and repair; (B) to be informed of the required time frame for maintenance or repairs when a maintenance request is submitted; and (C) in the case of maintenance or repairs necessary to ensure habitability of a housing unit, to prompt relocation into suitable lodging or other housing at no cost to the Tenant until the maintenance or repairs are completed.
12. The right to receive advice from military legal assistance on procedures involving mechanisms for resolving disputes with the property management company or property manager to include mediation, arbitration, and filing claims against a Landlord.
13. The right to have reasonable, advance notice of any entrance by a Landlord, installation housing staff, or chain of command into the housing unit, except in the case of an emergency or abandonment of the housing unit.
14. The right to not pay non-refundable fees or have application of rent credits arbitrarily held.
15. The right to expect common documents, forms, and processes for housing units will be the same for all installations of the Department, to the maximum extent applicable without violating local, State, and Federal regulations.

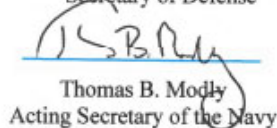
With respect to the remaining three rights—access to maintenance history, process for dispute resolution, and withholding of rent until disputes are resolved—the Department will continue to work with the MHPI companies and, as necessary, Congress to ensure the benefits of these rights are fully available. While the Department develops standardized, formal processes for these rights, service members and their families will be able to leverage the support available from their respective Military Departments to address and resolve relevant housing issues. Tenants seeking assistance should continue to engage their housing office, installation leadership, or chain of command.



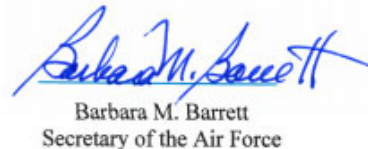
Mark T. Esper
Secretary of Defense



Ryan D. McCarthy
Secretary of the Army



Thomas B. Modly
Acting Secretary of the Navy



Barbara M. Barrett
Secretary of the Air Force

Note there are actually 18 Rights included in Tenant Bill of Rights, not 15.

Figure 5. Tenant Bill of Rights (page 2 of 2). Source: Military Construction and Military Family Housing (2019).

9. DOD Instruction (DODI) 4001.01 – Installation Support

DODI 40001.01 provides overarching installation management policy to ensure the effective and efficient alignment of assets and resources ISO the warfighter by specifying expected performance standards for five codified and defined categories of installation services and support related to installation life-cycle management:

(1) Facilities, (2) Services, (3) Family Housing, (4) Environment, and (5) Base Realignment and Closure (BRAC).

DODI 4000.01 outlines the following DOD policies related to the delivery of support and services as it relates to their associated output level standards:

- A. Provide acquisition, management, resourcing, and delivery of installation support to advance the overall mission of the Department of Defense. Installation support shall be governed to ensure DOD Components provide consistently high standards in support of the warfighting mission.
- B. Ensure that Installation Commanding Officers retain the authority to adjust standards to meet the morale, local quality of life, and work environment needs. This applies to family quality of life needs as well. (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2008)

10. Unified Facility Criteria (UFC) 4-711-01 Family Housing

UFC 4-711-01 is a coming together of the Army, Navy, and Air Force’s facilities and civil engineering authorities (i.e., U.S. Army Corps of Engineers, Naval Facilities Engineering Command, and Air Force Civil Engineer Support Agency) to create and provide MFH plans, designs, processes, and procedures ISO new housing construction and requirements for its sustainment. Specifications and requirements related to restoration and modernization of existing housing stocks is also covered (Department of Defense, 2018b).

UFC 4-711-01’s Military Family Housing goal statement is: “To provide quality-housing neighborhoods and dwellings to contribute to a strong force of skilled people who provide the readiness of our Military Forces” (Department of Defense, 2018b, p. 1).

UFC 4-711-01’s Military Family Housing objective ISO its goal statement includes an oath-like vow, “To bring the existing required housing inventory up to contemporary

housing standards (i.e., life safety, convenience, quality, livability, maintainability) to the extent practicable through repair, improvement and replacement” (Department of Defense, 2018b, p. 1).

Based on this literature it appears current federal, state, and residential building codes and designs are leveraged ISO UFC 4-711-01. The revised 2018 UFC reflects updates from the 2006 version to better align with modern residential construction standards and practices to provide safer housing units that are both more efficient as well as resilient (Department of Defense, 2018b, p. Summary Sheet). Notably, the construction of housing units and facilities with increased resiliency is also included in section 2815, USC Title 10 Chapter 169.

11. National Association of Home Builders (NAHB) Research Center, Military Family Housing (MFH) Standards Study

A 2001 study commissioned by the department following changes to MILCON authorities that eliminated decade-long size limitations on MFH. The rationale and justification for the abolishment of the previous long-standing limitations was to enhance service member and military family QoL and improve military readiness through improved military recruitment and retention by way of improved housing. The results of the study were used to establish benchmarks for the construction of housing facilities for military families that are comparable to (at the time) current construction, design, features, and accommodations found in civilian community [private sector] housing (National Association of Home Builders (NAHB), 2001, p. 2).

C. STRATEGY

Strategy is the connector, it is what bridges and narrows the gap between what policy says must be done (i.e., the desired end state; the objective), and where we stand (i.e., the current end state). The DOD Dictionary defines strategy as: “A prudent idea or set of ideas for employing the instruments of national power in a synchronized and integrated fashion to achieve theater, national, and/or multinational objectives” (CJCS, 2019, p. 927).

As it relates to the policies covered, the objective is to ensure service members and their families are provided with safe and affordable quality housing.

1. DODM 4165.63 – DOD Housing Management Manual

Enclosure 2 of DODM 4165.63 assigns responsibilities as prescribed and authorized by the authority of the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics (OUSD AT&L), which further assigns and redelegates duties and responsibilities for housing oversight and management to the Assistant Secretary of Defense for Energy, Installations, and Environment (ASD(EI&E)) (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2010b, p. 7)

At the ASD(EI&E) level, responsibility for housing oversight and management are shared among three offices senior to the secretaries of Army, Navy, and Air Force. The ASD(EI&E) retains principal responsibility and accountability for housing; however:

1. The Under Secretary of Defense (COMPTROLLER)/Chief Financial Officer, Department of Defense (USD(C)/CFO), is delegated duties for providing guidance and procedures related to finance, budgeting, and accounting; and,

2. The Under Secretary of Defense for Personnel and Readiness (USD(P&R)) is delegated responsibilities for providing policy, guidance and procedures related to personnel, which is then redelegated to the heads of the DOD service components (respective service secretaires of the armed forces).

As reflected in the DOD directives, instructions, and manuals, the responsibility for ensuring service members and their eligible dependents are provided housing and readiness services and support is last redelegated to the cognizant Installation Commander. Enclosure 3 of DODM 4165.63, Procedures, provides guidance and tools ISO housing requirements determinations, housing market analysis, operating and maintaining DOD Housing (i.e., GOGC housing), to include support and coordination with privatized housing projects as well as monitoring.

The processes included in Enclosure 3, Procedures, may suffice provided the Installation Commander's support staff is appropriately manned, trained and equipped to manage what appears to require unique skills, knowledge, and abilities. However, the risk to the installation's mission, both directly as well as indirectly, and most importantly the morale and welfare of the service member and the service member's eligible beneficiaries

must also be considered and weighed in the Commander’s risk assessment if this is not the case (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2010b, pp. 10–34).

DODM 4165.63 makes mention of conducting surveys pertaining to housing and relocation assistance on pages 16 and 35 but does not provide any discernable measurements or indicators of success.

2. Government Accountability Office (GAO) Report GAO-20-281

GAO-20-281 includes four metrics used by the services to evaluate a privatized project’s performance (Field, 2020b, p. 19):

- maintenance management
- resident satisfaction
- project safety
- financial management

However, the same report also explains how gross issues involving inaccurate reporting, inconsistent aggregation of data, using measures and metrics of success such as response times to start the work order, not actually whether a maintenance work order was physically completed or completed satisfactory, resulted in those metric’s data being unusable or of little to no value.

D. MISMATCH

First, an abbreviated summary of the policy end state requirements from Chapter II, Literature Review, to spotlight some of the higher priority policy end state requirements.

1. Summary and Review of Policy Objective Desired End States

a. DODI 4165.63 – DOD Housing:

- To ensure that eligible personnel and their families *have access to affordable, quality housing* facilities and services consistent with

grade and dependent status and *generally reflecting contemporary community living standards* [emphasis added]. (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2010a)

- That the Commander of an installation shall be responsible for the military housing programs with broad authority to decide the best use of resources to provide access to housing for eligible personnel and their families. (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2010a)

b. DODI 1342.22 – Military Family Readiness:

- The role of personal/family life shall be incorporated into organizational goals related to recruitment, retention, morale, and operational readiness of the military force.
- The type and level of family readiness services provided to Service members and their families shall be correlated to needs resulting from the unique challenges associated with military service across three domains of family readiness:
 - (1) Mobilization and deployment readiness.
 - (2) Mobility and financial readiness.
 - (3) Personal and family life readiness.
- Promote military recruitment and retention, and support commanders' ability to maintain a mission-ready force consistent with DODI 4001.1 Installation Support.
- Provide compassionate, coordinated assistance and support to DOD personnel and their families in the event of an all-hazards incident. (Office of the Under Secretary of Defense for Personnel and Readiness, 2012)

c. DODI 4000.01 – Installation Support:

- Provide acquisition, management, resourcing, and delivery of installation support to advance the overall mission of the Department of Defense. *Installation support shall be governed to ensure DOD Components provide consistently high standards in support of the warfighting mission* [emphasis added].
- Ensure that Installation Commanding Officers retain the authority to adjust standards to meet the morale, local quality of life, and work environment needs. This applies to family quality of life needs as well. (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2008)

d. UFC 4-711-01 Family Housing

UFC 4-711-01's Military Family Housing goal statement: "To provide quality-housing neighborhoods and dwellings to contribute to a strong force of skilled people who provide the readiness of our Military Forces" (Department of Defense, 2018b, p. 1).

UFC 4-711-01's Military Family Housing objective ISO its goal statement: "To bring the existing required housing inventory up to contemporary housing standards (i.e., life safety, convenience, quality, livability, maintainability) to the extent practicable through repair, improvement and replacement" (Department of Defense, 2018b, p. 1).

Next, regardless the current DOD policy desired end states and strategies just reviewed calling for delivery of high-quality products and services, the following undesirable results regarding housing and readiness concerns were provided or covered through GAO and DODIG reports, Congressional testimony, etc. These examples support the assertion that a mismatch exists, resulting in substandard products and services being received by service members and their families.

This is not to say that all privatized housing projects are failing to meet established policies, standards, and expectations. The fact these events occurred brings to light the reality that mismatches exist; the occurrence of these events is otherwise unexplainable.

However, as discussed by the members of Congress, witness testimony, and explained in the GAO and DODIG reports, the problems seem to be systemic and pervasive.

2. Congressional hearings and testimony

a. *House Committee on Appropriations Hearing on Military Privatized Housing; Tuesday, March 3, 2020*

Three panels of witnesses provided testimony to the committee on the condition of privatized military housing. The first panel consisted of two military housing tenants representing their families to give testimony and answer the committee's inquiries related to the tenant's privatized military housing experiences. In the second panel, representatives from five of the fourteen privatized military housing developers that provide housing through the MHPI were present to give testimony on behalf of Balfour Beatty Communities, Corvias, Lend Lease America, Hunt Military Communities, and Lincoln Military Housing. Lastly, in the third panel, Acting Secretary of Defense for Sustainment, Mr. Pete Potochney, and Ms. Elizabeth Field, Defense Capabilities and Management.

In her opening remarks, Chairwoman Mrs. Debbie Wasserman-Schultz included mention of the 2018 Reuters' articles included under the series title, "Ambushed at Home: The hazardous, squalid housing of American military families," and stated she had the opportunity to visit and speak with many families affected by conditions similar to those included in the Reuters' articles during her travels to military installations and personally, *"...seen first-hand the deplorable conditions of some of the military housing and how long the conditions were allowed to persist without response from the private companies..."* (House Appropriations Committee, 2020).

United States Army Colonel Scott Gerber opened his testimony by stating he was shocked to learn of the next witnesses' privatized military housing experiences, the Gherdovich's, which paralleled his, yet followed a year after his and a year after the first hearing when the privatized housing providers swore under oath to fix these issues (presumably alluding to the February 13, 2019 Senate Armed Services Committee Hearing to receive testimony on the condition of the Military Housing Privatization Initiative) (House Appropriations Committee, 2020).

Colonel Gerber's testimony included many of his own family's privatized military housing experiences: living in two mold infested homes, being unable to acquire acceptable maintenance work and misinformed by privatized housing employees who told him mold would not hurt him or his family, and the fact he was personally powerless and unable to stop the housing allowance allotment that continued to be drawn for uninhabitable housing.

Experiences while attempting to help other families included finding water damaged and toxic levels of mold in 13 of 16 homes tested after hiring an independent inspector, which included six of seven homes the contractor recently built for junior enlisted service members and their families.

Colonel Gerber's testimony centered on two strategic imperatives that he felt must come to fruition if the DOD and Congress were to be successful in bringing an end to further ghastly military housing stories like the ones included in his testimony:

1. Oversight; and,
2. Accountability

Colonel Gerber added these imperatives could be achieved through three initiatives:

- a. Full implementation of the 18 Tenant Bill of Rights.
- b. Expanding role of military families and advocacy groups in formal discussions.
- c. Government finding a way to bring in independent inspectors to ensure commanders receive unbiased assessments.

Colonel Gerber closed his opening remarks by saying:

I've deployed to combat three times. I've executed over 400 combat patrols. I carry a list of 42 friends and comrades we lost in combat, six of them under my command, so when I see what I saw in Fort Meade it's personal. We cannot send people into harm's way wondering if their family is in danger from the house, they live in. (*Our experience with privatized housing*, 2020)

Mrs. Gherdovich's testimony included experiences that paralleled Colonel Gerber's but included more personal information regarding the negative health effects

caused by the toxic conditions that she and her family were exposed to during the time the family lived in privatized military housing, especially the effects on her six children.

While the events Mrs. Gherdovich describes in her testimony are concerning, what is alarming and directly applicable to this study is the fact Mrs. Gherdovich states in her testimony that the residence provided to Mrs. Gherdovich and her family by the privatized housing developer had never actually been approved for occupancy (i.e., never received pre-leasing approval from the Base Commander). The Base Vice Commander, having learned of this new information after the fact, visited the Gherdovich family at the residence immediately after learning the home had never been approved for occupancy.

Given the long-term leases, many of which 50 years or longer, to include legal stipulations contained in the MHPI project business agreements (Field, 2020a, p. 18), it appears oversight and accountability as Colonel Gerber recommended in his testimony are the most prudent and impactful assurances DODI 4165.63 housing policy requirements will be met (*Our experience with privatized housing*, 2020); however, it appears holding the private developers accountable has been somewhat elusive.

Acting ASD(Sustainment), Mr. Peter Potochney, gave testimony in the third panel, his testimony centering on the actions necessary to correct recent MHPI failures and misgivings and that the recent designation of the Chief Housing Officer (CHO) will facilitate course correction through standardized policies, processes, and procedures while also ensuring appropriate oversight and administration of privatized housing (*Statement of Mr. Peter J. Potochney, Acting Assistant Secretary of Defense (Sustainment) on the Military Housing Privatization Initiative*, 2020).

Secretary Potochney provided a brief overview of MHPI, stating, “The Department remains confident that housing privatization was the right thing to do, and with continued diligence from all, can return to the success enjoyed over the first 20 years of the program” (*Statement of Mr. Peter J. Potochney, Acting Assistant Secretary of Defense (Sustainment) on the Military Housing Privatization Initiative*, 2020, p. 1).

Secretary Potochney next pointed out an important fact as it relates to the MHPI:

It is important to note that the private MHPI partners operating these projects are not DOD or Military Department contractors. The MHPI projects are private business entities and our relationship with them is not governed by federal acquisition regulations. The Military Departments retain oversight and limited decision-making rights through the project legal agreements. The government cannot unilaterally change a project legal document [Emphasis added]. When changes are pursued, in addition to project owner consent, the project lender also retains approval rights to project legal document changes. (*Statement of Mr. Peter J. Potochney, Acting Assistant Secretary of Defense (Sustainment) on the Military Housing Privatization Initiative*, 2020, p. 2)

Secretary Potochney included that each of the services monitor the MHPI projects under their charge to ensure private developer compliance with the terms of the project's business agreements to include both legal and regulatory requirements, as applicable. Five key oversight area efforts were discussed, which Secretary Potochney believed would provide the requisite structure, engagement, and oversight to allow the DOD, its service members, and the service members' families to once again enjoy the success of the MHPI as it did for the first 20 years of the program: 1) Senior leader engagement; 2) Rebuilding trust; 3) Accountability; 4) Transparency and communication, and 5) Financial viability (*Statement of Mr. Peter J. Potochney, Acting Assistant Secretary of Defense (Sustainment) on the Military Housing Privatization Initiative*, 2020).

Secretary Potochney's testimony brings into focus some of the unique challenges associated with the MHPI and an under-performing MHPI project provider. For example, if the department and its services have little to no authority to direct and/or affect change for poor private developer performance, what is the benefit, the return on investment, of the increased oversight? Further, as has been discussed, all DOD policies place the responsibility and accountability for service member and military family housing, installation support, and QoL, etc., firmly upon the shoulders of the Installation Commanders; however, as Secretary Potochney's testimony points out, not the service secretaries, or the assistant DOD secretaries, not even the SECDEF himself are vested with the authority over the MHPI project and/or private developers to affect any change in performance or behavior outside of some [comparatively and relatively speaking] small financial bonuses and incentives. Succinctly, as it relates to the "R-A-A" concepts, the

quagmire of figuring out how the DOD or the respective services enforce private developer compliance without the authority to direct change in private developer performance and behavior remains.

Further, assuming the matters of Mrs. Gherdovich's sworn testimony are in fact true and accurate, it appears even further vexing is the matter of enforcing compliance with other applicable legal and regulatory requirements, such as in the case of the private developer providing the Gherdovich's with a residence that had never received clearance for occupancy (*Written testimony*, 2020).

b. U.S. Senate Committee on Armed Services Hearing to receive testimony from the Government Accountability Office regarding reports of substandard conditions and services; Tuesday, December 3, 2019

The near two and a half hour hearing can be summarized in the first few minutes of Committee Chairman, Oklahoma Senator James Inhofe's opening remarks, referring to the condition of privatized military housing being, "...*a national crisis of proportions we haven't seen since the scandal at Walter Reed about a decade ago*" (*GAO on privatized housing*, 2019).

It is unclear if Chairman Inhofe comparing the likeliness of privatized military housing to the Walter Reed scandal was in reference to how individual incidents, by themselves, being seemingly trivial and not make sense, such as a private developer leasing a family of eight with a newborn infant child a home that never received pre-leasing approval from the base commander, or the byproducts of "resentment and disenfranchisement" that develops as a result the cumulative effects taking a toll on the well-being of those affected, as alluded to by Joe Wilson, a Walter Reed clinical social worker (Priest & Hull, 2007).

Chairman Inhofe went on to say, "...*members of this committee, our staff, and myself, we've all traveled and seen these problems first-hand. This is the third hearing this committee has had on this issue...progress has not been what we wanted. We continue to hear regularly from the families across the country about questionable practices and poor*

workmanship and frankly in some places about housing contractors not caring about the families they are supposed to be serving” (GAO on privatized housing, 2019).

Chairman Inhofe directed his comments to the service secretaries and service chiefs present to give testimony: “...*the time for talk is over. If these companies can’t get the job done you owe it to the military families to find a company who will...this housing problem is really a readiness problem...I ask: What are we going to do about it since a year later, we’re still hearing about the same problems (GAO on privatized housing, 2019)?*

It should be noted that Chairman Inhofe caveated his comments to the service secretaries and service chiefs with the statement that, while his comments may seem critical, his comments are not personally directed at the witnesses themselves, but rather their predecessors (only one of the witness’ tenure had spanned the year the committee had been holding hearings regarding substandard military housing conditions and services).

Ms. Elizabeth Field, GAO, included in her testimony that service members and their families began reaching out to the GAO in 2018 for help and to share their privatized military housing stories. Ms. Field stated GAO received reports of rampant mold issues, vermin infestation, as well as raw sewage, gas, and carbon monoxide leaks from privatized military housing tenants nation-wide. These reports were problematic for the GAO given recent DOD reports of maintaining an 87% military housing tenant satisfaction approval score, which Ms. Field pointed out, the DOD cited as, “...*being a critical indicator of overall program success” (GAO on privatized housing, 2019).*

Ms. Field explained that the GAO conducted an analysis of the DOD survey in hopes of gaining an understanding and explanation for the disparity between reports the GAO received from privatized military housing tenants compared to the DOD’s privatized military housing program tenant satisfaction survey score. According to Ms. Field’s testimony, results of the GAO’s analysis showed that the 87% satisfaction score as reported by the DOD was both inaccurate and unreliable based on the manner the survey was conducted, and the survey questions being asked. Further, irregularities regarding how survey scores were compiled as well as how the scores were calculated also invalidated any plausibility of an 87% military housing tenant satisfaction score.

These results left the GAO to question DOD reports claiming military housing's high occupancy rate of 93% program-wide was an unequivocal indicator of, *"...a high level of service member satisfaction and overall success in providing suitable and desirable housing"* (GAO on privatized housing, 2019).

To learn first-hand from privatized military housing tenants why they chose privatized military housing over other available options, GAO performed site visits, traveling to 10 different installations, and met with 15 different focus groups. As testified by Ms. Field, privatized military housing tenants overwhelmingly provided two primary explanations for choosing to occupy privatized military housing over other available options, neither of which were for reasons related to the base-housing unit itself other than the proximity of the residence's physical location being on base. The first explanation was a high demand for expeditious access to base community services (e.g., childcare and medical care, especially in the case of Exceptional Family Members (EFM), and the second related to concerns that local community housing was either not safe, or not affordable (GAO on privatized housing, 2019). Based on the GAO's evaluation and analysis it appears any claims made regarding privatized housing occupancy rates of greater than 93% being a result of service members' satisfaction with their actual living accommodations is unfounded.

To acquire a firmer grasp of the military housing problem and better understand the disparity in reporting, the GAO took a quantitative approach in hopes correlating work order rate and frequency with other associated work order characteristics would provide more definitive answers and guide further ongoing reviews and interpretation. GAO collected over 8,000,000 work order records generated through the 79 housing projects managed by the 14 private developer firms that support the MHPI. While the GAO's review did not provide the insight or answers they were hoping for, other unexpected issues were identified that still proved to be useful and beneficial. The GAO learned that private companies' maintenance and service records were riddled with inaccuracies, the most plausible explanation being because the maintenance data had not been consistently maintained. Unusual and unexplainable anomalies such as duplicate work orders and even work orders that had been closed on dates that predated the work order's submission date

were also discovered. The fact that the GAO learned these unusual and unexplainable anomalies were the only consistent trend across all 14 private developers and their 79 MHPI projects was an added and unintentional benefit that led to another lesson learned: If the GAO could not use this data because of its unreliability, the data should not have been relied on as the basis for paying out incentive bonuses to the privatized housing providers (*GAO on privatized housing*, 2019).

In his testimony before the committee, Acting Secretary of the Navy Thomas B. Modley cited the issues with the data the Navy was receiving from its MHPI project providers being a matter of the MHPI project providers providing the data in a meaningful way to ensure the data was accurate and relative related to providing a measurement and indicator of what the data was supposed to measure or was intended to measure. In short, Acting Secretary Modley explained to the committee that the data the Navy received from the MHPI project was not specific to the individual housing unit itself nor was the data standardized. These factors alone warrant concern of the accuracy of the MHPI project provider-provided data; compound these issues with the many others exponentially compounds the inaccuracy of the data received from the MHPI project providers (*GAO on privatized housing*, 2019).

In their own testimony that followed shortly after Acting Secretary of the Navy Modley's, both newly appointed, Secretary of the Air Force Barbara M. Barrett, and Secretary of the Army Ryan D. McCarthy both acknowledged and confirmed having similar issues and concerns with the data their respective service was receiving from its MHPI project providers and further added that receiving the data in aggregate as opposed to unaggregated was a significant contributing factor for why the data from the MHPI project providers was not accurate or a reliable means of measuring or confirming achievement of MHPI project objectives. One example provided by Secretary of the Air Force Barrett was that the data in aggregate obscured the individual itemized issues, adding that many of these individual issues that were examples of the critical points of failure and substandard performance being provided by the MHPI project providers, and consequently why some of the housing issues had continued to go on unnoticed (*GAO on privatized housing*, 2019).

c. U.S. Senate Committee on Armed Services Hearing to receive testimony on chain of command's accountability to provide safe military housing and other building infrastructure to servicemembers and their families; Thursday, March 7, 2019

The committee's second hearing on privatized military housing. The focus of this hearing was to receive testimony from the secretaries of the military services and their Chiefs of Staff (CoS). Also included was the Chief of Naval Operations (CNO) and the Commandant of the Marine Corps (CMC). This hearing's testimony was similar to the December 2019 Senate Armed Services Committee hearing in that the members of the committee shared what they had personally seen at the military installations they had visited. The stories followed suit with the examples provided by House Committee on Appropriations Chair, The Honorable Mrs. Debbie Wasserman-Schultz, during the March 3, 2020, Committee on Appropriations hearing, as well as Senate Committee on Armed Services Chair, The Honorable Mr. James Inhofe's opening remarks during the December 3, 2019, committee hearing (*Chain of command's accountability*, 2019).

d. U.S. Senate Committee on Armed Services Hearing to receive testimony on the current condition of the Military Housing Privatization Initiative (MHPI); Wednesday, February 13, 2019

This was the first of many hearings the U.S. Senate Committee on Armed Services would hold to receive testimony on the MHPI. This hearing consisted of two primary witness panels, the first multiple spouses of military members, who each testified to ensure Congress and the military service's leadership learned of their privatized military housing experiences. The second panel of witnesses consisted of the owners or senior members of the private developers that owned the MHPI project (*Hearing to receive testimony*, 2019).

e. Department of Defense Inspector General (DODIG)

(1) Department of Defense Inspector General Report DODIG-2019-056

The 2019 accounting and financial reporting audit of the MHPI resulted in two principal findings stemming from multiple accounting errors ranging from a low of \$1.8 million to a high of \$4.2 billion (Department of Defense Office of Inspector General, 2019).

(2) 2015 DODIG 2017–004 Summary Report

The report summarizes half a dozen DODIG inspections that took place between 2013 and 2016 that resulted in thousands of findings covered in depth in individual DODIG reports and inspections that span many years, showing a trend of housing, health, and habitability, and safety issues and concerns that go back to the early 2000s. Examples of summarized safety findings include 3,783 environmental, electrical, and fire protection system safety and health issues, as well as military housing findings at three separate military installations, one Navy, one Army, and one Air Force. These examples further illustrate the policy-strategy mismatches this study cites (Department of Defense Office of Inspector General, 2016).

f. Government Accountability Office (GAO)

GAO reports on the MHPI over the last decade demonstrate the DOD succeeded in achieving its goal of privatizing 99% of its MFH (Lepore, 2018, p. 1). Unfortunately, these same GAO reports show the MHPI is beleaguered with various data and reporting discrepancies, financial challenges, and fraud-prone business practices and processes. These GAO reports are concerning given that an underperforming MHPI project can detract from service member or military family health and wellbeing, or worse, degrade a supporting unit's ability to provide critical instillation services or logistics, resulting in negatively impacting installation mission success, ultimately degrading overall military readiness. Further, 2019 and 2020 GAO reports to include U.S. Senate Armed Services Committee hearings and testimonies demonstrate various accounts in which many of the private developers failed to meet the minimum performance requirements, yet many if not most of the private developers still received an incentive and/or performance award that was not earned and should have been denied based on health, life, safety or other form of violation (Field, 2020a, p. 7).

The matter of private landlords still receiving bonuses and incentive fees comes under scrutiny following these reports of substandard performance when the purpose, or strategy, behind offering the bonuses and incentives is to entice and incentivize private

developers and landlords to maintain military housing units in good or above-average maintenance and repair.

(1) Government Accountability Office Report GAO-18-218

GAO made eight corrective action recommendations, most of which related to financial accounting discrepancies and inconsistencies that the GAO noted were consistent across the services. GAO also addressed the DOD's failure to provide timely, comparable reports to Congress as required by public law (Lepore, 2018, p. 52,53).

The fact these events occurred brings the reality and existence of the mismatch to light. The occurrence of these events is otherwise unexplainable.

Substandard MHPI project provider performance and the associated undesirable results add increased risk to the force and mission, which prudently must be assumed until confirmation that the policy-strategy mismatches are resolved or effectively mitigated proves otherwise.

Ergo, the need and motivation for this service member and military family housing, health, and readiness research study and its included survey instrument. Results from MFAN's 2019 nationwide housing survey encompasses some 41,422 complaints made by privatized military housing tenants, over 6,600 of which being related to health concerns, further supports the need for this study and research (Pell & Schneyer, 2019).

III. METHODOLOGY

A. RESEARCH METHOD

A survey was conducted using United States Navy (USN) commands using a sample size representative to gather data on current housing characteristics and any potentially related occupant health matters.

The study's survey will be used to gather data related to respondent demographics, current housing characteristics, and evaluate respondent health, readiness, and well-being. The survey is structured to provide objective, policy-based feedback to gain insight regarding housing characteristics commonly suspected to cause, or known to cause, adverse occupant health related issues. With the purpose of military housing being to support the warfighter in support of National Defense, feedback, and analysis of that feedback that centers on gauging measurements of success of these desired end states provides value.

B. SURVEY

1. Survey Objective

The objective of the survey is to acquire the necessary data to establish the characteristics of housing occupied by Active Duty Service Members (ADSM) and their families as well as any affects the housing has had on occupant health, well-being, and readiness.

This data, in theory, will answer the research question:

Have housing and family readiness program policy-strategy-mismatches impacted the health, well-being, and readiness of service members and their families?

The research hypothesizes that the study and analysis will result in the identification of statistically significant findings that correlate to impacts to DOD readiness. Participation in the study and completion of the survey is both completely anonymous and voluntary. Data collection does not include acquiring personally identifiable information (PII) or protected health information (PHI). Measurement is a Likert scale for questions addressing

the research question and includes demographic data collection as a control. Respondents are informed of survey parameters via the recruitment email distributed in conducting the survey. Analysis will be done through a correlation/regression method.

2. Survey Sample

USN ADSMs assigned within the continental United States (CONUS) served as the survey population. June 2020 Defense Manpower Data Center (DMDC) reflected a population size of 299,548 (P=299,548) (Department of Defense, 2020). The ideal sample size to acquire a 95% confidence interval (CI) with a 5% margin of error (MOE) equaled 383 (N=383). Military housing survey response rates historically average between approximately 20% to 30% (CEL & Associates, 2020b, p. 3), (CEL & Associates, 2020a, p. 2) therefore, to account for the survey response rate, the survey distribution plan included distributing the survey to approximately 1,300 USN ADSMs to acquire the ideal sample size (N= 383) of 383 respondents.

3. Survey Administration

Primary and alternate CONUS based USN commands were randomly identified to serve as survey sponsoring commands, beginning with the USN command's location related to the four U.S. Census Bureau regions, subdivided into nine divisions (*US Census Bureau Regions and Divisions*, 2015):

- | | |
|----------------------------------|----------------------------------|
| - Division 1: New England | - Division 6: East South Central |
| - Division 2: Middle Atlantic | - Division 7: West South Central |
| - Division 3: East North Central | - Division 8: Mountain |
| - Division 4: West North Central | - Division 9: Pacific |
| - Division 5: South Atlantic | |

This equates to a total of 18 USN survey sponsoring commands; nine primaries, nine alternates. Any division(s) or region(s) not represented with survey results or survey responses that are not received will be addressed in Chapter IV – Analysis.

Researchers will coordinate with command personnel to acquire command support to sponsor the survey. Each survey sponsoring command will provide a randomly generated list of 150 ADSM names and associated government email address to support

survey recruitment and survey distribution. Assuming a best-case scenario, 30% response rate provides approximately 50 completed surveys from each of the nine survey sponsoring commands, total (N=450) completed surveys and achievement of the ideal sample population (p=383). Survey management, distribution, and recruitment will be maintained by the researchers for quality assurance and to ensure compliance with research protocols. Survey sponsoring command leadership (e.g., Commanding Officer, Executive Officer, Command Master Chief) will not be involved in survey recruitment or conducting the survey in any way to ensure mitigation of any leadership influence.

Bias influences are effectively mitigated by ensuring subjects understand that participation is voluntary and anonymous by reinforcing these facts in the recruitment script and survey link. Bias is mitigated given the plan/intent to have the recruitment script and survey link sent via email by an individual or office disassociated from Command Leadership roles and responsibilities. Primary data is obtained from surveys completed by random samplings of ADSMs assigned to the respective survey sponsoring USN command. Various USN commands located at or near military installations within CONUS and respective Census Bureau Region and Division geography will serve as a representative sampling of the population.

4. Recruitment

To participate in the survey, a subject must first “click” on a link included in the recruitment email. Only by clicking the link included in the recruitment email can the subject access the survey’s landing page which serves both as a final introduction, voluntary participation verification, and lastly, survey quota control.

To proceed beyond the survey landing page and final introduction to participate in the survey, subjects are informed that ADSMs are the intended audience, and that survey participation is completely voluntary and anonymous. Per the NPS IRB approved exempt research proposal, subjects are informed that neither PII nor PHI is collected through participation in the survey. Subjects are reminded that the survey consists of 25 generalized questions regarding the characteristics of their current housing and any perceived affects

the housing has had on health, well-being, and readiness. Survey instrument (in the appendix) questions are grouped into four separate sections:

- (1) Section 1: Demographics, general, non-specific background information;
- (2) Section 2: Non-specific current duty assignment and housing background information;
- (3) Sections 3: Evaluation and rating of COVID-19 impacts;
- (4) Section 4: Evaluation and rating of current housing, health, and readiness.

Subjects are provided instructions to click on the option they agree with the most to record their responses and to click in the space provided for numerical responses (Age, Pay Grade, Zip Code, etc.) and enter the appropriate one, two, or five-digit number. Subjects are also advised that completed survey responses will be summarized, evaluated, and analyzed in support of this study and could be used to support future studies.

Subjects are informed that only responses from voluntary participants will be recorded. This marks the transition to the voluntary participation control and verification portion of the survey introduction. Subjects are advised to stop at this point in the survey introduction if their participation in the survey was forced or a result of undue influence in any way and that Researcher contact info was available at the bottom of the introduction should the subject have any questions. Subjects are given step by step procedures to follow to demonstrate they are taking the survey voluntarily as well as what to expect after the subject demonstrates taking the survey voluntarily: “By selecting the “Yes” option versus the “No” option, at the end of the introduction, and then clicking the “Next” button, these steps marked the end of the Introduction, and launched the survey.”

Quota control question option was utilized to ensure no more than 50 completed survey responses were recorded for any one survey sponsoring command.

Each command surveyed received its own individual serialized copy of the survey, each with a quota control set to 50 completed survey responses. The quota control question option provided subjects with two options: Option (1): “YES,” to take the survey, or Option (2): “No,” to not take the survey. If a subject selected “No,” the subject was not allowed to

take the survey. Selection of the “No” option took subjects to a survey exit page where the subject’s survey experience ended but provided a salutation message informing the subject that the survey would remain open for a brief period and encouraged to return to complete the survey. Subjects that selected “YES” were immediately enrolled and could begin taking the survey once the page refreshed with Section 1 of the survey loaded.

a. *Survey Design—Section 1. Demographics and current Leave and Earnings Statement (LES) information*

Section 1’s purpose is to gather general background data about the subject that could be beneficial in analyzing and comparing the data from the survey.

Starting with Question #1, acquiring the subject’s age is relevant for correlation to mean behavior and societal data points: education, employment, annual income, shopping characteristics, etc. (Bureau of Labor Statistics, 2021).

Branch of military service allows USN commands to represent subjects from other branches of the military services assigned within their commands. This cross-service assignment reflects the DOD’s joint warfighter ethos. Additionally, this format sets the foundation for a DOD-wide housing, health, and readiness survey.

Collecting current Pay Grade information allows for the data to be analyzed across the spectrum of military ranks between enlisted, officer and warrant officer communities.

Length of military service, Question #4, provides for a variety of relevant demographic data points. Retention, for example, is always a focus in any military study given the costs avoided with high personnel turnover and improved corporate knowledge with increased retention. Enlisted pay grades historically encompass approximately 80% of the DOD’s manning regardless of overall end-strength (Department of Defense, 2020).

Basic Allowance for Quarters (BAQ) Type (With or Without Dependents) provides data for correlation regarding typical family-related survey responses and choices made by service members. For the purposes of this study this data specifically helps identify whether the subject should be residing in Unaccompanied Housing (UH). This is more likely the case of a junior service member that is not married who also does not have any qualifying dependents. Conversely, those service members qualifying for and residing in Military

Family Housing (MFH) given the service member has a spouse (one dependent), and/or two dependent children (three dependents or two dependents total, relatively). BAQ Type data is one of a variety of factors used in determining the type of MFH a service member qualifies for (e.g., two, three, or four bedroom-housing unit based on the number of dependents) (Office of the Under Secretary of Defense for Personnel & Readiness, 2020, p. 7). The five-digit Variable Housing Allowance (VHA) Zip Code helps determine the BAH rate the service member qualifies for based on duty station location the member is assigned. While there are options available to elect to receive BAH based on the location of dependents if other than with the member, this study assumes dependents are assigned with the service member at the member's assigned duty location unless otherwise stated in the respondent's survey response. Additionally, throughout the United States, there are high-cost and critical housing markets which dramatically change housing factors and dynamics, which are tracked by duty station Zip Code.

While the factors and algorithms that go into the Housing Research Market Analysis (HRMA) are not the focus of this study, the HRMA is one of the principal determinants used to determine BAH amounts for the various duty station locations (by Zip Code). Availability of adequate local community housing is taken into account and is a factor in the HRMA rubric. Therefore, any study that evaluates and/or analyzes the adequacy of housing and housing allowances cannot turn a blind eye to the HRMA and the critical role the HRMA plays in determining the overall housing picture for a specified duty location.

b. Survey Design—Section 2. Current assignment and housing background information

Section 2 consists of six questions that are designed to acquire respondent background data pertaining to their current duty assignment, previous home ownership, and current housing information. This data, in conjunction with Section 1 data, builds the respondent profile.

The respondent profile will inform the research and assist in identification of potential behavior patterns. Beginning with Question #7, the tour length of the respondent's

current assignment is an important determinant whether the service member purchases or rents housing. It is generally accepted that service members assigned to a shore-duty tour for three years or longer are more likely to purchase a home than service members assigned to shore-duty for less than three years.

Subjects that respond “Yes” to Question #8 confirming they have previously purchased a home may be more likely to have additional insight and understanding of building assemblages, construction, and home maintenance given the inherent need to evaluate these matters when considering purchasing a home. Increased requirements and responsibilities related to self-performed maintenance and repairs are also typically inherently associated with home ownership. Analysis of results may provide information to support whether previous home ownership biases respondent survey responses positively or negatively.

Subjects describe their current residence in Question #9 to evaluate correlation to the subject’s responses to survey questions in Sections 3 and 4.

Questions #10 and #11 ask the subject to identify characteristics specific to the type of housing the respondent currently occupies. Single family homes leased from a property owner or landlord may have a home warranty that covers appliances but is less likely to have or provide on-site or on-staff maintenance and repair personnel for performing routine preventive maintenance and unscheduled corrective maintenance. Lessees of single-family homes are often expected, or contractually obligated per the lease agreement, to perform basic non-invasive and non-corrective routine preventive maintenance (i.e., changing the heating, ventilation, and air conditioning (HVAC) filters, or fixing a leaking toilet or faucet). Conversely, apartments, townhomes, and condominiums will normally have on-site or on-staff maintenance and repair personnel for performing routine preventive maintenance as well as unscheduled corrective maintenance.

Residents of barracks, UH, and MFH are asked to specify whether their military provided living quarters are government owned/managed or private developer owned/managed. “Unsure” and “Other/Not Applicable” options are provided also in the event the

subject does not know or in the unlikely event there is a tertiary entity that own/manages the military provided living quarters.

Reports from GAO, MFAN, as well as statements made during congressional testimony reflect that residents living in military provided quarters were frequently either unsure or confused regarding whether their military provided quarters were government owned/managed or private developer owned/managed. Additionally, these same reports and statements also reflected that many residents living in military provided quarters that were private developer owned/managed were unaware that there were government housing representatives available that serve as advocates for military residents that occupy private developer owned/managed military housing. Questions #9 through #12 will provide data to add insight to this issue and the extent of it being a more pervasive problematic matter or merely just a coincidental occurrence of isolated incidents.

Question 12 is one of *responsibility, accountability, and authority*. All installation housing programs are managed by one of the four services. In most cases, it is the service having installation responsibility that retains the authority and accountability for housing and family readiness support programs and services. Acquiring survey respondent feedback from service members from the same area is valuable given it provides an opportunity to determine rate and magnitude of selection dispersion among the services (i.e., if one service's personnel is more likely to choose "Unsure" or select "Other" than the other services' personnel). As it relates to acquiring accurate data to measure and gauge the quality and performance of military provided housing, the "Unsure" responses are of special interest regarding survey respondents that have acknowledged residing in MFH.

c. Survey Design—Section 3. Rating and evaluation, effects of COVID-19

Four questions are included for COVID-19 control to account for the exogenous shock of COVID-19, and how COVID-19 may have affected respondent well-being, job performance, health, and readiness. This data can be cross-referenced with Section 4 rating and evaluations to gauge and differentiate COVID-19 impacts to well-being, job performance, health, and readiness from residence-caused or related impacts.

d. Survey Design—Section 4. Rating and evaluation, housing, health, and readiness

Section 4 questions center on three principal themes:

1. Department policy-based questions that obtain objective feedback from the joint force whether policy desired end states are being met or not.
2. Policy-based questions that return clear objective responses that identifies potential health and readiness related issues to facilitate proactive versus reactive engagement and resolution.
3. The results of one and two above should provide improved, measurable feedback that leads to an improved and measurable understanding of a survey respondent's health, well-being, and readiness.

Section 4 survey analysis information was derived from key DOD policies, directives, manuals, and mandates. Most if not all were included and listed as references in DODI 4165.63 DOD Housing Instruction and DODM-4165.63 DOD Housing Management Manual.

The DOD instruction, directive, manual, policy, mandate, etc., used for the survey questions were extracted from:

e. DODI 4165.63 - DOD Housing and DODM 4165.63 – DOD Housing Management Manual

Survey Questions #17, #18, and #19 provide survey respondent feedback regarding long-standing policy objective requirements stipulating that eligible personnel have adequate access to affordable, quality housing facilities and services that are both safe as well as consistent with the service member's grade and dependent status (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2010a). While ADSMs and MFH are the focus of this study, it is important to note that MFH is occupied by far more than just ADSMs and their eligible beneficiaries. Based on the MHPI's project's tenant waterfall policy and occupancy rates, the ratio between ADSMs, federal

service employees, retired military, contracted employees (even the private real estate developer's own employees), and the general public (Gorman, 2016). Additionally, DOD Housing policies state that military housing units should be comparable in size (i.e., square footage of inside of residence), [build] quality, construction materials, etc., as those found in local community [private sector] housing (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2010a), (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2010b).

f. DODI 1342.22 – Military Family Readiness

Question #20 is an incorporation of critical military family readiness programs and services, many of which are hallmark support programs that are vital to military recruitment and retention (Office of the Under Secretary of Defense for Personnel and Readiness, 2012).

g. Unified Facilities Criteria (UFC) 4-711-01 – Family Housing

UFC 4-117-01 is the DOD's principal residential building design and planning reference resource. Unfortunately, it does not necessarily address post-construction habitability issues. Regarding Question #21, countless state and federal agencies acknowledge and assert that the best mold, mildew, and/or moisture detection device is your nose; your ability to smell. Federal agency guidance advises housing tenants and building occupants to be well-aware to take caution and be critical of any housing unit or building that possesses a musty odor, an empirical indicator of excess moisture, or worse, environmental contaminants such as mildew and mold (United States Environmental Protection Agency, 2021). In Questions #22 and #23, we acknowledge that some CONUS locations do not have central heating, ventilation, and air conditioning (HVAC) or AC (Department of Defense, 2018b).

The National Center for Healthy Housing (NCHH) provides a basic maintenance checklist to help maintain a healthy home. The checklist recommends periodical or season-specific preventive maintenance checks, even those as simple as seasonal, quarterly, or more frequent heating and ventilation air filter changes at a minimum (based on individual

needs and circumstances, such as having pets, environmental and medical conditions, etc.) (Brennan & Tohn, n.d.).

More closely related to this study's survey, Environmental Protection Agency (EPA) guidance recommends checking your HVAC filters every month, especially during the summer and winter months when a home's HVAC system is operating more frequently (Environmental Protection Agency, 2014a). Generally, the HVAC's filtration system is only filtering the air while the unit is operating (i.e., cooling, or heating). Many factors can alter and affect the amount of dust, dirt, debris, etc., retained by the system's filters.

By inspecting your HVAC filters monthly you can potentially avoid making your HVAC system work harder than necessary; if the filter looks dirty, even if after only a month, the EPA recommends changing it. Both you and your HVAC system will breathe easier. At a minimum, the EPA recommends changing your HVAC filters every three months given dirty filters reduce the system's efficiency making the system work harder, not only wasting energy but also contributing to climate change (Environmental Protection Agency, 2014b).

There is little to no inference involved on the part of the survey respondent or the researcher when evaluating survey respondent responses when asked a question such as Question#23. The answer is simply "Yes," or "No". Suffice to say, if a Likert scale interval variable was used in place of a nominal [binary] variable, any survey respondent that responds, "Strongly Disagree," or arguably even, "Somewhat Disagree," with survey Question #24 would likely be a clear indicator of health, life, or safety issues until proven otherwise given building assemblage characteristics that reflect a "Strongly disagree" response are indicative of a much larger problem such as leaking plumbing drains, leaking water supply lines, areas of excess condensation, etc., indicating underlying insulation or other environmental control issues. Ergo one of the additional benefits of this study's survey format over previous DOD housing survey formats is that it does provide feedback regarding the characteristics of the service member's living environment, specifically conditions and characteristics that are commonly associated with health, life, or safety issues, whereas the DOD's previous and current survey formats do not.

h. DODI 4000.01 - Installation Support

Questions #25 through #29 support a specific task, duty, responsibility, or a combination thereof. DODI 4000.01's purpose, definition, and policy statements serve as overarching installation-level program support and services desired end states:

Purpose: Prescribes installation management policy to enhance DOD use of assets to effectively support the warfighter. (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2008)

Definitions: Installation Support. Any of the five categories of services and support activities the DOD engages in life-cycle management of installations: (1) Facilities; (2) Services; (3) Family Housing; (4) Environment; and (5) Base Realignment & Closure. Program element definitions for facilities, environment, and other installation support functions are maintained by the Deputy Under Secretary of Defense (Installations and Environment) and Director, Program Analysis and Evaluation of Cost Assessment and Program Evaluation (DCAPE). (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2008)

Policy. It is DOD policy to:

- A. Support and promote Common Delivery of Installation Support (CDIS).
- B. Provide acquisition, management, resourcing, and delivery of installation support to advance the overall DOD mission. Installation support shall be governed to ensure consistently high standards in support of the warfighting mission.
- C. Promote cost transparency and more consistent Programming and Budgeting decisions by aligning the Planning, Programming, Budgeting and Execution (PPB&E) process with Common Output Level Standards (COLS). (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2008)

i. 2018 National Defense Strategy

Any effects that reduce military recruitment and retention are clearly prejudicial to the DOD's current NDS (White House, 2018).

IV. DATA AND ANALYSIS

A. RELATIONSHIPS

Table 1 lists the concepts and/or policy end state requirements covered as specified by the source as it relates to the survey instrument questions. The emphasis and focus being on service member and military family health, readiness, and well-being.

Table 1. Relationship: Concepts, policy and reference sources, and survey questions

Concept	Source	Survey
Improving and maintaining the readiness of service members and military families; including financial readiness	DoDI 1342.22 - Military Family Readiness	Q20-Q30
Principal DOD housing directive; reliance on private sector housing	DoDI 4165.63 - DOD Housing	Q9
Ensuring eligible personnel (e.g., service members, beneficiaries, dependents, etc.) have sufficient access to affordable, quality housing that is consistent with the service member's rank/grade, dependent status, and similar to local community housing design and standards	DoDM-4165.63 - DOD Housing Management Manual	Q3, Q5, Q6, Q9, Q10
DOD's principal residential building planning, design and construction resource tool comprised of Army, Navy, and Air Force. Also covers sustainment needs, and criteria for successful restoration and modernization	Unified Facility Criteria (UFC) 4-711-01 - Family Housing	Q3, Q5, Q6, Q9, Q18
Benchmarks local community [private sector] housing construction and maintenance markets to establish DOD standards that improve readiness through enhanced QoL and increased military recruitment and retention	National Association of Home Builders (NAHB) Research Center, Military Family Housing Standards Study	Q3, Q5-Q7, Q9, Q10, Q18, Q29, Q30
Housing and readiness program and services delivery	DoDI 4001.01, Installation Support	Q11, Q12, Q21-Q24, Q29, Q30

Concept	Source	Survey
Acquisition, management, and disposal of DOD property	DoDD 4165.06, Real Property	Q18, Q21-24
Service, supply, procurement, and management of military construction and military family housing	Title 10 U.S. Code, Chapter 169 - Military Construction and Military Family Housing	Q2, Q5, Q9, Q10 Q11-Q12, Q17-Q18, Q29, Q30

B. SURVEY ADMINISTRATION AND SAMPLE

Table 2 reflects the response data by U.S. Census Bureau region and division. Survey administration and data acquisition was conducted IAW the study's research protocols. Surveys were made available over the December 21, 2020 to February 17, 2021 time-period. All commands surveyed were USN commands and were provided 14-day survey time periods. The only exceptions made were commands surveyed during the 2020 Christmas and New Year time periods, which were afforded 21 days to account for seasonal holidays. Only one command fit this description. Additionally, any command that was surveyed during the time-period a federal or national holiday was observed had its survey time-period extended based on observance of the federal holiday per Office of Personnel Management (OPM) holiday observance guidance.

Thirty-three contacts by email or phone were made in conducting the survey. USN commands or contacts were made in all four U.S. Census Bureau regions and nine divisions; however, it was not possible to acquire data in all identified areas. Circumstances for not being able to acquire data include USN commands within the region/division not possessing adequate billets authorized (BA) and/or on board (OB) end strength to support and/or produce a randomly generated list of 150 ADSMs IAW the study's research protocols.

COVID-19 factors also negatively impacted survey administration. Many commands conveyed concerns of low survey support which would presumably result in lower than expected survey responses due to teleworking requirements. Survey administration unfortunately coincidentally occurred in unison with the DOD's full-scale,

DOD-wide COVID-19 inoculation effort, which obviously took priority. Further, towards the latter half of the survey period, the areas located in the northern regions and divisions experienced unusual and inordinate amounts of snowfall that resulted in “snow days.” Personnel were not required to report to work for safety and travel concerns for days at a time (phone musters and the like provided accountability at the command level but hindered survey subject access to their DOD workstations). Given surveys were distributed to service member’s official DOD email address, service members not being unable to access their DOD workstations negatively impacted survey response rates to some effect.

Table 2. Survey administration and sample

Region	Division	State	N	n	Rate
West	Pacific	California	150	40	26.7%
West	Mountain	Nevada	150	11	7.3%
South	West South Central	Oklahoma	150	5	3.3%
South	South Atlantic	Maryland	150	3	2.0%
South	East South Central	Mississippi	150	1	0.7%
Midwest	East North Central	Illinois	150	4	2.7%

C. DATA AND VARIABLE DESCRIPTIONS

Data and variable descriptions are listed in Tables 3 and 4, respectively. Table 4 includes identification of the principal variable type (e.g., Categorical, Interval, etc.).

Table 3. Data description

Section	Question	Description
S1	Q1	Age (in years); (#=two-digit numerical value; 0=Prefer not to answer)
S1	Q2	Branch of Military Service (1=USA; 2=USMC; 3=USN; 4=USAF)
S1	Q3(a)-(c)	Current Pay Grade (as applicable):
S2	Q3(a)	Enlisted (1=E1; 2=E2; 3=E3; 4=E4; etc.)
S1	Q3(b)	Officer (1=O1; 2=O2; 3=O3; 4=O4; etc.)
S1	Q3(c)	Officer - Prior Enlisted (1=O1E; 2=O2E; 3=O3E; etc.)

Section	Question	Description
S1	Q4	Length of Military Service (in Months)
S1	Q5(a)	BAQ Type (1=With Dependents; 0=Without Dependents)
S1	Q5(b)	BAQ Type With Dependents; (# of Dependents)
S1	Q6	VHA Zip
S2	Q7	Tour length of current duty assignment (in Months)
S2	Q8	Previously purchased home or residence; (1=Yes; 0=No)
S2	Q9	Current residence (1=Residence located within the local civilian community; 2=Barracks/UH; 3=MFH; 4=Other)
S2	Q10(a)-(g)	Current residence within the local civilian community (1=Yes; 0=No)
S2	Q10(a)	Residence is “Rented”; (1=Yes; 0=No)
S2	Q10(b)	Residence is “Owned”; (1=Yes; 0=No)
S2	Q10(c)	Residence is a Single-Family Home; (1=Yes; 0=No)
S2	Q10(d)	Residence is an Apartment; (1=Yes; 0=No)
S2	Q10(e)	Residence is a Condominium/Townhouse; (1=Yes; 0=No)
S2	Q10(f)	Resides in Barracks, UH, or MFH, otherwise=0
S2	Q10(g)	Resides in other; (1=Yes; No=0)
S2	Q11	Residence is Barracks, UH, or MFH; Owning/Managing entity is; (1=Gov’t Owned/Managed; 2=PPV; 3=Unsure; 4=Other)
S2	Q12	Housing and readiness programs where assigned are provided by; (1=USA; 2=USMC; 3=USN; 4=USAF; 5=Unsure; 6=None; 7=Other)
S3	Q13	COVID-19 affects: well-being; (Significantly reduces=1; Significantly increases=5)
S3	Q14	COVID-19 affects: job performance; (Significantly reduces=1; Significantly increases=5)
S3	Q15	COVID-19 affects: health; (Significantly reduces=1; Significantly increases=5)
S3	Q16	COVID-19 affects: readiness; (Significantly reduces=1; Significantly increases=5)
S4	Q17	BAH provides access to quality local area housing; (Strongly disagree=1; Strongly agree=5)
S4	Q18	Price points being similar, compare local civilian community housing standards and quality, to military housing standards and quality; (Local community significantly better=1; Military significantly better=5)
S4	Q19	Local area provides adequate access to safe, healthy, affordable housing; (Strongly disagree=1; Strongly agree=5)

Section	Question	Description
S4	Q20	New arrivals receive relocation assistance information well in advance of arrival; (Strongly disagree=1; Strongly agree=5)
S4	Q21	Residence has a strange odor, smells funny; (Strongly agree=1; Strongly disagree=5)
S4	Q22	HVAC receives regularly scheduled maintenance; (Strongly disagree=1; Strongly agree=5)
S4	Q23	All HVAC air filters replaced every three months or sooner; (Strongly disagree=1; Strongly agree=5)
S4	Q24	Ceilings, walls, floors not leaking, not discolored or stained, paint is not peeling; (Strongly disagree=1; Strongly agree=5)
S4	Q25	Affect residence has on well-being; (Significantly reduces=1; Significantly increases=5)
S4	Q26	Affect residence has on job performance; (Significantly reduces=1; Significantly increases=5)
S4	Q27	Affect residence has on health; (Significantly reduces=1; Significantly increases=5)
S4	Q28	Affect residence has on readiness; (Significantly reduces=1; Significantly increases=5)
S4	Q29	Current housing/readiness program impacts on unit's mission; (Significant negative impact=1; Significant favorable impact=5)
S4	Q30	Housing and readiness programs' current affect on military recruitment and retention; (Significantly reduces=1; Significantly increases=5)

Table 4. Variable description

Section	Variable	Description
S1	Age (in years)	Q1; ([##]=two-digit numerical value; 0=Prefer not to answer); Interval variable
S1	Branch of Military Service	Q2; (1=USA; 2=USMC; 3=USN; 4=USAF); Categorical variable
S1	Pay Grade: Enlisted (E1-E9)	Q3(a); (1=E1; 2=E2; 3=E3; 4=E4; etc.); Categorical variable
S1	Pay Grade: Officer (O1-O10)	Q3(b); (1=O1; 2=O2; 3=O3; 4=O4; etc.); Categorical variable
S1	Pay Grade: Officer - Prior Enlisted	Q3(c); (1=O1E; 2=O2E; 3=O3E; etc.); Categorical variable

Section	Variable	Description
S1	Length of Military Service	Q4; ([Totaled in Months], Years + Months); Interval variable
S1	BAQ Type	Q5(a); [(per LES], 1=With Dependents; 0=Without Dependents); Nominal [binary] variable
S1	# of Dependents	Q5(b); ([##] per LES); Interval variable
S1	VHA Zip	Q6; ([per LES] “Max” demonstrates Zip dispersion; 0=Prefer not to answer); Categorical variable
S2	Duty assignment tour length	Q7; ([Totaled in Months], Years + Months); Interval variable
S2	Previous home or residence purchase	Q8; (1=Yes); Q10b (1=Yes); Nominal [binary] variable
S2	Current residence type	Q9; (1=Residence located within the local civilian community; 2=Barracks/UH; 3=MFH; 4=Other [Explanation requested]); Categorical variable
S2	Current residence is located within local civilian community housing	Q10(a)-Q10(f); ([1=Yes/Applicable, selects all that apply, Q10(a), Q10(b), Q10(c), Q10(d), Q10(e), otherwise=0]; Q10(f), Q10(g)=0); Nominal [binary] variables
S2	Residence is “Rented”	Q10(a)=1 ([Yes/Applicable]; Q10(b)=0, selects applicable residence type, Q10(c), Q10(d), Q10(e)]; Q10(f), Q10(g)=0); Nominal [binary] variables
S2	Residence is “Owned”	Q10(b)=1 ([Yes/Applicable]; Q10(a)=0, selects applicable residence type, Q10(c), Q10(d), Q10(e)]; Q10(f), Q10(g)=0); Nominal [binary] variables
S2	Residence is a Single Family Home	Q10(c)=1 ([Yes/Applicable]; [Q10(a), Q10(b)]=1 as applicable); ([Q10(d), Q10(e), Q10(f), Q10(g)]=0); Nominal [binary] variables
S2	Residence is an Apartment	Q10(d)=1 ([Yes/Applicable]; [Q10(a), Q10(b)]=1 as applicable); ([Q10(c), Q10(e), Q10(f), Q10(g)]=0); Nominal [binary] variables
S2	Residence is a Condominium, or Townhouse	Q10(e)=1 ([Yes/Applicable]; [Q10(a), Q10(b)]=1 as applicable); ([Q10(c), Q10(d), Q10(f), Q10(g)]=0); Nominal [binary] variables

Section	Variable	Description
S2	Residence is Barracks, UH, or MFH	Q10(f)=1 ([Yes/Applicable]; [Q10(a), Q10(b), Q10(c), Q10(d), Q10(e), Q10(g)]=0); ([Q9=(2), (3)] as applicable); Nominal [binary] variables
S2	Residence is Other	Q10(g)=1 ([None of these residence types apply], explanation required]; otherwise=0); [Q10(a), Q10(b)]=1 as applicable); ([Q10(c), Q10(d), Q10(e), Q10(f)]=0); Nominal [binary] variables
S2	Owning/Managing entity of Barracks, UH, or MFH	Q11; (1=Gov't Owned/Managed; 2=PPV; 3=Unsure; 4=Other/Not Applicable); Categorical variable
S2	Housing/readiness program provider where assigned	Q12; (1=USA; 2=USMC; 3=USN; 4=USAF; 5=Unsure; 6=None; 7=Other [Brief explanation requested]); Categorical variable
S3	COVID-19 affects on well-being	Q13; (Significantly reduces=1; Significantly increases=5); Interval variable
S3	COVID-19 affects on job performance	Q14; (Significantly reduces=1; Significantly increases=5); Interval variable
S3	COVID-19 affects on health	Q15; (Significantly reduces=1; Significantly increases=5); Interval variable
S3	COVID-19 affects on readiness	Q16; (Significantly reduces=1; Significantly increases=5); Interval variable
S4	BAH provides access to quality housing	Q17; (Strongly disagree=1; Strongly agree=5); Interval variable
S4	Price points being similar, compare local civilian community housing standards and quality to MFH	Q18; (Local community significantly better=1; Military significantly better=5); Interval variable
S4	Local area provides adequate access to safe, healthy, affordable housing	Q19; (Strongly disagree=1; Strongly agree=5); Interval variable
S4	New arrivals receive relocation assistance in advance of arrival	Q20; (Strongly disagree=1; Strongly agree=5); Interval variable
S4	Residence has strange odors, smells funny	Q21; (Strongly agree=1; Strongly disagree=5); Interval variable
S4	HVAC receives regularly scheduled maintenance	Q22; (Strongly disagree=1; Strongly agree=5); Interval variable

Section	Variable	Description
S4	HVAC air filters replaced every 90 days or sooner	Q23; (Strongly disagree=1; Strongly agree=5); Interval variable
S4	Ceilings, walls, floors, not leaking, not discolored; paint not peeling	Q24; (Strongly disagree=1; Strongly agree=5); Interval variable
S4	Affect residence has on well-being	Q25; (Significantly reduces=1; Significantly increases=5); Interval variable
S4	Affect residence has on job performance	Q26; (Significantly reduces=1; Significantly increases=5); Interval variable
S4	Affect residence has on health	Q27; (Significantly reduces=1; Significantly increases=5); Interval variable
S4	Affect residence has on readiness	Q28; (Significantly reduces=1; Significantly increases=5); Interval variable
S4	Current housing/readiness program impacts on unit's mission	Q29; (Significant negative impact=1; Significant favorable impact=5); Interval variable
S4	Housing and readiness program affects on military recruitment and retention	Q30; (Significantly reduces=1; Significantly increases=5); Interval variable

D. DESCRIPTIVE STATISTICS AND FREQUENCY DISTRIBUTIONS

1. Introduction

Survey response data was exported by serialized survey from the NPS-hosted LimeSurvey survey software as Microsoft Excel files and transferred to the NPS researchers' shared drive hosted on the NPS storage area network (SAN) infrastructure where the survey files and data were compiled and aggregated into one workbook to simplify and streamline variable descriptions, generate descriptive statistics and frequency distribution tables, and data analysis. While unorthodox, some, but not all, Categorical variable descriptive statistics were provided for standardization of data, tables, and analysis methodology. Further, this methodology serves a purpose explained later in the study.

2. Analysis methodology

The initial descriptive statistics data table was generated from the data set with Categorical and Nominal variable means (M) and/or rate (frequency, % of Resp, # Obs) for simplicity, standardization, and common data analysis practices calling for initial analysis of descriptive statistics data prior to Categorical and/or Nominal frequency distributions. This methodology also serves a purpose explained later in this chapter. Variable means have in large part been removed from non-Interval variables result discussions for clarity and accuracy related to discussion of results.

Table 5. Descriptive statistics

Section	Question	Mean	Median	Mode	SD	Min	Max
S1	Q1	34.08	34	35	6.69	23	56
S1	Q2	2.69	3	3	0.75	1	4
S1	Q3(a)	6.04	6	6	1.08	4	9
S1	Q3(b)	3.58	3	3	0.97	1	6
S1	Q3(c)	3.57	3	3	0.79	3	5
S1	Q4	148.56	139	67	78.59	6	386
S1	Q5(a)	0.75	1	1	0.44	0	4
S1	Q5(b)	2.13	2	1	1.08	1	5
S1	Q6						26
S2	Q7	29.66	27.5	36	10.12	12	54
S2	Q8	0.45	0	0	0.5	0	1
S2	Q9	1.44	1	1	0.89	1	4
S2	Q10(a)	0.68	1	1	0.47	0	1
S2	Q10(b)	0.19	0	0	0.39	0	1
S2	Q10(c)	0.36	0	0	0.48	0	1
S2	Q10(d)	0.25	0	0	0.44	0	1
S2	Q10(e)						
S2	Q10(f)	0.13	0	0	0.33	0	1
S2	Q10(g)						
S2	Q11	3.59	4	4	0.83	1	4
S2	Q12	3.67	3	3	1.67	1	7
S3	Q13	1.93	2	2	0.8	1	5

Section	Question	Mean	Median	Mode	SD	Min	Max
S3	Q14	2.42	2	2	0.87	1	5
S3	Q15	2.63	3	3	0.71	1	4
S3	Q16	2.44	3	3	0.76	1	4
S4	Q17	2.76	2	2	1.47	1	5
S4	Q18	2.7	2	2	1.38	1	5
S4	Q19	2.82	3	4	1.32	1	5
S4	Q20	3	3	4	1.34	1	5
S4	Q21	4.53	5	5	0.74	3	5
S4	Q22	3.39	4	4	1.36	1	5
S4	Q23	2.93	3	1	1.56	1	5
S4	Q24	3.82	4	5	1.4	1	5
S4	Q25	3.3	3	3	1.09	1	5
S4	Q26	3.11	3	3	0.99	1	5
S4	Q27	3.11	3	3	0.92	1	5
S4	Q28	3.02	3	3	0.87	1	5
S4	Q29	2.82	3	3	0.94	1	5
S4	Q30	2.85	3	3	1.13	1	5

Table 6. Interval variables

Section	Question	Mean	Median	Mode	SD	Min	Max
S1	Q1	34.1	34	35	7	23	56
S1	Q4	148.6	139	67	79	6	386
S1	Q5(b)	2.1	2	1	1	1	5
S2	Q7	29.7	27.5	36	10	12	54
S3	Q13	1.9	2	2	1	1	5
S3	Q14	2.4	2	2	1	1	5
S3	Q15	2.6	3	3	1	1	4
S3	Q16	2.4	3	3	1	1	4
S4	Q17	2.8	2	2	1	1	5
S4	Q18	2.7	2	2	1	1	5
S4	Q19	2.8	3	4	1	1	5
S4	Q20	3	3	4	1	1	5

Section	Question	Mean	Median	Mode	SD	Min	Max
S4	Q21	4.5	5	5	1	3	5
S4	Q22	3.4	4	4	1	1	5
S4	Q23	2.9	3	1	2	1	5
S4	Q24	3.8	4	5	1	1	5
S4	Q25	3.3	3	3	1	1	5
S4	Q26	3.1	3	3	1	1	5
S4	Q27	3.1	3	3	1	1	5
S4	Q28	3	3	3	1	1	5
S4	Q29	2.8	3	3	1	1	5
S4	Q30	2.8	3	3	1	1	5

Question 1, survey sample mean age is approximately 34 years and one month old (M=34.08). Of note, one respondent (1.56% of the sample survey) selected the option to not provide their age.

The median is 34 and with the minimum age of 23 and the maximum age of 56. Based on a sample mean age of 34, fairly higher than the normal mid 20's average for the DOD (DOD, 2018a, p. 8), we would anticipate seeing higher than average ranks (Q3), BAH w/ Dependent types (Q5=1), and higher (Q8) mean.

Q2 ([Categorical variable] descriptive statistics provided for standardization of analysis methodology as alluded to in the chapter introduction). As expected, the median and mode both equal to 3. Branch of service survey response are as follows.

Table 7. Q2 response frequencies

Branch of Service	# Obs	Rate (%)
USA:	8	12.50%
USMC:	7	10.94%
USN:	46	71.88%
USAF:	3	4.69%

In question 3, Q3 responses were not received from Warrant Officer pay grades as well as "Other" category and therefore are not included in the analysis.

Table 8. Q3 response frequencies

Enlisted:	% of total responses	Officer:	% of total responses	Officer - Prior Enlisted	% of total responses
E1:	0.00%	O-1:	1.56%	O-1E:	0.00%
E2:	0.00%	O-2:	0.00%	O-2E:	0.00%
E3:	0.00%	O-3:	28.13%	O-3E:	6.25%
E4:	1.56%	O-4:	12.50%	O-4E:	3.13%
E5:	10.94%	O-5:	7.81%	O-5E:	1.56%
E6:	12.50%	O-6:	1.56%	O-6E:	0.00%
E7:	10.94%	O-7:	0.00%	O-7E:	0.00%
E8:	0.00%	O-8:	0.00%	O-8E:	0.00%
E9:	1.56%	O-9:	0.00%	O-9E:	0.00%
Total %:	37.50%		51.56%		10.94%

Question 3 frequencies indicate that 40 of the 64 were officers. Enlisted pay grade survey responses represent only about one third of the survey responses which is less than half of the normal average DOD Enlisted distribution (80%) of the force (Department of Defense, 2020).

Both (Q4) and (Q7) survey response data were acquired in both year and month format. For analysis, respondent data was totaled and converted overall to months for more accurate data analysis. (Q4) M=148.56, or roughly 12.5 years. For Q7, the mean is 29.66 months, or roughly 2.5 years. This aligns with normal sea/shore duty station tour assignments.

Question 5 shows that 75% of total respondents have dependents, while Q6 shows a total of 26 different VHA zip codes for the 64 respondents.

Question 8 responses indicate that 45% of respondents have previously purchased a home or residence.

Q9, current residence description survey responses, are as follows.

Table 9. Q9 response frequencies

Residence type	# Obs	% of Resp
Residence in local civilian community:	51	79.69%
Military Family Housing:	11	17.19%
Other:	2	3.13%

Q9 median and mode equal to 1, suggesting respondents are biased towards living in a residence located in the local civilian community (Q9=1). These results are expected given the DOD’s historical housing ratios of one third occupying government-provided quarters (i.e., Barracks, UH, MFH) with the remaining two thirds residing in a residence located in the local community (Lepore, 2018, p. 1). The relatively small size of the Q9 data set provides an opportunity to demonstrate the effect of outliers on means. With nearly five times the next selected response it is not unreasonable to assume a mean of 1 (M=1) or very close 1 (versus M=1.44 per Table 5); however, M=1.44 demonstrates how means, being averages of the variable data, can be influenced (skewed) as a byproduct of the variable data. In the case of Q9, the mean was pulled upwards (nearly towards 2 if being rounded up (note: we are not recommending rounding means, this is for demonstration/explanation purposes only). With the laws of central tendency being to use the median or mode dependent on the variable type and characteristics of the skewed data, both Q9 median and mode equaling 1 in addition to 51 observed responses accounting for 80% of Q9 responses, Residence in the local civilian community is clearly the favored response. Q9=1 being heavily favored should correlate to a low response rate for Q10(f). Of note, one respondent selected the “Other” category, providing a brief description with survey submission, indicating the member “*Owned a home in permanent address*” (e.g., “Home of Record”) and was “*...renting a room at duty station currently assigned.*” This is not uncommon with military members whose BAQ Type is w/ Dependents (Q5)=1.

Question 10 responses were not received for “Condominium/Townhome” [Q10(e)] or “Other” categories [Q10(g)] and were therefore not included in the analysis.

Table 10. Q10 response frequencies

Current residence type	# Obs	% of Resp
Q10(a) Rent:	41	64.1%
Q10(b) Own:	12	18.8%
Q10(c) Single Family Home:	23	35.9
Q10(d) Apartment:	16	25%
Q10(f) Barracks, UH/MFH:	8	12.5%

Question 10 responses (Nominal [binary] variables) reflect a higher frequency and percentage of rented residences as expected with (Q8) $M=0.45$, less than half of the sample.

Q11, Owning/Managing entity responses, are listed below.

Table 11. Q11 response frequencies

Owning/Managing entity	# Obs	% of Resp
Government Owned/Managed:	1	1.56%
Private Developer Owned/Managed:	11	17.2%
Unsure:	1	1.56%
Other/Not Applicable:	51	79.69%

As forecasted, Question 11 responses reflect a significantly higher selection of “Other/Not Applicable” ([Q11=4]; Residence in local civilian community). Q11 median and mode are both equal to 4. This data suggests respondents are biased towards living in a residence located in the local civilian community (Q9=1). These are the expected results. Unexpectedly, note Private Developer Owned/Managed=11, yet Q10(f)=8. Also, Q11 “Unsure” category selected by one respondent. These disparate response anomalies suggest residents of military housing may not fully understand who their landlord/property manager is.

Question 12 response frequencies reflect:

Table 12. Q12 response frequencies

Services provided by	# Obs	% of Resp
USA:	10	15.63%
USMC:	2	3.13%
USN:	24	37.50%
USAF:	1	1.56%
Unsure:	19	29.69
Other:	2	3.13%
None Provided:	6	9.38%

Question 12 median and mode are both equal to 3, with Min=1 and Max=7. Q12 response frequencies show USN was the most frequently observed selection at 37.5%. As expected based on Q2 responses, the data set suggests the sample favors the USN Service provider selection (for demonstrational purposes, referring back to Table 5, note Table 5 Q12 M=3.67 (i.e., pulled upwards by the nineteen “Unsure,” two “Other,” and six “None” outliers; 27 responses in total, or 42.2% of N). Note, “Unsure,” “Other,” and “None Provided” categories account for 42.2% N.

Q13 through Q16 are Likert scale-measured COVID-19 control questions.

Table 13. Q13 response frequencies (with bar chart)

	Q13. COVID-19 affects on well-being	% of Resp
Significantly REDUCES: (1)	18	28.125%
Somewhat REDUCES: (2)	30	46.875%
Neither reduces nor increases: (3)	11	17.188%
Somewhat INCREASES: (4)	0	0.000%
Significantly INCREASES: (5)	1	1.563%
Do not know, No opinion, or N/A: (0)	4	6.250%

Question 13 median and mode both equal to 2, favors a “Somewhat” reduction to respondent well-being.

Table 14. Q14 response frequencies (with bar chart)

	<i>Q14. COVID-19 affects on job performance</i>	<i>% of Resp</i>
Significantly REDUCES: (1)	6	9.375%
Somewhat REDUCES: (2)	30	46.875%
Neither reduces nor increases: (3)	19	29.688%
Somewhat INCREASES: (4)	3	4.688%
Significantly INCREASES: (5)	2	3.125%
Do not know, No opinion, or N/A: (0)	4	6.250%

Q14 median and mode are both equal to 2, demonstrating a bias towards a “Somewhat” reduction to job performance, albeit not demonstrated as strongly as Q13.

Table 15. Q15 response frequencies (with bar chart)

	<i>Q15. COVID-19 affects on health</i>	<i>% of Resp</i>
Significantly REDUCES: (1)	5	7.813%
Somewhat REDUCES: (2)	15	23.438%
Neither reduces nor increases: (3)	37	57.813%
Somewhat INCREASES: (4)	3	4.688%
Significantly INCREASES: (5)	0	0.000%
Do not know, No opinion, or N/A: (0)	4	6.250%

Question 15 median and mode equal to 3, with Min=1 with Max=4, has a narrower response dispersion than Q14 suggesting the sample favors a neutral respondent response regarding COVID-19 impacts to health.

Table 16. Q16 response frequencies (with bar chart)

	<i>Q16. COVID-19 affects on readiness</i>	<i>% of Resp</i>
Significantly REDUCES: (1)	8	12.500%
Somewhat REDUCES: (2)	21	32.813%
Neither reduces nor increases: (3)	31	48.438%
Somewhat INCREASES: (4)	2	3.125%
Significantly INCREASES: (5)	0	0.000%
Do not know, No opinion, or N/A: (0)	2	3.125%

Question 16 consists of a median and mode both equal to 3, with Min=1 and Max=4, suggesting a “Somewhat reduction” in respondent readiness as the result of COVID-19 impacts.

Q17 BAH providing access to quality housing, with M=2.76, has both median and mode equal to 2, suggesting a “Neutral” sample response. SD=1.47. These data suggest the data set is skewed and will likely require further analysis. To evaluate and confirm or deny this need, Q17 Categorical responses were evaluated:

Table 17. Q17 response frequencies

Likert Scale	BAH provides access to quality housing	% of Resp
Strongly disagree (1)	16	25.00%
Somewhat disagree (2)	17	26.56%
Neither agree nor disagree (3)	5	7.81%
Somewhat agree (4)	14	21.88%
Strongly agree (5)	10	15.63%
Do not know, No opinion, N/A (0)	2	3.13%

Eliminating the non-score factors (3) and (0) for Q17, Q17 “Disagree” responses=52% of responses, whereas Q17 “Agree” responses=38%. Further analysis will be required.

Question 18 descriptive response data being comparable to Q17, with SD=1.38, likewise suggests a “Neutral” response. Therefore, further analysis will be required.

Q19 mean (M=2.82) sample responses suggest favoring a “Neutral” sample response yet consists of a median equal to 3 and a mode equal to 4. These data suggest Q19 responses favor a “Neutral” response but will be further evaluated.

Q20, with mean of 3, median equaling 3, and mode equal to 4 and SD=1.34 suggests a “Neutral” response.

Question 21, “My residence has a strange odor” was reverse-scored as required for the survey format and methodology. Q21 mean (4.53), with both median and mode equal to 5, with Min=3, Max=5, heavily favored the “Strongly disagree” response. Q22 mean (3.39), with median and mode both equal to 4, SD=1.36, favors a “Neutral” to “Somewhat Agree” response.

Question 23 mean (M=2.93) favors “Neutral.” However, median is equal to 3 and mode is equal to 1 suggesting this data is skewed. SD=1.56, Min=1, Max=5. Evaluate if further analysis will be necessary.

Table 18. Q23 response frequencies

Scale	Air filters replaced 3 months or <	% of Resp
Strongly disagree (1)	15	23.44%
Somewhat disagree (2)	10	15.63%
Neither agree nor disagree (3)	5	7.81%
Somewhat agree (4)	12	18.75%
Strongly agree (5)	12	18.75%
Do not know, No opinion, N/A (0)	10	15.63%

Eliminating the non-score factors (3) and (0), “Disagree” responses=39.06% of Q23 responses whereas “Agree” responses=37.50%. Confirmed, further analysis will be required.

Question 24 mean (M=3.82) strongly suggests a “Somewhat agree” response. Q24 median equal to 4 and mode equal to 5, SD=1.40, confirms this suggestion. Q25 M=3.30, with both median and mode equal to 3 strongly suggest a “Neutral” response. Questions 26 and 27 M=3.11, with both median and mode equal to 3, with SD=0.99, 0.92, firmly suggest a “Neutral” response. Q28 through Q30, with means ([Q28, M=3.02]; [Q29, M=2.82]; [Q30, M=2.85]) with both median and mode equal to 3, with respective standard deviations ([Q28, SD=0.87]; [Q29, SD=0.94]; [Q30, SD=1.13]), strongly suggest “Neutral.”

E. FURTHER ANALYSIS AND STATISTICAL SIGNIFICANCE

Survey responses information provided data for two primary groups:

1. Residents of local civilian community housing (LCCH); and,
2. Residents of on-base housing (i.e., Barracks, UH, MFH); “MFH” for brevity.

The preferred statistical analysis tool for evaluating the difference between two variables is the T-test, the two variables being residents of LCCH, and residents of MHF. related to the accuracy of the T-test’s summary statistics is predicated on four commonly known and understood T-test assumptions codified in the following statistician technical language:

1. Scale of measurement; that the scale of measurement is applied to the data follows a continuous and consistent scale, such as the scores for an IQ test.
2. Simple random sample; the data collected is from a representative, randomly selected portion of the total population.
3. Normal distribution; when the data is plotted it forms a normal bell-shaped distribution curve (a must for central rule of tendency to be applicable).
4. Homogeneity of variance; equal variance exists when the standard deviations of the samples are approximately the same.

Microsoft Excel allows for t-testing of two-samples assuming either equal, or unequal variances, depending on the sample being tested, but the default is typically assuming unequal variances.

Survey results were segregated into two subsamples: 1) LCCH, and 2) MFH to ensure accurate selection of Variable 1 (LCCH) and Variable 2 (MFH) input ranges. Two-sample t-Tests assuming unequal variances was performed on applicable survey questions. Test Hypothesized Mean Difference was set to “0” with labels selected and Alpha set to 0.05 for a 95% confidence interval (CI). T-Test data table is provided below. Results are as follows for Interval variables beginning with Question #1.

Q1 t-statistic is -1.223 with 26 degrees of freedom. The corresponding p-value is 0.232, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means; the LCCH & MFH subsample populations do not have intrinsic differences with regard to age. Question 4 t-statistic is -0.778 with 23 degrees of freedom. The corresponding p-value is 0.445, which is much greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means. Q5(b) t-statistic for # of Dependents is -1.752 with 16 degrees of freedom. The corresponding p-value is 0.099, which is slightly greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means.

Question 7 t-statistic for length of duty assignment is 1.384 with 20 degrees of freedom. The corresponding p-value is 0.182, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means; the LCCH & MFH subsample populations have no intrinsic differences.

Q13 t-statistic is 0.888 with 27 degrees of freedom. The corresponding p-value is 0.382, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means; the LCCH & MFH subsample populations have no intrinsic differences. Q14 t-statistic for COVID-19 affects to job performance is 2.039 with 16 degrees of freedom. The corresponding p-value is 0.058, which is marginally greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means. Q15 t-statistic is -0.287 with 12 degrees of freedom. The corresponding p-value is 0.779, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means. The differences are not statistically significant. Q16 t-statistic is -0.497 with 14 degrees of freedom. The corresponding p-value is 0.627, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means. The differences are not statistically significant.

Q17 t-statistic for BAH providing access to quality housing is -0.561 with 13 degrees of freedom. The corresponding p-value is 0.584, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means. Q18 t-statistic is -1.089 with 16 degrees of freedom. The corresponding p-value is 0.292, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no

difference between means of LCCH & MFH subsample populations for Q18. Q19 t-statistic is -1.089 with 16 degrees of freedom. The corresponding p-value is 0.292, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means.

Q20 t-statistic -1.428 with 19 degrees of freedom. The corresponding p-value is 0.169, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means of the LCCH & MFH subsample populations. Q21 t-statistic for residence has odors or smells funny is -0.775 with 14 degrees of freedom. The corresponding p-value is 0.451, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means of the LCCH & MFH subsample populations. Q22 t-statistic is -1.0450 with 23 degrees of freedom. The corresponding p-value is 0.307, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means of the LCCH & MFH subsample populations.

Q23 t-statistic for replacing HVAC filters every 90 days or sooner is 2.263 with 17 degrees of freedom. The corresponding p-value is 0.037, which is less than Alpha 0.05, which provides statistically significant evidence that the subsample differ between means is not limited only due to their intrinsic differences. Reject the null hypothesis that there is no difference between the means of the two subsamples.

Q24 t-statistic is -0.644 with 13 degrees of freedom. The corresponding p-value is 0.530, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means of the LCCH & MFH subsample populations. Q25 t-statistic is 0.096 with 14 degrees of freedom. The corresponding p-value is 0.925, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means. Q26 t-statistic is 1.089 with 15 degrees of freedom. The corresponding p-value is 0.293, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means of the two groups.

Q27 t-statistic is 0.450 with 15 degrees of freedom. The corresponding p-value is 0.659, which is greater than Alpha 0.05. It is safe to reject the null hypothesis that there is no difference between means of the LCCH & MFH subsample populations. Q28 t-statistic

is 0.419 with 14 degrees of freedom. The corresponding p-value is 0.682, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means. Q29 t-statistic is 0.085 with 17 degrees of freedom. The corresponding p-value is 0.933, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means.

Q30 t-statistic is -0.255 with 23 degrees of freedom. The corresponding p-value is 0.801, which is greater than Alpha 0.05. It is safe to not reject the null hypothesis that there is no difference between means of the LCCH & MFH subsample populations.

1. Independent Sample T-Test Assuming Unequal Variances

Table 19. Comparing local civilian community housing (LCCH) to military family housing (MFH) resident survey responses

Survey information			LCCH	MFH	P(T<=t) two-tail		
Section	Question	Variable	M (s) n	M (s) n	df	t	p
S1	Q1	Age (in years)	33.75 7.12 52	35.64 3.93 11	26	-1.223	0.232
S1	Q4	Length of Service	146.02 83.41 53	160.82 50.37 11	23	-0.778	0.445
S1	Q5(b)	# of Dependents	1.97 1.04 37	2.64 1.12 11	16	-1.752	0.099
S2	Q7	Duty assignment tour length	30.28 10.56 53	26.64 7.30 11	20	1.384	0.182
S3	Q13	COVID-19 affects on well-being	1.96 0.86 50	1.80 0.42 10	27	0.888	0.382
S3	Q14		2.50	2.00	16	2.039	0.058

Survey information			LCCH	MFH	P(T<=t) two-tail		
Section	Question	Variable	M (s) n	M (s) n	df	t	p
		COVID-19 affects on job performance	0.89 50	0.67 10			
S3	Q15	COVID-19 affects on health	2.62 0.70 50	2.70 0.82 10	12	-0.287	0.779
S3	Q16	COVID-19 affects on readiness	2.41 0.75 51	2.55 0.82 11	14	-0.497	0.627
S4	Q17	BAH provides access to quality housing	2.71 1.47 52	3.00 1.49 10	13	-0.561	0.584
S4	Q18	Comparison: LCCH to MFH	2.60 1.40 43	3.09 1.30 11	16	-1.089	0.292
S4	Q19	Local area provides adequate safe, healthy, affordable housing	2.82 1.35 51	2.80 1.23 10	14	0.054	0.957
S4	Q20	PGs receive relocation assistance in advance of arrival	2.88 1.38 42	3.45 1.13 11	19	-1.428	0.169
S4	Q21	Residence has strange odors	4.57 0.73 51	4.36 0.81 11	14	0.775	0.451
S4	Q22	HVAC receives regularly scheduled maintenance	3.34 1.45 50	3.67 0.71 9	23	-1.045	0.307
S4	Q23		3.11 1.59	2.10 1.20	17	2.263	0.037

Survey information			LCCH	MFH	P(T<=t) two-tail		
Section	Question	Variable	M (s) n	M (s) n	df	t	p
		HVAC air filters replaced < every 90 days	44	10			
S4	Q24	Ceilings, walls, floors, not leaking, not discolored; paint not peeling	3.76 1.36 50	4.09 1.58 11	13	-0.644	0.530
S4	Q25	Affect residence has on well-being	3.31 1.09 52	3.27 1.10 11	14	0.096	0.925
S4	Q26	Affect residence has on job performance	3.17 0.98 52	2.82 0.98 11	15	1.089	0.293
S4	Q27	Affect residence has on health	3.13 0.93 52	3.00 0.89 11	15	0.450	0.659
S4	Q28	Affect residence has on readiness	3.04 0.86 52	2.91 0.94 11	14	0.419	0.682
S4	Q29	Current housing and readiness program impacts on unit's mission	2.83 0.98 40	2.80 0.79 10	17	0.085	0.933
S4	Q30	Current housing and readiness program affects on military recruitment and retention	2.83 1.20 41	2.91 0.83 11	23	-0.255	0.801

V. RESULTS, CONCLUSIONS, RECOMMENDATIONS

A. DISCUSSION OF RESULTS

The results of this study are not generalizable due to the sample survey not acquiring the requisite amount of completed surveys. To establish a 95% confidence interval (CI), the survey sample required was 383 (N=383). Total completed surveys received was 64 (N=64), a 7% response rate, 16.71% of the required (N).

Question 3 frequencies indicated that 40 of the 64 respondents were officers. Enlisted pay grade survey responses represented only about one third of the survey responses which is less than half of the normal average DOD Enlisted distribution (80%) of the force (Department of Defense, 2020). The officer-biased survey response rate can be explained by analyzing the source of the officer survey responses given the study's survey methodology called for the researcher to identify each survey generated with its own unique serialization. The officer-biased results are largely attributed to NPS being included in the survey (i.e., a byproduct of NPS' military population consisting mostly of officers).

Q6 responses showed a total of 26 different VHA Zip Codes were provided by the 64 respondents (from six of the nine U.S. Census Bureau divisions). Respondents were asked to provide the VHA Zip for their assigned duty location (per LES). Many [most] respondents provided a Zip Code other than their assigned duty station's Zip Code, which is presumed to be the respondent's home, or mailing Zip Code. While it is not within this study's scope to evaluate the mean distance (in miles) that service members are living from their assigned duty stations, acquiring the respondent's residential Zip Code could provide insight to support further evaluation and analysis of Q19 responses as it relates to determining if service members are traveling further from their assigned duty stations to find appropriate housing; e.g., within 30 miles and a one hour commute one-way (Reishauer, 1993, p. 4). Another consideration regarding Zip Codes is that the respondent might not actually "work" at the ultimate duty station listed in their orders; reassignment to a detachment or subordinate unit is very common.

B. RECOMMENDATIONS

For future studies, specifically surveys, consider including various Zip Code inquiries such as:

1) VHA Zip (per LES): to ensure identification of ultimate duty station.

2) Home, or residence zip code: To establish respondent's housing area; much information can be gained through U.S. Census Bureau and other resources that are directly relevant to DOD policy (e.g., crime rates, critical housing market areas, etc., much of this is evaluated and/or taken consideration during periodical MHA assessment).

3) Duty location zip code (if assigned other than ultimate duty station; per unit mailing address).

Note: Some surveys have respondents provide their travel distance (in miles) and the commute time (in minutes). We advise utilizing these methodologies in addition to acquiring the actual location demographics; e.g., mailing address, zip code.

While length of tour assignment (Q7) has not yet been emphasized in this study, we take this opportunity now in the conclusion. Length of tour assignment is an important and very relevant factor service members take into consideration in the home-buying or home-renting decision-making process (Bond et al., 2016, pp. 77–78). Studies commissioned by the department have shown home ownership also improves service member and military family QoL (Bissell et al., 2010; Marsh, 1995; Reishauer, 1993).

Given the DOD has control over service member tour length assignments, this factor must be considered and evaluated. RAND's 2016 study: "Tour Lengths, Permanent Changes of Station, and Alternatives for Savings and Improved Stability," weighing length of tour assignment more heavily as compared to a standard equal weight distribution analysis may render more accurate results (Bond et al., 2016). The DOD has long considered adjusting the length of both "sea-duty" and "shore-duty" assignments as a cost saving measure for curtailing permanent change of station (PCS) related costs as well as improving service member and family QoL. Assume the DOD's CONUS tour assignment policy stipulates six-year "area" assignments. Assume service member's orders were six-

year orders versus three. For example, using current detailing practices: Instead of receiving one set of three-year orders, the service member would receive two sets of three-year orders; the first three-year orders are to the primary duty station, and the second set of three-year orders are to the follow-on tour). The service member could be attached to a sea-duty platform within the same geographical duty location for three of the six years. Following completion of that tour, the service member would detach the sea duty assignment and report to the shore-duty platform assignment that is located within the same geographical location as the sea duty assignment for the other remaining three years of the service member's assigned tour. As it is the DOD's policy to look first to house their service members in available and suitable housing in the local civilian community located within commuting distance of the installation assigned (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2010a, p. 2). How much more likely would service members be to purchase homes located in the local communities versus renting if this were the policy of the DOD? Recall 66% of the DOD already leverages local communities for housing. Could a policy change such as this drastically change the service member's behavior and decision-making to favor purchasing a home versus renting? If so, would this change be large enough that it essentially absolves the DOD of the MFH responsibility apart from the few remote outlying areas where the local MHA cannot support housing the force?

This is not to say that order modifications and other unusual or episodic events will not require attention or that there are no drawbacks whatsoever if six-year MHA assignments were the DOD's policy, but those circumstances likely cannot be avoided regardless the situation; therefore, these issues and circumstances should not have any weight or bearing on the matter unless they can be validated, justified, and quantified.

Using the substantial cost-avoidance benefits from six-year MHA assignments as an example, the DOD stands to avoid tens of thousands of dollars with each set of reduced Permanent Change of Station (PCS) orders. These costs can be significant, staggering even when considering the overall PCS costs of moving a military family of three, four, or more across the United States, in addition to their household goods (HHG), personal belongings, personally owned vehicles (POV), etc.

Additionally, factor in the lost man-hours that will be regained that are normally associated with the service member checking out from the detaching command, pack-out HHGs, disenrolling children from the detaching MHA school, travel time to the next duty station, per diem costs during PCS travel for lodging, meals, and incidental expenses (M&IE), checking into the new command, time away from work to accept delivery and unpacking HHGs, reenrolling children in school, spouse employment in the new duty station, the eventual and unavoidable follow-on HHGs claim for items lost, missing, broken or damaged by the Transportation Service Provider (TSP) that moved the family's personal effects from the previous duty station to the next, etc. Studies show these issues matter and have standing in the service member's and military family's evaluation and valuation of QoL and could therefore be a powerful resource maximization capability.

Question 8 responses indicating that 45% of respondents had previously purchased a home or residence could be largely influenced by history of duty assignment location. Example being, it is likely that, on average, less service members purchase homes in California or other similarly priced critical housing areas.

In her testimony before the Committee on Armed Services, Ms. Elizabeth Field briefly mentioned that the GAO determined the purported 87% privatized military housing tenant satisfaction score was inaccurate and completely unreliable due to the manner in which the score was arrived at (*GAO on privatized housing*, 2019). Q9 responses provided an excellent opportunity to demonstrate why and how it matters how these data and other survey data are analyzed, summarized, aggregated, and counted.

While we provided all descriptive statistics for all survey questions for simplicity and standardization, it should be noted that descriptive statistics are not commonly utilized to analyze or summarize Categorical variable results. However, as alluded to in the paragraph above, based on the information reported by Ms. Field, it was the researchers' opinion that the utilization of all Q9 data, descriptive statistics, in addition to normally reported and evaluated Categorical variable response frequencies and distributions, was beneficial in demonstrating how these data could be misinterpreted or errantly counted and/or aggregated, leading to inaccurate data being reported. For example, Q9, a Categorical variable, and explaining the causation for Q9's mean (M=1.44) being pulled upwards

towards 2 because of the outlier effects of “MFH” as well as “Other” option categories (consequently why Q9 median and mode being equal to 1 are more accurate measures of a “mean” value). Regarding Q9 results, 80% (51 # obs) of respondents identifying with residing in a residence in the local civilian community, and only 17% (11 # obs) of respondents residing in MFH, with 3% (2 # obs) choosing “Other” category, is noteworthy given the historical 66% of service members living out in town with approximately 33% residing in on-base housing (barracks, UH/MFH) (Lepore, 2018, p. 1). The researchers suspect these non-traditional response results are most likely explainable as being a byproduct of the sample being officer-biased (note there were no “Barracks/UH” category selections).

Question 11 responses returned unexpected results with ([Q11; Private Developer Owned/Managed]=11), yet ([Q10(f)]=8). Also, Q11 “Unsure” category was selected by one respondent. It is important to understand the implications associated with these disparate response anomalies suggesting that residents of military housing may not fully understand who their landlord/property manager is. Briefly discussed in this study’s literature review, if residents of on-base housing (MFH, to include barracks/UH) cannot distinguish between the Government Housing Representatives/Advocates and the employees that work directly for the Private Developer (i.e., Privatized Housing contractors), whose performance are residents of military provided quarters evaluating and grading when participating in the annual housing survey? While this study’s survey did not obtain responses from barracks/UH occupants, it is worth noting for reader awareness and understanding that many barracks and UH facilities utilized by the military have also been privatized. As discussed in Chapter I Limitations, barracks/UH was not the focus of this study and therefore why barracks/UH is not covered in more detail in this study.

Similarly to Q9, Question 12’s analysis provided an opportunity and discussion related to bias and skewed data, means, mode, and median. Mentioned in Q12’s analysis but not further discussed was the noteworthiness of the “Unsure,” “Other,” and “None Provided” categories accounting for 42.2% of the sample (N). We digress for a moment for emphasis to reiterate points from Questions 1 through Q5, this survey sample is senior

to the DOD average in age, rank, length of military service, etc. (essentially, senior across the board).

This is a very important statistic and finding of this study. Q12 “Unsure,” “Other,” and “None Provided” categories account for 42.2% of the survey sample (N). This survey sample is senior across the board to the average ADSM. Yet, when asked who at the local installation level where they are assigned is providing critical readiness program support and services, nearly half of the survey respondents responded: “Unsure”(29.69%), “Other”(3.13%), or believe “None [are] Provided” (9.38%).

As it relates to Ms. Field’s testimony (*GAO on privatized housing*, 2019), DOD officials have frequently referred to historically referenced privatized military housing tenant satisfaction survey scores of 87%, and a 93% privatized military housing occupancy rate both being readily evident measures of military tenant satisfaction with privatized housing. It would seem these purported metrics and results have been relied upon for years, if not decades. Based on the current understanding that this data was inaccurate, in fact wildly inaccurate according to Ms. Field’s testimony, the inherent questions that follows are: Who is/was responsible, if anyone, to verify and validate these reported measurements, scores, and indicators of satisfaction? Presumably the next question: For how long have the tax-paying American public that is footing the MHPI bill and the DOD been defrauded and misguided by this misinformation?

Another benefit and potential significant result of this study involves respondent responses to Questions 13 through Question 16; the COVID-19 control questions (Section 3 Questions). In summary, and as it relates to the combat effectiveness of the joint force, our study finds this survey sample, on average, perceived COVID-19 had little to no effect on their well-being, job performance, health, and readiness.

For clarification and to be specifically clear, it should be noted that for Q13(well-being) and Q14(job performance) “Somewhat reduces” was the most frequently selected response; however, on average, the sample responded neutrally to COVID-19 effects.

Q13 through Q16 descriptive statistics and T-Statistic results are listed below:

Question 13 mean (M=1.93), with both a median and mode equal to 2, strongly favors a “Somewhat” reduction to respondent well-being. Q14 M=2.42, median and mode being equal to 2, demonstrates a “Somewhat” reduction to job performance, albeit not demonstrated as strongly as Question 13. Question 15 mean (M=2.63) having both a median and mode equal to 3 and Min=1 with Max=4 has a narrower response dispersion than Q14 suggesting the sample favoring a neutral respondent response regarding COVID-19 impacts to health. Question 16 mean (M=2.44) consisting of a median and mode both equal to 3 and Min=1 with Max=4 suggests a “Somewhat reduction” in respondent readiness as the result of COVID-19 impacts.

Question 17 mean (M=2.76), BAH providing access to quality housing, suggests a “Neutral” sample response. However, both median and mode are lower, equaling 2(SD=1.47). These data suggest the data set is skewed and will likely require further analysis. To evaluate this need Q17 Categorical responses were evaluated.

Table 20. Q17 response frequencies (further analysis)

Scale	<i>BAH provides access to quality housing</i>	<i>% of Resp</i>
Strongly disagree (1)	16	25.00%
Somewhat disagree (2)	17	26.56%
Neither agree nor disagree (3)	5	7.81%
Somewhat agree (4)	14	21.88%
Strongly agree (5)	10	15.63%
Do not know, No opinion, N/A (0)	2	3.13%

Eliminating the non-score factors (3) and (0), “Disagree” responses=52% of Q17 responses whereas “Agree” responses=38%. Further analysis will be required.

Question 23 asked respondents if their residence’s HVAC filters were replaced every 90 days or sooner. Q23 provided the most “statistically significant” findings of the study thus far, from the t-Statistic tests performed on the interval variables after segregating the survey sample into two subsamples, those that live in local community housing (LCCH), and MFH tenants.

Q23 mean (M=2.93) favors “Neutral.” However, median is equal to 3 and mode is equal to 1 suggesting this data is skewed (SD=1.56). Min=1, Max=5. Further analysis will be necessary:

Eliminating the non-score factors (3) and (0), “Disagree” responses=39.06% of Q23 responses whereas “Agree” responses=37.50%. Confirmed, further analysis will be required.

Table 21. Q23 response frequencies (further analysis)

Scale	Air filters replaced 3 months or <	% of Resp
Strongly disagree (1)	15	23.44%
Somewhat disagree (2)	10	15.63%
Neither agree nor disagree (3)	5	7.81%
Somewhat agree (4)	12	18.75%
Strongly agree (5)	12	18.75%
Do not know, No opinion, N/A (0)	10	15.63%

Q23 t-statistic for replacing HVAC filters every 90 days or sooner is 2.263 with 17 degrees of freedom. The corresponding p-value is 0.037, which is less than Alpha 0.05, which provides statistically significant evidence that the subsample difference between means is not limited only due to their intrinsic differences. Reject the null hypothesis.

In keeping with the purpose of this study, recommendation methodology incorporates categorizing recommendations per the study’s purpose. The study had intended to provide a variety of recommendations outlined and categorized IAW the NDS LOE which the recommendation most accurately aligned with and supported but due to time constraints these intentions are not possible at this time but will be maintained in rough form to support further research and inquiries should they come to fruition.

C. STUDY PURPOSE

(1) Identify and prioritize key policies

Referring to Figures 1, 2, and 3, there are nearly 50 references listed between DODI 4165.63 DOD Housing and DODM 4165.63 DOD Housing Management Manual, the order and format to Chapter II Literature Review, [section] B. Policy, is not by chance. The policies and references are drawn from the near 50 references and are listed in order of priority established by this study. The researchers conducting this study believe establishing this prioritization is important to ensure all stake holders (e.g., unit and installation leadership, decision-makers, policymakers, program managers, and occupants of housing) understand which policies take precedence in the event policies conflict or stakeholders are faced with difficult decisions regarding resource management and utilization.

(2) Measurement tools and identification of common causal factors related to negative impacts to service member and family health, well-being, and readiness

The survey instrument itself is a product produced by the study and researchers to assist with measurement and achievement of policy objective desired end states. The survey instrument is policy-based and strategically developed to remove or mitigate subjectivity when used for evaluation to acquire accurate and actionable data related to occupant health, well-being, and readiness with the intrinsic benefit of serving as a rubric to gauge achievement of current housing and readiness policies. Succinctly the study's survey instrument could easily be used by housing tenants, providers, and support staff as a near-definitive diagnostic physical inspection tool to identify physically observable indicators and building assemblage characteristics commonly observed, known, and associated with unsafe and unhealthy housing conditions. Standardized values and/or grading systems and criteria need to be established.

Issues and concerns related to needing but not having accurate data has been consistently raised and discussed in great detail in each of the four congressional hearings on privatized military housing. The nucleus for much of the data relative to the MHPI projects is the maintenance and service data (i.e., the work order history). Not having

accurate maintenance and service data negatively affects all four metrics mentioned by the GAO that the services use to gauge MHPI project success (Lepore, 2018):

- maintenance management
- resident satisfaction
- project safety
- financial management

An example to demonstrate how one maintenance issue or work order can easily affect and influence the other three areas of measurement: Consider a water leak, presumably the result of a failed plumbing component. The military housing occupant who just took possession of the housing unit notices wet flooring in the area of a bathroom base cabinet and places a work order for a water leak in the electronic work order system based on what they observed. Maintenance arrives within one hour of the tenant placing the work order and identifies the source of the leak: a corroded and deteriorated rubber gasket in a plumbing fitting, and replaces the fitting, closes the work order, and is on with the day. The following day, the occupant checks the area to validate a complete repair and does not notice any leaks or signs of water, and therefore assumes the issue has been resolved.

Two days later, the occupant notices water on the floor in the same area and places another work order for a water leak. Assume at this time the source of the leak is correctly located and identified; the source of the water leak is an ill-fitted and incorrectly installed sink drain and P-trap assembly. Through reflection, the occupant and maintenance staff learn and understand what led to the incorrect identification of the source of the water leak and the assumption that corrective action and repair had taken place. The day of the week of the original identification of the issue and work order was on a Friday, the last day of the work week. The water that had leaked onto the floor was a byproduct of the spouse of the housing occupant preparing for work first thing in the morning. Following the purported repair, the next day when the housing occupant evaluated the same area for any signs of water as an indication that the leak had not been repaired, was a Saturday, and the following day Sunday. While the leak still occurred when the spouse used the sink, the leak

was not as significant nor noticed due to the change in routines between the work week and the weekend. Come Monday and resumption of normal work week routines, the matter of the leak not being appropriately identified and repaired comes to light.

This example, noting that the housing occupants just took possession of the housing unit, begs the question, “How long has the leak been occurring for unnoticed or unreported, potentially assuming the water on the floor was just a matter of splashed or spilled water from normal routines?” If for an extended time, weeks, or months, or longer, not only could serious health implications potentially come into play as a result environmental and biological issues developing (Environmental Protection Agency, 2014b), but the condition of the home could be severely, even detrimentally affected. These results can implicate and influence not only Resident satisfaction measurements but largely influence Project safety as well as Financial management measurement areas depending on the extent and severity of the leak, environmental and biological concerns, structural damage requiring demolition and reconstruction of building assemblages following abatement of the moisture related incident caused by the leak, etc.

It is for these reasons that this study had conclusively determined the government cannot outsource but must own, manage, maintain, and standardize an Enterprise maintenance software program to ensure tracking and historical record archiving to ensure these type measures are accurately captured and maintained. Fortunately, included in the near 50 references included in Figures 1, 2, and 3, is DODD 4165.06 – Real Property, which stipulates policy requirements for the branches of the military services to capture this type data on the DOD’s behalf ISO property and asset management initiatives (Office of the Under Secretary of Defense for Acquisition and Sustainment, 2004).

Based on the overwhelming data included in GAO reports, DODIG reports, congressional hearings and testimony, etc., specifically citing government’s need for accurate and reliable data across a spectrum of policy-based requirements, in addition to needing to have data and facts available to hold a MHPI project provider accountable for substandard performance in the least, the need, rather the requirement for the government and/or DOD to have and provide a government owned and government controlled, supported, and managed asset and maintenance work order management system, or

database, is unequivocally a requirement if there are reasonable expectations for lasting program improvements to the MHPI and housing in general.

Fortunately, many of these systems are commercial off-the-shelf (COTS) available systems; they are no different than purchasing a software use license for Microsoft Office or other program. Immediate benefits include the government having control of architecture naming conventions, work order processing and required notifications in the event of health or safety related matters, real-time monitoring of work order processing, input, submission, updates by maintenance staff, as well as the closing of the work order and establishment of required or recommended notes to be input by the maintenance staff, etc. These are just a few of the myriads of data point and system management benefits.

Lastly, reporting. A standardized reporting system needs to be used for all services to use as it relates to issues related to personnel and barracks, UH, and MFH.

All services are required to report various instances of other personnel matters up their respective chains of command. Examples of instances are those related to domestic violence, suicide, casualty assistance, information “spillage,” both classified information or personal identifiable information or private health information, etc. The USN’s directive on operational report requirements such as this is OPNAVINST F3100.6 (series).

Given much of the housing, health, and habitability-related matters discussed in the congressional hearings and testimony centered on issues that were a result of a residence that had one or multiple maintenance or repair issues for water leaks or some form of water ingress, it seems prudent for the DOD to adopt a policy that regarded all water leak or water ingress related work orders as “reportable incidents” comparable to other Commander Critical Information Requirements (CCIR) such as suicidal ideation, suicidal gestures, domestic violence, safety, etc. This reporting requirement could facilitate the DOD taking a proactive approach to getting ahead of the problem both in reporting as well as increasing awareness. The survey instrument is included as an appendix to further assist and guide service members and their families with inspecting and documenting issues and concerns with their residence regardless the location.

APPENDIX. HOUSING, HEALTH, AND READINESS SURVEY

A policy-based approach to measuring achievement of program desired end states

Section 1

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 1 of 4

* 1. What is your age (in years)?
Only numbers may be entered in these fields.

Enter the two-digit number in the answer field provided to answer the question:

Prefer not to answer (enter "0" in the answer field provided if you prefer not to answer):

? Only numbers may be entered in the answer field(s). Example: A 23 year-old would enter the number "23" in the answer field to answer the question

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 1 of 4

* 2. Your "BRANCH" of military service is:

☐ United States Army (USA)

☐ United States Marine Corps (USMC)

☐ United States Navy (USN)

☐ United States Air Force (USAF)

☐ Other (please explain):

? If "Other", please provide a brief description or explanation (Example: "Transitioning between services", or "Prefer not to say").

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 1 of 4

* 3. Your current Pay Grade ("GRADE" per LES) is:
Only numbers may be entered in these fields.

Enlisted (E-1 to E-9) E-?:

Officer (O-1 to O-10) O-?:

Officer (prior Enlisted) O-?E (only need to enter the #):

Warrant Officer (W1 to W-5) W-?:

Other:

? Only numbers may be entered in the answer field(s). Example: An E-4 would enter the number "4" in the space provided to the right of the Enlisted row group

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 1 of 4

*** 4. Your length of military service ("YRS SVC" per LES) is:**
Only numbers may be entered in these fields.

Number Year(s) of Service

Number Month(s) of Service

? Only numbers may be entered in the answer field(s). Do not leave either field blank. Enter "0" for "Number Year(s) of Service" if total military service is less than one year, only Month(s)
Example-1: New Recruit with a total of two months (less than one year) of military service: Number Year(s) of Service = "0"; Number Month(s) of Service = "2"
Example-2: Junior Enlisted/Officer mid-tour at first duty station following basic training with one year, and ten months of military service: Number Year(s) of Service = "1"; Number Month(s) of Service = "10"

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 1 of 4

*** 5. Your Basic Allowance for Quarters "BAQ Type" is:**
Choose one of the following answers
Only numbers may be entered in 'BAQ Type With Dependents (Number of Dependents):' accompanying text field.

☐ BAQ Type Without Dependents

☐ BAQ Type With Dependents (Number of Dependents):

? If "With Dependents", please provide number of Dependents (e.g., "1", or "2", etc.). Only numbers may be entered in the answer field(s).

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 1 of 4

*** Q6. Your Variable Housing Allowance "VHA Zip" Code is:**

Only numbers may be entered in these fields.

Enter five-digit Zip Code for VHA Zip:

Enter "0" if you prefer not to answer:

Section 2

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 2 of 4

*** 7. The tour length of your current duty assignment is (do not include any extensions):**

Only numbers may be entered in these fields.

Year(s)

Month(s)

? Only numbers may be entered in the answer field(s). Do not leave either field blank. Enter "0" if no Year(s), only Month(s); or Year(s) only, no Month(s).
Hint: Reference your original orders, subtract the report No Later Than (NLT) date from the Projected Rotation Date (PRD).
Example: Report NLT Date: 03/20 (March 2020); PRD: 03/23 (March 2023) = "3" Year(s), "0" Month(s).

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 2 of 4

*** 8. Have you previously purchased a home or residence?**

☐ Yes ☐ No

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 2 of 4

*** 9. Your current residence is best described as:**

☐ Residence located within the local civilian community that you "Own" or "Rent"

☐ Barracks, or Unaccompanied Housing (UH)

☐ Military Family Housing (MFH)

☐ Other

? If "Other", please provide a brief description or explanation (Example: For a recreational vehicle or camper, enter: "RV")

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 2 of 4

*** 10. Select all that apply if you reside in a residence located within the local civilian community.**

If you reside in Barracks, Unaccompanied Housing (UH), or Military Family Housing (MFH), select "Not Applicable" and proceed to the next question.

Check any that apply

☐ You "Rent" the residence from a Property Owner/Landlord (you have a residential lease agreement)

☐ You "Own" the residence (you have a mortgage and/or applied for a title/deed)

☐ The residence is a Single Family Home

☐ The residence is an Apartment

☐ The residence is a Condominium/Townhouse

☐ Not Applicable (you reside in Barracks, UH, or MFH)

☐ Other (see "Note" below)

? *Note: "Other" option auto-checks only when an entry is made in the comment field. If "Other", please provide a brief description or explanation and the option will auto-check

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 2 of 4

*** 11. If you reside in Barracks, Unaccompanied Housing (UH), or Military Family Housing (MFH), select the owning/managing entity of the residence.**

If you reside in a residence located within the local civilian community, select "Other/Not Applicable" and proceed to the next question.

☐ Government owned/managed

☐ Private Developer owned/managed

☐ Unsure

☐ Other/Not Applicable

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0%
100%

Section 2 of 4

* 12. Housing and readiness programs where you are assigned are provided by:

☐ United States Army (USA)
☐ United States Marine Corps (USMC)
☐ United States Navy (USN)
☐ United States Air Force (USAF)
☐ Unsure
☐ None; housing and/or readiness programs are not provided
☐ Other (please explain):

Section 3

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0%
100%

Section 3 of 4

* 13. Has COVID-19 affected your well-being?

	Significantly reduces my well-being	Somewhat reduces my well-being	Neither reduces nor increases my well-being	Somewhat increases my well-being	Significantly increases my well-being	Do not know, No opinion, or N/A
COVID-19:	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0%
100%

Section 3 of 4

* 14. Has COVID-19 affected your job performance?

	Significantly reduces my performance	Somewhat reduces my performance	Neither reduces nor increases my performance	Somewhat increases my performance	Significantly increases my performance	Do not know, No opinion, or N/A
COVID-19:	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 3 of 4

* 15. Has COVID-19 affected your health?

	Significantly reduces my health	Somewhat reduces my health	Neither reduces nor increases my health	Somewhat increases my health	Significantly increases my health	Do not know, No opinion, or N/A
COVID-19:	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 3 of 4

* 16. Has COVID-19 affected your readiness?

	Significantly reduces my readiness	Somewhat reduces my readiness	Neither reduces nor increases my readiness	Somewhat increases my readiness	Significantly increases my readiness	Do not know, No opinion, or N/A
COVID-19:	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Section 4

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

* 17. Your Basic Allowance for Housing (BAH) provides access to quality housing within the local area where you are assigned.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

* 18. Based on your experiences and observations, comparing local community housing standards and quality, to military housing standards and quality at similar price points:

	Local community standards & quality are significantly better	Local community standards & quality are somewhat better	Local community standards & quality are comparable to the military's	Military standards & quality are somewhat better	Military standards & quality are significantly better	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select the most accurate comparison by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

* 19. The local area provides adequate access to safe, healthy, affordable housing.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

* 20. New arrivals receive relocation assistance information such as local housing, schools, childcare, religious services and cultural information well in advance of their arrival.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

*** 21. My residence has a strange odor or "smells funny".**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

*** 22. The heating and ventilation system in my residence receives regularly scheduled maintenance.**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

*** 23. All air filters in my residence's heating and ventilation system are replaced every three months or sooner.**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

*** 24. My residence's ceilings, walls, and floors are in good condition, not leaking, discolored, or stained, paint is not peeling.**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

*** 25. Describe the affect your current residence has on your well-being.**

	Significantly reduces my well- being	Somewhat reduces my well-being	Neither reduces nor increases my well- being	Somewhat increases my well- being	Significantly increases my well- being	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

*** 26. Describe the affect your current residence has on your job performance.**

	Significantly reduces my performance	Somewhat reduces my performance	Neither reduces nor increases my performance	Somewhat increases my performance	Significantly increases my performance	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

*** 27. Characterize the affect your current residence has on your health.**

	Significantly reduces my health	Somewhat reduces my health	Neither reduces nor increases my health	Somewhat increases my health	Significantly increases my health	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

*** 28. Characterize the affect your current residence has on your readiness.**

	Significantly reduces my readiness	Somewhat reduces my readiness	Neither reduces nor increases my readiness	Somewhat increases my readiness	Significantly increases my readiness	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

*
29. Based on your personal experiences and observations with housing and readiness programs, describe their current affect on your unit's mission.

	Significant negative impact on mission	Somewhat negative impact on mission	Neither negative nor favorable impact on mission	Somewhat favorable impact on mission	Significant favorable impact on mission	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

Housing, Health, and Readiness Survey_NPS.2021.0005-IR-EM2-A_MWR-ENCD

Your support to improve housing and the health and readiness of service members and their families is most appreciated!

0% 100%

Section 4 of 4

*
30. Based on your personal experiences and observations with housing and readiness programs, describe their affect on military recruitment and retention.

	Significantly reduces recruitment and retention results	Somewhat reduces recruitment and retention results	Neither reduces nor increases recruitment and retention	Somewhat increases recruitment and retention results	Significantly increases recruitment and retention results	Do not know, No opinion, or N/A
	☐	☐	☐	☐	☐	☐

? Select your response by "clicking" on the bubble below the response option

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