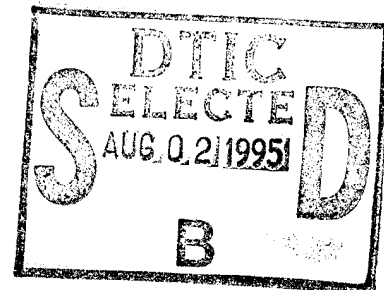# NAVAL POSTGRADUATE SCHOOL
MONTEREY, CALIFORNIA

THESIS

THE EFFECTS OF THE MILITARY DRAWDOWN ON RECRUITING OF MINORITY OFFICERS

by

Jon E. Lux

March 1995

Thesis Co-Advisor: Stephen L. Mehay
Thesis Co-Advisor: Mark J. Eitelberg

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This thesis examines the effects of the defense drawdown (from 1988 through 1994) on the accession of racial/ethnic minorities into the military's officer corps. Analysis focuses on changes in minority representation by source of commission and occupational categories. In addition, the thesis looks at the relationship between graduation from a Historically Black College (HBC) and promotion to 0-4. Logistic models were used to evaluate an officer's probability of being promoted to 0-4, and ordinary least squares models were employed to evaluate length of time to promotion. The results indicate that the level of representation for some minority groups declined within specific areas; but, on the whole, minorities experienced an increase in representation during the drawdown period. Also, statistical analyses suggest that attendance at an HBC has no significant effect on time to promotion but, it is positively related with an increased probability of promotion to 0-4 during the period of study. Continued monitoring of minority representation is recommended.

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OF MINORITY OFFICERS

by

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Submitted in partial fulfillment
of the requirements for the degree of

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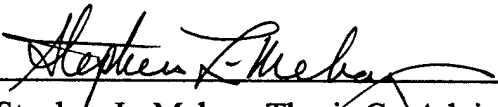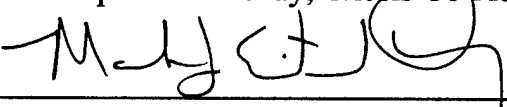
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ABSTRACT

This thesis examines the effects of the defense drawdown (from 1988 through 1994) on the accession of racial/ethnic minorities into the military's officer corps. Analysis focuses on changes in minority representation by source of commission and occupational categories. In addition, the thesis looks at the relationship between graduation from a Historically Black College (HBC) and promotion to 0-4. Logistic models were used to evaluate an officer's probability of being promoted to 0-4, and ordinary least squares models were employed to evaluate length of time to promotion. The results indicate that the level of representation for some minority groups declined within specific areas; but, on the whole, minorities experienced an increase in representation during the drawdown period. Also, statistical analyses suggest that attendance at an HBC has no significant effect on time to promotion but, it is positively related with an increased probability of promotion to 0-4 during the period of study. Continued monitoring of minority representation is recommended.

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I. INTRODUCTION

A. BACKGROUND

Between fiscal 1987 and 1993, the Department of Defense experienced a decrease of 17 percent in its population of active duty officers. During the same period, the accession of new officers was also dramatically reduced. Although the reduction of non-minority officers (19 percent) has exceeded the reduction of black officers (10 percent)-- while Hispanic officers and other racial/ethnic minorities have seen an increase of about 15 percent--there is some concern that minority officers may be adversely affected in the force drawdown. If this is the case, the Services will find it even more difficult to meet their goals for increasing the representation of minorities in the officer corps.

There is also some concern that specific minority groups may be affected more than others by the force drawdown. This is especially true where younger officers are involved. Reduced representation at entry grades forms a "bubble" that continues into higher grades, thereby reducing representation at senior leadership levels in the later years. For example, while the reduction of black officers in the pay grades 0-1 through 0-3 was 23 percent between 1987 and 1993, the reduction of whites at this level was only 21 percent. This disparity will contribute to relatively lower black officer representation at the pay grades of 0-2, 0-3, and 0-4 in future years. This runs counter to the Department of Defenses's goal of increasing the representation of minorities in the officer corps.

The common assumption is that accession programs will become increasingly more competitive and unattainable for minorities as officer recruiting goals decrease and applications remain relatively constant. The result may be a lower proportion of minorities

entering the officer corps and, consequently, the armed forces not achieving their goals for minority representation. With the increase in competition, there is a concurrent concern that minorities, who already have an attrition rate that is 10 percent higher than non-minorities at the college level, may opt to leave the accession program in disproportionately greater numbers than their white counterparts. Another worry is that, with accession programs becoming more competitive, highly competitive occupations (such as aviation) will become even more so thus possibly worsening the under-representation of minorities in these occupations.

B. OBJECTIVES

This thesis seeks to draw conclusions about the current and future "pipeline" of minority officers by assessing available information on manpower supply and demand. Information on supply is drawn from Census files and statistics available through the Department of Education. Information on demand comes from the Armed Services and the Department of Defense. Data on the early drawdown period and pre-drawdown period, obtained from the Defense Manpower Data Center (or DMDC), are analyzed to determine whether the restructuring of the officer corps and its occupations has affected--and may continue to influence--the recruiting and commissioning of minority officers. For example, if there are historical patterns of minority over- or under-representation in certain occupations, and these occupations are "downsized" proportionately more than other occupations, what has been (or will be) the effect on minorities in those occupations?

The data are further analyzed to identify any changes in minority accessions into the officer corps that may be related to the defense personnel drawdown. The main focus

is on changes in the accession flow of minorities from various sources during the pre-drawdown and current drawdown periods.

In addition, this thesis examines the effect that attendance at a Historically Black College (or HBC) may have had on an officer's time to promotion (from 0-3 to 0-4) and the probability of being promoted to 0-4. Logistic models are employed to evaluate probability of promotion and Ordinary Least Squares (or OLS) models are employed to evaluate time to promotion.

C. RESEARCH QUESTIONS

Has the military personnel drawdown affected minority recruitment into the officer corps? Did changes in recruitment policy under the drawdown cause certain occupations to be over- or under- represented? Finally, could increased recruitment at HBCs, and ultimately increased accessions, assist the Armed Services in recruiting "quality" officers and meeting diversity goals?

D. ORGANIZATION OF THE STUDY

The thesis is documented in seven chapters. Chapter II contains a literature review. The literature reviewed here covers selected aspects concerning the history of recruiting officers, minority officer recruitment, the armed forces drawdown, the supply of minorities for officer accession programs, the effect personnel drawdowns have on minorities in both private and military organizations, and the quality of graduates from HBCs. Chapter III is an analysis of racial/ethnic representation and trends in officer recruiting from various accession sources. Chapter IV is an analysis of racial/ethnic representation and occupational trends. Chapter V summarizes the methodology used in

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analyzing the relationship between attendance at an HBC and promotion to 0-4. Chapter VI provides the preliminary analysis of the promotion models. Finally, Chapter VII offers several conclusions and recommendations based on the analysis of accessions, occupations, and attendance at an HBC.

These Appendices are presented. Appendix A contains tables showing the total number of officers accessed into DoD, Army, Navy, Marine Corps, and Air Force, by racial/ethnic group, from 1980 through 1994. Appendix B contains tables showing the racial/ethnic representation of officers, by service, in DoD defined occupations, from 1980 through 1994. Appendix C contains a list of HBCs.

II. LITERATURE REVIEW

Since the first shots fired during the revolutionary war, the armed forces have gradually moved from manpower-intensive conflicts to those that are technologically-intensive. This movement has created the need for increasingly better-trained, better-educated, better-skilled personnel--or the so-called "quality" soldier, sailor, marine, and airman. It is interesting to note that there are many different definitions for "quality," which is essentially a relative term. Webster's dictionary defines quality as a degree of excellence or superiority in kind (Merriam-Webster, 1987). Synder (1984) defines "quality " as an elusive concept, noting the difficulty of measuring it over time. At the same time, Janowitz (1971) observes that superior performance and success--two elements of quality--depend as much on motivation, training, and circumstances as on intellectual or analytical skills.

As the need for high-quality officers expanded, so did the need for a system that would recruit, train, and assign these officers. As this system grew and evolved to meet the increased needs placed upon it by the services, it became generally more selective in choosing candidates. Thus, selection criteria were constructed, but this, too, was also affected by the changing needs of the services as well as by the need for minorities to have equal representation in the officer corps.

There have been numerous studies conducted on the issue of minority representation in the enlisted ranks, but there is relatively little research on recruiting minorities for the officer corps. This lack of research can be attributed to numerous reasons, including the fact that far fewer minorities are recruited into the officer corps each year than are recruited into the enlisted ranks. At the same time, virtually no study has comprehensively examined the effect of the military drawdown on minority officers--

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which may be related to the recency and continuing nature of the military's reduction-in-force.

A brief history of the methods devised to recruit quality officers is provided below, followed by a review of literature concerning the effect of manpower drawdowns on minorities in both the private and military sectors. The review also includes a perspective on the future supply of minorities eligible for officer recruitment programs.

A. EARLY EXPERIENCES: ARMY

The Continental Army was raised for the American Revolution, but it was a temporary institution and its disbandment left no lasting pattern of officer recruitment. During the war, the states controlled most military appointments and this practice continued until Congress established the first force of regular troops in 1784 (Skelton, 1992). With the adoption of the American Constitution in 1789, authority to make appointments passed from the states to the executive branch. This authority was quickly delegated down to the Secretary of War, who took recommendations from the states. Most of the commissions were given to discharged veterans of the Revolutionary War.

By 1790, Revolutionary War veterans had become too old to fill the most junior positions, so selected men in the enlisted ranks were tapped to fill vacancies in the officer corps. During the Jefferson administration, the appointment of "cadets" became an important element of the officer selection process (Skelton, 1992). The War Department, following the tradition of European armies, permitted some youths to serve unofficially in military apprenticeships as a way to eventually acquire commissions (Skelton, 1992). Congress officially introduced the rank of "cadets" into the American service in 1794,

when it authorized two cadets in each of the 16 companies of the Corps of Artilleries and Engineers (Skelton, 1992).

With the expansion of the Army in 1798, it became apparent that there were too many vacant positions to be filled by the current system. A new system was set up by George Washington to meet the need for junior officers. This system called for applicants to be "young gentlemen of good families, of liberal education, and a high sense of honor" (Skelton, 1992). Once all applications for a commission were received, they were submitted before a board for recommendation and then passed on to the executive branch.

On March 16, 1802, an act reducing the Army concurrently established a separate Corps of Engineers that functioned in part as a military academy. The cadets then in service gathered at West Point for instruction. Although no law or regulation guaranteed cadets a permanent appointment as an officer, young men trained at West Point gradually filtered into the officer corps (Skelton, 1992).

The force build-up leading to the War of 1812 (and throughout the war) created thousands of vacancies at the junior-officer level. The requirement to fill these vacancies was passed on to the states, who adopted their own system. As before, the states used political appointments, leaving the Army with high rates of personnel attrition, non-existent training, and bitter personal conflicts (Skelton, 1992).

The Army, having endured the system placed upon it during the War of 1812, vowed to make changes. The post-war era brought managerial reform and consolidation. By the 1820s, the Army officer corps had achieved an orderly system of recruitment, a well-defined concept of its collective role, efficient procedures for the education and

professional solicitation of young officers, and a high degree of regularity in its internal operations (Skelton, 1992).

B. EARLY EXPERIENCES: NAVY

The term "midshipmen" came from the location of a ship where these sailors could usually be found. In the days of the British three-deck ships, there was great distance between the fore and aft decks which, by design, required a sailor to run messages back and forth. Since this task required agility and a good knowledge of seamanship, the job usually fell upon the youngest and brightest of the ship's crew. Thus, this position of "midshipman" gradually became the stepping stone to a commission (Sweetman, 1979).

Throughout the Revolutionary War and the War of 1812 it was basically up to the midshipmen to train themselves. No designated person or system was established for the midshipmen. They would have to acquire books and instructors on their own if they wanted to be prepared for an advancement board. In 1802, the Navy issued a regulation that made reference to a schoolmaster who was charged with teaching the midshipmen. The regulation did not specify a certain person, so the teaching responsibility was usually passed on to the Chaplain. The Chaplain, having just a little more knowledge than the midshipman, was often not found to be of much assistance (Sweetman, 1979). This policy changed in 1812, when a regulation was issued that assigned a schoolmaster to each ship.

Shore-based schools were first established around 1803, but they had few students, since the prevailing theory was that one must go to sea to learn the sea (Sweetman 1979). Eventually, the shore-based school gained acceptance, and by 1829 there were three

specific private schools for the instruction of midshipmen. The courses mainly emphasized mathematics and navigation. The midshipmen who attended were generally those between cruises, and it was not until 1839 that a school was established where midshipmen could spend up to one year preparing for a promotion board. This school was organized at the Naval Asylum near Philadelphia and was the beginning of the U.S. Naval Academy.

The years of peace after the War of 1812 were difficult for the Navy. Numerous commanders and officers were criticized for their private and business affairs. Some viewed the Navy as an organization of legalized "pirates." These criticisms were not what the Navy needed as it attempted to obtain more ships, money, and manning. The Navy redeemed itself during the Mexican-American War and the conflict with the Barbary Pirates, but Congress still did not see the great need for sea power and a naval academy. As time advanced along with technology, naval leaders pushed for highly-trained officers that would be taking charge of steamships and heavy armaments (Sweetman, 1979). At the same time, new technology required new tactics and leadership. Secretary of the Navy George Bancroft took a major step toward these goals by creating the U.S. Naval Academy without first seeking the approval of Congress. Congress eventually recognized the Navy's counterpart to the U.S. Military Academy through formal legislation in 1845.

C. EARLY EXPERIENCES: MARINE CORPS

The Continental Congress adopted a resolution on 10 November 1775 calling for the creation of two battalions. This resolution established definite standards for the selection of marine officers. But, as was seen in the Navy, officers were usually political appointees and generally not war-fighters. Also, commanders of large ships were given discretionary power to commission officers on their own (Sweetman, 1979).

This unofficial agreement ended with the establishment of the United States Marine Corps in July of 1798. Along with the Marine Corps came the Office of the Commandant, who reviewed officer appointments before they were made. Still, there was no formal schooling or testing for officer appointees. It was not until 1861 that a professional examination was given to applicants. In 1882, Congress directed the Marine Corps to obtain some of its lieutenants from the Naval Academy; and, by 1883, the Marine Corps received it first input of trained officers.

D. EARLY EXPERIENCES: AIR FORCE

In August of 1907, when flight was beginning to interest the military, the Army Signal Corps was granted authority to establish the Aeronautical Division (Landis, 1960). After the newly-founded division studied the Wright brothers creation, an order was placed for an aircraft that could carry two men in continuous flight, for sixty minutes, at a speed of forty miles per hour. The craft was to allow an intelligent man to become proficient in handling it within a reasonable length of time. And so, the history of military aviation began in America.

As a result of a $125,000 appropriation by Congress in 1911, the Aeronautical Division opened its fist aviation school at College Park, Maryland. By 1913, three more schools had opened to teach military personnel to fly (Landis, 1960). It was not until World War I, however, that flight was to find much interest within the military. This interest converted the Aeronautical Division to the Aviation Section of the Signal Corps. Nevertheless, the Aviation Section was not ready for what it was going to meet in the war. Having been assigned to reconnaissance, observation, and messenger service, the new Aviation Section was undermanned, out-gunned, and under-trained. The pilots saw actual combat for the first time in April of 1918, but only 25-percent were flying American

planes(Landis, 1960). Even though the pilots were under-trained, they were able to overcome and prove themselves as an important new factor in warfighting. This success was carried home in the form of public support, and pressures soon mounted for a larger flying force.

Unfortunately, this support did not carry to Congress and to many military leaders. Even with public support (and the famous court martial of Billy Mitchell), the Air Corps did not make great strides in promoting its future use. Aircraft were becoming more sophisticated and faster, and training in the U.S. was falling behind advances elsewhere in the world(Landis, 1960). In October of 1931, the Air Corps opened the Air Corps Training Center and began to train "pilot-cadets." The Center was different from the other flying schools in that it taught more than just flying. The cadets were drilled in Air Corps doctrine, mathematics, and the new doctrine of air power. The school was successful at commissioning lieutenants, but the Air Corps felt that it needed a school to create future air generals. Various requests for a new "air force" academy were presented to Congress but all were ultimately rejected.

During World War II, the Air Corps again found itself behind in training and manning, but was once again able to overcome adversity and succeed. Now, the Air Corps was a major force in the war, and it was clear that Congress and the military's leaders could no longer withhold resources and recognition. In 1947, the Air Corps was separated from the Army and recognized as the Air Force (Landis, 1960).

Even though the Air Force was independent, it still had to rely on the academies of the other services for its officers. The top 10-percent of each graduating class at the Military Academy and Naval Academy were permitted to choose the branch of the military in which they wanted to serve. The percentage of graduates was increased in 1949, and

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the other services gradually felt the drain. This situation added support for the creation of an Air Force Academy. The Korean War proved that the Cold War would require a large Air Force; and on April 1 1954, the Air Force Academy was authorized by Congress.

E. HISTORY OF RESERVE OFFICER TRAINING CORPS AND OFFICER CANDIDATE/TRAINING SCHOOLS

The academy systems, along with direct commissions, provided a stable and effective source of officers through the World Wars. After World War II, requirements for a much larger force necessitated changes in the methods for recruiting and commissioning officers. The academies remained the most prestigious of the military's commissioning sources, but the academies produced only 10-percent of the officer corps.

The Reserve Officer Training Corps, or ROTC, was developed in 1916 to provide a pool of officers who could be called into service when the armed forces expanded during wartime. ROTC was elevated in importance and enlarged to a much greater extent in the post-war period. As of 1994, there were approximately 630 ROTC units located at colleges and universities throughout the nation. Among units existing in the early 1990s, the Army accounted for approximately 66-percent, the Air Force 24-percent, and the Navy 10-percent (GAO report, 1991).

Employed informally during the Civil War and more formally during World War I, Officer Candidate School or OCS (for the Army and Navy), Officer Training School or OTS (for the Air Force) and Platoon Leaders Course or PLC (for the Marine Corps) was introduced. OCS, OTS and PLC were designed to meet wartime requirements that could

not be met by the academies or ROTC. The training schools, which were created as a wartime programs, eventually became a peacetime program as well.

F. ISSUES IN MINORITY OFFICER PROCUREMENT

African-Americans have fought in all of America's wars from the very beginning of the Republic. However, it was not until World War II that a serious effort was made to include blacks in the officer corps; and, even then, only six-tenths of one percent of all black soldiers held commissions (Miles, 1993).

In 1948, President Harry Truman issued Executive Order 9981 calling for the complete integration of the armed forces (Binkin and Eitelberg, 1982). Truman's executive order mandated equality of treatment and opportunity regardless of race, color, religion, or national origin. It is important to note that it was not until the Korean War that blacks were truly integrated into the armed services. The demands placed upon the armed services during the war precluded them from using obsolete segregation practices. But, still, at this time blacks accounted for only about one percent of the officer corps (Binkin and Eitelberg, 1982).

During the Vietnam era, the armed services increased their efforts to recruit black officers by opening 14 new ROTC units at Historically Black Colleges or HBCs (Synder, 1984). The services also intensified recruiting of minority students into other ROTC units. As a result, minority participation rose sharply during the seventies; and, by 1981-82, racial or ethnic minorities accounted for 22 percent of total ROTC enrollment (Synder, 1984).

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In the late 1960s, the service academies initiated an aggressive minority recruiting program that increased minority representation to roughly 10-percent of total student enrollment (Synder, 1984). OCS/OTS also saw extensive recruiting of minorities, but were mainly used as a "filler" when the demand for new officers increased.

G. MILITARY DRAWDOWN

Defense spending has been on the decline since the mid-1980s, but its greatest change was seen after 1990, as a result of the Budget Enforcement Act. This Act established firm budget-authority ceilings for the Department of Defense (or DoD) for 1991 through 1993 and general spending targets through 1995. These actions, taken to adhere to the Budget Enforcement Act, took enormous slices out of the defense budget. Between 1991 and 1995, the DoD budget was reduced, in constant dollars, by approximately $35 billion dollars (Jones, 1992).

The first year of the drawdown made it clear that the years to follow would be exacting, severe, and full of turmoil. In 1990, the Pentagon cut the number of active-duty military personnel by 78,600 and reduced operations and maintenance by $4.4 billion. In addition, Congress slashed $10.4 billion from procurement accounts (Jones, 1992). It was apparent that no program was safe from scrutiny or the budgetary axe. Programs such as Strategic Defense Initiative sank by over half; funding for the B-2 bomber was eliminated; and all procurement funds for the V-22 aircraft were cut (Jones, 1992).

The Gulf War in 1990-91 gave the military a brief respite before the tide of budgetary reduction rose again. The targets for the manpower drawdown were suspended for that period. But late in 1991, cuts were again looming on the horizon. The change in world climate had dictated a smaller force, and DoD was ripe for the chopping. The

Pentagon's budget for 1992 through 1997 contained even greater cuts than were proposed in the Budget Enforcement Act. The new plan was set to cut the DoD budget by $1 trillion dollars over five years. In constant dollars, this was a 34-percent reduction from 1985 levels.

The drastic slide in defense spending was targeted for virtually all aspects of the DoD budget. Active-duty military personnel declined to approximately 1.65 million by 1995, a 24-percent cut from 1987 levels. With the reduction in manpower came a reduction in accessions. The Army was projected to see the largest reduction at 41 percent, the Navy at 33 percent, and the Air Force at 20 percent (GAO Report, 1991).

H. THE SUPPLY OF MINORITIES FOR OFFICER PROCUREMENT PROGRAMS

The ability for a firm to recruit during a force downsizing is highly dependent upon the firm being able to clearly define its business direction and its business strategy (Anfuso, 1993). Since the armed forces have been front-page news for the past several years (along with political turmoil all over the world), they have a perceived need and should still be able to recruit.

1. OCS/OTS/PLC

During the time of the DoD drawdown, the civilian sector was also cutting back in certain sectors of the work force. For example, a survey of 870 companies, conducted by the American Management Association in July of 1993, found that firms on average were reducing their work force by 10.4 percent (Clarke, 1994). This was up from 9.2 percent in 1992. During this time, 46.6 percent of the firms conducted some measure of downsizing

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(Anfuso, 1993). In addition, during this time, blacks were the only minority group to suffer a net loss in jobs. Part of the cause has been blamed on so-called objective-based performance appraisals, which are said to contain built-in biases and prejudices. These appraisal systems often result in minorities getting lower performance ratings than non-minorities and, thus, being the first ones cut in a reduction-in-force (Williams, 1994).

Restructuring and downsizing throughout the work force have dumped large amounts of people from all skill levels into the labor pool. This has changed attitudes of firms in the way they recruit new employees. Now, companies are receiving five times as many applications as they did a few years ago (Anfuso, 1993). This seems as though it would make the process easier, but it has not. It is important to remember that the labor pool has grown because of downsizing, and that many of the applicants may not be qualified for the job but are looking for a career change.

There is concern that this new pool may spill over into the pool of OCS/OTS/PLC applicants, thereby increasing that pool. Currently, OCS/OTS/PLC programs are accessing only enough people to keep the commissioning sources proficient. Thus, the classical decrease in demand and increase in supply increases the competition for entrance into the accession programs. Minorities, on average, have lower Scholastic Aptitude Test (or SAT) scores and high school Grade Point Averages (or GPAs) than do non-minorities. Thus, with lower scores and facing greater competition, minorities that normally would have been accepted, may be excluded during the drawdown.

2. ROTC/Academies

According to the Department of Education (DoE), between 1978-79 and 1991-92, the number of high school graduates declined by about 19 percent (DoE Report, 1992). Since minorities generally graduate at a lower rate than whites, there is some concern that the pool of eligible minorities for the officer corps has decreased. DoE did expect to see an increase in high school graduates from 1992 through 1994 and, then, an even greater increase through 2004 (DoE Report, 1992). At the same time, demographers and education researchers predicted a 25 percent increase in college graduates between the years 1994 and 2004 (DoE Report, 1992).

Even with the decrease in college attendance in recent years, between 12,000 to 16,000 high school seniors compete annually for some 1,450 vacancies at each military academy (Snyder, 1984). The combined average SAT score of admitted students is around 1,200 (Synder, 1984). By comparison, the combined average SAT of entering college freshmen nationally is around 900 (Synder, 1984). Throwing in extracurricular activities, student leadership positions, and community service, the academies are drawing from the top 15 percent of all college-bound students. Recipients of ROTC scholarships, as with the academy students, generally range in the top 15 percent of their high school class (Snyder 1984).

This causes some concern for persons interested in expanding participation by minorities. For example, in 1993, the SAT was taken by just over 100,000 blacks, of which 35,746 were college-bound. The number of black young men who scored higher than 500 on the verbal portion or 500 on the math was 5,874 (Seiwell, 1994). Seiwell deduced that, of the black men who graduated from high school in 1990, probably no

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more than 5-6 percent had SAT scores high enough to qualify for the military's officer commissioning programs, via ROTC or a military academy.

Another area of concern is the reported 45 percent drop in the propensity of black youths to enlist in the military, as judged by an annual survey of high school seniors' attitudes (Kitfield, 1992). This trend is reflected in the approximately 6 percent decrease in the number of blacks enlisting in the Army during the same time frame (Kitfield, 1992). Black enlistees may reduce the number of potential black officers who would seek a commission through OCS; but, more importantly, the falling propensity of blacks to join the enlisted force may be accompanied by a similar reduction in the propensity of blacks to join the military in general, including the officer corps (Binkin and Eitelberg, 1982).

The military is not the only establishment that is faced with a decreasing pool of applicants. According to John Leo (1993), many colleges are offering grants, scholarships, cash, and other fringe benefits to black students in an effort to fill diversity goals. It is not that black high school completion rates have declined; in fact, they have risen over 6 percent in the last 10 years, but colleges have raised their goals for minority recruitment during that period (Janice, 1992). In most cases, colleges want at least 10 percent of their administration and student body to be composed of blacks; since only 1 to 2 percent of blacks have SAT scores high enough to meet the minimum requirements at most highly selective colleges, these colleges are seeking alternative methods to recruit black students (Leo, 1993). These methods have included offering qualified candidates full scholarships, grants, cash, and even tickets to football games. This has created a market in which only half of the blacks accepted at Harvard actually enrolled (Leo, 1993). In this particular case, Leo observes that "other colleges put more money on the table and simply outbid Harvard" (Leo, 1993).

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There is one pool of prospective candidates that the Army has successfully tapped in recent years for its officer programs: HBCs. The greatest increase in college enrollment for blacks has occurred at HBCs, where the number of students increased by 17 percent. This compares with an increase of 12 percent in the enrollment of blacks at non-HBCs (Janice, 1992). The increase in enrollment is impressive, considering that HBCs account for only 3 percent of all colleges and graduate approximately 33 percent of all black college students, while serving 20 percent of the black college population. The data also suggest that HBCs recruit and retain blacks better than non-HBCs (Janice, 1992) and may be a good source of prospective recruits for the military's commissioning programs.

There has been some concern that HBCs, on average, are not as financially secure as non-HBCs; thus, HBCs are not able to offer the same level of education that non-HBCs can provide (Allen, 1992). Hines and Howard (1991), on the other hand, have found that attendance at an HBC has neither a positive nor negative effect on promotion of blacks int the Navy's officer corps. This is contrary to concerns that HBCs have fewer resources and thus offer a lower-quality education.

In summary, many important factors have been at work during the military drawdown that could have affected officer procurement. These include: a possible increase in blacks applying to officer training schools after being displaced in the civilian work-force; a possible decrease in the number of high school graduates and, ultimately, a lower number of minorities applying for officer procurement programs; a decrease in the number of minority applicants as the armed forces lose their appeal and universities and colleges increase diversity goals and benefits to meet those goals; an increase in the number of minority applicants as the number of minority college graduates increases; and a possible decrease in the number of minorities accessed into officer programs as accession standards are placed further out of reach of minorities. All of these trends are significant

in that they have played a role in the procurement of military officers during the military personnel drawdown.

III. RACIAL/ETHNIC REPRESENTATION
AND TRENDS IN OFFICER ACCESSION

A. DESCRIPTION OF THE DATA

The descriptive statistics in this analysis were provided by DMDC in tabular form by service, racial/ethnic group, and accession source. DMDC created the tables from the Officer Master File that it maintains. The statistics included all officers commissioned during 1980 through 1994. These years were chosen to give the analysis a base period (1980 through 1987 or pre-drawdown) that could be used to draw comparisons with the period in question (1988 through 1994 or drawdown).

The service category included Army, Navy, Marine Corps, and Air Force. The racial/ethnic category included black, Hispanic, other, and unknown. The "other" category was the default category (if racial/ethnic group was other than black, Hispanic, or unknown). The unknown category was not included in the sample. Accession sources included academy, ROTC, OCS[1], direct appointment, aviation training program, and unknown. Academy, ROTC, and OCS were selected for the analysis on the bases that, historically, these are the three major commissioning programs for all services and provide for easy comparison across services.

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[1] OCS includes Army OCS, Navy OCS, Marine Corps PLC, and Air Force OTS.

B. PRELIMINARY DATA ANALYSIS

As seen in Table 1, all racial/ethnic groups have increased their representation in the military's officer corps. Blacks and "others" have increased by approximately 3 percentage points and Hispanics have increased by 2 percentage points from 1980 through 1994.[2] These data, by themselves, suggest that the defense drawdown has not had an adverse effect on the accession of racial or ethnic minorities into the officer corps--unless one assumes that the increase in minorities would have been even greater in the absence of a reduction-in-force. From 1980 to 1987, black accessions increased by 1.5 percentage points and Hispanic accessions increased by 1.2 percentage points. This compares with the 1988 through 1994 period when blacks and Hispanics increased by 0.1 percentage points and 0.5 percentage points, respectively (after a downturn of approximately 1.2 percentage points for blacks during 1991 and 1992 and 0.4 percentage points for Hispanics in 1991). An analysis of the top three accession sources for all services is provided below.

1. Army Accessions

As seen in Table 2, the Army has apparently made great strides in increasing minority representation in its accession programs. From 1980 through 1994, blacks, Hispanics, and "others" have seen increases of 4.5, 3.8, and 1.8[3] percentage points,

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[2] See Table A-1 in appendix A for the total number of officers accessed into the armed forces by racial/ethnic group from 1980 through 1994.

[3] Due to the large disparity between the reported number of "others" accessed from 1980 through 1981, the 1980 data were not used to calculate percentage change given above.

Table 1

Percentage Distribution of Total Officer Accessions
by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Others	Total
1980	88.0	5.9	1.1	5.0	100.0
1981	90.6	5.2	1.3	2.9	100.0
1982	89.8	6.2	1.3	2.7	100.0
1983	89.4	6.3	1.6	2.7	100.0
1984	88.2	7.3	1.6	2.9	100.0
1985	87.8	7.3	1.7	3.2	100.0
1986	86.8	6.9	2.4	4.0	100.0
1987	87.0	7.4	2.3	3.3	100.0
1988	85.8	7.8	2.6	3.8	100.0
1989	85.2	7.8	2.7	4.3	100.0
1990	84.7	8.1	2.9	4.3	100.0
1991	85.6	7.5	2.5	4.4	100.0
1992	85.6	6.9	2.8	4.7	100.0
1993	84.1	7.3	2.9	5.7	100.0
1994	82.8	7.9	3.1	6.1	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.

Table 2

Percentage Distribution of Army Officer Accessions
by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Others	Total
1980	83.0	6.5	0.6	9.9	100.0
1981	89.1	6.2	0.9	3.9	100.0
1982	87.9	7.8	0.7	3.6	100.0
1983	90.3	6.3	0.4	3.0	100.0
1984	85.4	10.8	0.6	3.1	100.0
1985	84.4	11.7	0.7	3.2	100.0
1986	82.2	11.8	2.0	4.1	100.0
1987	81.8	12.3	2.3	3.5	100.0
1988	82.0	11.4	2.5	4.1	100.0
1989	82.1	11.2	2.6	4.0	100.0
1990	81.6	11.5	2.9	4.0	100.0
1991	82.3	11.0	2.3	4.3	100.0
1992	82.7	9.7	2.7	4.9	100.0
1993	83.2	8.6	2.7	5.4	100.0
1994	77.9	10.7	3.7	5.7	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.

respectively[4]. In looking at Table 2, again, it can be observed that blacks experienced a decrease in representation during the years 1987 through1993 by almost 2.5 percentage points, cutting almost in half the gains made during the pre-drawdown period. It was not until 1994 that representation of blacks increased. Hispanics, on the other hand, did not feel the effect until 1991, when they experienced a decrease of 0.6 percentage points. But, unlike blacks, Hispanics appear to have only been affected in 1991; in 1992 an increase is observed that carries through 1994. Persons in other racial/ethnic groups ("others") apparently made steady gains during the drawdown period.

a. Accessions from the United States Military Academy

The drawdown appears to have affected the accession of minority officers from the Military Academy. As seen in Figure 1, from 1985 to 1992 the proportion of blacks and "others" among officers commissioned through the Military Academy has declined by 7.3 and 2.2 percentage points, respectively. This is notable, since the number of officers commissioned through the Military Academy has remained fairly constant over

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Black %	3.1	4.0	4.3	3.8	4.2	9.0	8.0	7.9	3.8	0.7	1.8	1.9	1.7	3.6	5.5
Hispanic %	0.3	0.9	0.5	0.1	0.0	0.1	0.0	0.2	0.8	0.2	0.4	0.8	0.4	2.1	4.2
Other %	5.2	4.5	4.0	8.1	5.9	3.3	3.1	3.7	3.0	0.2	1.2	0.9	1.4	6.0	6.9
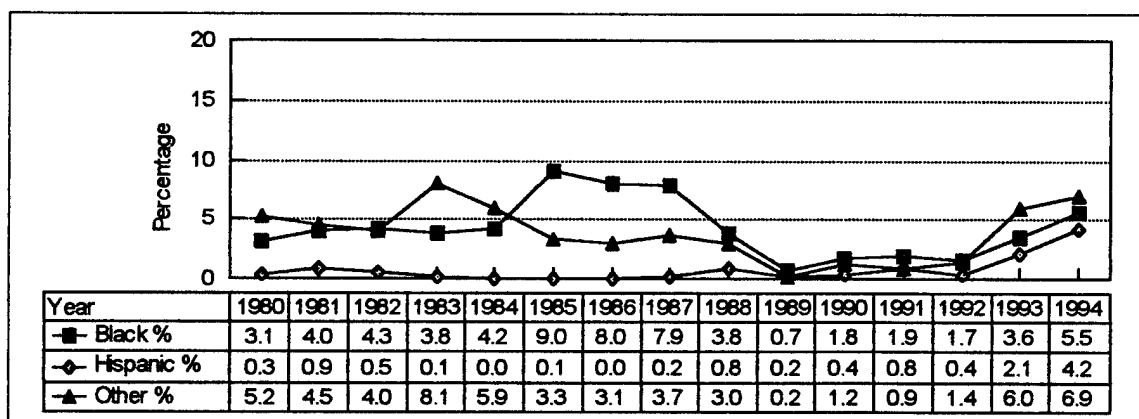
Figure 1 Military Academy Accessions by Racial/Ethnic Group, 1980-1984

[4] See Table A-2 in appendix A for the total number of Army officer accessions from all sources by racial/ethnic group from 1980 through 1994.

time. Thus, enrollment at the academy has tended to be constant during build-ups and drawdowns; and increases or decreases in minority representation may be attributed to factors other than military manpower requirements.

b. Army ROTC Accessions

Comparing Table 2 and Figure 2, it can be seen that changes in the proportion of officers commissioned through Army ROTC (or AROTC) accessions almost mirror variations in the proportion of total Army minority accessions. This is understandable since AROTC commissions, on average, made up 50 percent of total commissions during the time period examined. As a result, the same observations that were drawn from looking at total Army accessions may be applied to AROTC accessions.

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Black	5.7	4.0	5.6	3.9	10.0	13.0	12.9	13.8	13.5	13.8	14.3	15.4	11.4	9.9	10.7
Hispanic	0.2	0.3	0.5	0.1	0.4	0.5	2.9	2.9	3.0	3.7	3.7	2.9	3.7	3.4	3.8
Other	4.8	2.1	2.6	2.0	2.2	3.2	3.5	3.2	3.8	4.5	4.2	4.4	4.5	4.7	4.8
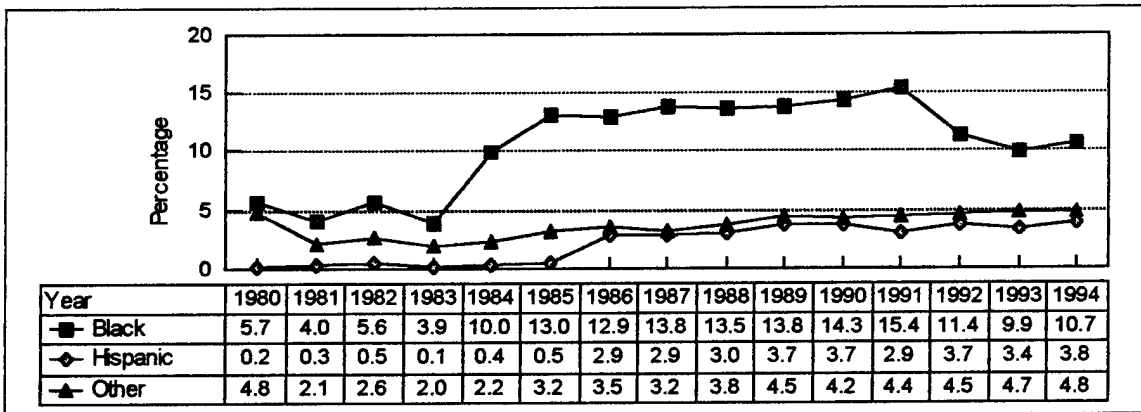
Figure 2 Army ROTC Accessions by Racial/Ethnic Group, 1980-1984

c. Army OCS Accessions

In the case of Army OCS (or AOCS) accessions, a different picture is seen than with accessions from the Military Academy and AROTC. As shown in Figure 3, blacks have made significant gains as a proportion of officers commissioned through AOCS--an almost 10 percentage point increase in the past decade. In the case of Hispanics and "others," an increase of 2 to 4 percentage points, respectively, can be observed. It must be noted, however, that AOCS, on average for the last decade, has accounted for only 4 percent of all Army officer accessions.

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Black %	9.1	0.0	7.1	0.0	0.0	8.8	6.3	8.4	11.0	16.9	14.9	14.2	17.0	15.8	18.5
Hispanic %	0.0	0.0	7.1	0.0	0.0	0.5	1.9	1.9	1.9	2.3	3.6	2.6	1.6	2.7	2.8
Other %	13.6	0.0	0.0	0.0	0.0	3.9	4.0	2.2	3.3	2.9	3.6	3.2	5.1	6.9	4.1
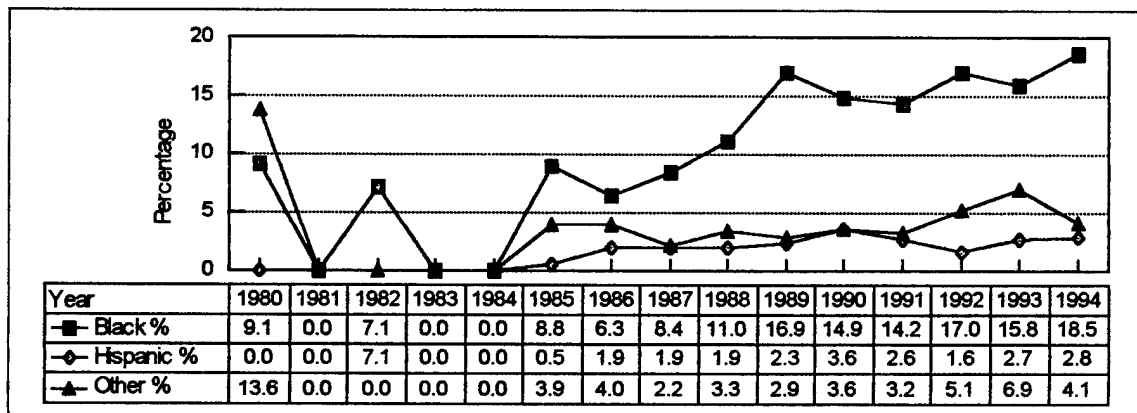
Figure 3 Army OCS Accessions by Racial/Ethnic Group, 1980-1984

3. Navy Accessions

The Navy, unlike the Army, has increased its representation of minorities among newly commissioned officers during the force drawdown. In Table 3 it can be seen that the proportions of blacks, Hispanics, and "others" have risen by 3.6, 3.9, and 3.5 percentage points, respectively, between 1990 and 1994.

Table 3

**Percentage Distribution of Navy Officer Accessions
by Racial/Ethnic Group, 1980-1994**

Year	White	Black	Hispanic	Others	Total
1980	92.8	3.6	1.1	2.4	100.0
1981	93.3	3.3	1.2	2.2	100.0
1982	92.8	3.8	1.3	2.1	100.0
1983	90.6	4.2	2.1	3.1	100.0
1984	90.0	4.2	2.7	3.2	100.0
1985	89.7	4.6	2.1	3.6	100.0
1986	87.7	4.2	3.2	4.9	100.0
1987	89.8	4.3	2.7	3.2	100.0
1988	88.4	5.0	3.3	3.3	100.0
1989	86.6	5.1	4.3	4.0	100.0
1990	85.2	6.6	4.0	4.2	100.0
1991	86.2	5.6	3.7	4.4	100.0
1992	85.6	6.0	3.8	4.6	100.0
1993	83.2	6.5	4.9	5.4	100.0
1994	81.9	7.2	5.0	5.9	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.

a. Navy Academy Accessions

As seen in Figure 4, minority representation has increased among officers commissioned through the Naval Academy during the force drawdown period. During the pre-drawdown period (up to 1987), the proportion of blacks actually decreased by 2 percentage points, while the proportion of Hispanics rose to 4.7 percent (1984) and then dropped to a 15-year low of just 1.2 percent (1986). "Other" groups maintained rather steady representation during that same period. As the force drawdown commenced, representation of each minority group among Naval Academy graduates gradually increased--rising by 4.5 percentage points for blacks between 1987 and 1994, compared with increases of 1.6 and 3.5 percentage points for Hispanics and "others," respectively, over the same years.

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Black %	4.5	3.1	3.3	3.9	3.2	3.3	2.5	2.5	3.5	4.8	5.8	4.2	3.4	4.5	7.0
Hispanic %	2.3	3.1	2.5	3.5	4.7	2.5	1.2	3.6	4.1	3.7	3.4	3.6	4.4	5.1	5.2
Other %	3.6	4.5	3.1	4.6	3.9	4.3	4.9	3.0	3.6	5.0	6.5	5.1	6.4	7.8	6.5
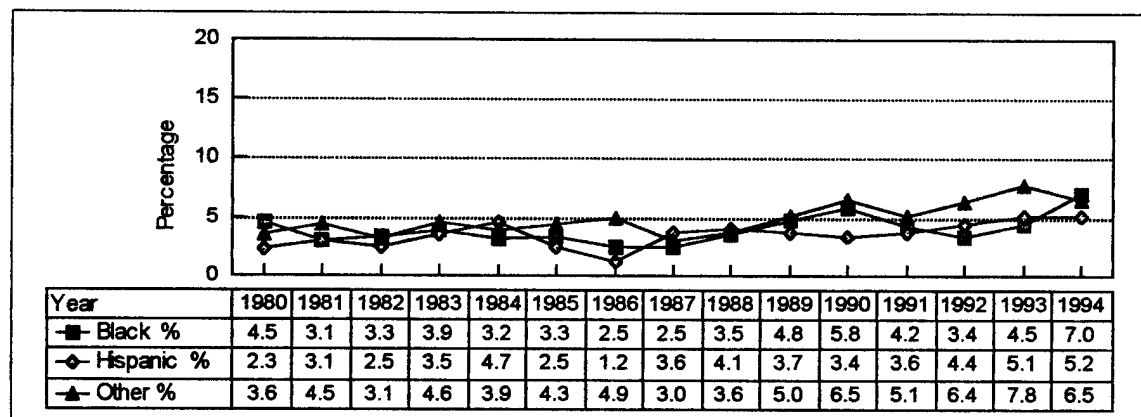
Figure 4 Naval Academy Accessions by Racial/Ethnic Group, 1980-1984

b. Navy ROTC Accessions

Representation of minority groups among Navy ROTC (or NROTC) accessions likewise increased over the drawdown period. As seen in Figure 5, the proportion of blacks, Hispanics, and "others" rose by 4.0, 6.1, and 3.8 percentage points, respectively. It is interesting to note that, just prior to the drawdown, black representation among NROTC officers actually declined by 1.3 percentage points, falling from 4.7 percent in 1984 to 3.4 percent in 1988.

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Black %	2.9	3.2	3.1	2.6	4.7	4.5	4.4	4.1	3.4	3.2	5.4	4.6	6.0	6.7	7.4
Hispanic %	0.0	0.5	0.3	0.5	0.4	0.7	1.9	0.5	0.5	3.2	3.1	4.0	4.6	5.1	6.6
Other %	0.6	1.3	1.7	1.1	1.9	1.5	2.8	1.9	2.7	3.8	3.7	5.5	4.7	5.2	5.7
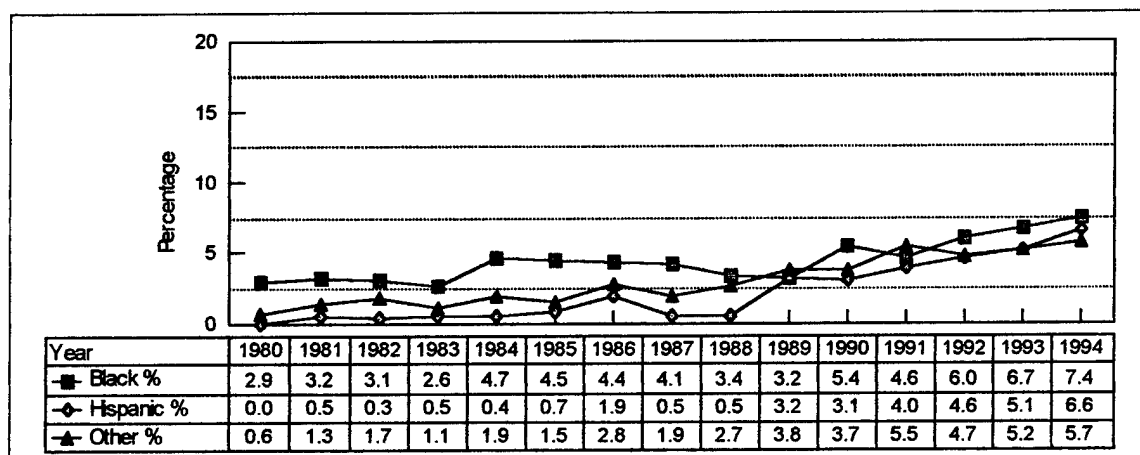
Figure 5 Navy ROTC Accessions by Racial/Ethnic Group, 1980-1984

c. Navy OCS Accessions

Blacks have made the greatest gains of any Navy accession source in Navy OCS (see Figure 6), where their proportion rose from 3.5 percent in 1980 to 12.6 percent in 1994. But, as with the AOCS, NOCS only accounts for approximately 20 percent of all Navy commissions each year. Hispanics and "others" have experienced similar, though smaller, increases in NOCS--4.3 percentage points for Hispanics and 1.8 percentage points for "others" over the 15-year period displayed in Figure 6.

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
-■- Black %	3.5	3.9	4.8	5.0	5.2	6.4	5.1	4.8	7.0	6.4	8.5	8.7	8.3	10.7	12.6
-◇- Hispanic %	1.0	1.4	1.3	2.8	4.3	3.8	5.3	4.7	7.0	6.4	5.2	6.1	4.5	5.0	5.3
-▲- Other %	2.5	2.6	2.0	3.0	1.9	2.4	3.0	3.4	3.3	3.9	4.4	5.2	4.7	4.1	4.3
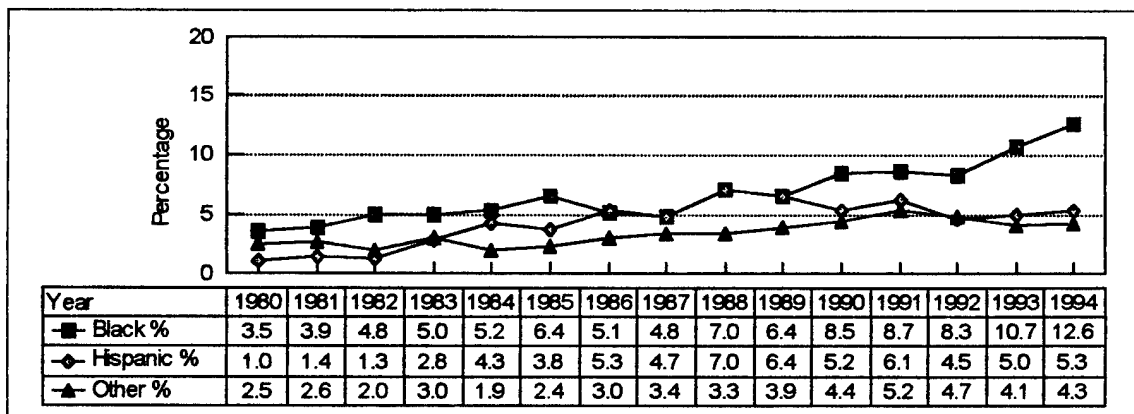
Figure 6 Navy OCS Accession by Racial/Ethnic Group

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4. Marine Corps Accessions

Table 4 shows the percentage distribution of racial/ethnic groups among newly commissioned officers in the Marine Corps. As seen here, from 1980 through 1987, Hispanics, and "others" made gains of 2.0, 3.0, and 2.8 percentage points, respectively. At the same time, from 1988 through 1994, the proportions of blacks and Hispanics each increased again by approximately 1 percentage point, while the proportion of "others"remained about the same. A dip in 1991 almost took blacks back to a previous low of just 4.2 percent. By 1994, the proportion of blacks had again risen to 7.8 percent-- a relatively high figure, but still below the 9.1 percent level of representation that occurred in 1991.

Table 4

**Percentage Distribution of Marine Corps Officer
Accessions by Racial/Ethnic Group, 1980-1994**

Year	White	Black	Hispanic	Others	Total
1980	93.9	4.2	1.0	0.9	100.0
1981	94.2	4.5	0.5	0.8	100.0
1982	94.1	4.2	0.7	1.1	100.0
1983	89.3	6.4	2.9	1.4	100.0
1984	89.5	6.1	2.4	2.0	100.0
1985	89.7	6.3	2.3	1.8	100.0
1986	88.3	5.0	3.8	3.0	100.0
1987	88.7	5.8	2.3	3.3	100.0
1988	85.5	6.2	4.6	3.7	100.0
1989	84.6	9.1	4.0	2.2	100.0
1990	87.1	4.7	3.9	4.2	100.0
1991	88.2	4.2	3.8	3.7	100.0
1992	86.7	5.5	4.5	3.3	100.0
1993	85.3	6.6	4.7	3.3	100.0
1994	83.5	7.8	5.2	3.5	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.

a. Marine Corps Accessions at the Naval Academy

A simple observation of data on Marine Corps accessions from the Naval Academy (Figure 7) reveals no consistent trends in minority representation. Generally, percentages seem to rise and fall from one year to the next without any clear pattern. However, it appears that something unusual may have occurred in 1989, when the proportion of blacks soared to 16.8 percent and the proportion of Hispanics likewise rose dramatically to 9.7 percent--levels of representation among Academy graduates (especially for blacks) that were much higher than in any previous or later year.

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Black %	5.5	9.4	5.7	7.3	6.4	5.6	9.4	6.9	2.7	16.8	7.3	2.0	6.6	5.7	8.3
Hispanic %	1.2	0.9	0.7	1.6	4.1	2.8	8.8	2.3	3.7	9.7	6.3	2.0	4.6	3.1	8.3
Other %	2.5	4.3	3.5	3.1	4.1	3.4	5.3	1.7	2.1	3.5	1.0	5.1	2.6	5.7	2.1

Figure 7 Marine Corps Accessions at the Naval Academy by Racial/Ethnic Group, 1980-1984

b. Marine Corps ROTC Accessions

Figure 8 shows blacks, Hispanics, and "others" as a percentage of Marine Corps officers commissioned through ROTC. As seen here, there has been moderate change in the proportions of minorities over time, though the figures seem to rise and fall without any clear pattern. The highest proportions of blacks (5.5 percent) and "others" (3.5 percent) are found in 1988, while the highest proportion of Hispanics (2.9 percent) occurs in 1989 and 1992. At the same time, in 1994 Hispanics represented just 1 percent of MCROTC.

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Black %	3.5	2.4	2.7	3.0	4.9	4.9	3.4	2.7	5.5	4.1	4.9	2.3	1.4	5.3	5.3
Hispanic %	0.1	0.4	0.2	1.6	2.1	1.4	1.7	0.9	2.6	2.9	2.6	0.7	2.9	1.3	1.0
Other %	0.4	0.4	0.6	0.9	1.8	1.1	1.7	0.9	3.5	3.2	2.6	1.0	2.9	1.3	2.9
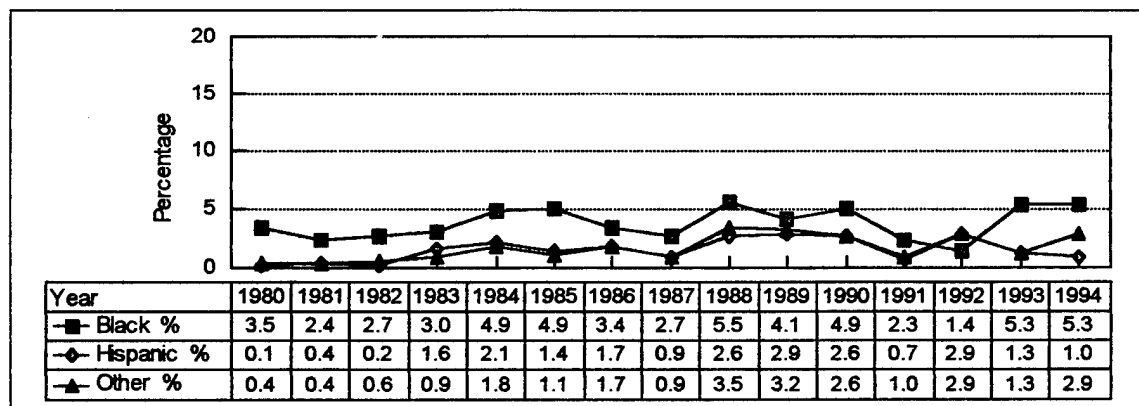
Figure 8 Marine Corps ROTC Accessions by Racial/Ethnic Group, 1980-1984

c. Marine Corps Accessions PLC

The proportion of minorities in Marine Corps PLC, as shown in Figure 9, appear relatively more stable than in other Marine Corps commissioning programs. (Data for 1989 were deleted from the figure due to errors in the computerized files.) In addition, for the most part, minority representation has increased or remained fairly constant during the force downsizing.

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1990	1991	1992	1993	1994
Black %	5.2	6.0	5.0	8.1	8.6	6.5	4.7	7.0	5.6	4.4	5.2	6.6	7.6	8.5
Hispanic %	2.0	0.7	1.0	4.0	2.7	2.5	3.2	2.5	5.5	4.1	5.1	4.9	6.8	5.6
Other %	1.2	0.8	1.2	1.5	1.7	1.8	3.1	4.9	5.0	5.1	4.6	3.5	3.3	4.1
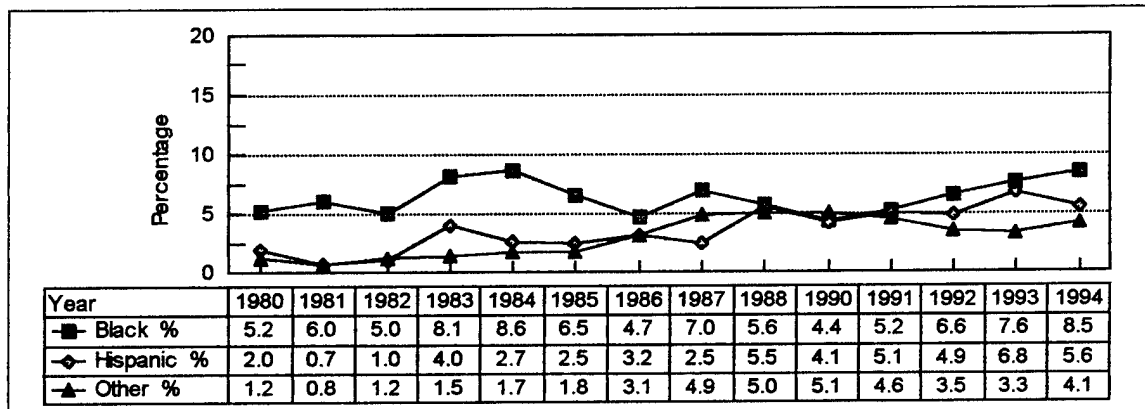
Figure 9 Marine Corps PLC Accessions by Racial/Ethnic Group, 1980-1994

5. Air Force Accessions

Table 5 shows the percentage distribution of racial/ethnic groups among newly commissioned Air Force officers over the past 15 years. As seen here, black representation decreased by 2.1 percentage points from 1983 to 1988. Black representation then rose slightly, stabilized at 5.6-5.8 percent between 1989-1990, and then declined for the two years of the force drawdown to less than 5 percent. At the same time, Hispanic representation between 1989 and 1994 has hovered at around 1.0 percent and actually reached a 15-year low of 0.6 percent in 1994. The decline in representation for blacks and Hispanics has been accompanied by a notable increase in "other" minorities. Indeed, in 1994, the proportion of "others" (7.5 percent) exceeded the total of both blacks and Hispanics (5.5 percent) for the first time in at least 15 years.
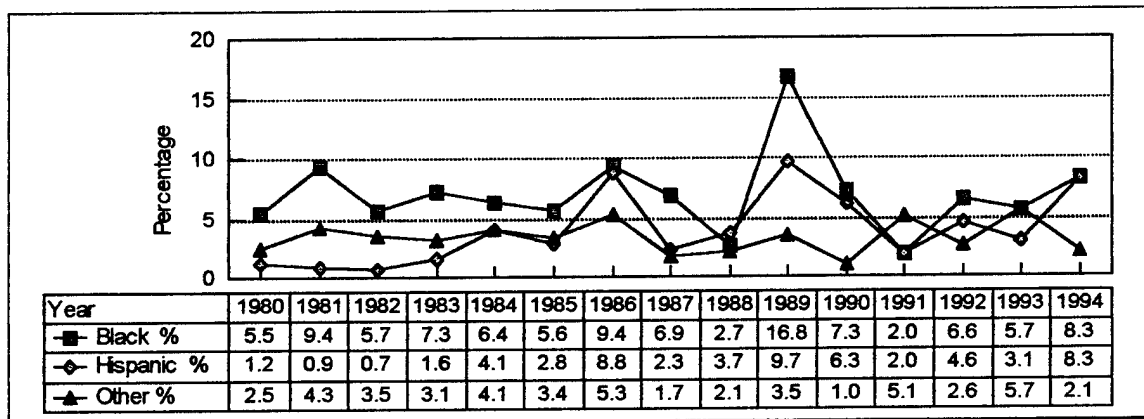
Table 5

**Percentage Distribution of Air Force Officer
Accessions by Racial/Ethnic Group, 1980-1994**

Year	White	Black	Hispanic	Others	Total
1980	88.5	7.1	1.7	2.8	100.0
1981	89.1	6.0	2.1	2.8	100.0
1982	88.2	7.2	2.1	2.6	100.0
1983	87.8	7.8	1.9	2.4	100.0
1984	89.6	6.1	1.8	2.6	100.0
1985	89.5	5.2	2.3	3.0	100.0
1986	90.5	4.6	1.7	3.2	100.0
1987	89.8	5.0	2.0	3.2	100.0
1988	88.2	6.1	1.8	3.8	100.0
1989	87.9	5.7	1.3	5.1	100.0
1990	88.2	5.8	1.1	4.8	100.0
1991	88.6	5.6	1.1	4.6	100.0
1992	88.9	4.9	1.2	5.0	100.0
1993	85.5	6.6	1.1	6.8	100.0
1994	87.0	4.9	0.6	7.5	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.

a. Air Force Academy Accessions

As seen in Figure 10, Hispanics have apparently all but disappeared from the graduation classes of the Air Force Academy. Even prior to the drawdown, Hispanics were on the decrease: from 1980 through 1987, Hispanic representation declined by more

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
■ Black %	3.6	4.2	5.9	5.9	7.1	6.3	6.9	6.1	5.5	5.4	6.7	6.4	7.1	8.0	4.7
◇ Hispanic %	3.3	4.2	3.1	1.0	2.9	3.1	1.2	1.4	1.3	0.8	0.5	0.2	0.3	0.7	0.0
▲ Other %	3.0	4.0	3.4	2.7	2.9	4.0	5.9	7.7	7.3	5.9	5.8	7.4	6.9	11.7	11.5
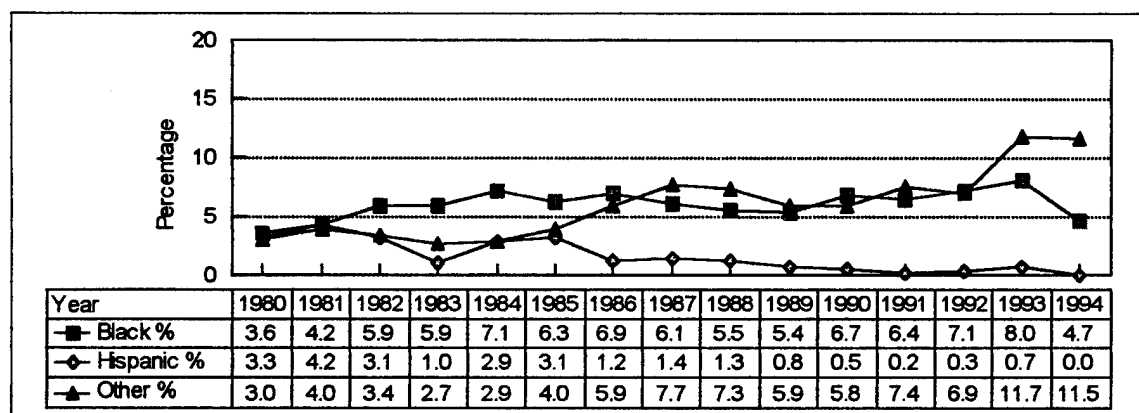
Figure 10 Air Force Academy Accessions by Racial/Ethnic Group, 1980-1984

than one-half, falling from 3.3 percent to 1.4 percent. The decline in Hispanic representation during the drawdown period was not as large; but, with a decrease of 1.3 percentage points, the data show that virtually no Hispanics have been commissioned through the Academy in 1994[5]. Blacks, on the other hand, seem to have been helped by the drawdown: during 1986 through 1989, the proportion of blacks decreased 1.5 percentage points; but, during the drawdown period, black representation increased by 2.6 percentage points. (However, the proportion of black Academy graduates fell to just 4.7 percent in the most recent year, 1994.)

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[5] These data are taken directly from DMDC cross tabulations. However, it is possible that the rise in representation by "other" minorities may somehow be connected with the "disappearance" of Hispanics--who may simply be misidentified or coded incorrectly in the data files provided to DMDC by the Air Force.

b. Air Force ROTC Accessions

The data in Figure 11 show that in 1982 through 1983, black representation among Air Force ROTC accessions was approximately equal with black representation in the general population (13 percent). Nevertheless, over the next three years (1984-1986) black representation fell to 4.9 percent, and then stayed at this level (with some moderation) through the drawdown period. At the same time, Hispanics experienced a gain of 0.4 percentage points; but, during the defense downsizing, that increase eroded to a point where Hispanics represented just 0.4 percent of Air Force ROTC accessions in 1994.[6] As was the case with data on Academy graduates, "others" appear to have benefited from the drawdown--increasing their representation among ROTC accessions by 5.4 percentage points.

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Black %	7.0	8.4	11.8	13.1	8.3	6.4	4.9	5.2	7.0	6.4	4.8	5.6	3.6	5.6	4.8
Hispanic %	2.0	3.0	3.1	3.0	2.2	2.7	2.1	2.4	2.0	1.3	1.4	1.9	2.1	1.3	0.4
Other %	2.0	2.2	2.8	2.4	2.9	3.2	3.0	3.0	3.2	6.0	4.9	4.6	4.3	6.0	8.4
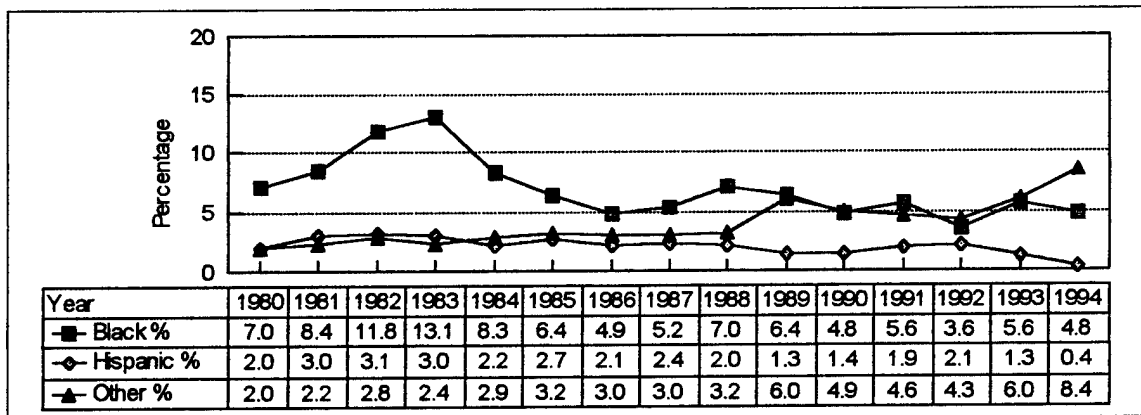
Figure 11 Air Force ROTC Accessions by Racial/Ethnic Group, 1980-1984

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[6] As in the case of the Academy data, it is possible that "others" and Hispanics, may simply be misidentified or coded incorrectly in the Air Force ROTC data file.

c. Air Force OTS Accessions

OTS accessions (Figure 12) appear to have remained relatively insulated from any effects of the drawdown. Blacks, Hispanics, and "others," after slight decreases during the early years of the drawdown, represented 4.5 percent, 2.9 percent, and 3.2 percent, respectively, of officers commissioned through OTS. This was the only Air Force accession source where Hispanics experienced a gain in representation over the drawdown period.

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Black %	8.7	4.5	3.2	2.0	3.1	3.2	2.8	2.7	1.6	2.0	2.0	3.4	4.2	6.8	4.5
Hispanic %	1.3	1.0	0.7	0.8	1.3	2.1	1.7	1.2	0.9	1.6	1.0	0.7	0.6	1.6	2.9
Other %	2.4	2.1	1.6	2.0	1.9	2.2	2.7	1.7	3.0	2.1	2.3	1.8	1.7	2.2	3.2
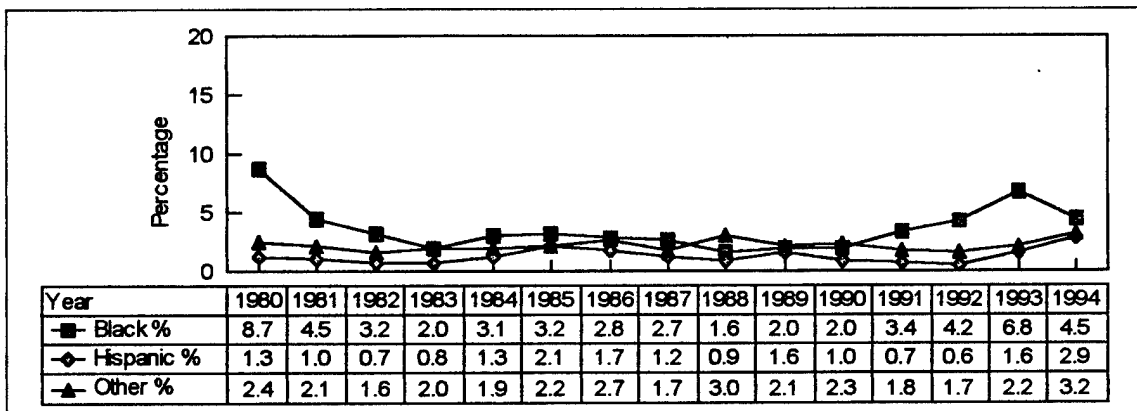
Figure 12 Air Force OTS Accessions by Racial/Ethnic Group, 1980-1984

IV. RACIAL/ETHNIC REPRESENTATION
AND TRENDS IN OFFICER OCCUPATIONS

A. DESCRIPTION OF THE DATA

The descriptive statistics presented here were provided by DMDC, cross tabulated by service, racial/ethnic group, pay grade, and DoD occupation code. DMDC created the tables from the Officer Master File maintained at DMDC. The statistics included all officers on active duty during 1980 through 1994. These years allow comparison of pre-drawdown (1989-1987) and drawdown (1988-1994) periods.

The service category included Army, Navy, Marine Corps, and Air Force. The racial/ethnic category included black, Hispanic, "other," and unknown. The "other" group was the default category (other than black, Hispanic, or unknown). The unknown category was not included in the sample. Warrant officers were excluded from the tabulations. Since the objective in this phase of the analysis is to capture the effect of the drawdown on officer accessions by DoD occupations, only officers in pay grades 0-1 through 0-3 were included here.

Occupations were categorized according to DoD codes. The following is a brief description of DoD occupation codes, as defined by the DoD "Occupational Conversion Index for Enlisted, Officers, and Civilians":

    a.   **General Officers and Executives** - Includes all officers of General/Flag rank and all commanders, directors, and planners not elsewhere classified.

b. **Tactical Operations Officers** - Includes pilots and crews and operational staff officers.

c. **Intelligence Officers** - Includes strategic, general, communications intelligence officers, and counter-intelligence officers.

d. **Engineering and Maintenance Officers** - Includes design, development, production, and maintenance engineering officers.

e. **Scientists and Professionals** - Includes physical, biological, and social scientist, and other professionals such as lawyers and chaplains.

f. **Health Care Officers** -Includes physicians, dentists, nurses, veterinarians, biomedical sciences, and allied health officers.

g. **Administrators** - Includes general and specialized administration and management officers.

h. **Supply, Procurement and Allied Officers** -Includes officers in supply, procurement and production, transportation, food service, and related logistics activities not elsewhere classified.

I. **Non-Occupational** - Includes patients students, trainees, and other officers who for various reasons are not occupationally qualified.

Since the analysis focuses on the occupational patterns of officers at the pay grades of 0-1, 0-2, and 0-3, both the "general officers and executive" and "non-occupational" categories were excluded. This left a total of seven DoD occupational categories, standardized for cross-service comparisons.

B. PRELIMINARY DATA ANALYSIS

1. Department of Defense Officers in Pay Grades 0-1 through 0-3

As seen in Table 6, the armed forces have successfully increased minority representation in the 0-1 through 0-3 pay grades over the past 15 years. The increases in representation occurred early in the 1980s for blacks and then leveled off, declining slightly during the 1993-1994 period. The pattern is different for Hispanics and "other" minorities, who have experienced a fairly continuous pattern of proportional growth, inching upward throughout the 1980s and initial years of the drawdown.

2. Army Officers in Pay Grades 0-1 through 0-3

As seen in Table 7, blacks are the only racial/ethnic group to have declined in representation over the drawdown period. In fact, the proportion of blacks in the Army at the pay grades of 0-1 through 0-3 has fallen by approximately 1 percentage point between 1992 and 1994. At the same time, both Hispanics and "others" have increased their representation in these pay grades by approximately 1.9 percentage points.

Data on minority representation in Army occupational categories are presented in Tables B-1 through B-7 in Appendix B. Historically, black officers have been over-represented in the Army's "support" occupations. As seen in Tables B-1 through B-7, blacks are still over-represented in the Engineering and maintenance, administration, and supply categories--while underrepresented in all other areas. However, over the past 15 years, the proportion of blacks in Army Health Care occupations has increased considerably; whereas, in every other occupation, except Intelligence, Scientists and

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Table 6

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to a DoD Occupation, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	88.8	6.3	1.3	3.6	100.0
1981	88.4	6.8	1.4	3.3	100.0
1982	87.7	7.2	1.5	3.6	100.0
1983	86.4	7.5	1.7	4.5	100.0
1984	87.2	7.9	1.8	3.1	100.0
1985	87.1	8.0	1.8	3.1	100.0
1986	86.7	7.9	2.0	3.4	100.0
1987	86.7	7.9	2.0	3.4	100.0
1988	86.6	7.9	2.1	3.3	100.0
1989	86.3	8.0	2.3	3.4	100.0
1990	85.9	8.1	2.4	3.6	100.0
1991	85.6	8.1	2.5	3.8	100.0
1992	85.5	8.0	2.6	3.9	100.0
1993	85.4	7.6	2.7	4.3	100.0
1994	84.8	7.7	2.8	4.7	100.0

Source   Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes persons who could not be identified by racial/ethnic group.
[b] Figures may not total 100 percent due to rounding.

Table 7

**Percentage Distribution of Officers in Pay Grades 0-1 through 0-3
Assigned to an Army Occupation, by Racial/Ethnic Group, 1980-1994**

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	84.5	9.0	1.1	5.4	100.0
1981	84.2	10.0	1.2	4.6	100.0
1982	82.2	11.0	1.3	5.5	100.0
1983	79.6	11.3	1.3	7.8	100.0
1984	82.7	12.4	1.3	3.6	100.0
1985	82.9	12.9	1.3	2.9	100.0
1986	82.7	12.9	1.4	3.0	100.0
1987	82.4	12.9	1.5	3.1	100.0
1988	82.1	13.0	1.7	3.3	100.0
1989	81.5	13.1	1.9	3.6	100.0
1990	80.9	13.3	2.1	3.7	100.0
1991	80.5	13.3	2.2	4.0	100.0
1992	80.2	13.1	2.4	4.2	100.0
1993	80.5	12.1	2.7	4.7	100.0
1994	79.8	12.0	3.0	5.2	100.0

Source   Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes persons who could not be identified by racial/ethnic group.
[b] Figures may not total 100 percent due to rounding.

Professionals, blacks have experienced a decrease in representation during the drawdown. Both Hispanics and "others," on the other hand, have experienced significant increases in representation in all occupations during the drawdown period.

3. Navy Officers in Pay Grades O-1 through O-3

The proportion of blacks among Navy officers in pay grades O-1 through O-3 (Table 8) has increased steadily since 1980. As seen in Table 8, the greatest increase in representation for blacks has taken place during the drawdown, almost 3 times the rate of increase seen during the pre-drawdown period. Hispanic representation has also increased during the drawdown; but, unlike blacks, the rate for Hispanics actually decreased (0.3 of a percentage point).

More detailed data on racial/ethnic representation in Navy occupational areas are presented in Tables B-8 through B-14 (Appendix B). It can be seen here that "others" were the only group to experience a significant decrease in representation within an occupational area during the drawdown. The occupations affected were Health Care and Scientists and Professionals; both saw decreases of 1.1 and 4.3 percentage points, respectively. During the drawdown, the proportion of Hispanics increased in every occupational area except Scientists and Professionals (where a slight decrease is observed).

Table 8

**Percentage Distribution of Officers in Pay Grades 0-1 through 0-3
Assigned to a Navy Occupation, by Racial/Ethnic Group, 1980-1994**

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	92.4	3.4	0.7	3.6	100.0
1981	92.1	3.6	0.8	3.4	100.0
1982	92.0	3.7	1.0	3.4	100.0
1983	91.1	3.7	1.2	4.0	100.0
1984	90.7	3.7	1.5	4.1	100.0
1985	90.0	3.9	1.7	4.4	100.0
1986	88.5	4.0	2.1	5.4	100.0
1987	88.5	4.0	2.3	5.2	100.0
1988	89.1	4.1	2.5	4.2	100.0
1989	89.1	4.3	2.8	3.8	100.0
1990	88.4	4.7	3.0	3.9	100.0
1991	87.8	4.9	3.2	4.1	100.0
1992	87.1	5.2	3.4	4.3	100.0
1993	86.4	5.5	3.7	4.5	100.0
1994	85.4	5.9	3.8	4.9	100.0

Source   Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes persons who could not be identified by racial/ethnic group.
[b] Figures may not total 100 percent due to rounding.

4. Marine Corps Officers in Pay Grades 0-1 through 0-3

Table 9 shows that Hispanics and "others" among Marine Corps officers (0-1 through 0-3) increased somewhat during the drawdown, while the proportion of blacks held steady. It should be observed that, over the past ten years, the proportion of blacks among Marine Corps officers in the lower pay grades has varied very little, though in a positive direction. Both Hispanics and "others" experienced greater increases in population representation during the drawdown than in the pre-drawdown period.

Occupational trends in the Marine Corps can be found in Tables B-15 through B-20 in Appendix B. It can be seen here that representation of blacks in Marine Corps occupational areas has generally declined or stayed about the same during the downsizing period. Blacks were only seen to increase in the Administrative and Scientists and Professionals occupations. The increase in the Scientists and Professionals area was only 0.2 of a percentage point, while the increase in Administration was 2.3 percentage points. Hispanics and "others" generally experienced increases in representation across occupational areas during the drawdown. Proportions of "others" also increased across all occupations, with the exception of Engineering and Maintenance.

Table 9

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to a Marine Corps Occupation, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	87.5	7.3	1.0	4.2	100.0
1981	87.2	8.1	1.1	3.6	100.0
1982	85.8	8.8	1.2	4.2	100.0
1983	84.1	9.0	1.2	5.7	100.0
1984	86.0	9.8	1.2	3.0	100.0
1985	86.0	10.2	1.2	2.5	100.0
1986	85.7	10.4	1.3	2.6	100.0
1987	85.3	10.5	1.4	2.8	100.0
1988	84.9	10.7	1.5	3.0	100.0
1989	84.3	10.9	1.6	3.2	100.0
1990	83.7	11.2	1.8	3.3	100.0
1991	83.2	11.3	1.9	3.6	100.0
1992	82.5	11.6	2.2	3.8	100.0
1993	82.2	11.1	2.5	4.2	100.0
1994	81.5	11.2	2.8	4.5	100.0

Source   Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes persons who could not be identified by racial/ethnic group.
[b] Figures may not total 100 percent due to rounding.

5. Air Force Officers in Pay Grades 0-1 through 0-3

It can be seen in Table 10 that the proportions of blacks and Hispanics among Air Force officers (0-1 through 0-3) have decreased during the defense drawdown. In fact, in the case of blacks, the start of the decrease actually began in 1985 and continued to slip over the next ten years. Hispanic representation, on the other hand, has changed very7 little, though in a consistently negative direction for the past 7 years. By 1994, the percentage of Hispanics (1.7 percent) reached an all-time low for the entire period since 1980. At the same time, representation of "others" has increased slowly, but consistently, over the years. By 1994, the proportion of others (4.5 percent) was almost double its level in 1980. In addition, the greatest increases in representation for "others" have occurred during the drawdown period.

This trend for persons in "other" minority groups can also be observed in the more detailed data on Air Force occupational areas (Tables B-21 through B-27 in Appendix B). Without exception, "others" increased their representation in all occupations--by as much as 3.4 percentage points in the Intelligence occupations and as little as 0.6 of a percentage point in the Health Care area. By comparison, there has been virtually no positive change in representation for either blacks or Hispanics. Any increases that were seen prior to the drawdown have disappeared during the subsequent period. In fact, over the past 15 years, the greatest increase in representation for both blacks and Hispanics amounted to less than 1 percentage point in the Health Care field.

Table 10

**Percentage Distribution of Officers in Pay Grades 0-1 through 0-3
Assigned to an Air Force Occupation, by Racial/Ethnic Group, 1980-1994**

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	89.7	6.1	1.8	2.4	100.0
1981	88.9	6.4	2.1	2.6	100.0
1982	88.8	6.5	2.2	2.5	100.0
1983	88.3	6.9	2.3	2.5	100.0
1984	88.2	6.9	2.3	2.6	100.0
1985	88.1	6.8	2.4	2.7	100.0
1986	88.3	6.7	2.3	2.7	100.0
1987	88.3	6.5	2.4	2.8	100.0
1988	88.3	6.5	2.3	2.9	100.0
1989	88.3	6.4	2.2	3.2	100.0
1990	88.2	6.3	2.2	3.3	100.0
1991	88.1	6.3	2.1	3.5	100.0
1992	88.3	6.1	2.0	3.7	100.0
1993	88.3	5.8	1.9	4.0	100.0
1994	88.2	5.6	1.7	4.5	100.0

Source   Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes persons who could not be identified by racial/ethnic group.
[b] Figures may not total 100 percent due to rounding.

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V. STUDY OF OFFICERS WHO ATTENDED HISTORICALLY BLACK COLLEGES: BACKGROUND AND METHODOLOGY

A. DESCRIPTION OF THE DATA: OFFICER COHORT FILES

As previously discussed in Chapter II, the armed services have apparently limited their efforts at recruiting officers from HBCs. One of the reasons offered is that HBCs are less likely than "mainstream" institutions to provide graduates who can meet the military's criteria for officer selection and commissioning. Although it is not possible to address the issue of officer qualifications from DoD data, one can evaluate the performance of military officers who have graduated from an HBC. This can be accomplished by looking at the time it takes to get promoted and the probability of being promoted. The underlying assumption is that "quality" officers will ultimately be promoted faster and have a greater chance off being promoted than others of lower quality. Since the focus of the analysis is on accessions, not on promotions, promotion models developed in a separate study are used to gauge the effect of attendance at an HBC on the time it takes to get promoted, and the probability of being promoted, to 0-4[7].

The data files also used in this analysis were provided by DMDC. Two cohort data files for, 1977 and 1980, were created to examine differences in promotion during the pre-drawdown and drawdown periods. These two cohorts were chosen on the basis of when officers would become eligible (in zone) for promotion to 0-4. Promotion to 0-4

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[7] This analysis was done in conjunction with Darrow's study of the effect of the military drawdown on the promotion of minorities. For more detailed information on this subject, see Cameron D. Darrow, The Impact of the Force Drawdown on the Promotion of Minority Officers in the U.S. Military, Master's Thesis, Naval Postgraduate School, Monterey, California, March 1995.

was selected because, historically, this is the first significant bottle-neck that an officer encounters in his or her career progression.

Darrow's (1995) cohort files did not contain information on the college attended by officers. Thus, a new file was created by merging information from DMDC on college attendance with Darrow's cohort files using the social security numbers of officers in the cohort. A list of all HBCs was obtained from the Department of Education (see Appendix C.) This list was than matched against college attendance records in the new data file to identify HBCs.

B. POSSIBLE LIMITATIONS OF THE DATA

The requirements for any statistical model are based on the various assumptions of the person who develops the model. The following assumptions were made in building the current model to analyze promotion. (Darrow, 1995).

Promotion is normally judged to be based on individual characteristics and rated performance in previous positions. Thus, a promotion model could simply be stated as the probability of promotion to 0-4 is dependent on individual characteristics and performance. But, there are many factors that could affect both individual characteristics and performance and, thus, the probability of promotion. To capture these effects, factors that affect individual characteristics and performance must be included in the model. The following is a list of ideal variables to be included in the model:

        a. Gender;

        b. Racial/ethnic group;

        c. Education level;

        d. College attended;

e. Commission source;

f. Indicators of stability (e.g., marital status);

g. Age at time of commission;

h. Any prior service in the armed forces;

I. Whether an officer has already failed to be promoted;

j. Number of personal awards;

k. Completion of essential milestones, courses, and qualifications;

l. Occupation; and

m. Indicators of motivation, aptitude, and performance (e.g., a
performance evaluation or fitness report).

If all of these variables could be included in the model, most of the variance in promotion would be accounted for, thus allowing the model coefficients to actually portray the true effect on promotion of attending an HBC.

2. Limitations of the Data

Although the DMDC files used to build the promotion model contain seven out of the twelve ideal variables, the five missing variables are, unfortunately, very important. These five variables may be closely linked to performance and motivation. Darrow (1995) tries to capture the missing variables by creating the variable STUDY, which is based on attainment of a graduate degree while on active duty. The limitations of the data set utilized above do not, in any way, undermine the legitimacy or integrity of the models. However, these limitations must be recognized in the analysis to qualify the conclusions.

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C. DEVELOPMENT OF MULTIVERATE PROMOTION MODELS

1. Restrictions and Assumptions

Darrow (1995) placed the following restrictions upon the officer cohort files:

a. The pay grade in the officers' entry year must be 0-1. This restriction eliminates warrant officers and officers of other ranks from the cohort.

b. The month and year of entry variables must produce an entry date that falls within the fiscal year of that cohort. This restriction ensures that all observations are valid members of that cohort group.

c. Officers with an occupation code of zero, one, or nine were restricted from the sample (that is, unknown, general officer or executive, and non-occupational, respectively). The remaining sample is distributed among the seven remaining DoD occupations.

These restrictions considerably reduced the number of observations. However, the restricted sample is still of sufficient size to support the statistical analysis and the data are representative of the various demographic groups.

The main assumption made by Darrow (1995) concerns promotion zones. Promotion zones are important because it is at this time that officers can confirm whether or not they will be able to get promoted and continue to serve on in the military. Furthermore, promotion rates are generally calculated as the percentage of officers in zone that are promoted. For a DoD-wide study, this is complicated by the fact that the services have different minimum time-in-rank periods, causing promotion zones to fall at different

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times. None of the services customarily consider an 0-3 for promotion to 0-4 within his or her first four years of time in grade. Therefore, it is assumed that an officer who leaves the military within this period has not done so because of failure to be selected for promotion. Officers who resign after this time are assumed to have done so because they have either failed to be promoted or realize that they are not going to be promoted. It is against this pool of officers who serve beyond four years as an 0-3 that the promotion rates to 0-4 are calculated.

2. Dependent Variables

The dependent variables in the promotion models by Darrow (1995) are TIME4 and PROM4. TIME4 is a continuous variable reflecting the number of months of commissioned service to 0-4 promotion. Time 4 is adopted as the dependent variable for the OLS regression models. PROM4 is a dummy variable, coded with a value of one for officers who are promoted to 0-4 (zero for those who are not). PROM4 is adopted as the dependent variable for the logistic models.

3. Explanatory Variables

a. Dummy Variables

1. **FEMALE** -- This is the gender variable that is designed to capture the effect of female status on promotability. The reference group is the male officer population.

2. **ETHNIC** -- This variable seeks to identify the effect of ethnicity on promotion outcomes. Blacks, Hispanics, and "others" (such as Asians and American-Indians) are targeted against the reference group of white officers.

3. POSTGRAD -- Those officers who entered the military having already completed a postgraduate degree are compared against all other officers in their cohort. Hence, the importance of having additional education up-front can be assessed.

4. STUDY -- The impact of completing a postgraduate degree while on active duty is isolated by this variable. Perhaps more importantly, though, is the attempt to pick-up the characteristics of motivation, aptitude, and performance that cannot be directly assessed because of the absence of information form performance evoluations. This variable identifies all the officers who are selected for funded graduate education. These officers are generally high performers. It also identifies those officers who take on the study commitments themselves, which, without discounting the possibility that they are high performers, is a display of motivation to their career and personal productivity.

5. ACADEMY -- A commission source variable that compares the promotability of graduates of the service academies to those of the OCS.

6. ROTC -- A commission source variable that compares the promotability of graduates of the ROTC programs to those of the OCS.

7. MARRIED/CHILDREN -- These variables are designed to be indicators of personnel stability. Across a large group of people, it is hypothesized that those that are married and/or have children are generally more stable and career-minded. The reference populations are simply officers who are not married and those without children, respectively.

8. PRIORSVC -- Officers with prior enlisted service are differentiated by this variable to assess the impact of the experience on their promotability as an officer.

9. OCCUPATION --Six of the seven occupation groups (Tactical Operations, Intelligence, Engineer/Maintenance, Science and Professional, Health, and Supply) were included in the promotion models. These variables highlight the relative importance of the different occupations on promotion outcomes.

10. SERVICES -- Dummy variables for the Navy, Marine Corps, and the Air Force were specified for the unrestricted models. The sample of ethnic officers (particularly Hispanics and others) is too small to run promotion models by race for each service. Only a general DoD model can be restricted by race. Because there are distinct differences in the promotion behavior of the services, these variables are required to hold that behavior constant.

11. HBC -- Officers who attended an HBC are compared with all other officers in their cohort who did not attend an HBC.

b. Continuous Variable

The only continuous variable in the promotion models is AGE. This variable records the age of the officers at the time of commission in their entry year. Although people can benefit from added experience and maturity, the military is a fairly youthful organization. Being considerably older than one's peer-group before a promotion board may influence the probability of promotion.

4. A Priori Expectations

The models are designed to assess the effect of minority status on promotion while holding constant gender, education, performance/aptitude (STUDY), commission source, marital status and parental status, prior service, age at entry year, occupation, service, and attendance at an HBC. It is expected that minority status will not, in itself, have a significant effect across the models. This is because poor promotion performance is normally attributed to factors such as lower education levels and being in an occupation or service with a "tight" promotion structure. No a priori expectations are associated with

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the variable HBC, due to conflicting opinions presented in the literature review. These factors are accounted for in the promotion models.

D. STATISTICAL PROCEDURES: OLS AND LOGIT

The OLS regression models assess the determining factors behind the time to 0-3 and 0-4 promotion. (Darrow, 1995) The coefficients of the significant variables indicate the change in time (in months) that can be associated with each variable, given no change in the other variables. This may seem, at first glance, to be of incidental importance because promotion times can vary as much according to occupation and service. However, these variables are held constant in the models. It is not a concern if minorities have been getting promoted a month or two slower than non-minorities. If the lag is about six months or more, then it might reveal that more minority officers are not being selected on their first look before the promotion boards. In this case, the OLS coefficients can give further insight into how one might remedy the situation for minorities.

The logistic models examine the determinants of the probability of promotion. In this case, the coefficients of the significant variables are converted into the percentage change in the probability of promotion. This is done by multiplying the coefficient by the promotion rate and then multiplying this product by one minus the promotion rate. The impact of factors such as minority status on the likelihood of promotion can then be readily understood.

VI. PRELIMINARY ANALYSIS OF PROMOTION MODELS

One logistic model and one OLS model were used in this analysis to explain the influence on promotion of attending an HBC. The logistic model was used to explain the change in probability of promotion based on the variables discussed in Chapter V. The OLS model was used to explain the time to promotion based, again, on the variables discussed in Chapter V. Both models were applied to the cohort files for 1977 and 1980, as explained in Chapter V.

To determine the effects of a change in each explanatory variable on the probability of promotion, the estimated coefficients of the logistic models were converted from the logistic coefficients into more meaningful measures. The coefficients were multiplied by the probability of promotion for all officers, and one minus the probability of promotion for all officers. This produces a coefficient that is expressed in percentage terms and can be used to compare the relative effect of each explanatory variable. For example, the variable POSTGRAD has a coefficient value of 22.67 for the 1980 cohort (as seen in Table 11); this relates to a 22.67 percent increase in the probability of being promoted to 0-4, for those with postgraduate education, holding all else constant.

The time-to-promotion coefficients are expressed in terms of months. For example, the variable FEMALE has an OLS coefficient of 1.22 for the 1977 cohort (Table 11). This means that, holding all else constant, being FEMALE will extend one's time to 0-4 promotion by 1.22 months.

As seen in Table 11, for both the 1977 and 1980 OLS models, attendance at an HBC does not have a significant effect on time to 0-4 promotion. The 1977 and 1980 logistic models, however, offer a completely different result. For both of the logistic

models, attending an HBC has a significant effect on increasing the probability of being promoted to 0-4. In fact, for officers in both the 1977 and 1980 cohorts, graduating from an HBC increased one's probability of promotion to 0-4 by at least 66 percent. It should be noted that these data reflect promotion probabilities in DoD as a whole. The results would likely be different if the models were executed using service-specific information.

Table 11

Percent/Time Change in 0-4 Promotion Rates
for Significant Variables, 1977 and 1980 Cohorts

Variable	Time to Promotion*		Percentage Change* in Promotion	
	1977	1980	1977	1980
FEMALE	1.22	-	5.90	8.30
ETHNIC	-	1.00	-	-
POSTGRAD	-3.90	-	0.09	22.67
STUDY	-	-	20.70	27.69
ACADEMY	-0.90	-1.00	6.39	11.78
ROTC	1.22	-0.60	-	4.63
MARRIED	-	-	22.61	22.42
CHILDREN	-	-	4.13	-
PRIORSVC	-0.90	-1.20	-	-7.38
AGE	0.12	-	-	-0.66
TACTICAL	-1.40	-1.50	-	-
INTEL	-2.10	-1.70	-	-
ENGMAINT	-2.30	-	-	-
HBC	-	-	*66.90*	*69.13*
SCIPROF	-	-1.50	-	-
HEALTH	-5.50	-9.20	-	10.33
SUPPLY	-	-	-	-
NAVY	-26.60	-22.20	15.05	18.77
MARINES	3.40	2.30	-	-
AIR FORCE	-10.20	-0.50	-	-

Source: Derived from data provided by the Defense Manpower Data Center.
* At the 0.05 level of significance.

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VII. CONCLUSIONS AND RECOMMENDATIONS

This study addresses three questions pertaining to minority officer recruitment. First, what changes have occurred in minority officer representation by DoD accession sources during the drawdown? Second, what changes have occurred in minority representation by occupation--for officers at the pay grades of 0-1 through 0-3--during the defense drawdown? Finally, what effect, if any, does attendance at an HBC have on an officer's time to promotion (from 0-3 to 0-4) and the probability of being promoted to 0-4?

A. CONCLUSIONS

It appears that the armed forces have done a respectable job of maintaining, or even increasing, the recruitment of minority officers during the defense drawdown. Even during a time of drastic force cuts, all services were generally able to raise their levels of minority representation in officer accession programs. Only three accession sources experienced a decline in minority representation: the Military Academy (for both blacks and "others"), the Air Force Academy (for Hispanics), and Air Force ROTC (for Hispanics). One of the most notable findings was a decrease in Hispanic representation in Air Force commissioning programs. It is not clear whether this finding is due to an anomaly in the data provided by DMDC; but, if the data provide an accurate picture of the racial/ethnic composition of Air Force commissioning programs, this service will certainly have very few Hispanics in its officer "pipeline" to higher grades in the years to come.

Looking at the overall representation of minorities in occupational fields during the force drawdown, it can be seen again that the armed forces succeeded in maintaining a certain level of racial/ethnic stability across the board. The data suggest that blacks were

affected most over the years of the drawdown, with some migration across occupational areas within the Services and a slight decline overall in representation among junior officers. At the same time, proportions of Hispanics and "others" generally increased among junior officers during the military's reduction-in-force.

At the specific occupational level, blacks in the Army experienced a significant decrease in representation within Supply and Administration; but they have concurrently experienced gains in the Army's Health Care fields. On the whole, Hispanics and "others" either maintained or made small gains throughout most occupational areas in the Services. The notable exception here was in the Air Force, where the representation of Hispanics decreased in every occupation. Again, assuming the data are accurate, this suggests that the Air Force will face even greater difficulties in achieving racial/ethnic representation as junior officers advance to higher grades.

The statistical analysis suggests that attending an HBC has no significant effect on time to promotion, but that it does have a significant effect on increasing the probability of being promoted to 0-4. This finding also suggests that HBCs may be a prime source of recruitment for "quality" officers, and that increasing recruitment at HBCs may assist the armed forces in raising current levels of black representation within the officer corps.

B. RECOMMENDATIONS

There is apparently no direct correlation between the force drawdown and changes in minority representation within officer commissioning sources or occupational fields. Further research, using regression models to isolate the effect of the drawdown, is recommended to support the inferences made in this study. Additionally, looking at pay grades 0-1 through 0-3 to isolate changes in occupations may offer too broad a picture.

Indeed, officers in the junior grades of 0-1 through 0-3 account for almost 60 percent of the total officer corps. A study that focuses only on officers who have been in their respective occupation for less than one year would likely capture more of the changes in representation associated with the force drawdown.

Finally, even though the promotion models showed that attendance at an HBC is significant (as discussed in Chapter V), certain important variables were missing from the data: these include items such as a performance index, scores on a fitness report, college GPA, and SAT score. Additionally, a more refined model should be service-specific, to capture elements of promotion that are unique to the individual services. Research is recommended that would incorporate these variables and restrictions.

APPENDIX A. NUMBER OF ACCESSIONS BY RACIAL/ETHNIC GROUP, SERVICE, AND TOTAL DEPARTMENT OF DEFENSE, 1980-1994.

Table A-1

Number of DoD Officer Accessions by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Others	Total
1980	23,607	1,569	307	1,335	26,818
1981	23,593	1,358	346	747	26,044
1982	22,750	1,582	331	675	25,338
1983	23,967	1,671	418	727	26,683
1984	22,958	1,910	421	744	26,033
1985	23,660	1,967	458	850	26,935
1986	21,459	1,701	582	981	24,723
1987	18,755	1,585	499	717	21,556
1988	19,209	1,739	590	849	22,387
1989	19,745	1,809	617	995	23,166
1990	17,459	1,674	588	888	20,609
1991	15,255	1,344	443	785	17,827
1992	14,436	1,171	464	796	16,867
1993	12,418	1,178	433	843	14,772
1994	12,332	1,174	468	915	14,889

Source: Derived from special tabulations provided by the Defense Manpower Data Center.

Table A-2

Number of Army Officer Accessions
by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Others	Total
1980	7,546	588	56	899	9,089
1981	8,119	562	80	355	9,116
1982	7,019	619	52	291	7,981
1983	7,497	523	32	253	8,305
1984	7,892	998	57	290	9,237
1985	7,627	1,059	63	292	9,041
1986	6,770	972	162	335	8,239
1987	6,063	911	172	263	7,409
1988	6,727	932	202	338	8,199
1989	7,398	1,009	237	362	9,006
1990	6,353	984	227	315	7,789
1991	5,493	734	156	290	6,673
1992	4,904	575	161	290	5,930
1993	4,271	444	141	279	5,135
1994	4,574	615	210	326	5,725

Source: Derived from special tabulations provided by the Defense Manpower Data Center.

Table A-3

Number of Navy Officer Accessions
by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Others	Total
1980	6,026	237	74	157	6,494
1981	6,619	234	86	154	7,093
1982	6,129	254	85	139	6,607
1983	6,459	298	147	223	7,127
1984	5,206	243	154	184	5,787
1985	6,612	341	153	264	7,370
1986	6,282	298	228	351	7,159
1987	5,425	258	162	194	6,039
1988	5,249	299	193	196	5,937
1989	5,161	305	254	239	5,959
1990	5,291	409	249	262	6,211
1991	4,202	275	182	215	4,874
1992	4,213	295	187	226	4,921
1993	3,360	262	199	217	4,038
1994	2,828	249	173	203	3,453

Source: Derived from special tabulations provided by the Defense Manpower Data Center.

Table A-4

Number of Marine Corps Officer
Accessions by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Others	Total
1980	1,677	75	18	16	1,786
1981	1,643	79	9	14	1,745
1982	1,922	85	14	22	2,043
1983	1,973	141	65	31	2,210
1984	1,644	112	45	36	1,837
1985	1,265	89	32	25	1,411
1986	1,407	79	60	47	1,593
1987	1,218	79	31	45	1,373
1988	1,336	97	72	58	1,563
1989	648	70	31	17	766
1990	1,148	62	52	56	1,318
1991	1,087	52	47	46	1,232
1992	1,111	70	58	42	1,281
1993	797	62	44	31	934
1994	887	83	55	37	1,062

Source: Derived from special tabulations provided by the Defense Manpower Data Center.

Table A-5

Number of Air Force Officer Accessions
by Racial/Ethnic Group, 1980-1994, 1980-1994

Year	White	Black	Hispanic	Others	Total
1980	8,359	669	159	263	9,449
1981	7,212	483	171	224	8,090
1982	7,680	624	180	223	8,707
1983	7,938	709	174	220	9,041
1984	8,216	557	165	234	9,172
1985	8,156	478	210	269	9,113
1986	7,000	352	132	248	7,732
1987	6,049	337	134	215	6,735
1988	5,897	411	123	257	6,688
1989	6,538	425	95	377	7,435
1990	4,667	309	60	255	5,291
1991	4,473	283	58	234	5,048
1992	4,208	231	58	238	4,735
1993	3,990	310	49	316	4,665
1994	4,043	227	30	349	4,649

Source: Derived from special tabulations provided by the Defense Manpower Data Center.

APPENDIX B. RACIAL/ETHNIC GROUP REPRESENTATION BY OCCUPATIONAL CATEGORY AND SERVICE, 1980-1994.

Table B-1

- ARMY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Tactical Operations, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	88.3	6.7	0.9	4.0	100.0
1981	88.2	7.2	1.0	3.6	100.0
1982	86.3	7.6	1.1	3.3	100.0
1983	83.1	7.5	1.1	3.3	100.0
1984	87.3	8.1	1.0	3.1	100.0
1985	85.9	10.3	1.0	3.0	100.0
1986	85.7	10.4	1.2	3.0	100.0
1987	85.5	10.4	1.3	2.8	100.0
1988	85.4	10.2	1.4	2.8	100.0
1989	85.1	10.2	1.6	2.7	100.0
1990	84.8	10.2	1.8	3.5	100.0
1991	84.7	10.1	1.9	8.3	100.0
1992	84.8	9.9	2.0	5.0	100.0
1993	85.1	9.1	2.2	3.6	100.0
1994	84.2	9.2	2.6	4.0	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-2

- ARMY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Intelligence, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	90.9	4.3	0.9	3.9	100.0
1981	90.6	5.2	1.0	3.2	100.0
1982	86.2	5.8	1.0	6.9	100.0
1983	87.6	6.1	1.0	5.4	100.0
1984	89.7	6.7	0.9	2.8	100.0
1985	89.2	7.2	1.0	2.6	100.0
1986	88.7	7.2	1.1	3.0	100.0
1987	88.2	7.6	1.3	2.8	100.0
1988	87.2	8.3	1.3	3.2	100.0
1989	85.3	9.4	1.6	3.7	100.0
1990	83.7	10.3	1.9	4.1	100.0
1991	82.6	10.6	2.1	4.6	100.0
1992	82.0	10.7	2.5	4.9	100.0
1993	82.3	9.8	3.0	5.0	100.0
1994	82.3	9.8	3.1	4.8	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-3

- ARMY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Engineering and Maintenance, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	84.8	10.7	0.9	3.5	100.0
1981	82.2	13.0	1.2	3.7	100.0
1982	78.4	14.7	1.3	5.7	100.0
1983	75.1	15.6	1.3	8.0	100.0
1984	75.8	18.9	1.3	4.0	100.0
1985	75.9	19.8	1.3	3.0	100.0
1986	75.7	19.6	1.5	3.2	100.0
1987	76.6	18.4	1.7	3.4	100.0
1988	75.5	19.2	2.0	3.4	100.0
1989	75.9	18.2	2.4	3.6	100.0
1990	75.5	18.0	2.6	3.8	100.0
1991	74.9	18.3	2.7	4.1	100.0
1992	73.7	18.6	3.2	4.5	100.0
1993	75.8	16.0	3.4	4.8	100.0
1994	76.6	14.8	3.7	5.0	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-4

- ARMY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Scientists and Professionals, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	89.4	5.6	0.6	4.4	100.0
1981	89.7	5.9	0.6	3.8	100.0
1982	90.6	6.0	0.7	2.7	100.0
1983	90.1	6.0	0.7	3.3	100.0
1984	90.6	6.4	0.7	2.3	100.0
1985	90.3	6.6	0.7	2.4	100.0
1986	89.7	7.1	0.9	2.3	100.0
1987	89.6	7.1	0.9	2.5	100.0
1988	89.0	7.5	0.9	2.6	100.0
1989	88.9	7.4	1.0	2.8	100.0
1990	88.7	7.8	1.0	2.5	100.0
1991	88.6	7.6	1.1	2.6	100.0
1992	88.3	7.6	1.1	2.9	100.0
1993	88.1	7.5	1.3	3.1	100.0
1994	87.1	7.9	1.8	3.2	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-5

- ARMY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3
Assigned to Health Care, by Racial/Ethnic Group,
1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	88.4	6.0	1.8	3.8	100.0
1981	88.9	5.7	1.9	3.5	100.0
1982	89.0	5.7	2.1	3.2	100.0
1983	89.0	5.8	2.3	2.9	100.0
1984	89.4	5.9	1.9	2.8	100.0
1985	88.9	6.2	2.0	2.9	100.0
1986	88.6	6.4	2.1	2.9	100.0
1987	88.6	6.4	2.2	2.8	100.0
1988	88.1	6.7	2.2	3.0	100.0
1989	87.5	6.9	2.1	3.5	100.0
1990	86.7	7.3	2.1	3.9	100.0
1991	86.9	7.2	2.0	3.9	100.0
1992	87.1	6.9	1.8	4.2	100.0
1993	86.6	7.1	1.9	4.4	100.0
1994	86.9	6.9	1.8	4.4	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-6

- ARMY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Administrative, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	85.9	9.9	1.4	2.8	100.0
1981	85.2	10.8	1.5	2.5	100.0
1982	83.0	11.8	1.6	3.6	100.0
1983	81.8	12.4	1.6	4.1	100.0
1984	82.4	13.7	1.8	2.1	100.0
1985	80.3	15.8	1.8	2.2	100.0
1986	80.1	15.8	1.8	2.3	100.0
1987	79.7	16.2	1.9	2.3	100.0
1988	78.8	16.7	2.0	2.4	100.0
1989	78.3	16.9	2.2	2.6	100.0
1990	77.5	17.1	2.4	2.9	100.0
1991	76.7	17.5	2.8	3.0	100.0
1992	75.2	18.5	3.1	3.2	100.0
1993	75.2	18.1	3.3	3.5	100.0
1994	74.2	18.4	3.6	3.8	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-7

- ARMY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Supply, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	89.6	8.4	0.5	1.4	100.0
1981	88.3	8.9	0.6	2.3	100.0
1982	83.1	12.4	0.7	3.7	100.0
1983	81.6	13.4	0.7	4.4	100.0
1984	81.4	15.2	0.8	2.7	100.0
1985	77.2	18.7	1.5	2.5	100.0
1986	77.3	18.3	1.7	2.8	100.0
1987	77.3	18.3	1.7	2.7	100.0
1988	76.6	18.7	1.8	3.0	100.0
1989	76.1	18.9	2.1	3.0	100.0
1990	75.0	19.3	2.4	3.3	100.0
1991	74.7	19.4	2.4	3.4	100.0
1992	74.4	19.3	2.6	3.7	100.0
1993	74.8	18.3	2.9	4.0	100.0
1994	74.8	18.2	3.1	3.8	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-8

- NAVY -

**Percentage Distribution of Officers in Pay Grades 0-1 through 0-3
Assigned to Tactical Operations, by Racial/Ethnic Group,
1980-1994**

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	94.5	3.4	0.7	1.4	100.0
1981	94.0	3.5	0.9	1.6	100.0
1982	93.2	3.8	0.8	2.2	100.0
1983	93.4	3.9	0.8	1.9	100.0
1984	92.7	3.9	1.2	2.2	100.0
1985	91.5	4.3	1.7	2.5	100.0
1986	91.4	3.9	2.1	2.6	100.0
1987	91.0	3.8	2.2	3.0	100.0
1988	92.4	2.8	2.3	2.4	100.0
1989	92.3	2.8	2.6	2.3	100.0
1990	92.0	2.9	2.7	2.4	100.0
1991	91.6	3.1	2.8	2.5	100.0
1992	90.8	3.4	3.0	2.8	100.0
1993	90.0	3.7	3.2	3.2	100.0
1994	89.8	3.8	3.2	3.3	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-9

- NAVY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Intelligence, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	92.4	3.9	0.9	2.8	100.0
1981	92.2	4.5	0.9	2.4	100.0
1982	89.3	4.9	0.8	4.9	100.0
1983	90.1	5.2	0.7	3.9	100.0
1984	91.3	5.6	0.7	2.3	100.0
1985	91.0	5.9	0.9	2.2	100.0
1986	90.6	6.0	0.9	2.4	100.0
1987	90.3	6.2	1.0	2.4	100.0
1988	89.6	6.8	1.1	2.6	100.0
1989	87.8	7.6	1.4	3.2	100.0
1990	86.6	8.3	1.7	3.4	100.0
1991	85.7	8.7	1.9	3.7	100.0
1992	85.1	8.7	2.2	4.0	100.0
1993	85.0	8.3	2.6	4.2	100.0
1994	84.4	8.5	2.9	4.1	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

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Table B-10

- NAVY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Engineering and Maintenance, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	87.5	9.0	0.8	2.7	100.0
1981	85.4	10.7	1.0	2.8	100.0
1982	82.7	12.0	1.1	4.2	100.0
1983	80.5	12.5	1.1	5.9	100.0
1984	80.1	15.5	1.2	3.3	100.0
1985	79.9	16.3	1.2	2.6	100.0
1986	79.5	16.4	1.4	2.8	100.0
1987	80.8	14.8	1.4	3.0	100.0
1988	78.5	16.7	1.8	3.1	100.0
1989	78.7	16.0	2.1	3.2	100.0
1990	78.2	16.1	2.3	3.4	100.0
1991	77.5	16.5	2.5	3.5	100.0
1992	75.9	17.2	2.8	4.0	100.0
1993	76.8	15.8	3.0	4.3	100.0
1994	76.9	15.3	3.4	4.4	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-11

- NAVY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Scientists and Professionals, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	91.3	4.2	3.6	3.9	100.0
1981	92.0	4.0	4.0	3.2	100.0
1982	91.8	4.5	4.3	2.9	100.0
1983	90.8	5.1	4.5	3.0	100.0
1984	90.8	5.5	4.1	2.4	100.0
1985	90.8	5.4	3.9	2.1	100.0
1986	88.5	5.5	3.9	3.6	100.0
1987	88.4	4.9	2.5	4.3	100.0
1988	82.7	7.2	2.3	6.2	100.0
1989	84.3	7.5	1.7	4.2	100.0
1990	84.0	7.7	1.4	4.2	100.0
1991	82.5	8.3	1.1	4.7	100.0
1992	83.4	8.0	0.9	4.4	100.0
1993	83.9	7.8	0.7	4.3	100.0
1994	83.2	8.2	0.6	5.1	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-12

- NAVY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Health Care, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	81.4	5.9	1.2	11.4	100.0
1981	83.6	6.8	1.5	8.2	100.0
1982	85.3	7.2	1.5	6.0	100.0
1983	85.2	7.4	1.5	5.9	100.0
1984	87.1	7.2	1.6	4.1	100.0
1985	86.9	7.3	1.7	4.2	100.0
1986	86.5	7.5	1.7	4.3	100.0
1987	85.7	8.5	1.7	4.1	100.0
1988	85.5	8.6	1.6	4.2	100.0
1989	84.8	9.0	1.7	4.5	100.0
1990	84.0	9.4	1.8	4.8	100.0
1991	83.3	9.5	1.9	5.3	100.0
1992	82.4	9.9	2.2	5.6	100.0
1993	81.5	10.1	2.7	5.8	100.0
1994	80.2	10.5	2.9	6.4	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-13

- NAVY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Administrative, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	85.9	9.9	1.4	2.8	100.0
1981	85.2	10.8	1.5	2.5	100.0
1982	83.0	11.8	1.6	3.6	100.0
1983	81.8	12.4	1.6	4.1	100.0
1984	82.4	13.7	1.8	2.1	100.0
1985	80.3	15.8	1.8	2.2	100.0
1986	80.1	15.8	1.8	2.3	100.0
1987	79.7	16.2	1.9	2.3	100.0
1988	78.8	16.7	2.0	2.4	100.0
1989	78.3	16.9	2.2	2.6	100.0
1990	77.5	17.1	2.4	2.9	100.0
1991	76.7	17.5	2.8	3.0	100.0
1992	75.2	18.5	3.1	3.2	100.0
1993	75.2	18.1	3.3	3.5	100.0
1994	74.2	18.4	3.6	3.8	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-14

- NAVY -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Supply, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	89.6	8.4	0.5	1.4	100.0
1981	88.3	8.9	.06	2.3	100.0
1982	83.1	12.4	0.7	3.7	100.0
1983	81.6	13.4	0.7	4.4	100.0
1984	81.4	15.2	0.8	2.7	100.0
1985	77.2	18.7	1.5	2.5	100.0
1986	77.3	18.3	1.7	2.8	100.0
1987	77.3	18.3	1.7	2.7	100.0
1988	76.6	18.7	1.8	3.0	100.0
1989	76.1	18.9	2.1	3.0	100.0
1990	75.0	19.3	2.4	3.3	100.0
1991	74.4	19.4	2.4	3.4	100.0
1992	74.4	19.3	2.6	3.7	100.0
1993	74.8	18.3	2.9	4.0	100.0
1994	74.8	18.2	3.1	3.8	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-15

- MARINE CORPS -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Tactical Operations, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	94.7	3.5	0.9	0.9	100.0
1981	94.5	3.5	1.1	1.0	100.0
1982	94.6	3.3	1.0	1.1	100.0
1983	94.9	3.0	1.0	1.0	100.0
1984	94.6	3.1	1.3	0.9	100.0
1985	94.1	3.3	1.5	1.2	100.0
1986	94.0	3.4	1.3	1.3	100.0
1987	93.5	3.4	1.7	1.4	100.0
1988	92.7	3.4	2.0	1.9	100.0
1989	92.1	3.5	2.3	2.1	100.0
1990	91.5	3.5	2.6	2.4	100.0
1991	91.6	3.2	2.7	2.4	100.0
1992	91.4	3.1	2.9	2.5	100.0
1993	91.3	3.0	3.0	2.6	100.0
1994	90.7	3.1	3.3	2.8	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-16

- MARINE CORPS -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Intelligence, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	94.6	3.2	1.1	1.1	100.0
1981	94.2	2.9	1.4	1.4	100.0
1982	95.0	2.7	1.5	0.8	100.0
1983	95.3	2.4	1.4	1.0	100.0
1984	93.9	3.2	1.6	1.3	100.0
1985	93.0	3.6	2.3	1.0	100.0
1986	93.2	4.3	1.9	0.5	100.0
1987	92.7	3.3	3.0	1.0	100.0
1988	93.1	3.4	2.5	1.0	100.0
1989	92.5	3.0	2.8	1.6	100.0
1990	92.1	2.8	3.1	2.0	100.0
1991	91.9	2.5	3.3	2.2	100.0
1992	89.7	3.0	4.3	3.0	100.0
1993	89.9	2.3	4.3	3.5	100.0
1994	87.8	2.7	4.2	5.4	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

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Table B-17

- MARINE CORPS -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3
Assigned to Engineering and Maintenance, by Racial/Ethnic Group,
1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	90.2	7.6	1.4	0.8	100.0
1981	90.2	7.5	1.6	0.6	100.0
1982	89.6	7.8	1.8	0.8	100.0
1983	90.3	7.3	1.6	0.8	100.0
1984	89.6	7.5	1.7	1.2	100.0
1985	89.2	7.3	2.1	1.4	100.0
1986	89.1	7.0	2.5	1.5	100.0
1987	90.1	6.2	2.3	1.4	100.0
1988	89.7	6.1	2.3	1.8	100.0
1989	89.0	6.6	2.4	2.0	100.0
1990	89.1	6.0	2.5	2.5	100.0
1991	88.7	6.1	2.5	2.7	100.0
1992	88.7	6.0	2.6	2.7	100.0
1993	89.7	5.5	2.5	2.3	100.0
1994	89.7	5.4	2.9	2.0	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-18

- MARINE CORPS -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Scientists and Professionals, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	91.4	5.9	1.2	1.6	100.0
1981	92.7	5.4	0.8	1.1	100.0
1982	93.2	4.9	1.1	0.8	100.0
1983	93.6	4.7	1.0	0.7	100.0
1984	92.1	5.2	1.8	0.9	100.0
1985	92.7	4.8	1.5	0.9	100.0
1986	92.9	4.8	1.1	1.1	100.0
1987	93.3	3.9	1.9	0.8	100.0
1988	92.7	3.8	2.2	1.3	100.0
1989	91.6	4.2	1.8	2.4	100.0
1990	91.0	4.5	2.2	2.2	100.0
1991	92.3	4.6	1.5	1.5	100.0
1992	89.9	5.5	3.4	1.2	100.0
1993	89.2	4.8	4.1	1.9	100.0
1994	87.4	4.0	5.3	3.3	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-19

- MARINE CORPS -

**Percentage Distribution of Officers in Pay Grades 0-1 through 0-3
Assigned to Administrative, by Racial/Ethnic Group,
1980-1994**

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	88.5	8.3	1.7	1.5	100.0
1981	88.9	8.1	1.8	1.3	100.0
1982	88.9	8.0	1.8	1.3	100.0
1983	88.7	8.2	2.1	1.0	100.0
1984	89.3	8.0	1.7	1.0	100.0
1985	88.6	8.4	1.9	1.1	100.0
1986	87.7	8.7	2.7	1.0	100.0
1987	86.4	9.1	2.7	1.8	100.0
1988	86.2	8.9	3.0	1.8	100.0
1989	85.5	9.7	2.9	2.0	100.0
1990	83.9	10.2	3.2	2.6	100.0
1991	82.6	10.9	3.3	3.2	100.0
1992	82.6	10.9	3.6	2.9	100.0
1993	81.4	10.9	4.1	3.6	100.0
1994	80.6	11.2	4.7	3.6	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-20

- MARINE CORPS -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Supply, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	87.4	9.9	1.6	1.1	100.0
1981	86.9	10.2	1.6	1.2	100.0
1982	87.4	10.0	1.7	0.9	100.0
1983	87.7	9.3	1.7	1.3	100.0
1984	86.5	9.9	1.9	1.7	100.0
1985	86.1	10.3	1.7	1.9	100.0
1986	86.0	10.0	2.4	1.6	100.0
1987	85.6	9.8	2.5	2.1	100.0
1988	85.1	9.8	2.7	2.4	100.0
1989	84.2	10.3	2.8	2.7	100.0
1990	83.8	10.0	3.3	2.9	100.0
1991	83.0	10.6	3.8	2.6	100.0
1992	83.0	10.3	3.9	2.8	100.0
1993	82.5	10.5	4.0	3.0	100.0
1994	81.8	10.8	4.0	3.4	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-21

- AIR FORCE -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Tactical Operations, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	93.3	3.5	1.5	1.6	100.0
1981	92.3	3.9	1.8	2.0	100.0
1982	92.8	3.6	1.8	1.7	100.0
1983	92.4	3.9	2.0	1.7	100.0
1984	92.3	4.0	2.0	1.7	100.0
1985	92.1	3.9	2.1	1.9	100.0
1986	92.2	3.9	2.0	1.9	100.0
1987	92.2	3.8	2.0	2.0	100.0
1988	92.1	3.9	2.0	2.1	100.0
1989	91.8	3.9	1.9	2.3	100.0
1990	91.8	3.8	1.9	2.5	100.0
1991	91.5	4.0	1.8	2.7	100.0
1992	91.6	3.9	1.7	2.8	100.0
1993	91.8	3.6	1.7	2.9	100.0
1994	91.7	3.5	1.6	3.2	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-22

- AIR FORCE -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Intelligence, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	90.0	5.4	1.8	2.7	100.0
1981	89.8	5.5	2.1	2.6	100.0
1982	89.3	5.8	2.0	2.9	100.0
1983	87.7	6.8	2.4	3.2	100.0
1984	87.5	7.0	2.3	3.2	100.0
1985	87.7	6.6	2.7	3.0	100.0
1986	87.9	6.2	2.7	3.2	100.0
1987	88.2	6.0	2.6	3.2	100.0
1988	88.5	5.4	2.4	3.7	100.0
1989	88.3	5.3	2.6	3.8	100.0
1990	88.4	5.3	2.5	3.9	100.0
1991	88.5	5.1	2.4	4.1	100.0
1992	88.9	4.5	2.1	4.6	100.0
1993	89.3	3.6	2.0	5.1	100.0
1994	88.5	3.6	1.8	6.1	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-23

- AIR FORCE -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Engineering and Maintenance, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	84.8	10.7	0.9	3.5	100.0
1981	82.2	13.0	1.2	3.7	100.0
1982	78.4	14.7	1.3	5.7	100.0
1983	75.1	15.6	1.3	8.0	100.0
1984	75.8	18.9	1.3	4.0	100.0
1985	75.9	19.8	1.3	3.0	100.0
1986	75.7	19.6	1.5	3.2	100.0
1987	76.6	18.4	1.7	3.4	100.0
1988	75.5	19.2	2.0	3.4	100.0
1989	75.9	18.2	2.4	3.6	100.0
1990	75.5	18.0	2.6	3.8	100.0
1991	74.9	18.3	2.7	4.1	100.0
1992	73.7	18.6	3.2	4.5	100.0
1993	75.8	16.0	3.4	4.8	100.0
1994	76.6	14.8	3.7	5.0	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-24

- AIR FORCE -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Scientists and Professionals, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	89.4	5.6	0.6	4.4	100.0
1981	89.7	5.9	0.6	3.8	100.0
1982	90.6	6.0	0.7	2.7	100.0
1983	90.1	6.0	0.7	3.3	100.0
1984	90.6	6.4	0.7	2.3	100.0
1985	90.3	6.6	0.7	2.4	100.0
1986	89.7	7.1	0.9	2.3	100.0
1987	89.6	7.1	0.9	2.5	100.0
1988	89.0	7.5	0.9	2.6	100.0
1989	88.9	7.4	1.0	2.8	100.0
1990	88.7	7.8	1.0	2.5	100.0
1991	88.6	7.6	1.1	2.6	100.0
1992	88.3	7.6	1.1	2.9	100.0
1993	88.1	7.5	1.3	3.1	100.0
1994	87.1	7.9	1.8	3.2	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-25

- AIR FORCE -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3
Assigned to Health Care, by Racial/Ethnic Group,
1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	88.4	6.0	1.8	3.8	100.0
1981	88.9	5.7	1.9	3.5	100.0
1982	89.0	5.7	2.1	3.2	100.0
1983	89.0	5.8	2.3	2.9	100.0
1984	89.4	5.9	1.9	2.8	100.0
1985	88.9	6.2	2.0	2.9	100.0
1986	88.6	6.4	2.1	2.9	100.0
1987	88.6	6.4	2.2	2.8	100.0
1988	88.1	6.7	2.2	3.0	100.0
1989	87.5	6.9	2.1	3.5	100.0
1990	86.7	7.3	2.1	3.9	100.0
1991	86.9	7.2	2.0	3.9	100.0
1992	87.1	6.9	1.8	4.2	100.0
1993	86.6	7.1	1.9	4.4	100.0
1994	86.9	6.9	1.8	4.4	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-26

- AIR FORCE -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Administrative, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	83.4	11.6	2.1	2.9	100.0
1981	82.3	12.2	2.3	3.1	100.0
1982	81.7	12.7	2.6	3.0	100.0
1983	80.4	13.7	3.0	2.9	100.0
1984	80.1	13.9	3.0	3.0	100.0
1985	81.3	12.5	3.1	3.1	100.0
1986	81.6	12.0	3.3	3.1	100.0
1987	80.9	12.3	3.4	3.3	100.0
1988	78.8	14.7	3.4	3.0	100.0
1989	79.5	14.2	3.2	3.0	100.0
1990	79.6	14.2	3.1	3.1	100.0
1991	79.8	13.8	3.0	3.4	100.0
1992	81.1	12.2	2.8	3.8	100.0
1993	82.0	11.3	2.5	4.2	100.0
1994	81.5	10.7	2.4	5.4	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

Table B-27

- AIR FORCE -

Percentage Distribution of Officers in Pay Grades 0-1 through 0-3 Assigned to Supply, by Racial/Ethnic Group, 1980-1994

Year	White	Black	Hispanic	Other[a]	Total[b]
1980	81.1	14.2	2.2	2.5	100.0
1981	79.8	15.0	2.6	2.7	100.0
1982	78.4	16.6	2.5	2.6	100.0
1983	76.6	17.9	2.7	2.8	100.0
1984	76.0	18.5	2.7	2.9	100.0
1985	77.3	17.3	2.7	2.8	100.0
1986	78.2	16.2	2.7	2.9	100.0
1987	78.9	15.3	2.7	3.2	100.0
1988	81.0	12.5	2.7	3.8	100.0
1989	81.6	11.3	2.7	4.4	100.0
1990	81.5	11.2	2.8	4.5	100.0
1991	81.9	10.9	2.8	4.4	100.0
1992	82.6	10.2	2.8	4.3	100.0
1993	83.3	9.3	2.5	4.9	100.0
1994	83.8	8.2	2.4	5.6	100.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center.
[a] "Other" category includes those other than white, black, or Hispanic.
[b] Figures may not total 100 percent due to rounding.

APPENDIX C - HISTORICALLY BLACK COLLEGES AND UNIVERSITIES.

Institution	Location (State Abbreviation)
ALABAMA A&M UNIVERSITY	AL
ALABAMA STATE UNIVERSITY	AL
ALBANY STATE COLLEGE	GA
ALCORN STATE UNIVERSITY	MS
ALLEN UNIVERSITY	SC
ARKANSAS BAPTIST COLLEGE	AR
BARBER-SCOTIA COLLEGE	NC
BENEDICT COLLEGE	SC
BENNETT COLLEGE	NC
BETHUNE COOKMAN COLLEGE	FL
BISHOP STATE COMMUNITY COLLEGE	AL
BLUEFIELD STATE COLLEGE	WV
BOWIE STATE UNIVERSITY	MD
C A FREDD STATE TECHNICAL COLLEGE	AL
CARVER STATE TECHNICAL COLLEGE	AL
CENTRAL STATE UNIVERSITY	OH
CHEYNEY UNIVERSITY OF PENNSYLVANIA	PA
CLAFLIN COLLEGE	SC
CLARK ATLANTA UNIVERSITY	GA
CLINTON JUNIOR COLLEGE	SC
COAHOMA COMMUNITY COLLEGE	MS
CONCORDIA COLLEGE	AL
COPPIN STATE COLLEGE	MD
DELAWARE STATE COLLEGE	DE

DENMARK TECHNICAL COLLEGE . . . . SC

DILLARD UNIVERSITY . . . . LA

EDWARD WATERS COLLEGE . . . . FL

ELIZABETH CITY STATE UNIVERSITY . . . . NC

FAYETTEVILLE STATE UNIVERSITY . . . . NC

FISK UNIVERSITY . . . . TN

FLORIDA AGRICULTURAL AND MECHANICAL UNIVERSITY . . . . FL

FLORIDA MEMORIAL COLLEGE . . . . FL

FORT VALLEY STATE COLLEGE . . . . GA

GRAMBLING STATE UNIVERSITY . . . . LA

HAMPTON UNIVERSITY . . . . VA

HARRIS-STOWE STATE COLLEGE . . . . MO

HINDS COMMUNITY COLLEGE-UTICA CAMPUS . . . . MS

HOWARD UNIVERSITY . . . . DC

HOUSTON-TILLOTSON COLLEGE . . . . TX

INTERDENOMINATIONAL THEOLOGICAL CENTER . . . . GA

J F DRAKE STATE TECHNICAL COLLEGE . . . . AL

JACKSON STATE UNIVERSITY . . . . MS

JARVIS CHRISTIAN COLLEGE . . . . TX

JOHNSON C SMITH UNIVERSITY . . . . NC

KENTUCKY STATE UNIVERSITY . . . . KY

KNOXVILLE COLLEGE . . . . TN

LANE COLLEGE . . . . TN

LANGSTON UNIVERSITY . . . . OK

LAWSON STATE COMMUNITY COLLEGE . . . . AL

LE MOYNE-OWEN COLLEGE . . . . TN

LEWIS COLLEGE OF BUSINESS .... MI

LINCOLN UNIVERSITY .... MO

LINCOLN UNIVERSITY .... PA

LIVINGSTONE COLLEGE .... NC

MARY HOLMES COLLEGE .... MS

MEHARRY MEDICAL COLLEGE .... TN

MILES COLLEGE .... AL

MISSISSIPPI VALLEY STATE UNIVERSITY .... MS

MOREHOUSE COLLEGE .... GA

MOREHOUSE SCHOOL OF MEDICINE .... GA

MORGAN STATE UNIVERSITY .... MD

MORRIS BROWN COLLEGE .... GA

MORRIS COLLEGE .... SC

NATCHEZ COLLEGE .... MS

NORFOLK STATE UNIVERSITY .... VA

NORTH CAROLINA AGRICULTURAL AND TECHNICAL ST UNIV .... NC

NORTH CAROLINA CENTRAL UNIVERSITY .... NC

OAKWOOD COLLEGE .... AL

PAINE COLLEGE .... GA

PAUL QUINN COLLEGE .... TX

PHILANDER SMITH COLLEGE .... AR

PRAIRIE VIEW A & M UNIVERSITY .... TX

RUST COLLEGE .... MS

SAINT AUGUSTINE'S COLLEGE .... NC

SAINT PAUL'S COLLEGE .... VA

SAVANNAH STATE COLLEGE .... GA

WILBERFORCE UNIVERSITY .... OH

WILEY COLLEGE .... TX

WINSTON-SALEM STATE UNIVERSITY .... NC

XAVIER UNIVERSITY .... LA

Source: Department of Education, "Projections of Education Statistics to 2004."

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