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What Factors Affect the Military Enlistment of Hispanic Youth?

A Look at Enlistment Qualifications

Beth J. Asch, Christopher Buck, Jacob Alex Klerman,
Meredith Kleykamp, David S. Loughran

Prepared for the Office of the Secretary of Defense

Approved for public release; distribution unlimited



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Preface

An ongoing concern of Congress, the U.S. Department of Defense (DoD), and the armed services is the social representation of the military. As there is virtually no lateral entry, a key concern in particular is the social representation of active duty accessions. Hispanics are a growing segment of the youth population yet have been underrepresented historically among military accessions. The widely cited reason is their below-average rate of graduation from high school and the services' preference for diploma graduate recruits. But other less-studied factors may contribute. These other possible factors may include lack of language proficiency as reflected in their applicant aptitude test scores, fertility choices, health factors such as obesity, and involvement in risky activities such as the use of illegal drugs. These factors could adversely affect the ability of some Hispanic youth to meet service enlistment standards.

Our project "Hispanic Youth in the United States and the Factors Affecting Their Enlistment" is conducting an analysis of the factors that lead to the underrepresentation of Hispanic youth in the military. This documented briefing provides a summary of interim results from the first year of the research effort. First, it highlights the various enlistment standards recruits must meet in each branch of service. Then using available data on American young adults, it summarizes the degree to which Hispanic youth qualify for service relative to youth who are members of other racial and ethnic groups. A more detailed summary of the first-year analysis, together with the summary of the results of the second year, will be published in a final report for the project. This documented briefing is intended for individuals interested in military recruiting and in the population representation of personnel in the armed forces.

This research was sponsored by the Defense Human Resource Activity and the Office of Accession Policy, Office of the Under Secretary of Defense for Personnel and Readiness, and conducted within the Forces and Policy Resources Center of the RAND National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Department of the Navy, the Marine Corps, the defense agencies, and the defense Intelligence Community.

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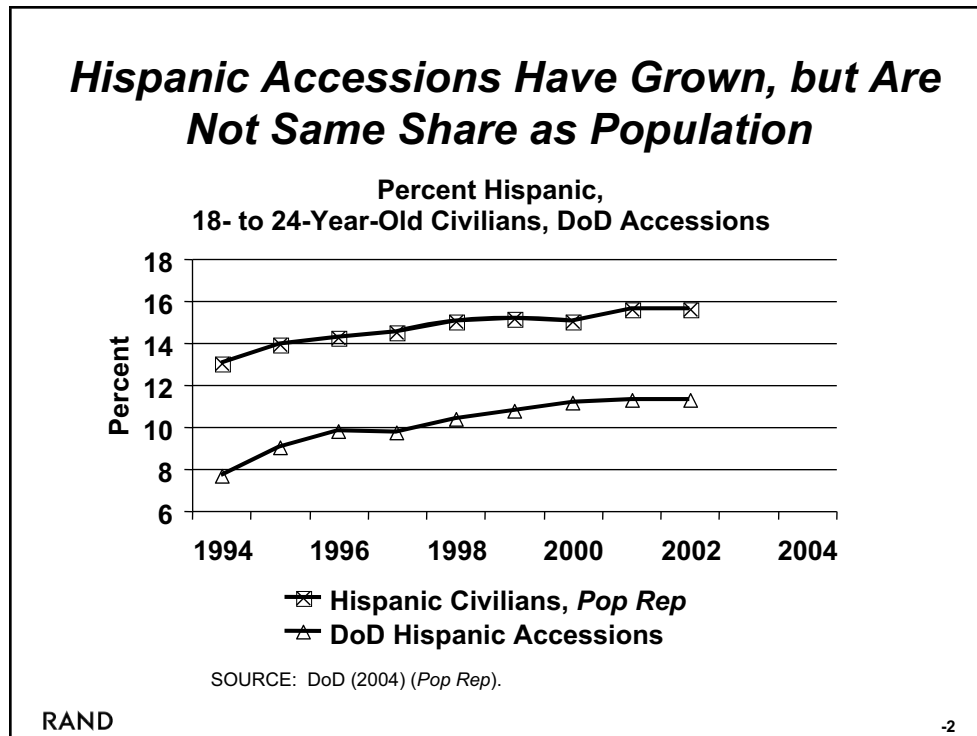
NATIONAL DEFENSE RESEARCH INSTITUTE

***What Factors Affect the Military
Enlistment of Hispanic Youth?***

A Look at Enlistment Qualifications

DB-484-OSD

**Beth J. Asch, Christopher Buck,
Jacob Alex Klerman, Meredith Kleykamp,
David S. Loughran**

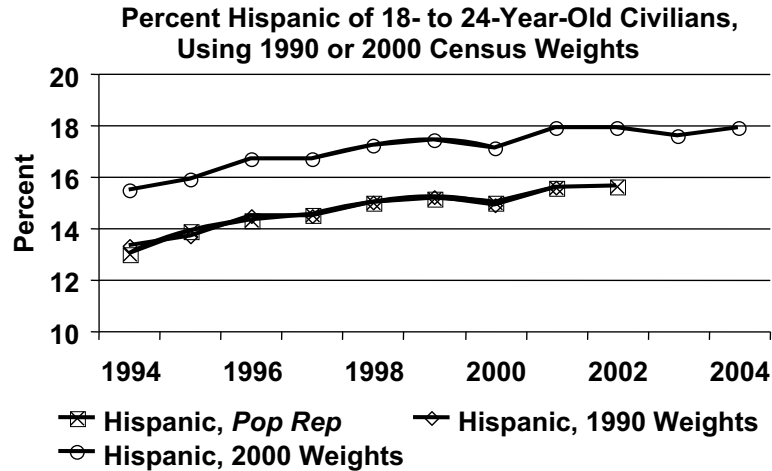


Although the representation of Hispanics among military recruits has increased in the past decade, this group is still underrepresented among military enlistments. This chart shows the fraction of Department of Defense (DoD) accessions that is Hispanic and the fraction of 18- to 24-year-old civilians in the U.S. population who are Hispanic since 1994. The Department of Defense tracks information about the demographic composition of its personnel and of the 18- to 24-year-old civilian population in an annual report, *Population Representation in the Military Services* (*Pop Rep*). *Pop Rep*'s estimates show an increase in the fraction of the youth population that is Hispanic (the upper line in the figure). According to *Pop Rep*, the fraction of the youth population that is Hispanic increased by about 20 percent from 1994 to 2002 (from 13.0 percent to 15.6 percent).

The fraction of DoD enlisted accessions who are Hispanic has also increased, according to the *Pop Rep* report, from 7.6 percent in 1993 to 11.3 percent in 2002. Thus military accessions seem to be catching up but are still underrepresented in terms of Hispanic recruits.

Underrepresentation is a concern to the Congress, DoD, and the services. As stated in *Pop Rep*, "There is a continuing need to track demographic changes and to monitor the balance between benefits and burdens across the varied segments of society" (DoD, 2004, pg. ix).

An Aside: Use of 1990 Census Weights in Pop Rep Undercounts Hispanic Population

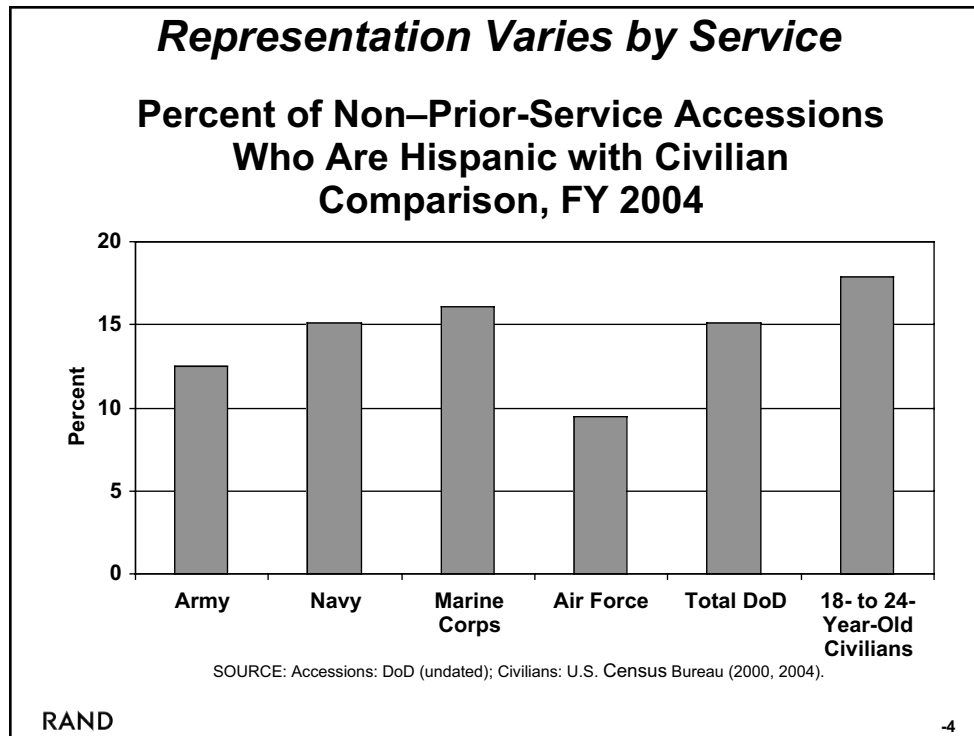


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As an important aside, it seems clear that *Pop Rep*'s estimates of the fraction of the youth population that is Hispanic are too low. As we discuss in Appendix A, the results of the 2000 U.S. Census suggest that the 1990 Census significantly under-counted Hispanics. However, through its 2002 edition, *Pop Rep* has used official Census Bureau estimates or weights that are based, in part, on the 1990 Census results. Once *Pop Rep* switches to new Census Bureau weights based on the 2000 Census, its estimates of the share of the population that is Hispanic will jump sharply.

The 2000 Census-based weights are preferred. The upper line in the above chart uses 2000 Census-based weights to estimate the share of Hispanics in the youth population from 1994 to 2004. These estimates imply that the true fraction of the youth population that is Hispanic is about two percentage points higher than the official estimates in *Pop Rep* (e.g., 17.1 percent versus 14.9 percent in 2000).



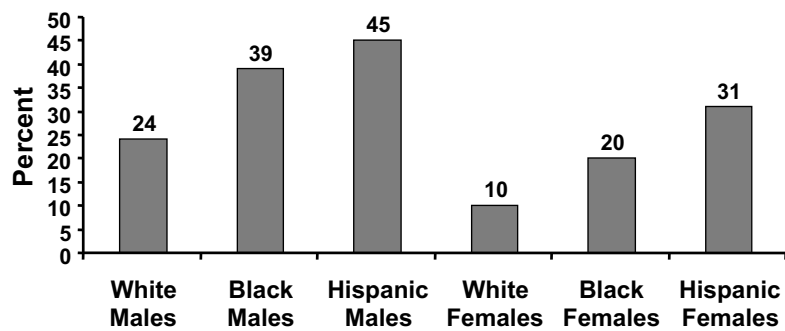
The degree of underrepresentation varies by service. According to *Pop Rep*, the Air Force has been the least representative of Hispanics, with only 7.3 percent of accessions being Hispanic compared with 15.7 percent of 18- to 24-year-olds in 2002. The Marine Corps is the closest to being representative of Hispanic youth.

The chart shows more recent representation figures for FY 2004, available from the Defense Manpower Data Center's (DMDC's) Recruit Market Information System (DoD, undated), and shows more progress by service.¹ For example, the system reports the percentage of total accessions that are Hispanic and Latino for the Army, Navy, Air Force, and Marine Corps as 12.5 percent, 15.1 percent, 9.5 percent, and 16.1 percent, respectively, resulting in a DoD figure of 15.1 percent. In comparison, Hispanics represent 17.9 percent of the 18-to-24 population of civilians in 2004. These figures are not directly comparable to pre-2003 percentages because of governmentwide changes in how race and ethnicity are defined in federal data collection efforts. Still, they clearly show progress when compared to the earlier years.

¹ One wrinkle in comparing social representation over time is that the definition of racial and ethnic representation is not comparable to the earlier years because of a governmentwide change in the standard definitions of race and ethnicity in federal data collections as of January 1, 2003. Among other things, agencies, including the Department of Defense, must offer individuals the opportunity to select one or more races when reporting race and the categories for ethnicity must include "Hispanic or Latino" and "Not Hispanic or Latino."

Underrepresentation Occurs Despite Higher Reported Enlistment Propensity

Youth Composite Active Duty Propensity: Percent Likely or Very Likely to Join a Military Service, Youth Poll Spring 2004, Ages 16–21



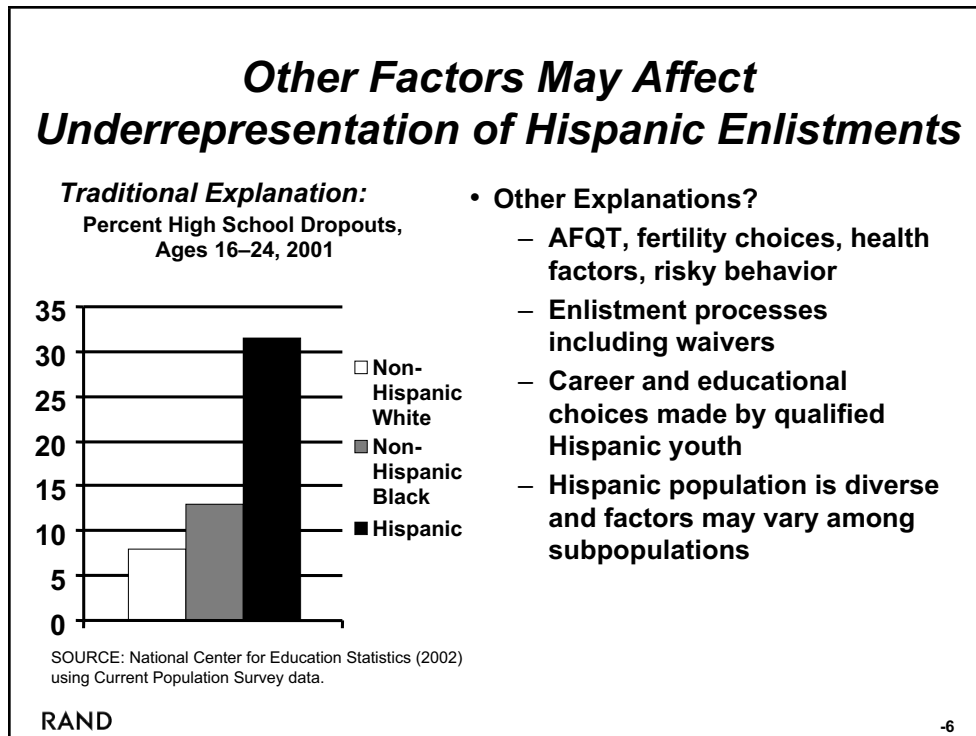
SOURCE: Defense Human Resources Activity (2004, Table 2.2).

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The observed demographic composition of new accessions may simply reflect low propensity among Hispanics. The reality is just the opposite. Surveys of youth attitudes toward the military consistently find Hispanics have a higher propensity to enlist than whites.

The responses from a spring 2004 poll of American youth conducted by the Department of Defense are illustrative. This chart summarizes the responses of youth, ages 16 to 21, to the question, “How likely is it that you will be serving on active duty in (random service named) in the next few years?” The chart shows the fraction who responded that they were definitely or probably likely to serve. Among males, Hispanics had the highest percent responding probably likely or very likely to join relative to white or black males. Among females, 31 percent of Hispanic youth stated they were very likely or probably likely to serve in the military, significantly more than white females.



The traditional explanation is Hispanics' higher than average high school dropout rate. The services strongly prefer the enlistment of recruits with a high school diploma, aiming to achieve at least a 90-percent annual target. Among individuals in 2001, ages 16 to 24 who are not enrolled, 31.6 percent of Hispanics were high school dropouts. As will be shown later, high school graduation is an important explanatory variable.

Still, other factors may also be important in explaining both low enlistments and low high school graduation rates among Hispanic youth. The services have numerous eligibility criteria in addition to high school diploma status, including language proficiency and aptitude as measured by the Armed Forces Qualification Test (AFQT), and these criteria may disproportionately disqualify Hispanic youth. Furthermore, how the services implement the standards, with the ability of the services to waive standards in some circumstances, may affect the representation of Hispanics in accessions. In addition, qualified Hispanic youth may not be likely to join the military. Therefore it would be useful to investigate what educational and work choices qualified Hispanic youth make as they transition from high school to stable employment. Finally, given the diversity of the Hispanic population in terms of country of origin and geographic region with the United States, factors affecting eligibility to enlist may vary by subpopulation.

Research Questions

- **What are the most significant obstacles to the enlistment of Hispanic youth, and how have these varied over time?**
- **Are there differences in enlistment rates by Hispanic subgroup?**
- **What career and educational choices do Hispanic youth make that affect their enlistment decisions?**
- **How do the military's recruiting and waiver processes affect Hispanic enlistment representation and the subsequent success of Hispanic recruits?**

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This research project addresses a series of questions about the Hispanic youth population and their enlistment behavior. First we analyze which enlistment factors are the most difficult for Hispanics to meet, whether the factors have changed over time, and how they vary among Hispanic subpopulations to the extent we can identify them. We also consider the question of the educational and career choices made by Hispanic youth and seek to understand how waivers and other service recruiting practices determine the representation of Hispanic youth among enlistments. The project also considers the question of how such practices affect subsequent success in service for Hispanic recruits, measured in terms of metrics such as first-term attrition rates.

Year One, Task One: Cataloging Current Enlistment Standards

Research Tasks

- | | |
|---------------|---|
| Year 1 | <ul style="list-style-type: none"> • Task 1: Catalog current enlistment standards • Task 2: Assess the importance of enlistment standard characteristics among Hispanics • Task 3: Examine how the fraction passing enlistment standards has changed over time |
| Year 2 | <ul style="list-style-type: none"> • Task 4: Estimate the representation of Hispanics in military accession by Hispanic subgroup • Task 5: Analyze the career and schooling paths of Hispanics • Task 6: Analyze MEPCOM attrition among Hispanic applicants • Task 7: Analyze the waiver process and the effects of enlistment standards on the success of Hispanic recruits during their first enlistment term |

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The project is a two-year project with seven tasks. This documented briefing summarizes the results of the first year, which covers the first three tasks. These first three tasks focus on identifying the characteristics that define whether individuals are qualified to enlist and on analyzing the degree to which the Hispanic youth population exhibit those characteristics. Thus, the first-year tasks characterize the pool of qualified Hispanic youth and examine what fraction of the Hispanic youth population would meet the various enlistment standards.

The remaining four tasks, being conducted in the second year, focus on providing more refined estimates of the representation of Hispanics among recent and current enlistees, examining the career and school choices of Hispanic young adults, analyzing Military Entrance Process Command (MEPCOM) attrition among Hispanic military applicants, and analyzing the services' waiver processes and their effects on the personnel outcomes of Hispanic recruits relative to the recruits.

For the remainder of the briefing, we will first briefly review the services' enlistment standards. Next, we will discuss our analysis of the enlistment standard characteristics among Hispanic youth and discuss how they have changed over time.

Enlistment Standards Fall into 12 Broad Categories

1. Citizenship	7. Moral standards
2. English language proficiency	8. Financial restrictions
3. Weight/height	9. Homosexual conduct
4. Education	10. Age
5. Aptitude	11. Strength
6. Medical	12. Dependents

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To analyze what fraction of Hispanic youth would meet the various enlistment standards, we first needed to catalogue the enlistment standards. Enlistment standards are highly detailed and are defined by the Department of Defense and by each of the service branches in a series of documents and manuals listed in Appendix B. We organize and summarize the information in these manuals in an unpublished draft document for our project “A Summary of Military Enlistment Standards” by Christopher Buck. The standards can be roughly categorized into 12 broad areas shown in this table. In the next several tables, we briefly describe the standards in categories that are relevant to the study’s main findings.

***Army Is the Most Lenient with Regard
to AFQT, Age, and Financial Debt***

	Army	Air Force	Navy	Marine Corps
Min. AFQT Tier 1 (HSD)	16	40	31	21
Min. AFQT Tier 2 (GED, home school)	31	50	50	31
Min. AFQT Tier 3 (all others)	31	65	50	50
Maximum age	34	27	28	34
Max. dependents, if married	3	3	1	1
Financial debt	No specific policy	Not to exceed 40% of salary	Not to exceed 50% of salary	Must meet current financial obligations

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This table compares the services' eligibility requirements for education and the AFQT score, as well as the maximum age, number of dependents, and financial debt the military applicant can carry. Education and AFQT score are defined as tiers. Those with at least a high school diploma (HSD) must score at least 40 on the AFQT if they are to join the Air Force. The AFQT score is a linear combination of math and verbal test scores that are standardized to the national 18- to 23-year-old population. Those joining the Army can have an AFQT score as low as 16. Applicants with no high school degree, tier 3 applicants, must have a score of 50 for the Marine Corps and Navy and a score of 31 for the Army. Enlistees must be between 17 (with parental consent) and 35 years old to join the military according to Title 10 of the U.S. Code. Beyond this requirement, the services may set their own maximum. The Army and Marine Corps allow applicants as old as 34, while the Air Force and Navy set their maximum at a lower age. The Marine Corps and Navy permit applicants to have a spouse but no other dependents, while both the Army and Air Force allow applicants to have a spouse and up to two children. Single parents are disqualified. Finally, the services differ with regard to financial debt. The Air Force requires that applicants' debt not exceed 40 percent of their military pay. The figure for the Navy is 50 percent. Although the Army checks applicants' financial health, it does not have a specific policy about how much debt load is too much.

Marine Corps Has the Most Lenient Maximum Weight Standard

	Maximum Weight for Males (lbs)				
Height (inches)	Army ^a	Air Force	Navy	Marine Corps Delayed Entry Program ^a	Marine Corps Ship ^b
65	163–168	169	165	185–190	174
70	189–195	194	191	215–220	202
72	200–206	205	201	227–232	213
75	217–224	224	216	246–253	231

NOTE: ^a Standards depend on age.

^b For Marine Corps, if enlistee weighs less than indicated weight and passes strength test, then no waiver is required.

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The Army defines its weight standards in terms of height and age, while both the Air Force and Navy base their standards on height alone. The Marine Corps also has weight standards that vary by height and age for those entering the delayed-entry pool and signing a contract to enter the Marine Corps at a later date. However, at entry, the Marine Corps sets a more stringent weight standard for those who ship to recruit training. This ship weight standard varies only by height, not by age. The Marine Corps also requires that those who ship to recruit pass a strength requirement within 30 days prior to entry. Individuals who exceed the Marine Corps ship weight and are below the weight required to sign a contract and enter the Delayed Entry Program may be eligible for a waiver. A waiver requires that they pass a strength test and possibly a body fat analysis. In the case of the Navy, those who exceed the weight standard for their height may still be able to ship to recruit training if their body fat is less than 22 percent.

Citizenship Is Not Required

- **Must be a citizen, permanent resident, conditional permanent resident (except AF), or noncitizen national**
- **Noncitizens have restricted job opportunities; ineligible to be commissioned or warrant officers**
- **Army and Air Force disallow noncitizens to reenlist**
- **Marine Corps: Noncitizens from hostile countries cannot have more than two visits home in five years (except vacations and sporting events)**

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To be eligible to enlist, an individual must be a U.S. citizen, or an alien lawfully admitted to the United States for permanent residence, or a citizen of the Federal States of Micronesia or the Republic of the Marshall Islands, or a noncitizen national. Included among permanent residents are individuals admitted as conditional permanent residents, i.e., individuals whose residence status is subject to expiration after two years. Noncitizen nationals are individuals born in American Samoa.

Though eligible for enlistment, non-U.S. citizens are restricted in how they can serve. First, they are not eligible for appointment as commissioned or warrant officers or for jobs that require a security clearance. Second, the Air Force does not allow noncitizens to reenlist unless they have become citizens during their first term of service. Similarly, the Army bars noncitizens with more than eight years of service from reenlisting. The Marine Corps and Navy do not have such restrictions and allow all noncitizens to reenlist regardless of whether or not they have become citizens while serving.

The Marine Corps also specifies that noncitizens who have residency in countries considered hostile toward U.S. interests cannot have taken more than two trips in five years after the 15th birthday preceding enlistment, except for school trips, family vacations, or other similar trips.

Language Proficiency Is Required

- **ASVAB is administered in English**
- **Language proficiency requirements vary across services**

Army	Air Force	Navy	Marine Corps
Applicant must be able to understand oath and entrance processing; some remediation available	Applicants lacking language proficiency can retake ASVAB	Applicant must be proficient in English prior to entry; some remediation available	Applicant must be proficient in English to complete recruit training

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Because the Armed Services Vocational Aptitude Battery (ASVAB), the exam from which the AFQT is derived, is administered in English, it operates as a screen for English language proficiency. If a recruit lacks the language skills necessary to qualify based on AFQT scores, he or she is disqualified. The only recruits who are accepted for enlistment with disqualifying AFQT scores are those enlisted in the Army's Individual Ready Reserve (IRR) Direct Arabic Linguist Program, beginning in August 2003. This is one of three programs run by the Army to provide English language training to recruits who need remediation. The Navy also provides such training.

The Army attempts to identify all recruits who meet AFQT standards but who have difficulties speaking or understanding English. These recruits are given the English Language Comprehension Level Test (ELCLT) at the Military Entrance Processing Station (MEPS), and those who score poorly are required to attend an English language training program. The Air Force also uses the ELCLT but only at the MEPS in Puerto Rico. The Navy considers the applicants' verbal ASVAB scores. Those who score poorly are required to take an additional test, the Test of Adult Basic Education (TABE). Those recruits who score poorly are provided either literacy or English language training, depending on their needs.

The Army runs three English language programs for enlisted recruits. The first is a traditional English-as-a-second-language program. Recruits are not assigned Army occupations, and are permitted to retake the ASVAB following completion of the program and be assigned their occupations once their new ASVAB scores are known. The second program was started in 2001 and is a pilot program that uses a Spanish language screening test to identify high-aptitude Spanish speakers who score poorly on the AFQT. Participants are permitted to retake the ASVAB following completion of the program. The third program is the IRR Direct Arabic Linguist Program.

Moral Character Standards

- Each applicant requires an ENTNAC
- Categories of legal infractions
 1. Minor traffic
 2. Minor nontraffic
 3. Misdemeanors
 4. Felonies
- The number of infractions permitted before waiver varies by service
- Nonwaivable standards include the following:
 - Convictions for drug trafficking, sales, or distribution
 - Pending judicial proceedings or charges
 - Civil restraints including confinement, parole, probation
 - Felonies while in DEP

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The services also require that recruits meet moral character standards where the standards refer to past legal infractions and substance abuse. Each service defines different categories of infractions and sets limits on the number of offenses for each category before an applicant requires a waiver or be disqualified for service. The categories are quite broad and cover minor traffic offenses, nontraffic offenses, and so forth. However, the particular offenses within each category are quite detailed and differ across service branches. For example, the Army will permit the enlistment of an applicant convicted of a misdemeanor, while the other service branches may require a waiver or consider such an applicant disqualified. To ensure that all violations are included when assessing moral eligibility, an Entrance National Agency Check (ENTNAC) is conducted for all applicants.

Some offenses are considered nonwaivable. These include drug trafficking, sales, and distribution, and for the Marine Corps, felonies while in the Delayed Entry Program (DEP). Individuals on parole, probation, or civil confinement are also not eligible for enlistment, nor are those with pending judicial proceedings or awaiting criminal charges.

Substance Use Standards Vary by Service

Offense	Preservice use of marijuana	Preservice use of drugs other than marijuana	Drug or alcohol dependency	Drug trafficking
Army	Must disclose use; no waiver required	Must disclose use; no waiver required	Not waivable	Not waivable
Air Force	5 or more uses requires waiver	Use of amphetamines, barbiturates, and anabolic or androgenic steroids are waivable	Waivable if abstained from alcohol for 2 years prior to enlistment, or in rehab for marijuana	Not waivable
Navy	No waiver required for experimental use	Use of stimulant, depressant, narcotic, and psychedelic drugs is waivable if not used in previous year; 2 years for LSD	Prior psychological or physical dependence upon any drug or alcohol is waivable	Not waivable
Marine Corps	1 or more use requires a waiver	1 or more use requires a waiver	Not waivable	Not waivable

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In general, all services disqualify applicants who are currently dependent on drugs or alcohol. Drug and alcohol testing are part of the physical examination applicants undergo at the MEPS. The services differ somewhat on what past drug- and alcohol-related activities require a waiver. The Marine Corps and Army do not generally grant waivers to applicants who have a history of drug or alcohol dependency or addiction. The Navy and Air Force may grant waivers in some circumstances. For marijuana use, the Army states that applicants with a history of chronic use are disqualified, the Air Force requires a waiver for applicants who have used marijuana more than five times before enlistment, and the Navy does not require a waiver for casual use of marijuana. The Marine Corps has the strictest policy and requires a waiver for all applicants who have ever used marijuana. The second phase of our research is investigating the propensity of the services to grant enlistment waivers.

Year One, Task Two: Assessing the Importance of Enlistment Standard Characteristics Among Hispanics

Research Tasks

- Year 1**
- Task 1: Catalog current enlistment standards
 - Task 2: Assess the importance of enlistment standard characteristics among Hispanics
 - Task 3: Examine how the fraction passing enlistment standards has changed over time
- Year 2**
- Task 4: Estimate the representation of Hispanics in military accession by Hispanic subgroup
 - Task 5: Analyze the career and schooling paths of Hispanics
 - Task 6: Analyze MEPCOM attrition among Hispanic applicants
 - Task 7: Analyze the waiver process and the effects of enlistment standards on the success of Hispanic recruits during their first enlistment term

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The remainder of the briefing presents our analysis of the fraction of the Hispanic youth population who would meet these enlistment standards and how it has changed over time.

Estimating the Fraction Who Meet Enlistment Standards Is Complicated by Two Factors

1. Enlistment standards are fluid due to waivers
 - Waivers can be granted at different organizational levels
2. Enlistment standards do not match directly to variables measured in our data
 - No one data set contains information relevant to the entire set of enlistment standards
 - We rely on four different data sets:
 - National Health Interview Survey (NHIS) (National Center for Health Statistics, 1998, 1999, 2000, 2001)
 - 1979 National Longitudinal Survey of Youth (NLSY) (U.S. Department of Labor, 1979)
 - 1997 NLSY (U.S. Department of Labor, 1997)
 - June 2003 Youth Poll (YP) Survey (Defense Human Resources Activity, 2003)

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We faced two challenges in estimating the fraction of the Hispanic youth population who would meet enlistment standards. First, enlistment standards are not always hard and fast because applicants who do not meet a specific standard can sometimes receive a waiver. For example, a highly qualified Navy applicant with more than six minor traffic violations could receive a waiver, if the violations occurred in the distant past or if the Navy was in great need of recruits to meet its monthly recruiting mission. The waiver process is not entirely transparent; it depends on the decision of the commander at the local level or higher, depending on the nature of the waiver (e.g., a minor traffic violation or a conviction). It also seems to depend on the recruiting needs of the service. Tasks 6 and 7 of the project in the second year will be investigating waivers in greater depth. The implications of waivers is that we will tend to overestimate the fraction of youth who will not meet any given standard, as some youth who appear unqualified might receive waivers.

The second challenge is that the standards are quite detailed requirements, while the variables in the data used in our analysis are defined broadly and do not perfectly measure the criteria applied by each service. Furthermore, no single data source contains information on all enlistment standards. We therefore rely on multiple data sources, and the measures used in them are those that, on balance, most closely capture the set of qualifying standards. Thus, the measures provide an estimate of the fraction of the population that is likely to qualify for enlistment. Also, we compare the fraction likely to qualify among the Hispanic population relative to other demographic groups. That is, we focus more on comparisons of the fraction who qualify across groups rather than on the absolute magnitude of the estimate of the fraction who qualify.

The data sources we use to examine medical standards are the 1998–2001 waves of the National Health Interview Survey (NHIS) (National Center for Health Statistics, 1998, 1999, 2000, 2001). For most of the remainder of the standards, we use the 1997 National

Longitudinal Survey of Youth (NLSY) (U.S. Department of Labor, 1997). Unlike any other data source, the NLSY has recent information on AFQT scores. It also has information on education, number of dependents, height and weight, and some information on criminal activity. To examine how the fraction who qualify has changed over time, we compare results between the 1979 and 1997 NLSY (U.S. Department of Labor, 1979, 1997). Finally, in June 2003, the Department of Defense Joint Advertising Market Research and Studies Program conducted a survey of youth to examine enlistment eligibility explicitly (Defense Human Resources Activity, 2003). Although it does not have information on AFQT, this survey provided more detailed information on various moral character-related standards. A detailed discussion of the translation of the enlistment eligibility criteria into variable measures from each data source is discussed in subsequent charts.

Finally, documentation from all four data sources indicates that information on whether a respondent is of Hispanic origin is based on self-identification, either from the respondent, or in the case of minors in the NLSY, from a parent or guardian. That is, the information is based on the individual's response to a question about his or her ethnicity or about whether he or she is Hispanic. Information on race is also based on self-identification, with the exception of the 1979 NLSY. In that survey, race is based on the interviewer's observation. It should be noted that there are no missing values in the NLSY or NHIS, and the interviewer or organizations that conducted the surveys provide values in the missing cases, by observation, or through imputation. Unfortunately, because of a lack of sample size, we could not perform our analysis by Hispanic subgroup. The exception is the NHIS analysis, which considers all Hispanics, then the subgroup of those of Mexican origin only.

We Use the National Health Interview Survey (NHIS) to Study Health-Related Disqualifications

- **Pool 1998–2001 survey waves**
 - **Adults age 18–30: 12,013 males, 14,792 females**
- **Examine three types of health disqualifications based on likelihood of waiver**
 - **Weight-for-height**
 - **Major health conditions (e.g., functional limitation, heart condition, blind or deaf, special equipment, organ failure, heart conditions, ulcer, stroke, active asthma)**
 - **“Minor” health conditions (e.g., chronic bronchitis, hay fever, sinusitis, cancer)**

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The NHIS is an annual cross-sectional, household-based survey of diseases, health conditions, and behaviors in the civilian population. One adult (age 18 and over) is sampled from each family and asked detailed demographic and health questions. The survey oversampled blacks and Hispanics. By pooling several years together, 1998–2001, we are able to analyze the Mexican sample as a distinct subsample from the general Hispanic sample with statistical precision. From the adult sample, we consider males and females 18–30. Because children under 17 are sampled separately and asked different health questions, we limit the current briefing to the results for adults. We use a wider age range than the military’s prime recruiting target range of 17 to 24 to increase sample size. The older ages are relevant because both the Army and Marine Corps permit recruits as old as 35.

The goal of the analysis is to estimate the fraction of the youth population who would meet the military’s health and medical standards, by race and ethnicity. The analysis is described in detail in an unpublished draft document for our project “Health Barriers to the Enlistment of Hispanic Youth,” by Meredith Kleykamp. The analysis is descriptive and is driven by the NHIS data definitions. Measuring the prevalence of enlistment-related health disqualifications is challenging for reasons given earlier. A military applicant is screened by a doctor who not only has the patient with whom to interact and physically examine, but who also has past medical records at his or her disposal. As a result, the services can delineate specific health conditions. Large national data sets employ coarser measures.

The strategy adopted in this study is to identify three general health measures, indicating whether an individual would meet the health standards on the basis of weight or of a major or minor health condition. This measurement strategy captures most of those who would fail to meet the medical enlistment standards across the services. Further, the strategy of aggregating individual conditions is used because of the relative infrequency of any single disqualifying health condition. There are simply not enough cases to examine each condition

separately with any precision. In the case of weight, self-reported height and weight are compared to the sex- and age-specific height-weight accession standard for each service.

We define major conditions as those that the military treats as nonwaivable (according to the published medical standards for each of the four branches). Major conditions are defined specifically as follows: having a functional limitation; having a noncorrectable vision or hearing problem; needing special equipment for daily activity; having organ failure, heart condition, diabetes, ulcer, stroke, emphysema, or hypertension; or having an asthma attack in the past year. This last measure of asthma does not perfectly capture the military standard for asthma. For the military, active asthma after age 14 is considered nonwaivable. But asthma before age 14 may be waivable (i.e., it may require a pulmonary function test or other tests or medical records to waiver). Our measures only ask, “Have you ever been told by a doctor you have asthma?” or “During the past 12 months, have you had an episode of asthma or asthma attack?” We use information about recent attacks, treating this as an indicator of certain disqualification from enlistment, rather than using information about having ever been diagnosed with asthma, as many individuals may have been diagnosed with asthma as a child, but have not had active asthma since childhood. This potentially underestimates the number of individuals who might be disqualified from asthma.

Minor conditions are defined as disqualifying, but waivable. These conditions include sinusitis, hay fever, and chronic bronchitis. Also included are conditions where our metric does not precisely identify waivability. Cancer is the only condition in this category. Our measure asks whether an individual has ever had cancer. Having ever had cancer does not automatically disqualify a person from enlistment. Individuals whose cancer has been in remission for five years or longer are eligible for enlistment. Unfortunately, we cannot identify if a cancer is in remission or the duration of remission. Again, because of the imprecise matching of the condition with the measure, we treat it as potentially waivable. Because the incidence of cancer is so low in the population being studied, whether included as a minor or major condition, it would not have a large influence on the total.

Several analyses are performed. First, we estimate the fraction of non-Hispanic whites, non-Hispanic blacks, and Mexicans who would meet the health standards.¹ In addition, the results for an aggregate Hispanic category (that includes Mexicans) are also presented. Those who join the military are not a random sample of the population. To account for this, the simple cross-tabulation strategy is performed on successively restrictive populations, focusing on the “military preferred” population. The military preferred population refers to those who are U.S. citizens and high school graduates.

The health condition questions in the NHIS are mostly self-reports of having ever been diagnosed with a given condition by a doctor. Consequently, this measure may not accurately capture the prevalence of a condition if there is underdiagnosis in certain populations for any reason. This is especially worrisome for the Hispanic population, which has much lower rates of insurance, and may face language and other barriers to getting medical care. As a consequence, individuals may have a condition that is undiagnosed either

¹ Other Hispanic ethnic subgroups, such as Cubans or Puerto Ricans, simply do not have enough cases, even pooling multiple years of data, to give statistically precise estimates, given our strategy of successively restricting the sample. The aggregate Hispanic category includes Mexicans, Puerto Ricans, Cubans, and Other Hispanics. Therefore, the Hispanic category and Mexican category are not mutually exclusive. As a consequence, estimates for Mexicans and Hispanics come from two separate models.

because they have not seen a doctor recently or because they have not had high-quality care. To try and address this concern, the results presented for health conditions are adjusted for having seen a doctor in the past 12 months. The adjustment strategy is a simple regression-based adjustment. First, the regression is estimated including ethnicity dummies and a doctor visit indicator. Then, the model coefficients are used to generate predicted probabilities, treating all individuals as having seen a physician in the past year, and then summarizing these predicted probabilities by ethnicity. This strategy is used for the estimates of both major and minor conditions for the adult samples. We also analyzed the results (not shown here) without adjusting for having seen a doctor in the past 12 months. We found the prevalence of disqualifying conditions were lower by about two to five percentage points, for all ethnic and racial groups. The ordering of the prevalence of disqualifying conditions across groups did not change when no adjustment was made. Thus, the adjustment affects the absolute magnitude of the estimates for each group but not the comparisons across ethnic and racial groups.

Findings on the Health of Hispanic Youth from Previous Research Are Mixed

- **On average, Hispanics are poorer and less educated than whites; less educated than blacks**
 - Income and education are positively related to health status
- **In terms of specific health conditions, Hispanics are:**
 - More likely to have infectious diseases, diabetes, obesity
 - Less likely to have cancer, low birth weight
- **“Immigrant paradox” is found in Hispanic population**
 - Hispanics have better-than-expected health outcomes, especially infant mortality and birth outcomes, and adult mortality rates
 - Cause of paradox debated, but immigrants appear to have better health outcomes than native-born Hispanics, except for diabetes and weight

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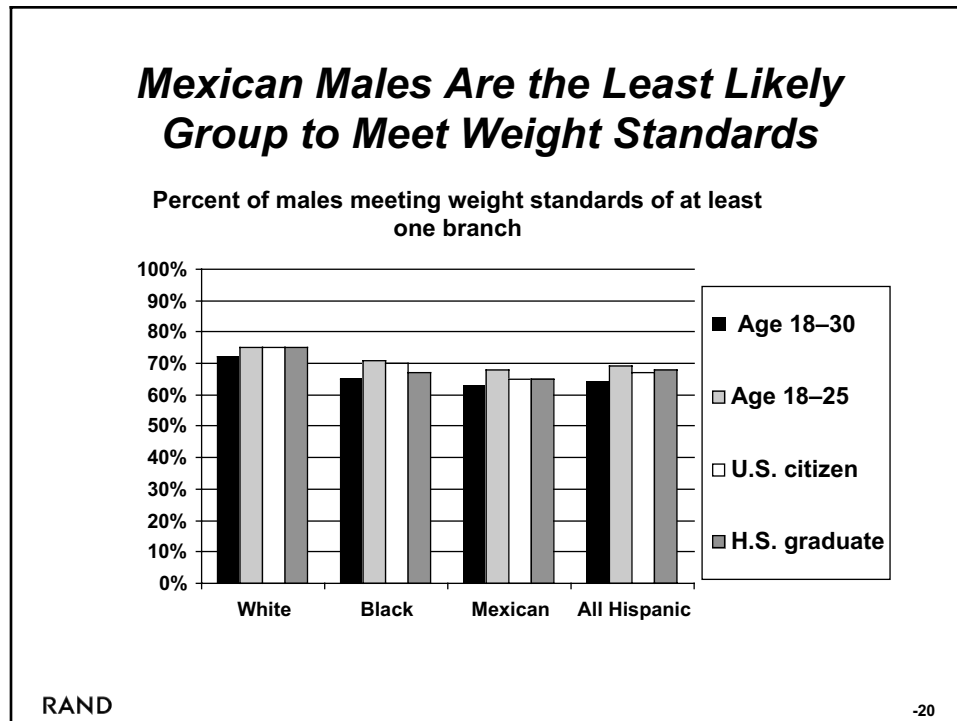
Previous research on the health of Hispanics has found mixed results. The findings depend largely on the population chosen for analysis or the specific health condition measured. On the one hand, there is reason to suspect Hispanics may suffer a greater burden from many of the health conditions considered for enlistment. Hispanics are on average poorer and less educated than whites, and less educated on average than blacks (Hoffman, Llagas, and Snyder, 2003; Llagas and Snyder, 2003). Because income and education are positively correlated with health, we would expect Hispanic health patterns to reflect their relative socioeconomic patterns. Infectious diseases, diabetes, and obesity disproportionately affect Hispanic groups, but for cancer, low birth weight, and some other health outcomes, Hispanics do not appear to have a disadvantage (see Vega and Amaro [1994] for a thorough review). Numerous studies have documented higher levels of overweight status and obesity among Hispanics, even among military personnel (National Center for Health Statistics, 2003; Lindquist and Bray, 2001; Nolte et al., 2002; Popkin and Udry, 1998).

On the other hand, researchers have identified a paradox of better-than-expected health outcomes (especially for mortality, infant mortality, and birth outcomes) in the adult Hispanic population, often referred to as the “Hispanic paradox” or “epidemiologic paradox.” The true cause of the paradox is debated, but research has generally concluded that the large fraction of immigrants in the Hispanic population is the primary explanation for the Hispanic paradox (now often referred to as the “immigrant paradox”).² In fact, recent

² The two main explanations for the paradox center on the selectivity of migration and on the effects of acculturation. It is hypothesized that only the healthiest individuals can undertake moving to another country, legally or especially illegally, resulting in immigrants being positively selected on health. The acculturation hypothesis suggests that immigrants have healthier lifestyles, eschewing smoking, alcohol, and unhealthy “Americanized” diets. The longer they live in the United States, the more acculturated they become, taking on more unhealthy behaviors. There is evidence to support both

studies have found a paradox for most ethnic groups when comparing immigrant to nonimmigrant health outcomes with weight and diabetes being the notable exceptions to the health paradox for Hispanics (Cho and Hummer, 2001; Franzini, Ribble, and Keddle, 2001; Frisbie, Cho, and Hummer, 2001; Palloni and Morenoff, 2001). Recent research has also identified a similar pattern of better-than-expected health among first-generation Mexican children in the United States (Burgos et al., 2005; Mendoza and Fuentes-Afflick, 1999). Given these alternative expectations about the relative health status of Hispanics compared with blacks or whites, it is an empirical question whether health may serve as an obstacle to enlistment for Hispanics.

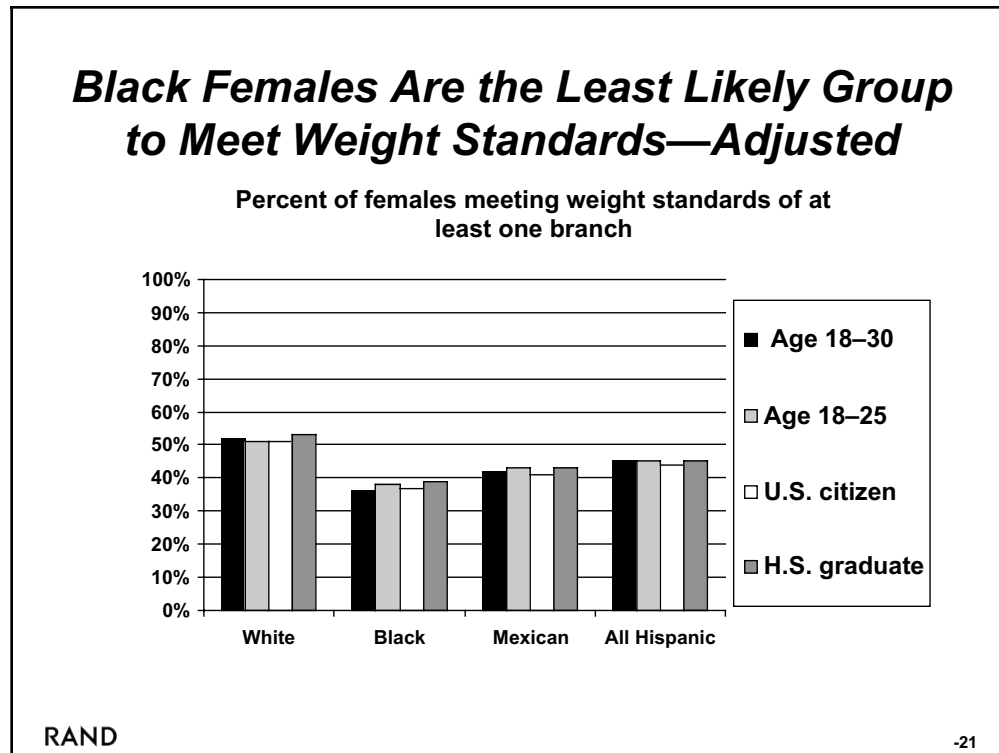
hypotheses, and is often highly dependent upon the ages considered and the specific health measure being used. (See in particular Franzini, Ribble, and Keddle [2001] and Palloni and Morenoff [2001]).



The first bar for each racial or ethnicity group represents the full sample of 18- to 30-year-old males for each group. Next, the population is limited to a slightly younger group, 18- to 25-year-old males. The third bar represents only those 18- to 25-year-old males who are U.S. citizens. Next, the population is further limited to 18- to 25-year-old male citizens who are high school graduates. This same logic applies to all of the charts presented. As noted earlier, the 18–25 group and citizens are the “military preferred” population.

There are two types of information presented in these charts—information on ethnic differences within subpopulations and differences from the selectivity of subpopulations within ethnic group. One can identify ethnic differentials by comparing the same shaded bars across race and ethnicity groups. Comparing across bars within each group reveals how subpopulation selection affects the prevalence of various health conditions.

We find that Mexicans are the most likely to have difficulty meeting the weight requirements, with the pattern for all Hispanics roughly mirroring the results for Mexicans. In any given population, Mexicans report the lowest fraction of males who would meet the weight standards of one or more branches of the military, with about 60 to 70 percent of Mexican males meeting the weight standards or as many as 30 to 40 percent of Mexican youth failing the weight standards for enlistment in at least one branch—a fairly staggering prospect. As we restrict the population to a younger subset, ages 18 to 25, the fraction who meet the weight standard rises for all groups, but falls, except for whites, as we further restrict to the military preferred population of U.S. citizens and high school graduates, indicating that those the military prefers are less likely to pass the weight standards. Selection appears to act most substantially at the citizenship criteria for Mexicans. Thus, Hispanics who are immigrants are more likely to pass the weight standard. Selection occurs more at the high school graduate level for blacks.



Unlike males, we find that black females are the most likely to face weight barriers to enlistment. Fewer than 40 percent of black young women would meet the weight standards of at least one branch. White females are the least likely to face difficulties meeting the weight standard, with roughly half of all white females meeting the standards set by at least one branch. Mexicans and all Hispanics lie somewhere in between, with approximately 41–45 percent meeting the standards. Further, it does not appear that citizenship has as strong an effect as for Hispanic males. In all groups, high school graduates appear to be more likely to meet the weight standards, a result unlike that for males. The differences across racial and ethnic categories and population segments pale in comparison to the striking result that only about a half or fewer women would meet the weight standards of at least one branch of the military; clearly weight is a larger obstacle to military service for females than for males.

***A Substantial Fraction of Overweight
Hispanic Males Is Within a Few Pounds
of the Weight Standard***

	White	Black	Mexican	Hispanic
≤5 lbs. overweight	16%	15%	16%	19%
≤10 lbs. overweight	30%	26%	36%	37%

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Given the large fraction of men, both Hispanic and non-Hispanic, who would fail to meet the military's weight standard, additional analyses were conducted to evaluate the distribution of individuals around the weight cutoff points. That is, we asked whether a large or small number of individuals are within a few pounds of the weight standards, and whether this differed by race or ethnicity. If so, a slight relaxation of weight standards could result in more Hispanics being eligible for service. Kernel density plots were made of the difference between observed weight and the maximum allowable weight, by race or ethnicity. These density plots are summarized by examining the fraction of individuals failing the military weight standards who are over the maximum weight by five pounds or less and by ten pounds or less. This chart summarizes the results.

About 16 percent of males 18 to 25 are overweight by five pounds or less (conditional on being over the maximum standard weight). The percentage is slightly higher for Hispanic males (19 percent) and lower for black males (15 percent). Roughly a third, 37 percent, of Hispanic males are within 10 pounds or less of the standard (conditional on being over the maximum standard weight). The figures are lower for white and black males, 30 percent and 26 percent, respectively. These figures suggest that a nontrivial fraction of men would qualify for service on the basis of their weights, if the weight standard were relaxed by a few pounds.

***A Substantial Fraction of Overweight
Hispanic Females Is Within a Few
Pounds of the Weight Standard***

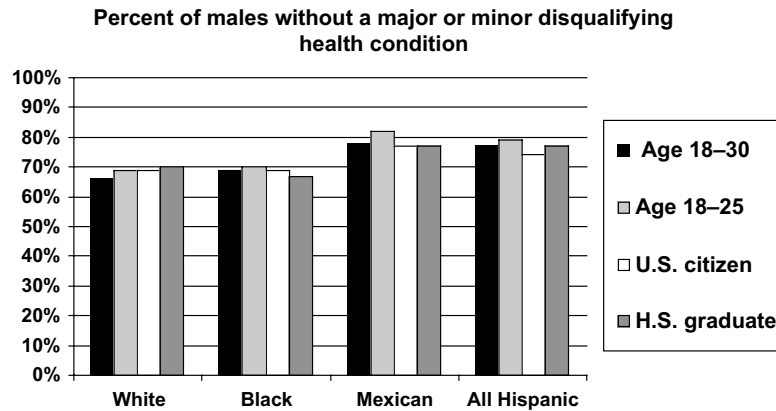
	White	Black	Mexican	Hispanic
≤5 lbs. overweight	15%	11%	14%	14%
≤10 lbs. overweight	27%	23%	27%	27%

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Slightly fewer women than men fall within five or ten pounds of the weight standards. About 14 percent of females 18 to 25 are overweight by five pounds or less (conditional on being over the maximum standard weight). The percentage is slightly higher for white females (15 percent) and lower for black females (11 percent). Approximately a quarter, 27 percent, of Hispanic females are within 10 pounds or less of the standard (conditional on being over the maximum standard weight). The figures are lower for black females, with 23 percent falling within 10 pounds of the limit. These figures suggest that, though fewer than men, a nontrivial fraction of women would also qualify for service on the basis of their weight, if the weight standard were relaxed by a few pounds.

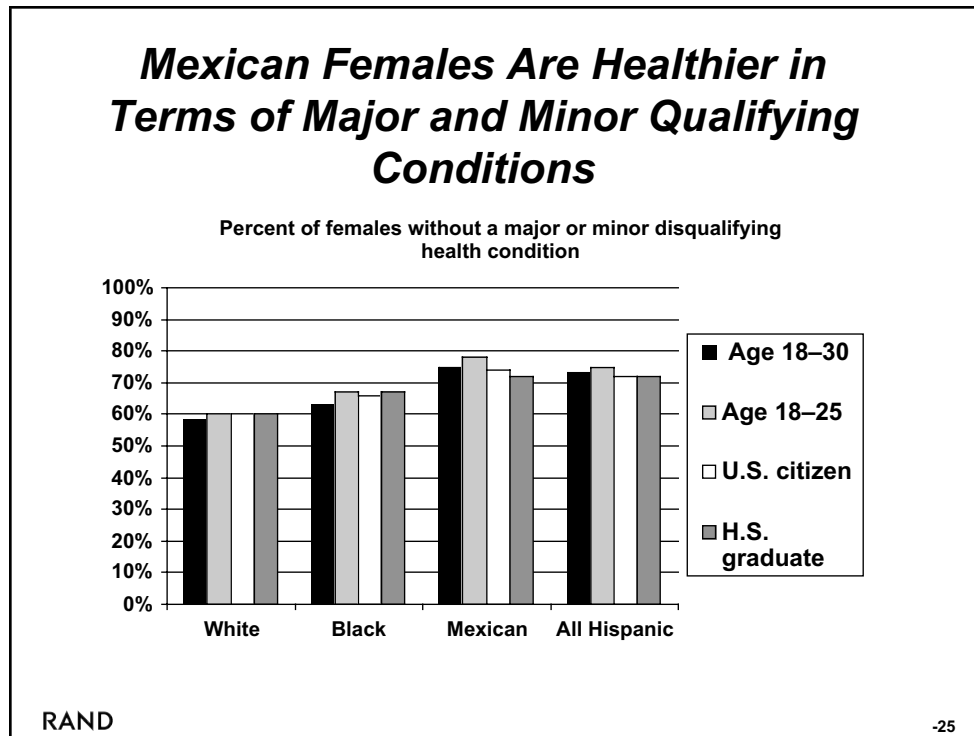
Mexican Males Are Healthier in Terms of Major and Minor Qualifying Conditions



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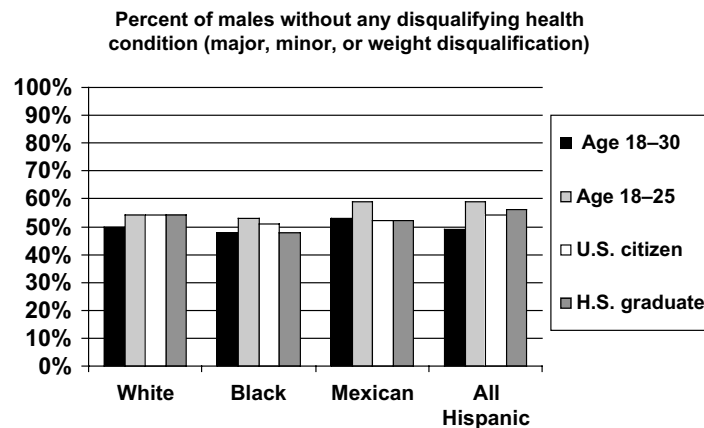
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When we aggregate, asking whether an individual has a major or minor condition, we find that Mexicans are less likely to have a health-disqualifying condition. That is, they are more likely to meet the health standards of at least one service for these conditions. The pattern of selectivity as we define the sample in terms of military preferred (18 to 25, U.S. citizen, high school graduate) shows a large drop in the likelihood of meeting health standards among U.S. citizens for Mexicans and Hispanics. That is, citizens are not as healthy as noncitizens. For blacks, high school graduates appear to be slightly less healthy than the average young man.



When looking at the percent of females who have a major or minor health condition, we find that Mexican females are also less likely to have a health disqualifying condition. That is, they are more likely to meet the health standards of at least one service for these conditions. The pattern of selectivity as we define the sample in terms of military preferred (18 to 25, U.S. citizen, high school graduate) also shows a drop in the likelihood of meeting health standards among U.S. citizens for Mexicans and Hispanics. That is, citizens are not as healthy as noncitizens. Unlike the results for males, it appears that white females are the least likely overall to meet the standards for this set of health conditions.

Overall, Hispanic Males Are as Likely as Whites and More Likely than Blacks to Meet Health Standards



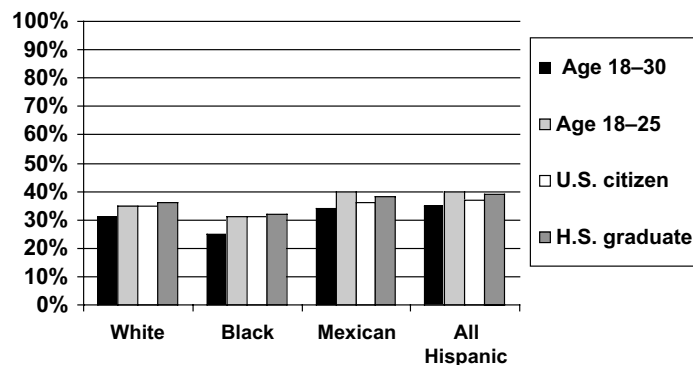
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This chart shows the fraction of each group without any of the disqualifying characteristics (weight, major, or minor) for at least one service. Because of the higher prevalence of weight problems among young men of Hispanic or Mexican origin, but lower prevalence of other major or minor health conditions, we see how there is little net difference between whites and Hispanics when aggregating these measures in the fraction of Hispanic young men who meet the health standards. This result holds for the “military preferred” population, but among noncitizens, Mexican and Hispanic males have lower overall rates of health disqualification. The effect of considering all health conditions, including weight, is striking. The only real difference for Hispanics from the earlier chart is in the fraction who meet the standard—which is reduced by roughly 20 to 25 percentage points when we consider all health conditions together.

Overall, Hispanic Females Are as Likely as Whites and More Likely than Blacks to Meet Health Standards

Percent of females without any disqualifying health condition (major, minor, or weight disqualification)



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When examining females, we see Hispanic females are slightly more likely to meet the total set of health standards set by the military. Because of the high prevalence of weight problems among black women, and their poorer health status compared with Hispanics, black women are the least likely to meet the set of health standards considered. The effect of considering all health conditions for any of the groups, including weight, is striking. The only real difference for Hispanics from the earlier chart is in the fraction of women who meet the standard—which is reduced by roughly 30 to 40 percentage points when we consider all health conditions together.

Summary of Findings on Health-Related Enlistment Standards

- **Hispanic and black males and females are the least likely to meet weight standards**
- **Hispanic males and females are more likely to meet other health-related standards**
- **Net effect: Hispanics are as likely as whites and more likely than blacks to meet all three health-related categories we considered**
- **Across all groups, females are less likely to meet health standards**
 - **Weight presents a much greater obstacle for females than males for all racial and ethnic groups**

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To summarize our conclusions from our analysis of health conditions from the NHIS, we find that Hispanic and Mexican males are less likely to meet the weight standards than their black or white counterparts, but that black females are the least likely to meet the weight standards, followed by Mexican and Hispanic females. However, both male and female Mexicans and Hispanics appear to be healthier when considering other medical qualification standards—having lower prevalence of both the major disqualifying conditions, and of the minor or potentially waivable conditions. When aggregating, these divergent results cancel out, and seem to indicate that, overall, health is not the likely cause of underrepresentation. It is also clear that there is a strong selection effect. In general, citizens of Mexican origin and black high school graduates are less likely to meet the health standards. The large effect of citizenship on the prevalence of disqualifying health conditions for Mexicans is consistent with other analyses showing immigrants are healthier than native-born peers.

***We Use the 1979 and 1997 NLSY Cohorts
and the 2003 Youth Poll to Examine
Additional Disqualifications***

- **1979 and 1997 National Longitudinal Survey of Youth (NLSY79 and NLSY97)**
 - **Ages 17–21 in 1983 or 2001**
 - **Estimate fraction passing standards related to high school graduation, AFQT, height and weight, dependents, and criminal activity**
- **2003 Youth Poll**
 - **Ages 17–21**
 - **Youth Poll has better questions related to criminal activity**

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We next turn to our analysis of non-health-related enlistment standards using the 1997 NLSY and 2003 Youth Poll. The NLSY is a nationally representative sample of American youth ages 12 to 16 as of December 1996 who are interviewed on an annual basis. We limit our analysis to the 2001 responses, when the cohort was ages 17 to 21 and therefore in the target recruiting age range. The sample includes both males and females, for a sample size of 6,180 observations. We estimate the fraction of the youth population who would pass each service's standards, by race and ethnicity. We also use the 1979 NLSY to examine how the fraction of youth passing enlistment standards has changed over time.

The NLSY's variable definitions drive the definition of the standards in our analysis. In some cases, such as education and AFQT score, we can often directly match the variable measure with the definition of the standard. In other cases, notably in the case of the moral character standards relating to drug use and convictions, the variable measures are far broader than the specific enlistment standards defined by the services. We define the standards as follows with the NLSY data.

For the purposes of this study, we define a high school graduate as someone who has either a traditional high school diploma or a General Equivalency Diploma (GED). DoD generally prefers traditional high school graduates to those with a GED, but can legally accept those with a GED providing they score sufficiently highly on the AFQT. Since the GED population is so small, restricting our definition of a high school graduate to just those individuals who have a traditional high school diploma has virtually no effect on the results we report below. AFQT score is defined as meeting the absolute minimum score. For example, in the case of the Army, the score is 16. In the case of the Air Force, the score is 40. In charts that show the cumulative effect of enlistment standards, AFQT is defined conditionally on the type of diploma a given individual holds. "Dependents" refers to meeting the service's standard for numbers of dependents. "Weight" is defined as meeting

the service's shipping weight requirements. "Convictions" is defined as ever having been convicted of a crime. "Drug use" is defined as having used marijuana or other drug use in the last year.

The Youth Poll is a computer-assisted telephone interview survey of youth ages 16 to 21, conducted in spring 2003. We limited the analysis to respondents ages 17 to 21. A big advantage of the Youth Poll is that its survey questions are posed in a way that is directly tied to how enlistment standards are measured. Thus, the survey asks, "Have you ever been convicted of a misdemeanor? If yes, how many?" It also queries respondents about height and weight, but does not have information about AFQT, a key variable in our analysis.

Hispanic High School Graduation Rates Differ Between the NLSY97 and Census

- **Fraction of Hispanics 18–21, not currently enrolled in high school with high school diploma or GED:**
 - **2001 NLSY97: 79 percent**
 - **2000 Census: 59 percent**
- **Differences in high school graduation rates between census and NLSY97 are not observed for non-Hispanic whites and blacks**
- **Differences in immigration patterns cannot explain these high school graduation rate differences**
- **A possible explanation**
 - **The NLSY97 is a more demanding and invasive survey than the census**
 - **The types of recent immigrants willing to participate in the NLSY97 might be very different from the types of recent immigrants willing to participate in the census**
 - **These differences in types could be correlated with educational attainment**
- **More research is needed to understand why Hispanic high school graduation rates differ so sharply between the census and NLSY97**

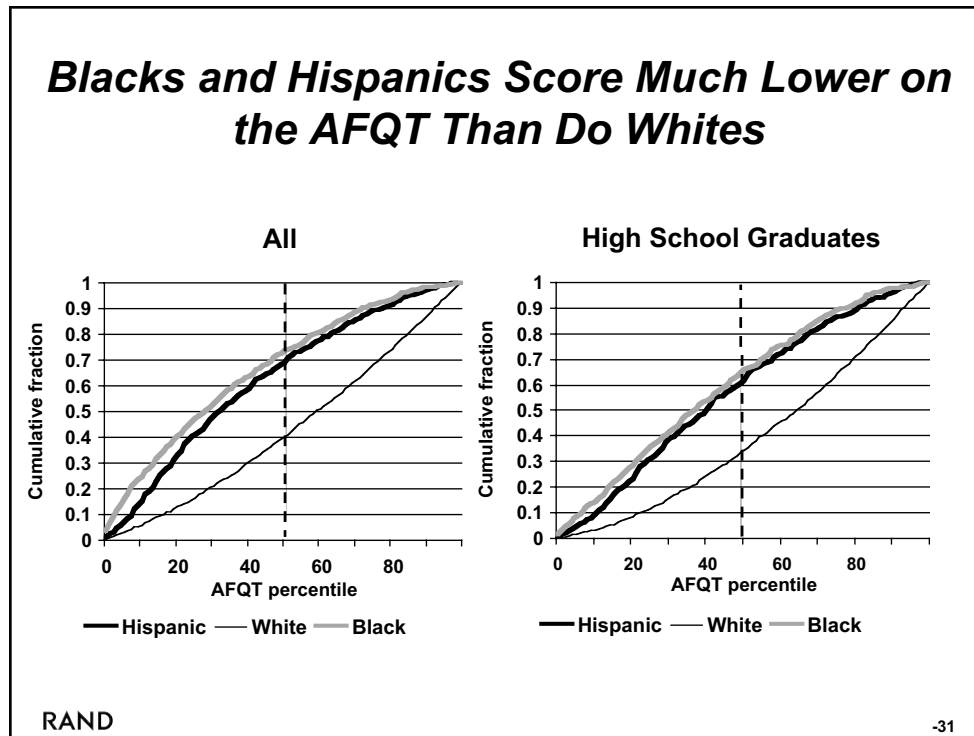
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As stated at the outset, failure to graduate from high school is an important reason that many Hispanic youth do not qualify for military service relative to non-Hispanic groups. An interesting anomaly, however, is that the high school graduation rates in the NLSY97 are substantially higher relative to the rates in the census and the Current Population Survey, the two standard (and considered to be highly reliable) sources of information on the U.S. population. The fraction of Hispanics ages 18 to 21 not currently attending high school who have a high school diploma or GED in 2001 is 59 percent in the 2000 Census but 79 percent in the NLSY97. High school graduation rates of non-Hispanic whites and blacks are the same in the two surveys.

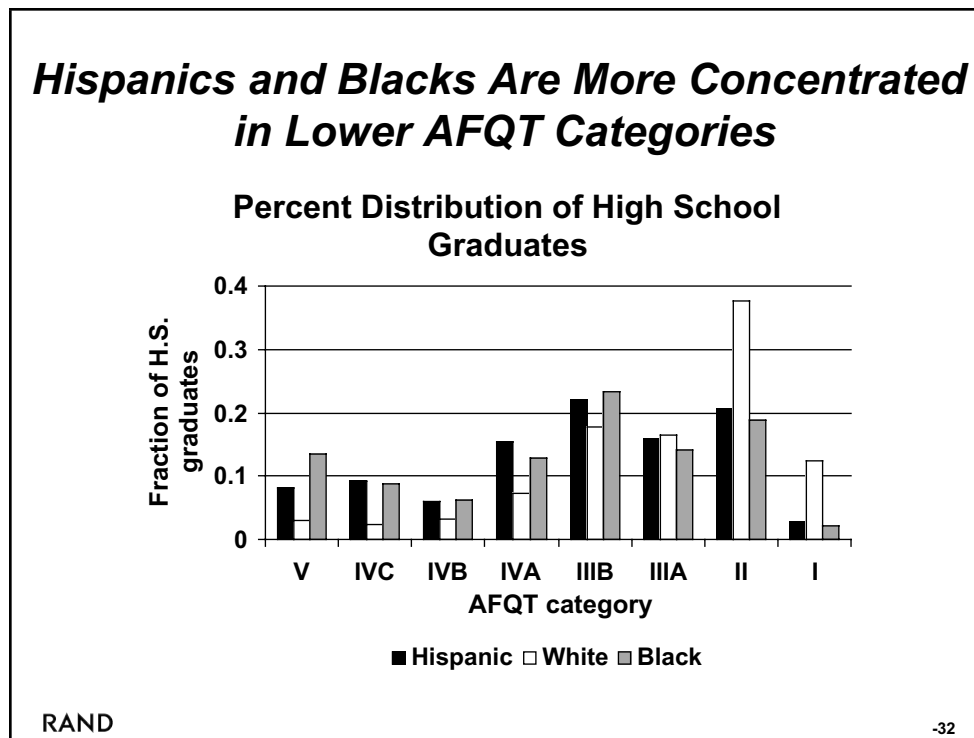
A much higher fraction of Hispanics in the census are recent immigrants, which might explain differences in high school graduation rates. But, even when we look at just recent Hispanic immigrants in both surveys, differences in high school graduation rates remain. We conjecture, then, that recent Hispanic immigrants in the census and NLSY97 differ along dimensions that we cannot observe in one or both surveys. Differences in country of origin, which are not well measured in the NLSY97, is one possibility. It is also possible that recent Hispanic immigrants willing to participate in the NLSY97 on average come from better-educated and higher-income families than do other recent Hispanic immigrants. Willingness to participate in the NLSY97 may be correlated with certain personality characteristics and contextual factors that also correlate with educational attainment, like willingness to trust survey personnel or living in a safe neighborhood.

Whatever the reason, it is clear that NLSY97 Hispanics are different from census Hispanics with respect to educational attainment and it is important to keep in mind that these differences could be correlated with other enlistment standards. We also note that these same differences exist between Hispanics interviewed in the 2003 Youth Poll and census.

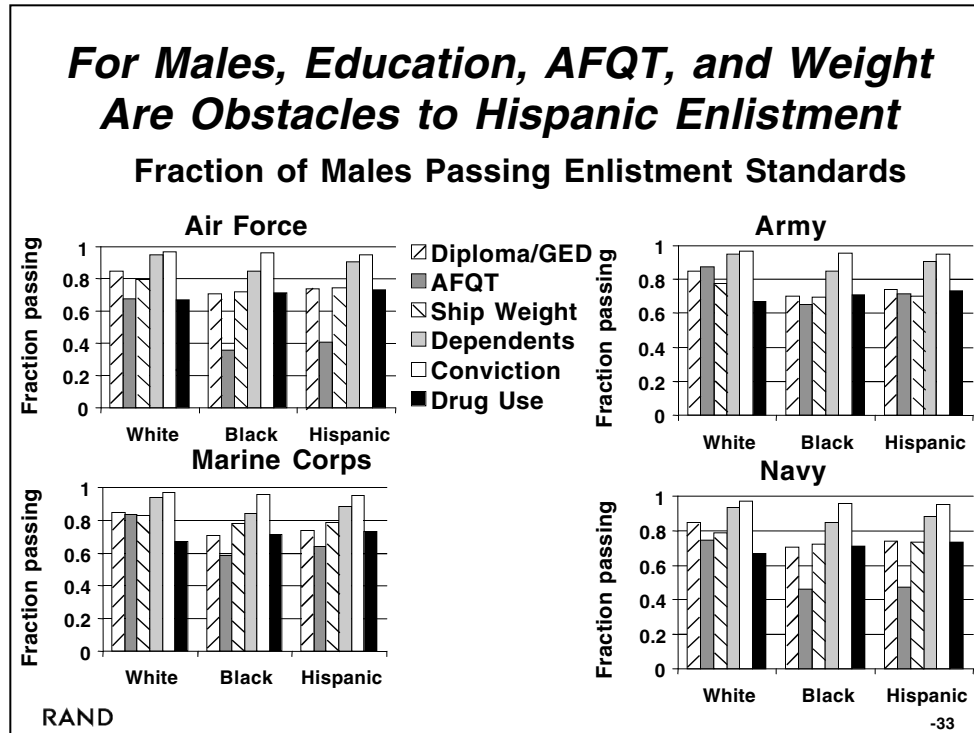


The AFQT was recently renormed by the Department of Defense in July 2004 using the 1997 NLSY data. However, these new norms have not yet been applied to the raw test scores available in the NLSY data. Therefore, we devised a method for norming the raw scores that corresponds quite closely to the DoD approach, summarized in Segall (2003). Specifically, we performed a principal components analysis on the four components of the ASVAB that DoD uses to derive the AFQT. Principal components transform a number of typically correlated variables into a smaller number of uncorrelated variables, called principal components, while maintaining the variability in the original variables. Because age in the sample at the time of the administration of the ASVAB ranged from 14 to 17, we first adjusted each component of the ASVAB scores for age by regressing each component score on an age in months and on an age in months squared variable. Principal components were performed on age-adjusted ASVAB scores. We weight the principal component using the NLSY sampling weights to arrive at a nationally normed AFQT index for the 1997 cohort.

This chart shows the cumulative distribution of AFQT scores by race or ethnicity and high school graduation status. The left graph shows that 40 percent of white youth but 70 percent of Hispanic youth and 74 percent of black youth scores are at or below the 50th percentile. The right graph shows that among high school graduates, the difference between white youth and minorities narrows, but still remains quite large with 34 percent of white youth but 62 percent of Hispanic youth and 66 percent of black youth scoring at or below the 50th percentile.



DoD categorizes potential recruits according to eight AFQT categories—V, IVC, IVB, IVA, IIIB, IIIA, II, and I corresponding to the 9th, 15th, 20th, 30th, 49th, 64th, 92nd and 99th percentiles of the nationally normed AFQT distribution, respectively. This chart shows the distribution of U.S. high school graduates, ages 17 to 21, in the NLSY across the AFQT categories, by race and ethnicity. White graduates are far more likely to be categorized in AFQT categories I or II than either Hispanic or black graduates. Relative to black graduates, Hispanics are somewhat less likely to be classified as a Category I, II, IIIA, or IVA, and more likely to be classified as a Category IIIB or Category V.



This chart shows the fraction of males in the NLSY passing the standards for each service by race and ethnicity, to the extent that we can measure the standards. We find that education, AFQT, and weight (the first three bars in each chart) are obstacles to enlistment for Hispanic males, with AFQT being particularly important for both Hispanic and black males. We find 47 percent of the Hispanic males in the NLSY sample would meet the Navy AFQT requirement and only about 40 percent would meet the Air Force standard. The figures for black males are 46 and 35 percent, respectively, for these services. In contrast, the Army and Marine Corps have less stringent AFQT standards (see earlier chart) and therefore a higher proportion of males meet their standards. For example, 71 percent of Hispanic males meet the Army's AFQT standard. Even so, a significant fraction of Hispanics, relative to white males, fail to meet Army and Marine Corps AFQT standards. Also relative to white males, of whom 85 percent are high school graduates, only 74 percent of Hispanic males and 70 percent of black males meet the services' standards for high school graduation.

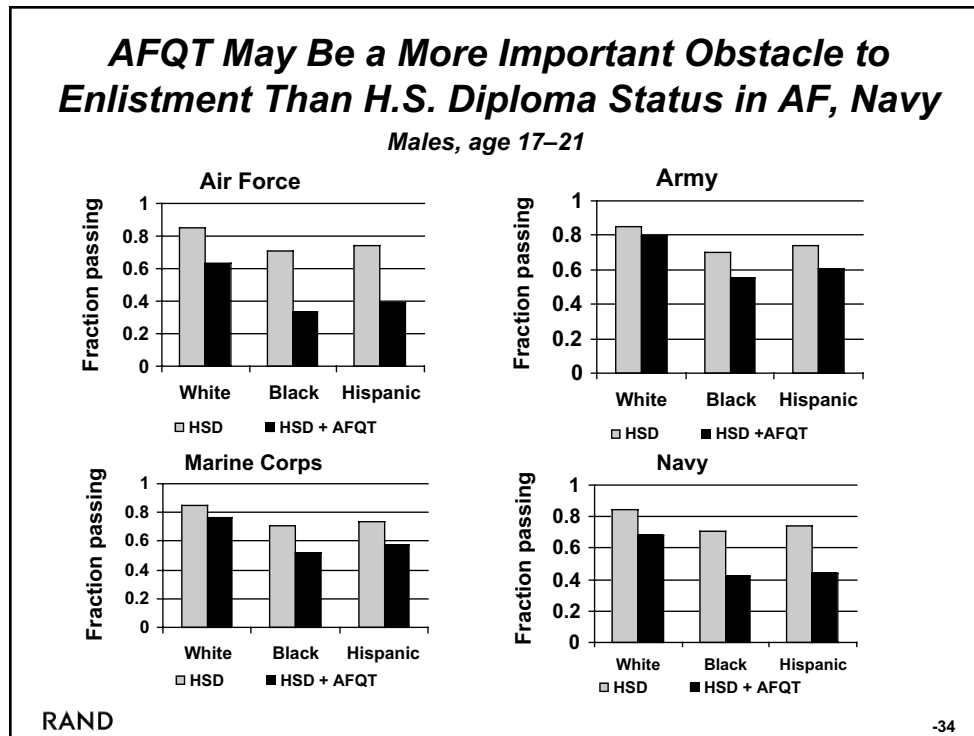
Fewer Hispanic and black males pass the weight standard than white males, although the fraction is close in the case of the Marine Corps. For example, in the case of the Army, 70 percent of Hispanic males and 70 percent of black males would pass the standard, compared with 77 percent of white males. In the case of the Marine Corps' shipping requirement, the figures are 79 percent, 77 percent, and 83 percent, respectively. The Marine Corps has less stringent weight requirements, so a higher fraction is estimated to pass the standard. However, we do not have information on whether individuals meet the Marine Corps' strength requirement. These estimates of meeting the weight standards are somewhat greater than those found in the NHIS discussed earlier. Additional tabulations show that the difference is attributable to age differences in the two samples. The NLSY sample includes ages 18 to 21 while the NHIS sample includes ages 18 to 25. When we restrict the NHIS

sample to ages 18 to 21, we find that mean weight, height, and fraction with a secondary school diploma or certificate are the same as in the NLSY sample. For example, the mean weight and mean height are 159 pounds and 68 inches, respectively, in both samples. The fraction with a secondary diploma is 78 percent in the NHIS sample and 78 percent in the NLSY sample.

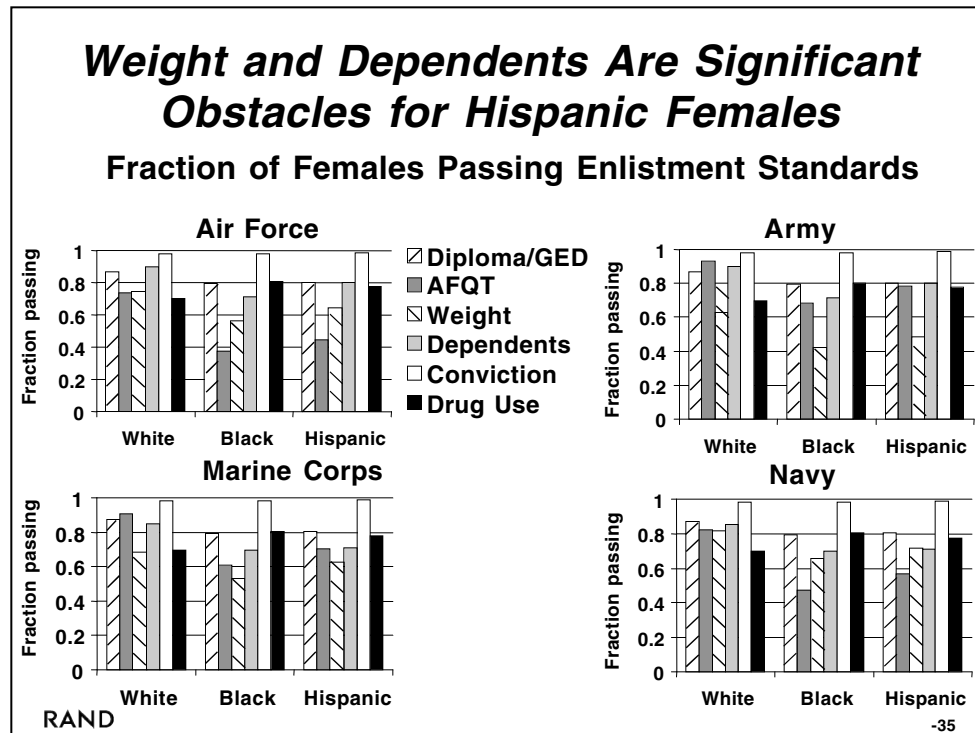
A significant fraction of youth report having used any drugs (both waivable and unwaivable) in the past year, a fraction that does not vary appreciably across groups. About 34, 29, and 27 percent of white, black, and Hispanic males, respectively, report having used drugs in the past year. This particular statistic, however, does not correspond particularly well to the services' enlistment standards with respect to drug use, and so it is unclear whether this many youth would be disqualified from enlistment because of drug use. Moreover, self-reported drug use is likely to be underreported in survey data.

Our measure of criminal activity in the NLSY—ever convicted of a felony—is also a poor indicator of whether a given individual would pass enlistment standards related to past criminal activity. It is worth noting, though, that the fraction of youth reporting ever having been convicted of a felony does not vary across groups.

In a later chart, we report separate statistics from the 2003 Youth Poll related to drug use and criminal activity that correspond more closely to enlistment standards.

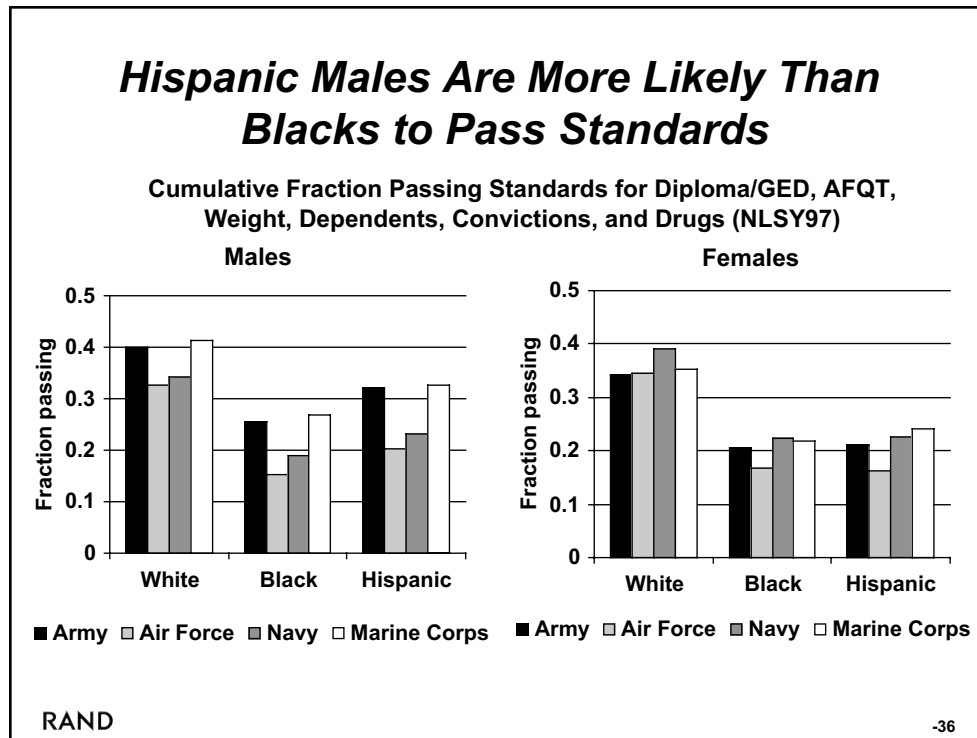


The previous chart showed the importance of AFQT but not its independent effect from high school diploma status. This chart shows the fraction who would pass the minimum AFQT standard of each service, conditional on being a high school diploma holder, where the AFQT standard depends on which type of diploma (traditional or GED) an individual holds. We find that AFQT has a large independent effect for Hispanic males for the Navy and Air Force, and sizable effects for the Army and Marine Corps. For example, the fraction of high school diploma-holding Hispanic males who would pass the Air Force's minimum AFQT standards for a diploma holder is only 39 percent. For black diploma holders, the figure is 33 percent. In contrast, the percent of diploma-holding Hispanic males who would pass the Marine Corps' AFQT minimum is 57 percent. Thus, AFQT is an important obstacle to enlistment, even beyond high school, for the Navy and Air Force.



Weight is a significant obstacle to enlistment for females. Only 42 percent of black females and 48 percent of Hispanic females in the NLSY sample would meet the Army's weight standard, given their heights. Weight is also a significant obstacle for white females, with only 62 percent meeting the Army's standard. Unlike males, dependent status is an important disqualification characteristic for females. As shown in the earlier chart, 90 percent of Hispanic males would pass the Army's standard of no more than two children in addition to a spouse, while only about 80 percent of Hispanic females would pass this standard. For blacks, 85 percent of males would pass the Army standard compared to 71 percent of females. The comparable figures for whites are 95 and 90 percent. Similar comparisons are found for the other services.

Like their male counterparts, minority females face obstacles meeting the services' AFQT standards. In the case of the Air Force, the fraction meeting the standard is 44 percent for Hispanic females and 38 percent for black females. For the Army, the figures are 78 percent and 68 percent, respectively. The figures are higher for the Army because of the Army's lower minimum score of 16. Still, the fraction who do not qualify for the Army on the basis of AFQT represents a sizable proportion. As far as the other standards, drug use is less important as an obstacle to enlistment for black and Hispanic females than it is for their male counterparts.



Cumulatively, accounting for all the standards using the NLSY data, we find that among males, Hispanics are less likely to meet the standards than whites but more likely to meet them than blacks. The cumulative fraction varies by service. The cumulative fraction that meets the standards is lowest in the Air Force, and highest in the Marine Corps.

Among females, the cumulative fraction meeting all standards is about the same for blacks and Hispanics, both being less than the fraction for their white counterparts. For Hispanic females, the cumulative fraction is lowest for the Air Force and roughly equal for the other three services.

Year One, Task Three: Examining How the Fraction Passing Enlistment Standards Has Changed over Time

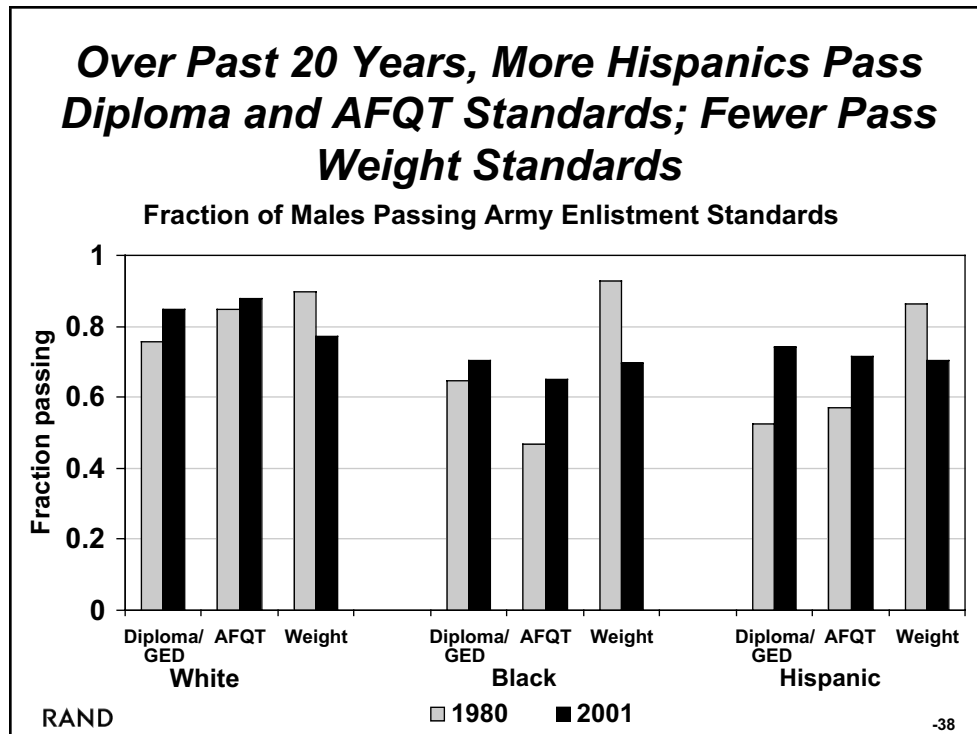
Research Tasks

- Year 1**
- Task 1: Catalog current enlistment standards
 - Task 2: Assess the importance of enlistment standard characteristics among Hispanics
 - Task 3: Examine how the fraction passing enlistment standards has changed over time
- Year 2**
- Task 4: Estimate the representation of Hispanics in military accession by Hispanic subgroup
 - Task 5: Analyze the career and schooling paths of Hispanics
 - Task 6: Analyze MEPCOM attrition among Hispanic applicants
 - Task 7: Analyze the waiver process and the effects of enlistment standards on the success of Hispanic recruits during their first enlistment term

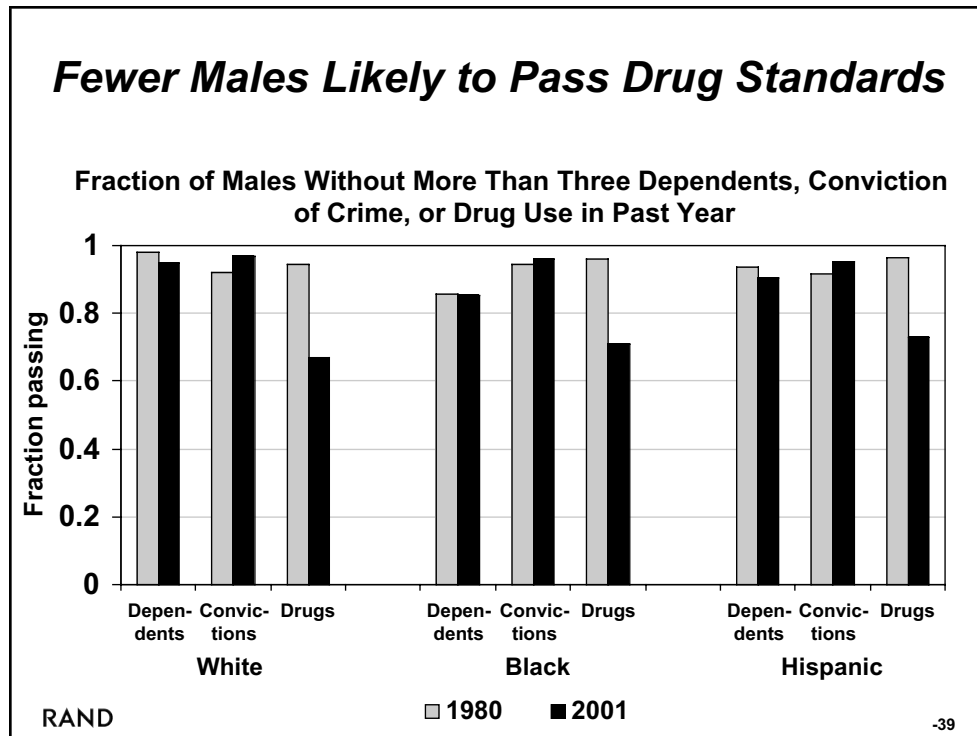
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The third project task was to consider the trend over time in the fraction of the Hispanic youth population that would be eligible. We compare the results from the two NLSY cohorts in 1997 and 1979 when survey respondents were ages 18 to 21 in 2001 and 1983, respectively. From the comparison, we can examine how qualification has changed over the 20-year period, holding the standards at their current values. To make the AFQT scores comparable across cohorts, we performed a principal components analysis to transform the 1979 cohort's raw ASVAB scores, just as we did for the 1997 cohort. The derived AFQT index for each cohort indicates the relative position of individuals within the AFQT distribution as measured in 1979 and in 1997.

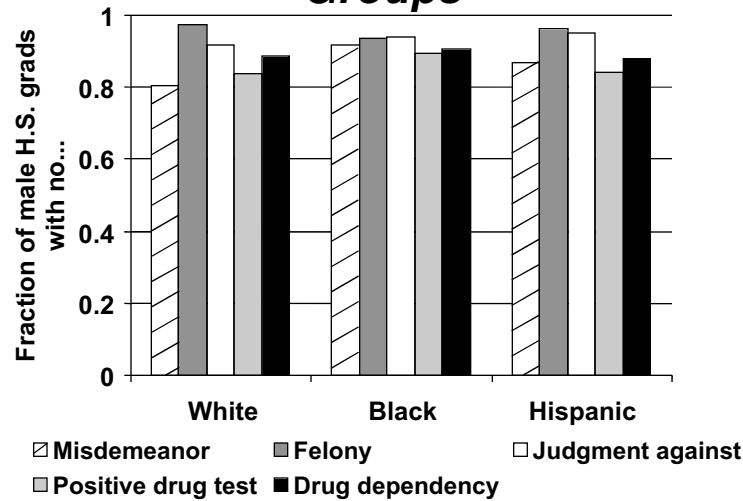


This chart shows the results for the Army. We find a higher fraction of Hispanics and blacks would pass the standard for education and AFQT now than they would 20 years ago, but fewer would pass the Army's weight standard. In the case of Hispanic males, the percent of Hispanics ages 17 to 21 meeting the Army's standard of a score of 16 on the AFQT was 57 percent in 1980 but was 71 percent in 2001 among the 1997 cohort. The improvement was greater among blacks, rising from 47 percent to 65 percent. On the other hand, the percent meeting the weight standard fell the most among blacks, followed by Hispanics, then by whites.



This chart shows the trend between the 1979 and 1997 cohorts in the fraction that would meet the Army's standards in terms of having fewer than three dependents, no drug use, or no convictions in the past year. Little change has occurred in the percent reporting fewer than three dependents or no convictions. But the percent reporting no drug use has fallen over time. For Hispanic males, the fraction who reported no drug use fell from 96 to 73 percent, while for white and black young men, it fell to 67 and 71 percent, from highs of 95 and 96 percent, respectively.

Youth Poll Data Suggest Likelihood of Passing Moral Standards Is Similar Across Groups



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The 2003 Youth Poll data provide more precise measures of moral character disqualification standards, because the questions are more comparable to the definitions of the standards than are the variables in the NLSY. The results are presented in this chart for male high school graduates. About 80 percent of white males pass the standard of “no misdemeanor conviction,” and nearly all graduates meet the “no felony conviction” standard, as expected. The pattern for Hispanic young men is quite similar to that of white men and at about the same magnitudes. Thus, Hispanic men do not seem to be less likely to meet these standards than white or black males.

Summary of NLSY and Youth Poll Results

- **AFQT is a significant obstacle to enlistment for Hispanics, even after controlling for high school diploma status**
- **Meeting the weight requirement is a growing problem for Hispanics, especially for females**
- **Dependents, criminal activity, and drug use do not seem to be significant obstacles to male enlistment**
- **Thus far, enlistment standards do not seem to explain why Hispanics are so much less likely to enlist than blacks**

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To summarize the results, we find that AFQT is an important addition to the traditional explanation of the underrepresentation of Hispanics among accessions, especially for the Navy and Air Force. Even controlling for the lower high school graduation rates of Hispanics, we find that they are less likely to meet the AFQT standards of the services than their white counterparts for both males and females. Another important disqualifying factor, especially for minority females, is weight. Among males, 28 percent of Hispanics and 29 percent of blacks would fail to meet the Army's standards. The figures were 55 percent and 48 percent for females, respectively. In the case of weight, relaxing the standards would improve eligibility more for Hispanic females. Our analysis did not suggest that dependent status, criminal activity, or drug use were important disqualifying characteristics. However, the NLSY variables were too broadly defined and could not account for waivers in the case of criminal activity and drug use. Finally, our future analysis must reconcile our finding that Hispanics are more likely to pass enlistment standards than are blacks, with the lower enlistment rate among Hispanics. Since Hispanics have a higher enlistment propensity rate than blacks, their lower enlistment rate cannot be due to their supply behavior.

What Can Be Done About AFQT and Weight?

- **Implement DEP program aimed at improving language skills**
 - **Relatively poor scores on AFQT for Hispanics could reflect poor language ability**
- **Implement programs to help applicants achieve weight standards during DEP**
 - **Implement programs to help with weight before entry**
 - **Could mean higher attrition**
- **Change weight standards to active duty standards**
- **Stratify weight standards based on occupation**
 - **Does not change fitness standards**
 - **Provides incentives to exceed minimum standards**
- **Increase recruiting in healthier populations**
 - **Include college market**
 - **Include recent immigrants**

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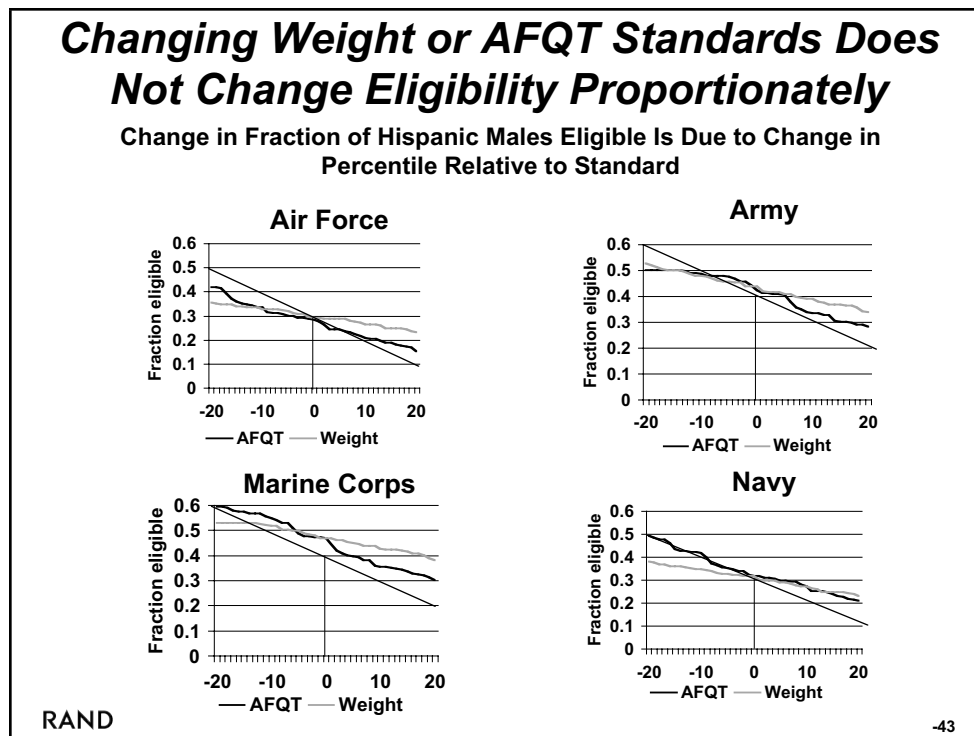
What could be done to address weight problems of potential enlistees or to improve the low AFQT scores of applicants? To the extent that low scores reflect English language proficiency, the services could expand existing programs that target improvement in language skills. In the case of weight, there are three alternative strategies.

First, the services might develop programs to help individuals reduce weight before entry. For example, they might enroll individuals in specific weight-reduction programs while in DEP. Whether such a program is cost effective would need to be evaluated. A second alternative might be to relax the standards. The Army and Marines currently have retention weight standards for active-duty personnel that differ from accession standards by two to three pounds. Accession standards could be revised, and put in place for all branches, to allow otherwise qualified individuals to enter and take off weight in DEP or boot camp (basic training).

A third alternative would be to stratify the weight standards by what jobs individuals perform. This acknowledges that different job functions require different sets of skills. Some jobs are dependent on having a high AFQT score, yet all are required to meet the same weight standard. Stratification of standards currently exists across branches. The Air Force and Navy weight standards are not as stringent as the Army or Marine Corps standards, yet personnel in these services can be just as effective at their service-specific mission. Such a policy would not necessarily imply a change in fitness standards (e.g., the requirements for running and doing sit-ups and push-ups could all be the same), and there are ways to provide incentives to exceed the minimum standard. This policy would simply admit that not all members are airborne infantrymen, and may be equally competent with different weight requirements.

The final alternative is to recruit from healthier populations. The analysis of the NHIS data indicated that those with more education, especially with some college and

noncitizens, are more likely to pass the weight standard. Enlistment programs that fast-track the citizenship of immigrants serving in the military and recruitment programs targeting college-bound youth may have the added benefits of improving the likelihood of youth meeting weight standards or of improving Hispanic representation among enlistments. Future research would need to investigate if this were the case.



It is important to recognize that policies that alter the standards for weight or AFQT, say by defining job-specific weight standards or by granting waivers, would not necessarily result in one-for-one increases or decreases in the fraction of the Hispanic population that would be eligible for enlistment. The reason is that applicants may be disqualified based on other characteristics that are correlated with AFQT score or weight, such as high school graduation status or number of dependents.

These charts show how the fraction of Hispanic males who would be eligible for enlistment would change as the weight standard or AFQT standard were tightened or loosened relative to the current standard in each service. (Unlike in previous charts, we only consider eligibility in terms of education, AFQT score, weight, and dependent status, and ignore convictions and drug use.) For example, in the Army chart, about 43 percent of Hispanic males would be eligible to enlist at current standards (indicated at 0 on the x axis). If the weight standard were relaxed by 10 percentage points (to -10 on the x axis), the percent eligible to enlist would increase by about four percentage points. Thus, relaxing the weight standard so that 10 percent more individuals pass the weight standard would not yield an increase in the fraction passing all enlistment standards by 10 percent, but only by four percentage points. The fact that eligibility does not rise in direct proportion as the weight standard relaxes means that other qualifying characteristics are negatively correlated with weight. For example, many people who exceed the weight standard are not high school graduates. Therefore, relaxing the weight standard in the Army will not improve eligibility proportionately because these individuals will still be disqualified on the basis of their education. For similar reasons, relaxing AFQT standards by 10 percentage points would increase the fraction eligible in the Army chart to about 49 percent.

In Appendix C, we show similar diagrams for white and black males as well as for black and Hispanic females. Three points are evident from these charts. First, the lines in the

figures are flat relative to the 45-degree lines, suggesting that correlations between the qualifying characteristics are negative in general. Thus, in the case of Hispanic males, relaxing the AFQT standard would not generate a proportionate increase in eligibility because many individuals who have higher AFQT scores are not high school graduates. Second, the slopes differ somewhat for AFQT versus weight, and the differences appear to correlate with sex (see the backup charts for females). The slope of the eligibility line for weight is steeper for Hispanic females than males but steeper for black males than females. Thus, relaxing weight standards would improve eligibility more for Hispanic females and black males. This result makes sense because females are more likely to be disqualified because of weight. It also suggests that weight is less negatively correlated with other qualifying characteristics among Hispanic females. As for AFQT, the slopes are steeper for males than females for both blacks and Hispanics. Thus, relaxing AFQT standards would improve male eligibility more than female eligibility among minorities.

Third, the slopes for Hispanics are considerably steeper than for whites for both males and females. Thus, relaxing standards would improve eligibility rates more for Hispanics than for whites. Stated differently, eligibility characteristics are less negatively correlated for Hispanics than for whites in general.

Year Two: Remaining Research Tasks

Research Tasks

- Year 1**
- Task 1: Catalog current enlistment standards
 - Task 2: Assess the importance of enlistment standard characteristics among Hispanics
 - Task 3: Examine how the fraction passing enlistment standards has changed over time
- Year 2**
- Task 4: Estimate the representation of Hispanics in military accession by Hispanic subgroup
 - Task 5: Analyze the career and schooling paths of Hispanics
 - Task 6: Analyze MEPCOM attrition among Hispanic applicants
 - Task 7: Analyze the waiver process and the effects of enlistment standards on the success of Hispanic recruits during their first enlistment term

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As stated at the outset, ours is a two-year project with seven tasks. The remaining four tasks are building on the first-year results and focus on several topics. The unifying theme is to provide information to develop policies to improve recruitment among the Hispanic youth population. Task four is focusing on providing more detailed information on Hispanic representation among accessions than what is currently available. For example, this analysis is focusing on Hispanic subgroups, such as first- and second-generation immigrants. Task five focuses on the career and school choices of Hispanic youth. An understanding of these choices can provide insights on what policies may be developed to recruit Hispanic youth more effectively. Task six is investigating how the services' recruiting processes, especially the applicant and the waiver processes, may affect Hispanic representation. Task seven is investigating the implications of these processes for subsequent performance of Hispanic recruits during their first term, where performance is measured by such proxy variables as attrition rates and promotion rates to E-4. Our final report is forthcoming.

Revising Estimates of Hispanic Representation in the 18- to 24-Year-Old Population

Appendix A: Revising Estimates of Hispanic Representation in 18–24 Population

- Census weights are key ingredient to computing Hispanic share of 18–24 civilian population
 - Any analysis of civilian data, including the Current Population Survey (CPS) or census data, must use census weights to count the Hispanic population properly
 - For example, *Pop Rep* figures are based on the CPS
- The 1990 Census undercounted the Hispanic population
 - Major efforts were made to improve the 2000 Census
 - Hispanic share of 18–24 population was undercounted
- Revised estimates of Hispanic share of 18–24 civilian population in the 1990s are 2.2 percentage points higher

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Analyses of the social representation of the military proceed by comparing counts of members of the military to counts of members of the corresponding civilian population. The latter are drawn from DoD personnel files, while the former figures are traditionally drawn from U.S. Census Bureau estimates. Recent technical changes in U.S. Census Bureau estimates are likely to have a substantial effect on the reported social representation of Hispanics in the U.S. military. This appendix describes this issue in more detail. It begins by describing the issue of weighting in general and then discusses the effects of weighting on civilian population estimates.

For estimating representation, DoD uses estimates of the corresponding civilian population derived from U.S. Census Bureau data. Specifically, footnotes in *Pop Rep* suggest that DoD uses estimates derived from the counts of the population in the monthly Current Population Survey (CPS) data. Thus, for the computation of most interest in this document, DMDC takes the average of the weighted count of 18- to 24-year-old Hispanics over a given fiscal year. We compute the weighted count of the 18- to 21-year-old Hispanic population using the Demographic Supplement to the March CPS. The March survey questions refer to

outcomes in the previous year. However, demographic characteristics (e.g., age) and sample weights are based on the survey month. Thus, for example, earnings reported in the March 1998 Demographic Supplement refer to earnings during calendar year 1997 (i.e., January 1997 to December 1997), but they are assigned to a respondent based on his or her age as of March 1998 and based on the sample weights appropriate for March 1998. It is important, however, to realize that the counts of the population from the CPS do not actually refer to the information collected by the CPS. Instead, the U.S. Census Bureau implements a complicated set of procedures for adjusting the results of the CPS fieldwork. (For a complete discussion, see U.S. Census Bureau, 2002, Chapter 10, Chapter 11, and Appendix D, especially, pp. 10–15 and Table 10-2.) Here, we discuss the components of that process that are relevant for the analysis presented below. We deliberately oversimplify or suppress many other aspects of CPS procedures.

For our discussion, the crucial concept is a “control total.” For our purposes, the crucial control totals are the Census Bureau’s best estimates of the total civilian non-institutional population for 14 Hispanic and five non-Hispanic age-sex categories. (Other control totals consider the population by state, race, and finer age-sex categories.) They are derived, not from the CPS, but from the presumed better population estimates from the decennial census as adjusted for births and deaths from vital statistics data (i.e., birth and death certificates), immigration (from a variety of sources), enrollment in the Armed Forces, and residence in institutions.

Once a decade, after work on the decennial census is completed, the Census Bureau revises its official control totals. As we will see below, this revision is sometimes significant, causing major shifts in CPS-based estimates. This revision is usually implemented about three years after the decennial census (i.e., in 1993 after the 1990 Decennial Census and in 2003 after the 2000 Decennial Census).

During the CPS fieldwork, random variation due to the CPS’s relatively small sample size (only about 50,000 households) and systematic biases (e.g., inability to find or interview certain types of individuals) lead to fractions of people in the sample that deviate from the “known true” fractions from the control totals. To fix this problem, weights are created that force the computed counts to conform exactly to the control totals for sex, age, and race and ethnicity. Analysts then use these weights to compute counts and other estimates using the CPS. That is, to ensure that the CPS reflects the U.S. population, analysts must adjust the CPS data using the weights provided with the CPS data.

Of course, these weights and the resulting estimates will only be as good as the underlying control totals. In retrospect, it appears that the 1990 Decennial Census was of poor quality (on the quality of the 1990 and 2000 Censuses, see Robinson, 2001). Large numbers of minorities were “missed.” Furthermore, during the late 1980s and 1990s, there was large, often undocumented, immigration. Both of these factors caused the control totals to underestimate the true numbers of Hispanics in the United States. The 2000 Census appears to have been much more successful at counting minority individuals, including undocumented immigrants currently living in the United States. Thus, estimates based on control totals using the 2000 Census are considered to be preferable to estimates based on control totals using the 1990 Census.

These technical issues have substantively large effects on estimates of the number of Hispanics. Specifically, for CPS interviews in the early part of a decade, the census provides weights either based on the control totals from the now-obsolete census (the 1990 Census) or

based on the control totals computed based on the new census (the 2000 Census). Thus, we can compute estimates for the same fieldwork, varying only the control totals (and the corresponding weights).

Our concept of interest is the share of Hispanics among 18- to 24-year-olds. Table A.1 presents the underlying numbers. These figures are shown graphically in the main text of the documented briefing. According to all measures, the fraction of Hispanics in the youth population rose rapidly in the 1990s and early 2000s. This is due to a combination of immigration and births (the Hispanic population is relatively young and has relatively high age-specific fertility rates).

Our interest here, however, is on the effect of weighting. For each federal fiscal year from 1993 to 2004, the table reports (approximately) comparable estimates of the fraction of 18- to 24-year-olds who are Hispanic. The first column gives the year to which the estimates correspond. The second column gives the estimates from the March CPS of that year using weights based on the 2000 Census. The third column gives the equivalent estimate based on the 1990 Census. The fourth column reproduces *Pop Rep*'s published estimates (based on the average of the estimates of the monthly CPS counts for October to September of that calendar year).

The final column, labeled "Adjusted," gives an estimate for the entire period 1993–2004 that is consistent with the later estimates that use the 2000 Census-based weights. When 2000 Census-based estimates are available, this adjusted figure uses that estimate. For the earlier period (1993–1999), this adjusted estimate uses a simple correction based on the divergence between the 1990 Census- and 2000 Census-based estimates in 2000. In that year, the 2000 Census-based estimate is larger than the 1990 Census-based estimate by 2.2 percentage points. Consistent with this difference, the adjusted column adds 2.2 percentage points to each earlier year's 1990 Census-based estimates.

Table A.1
Share of Hispanics Among 18- to 24-Year-Olds

Year	Weight 2000	Weight 1990	Pop Rep	Adjusted
1993		13.2		15.4
1994		13.3	13.0	15.5
1995		13.7	13.9	15.9
1996		14.5	14.3	16.6
1997		14.5	14.5	16.7
1998		15.0	15.0	17.2
1999		15.2	15.2	17.4
2000	17.1	14.9	15.0	17.1
2001	17.9	15.6	15.6	17.9
2002	17.9			17.9
2003	17.6			17.6
2004	17.9			17.9

SOURCES: Weight 2000: March CPS estimates using weights based on 2000 Census. Weight 1990: March CPS estimates using weights based on 1990 Census. Pop Rep: Estimates from *Population Representation in the Military* based on average monthly CPS interview weights for the entire federal fiscal year (October through September).

NOTE: CPS interview occurred in March 2005.

Examination of Table A.1 and the figures earlier in this document show that the March CPS estimates based on the 1990 Census weights and the *Pop Rep* estimates based on the average of the monthly CPS weights for October through September are nearly identical. Presumably any difference is due to using March rather than all 12 calendar months and small differences between the March Supplement weight and the March monthly weight.

Comparisons of estimates based on the 1990 and 2000 Census weights are striking. For the same year, the estimates based on the 2000 Census control totals are about two percentage points higher than those based on the 1990 control totals. These two percentage points are about 25 percent of the 1990-based total. Recall that the 2000 Census is considered to have been of higher quality than the 1990 Census. Furthermore, even if the 1990 Census had been of the same quality as the 2000 Census, we would still prefer the 2000 Census-based control totals, because they are more recent. Thus, purely methodological considerations cause us to prefer the 2000 Census-based estimates for any years in which they are available.

The Census Bureau has not backdated its control totals for earlier years in the 1990s. However, a joint project of the National Cancer Institute and the National Center for Health Statistics has done so. Ongoing work as part of this project will generate true adjusted estimates of the Hispanic population for 1990–2000.

Enlistment Documents by Source

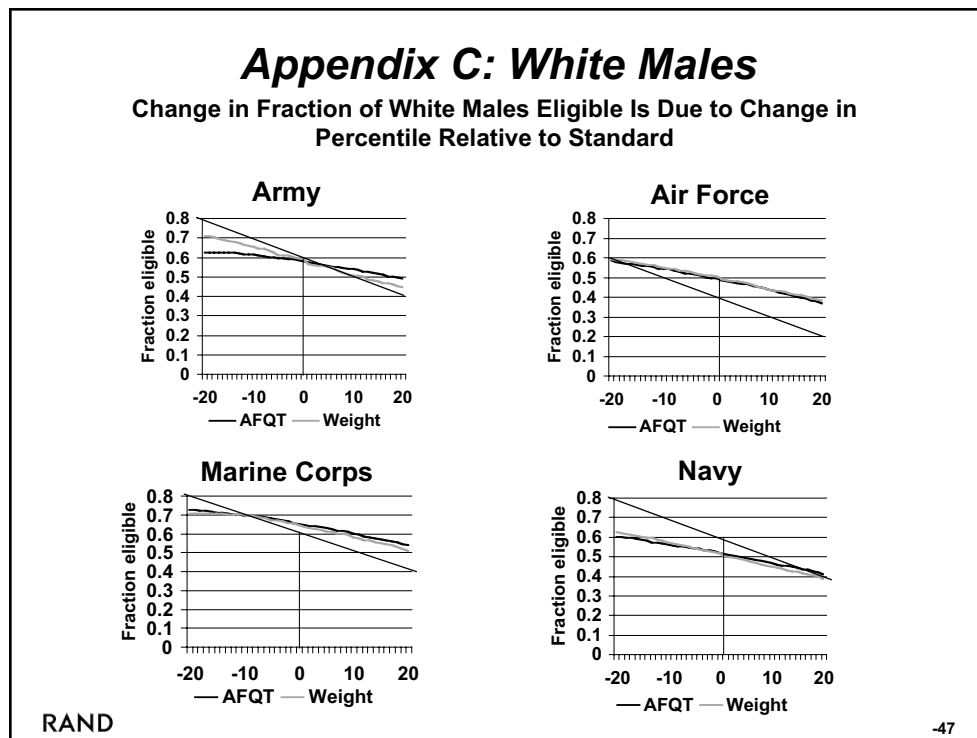
Appendix B: Enlistment Documents by Source

Source	Document
DoD	DoD (1994).
Army	DoD (1995, 2002).
Air Force	DoD (2000).
Navy	U.S. Navy Recruiting Command (1979).
Marine Corps	DoD (1997).

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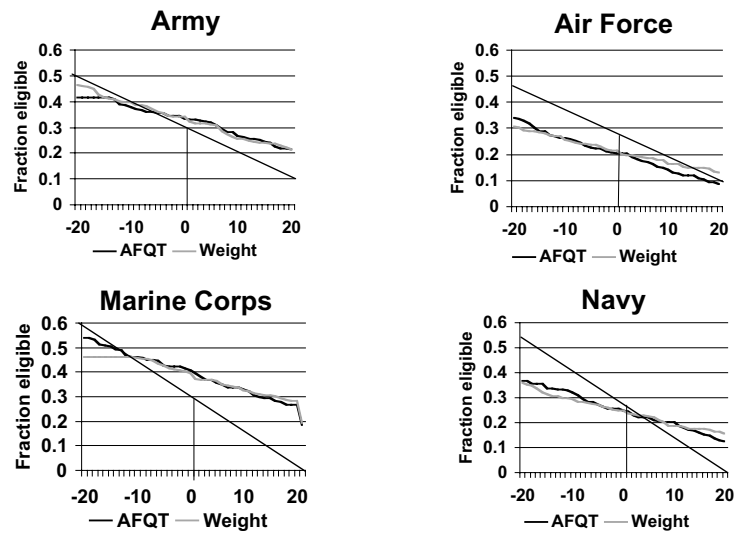
White and Black Males and Black, Hispanic, and White Females



This and the subsequent charts show the fraction of individuals in the NLSY sample who would be eligible for enlistment as the weight standard or the AFQT standard were tightened (moving right on each chart) or loosened (moving left) relative to the current standard for each service. These charts correspond to the similar chart shown in the main briefing for Hispanic males.

Appendix C: Black Males

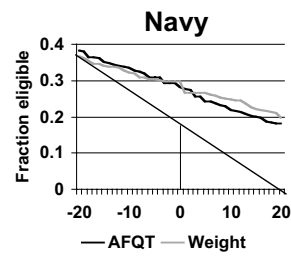
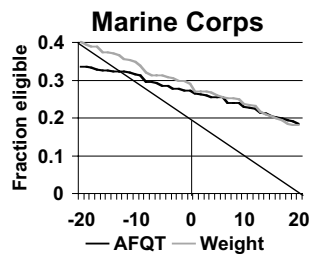
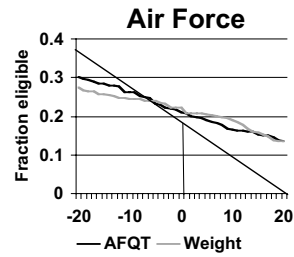
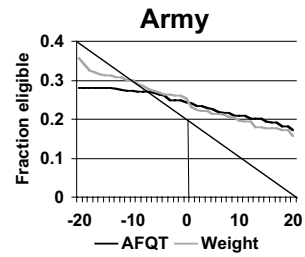
Change in Fraction of Black Males Eligible Is Due to Change in Percentile Relative to Standard



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Appendix C: Black Females

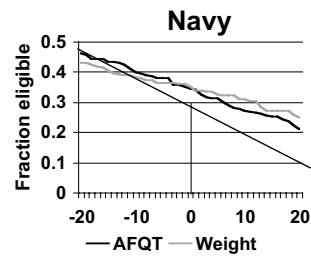
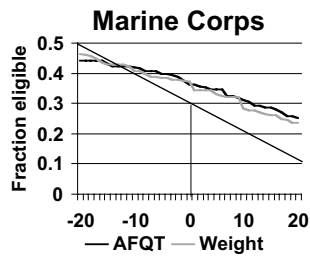
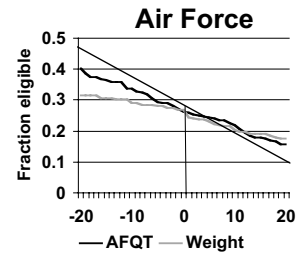
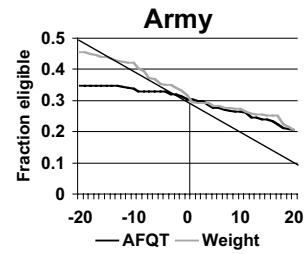
Change in Fraction of Black Females Eligible Is Due to Change in Percentile Relative to Standard



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Appendix C: Hispanic Females

Change in Fraction of Hispanic Females Eligible Is Due to Change in Percentile Relative to Standard

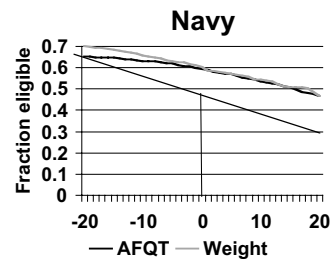
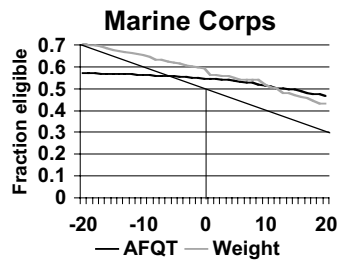
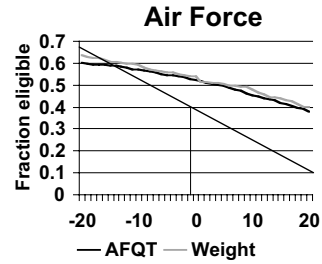
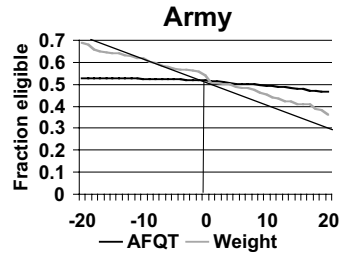


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Appendix C: White Females

Change in Fraction of White Females Eligible Is Due to Change in Percentile Relative to Standard



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