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R E P O R T

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# The Department of the Navy's Civilian Acquisition Workforce

## An Analysis of Recent Trends

Susan M. Gates, Edward G. Keating, Bryan Tysinger,  
Adria D. Jewell, Lindsay Daugherty, Ralph Masi

Prepared for the United States Navy

Approved for public release; distribution unlimited



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## Preface

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The defense acquisition workforce (AW) is responsible for providing a wide range of acquisition, technology, and logistics support to the nation's warfighters. The United States Navy asked the RAND Corporation to characterize the Department of the Navy (DoN) civilian AW by means of a cross-sectional examination of key workforce characteristics and an analysis of workforce turnover.

This report provides a descriptive overview of the DoN civilian AW over the past decade and presents the results of preliminary analyses of data related to specific workforce management issues: retention, professional development, and leadership. It demonstrates the utility of workforce analysis and focuses attention on issues that deserve further analysis and policy-maker attention. In performing this work, RAND leveraged prior work for the Office of the Secretary of Defense/Personnel and Readiness (Program Integration) (OSD/P&R(PI)) (Gates, Eibner, and Keating, 2006) and concurrent work conducted for OSD/Acquisition, Technology, and Logistics (AT&L). The concurrent work is described in a companion report, TR-572-OSD, *The Defense Acquisition Workforce: An Analysis of Personnel Trends Relevant to Policy, 1993–2006* (Gates et al., 2008). That report provides additional background and methodological detail on the work presented here. All references in this report to AW trends throughout the Department of Defense (DoD) relate to that report. This report combines data that RAND received from the DoN with data received from the Defense Manpower Data Center (DMDC).

This report will be of interest to officials responsible for acquisition workforce planning in the Department of Defense and those in other parts of the DoD, workforce managers more generally, as well as members of the defense acquisitions community. This research was sponsored by the Office of the Assistant Secretary of the Navy for Research, Development and Acquisition and conducted within the Forces and Resources Policy Center of RAND's National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Department of the Navy, the Marine Corps, the defense agencies, and the defense Intelligence Community. For more information on RAND's Forces and Resources Policy Center, contact the Director, James Hosek. He can be reached by email at [James\\_Hosek@rand.org](mailto:James_Hosek@rand.org); by phone at 310-393-0411, extension 7183; or by mail at the RAND Corporation, 1776 Main Street, Santa Monica, California 90407-2138. More information about RAND is available at [www.rand.org](http://www.rand.org).



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## Summary

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While workforce issues in general—human capital strategic planning efforts in particular—are important throughout the DoD, the AT&L workforce has received special attention. The strategic human capital plan for the AW, which is currently in its third revision (see DoD, Acquisition, Technology, and Logistics, 2007), emphasizes several critical workforce issues: the eventual loss of retirement-eligible personnel and their knowledge, understanding the differences in the workforce generations (aging baby-boomers compared with Generations X and Y, for example), and coping with the increasing demand for workers educated in science and engineering.

In 2006, the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, Director of Human Capital Initiatives (OUSD(AT&L)/HCI), asked RAND to analyze DoD AW data. RAND's findings for OUSD(AT&L)/HCI are presented in Gates et al. (2008). While that inquiry was under way, the United States Navy asked RAND to undertake a complementary analysis focusing on the DoN's civilian AW.<sup>1</sup> The DoN asked RAND to provide a descriptive overview of the DoN civilian AW and conduct preliminary analyses of data related to specific workforce management issues of retention, professional development, and leadership. This report summarizes what we learned about DoN's civilian AW and these workforce management issues.

### Data Sources and Methods

The DMDC maintains rich data sources on the DoD's military and civilian workforces. Because of congressional reporting requirements, there is even more information available about the acquisition workforce. However, these data are spread out among several data files and are not readily usable for more elaborate types of workforce analysis that require longitudinal information. To create analytical files, RAND assembled data from several sources and linked records across time and across data files.

DMDC provided RAND with annual civilian inventory and transaction file data covering the period September 30, 1992, to September 30, 2006. The inventory data provide annual demographic “snapshots” of each civilian employee, e.g., their grade, location, and education level. The transaction data complement the inventory data by noting “transactions” that occur to workers between inventory snapshots. Attrition transactions were of central interest to us.

DMDC also provided RAND with acquisition workforce person file data covering fiscal year (FY) 1992 through FY 2006. These data identify both military and civilian personnel

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<sup>1</sup> The DoN includes the United States Marine Corps along with the United States Navy.

who are part of the acquisition workforce, and provide additional information relevant to the acquisition community on these workers, such as acquisition career field and certification level. In addition, the DoN gave RAND a list of individuals who were identified as part of the DoN AW at the end of each fiscal year for FYs 1998–2006. These data include individuals who work for the Navy and the Marine Corps. Unlike the DMDC acquisition workforce data, the DoN acquisition workforce data distinguish between “incumbents” (those who are currently in designated acquisition positions) and “nonincumbents” (individuals who are considered part of the acquisition workforce but are not currently in designated acquisition positions). Our analysis of the DoN AW is restricted to incumbents in FYs 1998–2006.<sup>2</sup>

## The DoN Civilian Acquisition Workforce: Profile

As of September 30, 2006, there were 36,164 DoN civilians in the AW, representing about 27 percent of the DoN’s non–wage grade civilian labor force. There was a considerable increase in the size of the DoN civilian AW between September 30, 2001, and September 30, 2002. The preponderance of that increase occurred because 6,586 non-AW Naval Sea Systems Command (NAVSEA) civilians were recategorized into the AW during FY 2002.

DoN AW civilians are more likely than non-AW civilians to be scientists and engineers. DoN AW civilians have a higher level of educational attainment than non-AW civilians. These differences between the AW and non-AW workforces are not specific to the DoN and are true for the DoD as a whole (Gates et al., 2008).

Reflecting the fact that acquisition is the primary function of the major commodity commands (NAVSEA, Naval Air Systems Command [NAVAIR], and Space and Naval Warfare Systems Command [SPAWAR]), two-thirds of all DoN AW civilians are in NAVSEA and NAVAIR. Naval Air Station Patuxent River, Maryland, is the single biggest DoN AW civilian location.

The number of DoN AW civilians who become fully retirement-eligible will increase in FY 2012 and will remain at higher than current levels for about seven years after that. However, proportionally fewer DoN AW civilians have attained that status in recent years than has been the case for non-AW civilians.

As is true for the DoD as a whole, the DoN civilian AW has had consistently lower attrition than the DoN’s non-AW civilian workforce, even controlling for education and experience level, a finding that is driven by lower rates of nonretirement separation from the AW.

Our descriptive overview reveals that the AW is a sizable share of the DoN’s civilian workforce and that it looks quite different from the non-AW civilian workforce in terms of occupation and education level. Despite concerns about attrition among members of this workforce, our analysis shows that the AW actually experiences lower rates of separation than non-AW civilians.

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<sup>2</sup> The findings presented in our companion report, TR-572-OSD, on the entire DoD AW include both incumbents and nonincumbents.

## Retirement Behavior of the DoN's Acquisition Workforce

The analysis confirms that there is a burst of attrition when DoN AW civilian employees become fully retirement-eligible. Annual attrition rates jump from around 3–5 percent in the years preceding full retirement eligibility to more than 20 percent in the year in which individuals attain retirement eligibility. This is true for both the AW and for non-AW civilians, although the jump is slightly larger for AW civilians.

Most DoN civilians who became fully retirement-eligible in recent years were covered by the Civil Service Retirement System (CSRS). However, the fraction of the newly retirement-eligible workers in CSRS will decrease because most newer DoD civilian employees are instead in the Federal Employees Retirement System (FERS).

Whereas CSRS is an “all-or-nothing” retirement plan, FERS has a “deferred benefit” for which a civilian worker becomes eligible after five years of creditable service. We observe that attrition among those not yet retirement-eligible is greater for DoN civilians covered by FERS than for those covered by CSRS. However, we also see that employees covered by FERS do not experience as large a leap in attrition upon attainment of full retirement eligibility as their CSRS counterparts do.

The ongoing DoN-wide transition from “mostly CSRS” to “mostly FERS” retirement eligibility lags in the DoN's civilian AW. DoN AW civilians are disproportionately in CSRS, controlling for years until full retirement eligibility.

These findings on the retirement of the DoN AW civilians mirror our findings for the DoD AW workforce (Gates et al., 2008). They point to a need for AW managers to track retirement eligibility and to understand and plan for the differences between those covered by CSRS and those covered by FERS. It is also important to note that while attrition rates increase dramatically once individuals become retirement-eligible, it is not true that all employees depart immediately upon reaching retirement eligibility.

## DoN Acquisition Workforce Interns

In light of possible future challenges in maintaining the size of the civilian acquisition workforce as a growing share of the workforce reaches retirement eligibility, the DoN has put special emphasis on intern programs to attract and train high-quality new civilian employees.

We studied the 271 DoN AW civilians hired into the Naval Acquisition Intern Program (NAIP) during FY 2001 and how their careers have evolved. We compared their outcomes with those of other new hires to the DoN AW in that fiscal year.

Our analysis of the career experiences of new DoN AW hires in FY 2001 suggests that NAIP participants are promoted quickly to mid- and senior-level positions and that they are neither more nor less likely to remain in the DoN AW or the DoD overall through FY 2006 than other DoN AW new hires. Our analysis also suggests that the DoN AW has a harder time retaining new hires into the contracting career field compared with those in the engineering field, regardless of whether new hires are in the intern program or not. We caution that this analysis is based on the outcomes of only one cohort of new hires (those hired in FY 2001) and may not apply to current new hires. However, similar analyses could be done to track the outcomes for more-recent cohorts over shorter periods of time and to further explore the disparity in retention based on career field.

## **Analysis of the DoN's Acquisition Workforce Senior Executive Service Members**

The DoN had 151 AW Senior Executive Service (SES) members as of September 2006. Over half were in NAVSEA or NAVAIR. Of those 151, 140 were DoN civilian employees on September 30, 1992. One-hundred nineteen of the 151 had not changed DoN command since 1992. This suggests that DoN AW SES personnel have a command-specific depth of knowledge and experience rather than DoN-wide breadth.

The limited number of intercommand switches that we see in the data most often involves an employee leaving NAVSEA. NAVSEA is disproportionately the “cradle” of DoN AW SES members. DoD-wide, it has been more common for a civilian worker to leave the DoN and become an AW SES member elsewhere than it has been for the DoN to hire a civilian worker from another service who eventually becomes an AW SES member in the DoN.

In some respects, the experience of the DoN's civilian AW SES members complements the experience of the Navy's and Marine Corps's military leaders. While Navy and Marine officers rotate extensively, DoN AW SES members generally have focused expertise in their current command.

Our analysis of DoN AW SES careers reveals a high degree of retention among those in senior leadership positions and a low degree of intraorganizational mobility within the DoD.

## **More Detailed Analysis of the Current Acquisition Workforce and Historical Trends Could Yield Additional Insight**

In this report, we provide only a few examples of the type of analyses of current AW data that could more fully inform the AW management process. Further analysis of these issues, as well as an exploration of others, could provide useful information for acquisition workforce managers.

Our analysis suggests that the DoN should continue to monitor the effectiveness of the DoN AW intern program in improving the retention of new hires for post-2001 entry cohorts. Improved retention is a primary goal of most DoD intern programs, and organizations spend substantial resources providing interns with mentoring and professional development experiences in support of this aim.

While this report illustrates that, overall, the AW actually experiences lower rates of separation than do non-AW civilians, we also find evidence that attrition is higher for those entering the contracting career field in 2001. Further analysis should be done to monitor retention by career field. If trends persist over time, the DoN may need to develop targeted retention efforts.

The analysis also points to a few potential policy issues related to the senior DoN AW. First, we found that senior-level DoN AW personnel are more likely to move from the DoN to other DoD services or agencies than the reverse. This may be due to changes in the overall demand for senior AW executives (e.g., declining demand in the DoN and increased demand in other parts of the DoD) and thus may not be a cause for concern. Alternatively, it may reflect a desire on the part of DoN senior leaders to work in other parts of the DoD—an idea worthy of further exploration by DoN AW managers. Second, we found that few senior DoN AW SES members have experience in more than one naval command. This lack of intracom-



mand mobility may reflect a belief that senior AW leaders of a particular system must have deep knowledge of that system. However, a command focus can inhibit senior leaders from developing an “enterprise” (DoD- or DoN-wide) perspective, and the DoD has emphasized the need for such breadth among its senior leaders.



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Of course, the authors alone are responsible for errors that remain in the document.



## Abbreviations

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AT&L	Acquisition, Technology, and Logistics
AW	acquisition workforce
BA/BS	bachelor of arts or bachelor of science degree
CSRS	Civil Service Retirement System
DAWIA	Defense Acquisition Workforce Improvement Act
DMDC	Defense Manpower Data Center
DoD	Department of Defense
DoN	Department of the Navy
FERS	Federal Employees Retirement System
FY	fiscal year
GED	general equivalency diploma
GS	General Schedule
MCSC	Marine Corps Systems Command
NAIP	Naval Acquisition Intern Program
NAVAIR	Naval Air Systems Command
NAVFAC	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
NAVSUP	Naval Supply Systems Command
NAWC	Naval Air Warfare Center
NETC	Naval Education and Training Command
ONR	Office of Naval Research
OSD	Office of the Secretary of Defense
OSD/P&R(PI)	Office of the Secretary of Defense/Personnel and Readiness (Program Integration) )
OUSD(AT&L)/ HCI	Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, Director of Human Capital Initiatives
SECNAV	Office of the Secretary of the Navy
SES	Senior Executive Service
SPAWAR	Space and Naval Warfare Systems Command

SPRDE	Systems Planning, Research, Development, and Engineering
SYSCOM	system command
USD	Under Secretary of Defense
UIC	unit identification code

## Introduction

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While workforce issues in general, and human capital strategic planning efforts in particular, are important throughout the Department of Defense (DoD), the Acquisition, Technology, and Logistics (AT&L) workforce has received special attention.<sup>1</sup>

The President's Management Agenda for fiscal year (FY) 2002 presented itself as a "bold strategy for improving the management and performance of the federal government." (Executive Office of the President, 2002, p. 1). A key initiative in the agenda is the strategic management of human capital within government agencies. A number of concerns were outlined in the agenda, including the approaching retirement of the baby-boomer generation; the weakness of human resources planning across government agencies; and the need for better recruiting, retention, and reward programs for workers. Toward this end, the DoD generated a DoD-wide strategic human capital plan, and the Under Secretary of Defense (USD)(AT&L) developed a strategic human capital plan for the acquisition workforce (AW), which is currently in its third revision (see DoD, Acquisition, Technology, and Logistics, 2007). That plan echoed the concerns described above: the eventual loss of retirement-eligible personnel and their knowledge, understanding the differences in the workforce generations (aging baby-boomers compared with Generations X and Y, for example), and coping with the increasing demand for workers educated in science and engineering.

The defense AW is defined by the DoD as "the personnel component of the acquisition system" (DoDI 5000.55, p. 20). The AW is responsible for planning, design, development, testing, contracting, production, introduction, acquisition logistics support, and disposal of systems, equipment, facilities, supplies, or services that are intended for use in, or support of, military missions. A key role of the AW is to provide oversight of the acquisition process. Because of the breadth of the work carried out, the AW spans organizational boundaries within the DoN.

Management of the acquisition workforce is governed not only by the general policies and procedures that cover all civil service positions in the federal government, but also by the Defense Acquisition Workforce Improvement Act (DAWIA) of 1990. This legislation was enacted to improve the effectiveness of the DoD AW. DAWIA required the DoD to identify and count members of the AW and establish education and training standards for AW, as well as formal career paths for the AW across all services. In the DoN, the Director of Acquisition Career Management is the focal point for the management and development of the DoN AW.

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<sup>1</sup> See, for instance, DoD, Acquisition, Technology, and Logistics (2007) and U.S. General Accounting Office (2002).

In 2006, the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, Director of Human Capital Initiatives (OUSD(AT&L)/HCI) asked RAND to analyze DoD AW data. RAND's findings for OUSD(AT&L)/HCI are presented in Gates et al. (2008). While that inquiry was under way, the United States Navy asked RAND to undertake a complementary analysis focusing on the Department of the Navy's (DoN's) civilian AW.<sup>2</sup> The DoN asked RAND to provide a descriptive overview of the DoN civilian AW over the past decade and conduct preliminary analyses of data related to specific workforce management issues of retention, professional development, and leadership. This report summarizes what we learned about the DoN's civilian AW and these workforce management issues. The work demonstrates the utility of workforce analysis and focuses attention on issues deserving further analysis and policymaker attention. Additional details on the background of the data and methodology are provided in Gates et al. (2008).

In this report, we use a list of individuals who were identified by the DoN as part of the DoN AW at the end of a fiscal year. These data include individuals who work for the Navy and the Marine Corps. We include only those identified in the Naval data as incumbents as part of the DoN acquisition workforce.<sup>3</sup> In comparing members of the DoN AW to the overall DoN civilian workforce, we exclude federal wage system civilian employees.<sup>4</sup>

The DMDC data we use in this analysis are drawn from the DoD civilian personnel inventory and transaction files. These data contain detailed demographic, occupational, and geographic information on each DoD civilian employee. In this report, we use the DoN data to identify individuals who are part of the DoN AW, then use the DMDC data to describe those individuals and to compare them with other DoN civilian employees.

The analyses presented here are descriptive in nature. In addition to providing descriptive statistics, we also exploit the ability to link individual records over time in order to examine turnover and recategorizations into and out of the acquisition workforce. Gates et al. (2008) provides a detailed description of the methodology used.

Many of the key findings presented here for the DoN are consistent with findings for the DoD AW as a whole. For instance, both in the DoN and throughout the DoD, civilians in the AW are, on average, better educated than non-AW civilians. Also, even controlling for differences in education and experience, AW civilians have had less attrition from DoD employment than their non-AW counterparts.

Chapter Two presents an overview of the DoN civilian AW with more details on our findings.

Chapter Three focuses on retirement issues. Many more senior DoN civilians are covered by the Civil Service Retirement System (CSRS), while newer civilian employees are in the Federal Employees Retirement System (FERS). We discuss how attrition behavior appears to

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<sup>2</sup> The DoN includes the United States Marine Corps along with the United States Navy.

<sup>3</sup> An incumbent is a member of the AW who occupies a designated acquisition position as of the end of the fiscal year. A nonincumbent is a member of the AW who does not occupy a designated acquisition position at the end of the fiscal year. The companion report (Gates et al., 2008) includes both incumbents and nonincumbents in its analysis of the AW. Because we were able to obtain data distinguishing between these two types only for the DoN, the number of DoN civilian AW members in this report differs slightly from the number reported in Gates et al. (2008). The nonincumbent share of the DoN civilian acquisition workforce between 1998 and 2006 ranged from 1.12 percent (in 2002) to 1.77 percent (1999).

<sup>4</sup> The federal wage system pertains to blue collar employees paid on an hourly basis. It includes wage grade (WG), wage leader (WL), and wage supervisor (WS) pay plans.



be different for DoN civilians in the two different plans. DoN AW civilians are disproportionately in CSRS; over time, ever fewer civilians will be in that plan.

Chapter Four presents an analysis of DoN AW “interns”—individuals who are hired into a structured DoN-wide early career professional development program for new AW hires. We focus on individuals who were interns in FY 2001 and track how their careers have evolved since then.

Chapter Five examines a much different population: the DoN’s AW Senior Executive Service (SES) members. We study the careers of those individuals who were DoN AW SESs on September 30, 2006.

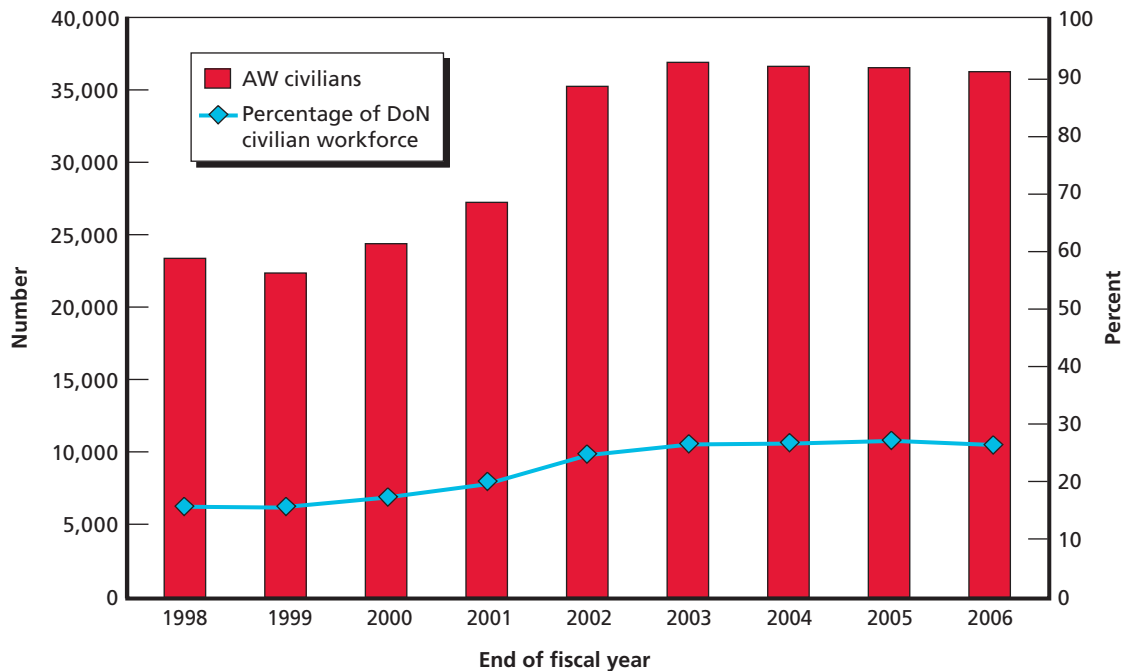
Chapter Six presents the conclusions emanating from this work.



## An Overview of the DoN’s Civilian Acquisition Workforce

As of September 30, 2006, 36,164 DoN civilians were categorized as being in the AW. This total represented about 27 percent of the DoN’s non–blue collar civilian labor force.<sup>1</sup> As shown in Figure 2.1, between 1998 and 2003, the DoN civilian AW grew, both in absolute terms and as a share of the DoN non–blue collar civilian workforce. Most of the increase occurred between FYs 2001 and 2002. Although there has been a slight reduction in the size of the civilian AW labor force since 2003, the AW share of the total DoN civilian workforce has remained stable during that time. As reported in Gates et al. (2008), the size of the DoD civilian AW declined throughout the 1990s, from 98,518 in 1992 to a low point of 77,504 in 1999, and then increased to 113,605 by FY 2006. Because the data we obtained from the DoN are available only starting in FY 1998, the analysis presented here is more limited than the DoD-wide

**Figure 2.1**  
**DoN Civilians in the Acquisition Workforce, September 30 Annual Snapshots**



RAND TR555-2.1

<sup>1</sup> We removed part-time and wage-grade workers from all our tallies of the workforce.

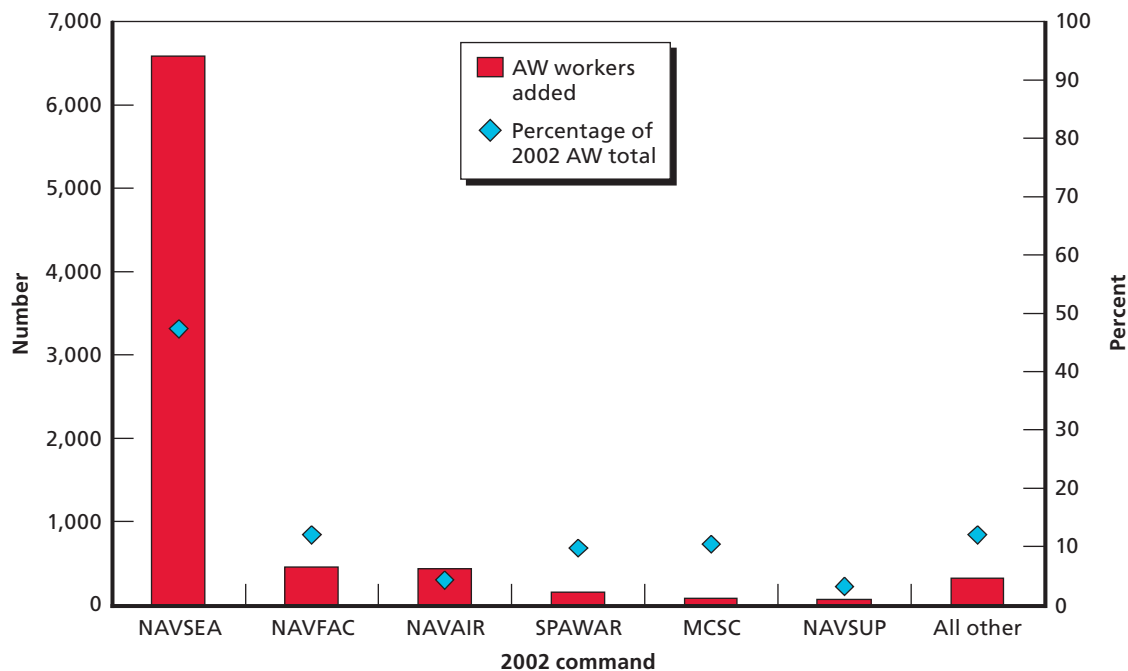
analysis and covers FYs 1998–2006. The increase in the size of the DoN AW reported here mirrors the increase in the total DoD AW between 1999 and 2006.

The left axis and the bars of Figure 2.2 represent the number of civilians recategorized into the AW in FY 2002, by DoN command. The right axis and points represent the percentage of the commands' 2002 total civilian AW that is made up of recently recategorized civilians. The figure shows that the preponderance of the increase in the DoN civilian AW occurred because 6,586 Naval Sea Systems Command (NAVSEA) civilians were recategorized into the AW during FY 2002. These people were employed by the DoN as of September 30, 2001, and were not in the AW but were counted as being in the AW as of September 30, 2002.

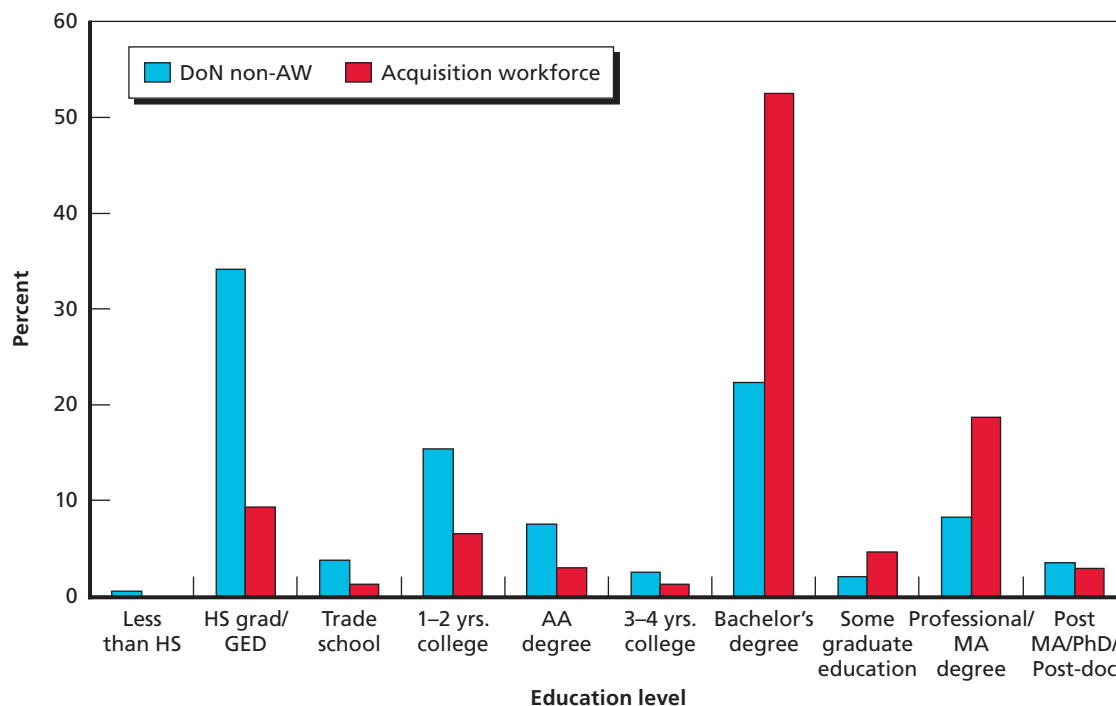
In Gates et al. (2008), we presented a detailed analysis of these recategorizations. We were able to distinguish between recategorizations that are likely administrative (i.e., they are associated with no other substantive change to the person's job or organization) and those that are likely substantive (i.e., they are associated with some other change to a person's job or organizational assignment). The analysis revealed that a vast majority of recategorizations were administrative in nature rather than substantive. Put another way, our analysis showed that recent variation in the size of the AW is largely due to changes in the way that the DoN and other services and agencies choose to count people as part of the AW.

As shown in Figure 2.3, DoN AW civilians have a higher level of educational attainment than do non-AW DoN civilians. The September 30, 2006, data reported that 78.6 percent of DoN AW civilians had at least a bachelor's degree, versus 36.2 percent of the non-AW DoN workforce. By way of caveat, the education field in DoD personnel records is not systematically updated by all DoD organizations, so it may understate education levels—for example, if workers are getting degrees at night while employed. If this field is not being properly updated,

**Figure 2.2**  
FY 2002 Recategorizations into the Acquisition Workforce, by Command



**Figure 2.3**  
DoN Civilians, by Education Level, September 30, 2006



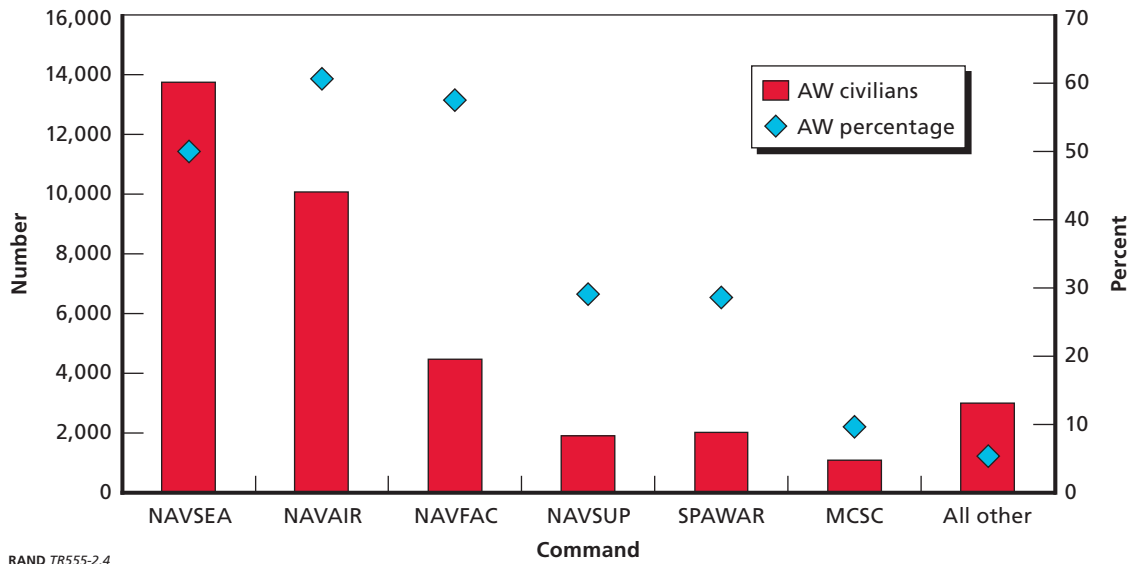
RAND TR555-2.3

AW civilians may have a higher level of educational attainment than when they entered the system and their record was created. As is true of the DoD AW, DoN AW civilians are more likely than non-AW civilians in general to be scientists and engineers. Other occupations that are common in the DoN non-AW—for example, clerical occupations—are rarely observed in the DoN AW.

Figure 2.4 summarizes the number of AW civilians and the share of all non-wage grade civilian employees who are part of the DoN AW by command. The left axis and bars represent the number of DoN AW civilians by command. The right axis and points represent the percentage of each command's total FY 2006 civilian workforce that is made up of AW civilians. About two-thirds of DoN AW civilians are in NAVSEA, which has primary responsibility for the acquisition of Naval ships, and NAVAIR, which has primary responsibility for the acquisition of Naval aircraft. In these two commands, as well as Naval Facilities Engineering Command (NAVFAC), which is responsible for the design and construction of shore facilities for the DoN, the acquisition workforce makes up half or more of the total civilian workforce.

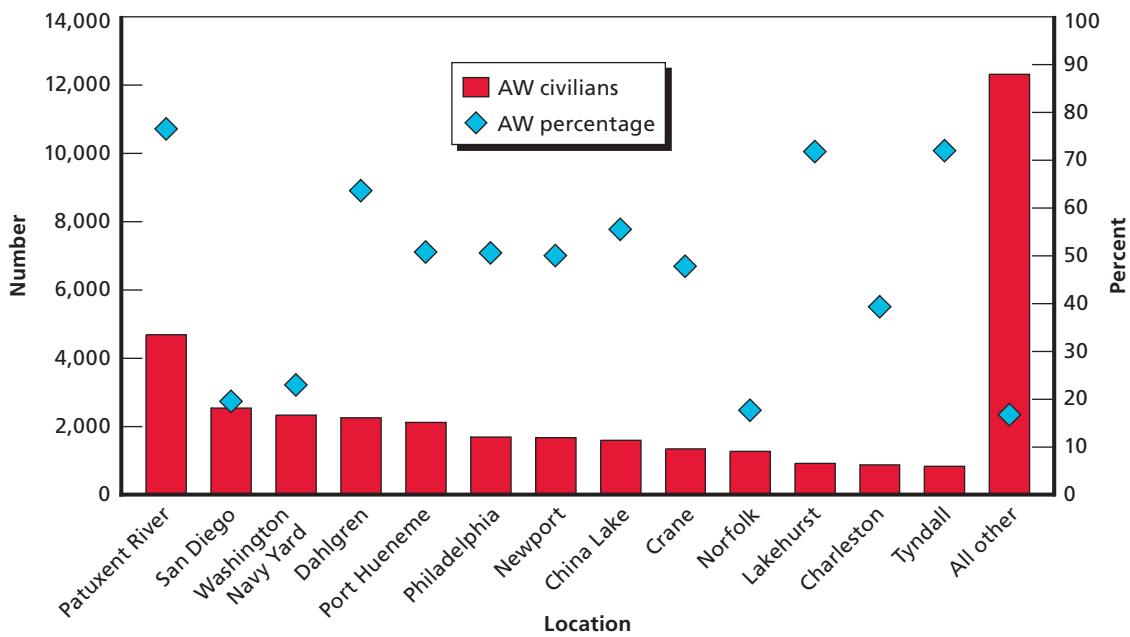
The left axis and bars of Figure 2.5 represent the number of DoN AW civilians by location. The right axis and points represent the percentage of the total FY 2006 DoN civilian workforce at that location that is made up of DoN AW civilians. The figure shows that Patuxent River, Maryland is the single largest employer of DoN AW civilians. Patuxent River serves as a center for test and evaluation and systems acquisition relating to naval aviation and is the home to NAVAIR Headquarters, the Air Test Wing Atlantic, U.S. Naval Test Pilot School, and the Naval Air Warfare Center (NAWC) Aircraft Division Commands. Over 75 percent of Patuxent River's DoN civilian employees are in the AW. Other locations also have a large share of DoN AW civilians in their DoN civilian workforce:

**Figure 2.4**  
DoN Acquisition Workforce Civilians, by Command, September 30, 2006



RAND TR555-2.4

**Figure 2.5**  
DoN AW Civilians, by Location, September 30, 2006



RAND TR555-2.5

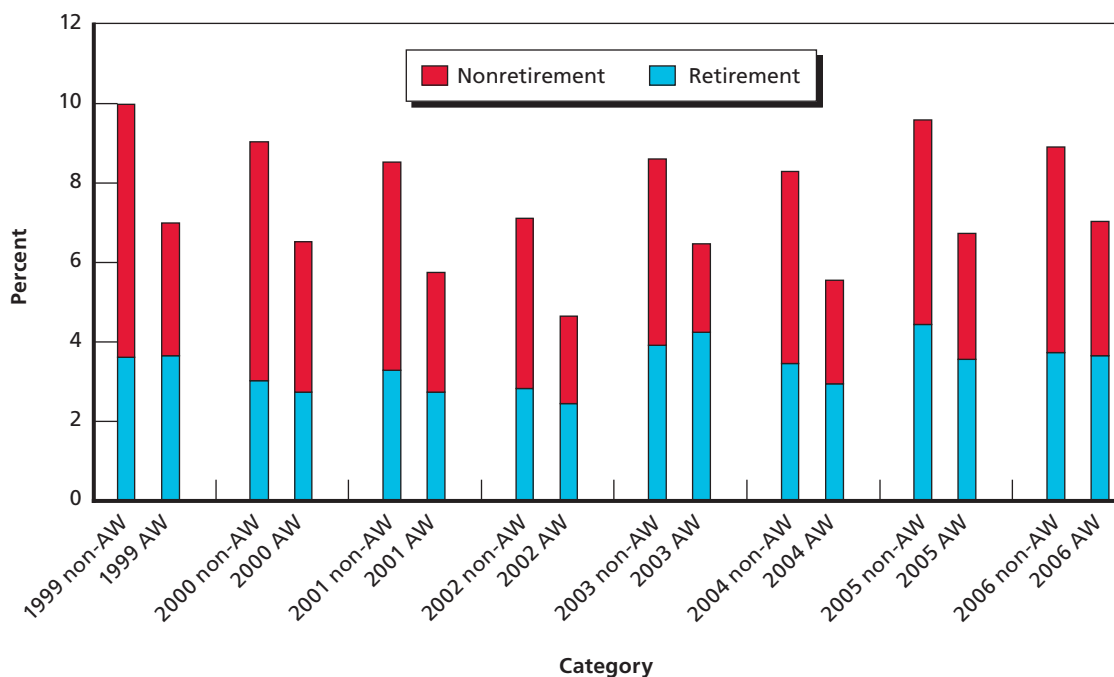
- Dahlgren (Naval Surface Warfare Center): 63.6 percent
- Philadelphia (Ship Systems Engineering Station): 50.2 percent
- China Lake (NAWC Weapons Division): 55.5 percent
- Naval Air Engineering Station Lakehurst: 71.5 percent
- Naval Station Newport: 50.1 percent.

Overall, only a handful of locations have a significant percentage of their civilian workforce as AW; the remaining DoN civilian AW is distributed broadly across the Navy and USMC.

Workforce retention has been a primary concern for AW managers across DoD as they strive to maintain the size of the AW. There is broad concern that members of the AW are prone to leave the civil service to pursue careers in the private sector and elsewhere and that the DoD is unable to provide the requisite incentives to retain them. Improving retention requires looking at patterns of attrition to determine whether there is a problem and, if so, the nature of the problem. Different types of attrition may have different causes, and different approaches may be needed to improve retention, depending on the nature of attrition an organization is experiencing. In the rest of this chapter, we provide information on all types of attrition or separation. In the next chapter, we present a more detailed analysis of one type of separation that is of particular concern to workforce managers: retirement.

Our analysis reveals that attrition rates among AW members of the DoN are lower than those for the DoN non-AW civilian workforce. This is consistent with the findings from our DoD-wide analysis. Figure 2.6 presents information on the rates of separation (of all types) for DoN AW and non-AW civilians. The figure also decomposes total separations into general categories—retirement and nonretirement. Attrition data were computed from the DMDC civilian inventory and transaction files. The years refer to the fiscal year: For example, in FY 2006, approximately 7.1 percent of the DoN AW civilian workforce attrited (a slight majority through retirement), while 8.9 percent of the non-AW workforce left DoD employment. A much higher share of non-AW civilian workforce attrition is due to factors other than retirement in the DoN, a phenomenon we also observe in the DoD-wide AW.

**Figure 2.6**  
DoN AW Versus Non-AW Civilian Attrition Rates



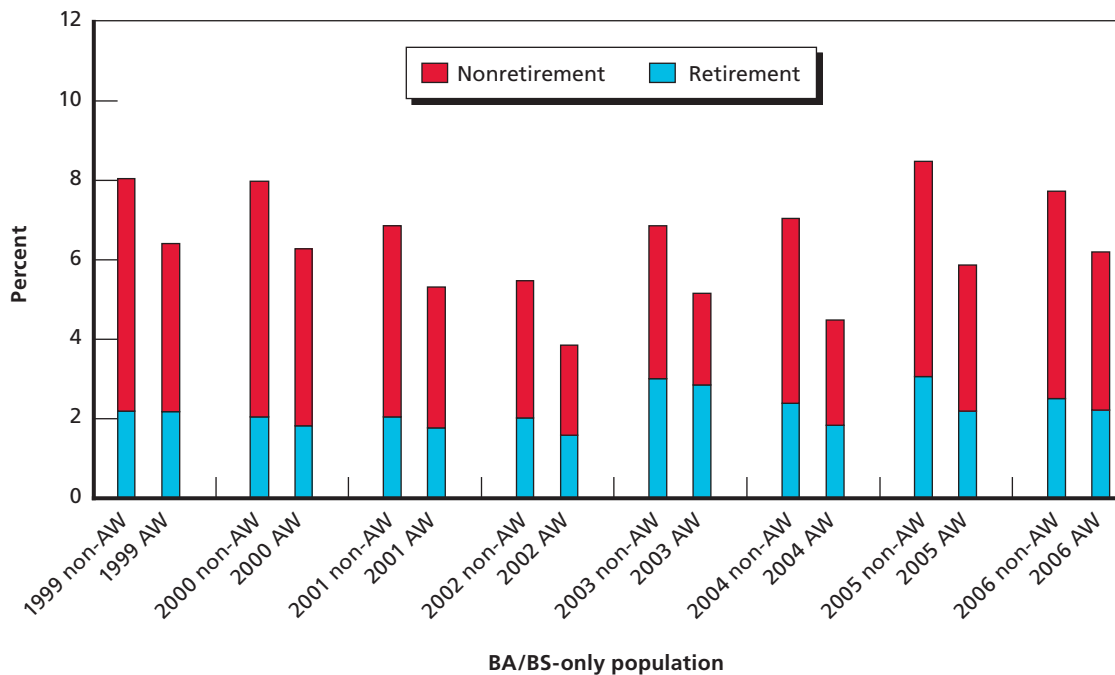
Across all types of organizations, rates of separation tend to vary by education level and by the number of years an employee has worked for the employer. Even if controlling for education level, DoN civilian acquisition workers have had lower attrition than non-AW civilian employees, suggesting that the lower rates of nonretirement separation may be driven by some more-subtle difference between members of the AW and other DoD employees that enhances their attachment to the DoD workforce.

In Figure 2.7, we compare the two populations' attrition rates, restricting our attention solely to those workers with a bachelor's degree (but no recorded graduate education). The portrayal is similar if one looks at workers with more than a bachelor's degree, i.e., some graduate-level education. Comparing Figures 2.6 and 2.7, we see that attrition is somewhat lower among those with a bachelor of arts or bachelor of science (BA/BS) degree only and that the difference between the two figures is largely due to lower rates of retirement among the BA/BS-only population.

As shown in Figure 2.8, the same result is obtained if one controls for both education level and years of service. In FY 2006, only in the 30 and greater years of service categories did the AW civilian attrition rate (diamonds and right-hand axis) exceed the non-AW attrition rate in the BA/BS-only population. The bars in this figure show that only a small fraction of the total workforce has more than 30 years of service.

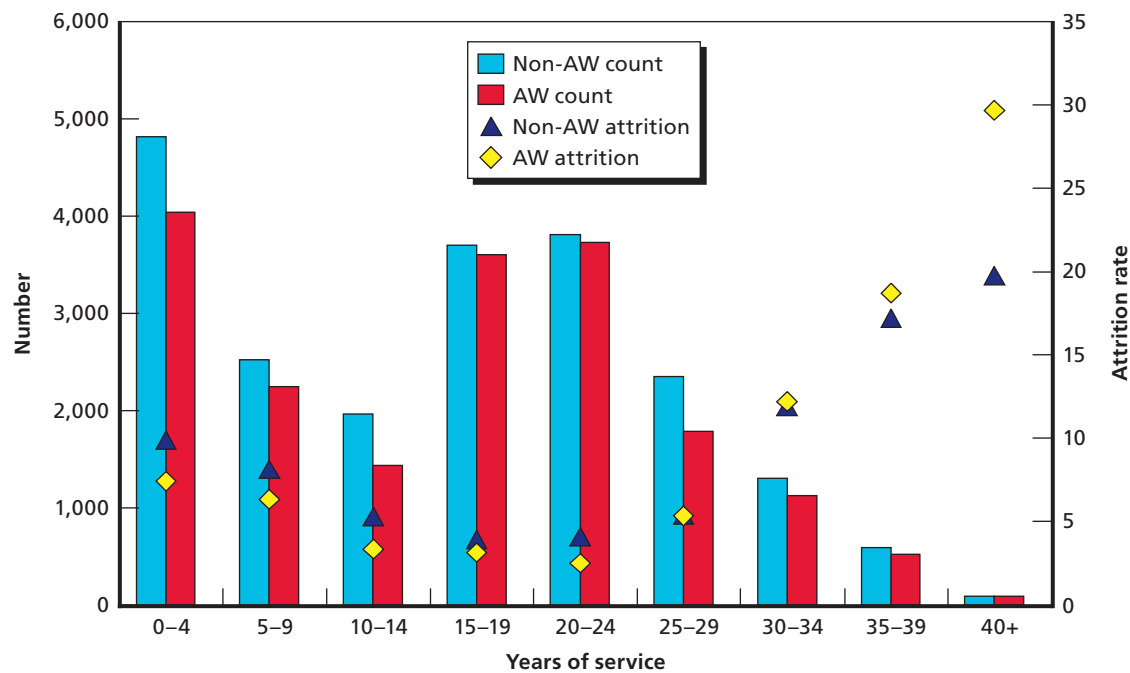
We do not wholly understand why AW civilian attrition has been consistently lower than non-AW attrition. Clearly, this phenomenon has helped preserve valuable skills in the AW. We can also analyze the attrition data at the system command (SYSCOM) level. Given the different missions associated with the different SYSCOMs, it is likely that the workforce composition and management of the AW varies by SYSCOM. As shown in Figure 2.9, in FY 2006,

**Figure 2.7**  
**AW Versus Non-AW Civilian Attrition Rates, BA/BS-Only Population**





**Figure 2.8**  
**AW Versus Non-AW Civilian Workforce Inventory and Attrition Rates, by Years of Service, BA/BS-Only, FY 2006**



RAND TR555-2.8

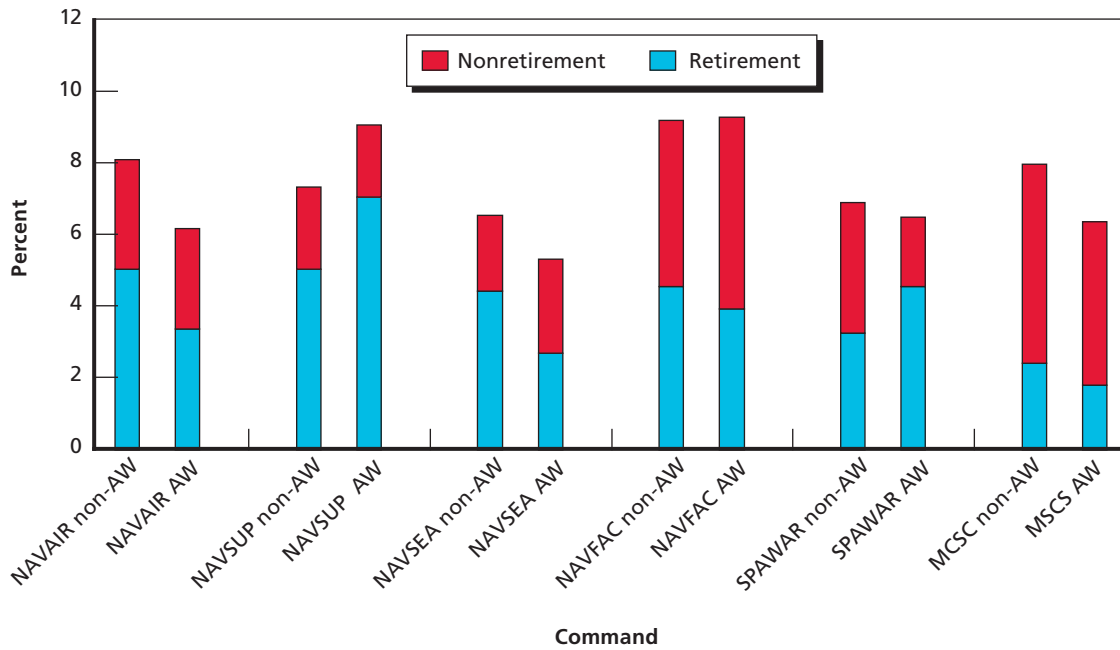
AW attrition was below non-AW levels in four of the DoN's six largest SYSCOMs (NAVAIR, NAVSEA, SPAWAR, and the Marine Corps Systems Command [MCSC]). The exceptions were NAVSUP and NAVFAC.

Figure 2.9 provides some insight into whether the differences in rates of attrition between the AW and the non-AW are consistent across Naval commands, but since it is based on only one year of data, it may not reflect meaningful differences between commands. In Figure 2.10, we plot each large SYSCOM's AW attrition percentage (on the horizontal, x-axis) against its non-AW attrition percentage (on the vertical, y axis) using data from FYs 1999–2006. The figure also includes a 45-degree line. If a point lies above the 45-degree line, it means that the attrition rate for AW personnel in a particular FY and SYSCOM was lower than the attrition rate for non-AW personnel in that FY and SYSCOM.

All but five points in Figure 2.10 are above the 45-degree line—that is, for almost every year and command, the non-AW attrition rate exceeded the AW attrition rate.<sup>2</sup> Second, there is considerable annual variability in command outcomes. For example, in FY 2003, NAVSUP lost 9.1 percent of its AW civilians and 11.3 percent of its non-AW civilians; in FY 2004, its corresponding attrition rates were only 3.2 percent and 6.7 percent. Figure 2.10 suggests that, on average, there are no major differences across commands in terms of AW attrition behavior and thus provides a caution against reading too much into an analysis of one year's worth of data

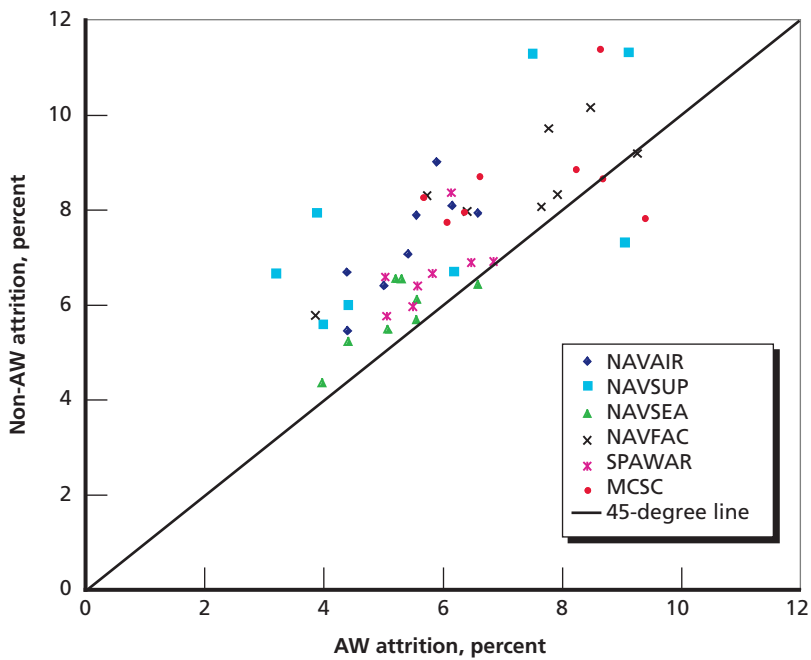
<sup>2</sup> The exceptions were NAVSEA in FY 1999 (6.6 percent attrition for AW versus 6.4 percent for the non-DoN civilian AW), MCSC in FY 2004 (9.4 percent AW attrition versus 7.8 percent non-AW attrition), MCSC in FY 2005 (8.7 percent attrition for both the AW and non-AW), NAVSUP in FY 2006 (9.1 percent AW attrition versus 7.3 percent non-AW attrition), and NAVFAC in FY 2006 (9.3 percent AW attrition versus 9.2 percent non-AW attrition).

**Figure 2.9**  
**FY 2006 AW Versus Non-AW Civilian Attrition Rates, by SYSCOM**



RAND TR555-2.9

**Figure 2.10**  
**SYSCOMs' AW Versus Non-AW Civilian Attrition Rates, FYs 1999–2006**



RAND TR555-2.10

In addition to the analyses presented here, at the request of the DoN we also examined attrition by geographic region and by acquisition career field. We found that separation rates are highly variable within narrow subgroups of the population.

## Summary

The DoN AW is a large segment of the DoN's civilian workforce. Although major commands and locations with a primary acquisition mission tend to have a high concentration of AW civilians, other commands and locations only have a few AW civilians. This combination of concentration and dispersion may pose challenges for workforce management.

The number of DoN civilians counted as part of the AW grew substantially between 2001 and 2002. This growth was largely due to an expansion in the definition of who is considered part of the AW. Despite concerns about attrition among members of the civilian AW, our analysis shows that rates of nonretirement separation are actually lower for DoN AW civilians than for other DoN civilians. Retirement rates are comparable between the two groups.

In the next chapter, we focus on retirement behavior and how workers' retirement plans appear to affect retention and attrition behavior.



## Retirement Behavior of the DoN's Civilian Acquisition Workforce

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Civilian workforce managers across the DoD have been preparing for an expected wave of retirement. The loss of these experienced employees and a dearth of mid-career personnel to replace them are serious concerns for managers across the DoN, DoD, and the federal government as a whole. In this chapter, we take a focused look at the retirement behavior of the DoN's AW civilians. This information should provide some insights for AW managers as they devise strategies for managing the retirement wave.

In Gates et al. (2008), we found that, DoD-wide, AW civilians are more likely than non-AW civilian employees to be at or near retirement eligibility.<sup>1</sup> The result for the DoN, however, is more nuanced.

Figure 3.1 shows the September 30, 2006, fraction of the total civilian DoN workforce by years relative to retirement eligibility. In this display, a person at Year 0 became retirement-eligible during FY 2006. A person at Year 1 became retirement-eligible during FY 2005 (and chose to remain employed by the DoD). A person at Year 1 first became retirement-eligible in FY 2007, but was not retirement-eligible as of September 30, 2006. In Figure 3.1, workers to the left of the vertical axis are not yet fully retirement-eligible.

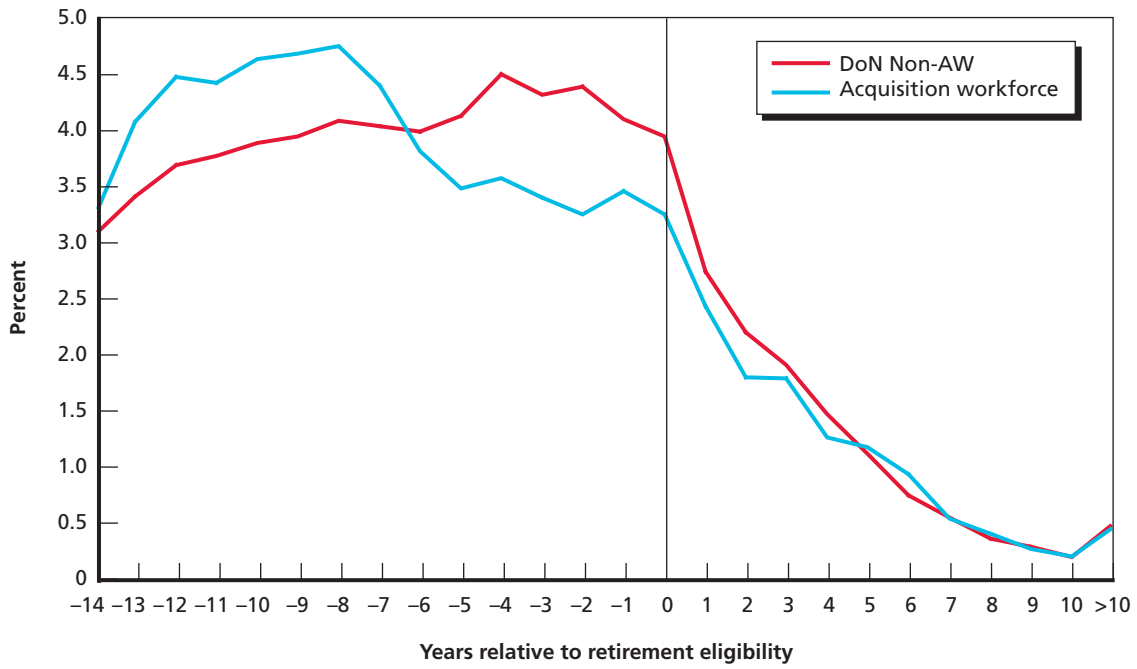
Figure 3.1 illustrates that in the next few years, proportionally more non-AW DoN civilians than AW civilians will become fully retirement-eligible. In addition, the figure suggests that the number of DoN AW civilians who become fully retirement-eligible will increase in FY 2012 and will remain at higher than current levels for about seven years after that.

The DoN civilian AW has had consistently lower attrition than its non-AW civilian workforce, mirroring findings observed in our analysis of DoD-wide data on AW civilians. Both DoN-wide and DoD-wide, there is a burst of attrition when civilian employees become fully retirement-eligible. Figure 3.2 presents DoN-wide data on FY 2006 civilian attrition for the AW and non-AW as a function of years relative to retirement eligibility. Whereas annual attrition in the years preceding an individual's becoming fully retirement-eligible is fairly minimal (3–5 percent), there is a surge of attrition in Year 0 (when an individual first becomes fully retirement-eligible) and thereafter.

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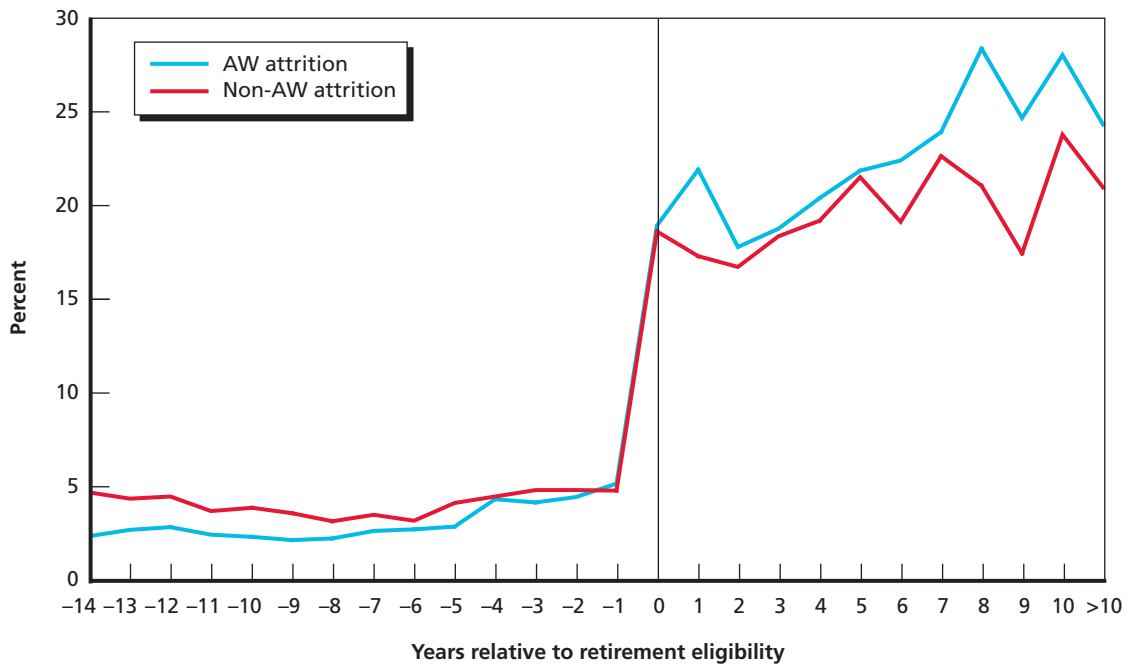
<sup>1</sup> We calculated the number of years relative to regular retirement eligibility for each civilian in the inventory file. Retirement eligibility depends on an individual's retirement plan, age, and years of service. Our measure does not account for special retirement incentives, early retirement options, or disability retirement. For this reason, we do observe some people in the data set who retire before having reached regular retirement eligibility.

**Figure 3.1**  
**Percentage of DoN AW and Non-AW Civilians At or Near Full Retirement Eligibility**



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**Figure 3.2**  
**FY 2006 DoN Civilian Attrition as a Function of Years Relative to Full Retirement Eligibility**



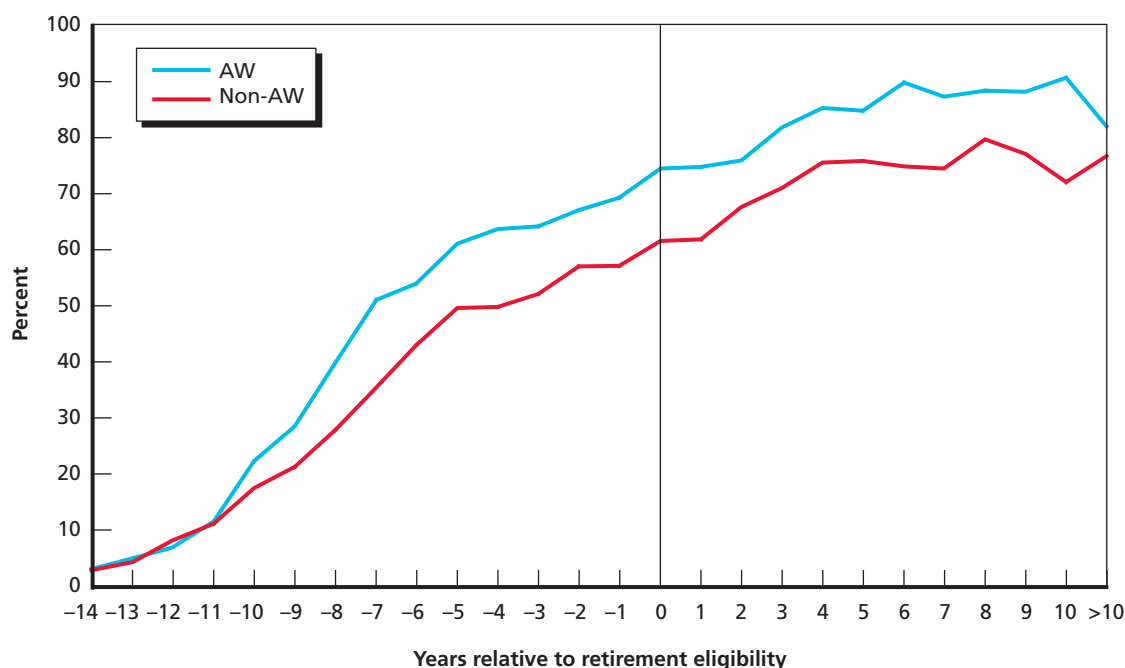
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Figure 3.2 shows attrition information for all non–wage grade civilian DoN employees in FY 2006 (between the September 30, 2005, civilian personnel inventory and the September 30, 2006, inventory) and distinguishes between AW and non-AW. The figure indicates that attrition rates are generally slightly lower for the AW prior to retirement eligibility and are typically higher subsequent to achieving retirement eligibility.

Civil servants currently employed by the DoD participate in two main retirement plans: the Civil Service Retirement System and the Federal Employees Retirement System. FERS was created in 1986; anyone hired into the federal civil service after January 1, 1987, is automatically covered under FERS.<sup>2</sup> Of those civilians who became fully retirement-eligible in FY 2006, the majority were in CSRS. Figure 3.3 plots the percentage of DoN civilians in CSRS as a function of years until retirement eligibility, again distinguishing between AW and non-AW.

Figure 3.3 reveals that a larger fraction of AW civilians than non-AW civilians who are becoming retirement-eligible are covered by CSRS. This mirrors the pattern observed in our analysis of the DoD-wide AW. This will remain true over the next several years. As time passes, the retirement plan composition of those becoming retirement-eligible changes. Whereas newly retirement-eligible personnel in recent years were predominantly in CSRS, the percentage of newly retirement-eligible population covered by CSRS is falling. Within the next few years, fewer than half of DoN civilians hitting “Year 0” will be covered by CSRS.

**Figure 3.3**  
Percentage of DoN Civilians in CSRS, FY 2006



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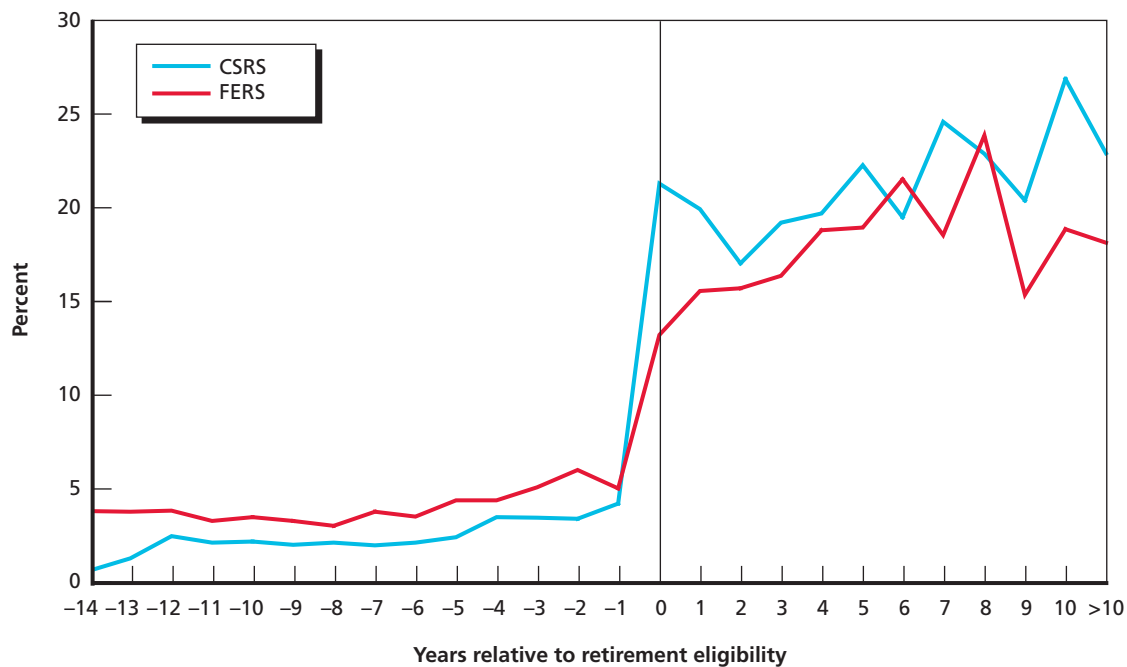
<sup>2</sup> Employees hired prior to that date were covered by CSRS when they were hired but had the option to switch into FERS. Few employees exercised that option.

CSRS is a traditional defined-benefit plan that gives people who attain specific retirement-eligibility criteria a retirement benefit in the form of an annuity. FERS has both a defined benefit and a defined contribution, for which a civilian worker becomes eligible after five years of creditable service. Therefore, although a CSRS employee would suffer an enormous loss to leave shortly before becoming fully retirement-eligible (not considering possible early retirement offers), his or her FERS counterpart would not be so markedly affected. Although it remains advantageous for an individual to attain “full retirement eligibility” under FERS, FERS is not an “all-or-nothing” program to the extent CSRS is. See U.S. Office of Personnel Management (1997) for more information on FERS.

Not surprisingly, therefore, as shown in Figure 3.4, attrition among those not yet retirement-eligible is greater for DoN civilians covered by FERS than for those covered by CSRS. In addition, we do not see as large a leap in attrition upon attainment of full retirement eligibility for those covered by FERS. While Figure 3.4 provides data for all DoN civilians, the observations are the same when looking specifically at the DoN AW. One interpretation of Figure 3.4 is that a number of CSRS employees “hang on” simply to become retirement-eligible, then leave immediately upon hitting that milestone. While full retirement eligibility is also valuable in FERS, the differential is not as large.

One should not attribute much policy significance to the variability on the far right-hand side of Figure 3.4. There were, for instance, very few FERS workers who had been retirement-eligible for nine years (67, in total), so a few individuals’ decisions considerably influence the retirement rate for this group. Coupled with Figure 3.3, Figure 3.4 suggests that the difference in attrition rates between AW and non-AW personnel before and after retirement eligibil-

**Figure 3.4**  
Attrition Rates for DoN Civilian Workers Covered by CSRS and FERS, FY 2006





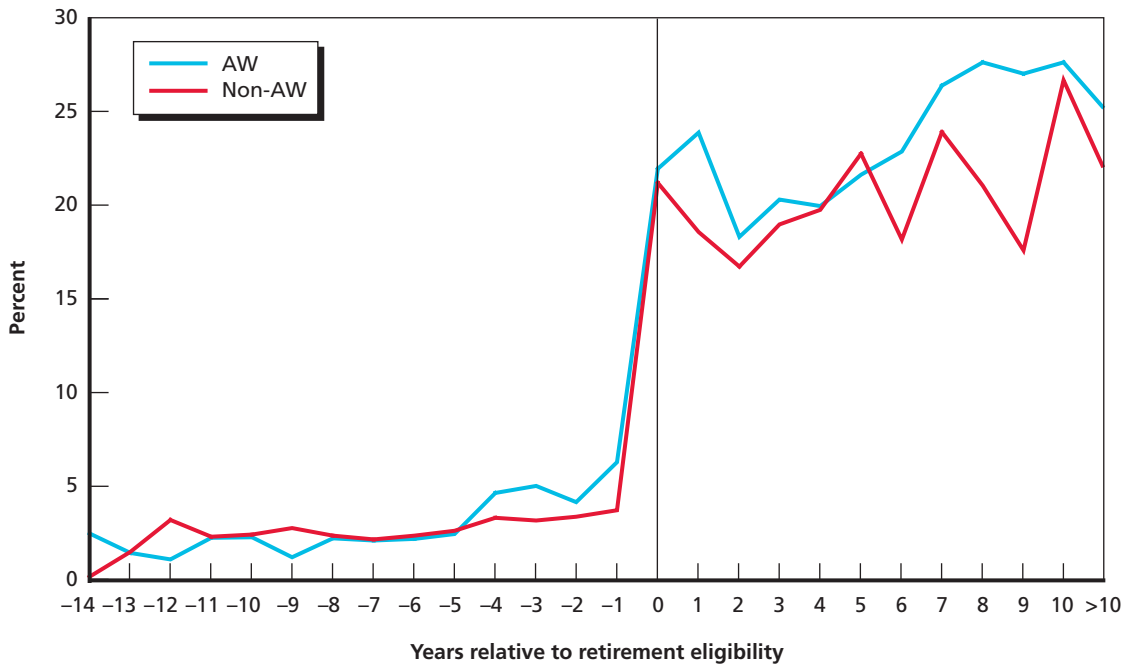
ity is likely driven by the fact that the ongoing DoN-wide transition from “mostly CSRS” to “mostly FERS” retirement eligibility is lagging in the DoN’s civilian AW.

Figure 3.5 presents information on the rates of attrition for the members of the DoN AW and non-AW civilian workforce who participate in CSRS as a function of years relative to retirement eligibility. Figure 3.5 reveals no systematic differences between the AW and non-AW CSRS workers.

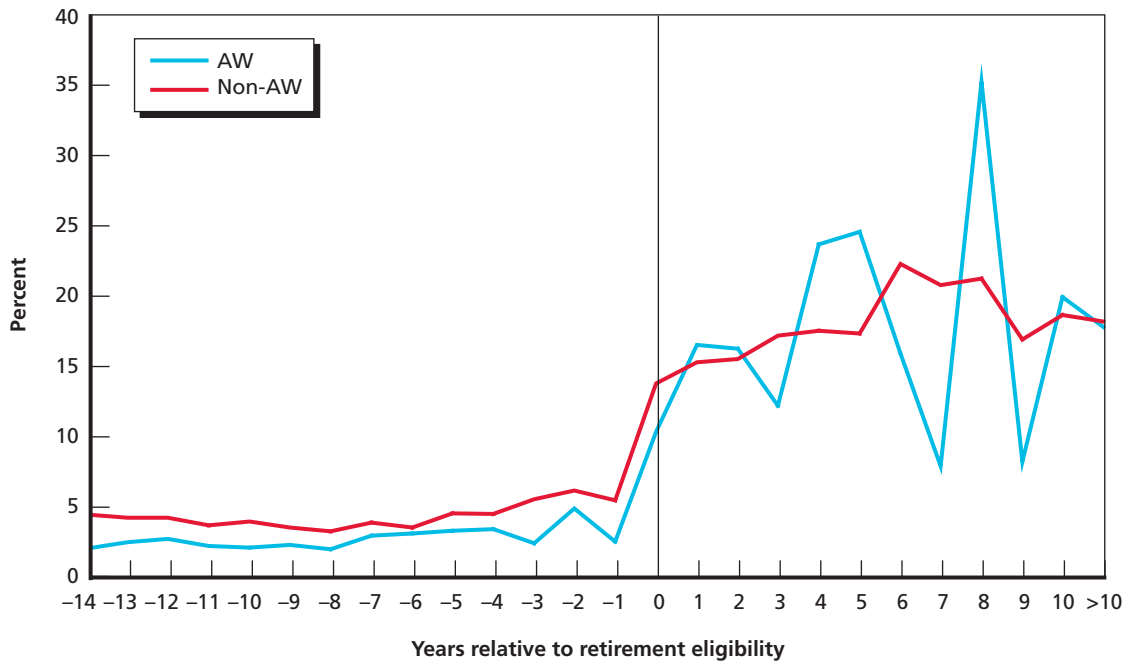
Figure 3.6 presents similar information for the FERS population. These data indicate that DoN AW workers who are covered by FERS but have not yet reached retirement eligibility have lower rates of attrition than do comparable non-AW civilians. Sample sizes for the AW are extremely small on the right side of the the figure, so it is not possible to know whether the attrition behavior of DoN AW civilians in FERS after they reach retirement eligibility differs from that of non-AW civilians.

One conclusion we draw from this chapter’s analysis is that retirement issues have a marked effect on DoN civilian attrition. There is a pronounced attrition spike when civilian employees become fully retirement-eligible. This spike is especially prominent for civilians covered by CSRS, an “all-or-nothing” retirement program. Across the DoN, the percentage of newly retirement-eligible workers covered by CSRS is falling, although its AW lags in this regard. FERS employees have slightly higher rates of attrition prior to reaching retirement eligibility, but they are more likely to remain in the workforce after reaching retirement eligibility. This suggests that AW managers may have some success in offering retirement-eligible employees incentives to remain in the workforce for a few additional years to ease the generational transition. In addition, FERS employees within the DoN who are part of the AW have lower attrition rates prior to retirement eligibility than do non-AW FERS employees. Thus, it appears that the

**Figure 3.5**  
Attrition Rates for DoN AW and Non-AW Civilians in CSRS, FY 2006



**Figure 3.6**  
**Attrition Rates for DoN AW and Non-AW Civilians in FERS, FY 2006**



RAND TR555-3.6

DoN AW may be reaping the benefits of FERS (in terms of retaining employees after retirement eligibility) without incurring as much of the costs. DoN AW managers will likely need to develop new strategies for managing the retention of its senior workforce in the future as an increasing fraction of the workforce becomes covered by FERS.

In the next chapter, we focus on the early careers of the DoN's AW interns.

## A Look at the FY 2001 DoN Acquisition Workforce Interns

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In light of possible future challenges with retiring civil servants, the DoN has put special emphasis on intern programs to attract, train, and retain high-quality new civilian employees. Gates and Paul (2004) present an overview of DoD intern programs and their objectives, arguing that the programs are more aptly described as early career professional development programs. Other organizations use the term “intern” to refer to individuals who are hired into temporary positions, often during summer months, with the explicit purpose of assessing the possibility of a longer-term employment relationship. In the DoD, however, interns are full-time employees in entry-level positions who receive structured professional development. In this chapter, we examine the 271 Naval Acquisition Intern Program (NAIP) civilian interns hired during FY 2001 and look at how their careers have evolved. Our purpose is to provide a preliminary analysis of the effectiveness of the intern program in achieving two of its key goals: training new hires in preparation for mid- and senior-level positions and retaining new hires. We note that intern programs strive to achieve another key aim as well: recruiting high-quality new hires. We are not able to evaluate the success of the intern program on this dimension because the quality of new hires cannot be ascertained using available administrative data.

### Background on the NAIP

The NAIP recruits civilians primarily into entry-level acquisition positions and provides them with structured mentoring, rotational assignments, and training over a three-year period. The goal is that individuals will be qualified for journeyman-level acquisition workforce positions (GS level 12) by the end of the internship. The intern program has three key objectives: (1) to improve recruiting through advertising and outreach by providing an early career development experience that is particularly attractive to high-quality prospective employees, (2) to improve early career professional development and ensure that new employees receive the training they need to quickly advance to senior-level positions, and (3) to improve retention among new hires. There is a general belief that the intern program, while costly to operate, is effective in achieving these objectives.

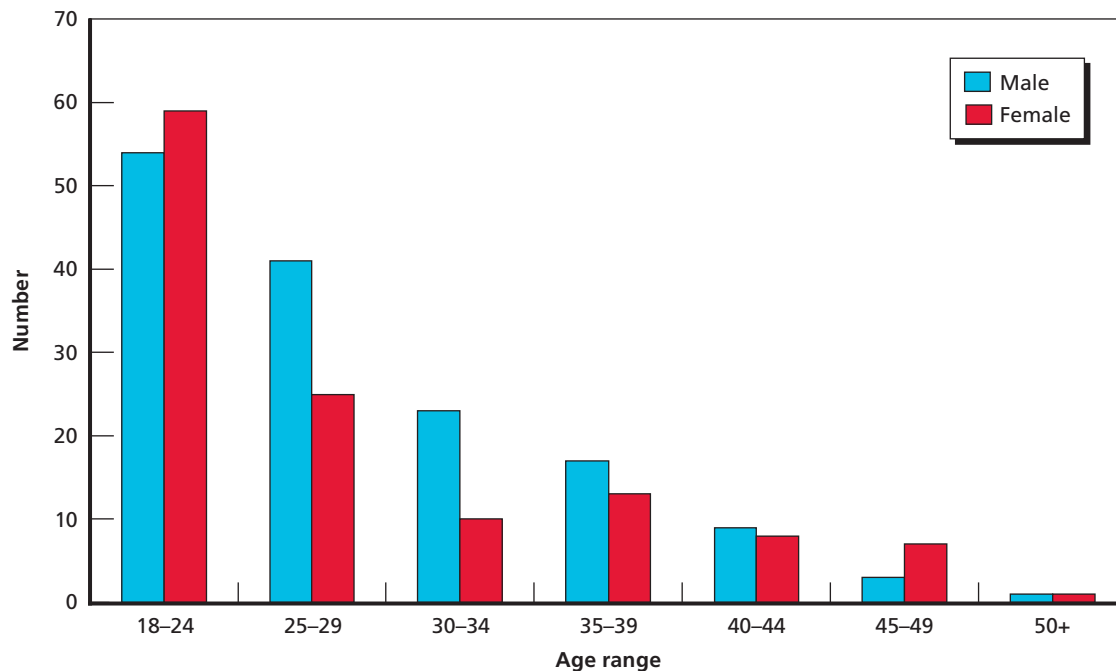
## Characteristics of NAIP Participants and Their Early Careers

Figure 4.1 provides some basic demographic information about the DoN AW interns hired in 2001.<sup>1</sup> One-hundred forty-eight of the 271 were males. Most of the interns were in their twenties, but a number were quite a bit older than that.

Figure 4.2 traces the number of interns still employed by the DoD in successive civilian inventory snapshots. The September 30, 2006, snapshot found 196 of the 271 (72 percent) still employed by the DoD. One-hundred fifty-six (58 percent) were still DoN AW workers. Fourteen worked in the DoN in a non-AW position. Twenty-six were employed by other parts of the DoD (14 by the Army, four by the Air Force, and eight by the Office of the Secretary of Defense (OSD) or DoD agencies).

The NAIP is merely the starting point for a career in DoN acquisition that is expected to take an individual to different organizational units within the DoN. Figure 4.3 describes the command assignment in FY 2006 of individuals who were hired as DoN AW interns in FY 2001. The interns started out assigned to Naval Education and Training Command (NETC), but then evolved toward their “regular” commands. As of September 30, 2006, the largest numbers were in NAVAIR (56), NAVSEA (43), and NAVFAC (28). This reveals that the NAIP appears to be training interns to fill AW positions throughout the DoN.

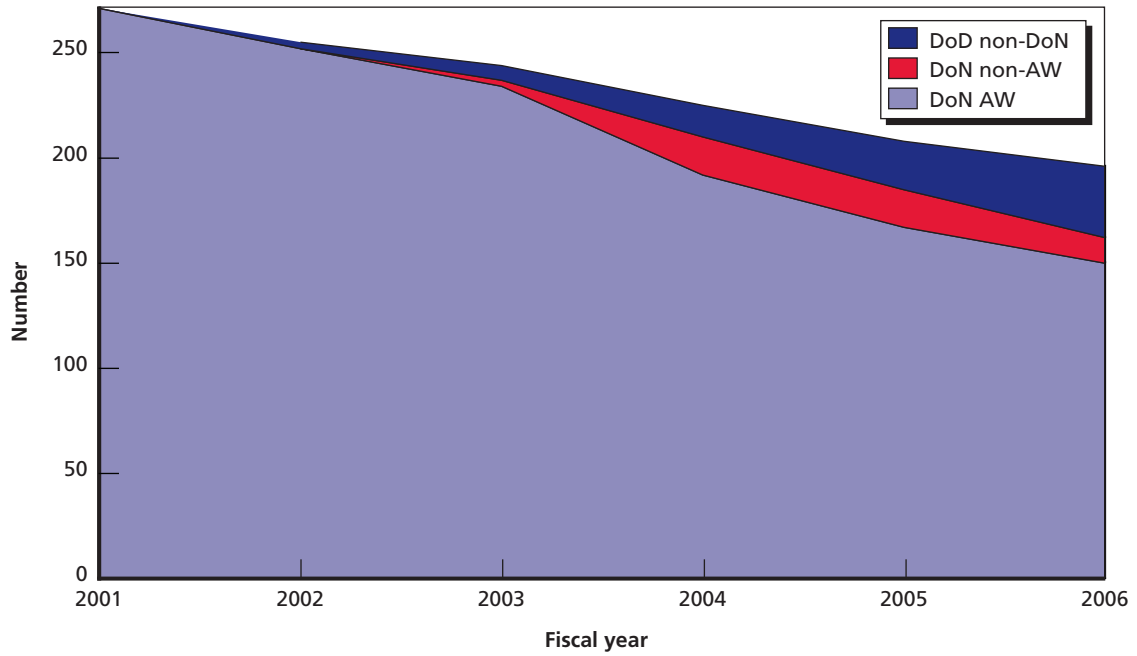
**Figure 4.1**  
Basic Demographics of the FY 2001 DoN AW Interns



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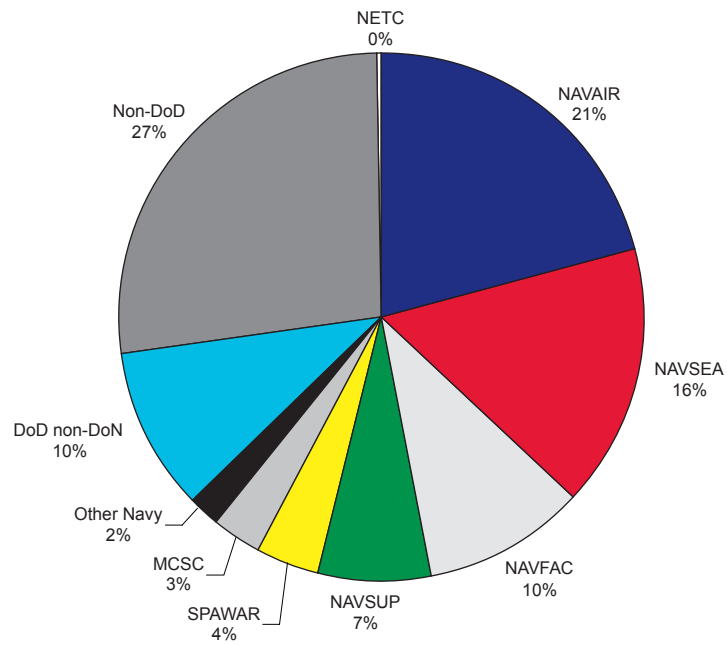
<sup>1</sup> Based on guidance from the client, we identified DoN AW interns as those hired into the AW and assigned unit identification code (UIC) 39721, which is reserved for the DoN AW intern program. A UIC is a fine-grained organizational identifier that appears in personnel records. This definition would exclude any individuals who participate in command-specific intern programs. We are focusing on DoN-wide interns.

**Figure 4.2**  
**FY 2001 DoN Interns Still Employed by the DoD**



RAND TR555-4.2

**Figure 4.3**  
**Commands of the FY 2001 DoN AW Intern Cohort, FY 2006**



RAND TR555-4.3

Figure 4.4 describes the grade level, by year, of 2001 DoN AW interns, providing a sense of their career trajectories. While the interns started as GS-5s, GS-7s, and GS-9s, the plurality (104) were GS-12s by September 2006. Forty-three had entered various demonstration and test pay plans. This suggests that the NAIP is providing interns with the skills needed in order to be promoted to senior-level positions. However, to evaluate the success of the intern program, it is also important to consider whether the NAIP is leading to more rapid promotion than is typical of entry- and mid-level new hires.

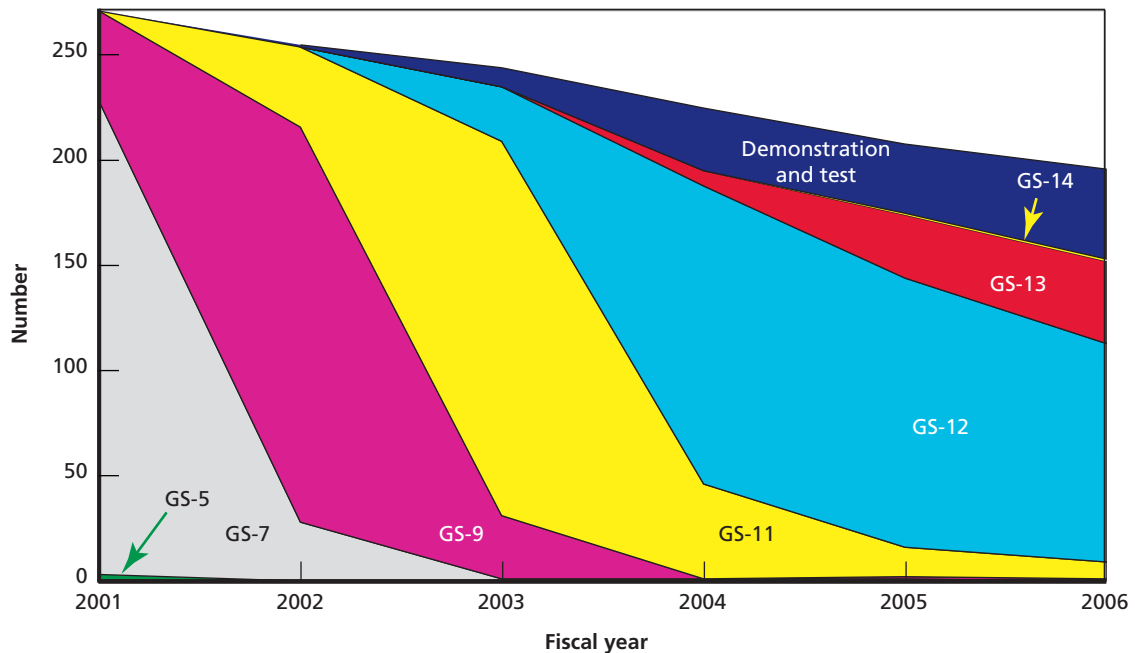
### Career Outcomes of Interns Compared with Those of Other New Hires

The NAIP is not the only avenue through which individuals can enter the DoD acquisition workforce, and therefore it is important to compare the experience of these interns with other new hires and to assess the similarities and differences. Given the objectives of the program, we would expect to see higher retention and faster promotion rates for interns than for a comparable group of non-intern new hires.

#### Retention of NAIP Participants

To analyze the effectiveness of the NAIP in retaining new entry-level hires, we estimated several logistic regression models predicting retention among new hires to the DoN AW. The data include 1,093 new DoN AW hires in FY 2001, of whom 271 entered the NAIP.

**Figure 4.4**  
Grade Levels of FY 2001 DoN AW Interns



Each federal employee is assigned to a pay plan and grade level. Grade-level assignments are determined by the nature of work the employee performs. The General Schedule (GS) is the traditional and most common pay plan covering federal professional, technical, and administrative employees. There are 15 GS levels. In addition to the GS, there are a number of alternative pay systems with pay plans that have a smaller number of grade levels (usually four or five).<sup>2</sup> All NAIP interns are hired into the GS. We classified new hires into three categories reflecting whether they were hired into entry-level, mid-level, or senior-level positions.<sup>3</sup> Since the interns were all at entry- or mid-level positions, we excluded from the analysis the 306 non-interns at the senior level. This reduced the population to 787 employees. Individuals were also classified based on their education level: less than a bachelor's degree, bachelor's degree, or more than a bachelor's degree. The individuals' age and gender were also considered. Summary statistics are shown in Table 4.1.

Worth noting is that females are more common in the intern program (45.4 percent of the intern population) than among other new hires (28.5 percent of the non-intern population). Interns also tend to be younger ( $28.8 \pm 7.4$  years old for interns versus  $32.9 \pm 9.9$  years old for other new hires), and there is less variance in interns' education level—interns typically have a bachelor's degree.

**Table 4.1**  
**Summary Statistics on NAIP Interns and Other DoN AW New Hires**

		Intern	Non-Intern
Pay plan/grade	Entry	210	129
	Mid-level	38	231
Education	Less than bachelor's degree	8	55
	Bachelor's degree	216	243
	More than bachelor's degree	24	62
DAWIA career field	SPRDE	88	273
	Acquisition Logistics	46	49
	Contracting	114	38
	Other	23	156
Gender	Female	123	147
	Male	148	369
Age	Mean	28.8	32.9
	Standard deviation	7.45	9.86

<sup>2</sup> These pay plans were originally approved on a temporary basis and are referred to as demonstration pay plans. Many, including the original demonstration at China Lake, initiated in 1980, have since been converted to permanent status. Alternative pay systems cover many of the DoD science and technology labs (including the Naval Research Laboratory and NAVSEA Command Warfare Centers). There is also a demonstration pay plan specific to DoD acquisition workforce employees. The DoD is currently in the process of moving all its employees to alternative pay systems as it rolls out the National Security Personnel System, which started in 2004.

<sup>3</sup> These assignments vary depending on the pay system a person was hired into. Entry-level positions consist of GS grades 1–5 and grade 1 in alternative pay systems. Mid-level positions are GS grades 8–11 and grades 2 or 3 of alternative pay systems. High-level positions are GS grades 12 or higher and grades 4 or higher in alternative pay systems.

We performed several estimations with these data. The analyses we report here are restricted to new hires, with a bachelor's degree or higher, in the following DAWIA Career Fields: Systems Planning, Research, Development, and Engineering (SPRDE), Acquisition Logistics, and Contracting.<sup>4</sup> The sample size of this group is 545. The rationalization for this focus is that interns typically have a bachelor's degree or higher and are usually hired into one of these three career fields. We considered two retention-related outcome variables: whether the individual was present in the DoN's acquisition workforce in FY 2006, and whether the individual was present in the entire Department of Defense workforce in FY 2006.

The first analysis uses a multivariate logistic model to examine the effect of several critical characteristics on retention in the DoN AW. The dependent variable in the estimation is a binary variable indicating whether the individual was present in the DoN acquisition workforce in FY 2006. The independent variable of interest is *AWIntern*, which is a binary variable indicating whether the individual was in the intern program. The model includes, or controls for, several other dichotomous independent variables: *Female* (1 if female, 0 if male), *MoreThanBA* (1 if the individual has higher than a bachelor's degree, 0 otherwise), *Midlevel* (1 if the person was hired into a mid-level pay grade, 0 if the person was hired at an entry level). Fixed-effects variables representing the Acquisitions Logistics (*AcqLogistics*) and Contracting career fields are included.<sup>5</sup> *Age* is a continuous variable reflecting the individual's age in years.

The estimated model is:

$$Z = \beta_0 + \beta_1 AWIntern + \beta_2 Female + \beta_3 MoreThanBA + \beta_4 Age + \beta_5 Midlevel + \beta_6 AcqLogistics + \beta_7 Contracting + \varepsilon. \quad (4.1)$$

The probability of an individual's being present in the acquisition workforce in 2006 is given by:

$$\Pr(AW06) = \frac{1}{1 + e^{-Z}}. \quad (4.2)$$

When interpreting the regression results, we consider the comparison or baseline individual to be a male non-intern with a bachelor's degree who works in an entry-level position in Engineering. The parameter estimates generated by the model reflect the effect that the dependent variables have on the probability of survival relative to this baseline individual. Thus, if one were predicting retention of a 22-year-old entry-level non-intern male engineer who held only a bachelor's degree, one would replace  $Z$  in the previous equation with:

$$\hat{Z} = \hat{\beta}_0 + \hat{\beta}_4 * 22.$$

<sup>4</sup> We also conducted analyses using broader populations: all new hires and all new hires in SPRDE, Acquisition Logistics, and Contracting. The results were similar to those presented here and are available from the authors upon request.

<sup>5</sup> Individuals in the SPRDE career field are also included in the model, but this career field is the omitted category in the model estimation.



For comparison, an individual with the same characteristics but who was in the intern program would include the AWIntern fixed effect:

$$\hat{Z} = \hat{\beta}_0 + \hat{\beta}_1 + \hat{\beta}_4 * 22.$$

Other fixed effects are added in a similar manner.

The results of the analysis are presented in Table 4.2. With this specification, we find that education level, employee age at the time of hire, and career field are statistically significant predictors of retention. Individuals who have more than a bachelor's degree, are younger, or who are in the contracting career field have lower rates of retention. The parameter estimate on being enrolled in the AW intern program is negative but is not statistically significantly different from zero.

The analysis indicates that the AW intern program has neither a negative nor a positive effect on retention in the DoN civilian AW. The analysis reveals that new hires in the contracting career field are substantially less likely to remain in the DoN AW through FY 2006 than similar new hires in the SPRDE career field. It also shows that new hires with more than a bachelor's degree are less likely to remain than similar new hires with a bachelor's degree only and that retention is higher for older new hires.

Table 4.3 reflects a similar analysis as Table 4.2, but here the outcome variable reflects retention within the DoD, rather than the DoN's acquisition workforce. Again, we find that the significant predictors of retention are whether the individual holds a degree higher than a bachelor's degree, his or her age, and whether the individual is in the contracting career field.

We conducted several other analyses, including one that examined retention over different periods of time. In most cases the AWIntern coefficient was not statistically significant. We also looked more explicitly at differences in pay plan and pay grade, but did not find substantively different results.

**Table 4.2**  
**Logistic Regression Results Predicting Employment in the**  
**FY 2006 DoN Acquisition Workforce for Employees in**  
**Engineering or Logistics Management with a Bachelor's**  
**Degree or Higher**

Variable	Parameter Estimate	Standard Error
AWIntern	-0.333	0.231
Female	-0.024	0.206
More than BA/BS	-0.561**	0.260
Age	0.036***	0.012
Mid-level	-0.303	0.229
Acquisition Logistics	-0.216	0.342
Contracting	-0.793***	0.271
Constant	0.168	0.381

Significance levels (p-values): \*\*\*0.01, \*\*0.05, \*0.10.

**Table 4.3**  
**Logistic Regression Results Predicting Employment in the**  
**Department of Defense Workforce for Employees in**  
**Engineering or Logistics Management with a Bachelor's**  
**Degree or Higher**

Variable	Parameter Estimate	Standard Error
AWIntern	0.025	0.264
Female	-0.251	0.226
More than BA/BS	-0.775***	0.281
Age	0.042***	0.015
Mid-level	-0.141	0.256
Acquisition Logistics	-0.175	0.386
Contracting	-0.704**	0.304
Constant	0.406	0.446

Significance levels: \*\*\*0.01, \*\*0.05, \*0.10.

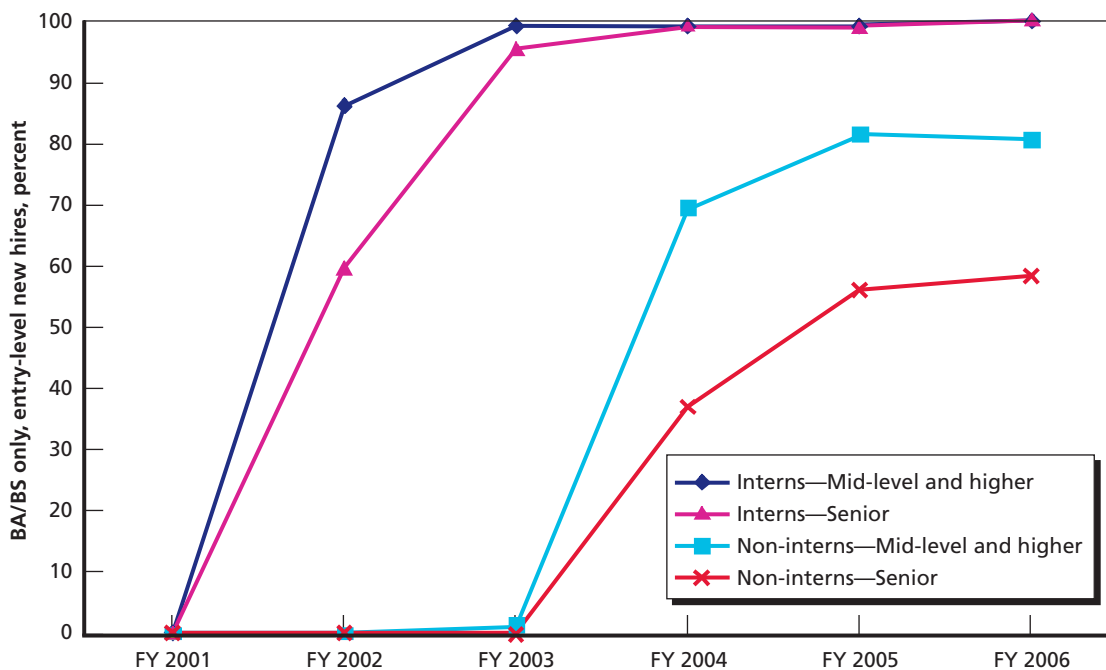
### Promotion of NAIP Participants

As discussed earlier in this chapter, an important objective of the intern program is to give entry-level new hires the training and experience needed to advance to mid-career and senior-level positions. In this section, we provide information on the percentage of the entry-level intern and non-intern cohorts who were in mid-career or higher positions and in senior-level positions as of the end of subsequent fiscal years. These percentages reflect speed of promotion for those who remain in the DoD workforce. In comparing promotion information of the intern population with that of other new hires, we consider BA/BS-only new hires into entry-level positions in the DoN AW.

Figure 4.5 presents information on the percentage of FY 2001 entry-level new hires who were in mid-level (or higher) or senior-level positions as of the end of subsequent fiscal years. The line marked by diamonds plots the percentage of entry-level intern new hires who were in mid-career or higher positions. The line marked by triangles provides similar information for non-intern entry-level hires. The line marked by squares reflects the percentage of entry-level intern hires who were in senior positions as of the end of subsequent fiscal years. The line marked by Xs provides similar information for non-interns.

Figure 4.5 indicates that a substantially larger fraction of interns had been promoted to mid-level positions by the end of FY 2002 (86 percent versus 60 percent), but that non-interns had caught up by the end of FY 2003. Due to higher rates of attrition among the intern population, by FY 2004, a larger share of the non-intern new hires were occupying mid-level positions or higher. The figure also reveals that interns are quicker to advance to senior positions. By the end of FY 2004, over half (69 percent) of the FY 2001 entry-level intern new hires had reached senior-level positions, compared with 37 percent of non-interns.

**Figure 4.5**  
**Promotion of DoN AW Interns and Non-Interns**



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## Summary

Our analysis of the career experiences of new DoN AW hires in FY 2001 suggests that NAIP participants are promoted quickly to mid- and senior-level positions, and that they were neither more nor less likely to remain in the DoN AW or the DoD overall through FY 2006, compared with other DoN AW new hires. The analysis also suggests that the DoN AW has a harder time retaining new hires into the contracting career field compared with SPRDE, regardless of whether new hires are in the intern program or not. We caution that this analysis is based on the outcomes for only one cohort of new hires (those hired in FY 2001) and may not apply to current new hires. However, similar analyses could be done to track the outcomes for more recent cohorts over shorter periods of time.

Next, we provide a description and retrospective analysis of the careers of the DoN's AW Senior Executive Service members.



## An Analysis of DoN's Acquisition Workforce Senior Executive Service Members

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The Senior Executive Service is the merit-based segment of senior civilian leadership in the federal government. SES members occupy top managerial, supervisory, and policy positions that are just below the positions occupied by presidential appointees. As such, SES members provide federal agencies with critical institutional knowledge at the highest levels and consistency of leadership. Current DoD policy also emphasizes the critical role that SES members must play in providing an “enterprise perspective” and having competency in “joint matters” (DoD, 2007, p. 2).

In spite of the importance of senior civilian leaders and debates regarding the roles that they should play, little is known about the background of individuals who hold these senior career positions. The data we have assembled can support a retrospective analysis of the careers of individuals who currently hold SES positions in the DoN AW. Such information is a necessary starting point for discussions about changes to career management and development of senior AW personnel.

We begin this chapter with some basic descriptive demographic information about the DoN's AW SES members, who make up 31.6 percent of all DoD AW SES personnel.<sup>1</sup> As shown in Figure 5.1, the DoN had 151 AW SES personnel as of September 2006, of whom 134 (87 percent) were male. In percentage terms, the gender composition of the DoN SES is similar to that of the DoD as a whole (84 percent). As one might expect, most of the SES members in both the DoN and in the DoD as a whole were between 45 and 64 years of age.

As shown in Figure 5.2, over half the DoN AW SES members were in NAVSEA or NAVAIR.

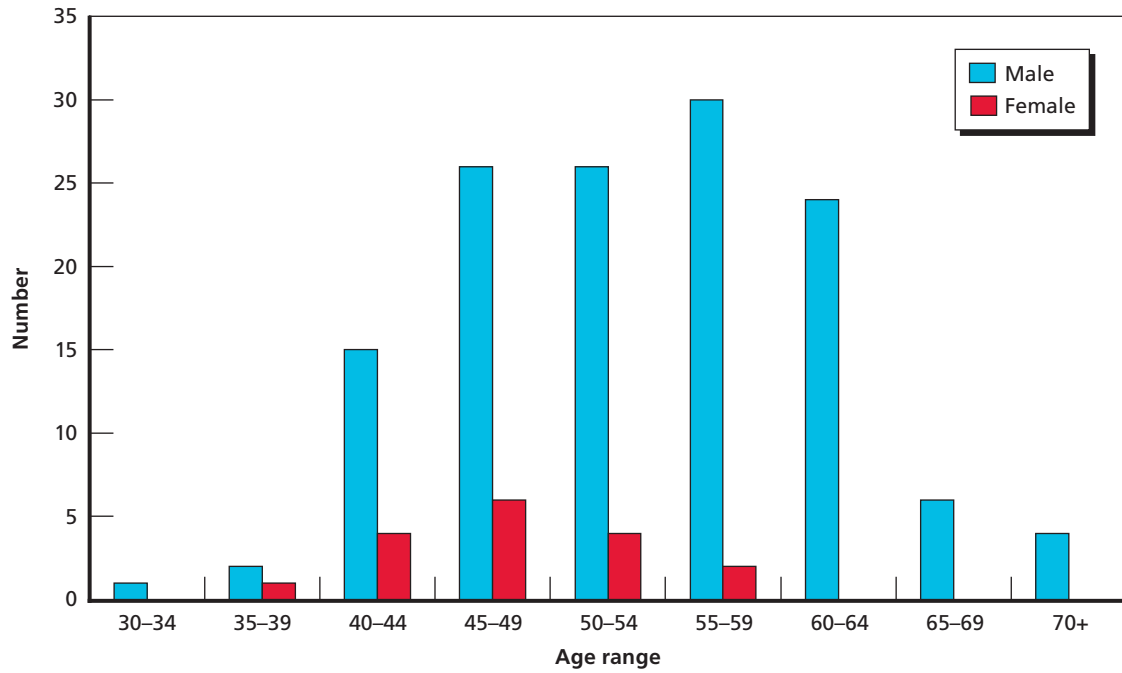
Figure 5.3 provides a retrospective look at the command affiliation of the September 2006 SES members back to September 1992. One-hundred forty of the 151 were DoN civilian employees on September 30, 1992. Eleven were not civilian DoD employees.

There is substantial discussion in the DoD workforce management community about the need for senior leaders to have a broad perspective that crosses organizational boundaries. This may be particularly relevant for the AW, whose members work in many different organizations across the DoD and DoN. Our analysis of the DoD AW SES revealed that very few (61 out of 454) DoD SES members have had senior management experience outside their current service or agency. That analysis also showed that the Navy was more likely to export senior leaders than to import them. In other words, there are more senior AW leaders currently in other parts

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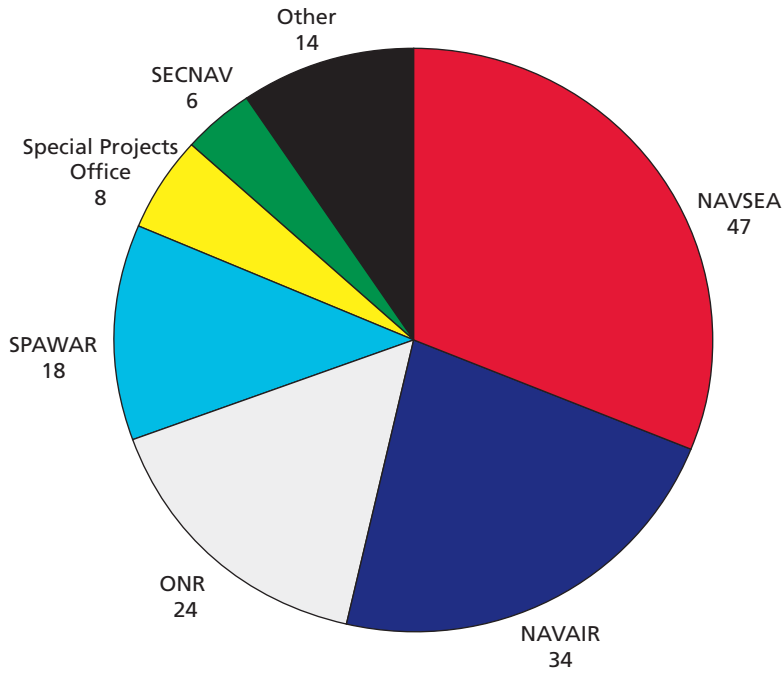
<sup>1</sup> Information on DoD AW SES personnel is provided in Gates et al. (2008).

**Figure 5.1**  
**Age and Gender Profile of DoN AW SES Personnel, September 2006**



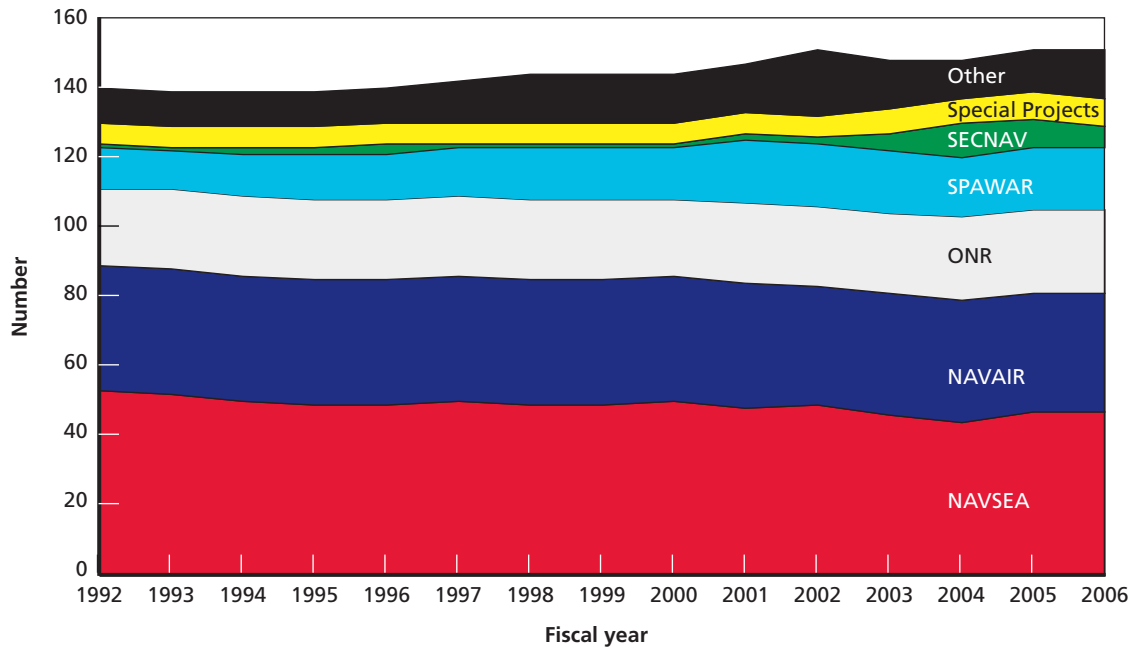
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**Figure 5.2**  
**DoN AW SES Members, by Command, 2006**



RAND TR555-5.2

**Figure 5.3**  
**Historical Commands of FY 2006 DoN AW SES Members, by Service**



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of the DoD who have had some recent experience in the Navy than there are senior AW leaders in the Navy who had some recent experience in other parts of the DoD.

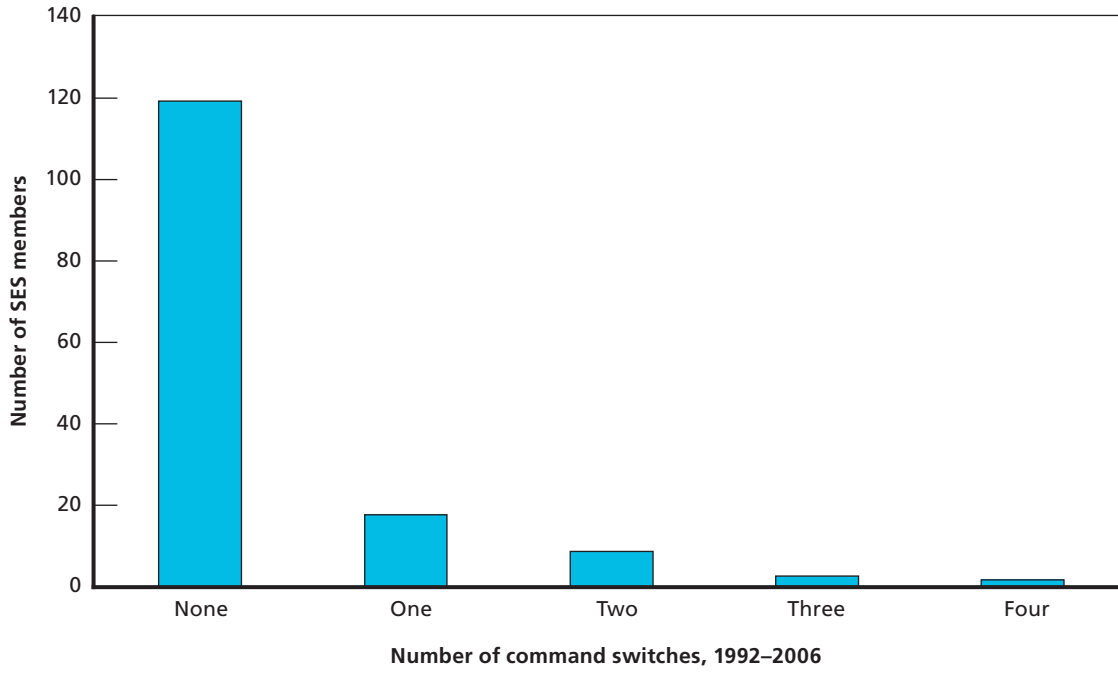
In this analysis, we considered whether DoN SES members might have had inter-organizational mobility within the DoN. Figure 5.4 shows that 119 of the 151 DoN AW SES members have not changed DoN command since 1992.<sup>2</sup> The management of SES personnel within the DoN does not seem to promote or encourage cross-command assignments. This may reflect a perceived value in having senior leaders develop deep expertise in a particular system or type of system.

Although mobility is uncommon, it is useful to see what types of interorganizational mobility have occurred. A command is said to have “exported” an SES member if he or she previously worked for the command but left that command sometime between September 30, 1992, and September 30, 2006. (The worker may or may not have been an SES member at the time of the intercommand move.) A command “imported” an SES member if the worker moved from a different command to the importing command some time between the same dates. By construction, the sum of imports equals the sum of exports.

As shown in Figure 5.5, the limited number of intercommand switches that we see in the data most often involve an employee’s leaving NAVSEA. NAVSEA is disproportionately the “cradle” of DoN AW SES members. The Office of the Secretary of the Navy (SECNAV) tends to fill its SES billets with individuals who have experience in other commands.

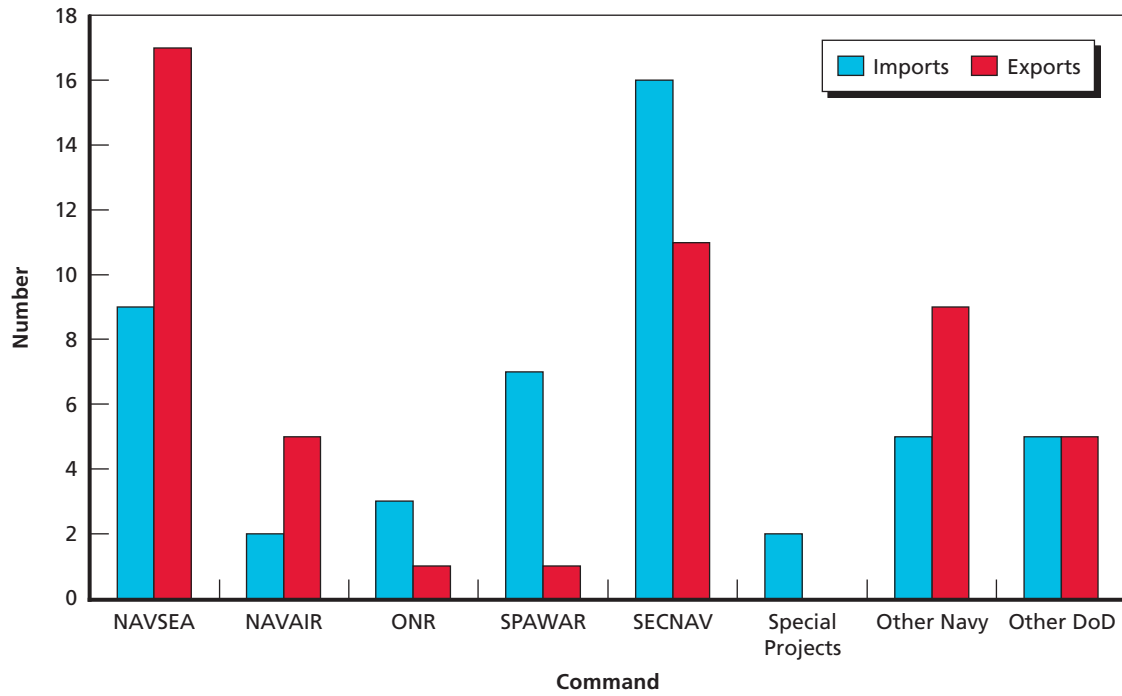
<sup>2</sup> We are able to observe only command switches that span fiscal years. If, for example, an individual were to move to a different command for short-term assignment and return to his or her original command before the end of the fiscal year, we would not observe that mobility in our data.

**Figure 5.4**  
**Command Switches by FY 2006 DoN AW SES Members, 1992–2005**



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**Figure 5.5**  
**Movement of DoN AW SES Members Between Commands**



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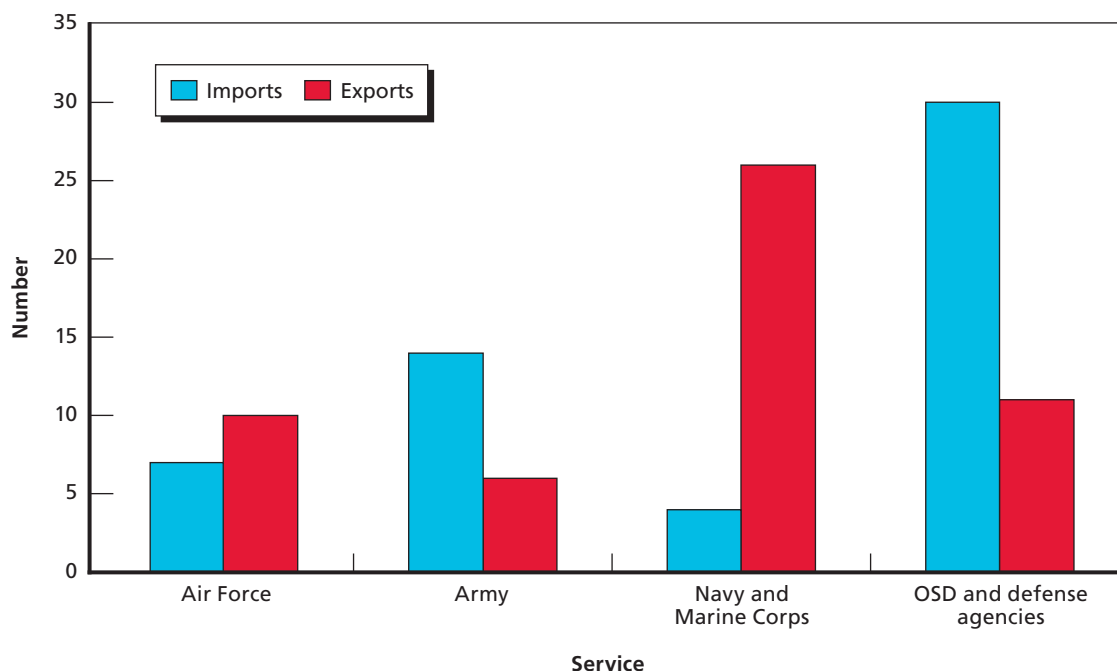


Figure 5.6 is a version of the same picture, but at the DoD level using DoD-wide AW data. The right-hand bars are imports into a military service from another service; the left-hand bars are exports from a service. The figure indicates that the DoN and the Air Force are net exporters, i.e., their exports exceed their imports. In other words, it has been more common for a civilian worker to leave the DoN and become an AW SES member elsewhere than it has been for the DoN to hire a civilian worker from another service who eventually becomes a DoN AW SES member.

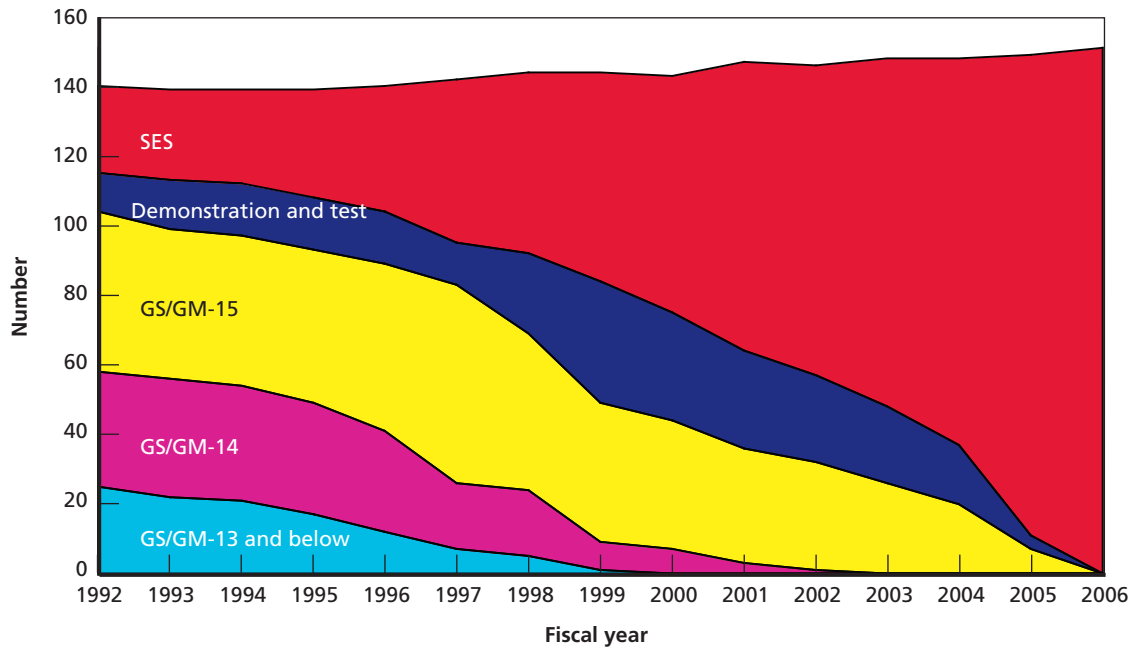
Just as NAVSEA is the cradle of DoN AW SES members, the DoN is often the cradle of other services' SES members. We were struck by how much more common it is for a leader to “grow up” in the DoN, and then go to another service or OSD, than vice versa. This pattern could have several different roots. For example, it may be that the DoN does an excellent job grooming members of the AW for senior positions and these people are therefore prime candidates for jobs in OSD and other services. Alternatively, senior AW positions in the DoN may be less desirable—or less available—than senior AW positions in other parts of the DoD. Further investigation into the qualitative aspects of DoN AW management may clarify the causes of the mobility pattern described here.

Figure 5.7 displays the grades of FY 2006 DoN AW SES personnel by past fiscal year. Forty-six of the 151 FY 2006 DoN AW SES members were GS/GM-15s as of September 30, 1992. Twenty-five had already become SES members. This pattern is similar to that observed for all DoD AW SES members.

**Figure 5.6**  
Service-Level Exports and Imports of AW SES Personnel, 2006



**Figure 5.7**  
**Historical Grade Levels of FY 2006 DoN AW SES Members**



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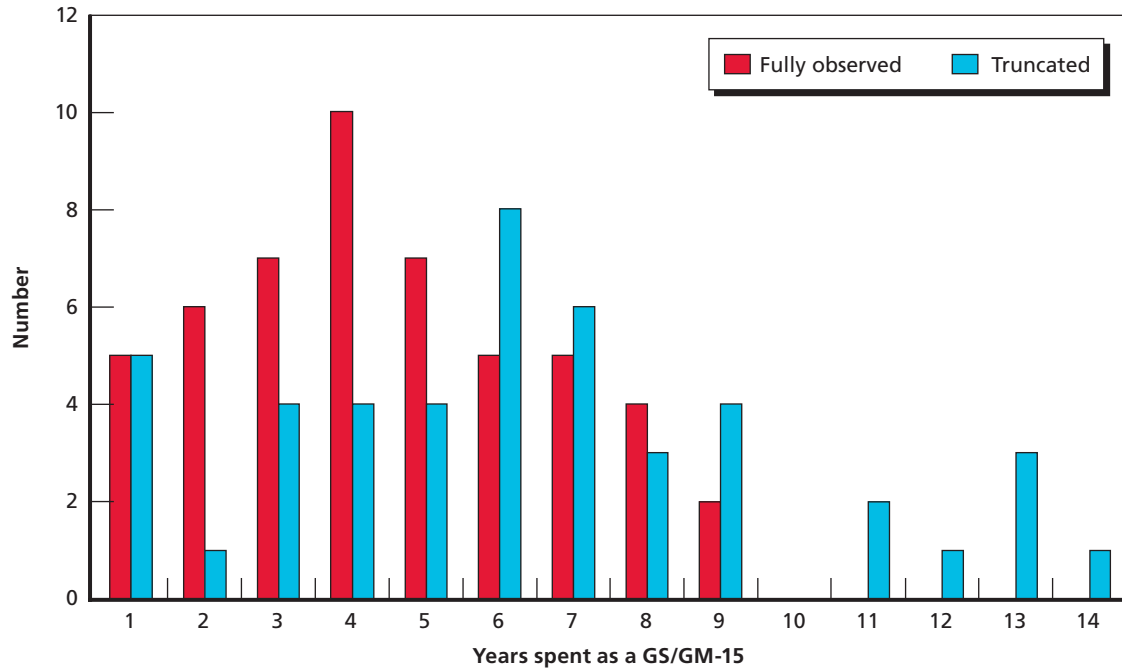
Figure 5.8 notes the time that FY 2006 AW SES members spent at least one year as a GS- or GM-15 between 1992 and 2005. (Twenty-five were members of the SES throughout. Others were never GS/GM-15s, i.e., they were part of various demonstration or test pay plans before becoming SES members.) For some SES members who were GS/GM-15s, we observed the beginning of their spell as a GS/GM-15 (as well as, in all likelihood, the end, because we know that they were in the SES in 2006). We refer to these cases as “fully observed” GS/GM-15 durations. These individuals, on average, were GS/GM-15s for 4.5 years, but the durations varied widely. Another population was “truncated,” i.e., they were already GS/GM-15s on September 30, 1992, so we do not know when they first attained that status. These individuals were GS/GM-15s for 6.3 years, on average, but we know this value is a lower bound on their actual mean duration in that grade.

We were struck by the variability in the number of years that future SES members spent as GS/GM-15s. Some individuals rocketed up the personnel schedule, while others lingered for many years as a 15. (In the military personnel system, time-in-grade is much less variable.) This variability is not unique to the DoN—we made a similar observation in our analysis of the DoD AW SES data as a whole.

## Summary

Our analysis of the DoN AW SES mirrors the findings from our analysis of the DoD-wide AW SES workforce. The DoN’s AW SES population is composed of highly experienced professionals with a depth of knowledge within their current service and current command. Relatively

**Figure 5.8**  
**Years Spent by FY 2006 DoN AW SES Members as GS/GM-15s**



RAND TR555-5.8

few have worked outside their present command and even fewer have worked outside the DoN since 1992. In some respects, the experiences of the DoN's civilian AW SES members complement those of the Navy's and Marine Corps's military leaders: Navy and Marine Corps officers rotate extensively both across the DoN and to assignments outside the DoN; DoN SES personnel generally have deep organizational knowledge of their own commands.



## Summary and Conclusions

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In this report we have provided descriptive information on, and preliminary analyses of, the DoN's acquisition workforce. The report demonstrates the utility of workforce analysis based on existing data, provides information that could inform workforce management decisions, and directs attention to areas of worthy of additional exploration. In addition, it shows the value of service-specific analysis and illustrates the range of issues that can be explored using the data we have assembled on the acquisition workforce. These analyses may inform policy decisions related to key issues of concern, including AW retention, professional development, and leadership.

The DoN AW is a large segment of the DoN civilian workforce. Major commands and locations with a primary acquisition mission tend to have a high concentration of AW civilians, but acquisition personnel also work in commands and locations that have only a few AW civilians. This combination of concentration and dispersion may pose challenges for workforce management and decisions related to the delegation of workforce management responsibilities.

The number of DoN civilians counted as part of the AW grew substantially between 1999 and 2002. This growth was largely due to an expansion in the definition of who is considered part of the AW. Despite concerns about attrition among members of the civilian AW, our analysis shows that rates of nonretirement separation are actually lower for DoN AW civilians than for other DoN civilians. Retirement rates are comparable between the two groups.

A key issue of concern to workforce managers across the DoD is workforce retention and, in particular, the pending wave of retirements. Our analysis shows that the number of DoN AW civilians who become fully retirement-eligible will begin to increase in FY 2012 and will remain at higher than current levels for the next seven years. In recent years, proportionally fewer DoN AW civilians have attained full retirement eligibility than has been the case for non-AW civilians. Since separation rates increase dramatically when individuals reach retirement eligibility, DoN AW managers may need to consider new strategies that could help retain individuals beyond that point. Approaches will likely differ depending on whether individuals are covered by FERS or CSRS. Our analysis of attrition also provides AW managers with some good news. We find that rates of nonretirement separation are quite low for DoN AW (and substantially lower than for non-AW civilians).

The other obvious approach to responding to the retirement wave is to increase new hires and improve their retention. In this report, we present a preliminary analysis of AW new hires with a particular focus on NAIP participants. Our analysis of the career experiences of new DoN AW hires in FY 2001 suggests that NAIP participants are promoted quickly to mid- and senior-level positions and that they are neither more nor less likely to remain in the DoN AW or the DoD overall through FY 2006 than other DoN AW new hires. Our analysis also

suggests that the DoN AW has a harder time retaining new hires into the contracting career field than those in the SPRDE career field, regardless of whether new hires are in the intern program or not. We caution that this analysis is based on the outcomes of only one cohort of new hires (those hired in FY 2001) and may not apply to current new hires. However, similar analyses could be done to track the outcomes for more-recent cohorts over shorter periods of time.

This issue may be worthy of further exploration by DoN AW managers to determine the potential reasons for this disparity in retention based on career fields. The finding also suggests that retention efforts targeted by career field may be needed.

In spite of the importance of senior civilian leaders and debates regarding the roles that they should play, little is known about the background of individuals who hold senior career positions. The data we have assembled can support a retrospective analysis of the careers of individuals who currently hold SES positions in the DoN AW. Such information is a necessary starting point for discussions about changes to career management and development of senior AW personnel.

The DoN's AW SES population is composed of highly experienced professionals with a depth of knowledge within their current command. Relatively few have worked outside their present command, and even fewer have worked outside the DoN since 1992. In some respects, the experience of the DoN's civilian AW SES personnel complements that of the Navy's and Marine Corps's military leaders: Navy and Marine Corps officers rotate extensively both across the DoN and to assignments outside the DoN; DoN SES members generally have deep organizational knowledge within their commands.

Workforce managers face conflicting pressures in the management of senior AW personnel. On the one hand, because acquisition functions are complex and critically important to the DoD, there is a need for senior leaders to have a depth of experience (e.g., in a particular system or type of system). On the other hand, several factors contribute to the demand for senior leaders with a cross-organizational perspective, including the increase in joint procurement and the need for organizations to share best practices in acquisition. Current DoD policy also emphasizes the critical role that SES members must play in providing an "enterprise perspective" and having competency in "joint matters" (DoD, 2007, p. 2). The information presented here can provide managers with an informed starting point for discussions about policies related to the management of senior AW personnel.

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