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The Association Between Base-Area Social and Economic Characteristics and Airmen’s Outcomes

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RAND Project AIR FORCE

Prepared for the United States Air Force
Approved for public release; distribution unlimited
Military families face many unique stressors, including deployment, separation, threat of harm or injury, and frequent moves. These families rely on a mix of military-provided and community-provided resources to cope with these distinctive stressors. The Air Force requested RAND help enhance its ability to tailor support for Airmen and their families through analysis of the relevance of neighborhood, or area, characteristics of the areas surrounding major Air Force installations in the United States. Building on a prior RAND project (documented in Exploring the Association Between Military Base Neighborhood Characteristics and Soldiers’ and Airmen’s Outcomes, Meadows et al., 2013) and a large literature across multiple academic disciplines that links the qualities and characteristics of neighborhoods to an individual’s health and well-being (e.g., sociology, epidemiology, medicine), this study examined whether and how base-area characteristics are associated with individual-level Airman outcomes across several different domains. The objective was to assist the Air Force with identifying communities where Airmen and their families may have greater levels of need so that it can adapt programs or resources to counteract stressors related to the base areas and the lack of nonmilitary resources in the area.

Neighborhood studies among civilians find that the social and economic characteristics of neighborhoods are significant predictors of health and well-being. This literature often focuses on neighborhood advantage or disadvantage, characterized by such factors as socioeconomic status, human capital, degree of personal safety, and availability of recreational activities. Disadvantaged neighborhoods have been empirically linked with worse outcomes, even after accounting for individual factors, such as age, race and ethnicity, gender, and education. This linkage between neighborhood characteristics, or quality, and individual outcomes may occur through multiple mechanisms, but the essential argument is that higher-quality neighborhoods offer residents more resources, better infrastructure, more social interaction, and fewer stressors. Although multiple studies have examined the association between specific neighborhood factors (e.g., unemployment) and retention and satisfaction outcomes among service members and their families, with the exception of one prior RAND report, none has examined the association between general neighborhood or area quality and a range of service member outcomes.

This report addresses three main research questions. First, how much variability is there in the social, economic, and demographic quality of areas surrounding and including Air Force bases? Second, is there an association between these base-area characteristics and Airman outcomes on health and well-being, military and
neighborhood social cohesion, ratings of neighborhood resources, use of on-base resources, satisfaction, and career outcomes? If little variability exists or the variability has little influence on Airmen and their families, then a uniform strategy for supporting them across these base areas is justified. If there is variability and an association exists, however, our third question is how the Air Force might use base-area factors in programmatic decisionmaking.

Using data from the U.S. Census Bureau’s American Community Survey (2005–2009; U.S. Census Bureau, 2009), we applied standard social indicators methodology to create social and economic profiles of the area encompassed by a 60-minute driving radius around 66 U.S. Air Force installations (including Alaska and Hawaii). Using home ZIP Codes from personnel files, we were able to verify that this definition of base area did, in fact, cover areas around the bases where Airmen and their families are concentrated. These area profiles form the basis for the RAND Base Area Social and Economic Index, or the RAND BASE-I. The RAND BASE-I contains 20 indicators of the military and nonmilitary population in these areas, grouped into six domains: household composition, employment, income and poverty, housing, social, and transportation. The RAND BASE-I is not an absolute measure of area quality; rather, it is a way to condense multiple quality indicators into a single index that can be used to compare and contrast characteristics across base areas. The RAND BASE-I should not be interpreted as a list of most-desirable places for Airmen and their families to live. It does not account for other factors that can influence Airman and family preferences for base assignments, such as climate, proximity to family, recreation opportunities, specific employment opportunities for spouses, or preferred Air Force job assignments, such as command or career development opportunities.

RAND BASE-I scores associated with Air Force base areas were quite varied; the gap between the highest-scoring and lowest-scoring areas was large. Geographic clustering among the highest-scoring base areas on the RAND BASE-I was apparent. In general, base areas in the South had lower RAND BASE-I scores, largely due to disadvantages among the economic indicators included in the RAND BASE-I (e.g., family poverty rates and reliance on public assistance among the general population). Yet we caution that the findings do not mean that Airmen and their families are themselves in economic distress. Unlike some fellow residents in the general population, for example, active-duty Airmen are employed full time and have housing and health insurance.\(^1\) Thus,

\(^1\) Note that, in this report, we refer to both the Active Component and active duty, and to the Reserve Components and reserve status. Reserve and guard members can be on active duty but still be in the Reserve Components; the surveys define those members as being on active duty.
the quality-of-life gap across the general population cannot be taken as an indicator of the quality of life of Airmen. These findings do indicate, however, that some Airmen and their families live in areas where community residents are more financially burdened than residents in other base areas.

After completing the assessment of base-area quality, we applied multilevel modeling techniques to explore possible associations between the RAND BASE-I and its constituent domains and Airman outcomes measured by two different Air Force surveys: the 2011 Community Assessment Survey and the 2010 Caring for People Survey.\(^2\) We grouped the selected Airman outcomes into six different domains: health and well-being, military and neighborhood cohesion, ratings of neighborhood resources, use of on-base resources, satisfaction, and career intentions. We ran separate analyses for active-duty and reserve Airmen, given that reservists are not required to move to a new base assignment every few years and may spend considerable time with civilian employers in other neighborhoods outside of the base. We also tested whether Airmen who live off base and commute to work may be more exposed to social and economic conditions in the larger base area than Airmen who live and work primarily on base. The hypothesis predicts that the association between the RAND BASE-I and Airman outcomes will be stronger among off-base Airmen than on-base Airmen.

At the broadest level of outcomes, we did find significant associations between RAND BASE-I scores and military and neighborhood social cohesion, ratings of neighborhood resources, use of on-base resources, and satisfaction measures. The RAND BASE-I and career outcomes were significantly associated only among reserve Airmen. We did not find that overall base-area quality was associated with the self-reported health and well-being outcomes available on the two Air Force surveys.\(^3\)

For some outcomes, higher scores on the RAND BASE-I aligned well with the interests of the Air Force. For example, among active-duty Airmen, higher scores on the RAND BASE-I are associated with

- greater perceived community safety
- higher satisfaction with community resources
- higher satisfaction with the local base area
- higher satisfaction with access to and the quality of health care
- lower economic stress

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\(^2\) Both are internal Air Force surveys.

\(^3\) Some associations between the six domains of the RAND BASE-I and Airman outcomes are also significant; these results are presented in appendixes.
• higher perceived school quality
• higher neighborhood quality ratings.

Similarly, among reserve Airmen, higher scores on the RAND BASE-I are associated with

• higher perceived school quality
• higher satisfaction with base assignment
• higher satisfaction with the local base area.

However, for other outcomes, higher RAND BASE-I scores were not aligned with Air Force interests. For example, among active-duty Airmen, higher scores on the RAND BASE-I are associated with

• lower levels of perceived base social cohesion
• lower levels of Airman engagement in the base community
• spending more on child care
• being less likely to use on-base recreational services.

Similarly, among reserve Airmen, higher scores on the RAND BASE-I are associated with

• lower Airman engagement in the base community
• lower perceived neighborhood social cohesion
• using fewer on-base programs and services
• being less likely to use on-base recreational services
• lower satisfaction with quality of own housing
• less perceived support from employers
• lower likelihood of intention to continue or reenlist
• lower likelihood of intention to stay in the Air Force until retirement.

The results suggest that the linkage between neighborhood quality and individual well-being found in civilian studies may be applicable to base-area quality and military populations. For at least some Air Force services, resource allocation at the base level is calculated according to base population sizes. Thus, larger bases receive more resources than smaller bases. However, the Air Force was interested in the social and economic characteristics of base areas because this allocation philosophy does not take into account any variability in base-area stressors and opportunities or what nonmilitary programs, services, and resources may (or may not) be available to Airmen and their families outside the confines of the base. We find that the RAND BASE-I and indices like it provide one piece of data the Air Force can use to make decisions about service programming and the allocation of limited or scarce resources. Of course, social and economic indicators of base area are not the only data that should be used: Cost, population size, program and service usage rates, and other factors within and outside of
Air Force control should also continue to be taken into account. To illustrate how Air Force Services could apply these base-area findings, we offer five specific examples:

1. **Increase or develop programs to foster a sense of community at higher-scoring bases.** Airmen who live near base areas that ranked higher on the RAND BASE-I reported lower levels of base cohesion. Programs to address this issue would leverage local base leadership, as well as local community leadership, to promote greater interaction and the Wingman Culture.⁴

2. **Focus spouse employment assistance resources in areas with high unemployment.** The existing literature suggests and our research found that Airmen who live near base areas that score high on the overall RAND BASE-I and the employment and income and poverty domains are more satisfied with community job resources. In light of this finding, in locations where area quality is low and unemployment is high, Air Force Services could bolster employment services for Airmen transitioning out of the Air Force, for reservists, and for spouses of current Airmen.

3. **Shift outdoor recreation resources from higher-scoring base areas to lower-scoring ones.** It appears that, in areas that score higher on the RAND BASE-I, Airmen and their families are choosing to utilize off-base, and presumably nonmilitary, resources in their communities when it comes to recreation, especially outdoor recreation. This result suggests that outdoor recreation resources may be more beneficial and better utilized if focused in base areas with fewer resources (those that score lower on the RAND BASE-I).

4. **Consider the RAND BASE-I scores when selecting bases for test programs (e.g., the Food Transformation Initiative).** If a test program does not include both bases located in relatively well-off communities and bases located in poorer communities, the results of the test may be misleading. A test program fielded in a resource-rich community might show limited impact, but, if it had been fielded in a resource-poor community, it might have shown great promise.

5. **Tailor the Air Force Relocation Assistance Program on each base to accentuate where installation resources can compensate for lack of resources in the surrounding community.** We found that Airmen near base areas that ranked higher on the RAND BASE-I reported greater satisfaction with a host of area resources (e.g., child care, jobs, health care). Airmen who live in lower-quality areas may need more information about Air Force programs and services

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⁴ *Wingman Culture* refers to a culture in which Airmen and their families look out for one another and help each other in times of need.
that may bridge the gap between what they need or want and what the outside community can provide.

The RAND BASE-I, or a similar index of neighborhood or base-area quality, may also be useful to the Air Force Medical Service, the Community Action Information Board (CAIB), and the Integrated Delivery System (IDS). Base-area data sources, such as the RAND BASE-I, could be used to identify bases where conditions in the surrounding area may lead to increased stress and strain on Airmen and their families. For example, base areas that score lower on the RAND BASE-I may also result in greater stress among Airmen and family members who live there (e.g., fear of crime and social disorganization may be higher). If this is the case, the Air Force may want to provide additional support for stress-related health care (e.g., counseling services, behavioral health care) to Airmen and their families who live in those areas. Moreover, with an eye to prevention, the Air Force might consider emphasizing resiliency programs for Airmen and their families assigned to bases located in more-stressful environments. The Air Force Medical Service could also use base-area data to identify areas where out-of-network, civilian providers may be more plentiful and augment existing resources with services from the area.

CAIBs and IDSs (Air Force level, major command [MAJCOM] level, and base level) might also find information about the relative resources of base areas helpful in their efforts to foster collaborative partnerships with service providers and helping agencies in the community.

Installation commanders can also use neighborhood or base-area quality data. Our results suggest that commanders whose installations are located in areas where the RAND BASE-I score of the base area is high may suffer from lower perceived base cohesion. This suggests a tension between a highly cohesive base environment and a civilian area around the base that scores high on our measure of quality. The finding suggests that base commanders in those areas that score higher on the RAND BASE-I may need to make extra efforts to foster base cohesion and sense of community among Airmen assigned to their bases, especially those who live off base. Commanders can also use the RAND BASE-I, or similar indices, to take stock of the local community. A specialized index would allow them to focus on issues most relevant to the Airmen directly under their command and those Airmen’s families. Such indices may also be helpful in change-of-command situations and provide incoming commanders a quick lay of the land.

Finally, we assert that military researchers can also use neighborhood and area quality to inform their studies. Some existing and ongoing data sets frequently used by military researchers, both military and civilian, could easily be linked to geographically based data, such as the census. Examples include the surveys used in this study (i.e., the Community Assessment Survey and the Caring for People Survey), the Defense
Manpower Data Center’s Status of Forces Survey, and the U.S. Department of Defense’s (DoD’s) Millennium Cohort Study. The addition of this type of data can expand the explanatory power of analyses. Ultimately, understanding how and why the social and economic characteristics of geographic areas may affect the health and well-being of service members and their families, their satisfaction with military life, and their retention and career decisions can be an additional consideration in how policymakers and military leadership design and implement policies affecting military members and their families.