

# STRATEGIC HOUSING SATISFACTION AND PREFERENCES AMONG U.S. MILITARY PERSONNEL: EVIDENCE FROM CAMP HUMPHREYS, KOREA

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**Abstract.** This study explores off-post housing preferences and satisfaction among U.S. military personnel and civilian employees stationed at Camp Humphreys in South Korea—the largest overseas U.S. military installation. Using the Importance–Performance Analysis framework, the research identifies key factors shaping residential experiences and strategic housing needs in host communities. While attributes such as English communication and clarity of lease agreement support resident satisfaction, unmet expectations regarding parking and shared facility management highlight critical service gaps. However, beyond individual preferences, the findings carry broader implications for real estate market responsiveness and urban policy. The structured nature of military housing allowances minimizes price sensitivity, suggesting that quality, service reliability, and cultural adaptability hold greater value for this tenant segment. These insights point to opportunities for local governments and developers to differentiate through certified multilingual real estate services and tailored infrastructure planning. By aligning investment strategies with the unique needs of foreign military populations, stakeholders can enhance property values, reduce tenant turnover, and foster community integration. The study contributes to the discourse on military housing policy and provides a model for optimizing real estate services in globalized urban contexts.

**Keywords:** cross-cultural housing management, off-post housing, U.S. military personnel, housing satisfaction, importance–performance analysis, real estate services.

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## 1. Introduction

As of 2025, South Korea is recognized as a major global economy, ranking 13th in GDP worldwide (International Monetary Fund, 2025). Beyond its economic performance, the country offers diverse employment opportunities for expatriates and foreign residents. The growing global influence of Korean culture—particularly the Korean Wave (Hallyu)—has increased interest among foreigners in residing in South Korea and experiencing its cultural environment directly (Korean Foundation for International Cultural Exchange, 2024). Consequently, the number of foreign residents has steadily grown and is expected to continue rising.

Among foreign occupational groups, United States Forces Korea (USFK) represents the largest presence. Following the relocation of Yongsan Garrison, the Eighth U.S. Army and USFK headquarters were transferred to Camp Humphreys in July 2017 and June 2018, respectively. This relocation significantly increased the number of USFK personnel and civilian employees in the area, leading to an on-base housing shortage and increased demand for

off-post accommodations (Ministry of National Defense, Republic of Korea [ROK], 2021). In response, developers launched targeted housing projects to meet USFK personnel needs, substantially expanding the off-post housing supply near Camp Humphreys.

Despite ongoing efforts, many USFK personnel and civilian employees continue to encounter challenges in securing and maintaining off-post housing. Disputes often emerge between tenants, landlords, real estate agents, and the Camp Humphreys Housing Office, largely due to limited familiarity with local housing norms. Disputes commonly involve contract negotiations, lease terms, and housing management practices. These tensions often stem from cultural differences and mismatched expectations between USFK tenants and Korean landlords, underscoring the need for a more structured and mutually understandable housing system.

This study examines the factors influencing off-post housing choices among USFK personnel in Pyeongtaek, focusing on the perceived importance of housing attributes prior to relocation and satisfaction levels after move-in. The research employs the Importance–Performance

Analysis (IPA) framework to evaluate these attributes and derive policy implications for improving housing systems and real estate services.

The primary objective of this study is to enhance housing satisfaction, streamline lease management, and promote cooperative relationships among tenants, landlords, and real estate agents. It also aims to bridge cultural and perceptual mismatches between Korean housing providers and USFK personnel by offering strategies to improve the responsiveness and competitiveness of certified real estate agents serving this specialized foreign market. Ultimately, the findings will inform the strategic planning and delivery of off-post housing near Camp Humphreys.

## 2. Theoretical background

### 2.1. Relocation of United States Forces Korea (USFK) bases

Following the Korean War, the United States established a network of military installations throughout South Korea to reinforce collective security and deter external threats. Although several facilities were later decommissioned and reverted to South Korean control, United States Forces Korea (USFK) has continued to maintain numerous sites under U.S. jurisdiction. The presence of these bases supported the establishment of critical military infrastructure—such as firing ranges, airfields, and maintenance depots—that enabled sustained operations during the Vietnam War and the Cold War. Over subsequent decades, however, the network underwent multiple cycles of activation and deactivation in line with shifting operational demands and periodic troop reductions.

As South Korea advanced its military modernization, the strategic necessity of certain U.S. installations diminished, prompting both governments to initiate a long-term program of base realignment and consolidation. A key milestone in this process was the 2002 Land Partnership Plan (LPP), which outlined a comprehensive framework for the return of multiple bases and training areas to South Korean control (USFK, 2002). Among these initiatives, the relocation of Yongsan Garrison in central Seoul to Camp Humphreys in Pyeongtaek drew particular attention, symbolizing not only a geographic redistribution of U.S. forces but also a broader recalibration of the American military posture on the Korean Peninsula. This phased transfer reflected evolving security dynamics, enhanced interoperability between the allies, and a reorientation of U.S. defense strategy toward more sustainable long-term basing.

The relocation process faced repeated administrative, logistical, and geopolitical challenges. USFK units originally stationed in Dongducheon, Uijeongbu, and Seoul were scheduled to move by December 2016, yet delays pushed the timeline to 2017 (USFK, 2017). Despite extensive infrastructure investments at Camp Humphreys, the transition required complex inter-agency coordination and was further slowed by heightened security concerns over

North Korea. Ultimately, by 2022, the transfer of both USFK and the United Nations Command headquarters to Camp Humphreys was completed, marking not merely a physical relocation but a pivotal moment in the strategic realignment of U.S. forces in South Korea (Ministry of National Defense, ROK, 2022).

Crucially, this relocation had profound implications beyond defense strategy. The consolidation of tens of thousands of military personnel and families into the Pyeongtaek region generated unprecedented pressure on local housing markets and created new demands for off-post accommodation. The transformation of Camp Humphreys into the largest overseas U.S. military installation thus represents not only a milestone in alliance management but also a structural driver of housing market change in its surrounding host community.

### 2.2. United States Army Garrison (USAG) Humphreys

United States Army Garrison (USAG) Humphreys, commonly known as Camp Humphreys, is located in Pyeongtaek City, Gyeonggi Province, and serves as the primary site for this study's empirical analysis. Situated approximately 70 kilometers (43.5 miles) south of Seoul, Camp Humphreys is the largest overseas U.S. military installation, encompassing 14.3 square kilometers (5.5 square miles)—over sixteen times the size of the Pentagon. Originally designed to house approximately 43,000 U.S. military personnel, civilian employees, and family members during peacetime, the base was constructed with the capacity to expand to 85,000 in the event of heightened security demands (USAG Humphreys, 2020b).

At present, Camp Humphreys supports a community of roughly 40,000, including Department of Defense personnel, civilian employees, contractors, and their families. This figure is expected to rise to nearly 45,000 in the near future. In parallel, the surrounding Pyeongtaek region has undergone dramatic demographic growth, with a population of 636,000 as of April 2024 and projections suggesting an increase to nearly one million residents (USAG Humphreys, 2019). According to the Pyeongtaek City Government, the city has experienced rapid population growth alongside accelerated urban expansion, with official projections indicating continued demographic and spatial growth in the coming years (Pyeongtaek City Government, 2024). This demographic trajectory highlights not only the expanding strategic significance of the installation but also the increasing interdependence between the base and its host community. This large-scale relocation and population growth have also generated substantial infrastructure expansion and transition challenges for both the installation and surrounding host communities (Ministry of National Defense, ROK, 2018).

The large-scale consolidation and relocation of U.S. military installations in South Korea were formally initiated under the Land Partnership Plan (LPP), a bilateral agreement between the United States and the Republic

of Korea aimed at enhancing operational efficiency and reducing the footprint of U.S. forces (United States Department of State, 2002). The site's origins date back to 1919, when it was established as Pyeongtaek Airfield by the Imperial Japanese Army.

During the Korean War, the U.S. Air Force expanded and refurbished the facility, and in February 1951 the site was formally acquired by the U.S. military (USAG Humphreys, 2020a). It subsequently hosted the Marine Corps Air Group and the 614th Tactical Control Group, collectively designated as "K-6" (USAG Humphreys, 2023). In 1961, the base was renamed Camp Humphreys in honor of Chief Warrant Officer 2 (CW2) Benjamin K. Humphreys, who was killed in a helicopter crash while serving with the 6th Transportation Company. Reorganized under the U.S. Eighth Army as the Humphreys Area Command in 1964 and redesignated as USAG Humphreys in 1974, the facility steadily evolved into one of the most important U.S. military hubs in the Asia-Pacific region.

Today, Camp Humphreys hosts a diverse array of tactical and support units while simultaneously functioning as a self-contained community. To accommodate its expanding population, the installation has undergone extensive infrastructure development in recent years. Investments have included upgraded recreational and educational facilities, such as a gymnasium with an indoor swimming pool, modernized barracks and dining facilities, and four Department of Defense Education Activity (DoDEA) schools serving elementary through high school students. These enhancements underscore the base's dual function as both a strategic military platform and a residential community. Administratively, the garrison is overseen by the Pacific Region of the U.S. Army Installation Management Command, ensuring integrated

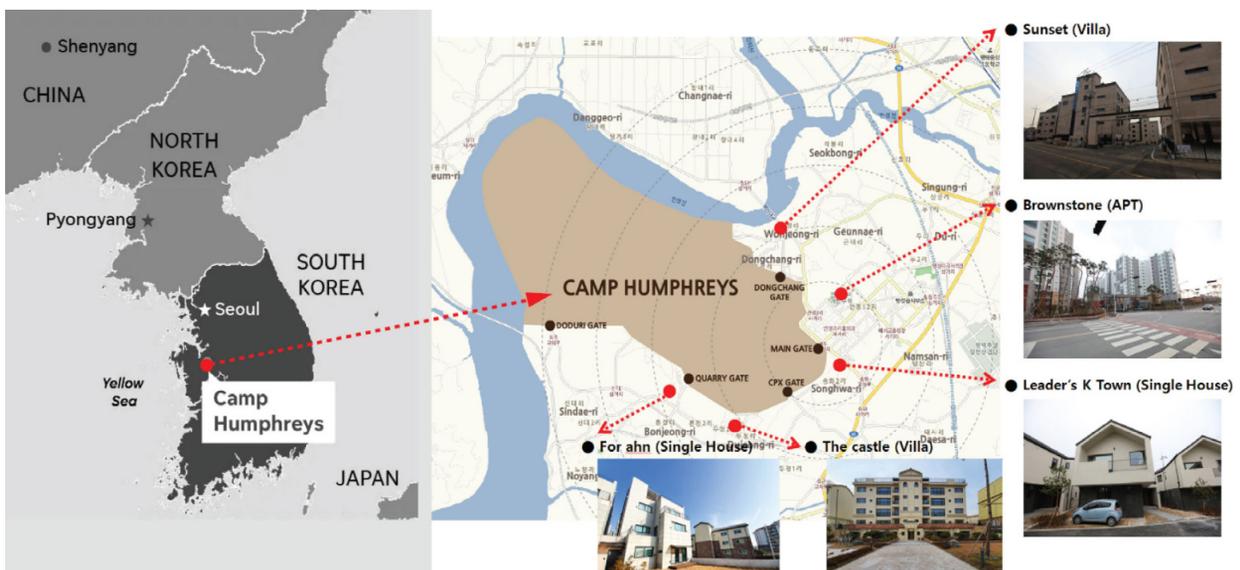
management of operational, residential, and community support functions (USAG Humphreys, 2020c).

Beyond its military role, Camp Humphreys exerts substantial influence on the socioeconomic fabric of Pyeongtaek. The consolidation of U.S. forces has stimulated local real estate development, expanded the demand for off-post housing, and created a unique urban environment where military and civilian populations interact daily. As such, Camp Humphreys should be understood not only as a cornerstone of U.S. military strategy in Northeast Asia but also as a catalyst for regional urban transformation and a focal point of civil–military coexistence in South Korea. This strategic repositioning of U.S. forces formed part of a broader transformation of the U.S.–ROK alliance, with official planning documents providing updates on force relocation and realignment objectives during this period (USFK, 2017).

Beyond this period of relocation and transformation, United States Forces Korea has continued to serve as a central pillar of the U.S.–ROK alliance, playing a strategic role in deterrence, regional stability, and combined defense operations on the Korean Peninsula (USFK, 2024).

### 2.3. Status of off-post housing surrounding Camp Humphreys

A diverse range of off-post housing options has emerged near Camp Humphreys to meet the needs of United States Forces Korea (USFK) personnel (Figure 1). Although high-rise apartment buildings remain relatively limited, several residential complexes have been specifically developed to accommodate military families. These complexes typically incorporate features tailored to foreign tenants, including 110V electrical outlets, underground parking, playgrounds,



Note: The map and housing examples illustrate the spatial distribution and architectural characteristics of typical off-post residences available to USFK personnel. Housing types include single-family homes, townhouses, and low-rise multi-family units designed to meet the needs of military families.

**Figure 1.** Camp Humphreys and representative types of off-post housing (source: Map adapted from official publications of U.S. Army Garrison Humphreys; housing photographs by the authors)

and community centers, thereby aligning more closely with U.S. housing standards and lifestyle expectations.

For households seeking greater privacy and living space, townhouses and low-rise multi-family residences provide viable alternatives. These housing types are frequently constructed using sustainable building methods and are often equipped with solar panels to reduce long-term utility costs. In addition, detached single-family homes are available for residents who prioritize larger private yards and outdoor space, reflecting a preference more common among U.S. military families than within the broader Korean housing market.

Several real estate agencies near Camp Humphreys specialize in providing housing services to USFK personnel and their families. These agencies offer comprehensive services, including property searches, rental negotiations, contract management, and ongoing support—facilitating smoother relocations and more stable residential experiences. When on-post housing is unavailable or inadequate to meet demand, the Camp Humphreys Housing Office provides a list of registered real estate agencies and assists with the necessary documentation to secure off-post accommodations. Even after housing arrangements are finalized, agents continue to support military residents by addressing maintenance concerns and other housing-related issues. The predominant types of off-post housing in the area include single-family homes, townhouses, and multi-family residences, which reflect the diverse preferences and needs of military families (Figure 1).

### 3. Literature review

Housing satisfaction and selection have been extensively studied in the context of military populations, with existing literature identifying multiple factors that influence residential experiences. These include environmental quality, accessibility, efficiency of property management, and socioeconomic conditions. Such studies provide important insights into how these elements shape the housing experiences of military personnel, both on-base and off-base settings.

According to previous studies, U.S. military housing policy has functioned not merely as a form of social welfare, but as a strategic asset for sustaining force readiness and supporting family well-being. Twiss and Martin (1999) provide a comprehensive historical analysis of military family housing in the United States, tracing its evolution across four policy phases shaped by shifting political and economic priorities. While military housing shares key challenges with conventional public housing—such as aging infrastructure, limited availability, and affordability issues—it avoids much of the stigma commonly associated with public assistance programs. The authors highlight persistent structural inequities, particularly for junior enlisted personnel, who are frequently excluded from on-base housing and must rely on overstretched civilian low-income housing markets.

Twiss and Martin (1998) conceptualized military housing not merely as a physical space, but as “a foundation for relationship-building and community participation” among service members. They emphasize that housing policy plays a critical role in shaping soldiers’ identity and sense of belonging. From this perspective, housing services that facilitate effective communication and cultural adaptation between U.S. Forces Korea personnel and the local Korean community can be regarded as a key factor in achieving strategic integration.

Basolo and Strong (2002) demonstrated that satisfaction with the broader neighborhood environment had a greater impact on overall housing satisfaction than the physical condition of the housing itself. Their study highlighted the significance of community-based strategies and resident engagement in urban revitalization, positioning neighborhood perception as a key determinant of residential well-being.

Beršnak and Lobe (2024) developed and applied a socioecological framework to examine the health and well-being of Slovenian military families, emphasizing the multilevel interaction of individual, family, community, and institutional factors. Their findings indicated that micro-level stressors—particularly parental stress and financial hardship—were more strongly associated with adverse health outcomes than macro-level conditions such as deployment or long-distance commuting. The study advocated the pivotal role of intra-family dynamics in shaping military family well-being and advocates for policy interventions that reinforce both emotional and structural support systems within the household.

The importance of property management and housing services has also been consistently highlighted in prior research. Parks et al. (2009) examined residential satisfaction among military households residing in privatized apartment communities in the United States. Their study identified key factors influencing satisfaction, including landscaping, the quality of service provided by office staff, and the overall condition of the housing. Notably, service quality from office staff emerged as the most influential predictor of satisfaction, consistent with findings from studies on other tenant populations. These results highlighted the significance of both the physical environment and management service quality in enhancing housing satisfaction among military families.

Similarly, Jing and Lim (2021) investigated the impact of property management service quality on residential satisfaction and residents’ intention to recommend their housing. By categorizing service quality into environmental, process, and outcome dimensions, they found that all three significantly influenced satisfaction, with process quality—such as responsiveness and staff courtesy—exerting the greatest influence. These findings emphasized the critical role of resident-centered management practices in improving both satisfaction and word-of-mouth recommendations.

Relocation and community engagement have also been identified as significant determinants of housing satisfaction. Carter and Swisher (2020) examined how geographic distance from home affects employee retention among U.S. Army soldiers. Using administrative data, they found that soldiers assigned to installations within 300 miles of their hometown were significantly more likely to separate voluntarily from service after their first term. The study suggested that proximity to family, friends, and civilian employment opportunities plays a key role in early separation decisions. Interestingly, overseas deployments appeared to mitigate this effect, likely due to limited access to civilian networks and a stronger identification with military life. These findings underscored the importance of considering geographic and social variables in retention strategies for military personnel.

Robinson (2008) examined housing satisfaction among U.S. military personnel residing in both privatized and non-privatized units. The study found that residents of privatized housing reported higher levels of satisfaction, primarily due to superior amenities and property management. These results reinforced the critical role of service quality in shaping residential satisfaction among military families.

Although it is unlikely that the U.S. government will entirely discontinue direct appropriations for traditional military construction (MILCON) of family housing, alternative forms of housing provision—such as financing or leasing privately owned units, housing allowances, and income supplements—have already been implemented in several other countries (Twiss & Martin, 1999). This global trend toward privatization is increasingly relevant to the off-post housing supply system for U.S. Forces Korea. Accordingly, the present study situates its analysis of housing choices and satisfaction among U.S. military personnel stationed at Camp Humphreys within this international policy context. Collectively, the literature suggests that housing satisfaction among military personnel is shaped by a multifaceted set of factors, including housing quality, affordability, management practices, relocation conditions, and social integration. These findings offer valuable insights for both policymakers and real estate professionals. However, empirical studies specifically addressing the off-post housing experiences of U.S. Forces Korea personnel remain scarce, leaving a critical gap in the existing scholarship. Building on this foundation, the present study examines off-post housing selection and satisfaction among U.S. military personnel stationed at Camp Humphreys, thereby extending the literature on military housing policy and offering new perspectives on market responsiveness in host communities.

## 4. Research design and analytical framework

### 4.1. Research objectives and questions

Previous research on housing choice and residential satisfaction has primarily focused on domestic populations (Kim, 2017; Lee et al., 2016; Jung et al., 2011). In contrast,

limited attention has been paid to the off-post housing experiences of U.S. military personnel, civilian employees, and their families residing in the rapidly growing city of Pyeongtaek. In particular, studies addressing the perceived importance of housing attributes and corresponding satisfaction levels within this group remain scarce. Against this backdrop, a more focused inquiry into the housing choices and satisfaction of U.S. Forces Korea personnel is both timely and necessary.

This study investigates the perceived importance and satisfaction associated with housing choices among U.S. military personnel and civilian employees currently or previously residing near Camp Humphreys in Pyeongtaek. The aim is to identify gaps between expectations and actual experiences and to rank housing attributes systematically using the Importance–Performance Analysis (IPA) framework. This method enables the assessment of both the prioritization and performance of housing factors from the perspective of off-post residents.

The findings are expected to deepen understanding of housing preferences among United States Forces Korea (USFK) personnel and to inform the development of tailored housing policies and services for foreign residents in Pyeongtaek and other host communities. Accordingly, the study addresses the following research questions:

Research Question 1. To what extent do discrepancies exist between the perceived importance and satisfaction levels of off-post housing attributes among United States Forces Korea (USFK) personnel?

Research Question 2. How are the importance and satisfaction of various off-post housing attributes evaluated and ranked by USFK personnel through the application of Importance–Performance Analysis (IPA)?

### 4.2. Survey design and analytical framework

A structured survey was conducted among U.S. military personnel and civilian employees residing in off-base housing near Camp Humphreys. The collected data were analyzed using SPSS 25.0 to examine general housing conditions and demographic characteristics of United States Forces Korea (USFK) personnel.

An Importance–Performance Analysis (IPA) was subsequently conducted to evaluate perceived importance and satisfaction levels across a range of housing attributes, thereby aligning with the study's primary objectives. Originally developed by Martilla and James (1977) in the field of marketing, IPA has since been widely adopted across disciplines such as housing studies, service management, and urban policy due to its methodological simplicity and practical utility in decision-making. The IPA framework has also been applied in various service contexts, including private education, to assess service quality and performance (Kong, 2006).

The IPA model employs a two-dimensional matrix which plots user ratings of perceived importance (vertical axis) against satisfaction or performance (horizontal axis). The analytical framework of the importance–performance analysis

employed in this study is illustrated in Figure 2. This results in four strategic quadrants: (I) “Keep up the good work”, (II) “Concentrate here”, (III) “Low priority” and (IV) “Possible overkill” (Martilla & James, 1977; Pitas et al., 2017).

Quadrant I is defined as the “High Importance–High Performance” (Keep up the good work) area, encompassing factors that exhibit high levels of both perceived importance and satisfaction among residents. This quadrant represents products or services with strong competitive advantages, and the items within it require ongoing management to sustain their superior performance.

Quadrant II is classified as the “High Importance–Low Performance” (Concentrate here) area, encompassing attributes that residents consider highly important when selecting housing prior to occupancy but rate lower in satisfaction after occupancy. This quadrant represents factors requiring substantial improvement, where proactive management is essential to meet user needs and expectations.

Quadrant III is classified as the “Low Importance–Low Performance” (Low priority) area, comprising attributes that consumers perceive as having low importance and that also register low satisfaction levels. Factors in this quadrant generally warrant minimal managerial effort or investment, as strategic focus should instead be directed toward attributes situated in the high-importance, high-satisfaction area.

Quadrant IV is classified as the “Low Importance–High Performance” (Possible overkill) area, representing attributes that are not regarded as important by customers yet exhibit high satisfaction levels. For off-post residents, these factors are perceived as relatively unimportant but still deliver strong performance, suggesting that excessive resources and efforts may have been allocated to them. A careful analysis of these attributes can facilitate resource reallocation, avoiding overinvestment while prioritizing im-

provements in areas of high importance but low satisfaction, thereby enhancing the overall housing experience of U.S. military personnel residing off-post in Korea.

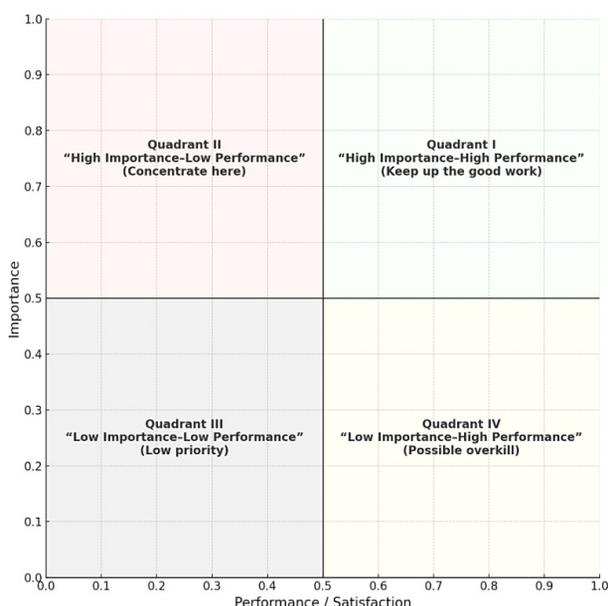
A key strength of IPA lies in its ability to identify and visualize performance gaps from a user-centered perspective. Its intuitive structure facilitates communication between stakeholders and enables effective prioritization of resources, especially in environments constrained by time, staffing, or budget (Pizam & Ellis, 1999). Moreover, the approach is particularly suitable for analyzing the degree of alignment between pre-occupancy expectations and post-occupancy evaluations—an essential dimension in housing satisfaction research involving temporary or foreign residents.

Xiao et al. (2024) employed IPA to identify priorities for improving multifunctional urban park landscapes. The study quantified users’ perceptions of importance and satisfaction across various landscape services, enabling a structured assessment of areas needing attention. By incorporating public perception into the evaluation process, IPA addressed the limitations of expert-centered planning. Boley et al. (2017) applied IPA to evaluate residents’ perceptions of sustainable tourism initiatives (STIs) and their community’s performance. Highlighting a gap in existing research, they argued that structuring perceptions by importance and performance helps identify policy priorities and supports greater community acceptance of sustainable tourism efforts.

Zhao et al. (2021) employed IPA to evaluate internal public space quality in low-income affordable housing. Resident surveys captured perceived importance, while performance was assessed using data from drone imagery and on-site observations. The IPA framework identified space elements needing urgent improvement and informed targeted interventions. By integrating subjective perceptions with objective spatial metrics, the study highlights IPA’s value as a practical tool for improving residential environments in underserved urban areas.

Ban et al. (2022) applied a fuzzy triangular number-based IPA to incorporate citizens’ perceptions into strategic smart city planning. Using Oradea, Romania as a case, the authors quantified and visualized the perceived importance and performance of various smart city attributes, enabling the identification of policy priorities. The study addresses the limitations of expert-driven approaches and highlights the applicability of IPA as a structured, citizen-oriented analytical tool for supporting evidence-based decision-making in urban governance.

In this study, IPA was used not only as an assessment tool but also as a strategic framework for guiding investment decisions in military host communities. By mapping U.S. military personnel’s housing expectations against actual experiences in off-post accommodations near Camp Humphreys, the analysis identifies core strengths, underperforming attributes, and areas of over- or under-investment. These insights may inform targeted interventions to enhance service delivery, infrastructure planning, and the overall housing experience for foreign military populations.



**Figure 2.** Importance–performance analysis (IPA) strategic quadrants (source: Martilla & James, 1977)

The survey was conducted between March and May 2024, with a target population of USFK personnel who currently or previously resided in off-base housing in the Pyeongtaek area of Gyeonggi Province. Of the 370 surveys distributed, responses with substantial missing data or outliers were excluded, yielding a final sample of 352 valid cases.

### 4.3. Sample characteristics

A total of 352 valid responses were collected for the study. Among the respondents, 248 were male (70.4%), while 104 were female (29.6%). The age distribution was predominantly concentrated in individuals in their 40s and 50s, accounting for 72.4% of the total sample. Specifically,

139 participants (39.5%) were in their 40s, and 116 (32.9%) were in their 50s. The remaining participants comprised those aged 30 or younger (14.5%), in their 60s (11.8%), and 70 or older (1.3%).

Eligibility for off-post housing within the United States Forces Korea (USFK) is restricted to personnel who meet specific institutional criteria. In principle, enlisted personnel and unmarried officers are assigned to on-post housing, whereas married officers or qualified civilian employees are authorized to reside in off-post private rental housing. As a result of these institutional arrangements, the study sample was composed predominantly of married officers and civilian personnel holding mid- to senior-level ranks,

**Table 1.** Demographic and employment characteristics of survey respondents

Classification	Group	Frequency	Percentage	Cumulative %
Occupation	(USFK) personnel	97	27.6	27.6
	Civilian employees	176	48.3	75.9
	Contractor employees	67	21.8	97.7
	Others	9	2.3	100
	Total	352	100	
Command sponsorship status	Command sponsorship	218	61.8	61.8
	Non-command sponsorship	25	7.2	69.1
	Others	109	30.9	100
	Total	352	100	
Number of family members	None	65	18.4	18.4
	1 person	95	27	45.4
	2–3 persons	134	38.2	83.6
	4 or more persons	58	16.4	100
	Total	352	100	
Military rank	E-1 to E-4	9	9.3	9.3
	E-5	9	9.3	18.6
	E-6 to E-9	19	19.6	38.2
	W-1 to W-5	9	9.3	47.5
	O1E to O4	27	27.8	75.3
	O5	24	24.2	100
	Sub total	97	100	
Civilian employee group	Group 2	38	22.3	22.3
	Group 3	110	64.7	87
	Group 4	22	13	100
	Sub total	170	100	
Contractor		77	21.9	
Others		8	2.3	
	Total	352	100	
Gender	Male	248	70.4	70.4
	Female	104	29.6	100
	Total	352	100	
Age	29 or younger	51	14.5	14.5
	30–40s	139	39.5	54
	41–50s	116	32.9	86.8
	51–60s	42	11.8	98.7
	61–70s older	5	1.3	100
	Total	352	100	

most of whom were in their late 30s to over 50 years of age. Accordingly, the underrepresentation of unmarried service members in their 20s and 30s—who are primarily engaged in combat readiness—can be explained by USFK housing policies and eligibility requirements.

In terms of employment status, 48.3% of respondents were civilian employees, the majority of whom (64.7%) were fell into Group 3, typically associated with middle management positions. Military personnel comprised 27.6% of the sample, with junior commissioned officers (O1E–O4) comprising the largest subgroup at 27.8%. Enlisted personnel represented 9.3%, evenly divided between those in the E-1 to E-4 (Private to Corporal) and E-5 (Sergeant) ranks. Senior enlisted personnel (E-6 to E-9) comprised 19.6%, while Warrant Officers (W-1 to W-5) and senior commissioned officers (O-5 and above) accounted for 9.3% and 24.2%, respectively.

In terms of household composition, the most commonly reported family size was two to three members (38.2%). Additionally, 18.4% of respondents reported having no family members, 27.0% reported one family member, and 16.4% reported having four or more.

Regarding command sponsorship for off-post housing, 61.8% of participants received official command

sponsorship, which provides eligibility for accompanying dependents and access to various military benefits, including travel allowances, overseas housing allowances, and healthcare services. An additional 7.2% had non-command sponsorship, while 30.9% were categorized as “Others” consisting primarily of civilian employees or contractors affiliated with United States Forces Korea (USFK). A detailed summary of demographic and employment characteristics is presented in Table 1.

## 5. Empirical result and interpretation

### 5.1. Overview of importance–performance differences

To assess differences between perceived importance and satisfaction levels across all items among United States Forces Korea (USFK) personnel and civilian employees, a paired-samples *t*-test was conducted. The analysis revealed statistically significant differences in 13 of the 32 evaluated items. The corresponding importance and satisfaction rankings for sub-factors related to housing selection are presented in Table 2.

**Table 2.** Importance–performance analysis (IPA) of off-post housing attributes

Attribute	Importance (A)			Satisfaction (B)			<i>t</i>	<i>p</i> -value	
	M	(SD)	Rank	M	(SD)	Rank			
Location	① Accessibility of public transportation	3.49	1.197	30	3.89	1.098	20	-2.704	.008
	② Distance to school and workplace (K6)	4.21	1.076	12	4.30	.861	1	-.732	.466
	③ Convenience of access to commercial and neighborhood facilities	3.93	.927	23	3.96	.975	16	-.278	.782
	④ Environmental cleanliness and comfort	4.36	.900	5	4.14	1.008	5	1.753	.083
	⑤ Availability of parks and green spaces	4.00	1.018	22	4.04	1.023	10	-.265	.792
Facilities	⑥ Size of living space and number of rooms	4.35	.885	6	4.24	.859	3	.913	.364
	⑦ Size and convenience of kitchen and storage	4.32	.894	7	4.02	1.064	12	2.332	.022
	⑧ Installation of security and safety facilities	4.06	.986	20	3.89	1.076	21	1.470	.145
	⑨ Efficiency of sun lighting and ventilation	4.21	.932	13	4.04	1.035	11	1.504	.136
	⑩ Noise reduction from outside	4.18	.984	15	3.96	1.046	17	1.460	.148
	⑪ Noise blocking between floors and units	4.26	.958	10	3.86	1.110	23	2.739	.008
	⑫ Quality and design of finishing materials	4.08	.960	18	3.93	.991	19	1.216	.228
	⑬ Solar panel installation	3.31	1.182	32	3.43	1.079	32	-.869	.387
Management	⑭ Convenience of vehicle access from the entrance road	4.31	.085	8	4.06	.949	9	2.499	.014
	⑮ Adequate parking and ease of use	4.51	.814	1	3.88	1.134	22	5.567	.000
	⑯ Community amenities (office, playground, gym)	3.71	.913	27	3.85	1.058	25	-.953	.343
	⑰ Common area management (trash, cleaning, security)	4.30	.875	9	3.86	1.121	24	3.348	.001
	⑱ Housing management (self vs. entrusted)	3.92	.921	24	3.95	1.005	18	-.297	.767
Living environment	⑲ Timely repairs	4.37	.875	4	4.08	.984	7	2.682	.009
	⑳ Preferred area (self)	4.20	.941	14	4.18	.867	4	.201	.841
	㉑ Preferred area (family)	4.12	.999	16	4.08	.867	8	.281	.780
	㉒ Distance to network (colleagues, relatives)	3.51	.976	29	3.98	.878	13	-3.860	.000
	㉓ Distance to DoDEA bus stop	3.65	1.125	28	3.79	1.007	26	-1.196	.235
㉔ Communication with Korean neighbors	3.40	1.031	31	3.71	1.025	30	-2.169	.033	

End of Table 2

Attribute	Importance (A)			Satisfaction (B)			<i>t</i>	<i>p</i> -value	
	M	(SD)	Rank	M	(SD)	Rank			
Housing costs	㉕ Housing costs vs. income	4.25	.848	11	3.74	.983	28	4.021	.000
	㉖ Deposit amount	3.76	.983	26	3.76	.859	27	.000	1.00
	㉗ Rent amount	4.02	1.086	21	3.70	1.015	31	2.819	.031
	㉘ Utility costs (electricity, gas, water)	4.07	1.027	19	3.73	1.045	29	2.286	.025
Cultural characteristics	㉙ Cultural understanding	3.89	1.030	25	3.98	.918	14	-.786	.434
	㉚ Understanding lease terms	4.44	.827	3	4.10	.926	6	3.374	.001
	㉛ English communication with agents	4.45	.782	2	4.27	.896	2	1.889	.062
	㉜ Communication between USFK housing & agents	4.11	.944	17	3.98	.969	15	1.494	.139

In terms of perceived importance, the most critical factor was the adequacy and convenience of parking facilities, categorized under the management sub-factor. This was followed by the ability to communicate in English with real estate agents. In contrast, solar panel installation—classified under the facilities sub-factor—was rated as the least important.

Regarding satisfaction after move-in, the highest-rated attribute was proximity to schools and workplaces, followed closely by the ability to communicate in English with real estate agents. Notably, several attributes recorded post-residency satisfaction levels that exceeded their pre-residency importance ratings. These included the distance to social networks (e.g., colleagues and relatives), access to public transportation, interaction with Korean neighbors, proximity to school bus stops serving Department of Defense Education Activity (DoDEA)-operated schools, availability of community facilities (e.g., management offices, playgrounds, exercise areas), presence of solar panel installations, cultural understanding, proximity to schools and workplaces, housing management approach (self-managed vs. outsourced), accessibility to commercial and neighborhood amenities, and the availability of parks and green spaces.

In contrast, items for which perceived importance exceeded satisfaction included the following: adequacy and accessibility of parking, housing costs relative to income, understanding lease terms, maintenance of common areas (e.g., waste disposal, cleanliness, security), rental rates, sound insulation, timeliness of maintenance repairs, and ease of vehicle access from the main road.

The discrepancy wherein perceived importance surpasses satisfaction suggests unmet expectations following relocation. Conversely, attributes with higher satisfaction than initially expected indicate that residents found these aspects more valuable after moving in than they had anticipated.

## 5.2. Category-level IPA findings

The six categories of off-post housing selection attributes—location, facilities, management, living environment, housing costs, and cultural characteristics—yielded overall

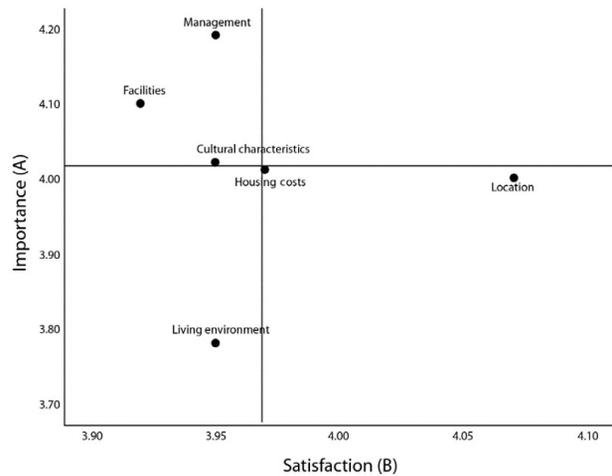


Figure 3. IPA matrix of housing selection categories

mean scores of 4.01 for importance and 3.97 for satisfaction. The results of the Importance–Performance Analysis (IPA) for these categories are presented in Figure 3.

Among the six components, management factors received the highest importance ratings, whereas location factors achieved the highest satisfaction scores. The comparison between importance and satisfaction across categories revealed no attributes positioned in the first quadrant of the IPA matrix. Instead, management, facilities, and cultural factors were classified into Quadrant II (High Importance, Low Satisfaction); living environment factors into Quadrant III (Low Importance, Low Satisfaction); and location factors into Quadrant IV (Low Importance, High Satisfaction).

Location factors exhibited higher satisfaction than perceived importance, whereas management factors showed greater importance than satisfaction. Living environment factors were positioned in Quadrant III, indicating both low importance and low satisfaction.

## 5.3. Attribute-level IPA mapping

Additionally, analysis of the average scores for the 32 individual housing attributes confirmed that overall perceived importance exceeded satisfaction. The mean importance

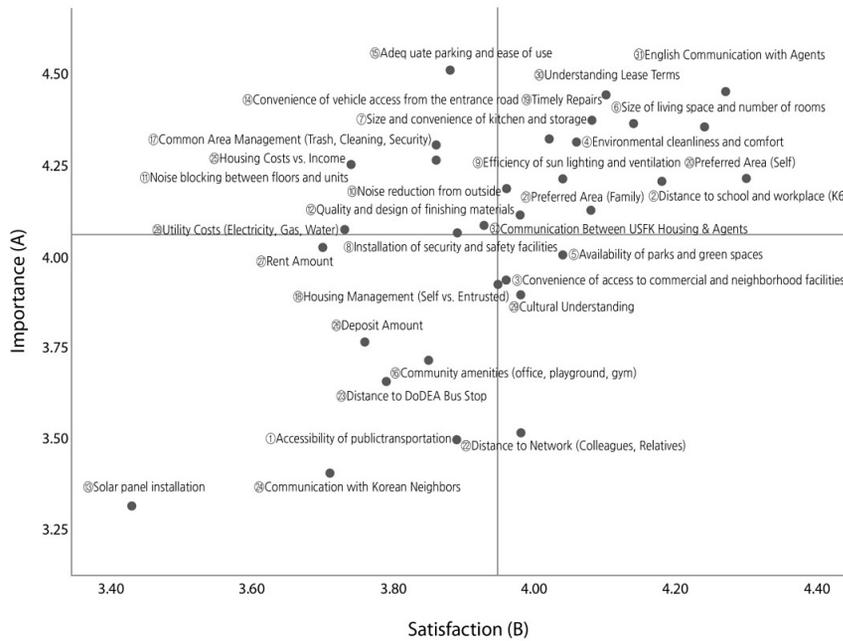


Figure 4. IPA mapping of individual housing attributes

score across all items was 4.05, compared with a mean satisfaction score of 3.95. The results of the IPA analysis are presented in Figure 4 and summarized in Table 3.

Quadrant I, referred to as the “Strengths Zone” represents attributes rated high in both importance and satisfaction. These findings suggest that continuous management is necessary to maintain the favorable aspects of off-post housing for USFK personnel and civilian employees at Camp Humphreys. Sustaining these strengths requires sustained investment in maintenance and improvement efforts.

Furthermore, leveraging these strengths to gain a competitive advantage in the foreign resident real estate market is essential. The findings from the importance–satisfaction analysis underscore the need for stakeholders involved in off-post housing near Camp Humphreys to preserve and enhance these attributes to ensure sustained positive outcomes. Specifically, 13 key factors—such as effective English communication with real estate agents, a clean and comfortable surrounding environment, and convenient vehicle access from main roads—were identified as core components of the Strengths Zone.

Table 3. Quadrant classification of housing attributes based on IPA results

Quadrant II: Priority improvement areas (7 items)	Quadrant I: Key strengths (13 items)
<ul style="list-style-type: none"> <li>15 Adequate parking and ease of use</li> <li>17 Common area management (trash, cleaning, security)</li> <li>11 Noise blocking between floors and units</li> <li>25 Housing costs vs. income</li> <li>28 Utility costs (electricity, gas, water)</li> <li>12 Quality and design of finishing materials</li> <li>8 Installation of security and safety facilities</li> </ul>	<ul style="list-style-type: none"> <li>31 English communication with agents</li> <li>30 Understanding lease terms</li> <li>4 Environmental cleanliness and comfort</li> <li>6 Size of living space and number of rooms</li> <li>19 Timely repairs</li> <li>14 Convenience of vehicle access from the entrance road</li> <li>2 Distance to school and workplace (K6)</li> <li>20 Preferred area (self)</li> <li>7 Size and convenience of kitchen and storage</li> <li>9 Efficiency of sun lighting and ventilation</li> <li>32 Communication between USFK housing &amp; agents</li> <li>21 Preferred area (family)</li> <li>10 Noise reduction from outside</li> </ul>
Quadrant III: Low-priority areas (8 items)	Quadrant IV: Low priority (4 items)
<ul style="list-style-type: none"> <li>27 Rent amount</li> <li>26 Deposit amount</li> <li>16 Community amenities (office, playground, gym)</li> <li>23 Distance to DoDEA bus stop</li> <li>18 Housing management (self vs. entrusted)</li> <li>1 Accessibility of public transportation</li> <li>24 Communication with Korean neighbors</li> <li>13 Solar panel installation</li> </ul>	<ul style="list-style-type: none"> <li>5 Availability of parks and green spaces</li> <li>3 Convenience of access to commercial and neighborhood facilities</li> <li>29 Cultural understanding</li> <li>22 Distance to network (colleagues, relatives)</li> </ul>

## 5.4. Strategic implications from IPA quadrants

Quadrant II constitutes a critical area for improvement, characterized by high perceived importance yet low satisfaction. This quadrant highlights attributes that require targeted investments to enhance resident satisfaction and offers opportunities for meaningful improvements at relatively low cost. Neglecting these issues may lead to increased dissatisfaction among U.S. military personnel and civilian employees residing in off-post housing. Seven items were classified in this quadrant, including the adequacy and convenience of parking and the management of common areas, such as waste separation, cleanliness, and security.

Quadrant III includes attributes with both low perceived importance and low satisfaction, thus constituting a low-priority area. Resource allocation in this quadrant is recommended to remain limited and contingent on budget availability. This category comprises eight items, including deposit amounts, rental costs, and solar panel installations. The findings suggest that low ratings for rent and deposit-related attributes may reflect the unique structure of military compensation, where housing allowances are determined by rank and position. Similarly, low importance and satisfaction regarding solar panels likely reflect the composition of the sample, in which approximately 50% of respondents were civilian employees. Given that utilities are covered under the Living Quarters Allowance (LQA), the practical relevance of solar energy features is therefore diminished. Investment decisions for attributes in Quadrant III should be guided primarily by available resources and practical relevance. It is also important for USFK personnel and civilian employees to understand that housing costs are shaped by institutional allowances, and additional charges beyond authorized limits cannot be considered justifiable.

Quadrant IV represents to areas with low perceived importance but high satisfaction, often termed the “Unnecessary Strength Zone”. Resources currently devoted to these attributes may be more effectively reallocated to higher-priority areas. Four factors were identified in this quadrant: access to commercial and community facilities, availability of parks and green spaces, understanding of cultural differences, and proximity to the residences of social networks (e.g., colleagues and relatives).

Although these factors may be undervalued during the housing selection process, they tend to receive high satisfaction ratings after move-in. In particular, proximity to social networks—initially perceived as unimportant—appears to reflect a cultural inclination to seek emotional and practical support from colleagues and relatives while living abroad.

## 6. Discussions

### 6.1. Findings

This study examined off-post housing selection attributes among U.S. military personnel and civilian employ-

ees residing in the Pyeongtaek area, focusing on the gap between perceived importance (pre-relocation) and satisfaction (post-residency). Utilizing the Importance–Performance Analysis (IPA) framework, the study aimed to provide foundational insights for improving off-post housing supply and management, while also enhancing the competitiveness of real estate services for foreign residents.

The IPA matrix identified 13 attributes in Quadrant I (Strengths), characterized by high perceived importance and high satisfaction. Notably, effective English communication with real estate agents emerged as the most highly rated attribute, highlighting the pivotal role of language proficiency in real estate service delivery and tenant satisfaction in international contexts. Seven attributes were classified in Quadrant II (Priority for Improvement), where perceived importance exceeded satisfaction. Key concerns included the adequacy and convenience of parking facilities and the management of shared spaces, such as waste disposal and overall cleanliness. These findings point to the need for targeted infrastructure investment and more systematic management practices to better align with U.S. personnel’s expectations.

Attributes in Quadrant III (Low Priority)—such as rental costs, deposits, and solar panel installations—were rated low in both importance and satisfaction. These results are likely attributable to the standardized structure of military housing support systems, including the Overseas Housing Allowance (OHA) and Living Quarters Allowance (LQA), as well as bundled utility provisions in lease agreements.

Quadrant IV (Unnecessary Strengths) included attributes with low perceived importance but high satisfaction, such as proximity to peers and relatives, access to parks and green spaces, and availability of neighborhood amenities. Although not prioritized during housing selection, these factors nonetheless emerged as meaningful contributors to post-residency satisfaction—particularly in the context of overseas deployment, where social and environmental support plays a psychologically supportive role.

### 6.2. Implications

While previous research has primarily focused on policy responses to rising housing demand, this study extends the discourse by analyzing both the perceived importance and satisfaction of specific housing attributes. This dual approach enables the identification of high-impact areas requiring active intervention versus those necessitating minimal attention, resulting in several key policy implications.

First, in the Strengths quadrant, attributes such as English communication with real estate agents and understanding lease terms were rated high in both importance and satisfaction. This suggests that real estate professionals with multilingual abilities and legal expertise play a strategic role in the off-post housing market near Camp Humphreys. To institutionalize this advantage, local governments may consider certifying and supporting “global real estate agencies” capable of offering multilingual services to foreign residents.

Second, attributes identified within the Priority for Improvement quadrant—namely parking adequacy, common area management, and noise insulation—warrant concentrated policy attention. In the United States, particularly in non-metropolitan settings, sufficient parking is considered a baseline amenity; thus, the relative scarcity of parking in South Korea may fall short of resident expectations. Moreover, the absence of formal management for shared spaces in off-post housing, coupled with cultural differences in waste separation practices, has been found to exacerbate dissatisfaction among residents. Taken together, these contextual factors highlight the urgency of targeted interventions by local governments. For example, municipalities such as Pyeongtaek City could prioritize expanding parking capacity and strengthening the administrative oversight of common facilities. This policy orientation is consistent with prior scholarship.

Twiss and Martin (1999) observed that, while privatization effectively expanded housing supply in the short term, it often led to insufficient maintenance, declining quality, and the marginalization of lower-ranking service members.

In line with these concerns, the present study revealed concentrated dissatisfaction in areas directly associated with management quality, including parking accessibility, noise insulation, and the upkeep of shared spaces. These findings indicate that privatization alone is inadequate for sustaining long-term residential satisfaction, underscoring the necessity of systematic management frameworks and continuous monitoring mechanisms.

Third, low-priority attributes such as rent, deposits, and solar panel installation are largely shaped by institutional housing allowances and the tenant profile. With many respondents being civilian employees whose rental contracts include utility coverage, solar panels are perceived as less relevant. Hence, significant investment in these features is unlikely to produce meaningful gains in satisfaction.

Fourth, although attributes in the Unnecessary Strength quadrant—such as proximity to social networks, cultural understanding, and access to environmental amenities—were initially perceived as less important, they proved to enhance post-relocation satisfaction. Modest enhancements in these areas may improve overall quality of life and residential experience for U.S. military personnel and their families.

Finally, Twiss and Martin (1999) characterized military housing communities as exemplary models of public housing, integrating child education, social cohesion, and community governance within a unified environment. However, the off-base housing environment near Camp Humphreys lacks an equivalent level of integrated service provision and displays a pronounced cultural distance among residents. In the absence of structured community-building mechanisms, such environments are likely to impede social integration and diminish the overall residential experience of foreign military personnel and their families, thereby underscoring the need for more holistic and inclusive housing strategies.

## 7. Conclusions

This study examined the perceived importance and satisfaction levels associated with off-post housing attributes among U.S. military personnel and civilian employees stationed at Camp Humphreys in Pyeongtaek, South Korea. Employing the IPA framework, the research identified key strengths and areas for improvement within the off-post housing experience.

Effective English communication with real estate agents, proximity to essential amenities, and a clean, comfortable living environment emerged as highly valued and consistently satisfying attributes. In contrast, parking inadequacies and insufficient management of common areas—especially regarding waste disposal and cleanliness—were identified as high-priority concerns. Low-priority items, such as rent, deposits, and solar panel installation, were rated low in both importance and satisfaction, reflecting the structured nature of military housing allowances. Additionally, attributes initially underestimated, such as access to parks and neighborhood amenities, contributed positively to post-relocation satisfaction.

The findings carry practical implications for real estate professionals, policymakers, and local governments. Enhancing off-post housing through improved infrastructure, culturally responsive practices, and multilingual service delivery can elevate the residential experience of foreign military residents and reinforce Pyeongtaek's position as a global host community. Future initiatives should emphasize collaborative policy-making, data-driven housing strategies, and continuous feedback mechanisms to align housing supply remains aligned with the evolving needs of foreign residents. Such efforts would directly enhance the well-being of U.S. military personnel and their families stationed abroad.

More broadly, this study underscores that housing satisfaction among military personnel extends beyond matters of everyday convenience to become a strategic determinant of operational readiness and organizational morale. In overseas deployments, discomfort and adaptation stress stemming from cultural and environmental differences can undermine service performance, yet empirical research on these linkages remains scarce. Against this backdrop, the present study systematically analyzed the perceptions of U.S. military tenants at Camp Humphreys, identifying the attributes they regard as most critical and isolating the dimensions of dissatisfaction that warrant immediate policy intervention.

The implications are twofold. For policymakers, the results highlight the necessity of institutionalized management systems that ensure accountability in parking provision, shared facility maintenance, and noise mitigation. For real estate markets, the findings demonstrate the value of multilingual services and culturally responsive management practices as competitive differentiators in an increasingly globalized housing environment. Ultimately, these results reaffirm that foreign military housing must be understood not only as a welfare provision but also

as an integral component of civil–military relations, urban governance, and host–nation diplomacy.

At the same time, several limitations should be acknowledged. First, constraints in sample composition prevented detailed analysis of variations in housing benefits across categories such as active-duty personnel, civilian employees, and contractors. Future research should expand the sample and incorporate subgroup analyses to provide a more comprehensive understanding of housing support structures. Second, differences in housing preferences by family size were not examined, despite the significant role family composition plays in shaping residential satisfaction. Third, demographic variables such as gender and age were not incorporated into the analysis. A more systematic exploration of these factors would enhance the robustness and generalizability of the findings.

Future studies should strive for balanced representation across demographic and occupational groups and extend the scope to include other U.S. military installations in South Korea and beyond. Comparative research incorporating both tenant and landlord perspectives would further illuminate shared expectations, points of tension, and opportunities for alignment in the off-post housing market.

In sum, this study advances understanding of off-post housing for U.S. military personnel in South Korea by linking residential satisfaction to operational readiness, policy development, and civil–military cooperation. By identifying both strengths and shortcomings in the current housing system, it provides a foundation for evidence-based reforms that can enhance the lived experiences of military families, sustain host communities, and strengthen the broader framework of military housing welfare and governance.

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## Author contributions

Heejung Park: Conceptualization; Methodology; Investigation; Data Curation; Formal Analysis; Writing – Original Draft. Saejoon Oh: Conceptualization; Supervision; Formal Analysis; Writing – Review & Editing; Project Administration. Both authors have read and approved the final version of the manuscript.

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