

**Armed Services Vocational Aptitude Battery (ASVAB):
Hawaii Report**

**Analysis by The Education Trust
July 2011**

Introduction

The armed forces is often considered a gateway to social mobility for low-income and minority youth. However, many young people who wish to serve their country are barred from military entry because their high schools do not adequately prepare them with the requisite skills and knowledge to be eligible for military training. The Armed Services Vocational Aptitude Battery (ASVAB) is the assessment that establishes the eligibility status of military hopefuls and determines the occupational opportunities available to individuals after they enter the armed forces. *While ineligibility rates for the U.S. Army are high nationwide, with nearly a quarter of young adults earning a failing score, they are disproportionately high in Hawaii, where more than a third of students fail to qualify for enlistment.*

The following analysis examines U.S. Army ASVAB results between 2004 and 2009 to evaluate the educational preparation of young adults in Hawaii for military entrance and training.¹ An overview of the ASVAB is provided first, followed by a presentation of results, including a national context for understanding the Hawaii results, an analysis of score trends within the state, an examination of island-specific trends, and achievement results among Hawaii test takers who actually join the armed forces.

Overview of the ASVAB

Developed by the Department of Defense, the ASVAB is the most widely used multiple-aptitude test battery in the world.² The instrument includes nine individual timed subtests, which take about three hours to complete: Word Knowledge, Paragraph Comprehension, Arithmetic Reasoning, Mathematics Knowledge, General Science, Mechanical Comprehension, Electronics Information, Auto-Shop Information, and Assembling Objects.

By combining the results of ASVAB subtests, the armed forces can assess whether candidates possess the aptitudes, skills, and knowledge needed to enlist and to qualify for a vast range of occupational specialties. Four of these subtests (Word Knowledge, Paragraph Comprehension, Arithmetic Reasoning, and Mathematics Knowledge) combine to produce a measure of general cognitive ability, called the Armed Forces Qualification Test (AFQT). AFQT scores are percentiles, ranging from 1 to 99, and they determine both the applicant's eligibility to enlist in the armed forces and his or her qualification for various incentive programs. The branches of the military have different eligibility thresholds (see table 1), but applicants have to score at or above the 31st percentile, at a minimum, in order to be eligible for enlistment.³

¹ For more information about the national ASVAB results, see The Education Trust's report "Shut Out of the Military: Today's High School Education Doesn't Mean You're Ready for Today's Army."

² For more information, visit <http://www.official-asvab.com>

³ Requirements are higher for candidates with a GED. However, we have used the same minimum eligibility cutoff for all members of the sample.

Table 1: Enlistment Eligibility in Military Branches

Service Branch	Minimum Required AFQT Score*
Army	31
Navy	35
Marines	32
Air Force	40
Coast Guard	45

AFQT scores are grouped into categories, which determine whether applicants qualify for various incentive programs if they choose to enlist (see table 2). Applicants must score in Category IIIA or higher, meaning they must earn an AFQT score above 50, in order to qualify for enlistment bonuses, college repayment programs, and the Army College Fund. Moreover, Congress requires the armed forces to enlist at least 60 percent of recruits from Category IIIA or higher. Applicants scoring in Category V are automatically denied entry into the armed forces, and applicants scoring in Category IV are only accepted in times of great need, as authorized by Congress.⁴ The Department of Defense has mandated that no more than 4 percent of recruits can come from Category IV.

Table 2: AFQT Categories

AFQT Category	Percentile Score Range
I	92-99
II	65-92
IIIA*	50-64
IIIB	31-49
IV**	10-30
V**	1-9

The remaining five subtests that do not count towards the AFQT score serve to qualify individuals for Military Occupational Specialties, which are positions in specific fields, such as Surveillance and Communications, Clerical, and Combat. Subtest scores are combined to create nine composite scores, which determine eligibility for positions in the various areas of employment within the army.

Hawaii Subsample

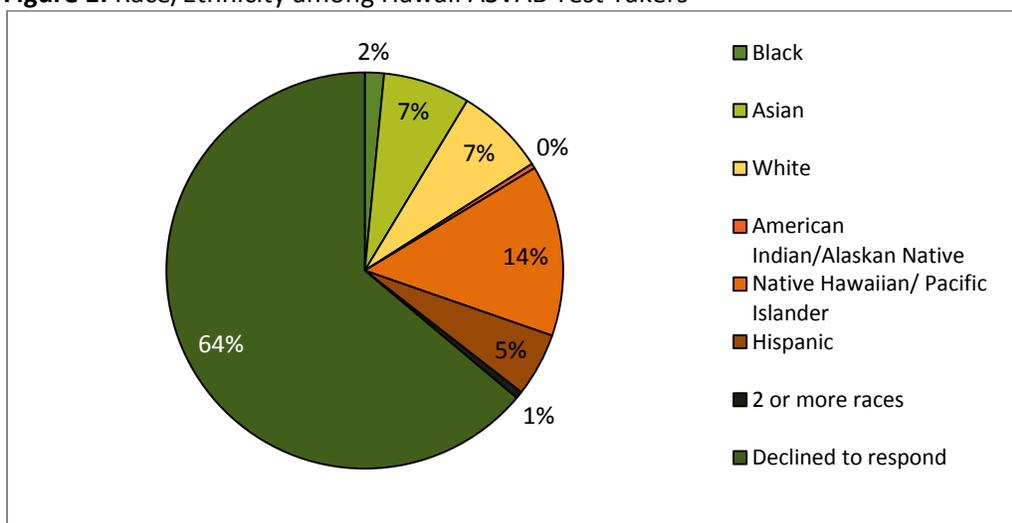
Between 2004 and 2009, 8,587 Hawaii residents took the ASVAB, demonstrating an interest in army enlistment. This analysis focuses on young adults in Hawaii who have not pursued education credentials

⁴ For more information about AFQT Categories and 2009 military accessions, visit <http://prhome.defense.gov/MPP/ACCESSION%20POLICY/PopRep2009/>.

beyond the high school level. The sample includes individuals with high school or alternative diplomas and high school seniors, who comprise about 85 percent of all Hawaii test takers.⁵ Outcomes are disaggregated for the three different types of educational backgrounds to more fully describe the preparation of young people with different educational experiences. High school seniors reflect the quality of the K-12 education system, diploma recipients have met the requirements, and alternatively credentialed individuals did not complete their education in the K-12 system. Additionally, the sample is restricted to young adults, aged 17 to 24, who comprise 76 percent of Hawaii high school seniors and graduates.⁶ The final sample contains 5,503 individuals.

In contrast to national ASVAB data, which has generally complete race and ethnicity information, 64 percent of Hawaii applicants in the sample decline to report their race or ethnicity (see figure 1). Because of these omissions, demographic information among test takers in Hawaii remains incomplete. Test results are disaggregated and reported for groups with large subsample populations, but it is always important to consider the results of the unknown category, as it comprises a large portion of the sample.⁷

Figure 1: Race/Ethnicity among Hawaii ASVAB Test Takers



Notes: Data include individuals with high school or alternative diplomas and high school seniors, aged 17-24, who took the ASVAB in Hawaii between 2004 and 2009.

⁵ In the Hawaii sample, 7,277 individuals have a high school or alternative diploma or are enrolled as high school seniors. Individuals with other educational backgrounds, such as high school underclassmen or postsecondary degree-holders, are excluded from the sample.

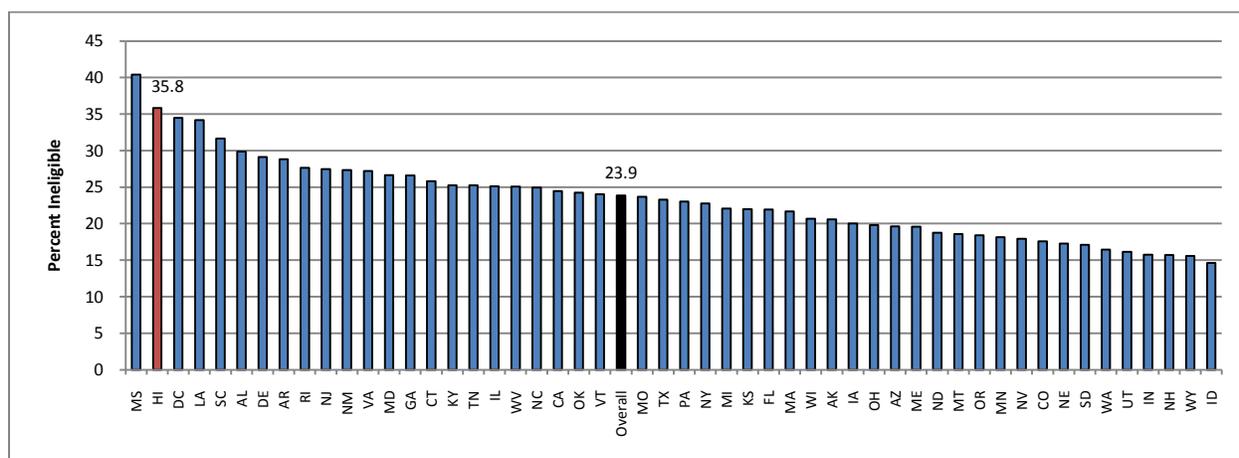
⁶ The term graduate refers to individuals with traditional high school diplomas or alternative diplomas.

⁷ Subgroup analyses include the following demographic groups: White (n=403), Asian (n=389), Native Hawaiian/Pacific Islander (n=769), and Decline to Respond (n=3,516). Multiracial individuals who partially identify as Native Hawaiian or Pacific Islander are included in the Native Hawaiian group. Throughout the report, the term “minority” refers to Native Hawaiian/Pacific Islanders, African Americans, Hispanics, and American Indians (n=1,163).

Hawaii in the State Rankings

Variation among states provides a national context for understanding Hawaii’s performance on the ASVAB. Trailing only Mississippi, Hawaii has the second highest ineligibility rate in the country, with 36 percent of applicants failing to earn an AFQT score above 30. The Hawaii ineligibility rate far exceeds the national rate of 24 percent (see Figure 2). Correspondingly, the median AFQT score in Hawaii is the third lowest in the country, surpassing only Mississippi and Louisiana.⁸ The median score in Hawaii, 39, is 9 points below the median score for the country and 20 points below Utah, the state with the highest median score in the country.

Figure 2: ASVAB Ineligibility Rate, by State for 17-24 year olds



Notes: Data include individuals with high school or alternative diplomas and high school seniors, aged 17-24, who took the ASVAB between 2004 and 2009. Individuals are counted as ineligible if they receive an AFQT score below 31, which is the minimum requirement for entry into the army. These results differ from the ineligibility rates reported in The Education Trust’s “Shut Out of the Military” due to differences in the samples.

Roughly speaking, states with larger numbers of minority applicants have higher ineligibility rates than states with small numbers of minority applicants. However, state-by-state variation in ineligibility rates among Native Hawaiian/Pacific Islanders test takers suggests that these applicants in Hawaii perform worse than *their counterparts* in other states. More than half of Native Hawaiians residing in Hawaii are ineligible for entry into the armed forces (54 percent), making Hawaii the worst state in the country for Native Hawaiian military hopefuls.⁹

Although the actual number of Native Hawaiian test takers in Hawaii is unknown due to the large percentage of individuals who decline to report their race, other states with large Native Hawaiian populations outperform Hawaii. For example, only 29 percent of the 558 Native Hawaiians who took the

⁸ Medians, as opposed to means, are reported throughout the analysis because they are a more accurate measure of central tendency, since AFQT scores are percentiles ranging from 1-99. The median score signifies that half of the sample scored below and half scored above the point.

⁹ States with fewer than 50 Native Hawaiians taking the ASVAB (n=14) were removed from this subgroup analysis. Still, the ineligibility rate among Native Hawaiians in Hawaii exceeds all of these states.

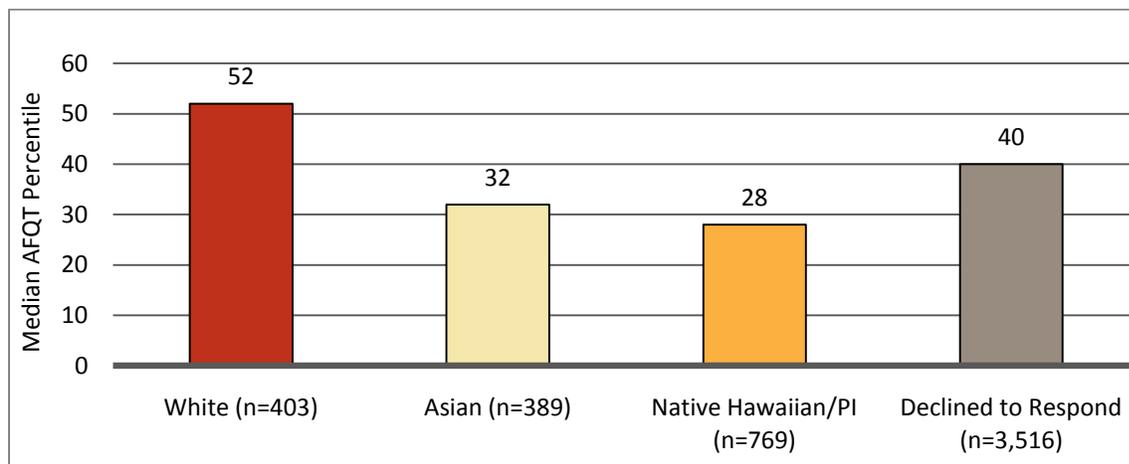
ASVAB in Texas failed, and 34 percent of the 1,709 Native Hawaiians in California failed. Texas and California’s Native Hawaiian ineligibility rates may not represent a high standard of performance, as they exceed the national ineligibility rate for *all* students, yet the ineligibility rates in these states are *20 percentage points lower than the rate for Native Hawaiians in Hawaii*. Moreover, Native Hawaiians residing in Hawaii earn a median AFQT score of 28, which is 13 points lower than the median for all Native Hawaiians in the country.

Still, test takers in any state, regardless of race, are a self-selected sample of individuals, meaning they are not necessarily representative of all individuals within the state. Because socioeconomic information is not reported on the ASVAB, relative income levels of specific race/ethnicity subgroups may vary from state to state. Nonetheless, applicants in all states demonstrate an interest in military service, and the data suggest that individuals in Hawaii are less ready for army training than individuals in other states.

Achievement Trends Among Hawaii Residents

Among residents in Hawaii, large achievement gaps between white and nonwhite applicants characterize ASVAB performance (see figure 3). The median white applicant in Hawaii receives an AFQT score of 52, which is 20 points higher than the score of the median Asian individual and 24 points higher than the median Native Hawaiian individual. White test takers are also much less likely to be ineligible for acceptance into the military. Only 18 percent of white applicants fail to achieve a minimum score of 31, compared to 48 percent of Asian applicants and 54 percent of Native Hawaiian applicants.

Figure 3: Median AFQT by Race



Notes: Data include individuals with high school or alternative diplomas and high school seniors, aged 17-24, who took the ASVAB between 2004 and 2009.

Merely qualifying for enlistment does not guarantee that an applicant will receive access to military incentive programs, and large achievement gaps between white and nonwhite test takers also plague these programs. More than half of white test takers (54 percent) receive a score of 50 or above, qualifying them for incentives such as the Army Incentive Fund and college repayment programs, while only 28 percent of Asian and 20 percent of Native Hawaiian test takers reach this threshold. These high-

performing individuals suggest that many test takers are capable of achieving at high levels, but far too few nonwhite Hawaii applicants are adequately prepared to excel on the test.

Test takers with various educational backgrounds also perform differently on the ASVAB, with high school graduates performing, on average, *worse* than students still enrolled in high school (see figure 4). The median high school graduate earns an AFQT score of 36, which is 6 points lower than the scores of both the median high school senior and alternative diploma holder. Furthermore, the median Hawaii high-school graduate scores as low as or lower than the median graduate in any other state, with an AFQT score that is tied with the median applicant in Mississippi for dead last.¹⁰

Moreover, achievement gaps between white and minority individuals are widest among high school graduates; a 23-point achievement gap exists between white and minority high school graduates, yet this gap drops to 17 and 9 points for high school seniors and alternate diploma holders, respectively (see figure 5).¹¹

Figure 4: AFQT Distribution by Education Status

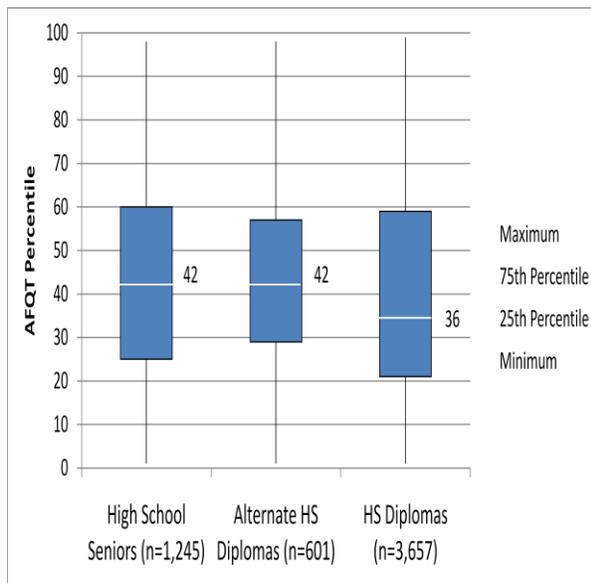
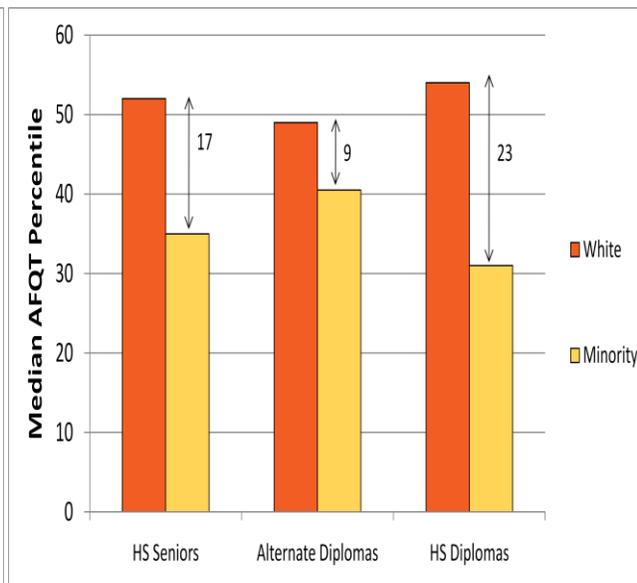


Figure 5: Median AFQT by Education and Minority Status



Notes: Data include individuals with high school or alternative diplomas and high school seniors, aged 17-24, who took the ASVAB between 2004 and 2009. The term “minority” refers to Native Hawaiian/Pacific Islanders, African Americans, Hispanics, and American Indians.

Because high school graduation is a higher level of educational attainment than high school enrollment, these results seem counterintuitive. However, a few possible explanations underlie these trends. First, high school seniors taking the ASVAB may still be deciding between postsecondary study and military

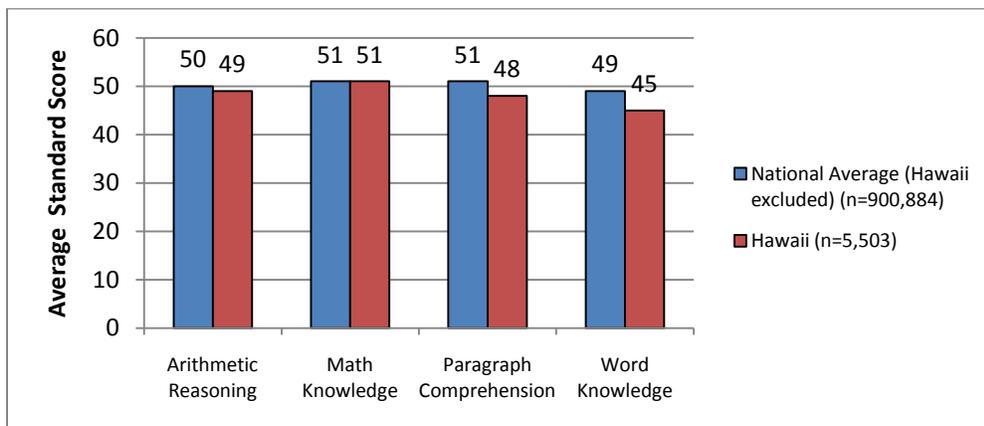
¹⁰ The median high school graduates in both Hawaii and Mississippi have an AFQT score of 36, which is 13 points below the national median high school graduate. This national ranking includes individuals with high school diplomas only, aged 17 to 24, who took the ASVAB between 2004 and 2009.

¹¹ Here, minority refers to the following subgroups: Native Hawaiian, Black, Hispanic, and American Indian.

enlistment, whereas high school graduates may be past the age of typical college enrollment and *only* considering military service, so their range of scores may be more restricted. Alternatively, high school seniors may be more familiar with the ASVAB material than high school graduates, since they are regularly exposed to academic coursework.¹² Moreover, if high school seniors are interested in joining the military upon graduation, they are not required to wait to take the ASVAB. The military recommends that examinees take a solid core of courses in mathematics, English, and science to do well on the exam, so if students have done this, they should be prepared.

Hawaii test takers generally perform better on the math portions of the ASVAB than the reading portions (see figure 6). For example, the average score on the math knowledge subtest is 51, which is only a fraction of a point lower than the national average, but the average score on the word knowledge subtest is 45, which is 4 points lower than the national average.¹³ Relatively higher achievement among minorities in math partially drives the state’s comparatively higher performance in this subject area. White applicants tend to perform similarly across the four AFQT components, earning an average score of between 50 and 52 on all four AFQT subtests. However, minority performance varies, ranging from an average score of 44 on the word knowledge test to a 49 on the math knowledge test.¹⁴ In other words, relatively smaller achievement gaps in math translate into enhanced statewide performance in this subject area.

Figure 6: Average Subtest Scores: Components of the AFQT



Notes: Data include individuals with high school or alternative diplomas and high school seniors, aged 17-24, who took the ASVAB between 2004 and 2009. Subtest scores are not comparable to AFQT scores. They are standard scores (mean=50,

¹² The Army typically requires individuals with GEDs to earn a higher AFQT score than individuals with traditional diplomas. While any attempt to explain differences in AFQT scores is merely speculative, because the data is limited to test results, youth with alternative diplomas may be aware of these different eligibility standards, leading only certain individuals to self-select into the sample.

¹³ Subtest scores are reported as averages rather than medians, because they are standard scores as opposed to percentiles. For comparison purposes, national averages on the ASVAB subtests exclude individuals residing in Hawaii.

¹⁴ Here, the minority designation refers to the following groups: Native Hawaiian, Black, Hispanic, and American Indian.

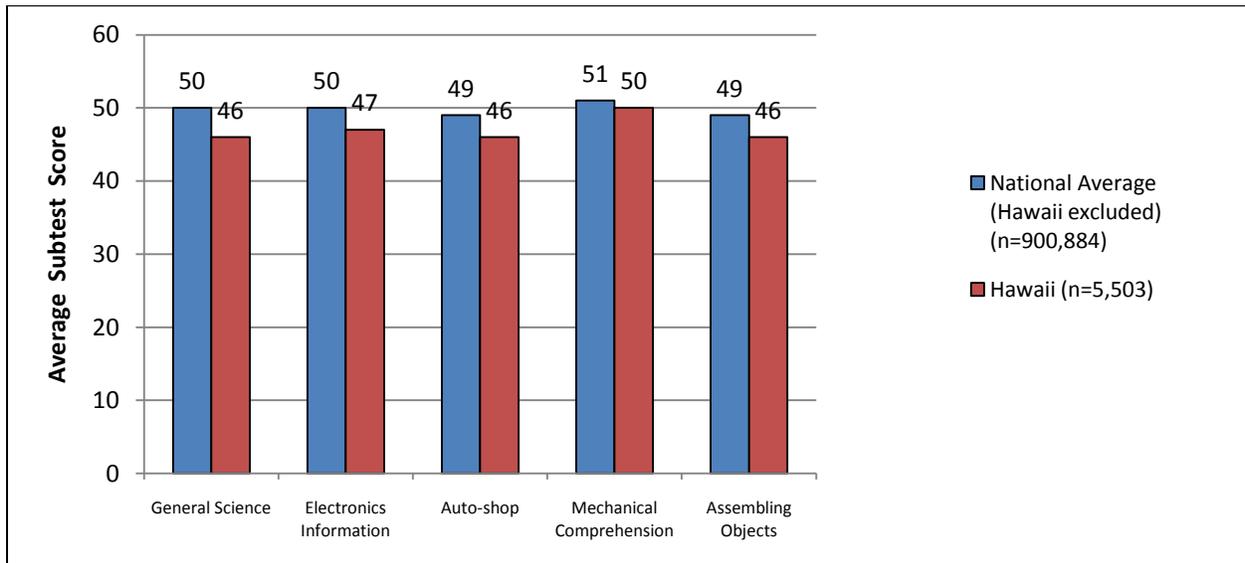
standard deviation=10), whereas AFQT scores are percentile rankings. All differences are significant at the 0.05 level, including the difference of less than 1 point on the math knowledge subtest, in part due to large sample sizes.

Considering that Hawaii ranks so far below the national median in overall AFQT scores, these subtest scores seem deceptively close to national benchmarks. However, subtest scores are not comparable to AFQT scores because they are reported as standard scores, whereas AFQT scores combine and differentially weight the 4 academic subtests and are then converted into percentiles.

Subtest data suggest that test takers from Hawaii are underperforming in subjects beyond just math and reading. Military applicants take five tests that do not count towards the AFQT score but instead help determine enlistees' Military Occupational Specialties (MOS), or positions and career fields in the army. The five subtests include General Science, Electronics Information, Auto-shop, Mechanical Comprehension, and Assembling Objects. Taken in combination with AFQT components, these subtests can serve as a proxy for career readiness in certain fields.

Hawaii test takers score below the national average on all five career technical subtests (see figure 7).¹⁵ In fact, with the exception of the Mechanical Comprehension subtest, Hawaii ranks among the bottom three states in four out of five subtests.¹⁶ Moreover, achievement gaps transcend traditional subject areas, evidenced by within-state gaps between whites and minorities on all five tests. The largest gap exists on the Assembling Objects subtest, where white test takers score, on average, 7 points higher than minorities. When applicants earn low scores on ASVAB subtests, their career opportunities within the army become extremely limited. Perhaps more importantly, they become excluded from critical career and skills training in the military.

Figure 7: Science and Technical Subtests, National Averages vs. Hawaii



¹⁵ For comparison purposes, national averages exclude individuals residing in Hawaii.

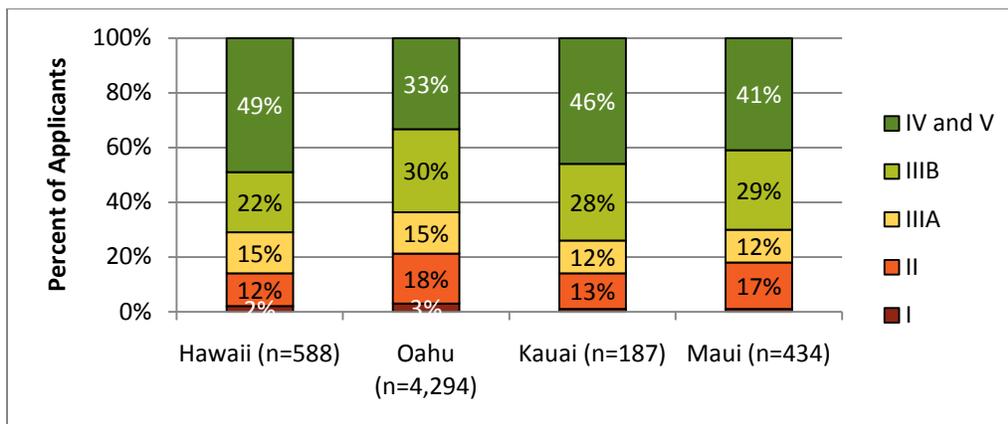
¹⁶ Hawaii ranks eighth to last on the Mechanical Comprehension subtest.

Notes: Data include individuals with high school or alternative diplomas and high school seniors, aged 17-24, who took the ASVAB between 2004 and 2009. Subtest scores are not comparable to AFQT scores. They are standard scores (mean=50, standard deviation=10), whereas AFQT scores are percentile rankings. All differences are significant at the 0.05 level, in part due to large sample sizes.

Island-Specific Trends

Over three-fourths of Hawaii test takers live on the island of Oahu, and these applicants tend to outperform test takers on other islands. The median applicant in Oahu earns an AFQT score of 40, which is 5 points higher than the median applicant in Maui and 8 points higher than the median applicants in Hawaii and Kauai. While eligibility rates are low on all the islands, they are particularly bleak on the islands of Hawaii and Kauai, where nearly half of all applicants fail to earn the minimum entrance score (see figure 8). The percentage of test takers qualifying for military incentives varies from island to island, ranging from a low of 26 percent in Kauai to a high of 36 percent in Oahu.

Figure 8: AFQT Categories by Region

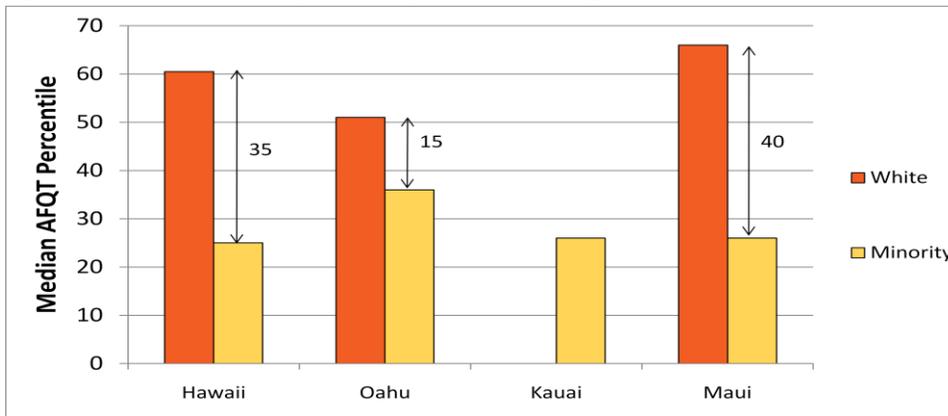


Notes: Data include individuals with high school or alternative diplomas and high school seniors, aged 17-24, who took the ASVAB between 2004 and 2009. Individuals scoring in categories I, II, and IIIA are eligible for military incentives.

Again, differences in minority performance influence the overall performance of each island. Oahu has the smallest gap between white and minority test takers, with the median white applicant scoring 15 points above the median minority applicant (see figure 9).¹⁷ By contrast, Maui has the largest gap, with the median white applicant scoring 40 points above the median minority applicant. Even though white test takers in both Hawaii and Maui score, on average, substantially higher than white test takers in Oahu, test takers in Oahu *as a group* perform better on the ASVAB than test takers on either of the other islands.

¹⁷ Minority applicants include Native Hawaiian/Pacific Islanders, African Americans, Hispanics, and American Indians.

Figure 9: Median AFQT by Minority Status and Region

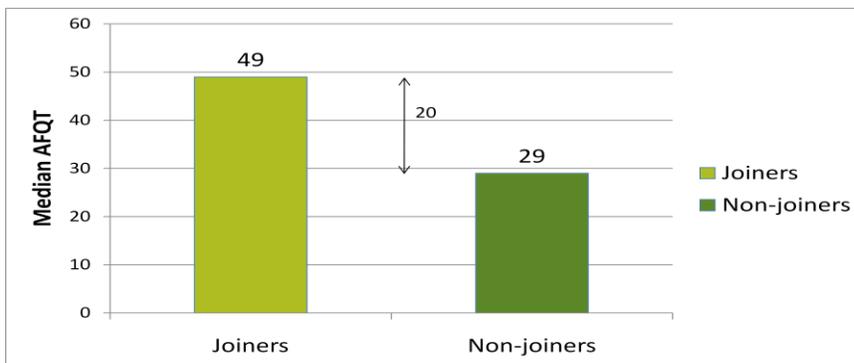


Notes: Data include individuals with high school or alternative diplomas and high school seniors, aged 17-24, who took the ASVAB between 2004 and 2009. Median AFQT for whites in Kauai is not shown because there are too few individuals to obtain a reliable estimate (n=10). All remaining subgroups contain at least 40 individuals. The term “minority” refers to Native Hawaiian/Pacific Islanders, African Americans, Hispanics, and American Indians.

Achievement Among Individuals Who Enlisted in the Army

A little over a third of Hawaii applicants choose to enlist in the army, but this fraction would likely be larger if more test takers earned a qualifying AFQT score. The 2,000 Hawaii applicants who enlist are demographically similar to those who do not join the military, though small differences between the groups exist due to variation in test scores. For example, a slightly smaller percentage of enlistees than non-enlistees are Asian and Native Hawaiian, perhaps because Asian and Native Hawaiian applicants are less likely to attain an AFQT score of 31 or higher than applicants of other races. Similarly, a slightly larger percentage of joiners than non-joiners are from the island of Oahu, as residents of this island tend to score higher than residents of other islands. In fact, the median enlistee scores 20 points higher than the median non-enlistee (see figure 10). Similarly, more than half of non-joiners are barred from entry due to their low AFQT score; although we don’t know if these individuals would have enlisted had they scored higher, we do know that the option was not available to them.

Figure 10: Median AFQT, Joiners vs. Non-Joiners

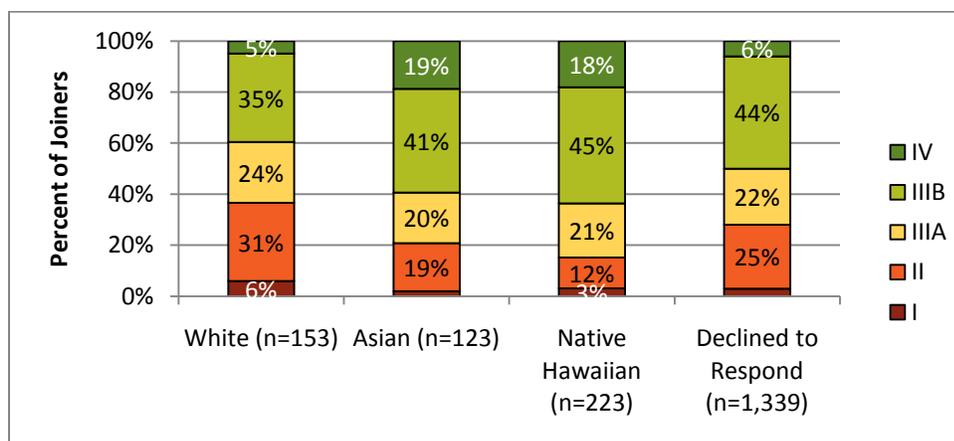


Notes: Data include individuals with high school or alternative diplomas and high school seniors, aged 17-24, who took the ASVAB between 2004 and 2009 and subsequently enlisted in the army.

Although joiners score higher than non-joiners, many earn scores that limit the opportunities available to them after enlistment. For example, slightly more than half of Hawaii residents who enter the military receive an AFQT score below 50, rendering them ineligible for army incentive programs and many Military Occupational Specialties. Whereas 61 percent of enlistees nationally qualify for incentive programs, only 48 percent of Hawaii enlistees qualify. Moreover, Hawaii ranks third to last in the percentage of enlistees who qualify for these programs, surpassing only the District of Columbia and Mississippi.

Within Hawaii, white enlistees score substantially higher than nonwhite enlistees, meaning they are more likely to qualify for incentive programs and advanced career opportunities within the military. For example, white enlistees are about twice as likely as Asian and Native Hawaiian enlistees to score in the top two AFQT categories, qualifying them for the most elite positions in the armed forces (see figure 11). High AFQT scores secure access to critical skills and career training while in the military, so white enlistees are also more likely to experience broader career opportunities once they enter the civilian workforce.

Figure 11: AFQT Percentile Categories among Joiners, by Race



Notes: Data include individuals with high school or alternative diplomas and high school seniors, aged 17-24, who took the ASVAB between 2004 and 2009 and subsequently enlisted in the army. Individuals scoring in categories I, II, and IIIA are eligible for military incentives.

Conclusion

Too many residents of Hawaii who wish to serve their country are barred from entry into the U. S. Army because they lack the reading, math, and critical thinking skills necessary to serve in the armed forces. High school graduates are even more likely than high school seniors to be turned away from service, despite the fact that the state has certified that they have mastered the requisite knowledge and skills to obtain a diploma. Because the ASVAB assesses applicants' potential for training in a variety of areas, test takers who do not qualify for enlistment are unlikely to be prepared for the workforce.

Large gaps in performance between white and nonwhite applicants suggest that the Hawaii K-12 system is inequitably preparing students for opportunities after high school. Furthermore, disparities in

performance among islands suggest that opportunity is inequitably distributed among regions. A statewide effort to enhance educational quality could reduce these inequities while improving the postsecondary options of all Hawaii graduates, relative to their mainland peers.