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NATIONAL DEFENSE RESEARCH INSTITUTE

Analyses of the Department of Defense Acquisition Workforce

Update to Methods and Results through FY 2011

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Summary

The defense acquisition workforce (AW) is charged with providing the Department of Defense (DoD) with the management, technical, and business capabilities needed to oversee defense acquisition programs from start to finish. This workforce comprises military personnel, civilian employees of DoD, and contractors who perform functions related to the acquisition of goods and services for DoD.

In 2006, RAND National Defense Research Institute began to collaborate with DoD to develop data-based tools that would support analysis of the organic defense AW, which includes military personnel and DoD civilian employees, but not contractors. RAND published a report in 2008 (Gates et al., 2008) that documented the construction of the data set and the analytical methods used to examine these data. That report provided descriptive analyses of the organic AW based on data through FY 2006.

This report updates Gates et al., 2008, by documenting revisions to the study methods, providing descriptive information on the AW through fiscal year (FY) 2011, and providing a user's manual for a projection model that can help managers explore what shape the AW could take in 2021 under different assumptions about the future. The value of the model and resulting projections is not so much in the specific numbers the model provides (including the examples presented in this report) but in the insights that managers can gain by manipulating the model to examine the possible effects of changes to the model parameters. To illustrate this value, we present some practical examples that describe how a manager can use the model to explore alternative assumptions about future workforce turnover or workforce management practices by modifying some of the default gain and loss rates in the model, which are based on the five-year historical averages. The examples illustrate the implications of such changes for the projections. Appendix A describes the procedures for making such modifications.

At the time of this writing, we continue to work collaboratively with DoD to improve the data and methodologies to make them more useful to DoD AW managers and to update the analyses as new data become available. In addition, we continue to explore new questions with the data we have and are working to obtain additional data, including data on the federalwide AW.

Data

Our analysis uses data on the DoD-wide AW that the Defense Manpower Data Center provided RAND. These data include information on individuals who are classified as part of the AW per DoD Instruction 5000.55. That instruction provides guidance for the implementation of the Defense Acquisition Workforce Improvement Act (DAWIA), which, among other

things, required DoD to track the AW. These data are often referred to as *DAWIA data*, and the number of employees captured in the data is referred to as *the DAWIA count*. This is one of several counting methods used since 1992. Congress and DoD raised numerous concerns about the counting methodologies in the 1990, leading to a major effort to improve them in the early 2000s. Because of limitations and changes to the workforce count information, readers are urged to use caution in interpreting trends related to the AW prior to 2004.

Study Approach Was Modified in Five Important Ways

A key objective of this report is to document refinements and improvements that have been incorporated into our analytical approach since the publication of Gates et al., 2008. The following subsections briefly describe the methodology-related modifications.

Better Accounting for Separations and New Hires

In our prior report, we used a “forward looking” approach to define separations in a given fiscal year and a “backward looking” approach to define new hires. Individuals were counted as a separation only if they left the data set and never reappeared. Similarly, individuals were counted as new hires only if they appeared in the data set for the first time ever.

We have modified our definition of separations and new hires so that individuals are considered to be separations in year $t + 1$ if they do appear in the data set in year t but do not appear in year $t + 1$. Similarly, we identify new hires as individuals who do not appear in the data set in year t but do appear in year $t + 1$, even if we observe them in the DoD workforce in a previous year prior to year t . This approach is reflected in all analyses presented in this report.

A key advantage of the new approach is that workforce gains and losses will equal differences in total workforce from year to year. Specifically, the baseline population at the end of year t plus the gains in year $t + 1$ minus the losses in year $t + 1$ will equal the year $t + 1$ population. Separation and new hire rates are slightly higher than they were under the old definition.

Better Coding of Substantive Career Switches to Reflect the Reasons for Pay Plan Changes

In our prior report, we highlighted the fact that a large share of gains and losses to the AW involves individuals who are not gains or losses to the DoD workforce as a whole but who are switching in or out of the AW while remaining DoD employees. We proposed an approach for distinguishing between switches that seemed to be substantive and those that appeared to have been purely administrative. Using this approach, switches were coded as either *substantive* or *administrative*. Coding was based on whether one or more of the following fields in an individual’s personnel record changed in conjunction with the switch between AW and non-AW: agency, bureau, functional occupational group, occupational series, or pay plan.

Between 2006 and 2011, however, numerous DoD employees experienced pay plan changes that were completely administrative because of the implementation and retraction of the National Security Personnel System. After exploring this issue in depth, we have modified the definition of a *substantive* switch so that pay plan is no longer a trigger unless one of the pay plans involved is the Senior Executive Service and to include pay grade as a trigger when the pay plan has not changed.

More Accurate Accounting for Retirement Eligibility

The vast majority of civil servants DoD currently employs participate in one of two retirement plans: the Civil Service Retirement System (CSRS) and the Federal Employees Retirement System (FERS).¹ FERS was created in 1986; anyone hired into the federal civil service after January 1, 1987, is automatically covered under FERS. Employees hired prior to that date were covered by CSRS when they were hired but had the option to switch into FERS.

For the purposes of this analysis, we created a variable for each individual covered under either CSRS or FERS called “years relative to retirement eligibility.” We did this by calculating the earliest age at which each individual could claim regular, full retirement benefits given their current retirement plan, age, and years of service under the assumption that they work continuously until that future retirement eligibility date and remain covered under their current retirement plan. In our previous report, we calculated this based on year-of-birth information. In this report, we make use of data on month and year of birth, which more accurately indicate retirement eligibility.

Accounting for Differences in Observations Presented by Data

By linking records across data files, we are now able to perform analyses that were not possible in analyses of cross-sectional data. The process of linking data from multiple sources also uncovered some inconsistencies across files that required us to either drop records from the analysis or reclassify records.

Update of Projection Model for Accuracy and Utility

The original projection model used five-year historical average gain and loss rates for a population to project workforce size over the next ten years, assuming that historical averages would continue into the future. The new version of the projection model differs from the prior version in two important respects. First, the model is now based on years relative to retirement eligibility, rather than years of service. Second, we added a component to the projection model worksheet that allows the user to input a target workforce size each year for the next ten years. The model then generates a projection of the number of new hires necessary to achieve, or at least come near, that goal. Finally, we have applied the projection model not only to the AW as a whole but also to subsets of the AW.

Revised Methods and Updated Data Elicited a Number of Important Findings

Here, we present a brief descriptive overview of the AW based on current methods and data. We also offer a projection of the AW in 2012, assuming current hiring and attrition trends hold constant.

The Acquisition Growth Initiative Was Associated with Growth in AW

Consistent with the AW growth initiative the Secretary of Defense established in April 2009, we found that the AW grew by 22 percent between FY 2008 and FY 2011. Along with new hiring, gains occurred through internal transfers into the AW (“switches in”). Similarly, losses occurred that were due to exits from DoD or to internal transfers out of the AW (“switches

¹ In FY 2011, 662 out of 136,066 civilian AW employees were covered by retirement plans other than CSRS or FERS.

out”). The number of new hires into the AW, as well as hiring rates, increased dramatically in FY 2008 and remained high through FY 2011.

Military AW Representation Is Highest in Air Force

Historically, the military AW has been smaller than the civilian AW. Figure S.1 displays civilian and military totals by service as of September 2011. Notably, military personnel are most prominent in the Air Force’s AW.

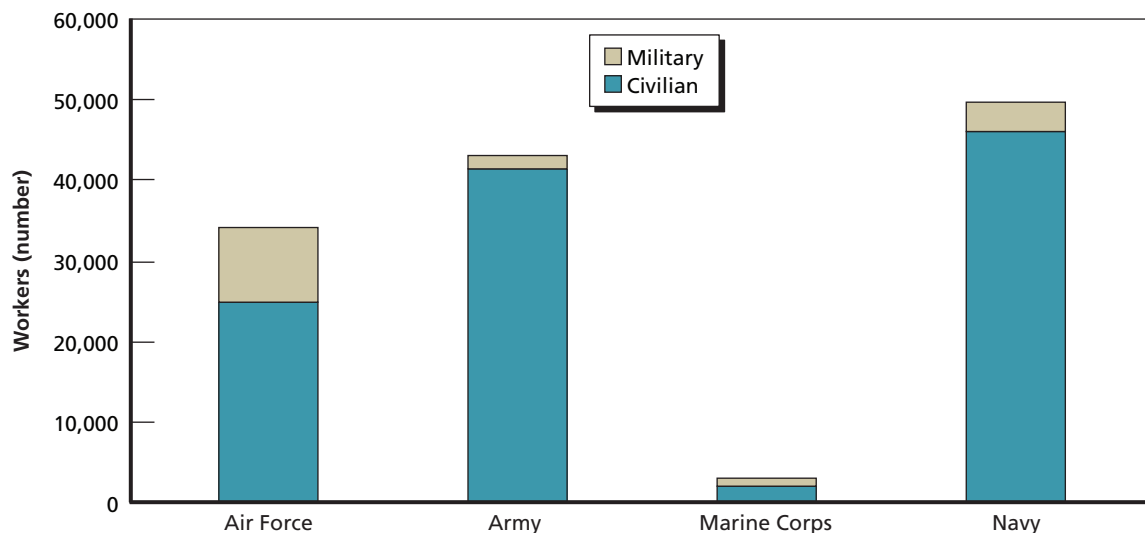
AW Attrition Remained Low

AW attrition, defined in terms of the percentage of the AW that leaves DoD civilian employment in a given year, has been consistently lower than DoD civilian norms, largely due to lower voluntary and involuntary separations. Notably, for both the AW and the overall civilian workforce, the rate of exit declined slightly in FY 2008, more significantly in FY 2009, remained low in FY 2010, and increased in FY 2011. FYs 2009 and 2010 saw unusually low rates of voluntary separation and retirement, likely because of high unemployment rates and concerns about stock market and pension valuations.

Gain and Loss Patterns Vary Across Subpopulations of the Workforce

An important example of these differences is among science technology engineering and mathematics (STEM) personnel. When compared with personnel fields across DoD, the overlap between the AW and STEM populations is substantial. Approximately 25 percent of the DoD civilian workforce is in either STEM fields or the AW; 17 percent is AW, and 15 percent is STEM. Seven percent are both STEM and AW, and another 8 percent are STEM but not AW. Our comparison of workforce numbers suggested that the AW STEM workforce has consistently higher retention than either the overall AW population or the DoD-wide STEM population.

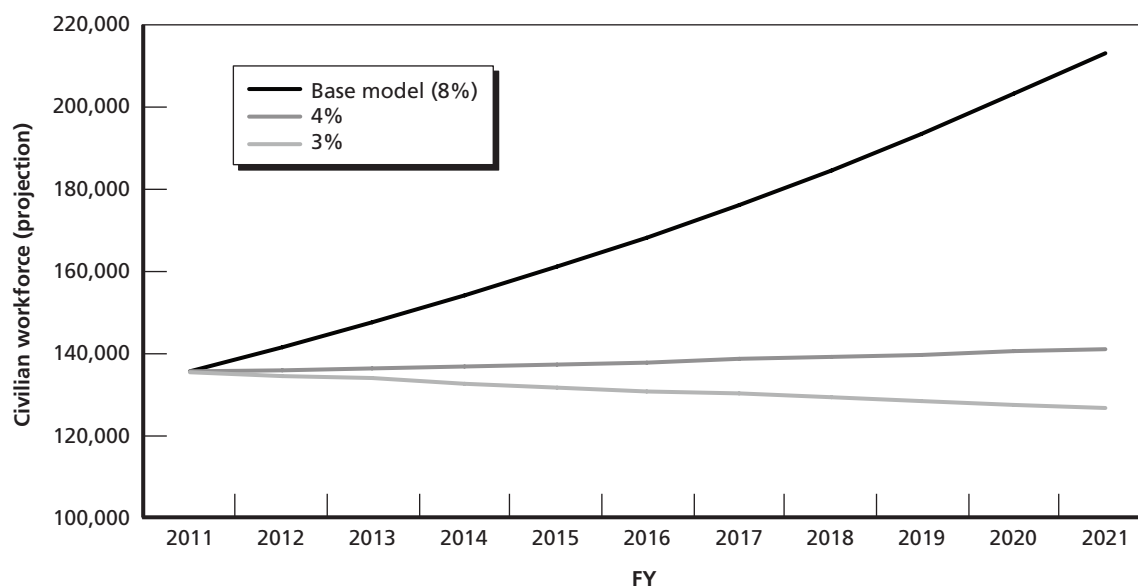
Figure S.1
Total Civilian and Military Acquisition Workers, by Service, 2011



The Projection Model Can Be Used to Explore Expected Future Growth Patterns Under Different Scenarios

The value of the workforce projection model described in this report lies in its flexibility, which allows managers to explore alternative scenarios. Recent data on hiring and attrition were used to produce workforce projections to 2021 if recent gain and loss rates were to continue into the future. In presenting this information, we are not suggesting that past trends *will* continue and this *will* be the future size of the workforce. That said, these projections can provide a useful starting point for workforce managers. The baseline workforce size used for the projection models is 135,320 (FY 2011). Between FY 2006 and FY 2011, the average hiring rate was 8 percent, and the attrition rate was 5.2 percent. Figure S.2 suggests that, if historical gain and separation rates hold over the next decade, the civilian AW will grow substantially over the next ten years, reaching over 213,132 by 2021.² The model has flexibilities that allow managers to explore scenarios other than those suggested by relatively high recent averages. For example, recognizing that further growth of the AW is impossible, given the available resources and the end of the AW growth initiative, we also generated projections for two alternative scenarios that align more closely with long-term historical averages. A new hire rate of 3 percent per year leads to a projected *decline* of the AW to 126,355 by FY 2021. An assumed hiring rate of 4 percent per year leads to a prediction of slight workforce growth to 140,909 by FY 2021. An alternative version of the model allows users to input target end strengths for future fiscal years and see the number of new hires required to achieve the targets. Appendix A describes how managers can manipulate the model.

Figure S.2
Projections of the Size of the DoD Civilian Acquisition Workforce, FY 2011–2021



RAND RR110-S.2

² The projected future size of the AW is also influenced by gains and losses to the AW due to internal transfers from within DoD. Because internal gains into the AW from other parts of DoD typically exceed internal losses, the projection will be stable, even though the rate of external hiring is lower than the expected rate of attrition.

Conclusions and Recommendations

This report describes some of the workforce supply analyses of the DoD AW that DoD data can support. Supply analysis is only part of the strategic human capital planning. Supply analyses must ultimately be combined with demand analyses. As defense budgets come under pressure, DoD must ensure that the civilian workforce is structured as efficiently as possible. A more-systematic and data-based understanding of workload drivers for the AW and the relationship between changes in the acquisition process and workload levels would facilitate strategic human capital planning for the AW.

One objective of the AW growth initiative was to increase the size of the organic civilian AW through a combination of insourcing contractor positions and new hiring. As we noted in our 2008 report, DoD-wide information on contractors who are performing acquisition-related functions is lacking. To date, there has been little progress in terms of the development of such data. As a result, we were unable to assess the extent to which insourcing contributed to AW growth. Better information on the contract workforce is critical for managers interested in assessing the health of the AW.