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Population Benchmarking for the U.S. Department of the Air Force

Impact of Eligibility Requirements and Propensity to Serve on Demographic Representation

The U.S. Department of the Air Force (DAF) considers a diverse force to be a military necessity (Air Force Global Diversity Division, 2013). The DAF defines diversity across four broad dimensions: demographic diversity, including characteristics that are either inherent or socially defined; cognitive and behavioral diversity; organizational and structural

diversity; and global diversity (Air Force Instruction 36-7001, 2019).

In each dimension, multiple types of diversity are of concern. Demographic diversity has been one area of recent focus in the DAF, and this includes efforts to better understand dynamics of gender and racial and ethnic diversity. The DAF has placed a strategic focus on improving talent management, including how to build a diverse, equitable, and inclusive workforce. In fiscal year (FY) 2021, the DAF further emphasized diversity and inclusion by standing up the Secretary of the Air Force Office of Diversity and Inclusion (ODI). ODI is an extension of the Diversity and

KEY FINDINGS

- Eligibility requirements limit racial and ethnic minority representation, but propensity to serve offsets barriers to eligibility for these minorities.
- Eligibility requirements favor representation for women, but propensity to serve is a key barrier to accessions of women.
- Body mass index, height, and education and aptitude requirements are the most important barriers to both enlisted and officer eligibility, but these requirements affect the eligibility of gender and racial and ethnic groups differently.
- Considering gender and race and ethnicity jointly, no minority group meets the demographic benchmarks of the U.S. population that is both eligible and has a propensity to serve across the three accession sources (enlisted, the U.S. Air Force Academy, and Reserve Officers Training Corps or Officer Training School).
- Examining Department of the Air Force benchmarks by considering gender concurrently with race and ethnicity highlights important differences otherwise not observed when considering these groups separately.

Abbreviations

ACS	American Community Survey
AFMAN	Air Force Manual
AFOQT	Air Force Officer Qualifying Test
AFQT	Armed Forces Qualification Test
BMI	body mass index
DAF	Department of the Air Force
FY	fiscal year
GED	General Educational Development Test
MTF	Monitoring the Future
NHIS	National Health Interview Survey
NLS	National Longitudinal Survey(s)
NLSY	National Longitudinal Survey of Youth
NLSY97	National Longitudinal Survey of Youth 1997
NSDUH	National Survey on Drug Use and Health
OTS	Officer Training School
ROTC	Reserve Officers Training Corps
USAFA	U.S. Air Force Academy

Inclusion Task Force established in summer 2020. As Tawanda Rooney, then-acting director of Diversity and Inclusion for the DAF, stated,

“Diversity and Inclusion are warfighting imperatives and we need to capitalize on all available talent by enabling a culture of inclusion where every member is respected and valued for his or her identity, culture and background.” (Secretary of the Air Force Public Affairs, 2021)

Because most military personnel begin their careers at the entry-level pay grade and positions are filled by promoting from within, achieving diversity at the point of accession is critical to growing and maintaining a diverse workforce across all pay grades. A lack of diversity at accession limits the pool of diverse individuals who can be promoted to higher ranks. However, a large segment of the U.S. population is not eligible to enlist as an airman or be commissioned as an officer, and the impact of eligibility criteria is not uniform across gender and race and ethnicity. Understanding the population that meets the eligibility requirements to join is crucial in determining the potential demographic makeup of DAF accessions and, ultimately, all DAF personnel.

Benchmarking—the process of comparing representation in one group with other relevant groups—can be a valuable tool for placing the diversity of DAF accessions into context. For example, one could compare racial and ethnic minority representation among accessions with racial and ethnic minority representation among the full U.S. population. One could compare the DAF with the portion of the population that is eligible to join the DAF. Or one might consider the portion of the U.S. population that is both eligible and has a propensity to serve in the military. Although it might be desirable for the DAF’s demographics to match those of the full population it serves, benchmarking against those who are eligible or those who are eligible and willing to serve provides context for the diversity that the DAF could achieve.

Eligibility requirements are particularly important to consider because they set the minimum standards for service. The DAF inherits inequities in the U.S. population relative to those requirements, such as differences in high school graduation rates across groups. Because of those inequities, having accessions meet the diversity of the full U.S. population might actually overburden groups that are less likely to be eligible, in that a higher proportion of those eligible would actually need to serve.

Prior literature, including Schulker (2010) and Lim et al. (2014), has provided benchmarks for DAF accessions. Over the past decade, the DAF has achieved important improvements in both gender and racial and ethnic minority representation.¹ Between FY 2010 and FY 2020, racial and ethnic minority representation increased from 38 percent to 49 percent of enlisted accessions and from 23 percent to 31 percent of officer accessions. Over this same period, representation of women increased from 19 percent to 24 percent of enlisted accessions and from 18 percent to 25 percent of officer accessions.² Because of these changes to DAF demographics, there is value in producing and maintaining new accession benchmarks relative to the diversity of the most current DAF accessions. In addition, prior benchmarking efforts might have been conducted separately by gender and race and ethnicity, so examining diversity by these groups jointly might reveal important patterns and features about representation

that might be missed when the intersection of these characteristics is not considered (Lim et al., 2021).

In support of the DAF's strategic focus on improving talent management, including how to build a diverse, equitable, and inclusive workforce, in FY 2021, RAND Project AIR FORCE was asked to (1) provide targeted benchmarks and a planning tool that will allow the DAF to evaluate the demographic composition of the active duty workforce overall, as well as functional areas in this workforce, and (2) to identify practices and opportunities that the DAF can use to support diversity in critical career fields. As part of the first objective, we constructed benchmarks of active duty accessions, comparing the distribution of gender and race and ethnicity at accession with relevant segments of the U.S. population. In this report, we describe how benchmarks are resourced and constructed to capture DAF eligibility requirements and propensity to serve in the military and present benchmarking results for enlisted accessions, new officers commissioned through the U.S. Air Force Academy (USAFA), and officers accessing through either the Reserve Officers Training Corps (ROTC) or Officer Training School (OTS). In a companion tool, the authors discuss a computer application built to actively examine and monitor the benchmarks discussed in this report.³

Applying Department of the Air Force Requirements to Nationally Representative Data

In this report, we use nationally representative survey datasets to generate estimates of the proportion of each gender and racial and ethnic group that is eligible to join the DAF, and we then further estimate the proportion of each group that is both eligible and has a *propensity to serve* (i.e., an indication that an individual has a high likelihood of serving in the military). We then use these estimates of being eligible and of being both eligible and having a propensity to serve (i.e., being *propensed*) in benchmarking accessions of enlisted and officer cohorts. In this section, we outline the eligibility requirements for both enlisted personnel and officers, as well as the survey data we use to inform what proportion of the

U.S. population meets those requirements. In the following section, we describe how the survey data are combined to produce an estimate of the eligible population for each gender and race and ethnicity group. In a later section, we discuss the population that has a propensity to serve.

Four Nationally Representative Survey Datasets Informed Eligibility

We consider data from the following four nationally representative surveys to inform eligibility:

- American Community Survey (ACS) (IPUMS USA, undated; U.S. Census Bureau, 2017)
- National Health Interview Survey (NHIS) (National Center for Health Statistics, undated; NHIS, undated)
- National Longitudinal Survey of Youth 1997 (NLSY97) (Moore et al., 2000; National Longitudinal Surveys (NLS), undated-a; NLS, undated-b)
- National Survey on Drug Use and Health (NSDUH) (NSDUH, undated-a; NSDUH, undated-b; Center for Behavioral Health Statistics and Quality, 2020a).

The 2019 ACS is a nationwide survey conducted by the U.S. Census Bureau. The Census Bureau mails monthly questionnaires, and the estimates are reported annually. The ACS serves as the baseline for U.S. population estimates in this analysis because it has the biggest sample size (more than 3 million individuals) and reports population estimates by gender and race and ethnicity. The survey collects information on social, economic, housing, educational, and demographic characteristics.

The 2018 NHIS is an annual survey conducted by the U.S. Census Bureau on behalf of the National Center for Health Statistics. The NHIS involves monthly face-to-face interviews, and the estimates are reported annually. The sample consists of approximately 30,000 adults and 9,000 children. The health survey contains information on height, weight, body mass index (BMI), and various medical conditions used in this analysis. The survey also includes demographic information, such as gender, race, ethnicity, age, and education.

The NLSY97 Cohort is a longitudinal survey that follows participants who were first interviewed in 1997 at ages 12–16.⁴ The initial NLSY97 sample consists of approximately 8,900 individuals across the nation. A sample of the same cohort has been interviewed 17 times to date, either annually or biennially. The survey includes information on employment, education, achievement scores, income, and crime. For the enlisted analysis, we use the 2005 and 2017 waves for estimating aptitude and moral character. We use the 2005 wave for USAFA and the 2003 wave for ROTC or OTS. These waves correspond to the age requirements for enlistment into DAF and entry into the USAFA and ROTC or OTS.⁵

The 2019 NSDUH is conducted by the U.S. Department of Health and Human Services. NSDUH is representative of those aged 12 and older in the 50 states and the District of Columbia. The sample size of NSDUH is approximately 67,000 individuals distributed relatively evenly across age groups. The survey provides information on drug and alcohol use and abuse, mental health, and other health-related issues.⁶ Below, we describe how these surveys inform eligibility criteria for enlistment and for being commissioned as an officer, either via USAFA or through ROTC or OTS. For a discussion of the limitations of

these datasets and assumptions associated with their use in estimating eligibility, see Appendix A.

Requirements for Enlistment

Air Force Manual (AFMAN) 36-2032 (2019) and AFMAN 36-2905 (2020) provide a comprehensive list of specific requirements for enlistment in the DAF, including ones that can be waived.⁷ Table 1 summarizes the general requirements that this analysis uses to determine eligibility. The analysis focuses on major eligibility factors: age, education, number of children, marital status, body composition, health, aptitude, moral character, and drug use. Depending on the data source, we sometimes parse the requirements in different ways to reflect the data that are available. To estimate eligibility based on each of these characteristics, the analysis incorporates data from multiple sources, which we describe below.

Age. Our examination of eligibility starts with the 2019 ACS, which provides baseline U.S. population estimates by each gender and race and ethnicity considered. We use the ACS data to filter the full U.S. population by the eligibility criteria for age, education, marital status, and number of dependents. The minimum age for enlistment is 17, and the maximum is 39 (raised from 27 in 2014 by AFMAN 36-2032).

TABLE 1
Department of the Air Force Enlistment Eligibility Requirements

Characteristic	Eligibility Requirement	Data Source
Age	Applicant is aged 17 through 39.	2019 ACS
Education	Applicant has a high school diploma.	2019 ACS
Dependents	Applicant has no more than two dependents and is not a single parent.	2019 ACS
Body composition	Applicant is within the DAF height/weight requirements.	2018 NHIS
Medical	Applicant does not have asthma, diabetes, heart disease, functional limitations, or a disability that limits activity or requires special equipment.	2018 NHIS
Aptitude	Applicant has a high school diploma and an AFQT score greater than or equal to 36 OR has a GED and an AFQT score greater than or equal to 50 OR does not have a high school diploma but has an AFQT score greater than or equal to 65.	2005 and 2017 NLSY97
Moral character	Applicant has no felony convictions.	2005 and 2017 NLSY97
Drug use	Applicant has no drug or alcohol dependence or abuse.	2019 NSDUH

NOTE: AFQT = Armed Forces Qualification Test; GED = General Educational Development Test.

The proportion of enlisted accessions between the ages of 27 and 39 in the past five years has remained steady at approximately 5 percent.

Education and aptitude. According to AFMAN 36-2032, the education and aptitude requirements are assessed concurrently. An applicant is eligible when they have a high school diploma with an AFQT score of at least 36, have a GED with an AFQT score greater than or equal to 50, or are not a high school graduate but have an AFQT score of at least 65. However, the 2019 ACS does not report AFQT scores. We chose to examine education alone using the 2019 ACS to estimate eligibility using the biggest sample size. Because accessions within a FY must meet 95 percent of Education Credential Tier Level One, the education requirement for this analysis is limited to those who have a high school diploma (AFMAN 36-2032). The AFQT aptitude requirement is then estimated using AFQT scores reported in NLSY97, conditional on education. See Appendix A for additional details.

Dependents. An applicant is eligible for enlistment if they have no more than two dependents and are not a single parent.

Body composition and medical. The DAF requires a BMI less than or equal to 25 and height from 58 to 80 inches (Department of Defense Instruction 1308.3, 2002). Medical eligibility is limited to those who do not have asthma, diabetes, heart disease, functional limitations, or a disability that limits activity or requires special equipment. Information on body composition and medical status comes from the 2018 NHIS.

Moral character and drug use. Moral character is limited to those without any felony convictions, and drug use is limited to those with no drug or alcohol dependence or abuse. Information on drug use comes from the 2019 NSDUH, and felony convictions are informed by the NLSY97.

Requirements to Become an Officer

Our analyses focus on benchmarking officer accessions from two different sources: USAFA and ROTC or OTS. Their eligibility requirements are different in some respects; thus, we create separate accession benchmarks for the two commissioning sources.

We use the eligibility requirements at the time of commissioning to benchmark ROTC or OTS officer accessions. Because commissioning as an officer through USAFA first requires admission into the academy, we use the USAFA eligibility requirements as the source for benchmarking USAFA accessions. Table 2 summarizes the general requirements that we used to determine officer eligibility and the data source for each requirement.

We use the same data sources to inform the eligibility criteria for officers that we use for enlistment. Several officer eligibility requirements from both commissioning sources are comparable to the enlisted requirements, such as body composition, medical conditions, moral character, and drug use. The eligibility requirements for officers differ from those for enlisted personnel in the areas of age, education, dependents, aptitude, and citizenship.

Commissioning through ROTC or OTS. Eligibility requirements to be commissioned as an officer through ROTC or OTS extend to individuals through age 34 who have a bachelor's degree. There are no restrictions on the number of dependents; however, officers commissioned through ROTC or OTS are required to be U.S. citizens. We use the ACS survey data to capture citizenship for the ROTC or OTS benchmark.

With the presence of a bachelor's degree, a separate aptitude eligibility component is not used in calculating the benchmarks for ROTC or OTS accessions. Technically, there are Air Force Officer Qualifying Test (AFOQT) minimum score requirements for ROTC or OTS accessions—at least 10 on the quantitative section and at least 15 on the verbal section; these are low bars for most college graduates.⁸ ROTC candidates take the AFOQT by the fall semester of their second year of undergraduate studies. The AFOQT scores are one of several components evaluated as part of the competitive process for selecting which ROTC cadets will continue on the professional officer course after completion of the general military course. OTS candidates take it during the OTS application process. The AFOQT scores are one of several components considered by OTS selection boards in choosing applicants for OTS. Thus, although there are minimum scores, the use of the AFOQT in these competitive processes means that, functionally, the

TABLE 2
Criteria for Department of the Air Force Commission Sources

Source	Characteristic	Eligibility Requirement	Data Source
USAFA	Age	Applicant is age 17 through 23.	2019 ACS
	Education	Applicant has a high school diploma or GED.	2019 ACS
	Dependents	Applicant is single and has no dependents.	2019 ACS
	Body composition	Applicant is within the DAF height/weight requirements.	2018 NHIS
	Medical	Applicant does not have asthma, diabetes, heart disease, functional limitations, or a disability.	2018 NHIS
	Aptitude	Applicant has an AFQT scores greater than or equal to 80.	2005 NLSY97
	Moral character	Applicant has no felony convictions.	2005 NLSY97
	Drug use	Applicant has no drug/alcohol dependence or abuse.	2019 NSDUH
ROTC or OTS	Age	Applicant is age 18 through 34.	2019 ACS
	Citizenship	Applicant is a U.S. citizen.	2019 ACS
	Education	Applicant has at least a bachelor's degree.	2019 ACS
	Body composition	Applicant is within the DAF height/weight requirements.	2018 NHIS
	Medical	Applicant does not have asthma, diabetes, heart disease, functional limitations, or a disability.	2018 NHIS
	Moral character	Applicant has no felony convictions.	2003 NLSY97
	Drug use	Applicant has no drug or alcohol dependence or abuse.	2019 NSDUH

NOTE: U.S. citizenship is not required for eligibility to apply for admission to the USAFA, but officers commissioned via USAFA must be a U.S. citizen at the time of commissioning. Entry into USAFA is highly competitive, and cadets usually exhibit aptitude that exceeds the minimum requirements.

necessary scores might be higher and will vary with each selection process, negating the possibility of identifying a fixed AFOQT competitive requirement. As Schulker (2010) notes, the need for officers to be accepted into a commissioning program, in addition to meeting the eligibility requirements, means that officer benchmarks are representative of those who are similar to officers on the eligibility requirements but do not capture commissioning program admission.

Commissioning through USAFA. Individuals aged 17 through 23 who are single, have no dependents, and have a high school diploma or GED are eligible for USAFA. We do not include citizenship as a USAFA eligibility requirement because U.S. citizenship is not required for admission; however, it is required before officers can be commissioned through USAFA.

Considering aptitude requirements for USAFA when generating a benchmark is challenging. Admis-

sion to USAFA is highly competitive, and individuals accepted for admission typically exhibit aptitude well beyond the minimum requirements. Thus, using the minimum aptitude requirements for a USAFA benchmark would result in a significant portion of the age-eligible population that technically qualifies but does not have a realistic chance for admission.

In creating the USAFA benchmark for education, we first consider having either an SAT composite score of at least 1200 or an ACT score of at least 25 (USAFA, undated). These are the minimum competitive scores typical for admission into USAFA. To implement this standard for aptitude, we first examined the subset of the NLSY97 data that contains both an AFQT score and an SAT or ACT score. We then chose an AFQT cutoff of 80; virtually all the individuals in the NLSY97 data meeting the SAT or ACT standard had an AFQT above this mark. Thus, although it is still a conservative cutoff, it better reflects the population that has a realistic chance of

USAFA admission.⁹ We return to the AFQT cutoff score to calculate the benchmark because only a small portion of individuals in the NLSY97 cohort had SAT or ACT scores, and preserving the NLSY97 sample size is important for the full estimation of eligibility, as described in the “Creating Target Population Benchmarks” section.

Propensity to Serve

This analysis also accounts for demographic differences in preferences for military service using “Monitoring the Future [MTF]: A Continuing Study of American Youth (12th-Grade Survey),” an annual survey of approximately 15,000 12th graders (Miech et al., 2020). Propensity for military service is captured by a question that asks respondents, “How likely is it that you will serve in the armed forces after high school?”¹⁰ Responses of “probably will” or “definitely will” reflects a propensity to serve. Prior research has shown that preference for serving is significantly correlated with actual enlistment (Orvis and Asch, 2001).

An alternative source for assessing a preference for service is the Joint Advertising, Market Research & Studies Youth Poll, which is conducted three times per year by the Office of People Analytics in the U.S. Department of Defense (Joint Advertising, Market Research & Studies, undated). The Youth Poll’s survey questions about propensity are similarly framed in terms of likelihood that a respondent will serve in the military. The Youth Poll asks, “In the next few years, how likely is it that you will be serving in the military?” The Youth Poll also differentiates between serving in the military in general and serving in the DAF. Because the Youth Poll surveys a nationally representative sample of youth aged 16 to 24, it better captures the age-eligible population than the MTF does. However, compared with the MTF, sample sizes for the Youth Poll are quite small—typically about 300 individuals when fielded. Unfortunately, these sample sizes are too small to produce a reliable estimate of propensity to serve when subdivided by combinations of gender and race and ethnicity examined jointly.

Creating Target Population Benchmarks

The goal of this analysis is to create benchmarks for comparison with the DAF’s accession cohorts by estimating the fraction of the eligible (and propensed) population in each demographic group. The benchmarks provide a measure of progress on diversity and inclusion in the force and a comparison to clearly identify whether a demographic’s overrepresentation or underrepresentation can be attributed to specific eligibility standards and/or propensity to serve. This analysis uses ten mutually exclusive categories of gender and race and ethnicity. The five race and ethnicity categories we estimate are (1) Non-Hispanic White only, (2) Non-Hispanic Black only, (3) Hispanic, (4) Non-Hispanic Asian only, and (5) Non-Hispanic Other (which includes those who are categorized as two or more non-Hispanic races).¹¹

We use the statistical method described by Schulker (2010) to estimate the distribution of gender and race and ethnicity in the *eligible population*, defined as those who meet the requirements. For each accession source—enlisted, USAFA, and ROTC or OTS—we start with the estimate of the population size of each gender and racial and ethnic group, as provided by the ACS, and then calculate a reduction in those size estimates, as each successive eligibility criterion is applied, to arrive at the estimated number of people in each group who are eligible for accession. The appropriate reduction for each eligibility criterion is calculated using the most appropriate data source, as identified in Tables 1 and 2. The *eligible benchmark* is estimated by dividing the estimated number of people who remain eligible in each group by the estimated total number of eligible individuals across all groups; this gives us an estimate of the proportion of the eligible population belonging to each group. We calculate the *eligible and propensed benchmark* by repeating the same method and treating propensity as an additional criterion. A more thorough description of how the eligible and eligible and propensed benchmarks are estimated is provided in Appendix A.

Comparing Department of the Air Force Accession Cohorts with the Eligible Population

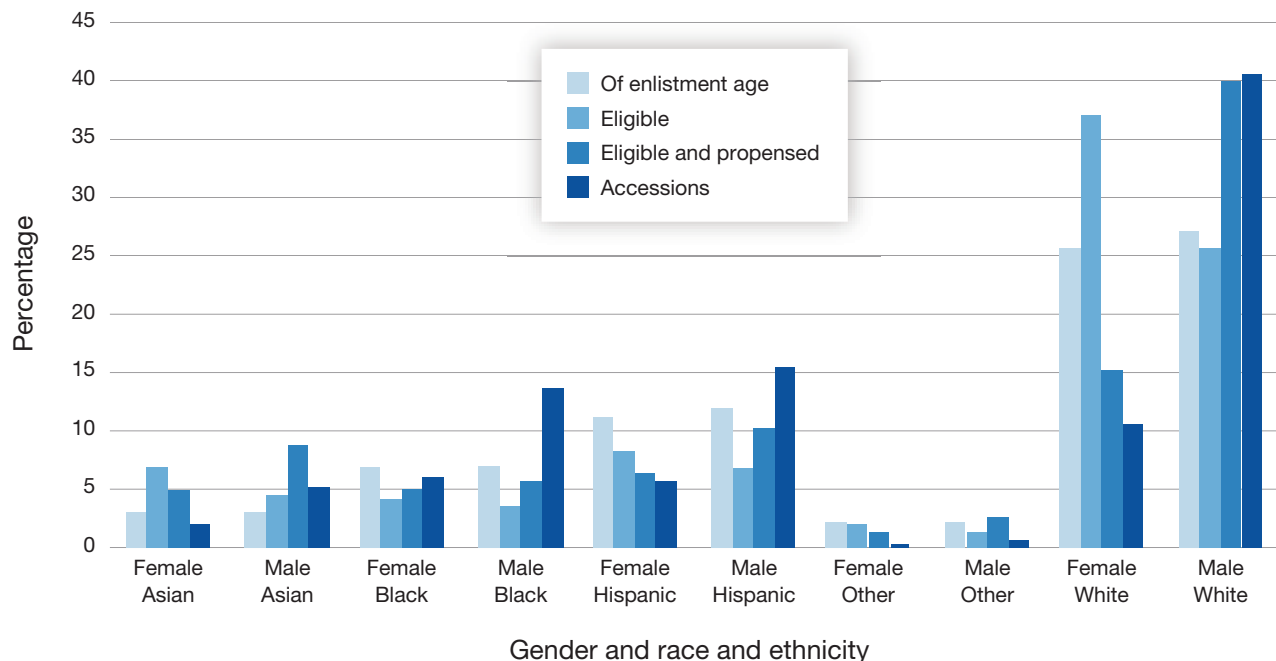
Eligible Enlisted Population

Figure 1 shows the estimated demographic distribution of the U.S. population of enlistment age (also referred to as the “youth” population below), the population eligible to enlist in the DAF, the population eligible and propensed to serve, and the demographic distribution of the FY 2020 DAF enlisted accession cohort for each of the ten gender and racial and ethnic categories. In the figure, bars of the same color add up to 100 percent across the ten categories. The darkest blue bars display the distribution of FY 2020 enlisted accessions across the ten gender and racial and ethnic categories. In an individual category, the bars show that category’s share of the full distribution across all categories. For example, examining the set of bars at the far right of the graph, we find that White men are the most represented demographic in the population of enlistment age (27.1 percent; first bar) and carry a similar share of

the total eligible population (25.6 percent; second bar). The share of White men of the eligible and propensed population (third bar) is even greater, at 40.0 percent. Finally, enlistment of White men was 40.6 percent of the FY 2020 enlisted accession cohort (fourth bar), which fell slightly below the eligible and propensed benchmark but exceeded the benchmark for eligibility alone.

Comparing the distributions of the population that is of enlistment age with the population eligible to enlist (the first and second bars) across all ten groups reveals important differences. White women are more likely to meet all enlistment requirements than other demographic groups, and a higher share are eligible to serve than their proportion of the enlistment age population would suggest. Asian men and women also make up larger shares of the eligible population than of the enlistment age population. In contrast, Black and Hispanic men and women all make up considerably lower shares of the eligible population than their respective shares of the enlistment age population. Potential reasons for such differences are further explored below.

FIGURE 1
Demographic Distributions of the U.S. Population of Enlistment Age, Population Eligible to Enlist, Population Eligible and Propensed to Serve, and the FY 2020 Enlisted Accession Cohort, by Gender and Race and Ethnicity



Comparing the distributions of the eligible population with the population that is both eligible and propensed to serve (the second and third bars) reveals additional important differences. Men in general have a greater propensity to serve than women, and men in all five racial and ethnic groups make up larger shares of the eligible and propensed population than their respective shares of the eligible population. Black women also make up a share of the eligible and propensed population that exceeds their share of the eligible population. In contrast, both White women and Asian women make up significantly smaller shares of the eligible and propensed population than their shares of the eligible population. These important differences highlight the need to consider both benchmarks in placing enlisted accessions into context.

Comparing the actual accessions with the benchmarks (fourth bar versus the second and third bars), we see that three groups—Black men, Black women, and Hispanic men—exceed both enlisted benchmarks; their shares of enlisted FY 2020 accessions are higher than their respective shares of the eligible population and also higher than their shares of the eligible and propensed population. FY 2020 enlisted accessions for Asian men, similarly to those of White men, exceeded the benchmark for the eligible population but fell short of the eligible and propensed benchmark. Accessions of White, Asian, and Hispanic women all missed both enlisted benchmarks. However, accessions for Hispanic women just fell short of the eligible and propensed benchmark, whereas accessions of White and Asian women fell well short of this benchmark.

Figure 2 aggregates the comparisons featured in Figure 1 across the racial and ethnic groups to display the benchmarks by gender only. As noted, prior benchmarking efforts for the DAF tended to examine differences either by gender or by race and ethnicity alone, instead of considering the intersection of the two groupings jointly, as in Figure 1. The pattern seen in Figure 2 for all women, suggesting that women are underrepresented at accession relative to relevant benchmarks, appears to mirror that of White and Asian women in Figure 1. However, Figure 1 reveals that the benchmarking patterns for Black and Hispanic women are critically differ-

ent from those of White and Asian women. White women have the largest share of the youth, eligible, and eligible and propensed populations of women and receive the greatest weight when examining representation of women across all races and ethnicities. Underrepresentation of White women thus creates a false picture for women of other races and ethnicities when examined jointly, masking the stronger performance of some groups of racial and ethnic minority women relative to the respective benchmarks.

Impact of Eligibility Requirements

As noted above, eligibility to serve is a composite of multiple characteristics, and an individual must meet the full set of requirements to be eligible. Conversely, each requirement narrows the field of eligible candidates. Figure 3 displays the number of age-eligible individuals who meet each eligibility factor, as well as propensity to serve, by gender. The estimates are

FIGURE 2
Demographic Distributions of the U.S. Population of Enlistment Age, Population Eligible to Enlist, Population Eligible and Propensed to Enlist, and the FY 2020 Enlisted Accession Cohort, by Gender

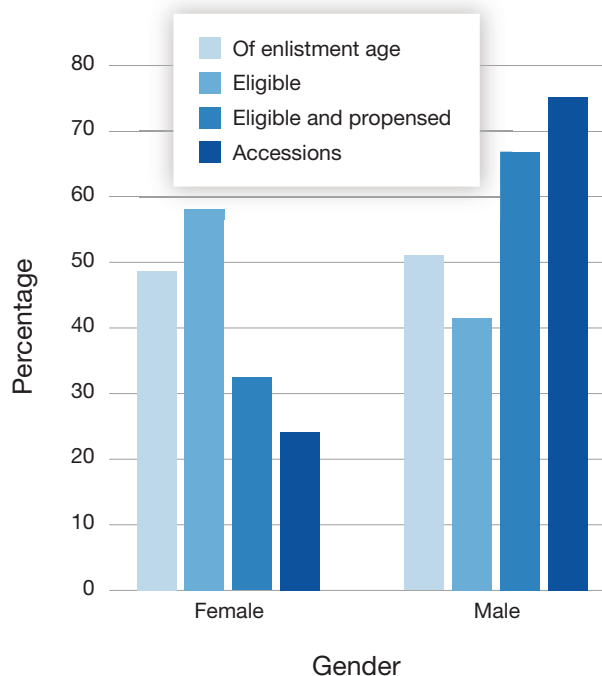
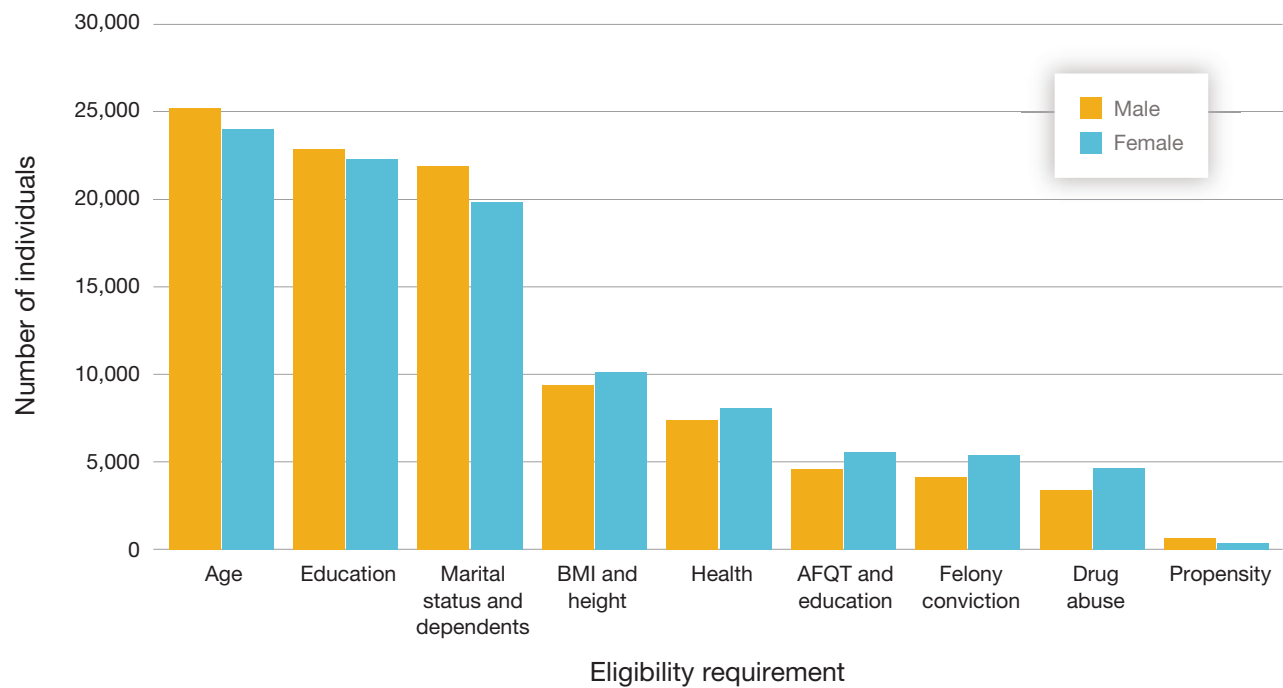


FIGURE 3

Cumulative Impact of Eligibility Requirements and Propensity to Serve on the Size of the Population Available to Enlist, by Eligibility Requirement



NOTE: These estimates are cumulative, meaning each bar represents the number of individuals in the population that meets the specific requirement and all previous requirements (to the left).

cumulative, meaning each bar represents the population that meets the specific requirement and all previous requirements (to the left). The first set of bars in Figure 3 identifies the size of the U.S. population that is within the eligible age range for enlistment for each gender. The second set of bars shows how many individuals remain after the education requirements are applied to those of eligible age. The third set of bars display the number of individuals who meet the age and eligibility requirements remain once the marital status and dependents criteria are applied. This pattern continues; each successive set of bars shows how much of the original population remains once the criteria for that set of bars is applied, in addition to the prior criteria.

As seen in Figure 3, the DAF body composition requirements for BMI and height are large eligibility barriers for both men and women. AFQT requirements present an important barrier to eligibility, as does propensity to serve, particularly for women.¹²

Figure 3 demonstrates that 1 in 5 people in the enlistment age range is a woman eligible for military service, and 1 in 7.5 is a man eligible for military service. The fraction of eligible individuals decreases significantly when propensity is taken into account, especially for women. One in 133 people in the enlistment age range is an eligible woman with propensity to serve, and one in 61 people in the enlistment age range is an eligible man with propensity to serve. Table B.2 in Appendix B provides these values for each gender and racial and ethnic group.

Although the general pattern of the impacts of each criterion on eligibility seen in Figure 3 is true across all races and ethnicities, this impact is not uniform. BMI, height, AFQT, and education are important barriers for all races and ethnicities, but any one of these criteria individually might affect eligibility in one racial and ethnic group to a greater or lesser extent than it affects the others. Because the impact of each criterion differs across gender and race and

ethnicity, as each eligibility criterion is applied, the share of the total remaining in each gender and racial and ethnic group changes. Figures 4 and 5 demonstrate how gender and racial and ethnic representation change with each additional requirement, starting with the entire U.S. population and applying the requirement to be in the eligible age range. Men and women are displayed separately to not overcrowd the figures. Each set of bars denotes the percentage point difference between each demographic group’s representation after the requirement for that set of bars is applied to groups that met all the previous requirements. A bar in the negative direction indicates that the criterion represented by the bar decreased that group’s share of the remaining eligible population, while a bar in the positive direction means that the criterion increased that group’s share. The magnitude of the bar indicates the size of the change, in percentage points. In Figure 4, the blue bar in the first set of bars for age extends almost 5 percentage points below zero. This shows that the age requirement reduces representation of White women by nearly 5 percentage points compared with their representation in the

total U.S. population.¹³ This is consistent with the idea that the younger portion of the U.S. population is more diverse than the full U.S. population across all age groups.

As shown in Figure 4, most requirements tend to increase representation of White women in the remaining eligible population with the exception of the age requirement and propensity to serve. The pattern is similar for Asian women. In contrast, age and propensity to serve benefit representation of Black women among the eligible population, and age alone benefits representation of Hispanic women among the eligible population. The other criteria have either a negative or neutral effect relative to the other gender and racial and ethnic groups. AFQT and education, BMI and height, and marital status and dependents all have disproportionately negative impacts on the eligibility of Black and Hispanic women. As demonstrated in Figure 4, the effects of each eligibility requirement and propensity to serve are different across gender and racial and ethnic groups. Without observing the intersectionality of gender and race and ethnicity, the analysis would

FIGURE 4
Change in Racial and Ethnic Representation with Addition of Each Enlistment Requirement Among Women



FIGURE 5

Change in Racial and Ethnic Representation with Addition of Each Enlistment Requirement Among Men



have shown that women in general are more likely to meet all enlistment requirements (as shown in Figure 2) without acknowledging that the observation is primarily driven by White women.

As shown in Figure 5, overall change in representation for men across racial and ethnic groups varies by enlistment requirement, whereas propensity to serve increases representation for all men, although not by the same amount. Enlistment requirements tend to work against representation of Black and Hispanic men. For Black men, the greatest barrier is the AFQT and education requirement, which decreases their representation by roughly 3.5 percentage points. For Hispanic men, the BMI and height requirements decrease their representation by more than 2 percentage points, and the AFQT requirement decreases representation of Hispanic men by 3 more percentage points relative to the other groups. These factors help explain why, in Figure 1, representation of Black and Hispanic men in the eligible population is notably lower than in the full population of enlistment age. In addition to the age requirement, representation of White men is negatively affected by the BMI and

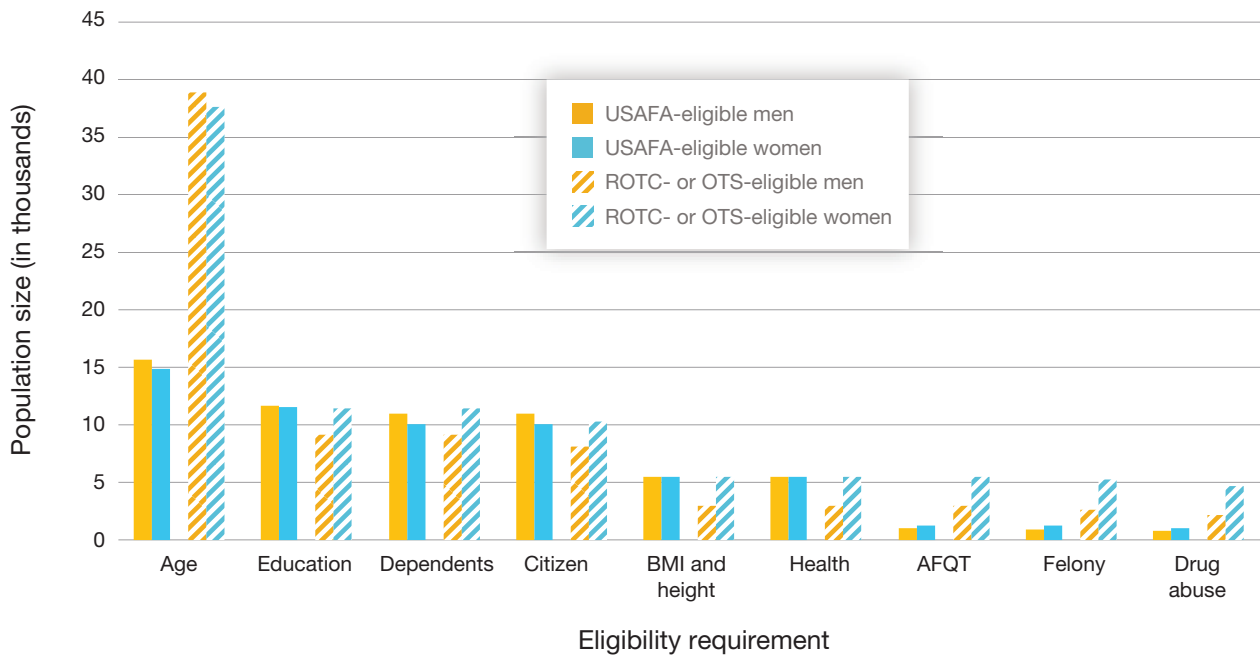
height requirements and also slightly declines relative to other groups when drug use is considered after all other criteria are applied.

Eligible Officer Population

Figure 6 shows the number of individuals who meet each officer requirement, broken out by gender.¹⁴ As a reminder, the requirements are cumulative, which means each set of bars represents the population that meets the particular requirement and all previous requirements. However, not all requirements apply to both USAFA and ROTC or OTS benchmarks. The USAFA benchmark calculations (the solid bars in the figure) do not apply a citizenship requirement, and the ROTC or OTS benchmark calculations (the dotted bars in the figure) do not apply dependent or aptitude requirements; therefore, the population shown in Figure 6 for these two categories is the same as the population that meets all previous requirements. Officer eligibility is much more restrictive than that of enlistment: Approximately 1 in 19 men and 1 in 14 women aged 17–23 are eligible to enter the

FIGURE 6

Cumulative Impact of Eligibility Requirements on the Size of the Population Eligible to Enter Department of the Air Force Officer Programs



NOTE: These estimates are cumulative, meaning each bar represents the size of the population that meets the specific requirement and all previous requirements (to the left).

USAFA. The number of USAFA-eligible men exceeds the number of eligible women for all requirements prior to BMI and height, but those two requirements reverse the pattern. For ROTC or OTS, 1 in 17 men and 1 in 14 women aged 18–34 are eligible; the education requirement is where this shift between men and women occurs—after considering education, more women than men are eligible. Education, aptitude, and the body composition requirements are challenges overall; these items are discussed further by race and ethnicity below. Tables B.4 and B.6 in Appendix B provide the values analogous to those displayed in Figure 6 for each gender and racial and ethnic group.

Figure 7 shows the estimated demographic distribution of the U.S. youth population in the age range for accessing USAFA officers, the estimated distributions of those eligible and eligible and propensed to enter as an officer through USAFA, and the demographic distributions of the FY 2020 officer accession cohort from USAFA.¹⁵ Figure 8

compares the analogous demographic distributions for officers accessing through ROTC or OTS.¹⁶ For USAFA, Hispanic men and women, Asian women, and White women are less represented in the DAF accession cohort than in the eligible population. Accounting for propensity to serve, this analysis also identifies Asian men as a population that is underrepresented. White women represent the largest proportion of the eligible population—similar to enlisted eligibility—and, if eligibility were examined by gender alone, White women and White men trends would have obscured the trends of racial and ethnic minority groups in each gender, particularly those of Hispanic officers.

As shown in Figure 8, all women are underrepresented in the ROTC or OTS accession cohort when compared with both the eligible benchmark and the eligible and propensed benchmark. On the other hand, all racial and ethnic minority men are overrepresented in the accession cohort compared with the eligible population. However, compared with the

FIGURE 7

Demographic Distribution of Youth Population, USAFA Eligible Population, USAFA Eligible and Propensed Population, and the FY 2020 USAFA Accession Cohort

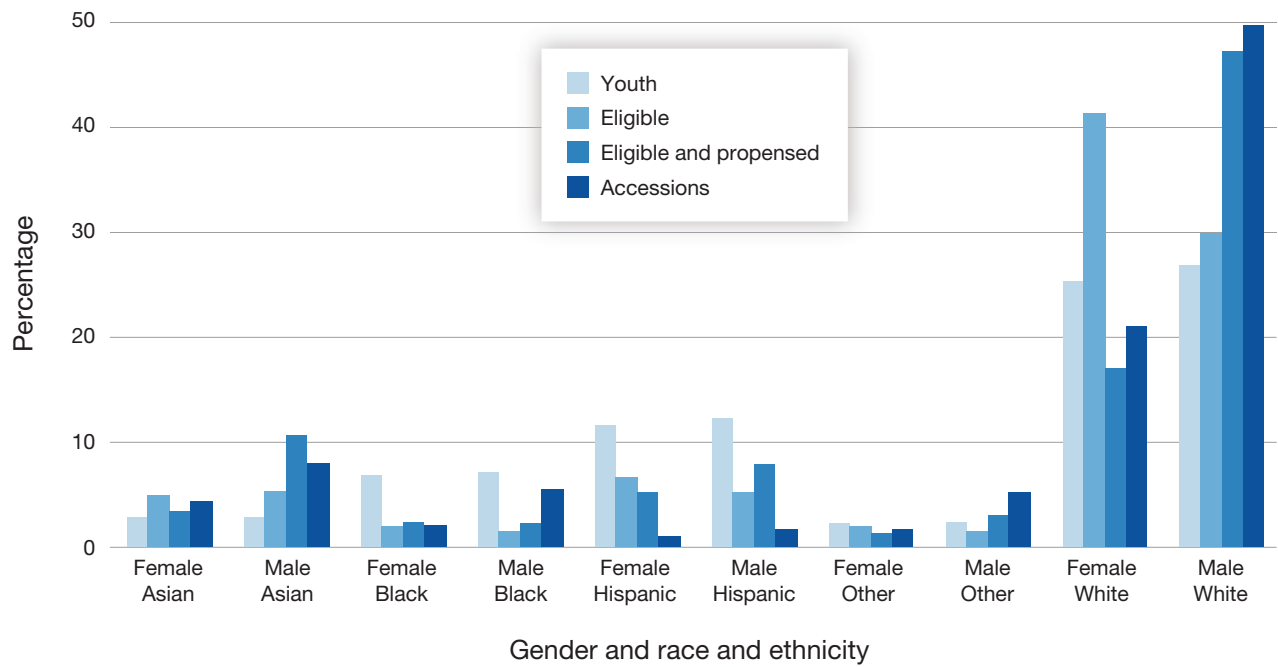
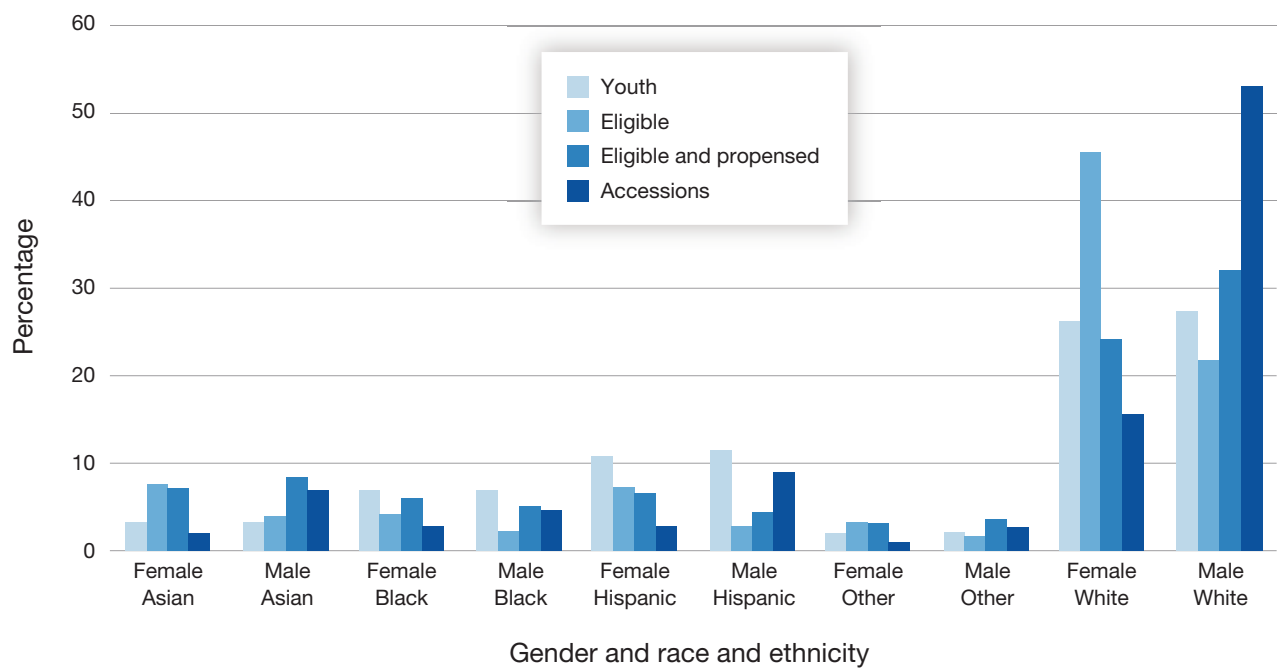


FIGURE 8

Demographic Distribution of Youth Population, ROTC or OTS Eligible Population, ROTC or OTS Eligible and Propensed Population, and the FY 2020 ROTC and OTS Accession Cohort



eligible and propensed population, Black men and Asian men are underrepresented in the accession cohorts. Similar to USAFA, White women represent the largest proportion of the eligible population, and propensity to serve is a significant barrier. Once again, if eligibility were examined by gender alone, important racial and ethnic minority trends would be missed.

Similar to Figures 4 and 5, Figures 9 and 10 demonstrate how the gender and racial and ethnic representation changes for USAFA eligibility with each additional eligibility requirement for women and men, respectively, and Figures 11 and 12 display the analogous information for officer accessions through ROTC or OTS. Mirroring the enlisted eligibility of women, the requirements for BMI and height, AFQT and education, and marital status and dependents appear to have the most-important impact for women across both officer commissioning sources, along with the propensity to serve. The requirements for AFQT and education for USAFA and the education requirement for ROTC or OTS accessions create a negative impact on the relative eligibility of both

Black and Hispanic women. The BMI and height requirements also have a disproportionately negative impact on the USAFA eligibility of Black and Hispanic women, while these requirements negatively affect the eligibility of Black women but not Hispanic women for ROTC or OTS accessions.

The eligibility results on the impact of BMI and height requirements on officer eligibility of Black and Hispanic women might seem curious. Given that the BMI and height requirements are the same for both commissioning sources, why would these requirements have a negative impact on the eligibility of Hispanic women for USAFA but not for ROTC or OTS? In this case, it helps to recall that these requirements are implemented sequentially, and, as seen in Figures 9 and 10, several requirements are filtered before the BMI and height requirements are reached. Thus, the BMI and height results displayed are conditional on the criteria already applied, some of which are either unique to one source or the other (marital status, dependents, and citizenship) or different for the two sources (education). A similar pattern might be seen for the negative impact of citizenship on the

FIGURE 9
Change in Racial and Ethnic Representation with the Addition of Each USAFA Requirement Among Women

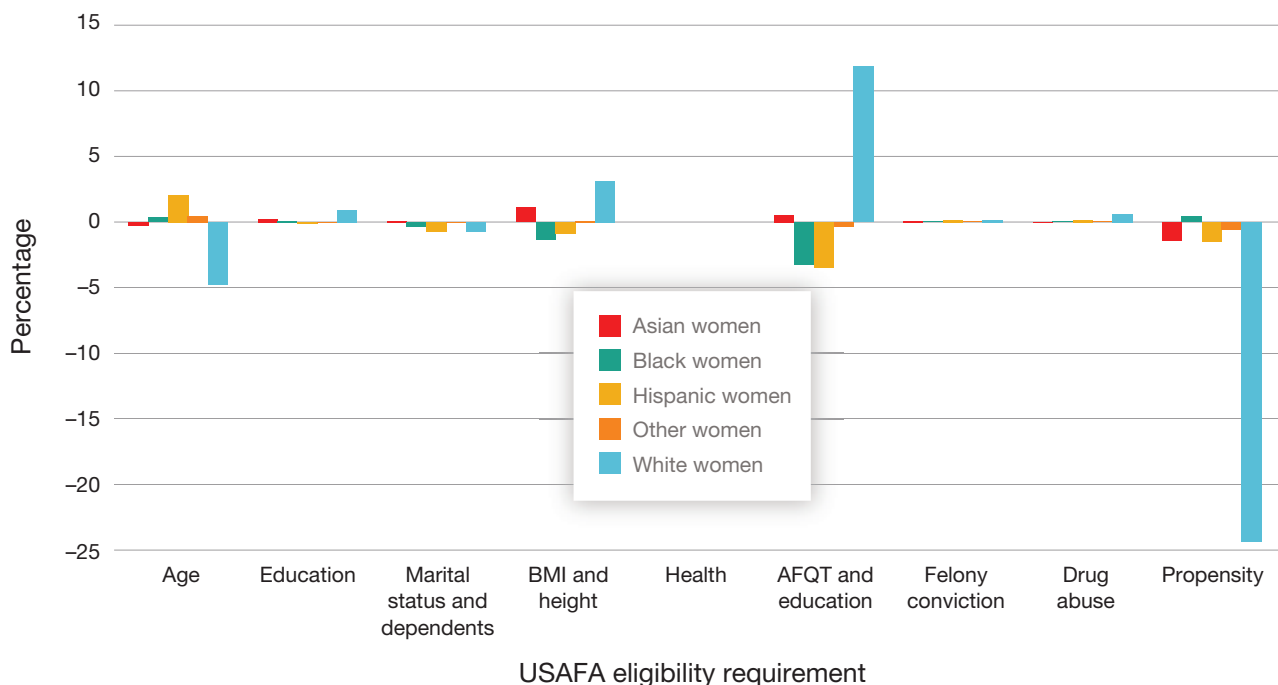


FIGURE 10
 Change in Racial and Ethnic Representation with the Addition of Each USAFA Requirement Among Men

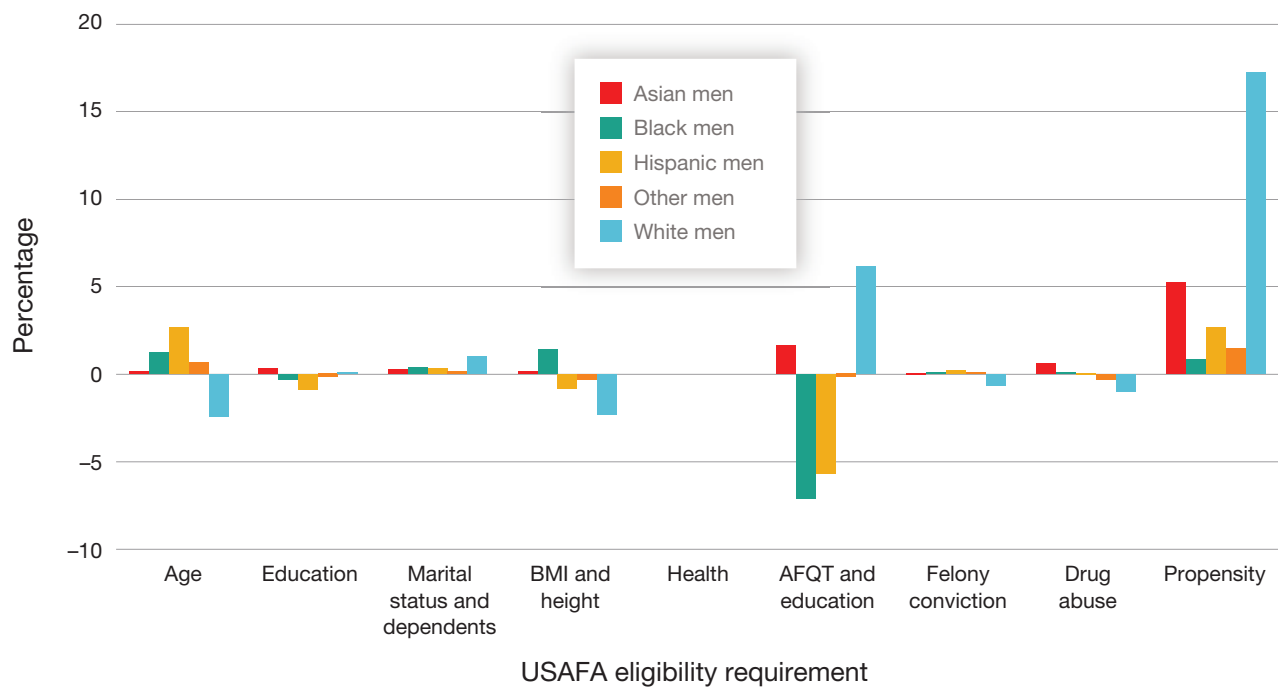


FIGURE 11
 Change in Racial and Ethnic Representation with the Addition of Each ROTC or OTS Requirement Among Women

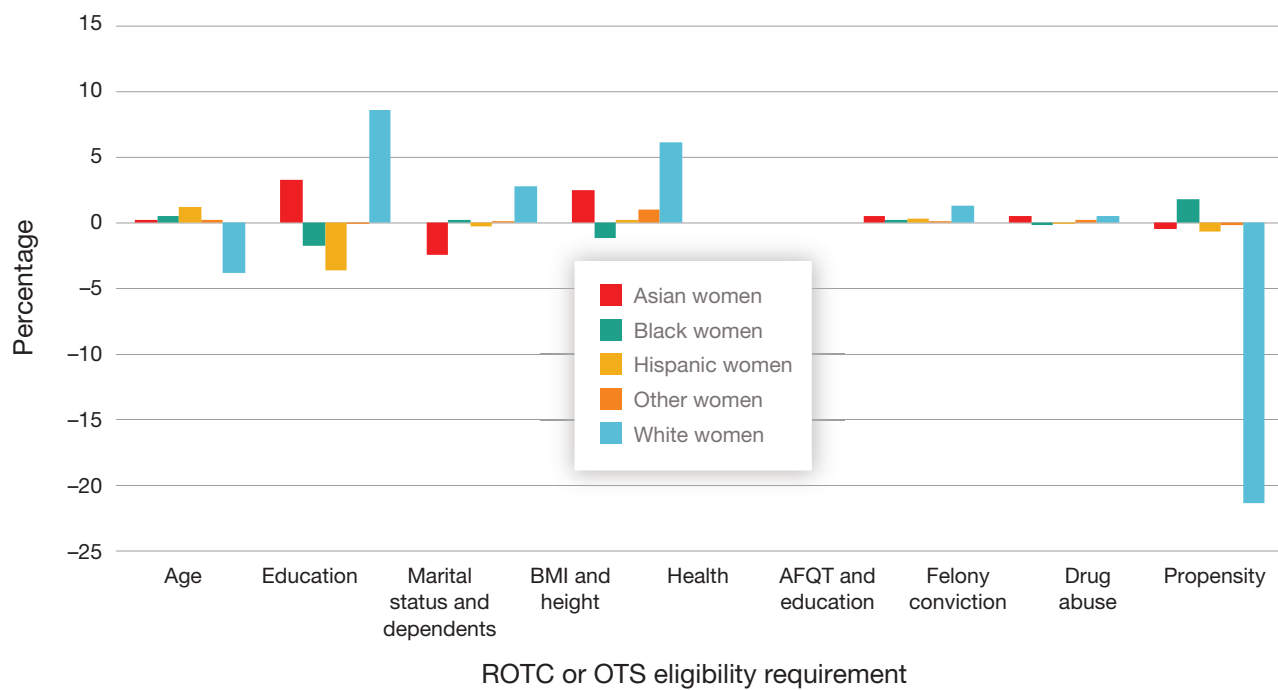
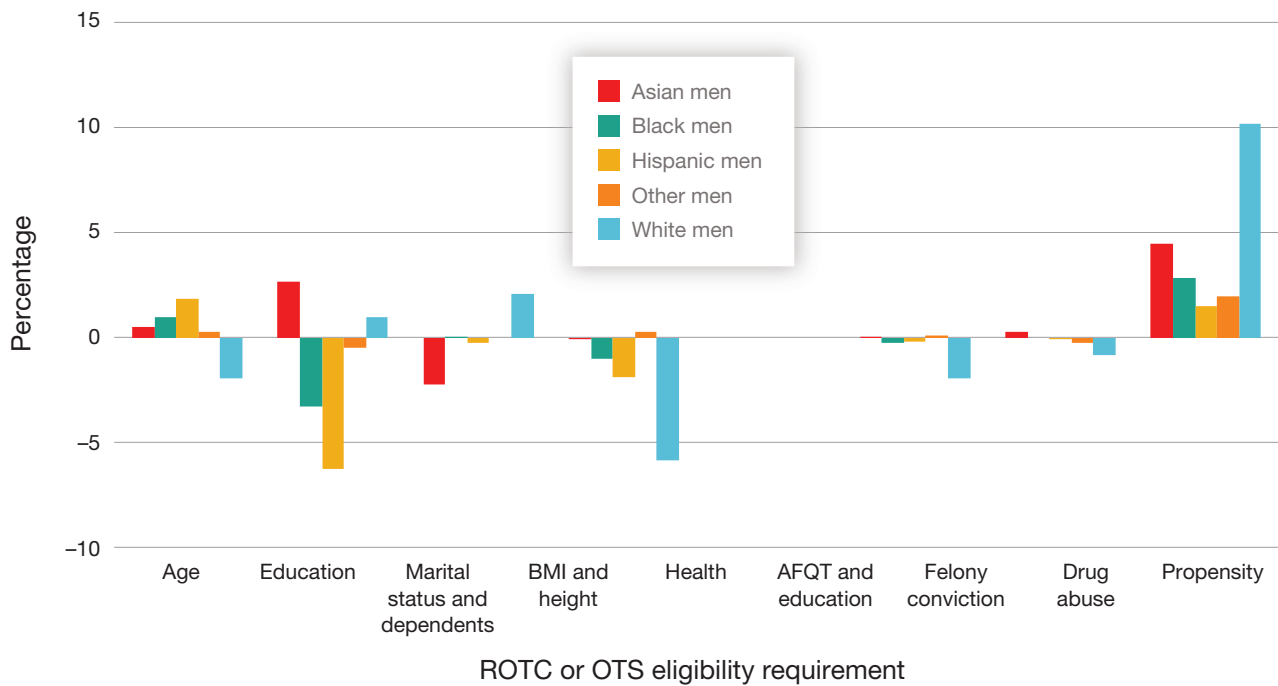


FIGURE 12

Change in Racial and Ethnic Representation with the Addition of Each ROTC or OTS Requirement Among Men



ROTC or OTS eligibility of Asian women, which appears much larger than for any other group. This differential impact might not appear as severe if other categories were not filtered first. The ability to manipulate the order in which the criteria are applied and examine how the impact changes is also seen in an additional research effort featuring a computer application built to actively examine and monitor the benchmarks discussed in this study (Maerzluft, Mariano, and Berglund, forthcoming).

Examining the impact of officer eligibility criteria on male eligibility (Figures 10 and 12), we find that again BMI and height, education, and AFQT requirements are all important barriers, as they were for enlisted eligibility. The aptitude and education requirements for USAFA and the education requirements for ROTC or OTS commissions have an important negative impact on the share of eligible male youth who are Black and Hispanic. BMI and height restrictions reduce the share of Hispanic and White men who are eligible for USAFA and ROTC or OTS, and there is an additional reduction in the eligibility of Black men for ROTC or OTS commissions.

Interestingly, although Black and Hispanic men face similar challenges to officer eligibility, Black men appear to exceed eligible and propensed benchmarks for USAFA but fall short for ROTC or OTS commissions, whereas Hispanic men exceed eligible and propensed benchmarks for ROTC or OTS commissions and fall short for USAFA (Figures 7 and 8).

Summary of Benchmark Findings

Table 3 shows a summary of our population benchmark results for FY 2020 accessions of enlisted personnel, officers through USAFA, and officers via ROTC or OTS. We summarize accession results against both the eligible and the eligible and propensed benchmarks for each accession source. The results are color coded: Green indicates where the DAF outperforms the benchmarks. Yellow and red indicate where the DAF underperforms the benchmarks; larger underrepresentations of greater than 5 percentage points are highlighted in red and smaller deviations below the benchmark are highlighted in yellow. Each cell shows the number of

TABLE 3

Summary of Differences in FY 2020 Accession Counts Versus Benchmarks by Gender and Race and Ethnicity

Race and Ethnicity	Gender	Enlisted Accessions Versus		USAFA Accessions Versus		ROTC or OTS Accessions Versus	
		E	E&P	E	E&P	E	E&P
Asian	Men	188	-879	22	-21	70	-36
	Women	-1221	-731	-4	7	-134	-123
Black	Men	2542	2016	34	27	57	-10
	Women	472	261	1	-2	-34	-77
Hispanic	Men	2163	1312	-29	-51	146	110
	Women	-668	-198	-48	-35	-106	-90
Other	Men	-175	-494	31	19	23	-23
	Women	-423	-284	-3	1	-53	-49
White	Men	3740	153	165	22	740	500
	Women	-6619	-1156	-169	34	-708	-203

NOTE: E = eligible benchmark; E&P = eligible and propensed benchmark. Green cells indicate that DAF accessions surpass the benchmark. Yellow cells indicate that DAF accessions are 0 to 5 percentage points below the benchmark. Red cells indicate that DAF accessions are more than 5 percentage points below the benchmark. Numbers represent the additional accessions needed to meet the benchmark.

additional accessions in each group that would have been needed in FY 2020 to bring DAF accession distributions in line with the benchmarks. As described previously and shown in the table, women from all racial and ethnic groups, except Black women, are consistently underrepresented in DAF enlisted and officer accessions, and the largest underperformance for DAF accessions relative to the benchmarks occur for White women. The lone exception to this pattern is accessions of women through USAFA relative to the eligible and propensed benchmark, which are met by White and Asian women, as well as those in the Other race and ethnicity category. DAF FY 2020 accessions consistently outperformed benchmarks of Black men and White men across all three accession sources; each group missed only one eligible and propensed benchmark. Accessions of Hispanic men exceed benchmarks for enlisted personnel and officers commissioned through ROTC or OTS but fell short of USAFA benchmarks. The DAF's representation of Asian men outperforms benchmarks created using eligibility requirements but underperforms

benchmarks created using both eligibility requirements and propensity to serve.

Conclusion and Recommendation

In this report, we have illustrated how the gender and racial and ethnic distribution among DAF active duty accessions might be benchmarked against the population eligible to serve and also against the population that is both eligible and shows a propensity to serve. We have provided benchmarks for FY 2020 accessions for three different accession types: enlistment, officers commissioned through USAFA, and officers commissioned via ROTC or OTS. In addition, we have disaggregated the impact of the collective eligibility criteria, both to better isolate which individual requirements might create the largest hurdles and to illustrate how the distribution of gender and race and ethnicity among those eligible changes as each eligibility criterion is applied.

Broadly, the most-important barriers for all gender and racial and ethnic groupings appear to

be the DAF's BMI and height requirements and the minimum standards for AFQT and education; limitations on dependents and marital status also affect eligibility of women. In general, women are more likely to meet the full set of eligibility criteria than men are, but propensity to serve is a key barrier to accessions of women.

While one might draw broad conclusions from the benchmarks at the levels of gender or race and ethnicity, the benchmarking results we present are neither consistent for women or men overall, nor are they consistent in racial and ethnic groups across both genders. As illustrated by the contrast between Figures 1 and 2, benchmarks aggregated to gender alone are heavily weighted toward White men and women because they are the largest racial and ethnic groups, and they miss important differences in each gender across race and ethnicity. For example, although propensity is generally a key barrier for accessions of women, this is not true for enlistment of Black women.

Recommendation: Benchmarking DAF Accessions Should Be Conducted Considering Gender and Race and Ethnicity Jointly

Examining the intersection of gender and race and ethnicity allows for a more accurate view of the effects of eligibility requirements on demographic distributions by sifting out patterns that are not dominated by the large representation of White men and women. Although the BMI and height requirements and minimum standards for education and aptitude are barriers for all racial and ethnic groups examined, these criteria do not affect eligibility of each demographic group uniformly. To the contrary, these hurdles affect each gender and racial and ethnic group to a different degree, and such differences are important for understanding how the distribution of those eligible differs from the distribution of race and ethnicity in the U.S. population who are of age to serve.

Consider, for example, Black men who are eligible for enlistment. As seen in Figure 1, Black men represent approximately 7.0 percent of the popula-

tion that is of enlistment age but only approximately 3.6 percent of the U.S. population that is eligible to enlist. Similar to the trend across all groups, both the BMI and height standards and the AFQT and education requirements reduce the number of Black men in the population that is eligible to enlist. However, as seen in Figure 5, the BMI and height standards do not reduce the share of Black men of those who are enlistment eligible, but the AFQT and education requirements do create such a reduction. Thus, examining the impact of the application of the eligibility criteria at such a granular level provides important insight into how the distribution of eligibility shifts across gender and race and ethnicity.

With propensity to serve greatly favoring men, it is not surprising that accessions of women almost uniformly miss benchmarks for eligibility alone and that the groups of racial and ethnic minority men usually surpass them. Considering eligible and propensed benchmarks across all three accession sources, no one group meets the benchmarks for all three sources. Several gender and racial and ethnic groups meet them for two of the three requirements, including White men, who miss the benchmark for enlisted accessions only; Black men, who miss the benchmark for ROTC or OTS only; and Hispanic men, who miss the benchmark for USAFA only. Thus, even in the individual groups in which representation is generally strong at accession overall, representation could be improved in some way. With one exception, the other gender and race and ethnicity groups meet the eligible and propensed benchmark for only one of the three accession sources, indicating stronger potential for improvement.

The lone exception is an interesting case. Asian men exceed the eligible benchmark for all three accession sources examined, yet they fall short of the eligible and propensed benchmark in all three cases. This case highlights the need to consider both eligibility and propensity as benchmarks. Examining eligibility indicates that the representation of Asian men within the DAF at accession meets or exceeds the share of Asian men of the eligible population. However, also examining the eligible and propensed benchmark provides the important additional context of a deficiency of Asian men among DAF acces-

sions relative to those who are able and willing to serve.

Which of these benchmarking contexts—eligibility alone or both eligibility and propensity to serve—is more important, or whether they are equally important, depends on the question being informed by the benchmarking exercise. Furthermore, the accession benchmarks illustrated in this report might be of interest on their own, or they might be used with other relevant information, such as analogous benchmarks for diversity in a functional area (Calkins et al., 2023) or at key career milestones, to understand how downstream patterns of representation and barriers to representation across segments of the DAF might have been affected by diversity at the entry point.

APPENDIX A Benchmarking Method

In this appendix, we provide more details on how we implement the method described in Schulker (2010) to calculate estimates of the eligible and eligible and propensed populations used as accession benchmarks. For descriptive purposes, we first focus on the calculation of the enlisted accession-eligible population benchmark. We describe the general process for calculating the benchmark and then discuss assumptions and possible limitations.

Our application of the eligibility criteria is conducted using four survey data sources: the ACS, the NHIS, the NLSY97, and the NSDUH. We start with the ACS, reducing the total population estimate of each group by those who are within the age range to enlist and meet the criteria for education and number of dependents. As the largest and most comprehensive of the surveys we use, the ACS is our primary source for any of the eligibility criteria applied that are present in that data. Functionally, this is accomplished by filtering the ACS individual respondent information in steps. First, we calculate the size of the full U.S. population for each gender and racial and ethnic group. Next, we reduce the ACS sample to those who are of age to enlist and calculate the size of the age-eligible population for each group. Then, we further reduce the ACS sample to include only those

who are age eligible and meet the education requirements for enlistment, again calculating the size of each group that remains. Finally, we reduce the ACS sample to just those respondents who meet the dependent requirements, in addition to being age and education eligible. With each step, the ACS survey weights are applied to gain an estimate of the number of people in the U.S. population who meet the specified criteria.

To calculate the estimate of the population eligible to enlist by gender and race and ethnicity, the only portion we actually need from the ACS is the final step of the population estimate: those meeting age, education, and dependency requirements. That is, we could just start by narrowing down the ACS sample to respondents who meet all three criteria and apply the ACS survey weights to calculate the population estimate for these criteria. The value of applying these criteria one at a time is to facilitate further investigation of how each individual criterion affects the distribution of those eligible, as displayed for enlisted eligibility in Figures 3, 4, and 5.

Next, we turn to the NHIS to apply the BMI and height and medical condition criteria. The NHIS also contains information on age and education along with gender and race and ethnicity. For each gender and racial and ethnic group, we first filter the NHIS data to those respondents who meet the criteria for age and education. Next, we calculate the proportion of respondents in each group meeting these first three criteria who also meet the BMI and height requirements. The ACS estimates for the number of individuals in each group meeting the criteria for age, education, and dependents is then reduced by this same proportion. For example, consider Black men. From the ACS, just under 3 million Black men meet the criteria for age, education, and dependents. From the NHIS, roughly 47 percent of Black men meeting age and education requirements also fit the BMI and height standards. Thus, the estimate of eligible Black men is reduced from just under 3 million meeting age, education, and dependents requirements, to just under 1.41 million meeting the criteria for age, education, dependents, and body composition ($3,000,000 \times 0.47 = 1,410,000$).

Further applying the second eligibility standard informed by the NHIS—medical conditions—works

in the same way. Starting with those NHIS respondents who meet the requirements for age, education, and body composition, we calculate the proportion in each gender and racial and ethnic group that also satisfy all the medical condition requirements. The estimate for the number of individuals in each group who meet age, education, dependents, and body composition conditions is then further reduced by this same proportion. Again, following the case of Black men, roughly 77 percent of those meeting age, education, dependents, and body composition criteria also meet the medical eligibility requirements. Thus, the estimate of just under 1.41 million is reduced to about 1.08 million ($1,410,000 \times 0.77 = 1,080,000$) meeting all five criteria.¹⁷ Similar to the criteria informed by the ACS, we could have applied the two eligibility criteria informed by the NHIS data jointly instead of body composition first and then medical conditions; by applying the criteria one by one, the sequential application allows the impact of each eligibility criterion to be examined.

We apply the eligibility criteria for aptitude and moral character, informed by the NLSY97, and the drug use criterion, informed by the NSDUH, in the same way that the data informing BMI and height and medical requirements from the NHIS are applied. Both the NLSY97 and the NSDUH contain information on respondents' gender and race and ethnicity, as well as age, education, dependents, and body composition. As each subsequent eligibility requirement is considered, we condition on any requirements previously considered that are present in the dataset informing that requirement.

Once all eligibility requirements have been applied, we are left with the estimated number of individuals in the U.S. population in each gender and racial and ethnic group who are eligible to enlist in the DAF. We divide the group estimate by the total number of individuals across all groups that are eligible to enlist to obtain the share of the eligible population represented by each group. For example, we estimate that just under 8.5 million individuals in the U.S. population are eligible to enlist. Of those, just over 300,000 are Black men. Thus, Black men make up about 3.6 percent of the population eligible to enlist ($300,000/8,500,000 = 0.036$).¹⁸ These estimated shares of the population eligible to enlist belonging to

each gender and racial and ethnic group are the eligibility benchmark for enlistment.

To create the eligible and propensed benchmark, we follow the same procedure that we used to create the eligible benchmark. Propensity to serve is treated as an additional eligibility requirement in the algorithm, informed by an additional survey, the MTF. Benchmarks for USAFA and ROTC or OTS accessions follow the same algorithm; the requirements specific to each of those accession sources apply.

One additional computational consideration is implemented for the calculation of the enlisted benchmarks. As previously noted, the age requirements for enlistment are 17–39, and the proportion of enlisted accessions between ages 27–39 in the past five years has remained at approximately 5 percent. As individuals progress through their late 20s and 30s, their tendency to meet eligibility requirements might diminish. For example, they are more likely to have more than two dependents and might be less likely to meet BMI criteria. Including differences in eligibility experienced by this older group equivalently to the segment of the population from which enlistment most commonly occurs could yield an unrealistic eligibility benchmark, in that it is not reflective of the population that accounts for most enlisted accessions. To adjust for this, we estimate enlisted eligibility separately for individuals aged 17–27 and those aged 28–39. We then produce a combined weighted estimate of the two in which the aged 17–27 estimate is weighted 95 percent and the aged 28–39 estimate is weighted 5 percent, commensurate with the recent actual accessions of this older group.

Limitations and Assumptions

Because no single data source exists for our calculations, we combine information from multiple sources to create the benchmarks. Although each eligibility criterion is informed by at least one data source, the information is not always a perfect match. Here, we discuss several important assumptions and limitations in the benchmarking algorithm.

Several of the eligibility criteria, such as age and level of education, appear in multiple datasets. As each eligibility requirement is sequentially applied, we consider the proportion of those who meet all

requirements previously applied who also meet the current requirement being considered. However, because not all variables appear in all of the datasets, we must make assumptions about the independence of these requirements. For example, in Figures 3 through 6, as well as Figures 9 through 12, the health requirements are applied prior to the AFQT requirements. However, the health variables in the NHIS do not also appear in the NLSY97. Thus, we assume that the health and AFQT requirements are independent. In other words, we assume that aptitude is distributed the same among those who do and do not meet the health requirements. To further explore this assumption, we conducted a sensitivity analysis in which we considered the eligibility estimate of each requirement conditional on all other previously applied requirements present and then separately conditional only on age and education. We found that after accounting for age and education, including the other requirements provided only very small additional value: Estimated eligibility was within 1 percentage point across both cases, and, in many cases, the difference was below one one-hundredth of a percent. Although this exploration cannot guarantee that no strong dependencies exist across variables appearing in only one dataset, it suggests that such a result would be unusual.

Limitations of the Individual Datasets

All the surveys used to inform eligibility and propensity to serve provide self-reported data. In certain cases, particularly those in which the questions are sensitive or have associated negative connotations, such as questions about prior drug use, measurement error bias might be present. The individual datasets also have limitations of note, as itemized below.

ACS: Although education is present in all four datasets used to estimate eligibility, it is best informed by the ACS, as it is the largest and most comprehensive of the surveys used. This creates a slight complication because the ACS does not capture the AFQT, and the aptitude requirement is tiered; AFQT scores differ depending on whether the individual is a high school graduate, is a GED holder, or does not have a high school credential. Enlisted accessions from this latter group are rare, and includ-

ing all individuals with less than a GED in the benchmark would not reflect the true portion of the population eligible to enlist. Therefore, we exclude those with less than a GED as ineligible when considering education. However, when considering the proportion of the population that meets aptitude standards using the NLSY97, we do include the proportion in the group with less than a GED who meet the AFQT standard for that group.

NHIS: We use data from the NHIS to account for the health requirements for all three accession sources. However, we do not include two health standards, eczema and attention deficit hyperactivity disorder (ADHD), when accounting for these standards because waivers to the restrictions are most common for these two elements and also because eczema is not measured by the NHIS. A sensitivity analysis (not shown) indicated that excluding those with ADHD from the sample would not have an appreciable impact on the benchmarks.

NLSY: The NLSY is a long-term longitudinal survey. Because the respondents of NLSY97 were aged 12–16 when they were first interviewed in 1997, the analysis is unable to capture the full range of eligible ages. This analysis uses different waves of the NLSY97 survey to capture the varying age ranges required for enlistment, admission to USAFA, and commission through ROTC or OTS. For enlistment, the analysis uses the 2005 and 2017 waves, which include only individuals aged 20–26 and 32–38, respectively. For officers, the analysis uses the 2005 wave and the 2003 wave for USAFA and ROTC or OTS, respectively.

For USAFA eligibility, as noted in the “Requirements to Become an Officer” section, we use an AFQT score of at least 80 as a proxy for having an SAT score of at least 1200 or an ACT score of at least 25. Considering the subset of NLSY97 data with an AFQT score and either an SAT or an ACT score present, an AFQT score of 85 would best map to these SAT and ACT marks. Because these values are the minimum scores to be competitive and not the absolute minimum scores for admission, we cast a wider net by lowering the threshold for the benchmark computation to an AFQT score of 80. In addition, there are no recent AFQT scores from the NLSY97; therefore, the analysis includes the assumption that

the distribution of these scores has not substantially changed since the first round of the NLSY97.

NSDUH: Age in the NSDUH is not reported as a continuous variable. Ages 17–21 are reported individually. However, ages 22 and above are categorized into groups: 22–23, 24–25, 26–29, 30–34, 35–49, 50–64, and 65 and above. Therefore, to weight the population to reflect that ages 28–39 represent only about 5 percent of the accession cohort, the analysis includes those aged 17–26 to represent the younger enlistment ages and those aged 26–40 to represent the older cohort.

MTF: MTF surveys were used for estimating the propensity to serve among high school seniors. As age progresses further from high school, there is greater extrapolation of these indications of propensity being reflective of older individuals. In addition, not all high school seniors will graduate; thus, the responses generalize to a broader population than is eligible. Finally, the MTF data also group Asian respondents into the category of Other race and ethnicity; we use the joint propensity value for both groups in our benchmark calculations.

APPENDIX B

Supplemental Tables

In this appendix, we provide tables from which any of the figures in this report could be generated. The tables also support analogous figures that could be generated from this information. Tables B.1 and B.2 provide the data used to generate the enlisted eligibility benchmark figures (Figures 1 and 2) and the plots examining the impact of eligibility requirements on the enlisted eligible population (Figures 3, 4, and 5). Similarly, Tables B.3 and B.4 provide the data used to generate the benchmark and impact of eligibility requirement plots for USAFA officer accession (Figures 6, 7, 9, and 10), and Tables B.5 and B.6 provide the analogous information for ROTC or OTS officer accessions (Figures 6, 8, 11, and 12). Please reference the table notes for the specific figures that each of these tables informs.

TABLE B.1

Gender and Race and Ethnicity Representation for Enlisted Accessions by Percentage

Race and Ethnicity	Gender	Total Population (%)	Age (%)	Education (%)	Marital Status and Dependents (%)	BMI and Height (%)	Health (%)	AFQT and Education (%)	Felony Conviction (%)	Eligible Benchmark	Eligible and Propensed Benchmark	Accessions (%)
										Drug Abuse (%)	Propensity (%)	
Asian	Men	2.69	2.99	3.10	3.31	3.28	3.63	4.12	4.04	4.46	8.73	5.21
Asian	Women	2.99	2.94	3.03	3.19	4.77	5.37	6.37	6.69	6.88	4.92	1.99
Black	Men	5.86	7.01	6.88	7.09	7.26	6.95	3.60	3.52	3.52	5.63	13.70
Black	Women	6.41	6.90	6.99	6.13	5.15	5.24	3.98	4.12	4.13	4.97	6.01
Hispanic	Men	9.65	11.94	11.17	11.47	9.49	10.20	7.19	7.21	6.83	10.24	15.49
Hispanic	Women	9.55	11.23	10.94	10.21	9.91	10.03	7.78	7.98	8.26	6.38	5.59
Other	Men	1.72	2.17	2.12	2.19	2.13	1.65	1.55	1.57	1.32	2.60	0.62
Other	Women	1.75	2.12	2.13	2.05	2.06	1.55	1.76	1.80	1.93	1.37	0.24
White	Men	29.30	27.07	27.33	28.41	25.75	25.53	27.96	26.55	25.60	39.96	40.58
White	Women	30.09	25.63	26.32	25.97	30.22	29.85	35.68	36.52	37.06	15.19	10.57

NOTE: Data in this table were used to construct Figures 1, 4, and 5.

TABLE B.2

Gender and Race and Ethnicity Representation for Enlisted Accessions by Count

Race and Ethnicity	Gender	Total Population	Age	Education	Marital Status and Dependents	BMI and Height	Health	AFQT and Education	Felony Conviction	Drug Abuse	Propensity	Accessions
Asian	Men	8,917,357	1,476,710	1,401,252	1,384,883	635,783	563,897	416,686	389,111	360,574	77,944	1,302
Asian	Women	9,911,946	1,449,068	1,371,249	1,334,675	925,067	834,754	644,186	644,186	556,480	43,927	498
Black	Men	19,407,363	3,459,696	3,113,020	2,968,792	1,407,105	1,079,965	363,981	338,496	284,721	50,238	3,422
Black	Women	21,246,814	3,403,520	3,163,569	2,567,536	998,300	814,177	402,851	396,806	333,546	44,335	1,502
Hispanic	Men	31,974,914	5,891,491	5,055,899	4,802,284	1,840,823	1,585,462	726,961	694,298	552,215	91,376	3,869
Hispanic	Women	31,644,948	5,538,175	4,949,682	4,276,345	1,921,425	1,558,634	786,336	767,812	668,129	56,957	1,396
Other	Men	5,700,807	1,070,605	958,765	917,776	412,667	255,677	157,156	151,222	107,128	23,211	156
Other	Women	5,790,778	1,044,492	963,856	858,504	399,040	241,369	177,911	172,967	156,008	12,242	59
White	Men	97,109,704	13,350,994	12,369,833	11,897,547	4,992,764	3,966,641	2,826,988	2,554,900	2,070,124	356,665	10,135
White	Women	99,728,586	12,641,101	11,913,020	10,875,561	5,859,532	4,637,703	3,606,707	3,514,637	2,997,003	135,604	2,639

NOTE: Data in this table were used to construct Figures 2 and 3.

TABLE B.3

Gender and Race and Ethnicity Representation for USAFA Accessions by Percentage

Race and Ethnicity	Gender	Total Population (%)	Age (%)	Education (%)	Marital Status and Dependents (%)	BMI and Height (%)	Health (%)	AFQT and Education (%)	Felony Conviction (%)	Eligible Benchmark	Eligible and Propensed Benchmark	Accessions (%)
										Drug Abuse (%)	Propensity (%)	
Asian	Men	2.69	2.79	3.05	3.26	3.33	3.33	4.90	4.80	5.35	10.58	8.03
Asian	Women	2.99	2.73	2.96	3.06	4.16	4.16	4.74	4.87	4.83	3.43	4.32
Black	Men	5.86	7.07	6.78	7.11	8.45	8.45	1.31	1.34	1.40	2.23	5.52
Black	Women	6.41	6.76	6.86	6.51	5.14	5.14	1.87	1.88	1.92	2.34	2.04
Hispanic	Men	9.65	12.30	11.37	11.65	10.82	10.82	5.14	5.28	5.19	7.83	1.68
Hispanic	Women	9.55	11.60	11.47	10.67	9.77	9.77	6.36	6.53	6.70	5.20	0.96
Other	Men	1.72	2.34	2.17	2.25	1.91	1.91	1.72	1.77	1.47	2.90	5.16
Other	Women	1.75	2.25	2.21	2.15	2.26	2.26	1.86	1.91	1.96	1.39	1.56
White	Men	29.30	26.81	26.84	27.81	25.48	25.48	31.61	30.96	29.94	47.17	49.76
White	Women	30.09	25.35	26.29	25.51	28.69	28.69	40.50	40.65	41.24	16.94	20.98

NOTE: Data in this table were used to construct Figures 6, 7, 9, and 10.

TABLE B.4

Gender and Race and Ethnicity Representation for USAFA Accessions by Count

Race and Ethnicity	Gender	Total Population	Age	Education	Marital Status and Dependents	BMI and Height	Health	AFQT and Education	Felony Conviction	Drug Abuse	Propensity	Accessions
Asian	Men	8,917,357	853,837	713,251	690,384	366,010	366,010	114,206	108,894	100,376	21,764	67
Asian	Women	9,911,946	833,479	692,673	648,781	456,512	456,512	110,349	110,349	90,530	7,061	36
Black	Men	19,407,363	2,162,958	1,585,932	1,506,691	928,083	928,083	30,410	30,410	26,191	4,588	46
Black	Women	21,246,814	2,067,790	1,606,422	1,379,805	564,001	564,001	43,525	42,661	36,087	4,808	17
Hispanic	Men	31,974,914	3,760,023	2,661,904	2,468,061	1,188,171	1,188,171	119,683	119,683	97,360	16,092	14
Hispanic	Women	31,644,948	3,546,182	2,685,667	2,259,450	1,072,821	1,072,821	148,065	148,065	125,627	10,685	8
Other	Men	5,700,807	716,359	507,521	477,516	209,662	209,662	40,154	40,154	27,501	5,963	43
Other	Women	5,790,778	687,724	517,294	456,227	248,592	248,592	43,344	43,344	36,678	2,861	13
White	Men	97,109,704	8,199,188	6,282,860	5,889,427	2,798,087	2,798,087	736,445	701,951	561,306	97,001	415
White	Women	99,728,586	7,752,114	6,154,553	5,404,185	3,151,244	3,151,244	943,428	921,463	773,126	34,828	175

TABLE B.5

Gender and Race and Ethnicity Representation for ROTC or OTS Accessions by Percentage

Race and Ethnicity	Gender	Total Population (%)	Age (%)	Education (%)	Citizen (%)	BMI and Height (%)	Health (%)	Felony Conviction (%)	Eligible Benchmark	Eligible and Propensed Benchmark	Accessions (%)
									Drug Abuse (%)	Propensity (%)	
Asian	Men	2.69	3.17	5.82	3.60	3.55	3.55	3.56	3.85	8.32	6.82
Asian	Women	2.99	3.24	6.50	4.07	6.58	6.58	7.12	7.61	7.16	1.95
Black	Men	5.86	6.83	3.54	3.56	2.53	2.53	2.26	2.26	5.08	4.66
Black	Women	6.41	6.91	5.15	5.37	4.19	4.19	4.38	4.17	5.97	2.71
Hispanic	Men	9.65	11.49	5.24	4.99	3.10	3.10	2.88	2.79	4.30	8.98
Hispanic	Women	9.55	10.78	7.14	6.87	7.04	7.04	7.32	7.23	6.55	2.75
Other	Men	1.72	2.01	1.53	1.53	1.79	1.79	1.90	1.65	3.58	2.62
Other	Women	1.75	1.99	1.96	2.00	2.97	2.97	2.98	3.19	3.01	0.93
White	Men	29.30	27.36	28.33	30.42	24.56	24.56	22.62	21.76	31.92	53.09
White	Women	30.09	26.21	34.79	37.60	43.69	43.69	44.97	45.49	24.11	15.50

NOTE: Data in this table were used to construct Figures 6, 8, 11, and 12.

TABLE B.6

Gender and Race and Ethnicity Representation for ROTC or OTS Accessions by Count

Race and Ethnicity	Gender	Total Population	Age	Education	Citizen	BMI and Height	Health	Felony Conviction	Drug Abuse	Propensity	Accessions
Asian	Men	8,917,357	2,433,126	1,201,202	668,527	303,917	303,917	281,751	268,920	50,530	161
Asian	Women	9,911,946	2,485,306	1,341,244	756,433	563,841	563,841	563,841	531,527	43,472	46
Black	Men	19,407,363	5,237,618	730,427	662,563	216,928	216,928	179,035	158,258	30,852	110
Black	Women	21,246,814	5,292,034	1,062,799	997,876	359,174	359,174	346,856	291,216	36,230	64
Hispanic	Men	31,974,914	8,807,770	1,081,552	927,417	265,395	265,395	227,778	194,961	26,107	212
Hispanic	Women	31,644,948	8,261,331	1,473,011	1,276,745	602,720	602,720	579,046	505,219	39,774	65
Other	Men	5,700,807	1,538,007	315,848	283,850	152,991	152,991	150,451	115,642	21,729	62
Other	Women	5,790,778	1,526,669	405,380	371,370	254,757	254,757	236,252	223,115	18,248	22
White	Men	97,109,704	20,969,358	5,845,885	5,656,292	2,103,667	2,103,667	1,790,649	1,520,878	193,750	1,254
White	Women	99,728,586	20,087,921	7,180,079	6,990,442	3,741,975	3,741,975	3,559,664	3,179,274	146,354	366

Notes

- ¹ In this report, we use a binary gender construct (men and women) because this aligns with DAF personnel data collection.
- ² The percentages of accessions of women and those of racial and ethnic minorities rose steadily between 2010 and 2020 for both officers and enlisted personnel with small year-to-year variation. Officer representation percentages include accessions from United States Air Force Academy (USAFA), Reserve Officers' Training Corps (ROTC), and Officer Training School (OTS).
- ³ See Christopher E. Maerzluft, Louis T. Mariano, and Tiffany Berglund, *An Accession Benchmarking Tool for the U.S. Department of the Air Force*, RAND Corporation, TL-A988-2, forthcoming.
- ⁴ The age of the respondent was determined in December 1996.
- ⁵ For enlistment in the military, the 2005 wave was used because those aged 12–16 in 1996 were between the ages of 20 and 24, which overlaps the most with the age of enlistment in the FY 2020 accession cohort. The 2017 wave was used to capture the expansion of the maximum age of enlistment. Those aged 12–16 in 1996 were between the ages of 32 and 36. Similarly, the 2005 and 2003 waves were chosen for entry into the USAFA and ROTC or OTS, respectively, because the ages overlap the most with USAFA and ROTC or OTS age requirements.
- ⁶ We use measures created by NSDUH for substance abuse and dependence. The criteria for classification of abuse and dependence vary by substance (Center for Behavioral Health Statistics and Quality, 2020b, Appendix D).
- ⁷ AFMAN 36-2032, issued in 2019, and AFMAN 36-2905, issued in 2020, apply to both the U.S. Air Force and the U.S. Space Force. Thus, the accession requirements we discuss for enlistment and for officers in this report are departmentwide. As noted in AFMAN 36-2905, it is possible that separate Space Force policy guidance could emerge in the future.
- ⁸ A score of 10 means that an individual scored better than 10 percent of all test takers.
- ⁹ As further discussed in Appendix A, an AFQT score of 85 would best map to the minimum competitive score for USAFA admission. Because these values are the minimum scores to be competitive, and not the absolute minimum scores for admission, we cast a wider net by lowering the threshold for the benchmark computation to an AFQT of 80. Even so, this lower threshold may not capture all USAFA admission; for example, some cadets entering via the U.S. Air Force Preparatory School.
- ¹⁰ MTF does not differentiate among propensity for branch of service. However, it does ask individuals who are entering the military which branch of service they will enter.
- ¹¹ For ease of expression throughout this document we drop the “non-Hispanic” descriptor for the categories other than Hispanic. For example, “White” will always mean “non-Hispanic White.” The “Asian” category includes Asian and Pacific Islander.
- ¹² As discussed, the extent to which each eligibility requirement reduces the size of the eligible population is order dependent. While the extent of the reduction attributed to a given requirement would change if the order of application were to be altered,

those requirements we discuss in the text as barriers demonstrate important reductions regardless of where in the order of application they are placed.

- ¹³ Note that the starting point for Figures 4 and 5 differs from the starting point for Figure 3. Figures 4 and 5 start with the full U.S. population and the first set of bars shows the change in representation once the age eligibility criterion is applied. In contrast, Figure 3 starts by displaying the remaining population size after the age criteria has already been applied.
- ¹⁴ Propensity to serve is not shown on this graph because the values do not display given its size.
- ¹⁵ This analysis compares eligible applicants to USAFA and actual accessions. Demographic distributions for those eligible to enter USAFA can be different from the demographic distributions for those who are eligible to graduate.
- ¹⁶ In FY 2020, two-thirds of the ROTC or OTS accession displayed in Figure 8 come from ROTC; the remaining one-third access through OTS.
- ¹⁷ Note that all numbers are approximate, with some small rounding error, to keep the example straightforward.
- ¹⁸ Note that all numbers are approximate, with some small rounding error, to keep the example straightforward.

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About This Report

The Department of the Air Force (DAF) has prioritized growing and maintaining a diverse workforce across all pay grades. Understanding the population that meets the eligibility requirements to join is crucial to determining the potential demographic makeup of DAF accessions and, ultimately, all DAF personnel.

To assist in this endeavor, the RAND Corporation refined and implemented an algorithm to construct benchmarks for gender and racial and ethnic diversity at the time of accession and compared those benchmarks with actual fiscal year (FY) 2020 DAF accessions. The primary objective of this report was to analyze FY 2020 accessions versus the benchmarks.

The research reported here was commissioned by DAF-A1 and conducted within the Workforce, Development, and Health Program of RAND Project AIR FORCE as part of a FY 2021 project, titled “Data-Enabled Talent Management Through Targeted Benchmarks, Best Practices, and Partnerships.” The project endeavored to (1) provide targeted benchmarks to evaluate the demographic composition of the active duty workforce and (2) identify practices and opportunities that the DAF can use to support diversity in critical career fields. The project produced four additional reports in meeting these goals: Christopher E. Maerzluft, Louis T. Mariano, and Tiffany Berglund, *An Accession Benchmarking Tool for the U.S. Department of the Air Force*, RAND Corporation, TL-A988-2 forthcoming; Avery Calkins, Tiffany Berglund, David Schuller, and Louis T. Mariano, *Benchmarking Demographic Diversity in Air Force Functional Areas Against Near-Equivalent Civilians: The Air Force Occupational Diversity Benchmarking Workbooks*, RAND Corporation, RR-A988-3, 2023; Devon Hill, Kirsten M. Keller, Monica Rico, Melissa Shostak, and Miriam Matthews, *Talent Management and Diversity, Equity, and Inclusion in Private-Sector Organizations: A Qualitative Review of Promising Practices*, RAND Corporation, RR-A988-4, 2023; and Maria C. Lytell, Elicia M. John, Melissa Shostak, and Miriam Matthews, *Talent Management and Diversity, Equity, and Inclusion in the Department of the Air Force: Qualitative Review of Programs, Practices, and Partnerships*, RAND Corporation, RR-A988-5, 2023.

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