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Models of Soldier Retention

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    This report examines the impact of Army work, community, family, and individual factors on young soldiers' reenlistment intentions and outcomes. The data used in the report were collected in an Army-wide survey of a probability sample of soldiers and spouses conducted in 1989-1990. Retention intentions are examined for male soldiers in the ranks of private through staff sergeant for whom supervisor ratings of performance were available in the survey (n=5,299). Actual retention outcomes are examined for soldiers whose service obligation ended between the time of the survey and June 1990 (n=1,537). The report examined factors affecting two outcomes:
- o Young soldiers' intentions to reenlist at the end of their service obligation. This was examined separately for soldiers classified as high, intermediate, and low in terms of their supervisors' ratings of their readiness and performance, to examine the factors that contribute most to the retention of high-quality young soldiers.

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    o Actual retention outcomes (whether still in the Army) as of June
      1990, prior to the beginning of Operation Desert Shield/Desert Storm
      and to the major period of downsizing.

    Logistic regression models are used to examine the effects of different factors
on these research outcomes.

    Factors associated with high retention intentions for high-performing young
soldiers include

    o Favorable Army opportunities, compared with civilian alternatives, for
      career advancement, service to the country, and excitement and
      adventure.

    o A favorable climate for family life--quality of place for children and
      spouse job/career opportunities--compared with civilian life.

    A favorable perception of Army jobs compared with civilian jobs on material
benefits (pay, retirement benefits, job security), along with opportunities for
advancement, was important for soldiers at lower performance levels.

    Retention intentions are strong predictors of actual retention behavior. In
addition, controlling for retention intentions, soldiers with a longer period
between the time intentions are measured and actual reenlistment decisions appear
more likely to remain in the Army.

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FOREWORD

The Army Family Research Program (AFRP) began in November 1986 as a 5-year integrated research project mandated by the Chief of Staff of the Army's **White Paper, 1983: The Army Family** and subsequent **The Army Family Action Plans (1984-1991).**

The object of the research was to support the Chief of Staff, Family Action Plans, and the U.S. Army Community and Family Support Center (CFSC) through research products that would (1) determine the demographic characteristics of Army families, (2) identify motivators and detractors to soldier retention, (3) improve soldier and family sense of community and adaptation to Army life, and (4) improve operational readiness.

This report presents results of analyses of the impact of Army work, community, family, and individual factors on young soldiers' reenlistment intentions and behavior. The analyses are based on data collected in a worldwide survey of soldiers and spouses conducted in 1989-1990. The report builds on the work presented earlier in **Family and Other Impacts on Retention** (Griffith, Rakoff, & Helms, 1992) and **Report on Retention Decisionmaking** (Griffith & Rakoff, 1992). It extends the earlier work in three ways: (1) it estimates multivariate models of retention intentions in order to assess the relative and combined effect of Army and family factors on retention plans; (2) it models retention intentions for soldiers classified by level of supervisor-rated readiness/performance to examine the Army and other factors most important for retaining high quality young soldiers; and (3) it examines the relationship of retention intentions to subsequent retention outcomes. The findings show the importance of both Army careers and family life for the retention of high-performing young soldiers: a favorable perception of the Army relative to civilian life on opportunities for career advancement, service to country and excitement or adventure, quality of place for children, and the spouse's job/career opportunities are all associated with retention of able young soldiers. These findings underline the importance of policies and programs that support soldiers and families and provide them with good opportunities in encouraging the retention of high-quality young soldiers.

The research is being conducted by the Leadership and Organizational Change Technical Area of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI). It is responsive to the ARI-CFSC Letter of Agreement dated 18 December 1986, "Sponsorship of ARI Army Family Research."

The findings presented in this report, together with other results of the AFRP retention analyses, were briefed 31 January 1992 to staff of CFSC, the Chaplains, ARI, and others concerned with the relationship between families and soldier retention and with Army retention policy.

ACKNOWLEDGMENTS

MODELS OF SOLDIER RETENTION

EXECUTIVE SUMMARY

Requirement:

The purpose of this report is to examine (1) the effects of Army and family factors and Army-civilian life comparisons on soldiers' retention intentions, and (2) the relationship of retention intentions to actual retention outcomes. The report is part of the Army Family Research Program (AFRP), which provides information about the partnership between the Army, soldiers, and families.

Procedure:

This report is based on data from an Army-wide survey of soldiers and spouses conducted in 1989–1990. Retention intentions are examined for male soldiers in the ranks of private through staff sergeant for whom supervisor ratings of performance were available in the survey (n=5,299). Actual retention outcomes are examined for soldiers whose service obligation ended between the time of the survey and June 1990 (n=1,537). Logistic regression models are used to test the effects of the different factors on retention intentions and behaviors.

Findings:

Models of Retention Intentions

The models show the combined effects of different Army, family, and civilian life comparison factors on retention intentions and the relative contribution of different factors. Soldiers were classified into thirds of the sample on the basis of the level of supervisor-rated performance, designated as "high," "middle," and "low" performers. To determine what factors are most important for the retention of high-performing young soldiers and to assess the extent to which different factors are important for high performers than for those at lower performance levels, the models of retention intentions were estimated separately for the three performance-level groups.

For high-performing young soldiers

- The most important aspects of Army work and careers related to stronger retention intentions are a favorable comparison of Army with civilian life on opportunities for career advancement, for service to the country, and for

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excitement and adventure; higher rank (being at the rank of staff sergeant); and longer years of service at the time of survey.

- Important family life factors related to positive retention intentions are viewing the Army favorably relative to civilian life on job and career opportunities for the spouse (for all soldiers) and, for those with children, the quality of place for children.

- After controlling for perceived quality of Army life, other aspects of Army work such as pay, retirement benefits, and job security do not have an effect on retention intentions of these able young soldiers. This does not mean high-performing young soldiers are indifferent to these aspects of their Army lives, but that these do not have an effect in addition to the other work and family factors at the levels of pay, benefits, and security experienced by young soldiers when the survey was conducted.

Results for soldiers at middle and low performance levels show both similarities and differences from high performers in work, family, and Army factors affecting retention intentions. Some factors have a significant effect on retention intentions of soldiers at one performance level that do not have a significant effect on intentions of those at other performance levels.

For young soldiers at lower performance levels

- For middle-level performers, there are positive effects of Army service (years of service), characteristics of work (predictability of work day), and Army-civilian work comparisons (opportunity for advancement, pay, retirement benefits, and job security).

- For low performers, there are positive effects of Army service (years of service), Army-civilian work comparisons (opportunity for advancement, pay, retirement benefits, and opportunity for excitement), and Army family experience (quality of place for children).

- Compared to high performers, more extrinsic aspects of soldier work and career--pay, retirement benefits, job security--are important for retention intentions for lower performers, along with opportunities for career advancement.

- The differential responsiveness to these more material aspects of work supports the conclusion, based on the findings for higher-performing soldiers, that, although the Army needs to remain competitive with civilian work and career alternatives, stress on factors such as career advancement and national service are important for maintaining a force of highly skilled, top quality soldiers.

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Models of Retention Outcomes

- The models show that retention intentions are strongly predictive of subsequent retention behavior. This provides empirical support for the value of measuring retention plans in future research.

- A longer interval between the time intentions are measured and the time at which the soldier has to make the actual reenlistment decision is associated with a higher probability the soldier actually will decide to reenlist, even after controlling for initial intentions. This finding indicates that a number of young soldiers who do not intend to reenlist will, with a longer period of Army experience, decide to stay in the Army.

Conclusions:

The opportunities and quality of work and family life in the Army compared with civilian alternatives are important determinants of young soldiers' retention plans. Army work that compares favorably with civilian jobs in terms of opportunities for advancement, national service, and excitement is important, especially for the most able young soldiers. Family life, too, is important for this group--especially the favorable comparison between Army and civilian life in terms of the quality of the place for children and job and career opportunities for the spouse.

These research findings reinforce the need for Army policies and programs that provide a high quality of work, family, and community life, both for the soldier and the Army family.

Utilization of Findings:

This research can be used by Army leaders and staff concerned with retention of quality soldiers in an era of substantial force reductions. The findings can help the Army better target policies and programs to support retention of highly qualified personnel. The data also provide information on retention in the period before downsizing, which can be used as a baseline for analysis of changes in retention in a period of downsizing.

The findings underline the importance of both work and family life for outstanding young soldiers' commitment to continuing their Army service. From a policy perspective, both (1) an Army commitment to provide good career development opportunities, opportunities for service to the nation, and rewarding work, and (2) support for family quality of life and spouse opportunities are important to the retention of top-quality young soldiers.

An important policy implication is that, through policies and programs that maintain and communicate the quality of work and family life, the Army can affect the decisions of young soldiers in the direction of continuing Army service. Especially in a period of downsizing, when retaining the most able young soldiers takes on increasing importance, this provides both an opportunity and a challenge for the Army.

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MODELS OF SOLDIER RETENTION

Introduction

The significant reduction in the threat from the Warsaw Pact and the Soviet Union, coupled with continuing pressure to reduce the Federal budget, will lead to a significantly smaller Army force structure in the 1990s. As the aggregate demand for active-duty soldiers declines, individual units in a small force will need to be more flexible, capable of a wider range of tasks and operations, and less specialized to specific functions than in the past. In this environment, the retention of high-performing soldiers will be crucial to ensure that the active force structure has the quality, skills, and experience to meet its requirements.

Job opportunities in the civilian sector will continue to attract skilled personnel at enlistment and retention points. Army pay, benefits, and quality of life must be competitive with these civilian opportunities to maintain the supply of high-skill soldiers.

The objective of the retention research carried out under ARI's Army Family Research Program (AFRP) is to estimate the relative importance of a number of factors on soldiers' retention intentions. Because of the recent societal emphasis on the family, we will pay special attention to the importance of family life, especially as it pertains to the retention of high-performing soldiers. The results of this study will provide the Army with the information to develop successful retention policies for the Army of the 1990s.

The manner in which family concerns affect the retention decisions of Army personnel has been a major focus of the Army Family Research Program since its inception. This focus reflects a long history of Army concern, supported by substantial amounts of prior research, that family factors do impact retention plans of both officers and enlisted personnel. That concern has been expressed and addressed in a series of Army white papers and Family Action Plans dating to the early 1980s.

While much retention research and most retention models used by analysts to estimate Army retention and test its responsiveness to policy concerns have been limited to consideration of various compensation policies (pay, bonuses, education benefits, retirement), other research has found evidence that non-compensation, non-economic factors are also related to the decision to stay in or leave the Army. In particular, the degree of spouse support for an Army career and of the Army as a way of life, response to Army demands such as frequent relocation and separations, satisfaction with the Army community and programs, and spouse employment opportunities have all been found to be related to retention plans (Etheridge, 1989).

Several other reports include relevant findings. Orthner, Bowen, Zimmerman, & Short (1994) used AFRP data to analyze the relationship status of young single soldiers and their adaptation to the Army, using happily married young soldiers as a comparison group. He found that, for young males, married soldiers reported a higher probability of reenlistment and higher satisfaction with Army life than did single soldiers (including single soldiers in committed relationships).

Moghadam (1989) used path models with longitudinal data for military couples to examine work and family effects on reenlistment plans and behavior. They found that soldier perception of the work/family interface and personal morale predicted reenlistment intentions; in turn, soldier morale and work-family interface were predicted by financial satisfaction, unit emotional climate, and time conflicts. The wife's perception of the work/family interface was predicted by the soldier's perception of this, his attitude toward staying in the Army, and her satisfaction with unit leadership and with the predictability of the soldier's schedule. Attitudes of both the soldier and spouse predicted subsequent reenlistment behavior.

Szoc (1982) and Szoc and Seboda (1984) analyzed longitudinal survey data for Navy personnel close to a retention decision, to examine retention intentions and retention outcomes. Examining the relationship between retention intentions and behavior for enlisted personnel, they report differences in retention outcome by intentions: nearly all of those who intended to remain in the Navy stayed (96%), as did a substantial majority of those who were undecided (85%), and almost half (44%) of those who intended to leave. The present report addresses the issue of retention intentions and behavior for an Army enlisted sample.

One major difficulty with much of the previous research reported on family factors and retention is that it has rarely provided a broad multivariate approach to the issue. Some studies concentrated on the more traditional compensation and economic impacts on retention, often not including family variables in the analysis. Others featured data on family variables but failed to include economic factors. One compelling argument for the broad-based survey conducted as part of the AFRP is that it brings together in the same data set both the traditional retention-related economic variables and family factors shown to be related to retention. Thus, the AFRP data allow true multivariate testing of the factors impacting retention of Army personnel.

The availability of these data has allowed the AFRP team to begin to address a wide range of questions concerning the factors that impact on retention and to assist the Army in shaping a series of policy and program responses to retention in an era of substantial force downsizing. The most important of these questions include:

- How do soldiers and spouses make decisions about staying in the Army (either for an additional term or for a career) or leaving for private-sector employment?

- What is the relative and combined importance of individual, family, work and Army factors for soldier and family retention intentions?

  - How important are opportunities for career advancement in the Army compared to the private sector?

  - How important is job security in the Army compared to the private sector?

  - How important are marriage and children to soldiers' retention decisions?

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- What role does the quality of life in the Army versus civilian life play in retention decisions? How do the availability and quality of Army programs impact on that evaluation?

- What factors affect the spouse's preference for soldier retention?

- What factors are most important for retaining high performers?

  - What job and family factors are most important for high performers?

  - Are different factors important for high and lower performers?

- How does the comparison between Army and civilian work and family life affect retention?

- What Army policies will enhance retention of high-quality soldiers in a period of uncertainty and downsizing?

This report will address these questions and others as it presents a series of multivariate models of soldier retention intent and behavior.

Background

Previous analyses and reports from the AFRP have addressed some of these questions and issues from more limited perspectives, and this report builds on this prior work. In particular, two AFRP retention reports form the underlying analytic base for this report (Griffith & Rakoff, In preparation; Griffith, Rakoff, & Helms, 1992).

Family and other impacts on retention (Griffith, Rakoff, & Helms, 1992). This report described retention intentions of soldiers using cross-tabulations to explore separate and joint effects of family, work, and other factors on soldiers' retention intentions. Analyses were done separately for officers and enlisted soldiers and, within each group, by stage in Army career (pay grade group). Principal findings from that research were that retention intentions of male Army personnel were positively related to

- being married and having children;

- spouse support for and involvement in the soldier's Army career;

- favorable perception of pay and benefits in the Army compared to civilian opportunities;

- opportunity for career development, and the quality of the Army work experience;

- opportunity to serve the country in the Army;

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- shared personal and Army values and a positive feeling about the Army;

- Army and family life not being in conflict.

Retention decision process (Griffith & Rakoff, In preparation). This report addressed three questions. These questions and the findings are summarized below.

1. Do soldiers and spouses make retention decisions jointly, or does the soldier make the decision largely alone? What factors affect whether the decision is made jointly? The large majority of young married male soldiers make the retention decision jointly with their spouses; this joint decision making is more likely in couples where the spouse is actively involved in the soldier's career, the soldier places high value on family life, and both members of the couple view the marriage as stable.

2. What aspects of soldier, spouse and family life in the Army affect the spouse's preference for the soldier to remain in the Army? What ones increase the preference for the soldier to stay? The wife's preference for the soldier's remaining in the Army was found t ʰe positively affected by the spouse having a favorable perception of Army ₋ife compared with civilian life in terms of quality of the soldier's work and career opportunities, time and freedom (the scale includes the spouse's personal freedom and time for personal and family life), and quality of Army community (the scale includes quality of community, the quality of the Army as a place to raise children, opportunity to make good friends, and quality and availability of medical care, programs and services for families). Spouse preference was not found to be affected by soldier hours of work or work stress, spouse employment, and unit type or geographic location.

3. Soldiers enter the Army with different career intentions, and may sustain or change those early plans in response to their experiences in Army life. What Army and soldier factors sustain an early commitment to an Army career? What ones lead soldiers who initially did not plan an Army career to become committed to the Army career? Factors that sustain male soldiers' early commitment to an Army career include a shared sense of values with the Army and positive Army affect; and, for officers, a favorable perception of Army work/career opportunities compared with civilian life. Factors associated with current Army career commitment for soldiers who did not plan a career at Army entry include having married since entering the Army; shared Army values and commitment, and positive Army affect; and for enlisted soldiers, favorable perceptions of Army work compared with civilian alternatives.

Together, these findings suggest that retention decisions are made with active participation of Army spouses, that spouse participation in, and support of, the retention decision is a product of her experiences in the Army community and a comparison of these experiences with perceptions of civilian life, and that the career intent of young soldiers is fluid as they pass from expectations at entry to later decision points. These

conclusions, in turn, lead to an awareness of the opportunities for the Army to influence retention decisions and provide a conceptual basis for the analysis of data and construction of models to inform these policy choices.

This retention models report also builds on other AFRP analyses and reports, including work on community support programs, young single soldiers and families, and measurement and modeling of soldier and unit readiness/performance.

Conceptual Basis

The focus of the research reported here has been on the manner in which male enlisted soldiers decide to stay in or leave the Army at the end of their current obligation, and the factors that can explain this decision. As noted above and detailed in earlier literature reviews, most of the prior efforts to deal with these retention issues have tended to focus narrowly on a predetermined set of variables, to be descriptive rather than explanatory in nature, and have often been limited to a small subset of the Army or other military department. The Army Family Research Program offers, for the first time, an opportunity to build multivariate models that can sort out the relative contributions of economic, work, and family variables to the retention decision.

Additionally, the complete AFRP data set includes measures of actual retention behavior, gathered from the Army master personnel files. This means that we can test models of retention behavior as well as retention intent. This difference is important because, as we will demonstrate later, a number of soldiers who report that they intend to leave the Army at the end of their current obligation in fact remain beyond that point, a finding similar to that reported for Navy personnel by Szoc & Seboda (1984). As a result, the findings of this research should be much more useful for Army planners and policy makers faced with planning for continuing retention of high-quality personnel in the face of massive downsizing.

We have focused on models to predict retention intent and behavior that are based upon the formulation of the family as the decision unit. The extension of the traditional economic model of retention from an individual to household basis has been recently accomplished by Hogan (1990) and Wood (1991) separately analyzing data for the 1985 DoD survey. Hogan defined and tested an extension of the Annualized Cost of Leaving (ACOL) model to include estimates of household, not just individual, earnings streams. Wood included measures of spouse satisfaction and employment potential in her work. The models developed and tested here draw on both these approaches.

Traditional economic theory of occupational choice posits that individuals make career choices based on their assessment of their estimated utility for the choices they face. The utility measured includes both the financial rewards of the evaluated alternatives as well as important non-financial measures. For military personnel, the occupational choice is between remaining in the service, either for an additional period or a full career, or returning to civilian life. The utility maximization model of occupational choice thus predicts that an individual or household will evaluate the alternatives of Army and civilian life in making this choice.

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Our concern here is not, however, limited to a better explanatory model of Army retention intentions and behavior. The results of our modeling effort must also be of use to Army planners and policy makers faced with the difficult choices of setting policies to enhance future retention. For that reason, we have chosen to focus our modeling effort, where feasible, on variables that are amenable to control by the Army. In particular, we have considered a series of variables that summarizes the effects of Army family policies and programs in an attempt to ascertain the impact these have on retention. The choices the Army faces include options to maintain or expand family programs or shift these resources to other areas.

The models presented in this report, then, seek to explain retention intention and retention behavior as a function of a complex of variables that represents the process of occupational choice by Army families. The variables fall into the following broad categories:

- Personal Characteristics--including education and racial/ethnic group.

- Family Characteristics--including marital status, presence of children, and spouse employment status.

- Characteristics of Army Service--including rank or pay grade, military occupational specialty (MOS), years of service, individual readiness/performance, unit type, unit readiness, and unit location.

- Characteristics of Work--including work predictability and hours of work.

- Army-Civilian Comparison--measures of assessment of the quality of Army life, jobs, and potential compared to civilian alternatives. These measures encompass economic and taste variables.

- Army Programs and Services for Families--including measures of usefulness of a variety of programs for families.

The models presented in this report thus allow comprehensive testing of the relative importance of the major factors identified in prior research within a framework of an occupational choice model. Intentions to remain in the Army, and actual decisions to stay or leave, are conceptualized to result from a process in which the soldier and spouse weigh the various advantages and disadvantages of continuing Army service on these multiple dimensions and choose the alternative that best satisfies their expectations, both financial and non-financial.

Contribution of Retention Models Report

This retention models report analyzes data for male enlisted soldiers in the early career stages: private through staff sergeant. It adds to the previous research in several ways:

- It builds multivariate models of factors affecting soldier retention intentions and retention behavior. These multivariate models significantly strengthen the explanatory power of these models compared to cross-tabulation-based analyses that control for only one or a few variables.

- It includes family, work, and other factors in the models, so separate and combined effects of these different factors can be measured. This allows us to examine the relative impact of these factors--such as economic well-being, work satisfaction, years of service and pay grade, and family life--on retention intent and, in so doing, provide a more solid base for making policy and program recommendations to the Army.

- It includes family program measures in the multivariate retention models, permitting the perceived importance of specific programs and classes of programs to be examined in conjunction with the other retention-related variables. This provides a much more significant analysis of the effects these programs have on retention than do simpler analyses that look at these program variables outside the context of the total retention decision.

- It includes soldier and unit readiness/performance in the models, allowing examination of such issues as whether being in a high-performing unit increases soldier likelihood of remaining in Army and what Army and family factors are most important for the retention of high-performing soldiers.

Report Organization

The remainder of this report is organized in several sections. The next section describes the data and methods used to develop and evaluate the models. Following that, the report presents the results of our multivariate modeling. The results are organized around two specific dependent variables--retention intent, captured from the AFRP survey data, and retention behavior, created from Army retention files. After presenting the results of the models, we summarize the findings and discuss their implications for Army policies and programs.

Data and Methods

Introduction

The data used in this report were collected in the Army Family Research Program (AFRP) survey, which was conducted under contract with the U.S. Army Research Institute for Behavioral Sciences (ARI). The survey was conducted by a contractor team led by the Research Triangle Institute (RTI) and including Caliber Associates, Human Resources Research Organization (HumRRO), and Decision Science Consortium (DSC).

The survey collected data from a probability sample of Army units and soldiers, together with the spouses of sampled soldiers. Data on unit environment and programs were obtained from unit commanders. Other data obtained in the survey include: supervisor ratings of soldier performance; ratings of unit readiness by soldiers and supervisors; information from installation service providers on family programs and services; and soldier personnel file data.

The analyses in the current report are for enlisted soldiers in the early career grades--in ranks private through staff sergeant. The report examines soldiers' retention intentions and actual retention outcomes. Retention intentions were measured by the soldier's self-report in the survey. Retention outcomes were obtained from Department of Defense personnel data for June 1990 (the last date before Operation Desert Shield/Operation Desert Storm began to affect retention outcomes).

This chapter summarizes the survey sample, instrument development, data collection, and data processing and file development. More detail on these topics is presented in:

- Report on Survey Implementation (Research Triangle Institute, 1992)

- Sampling Weights for the AFRP Core Research Effort (Iannacchione & Milne, 1991)

Sample

The AFRP survey was designed to enable researchers to relate characteristics and attitudes of soldiers and family members to characteristics of the Army at both the unit and installation level. The sample represents the active Army component worldwide, in all major types of operational units, including both Modified Table of Operation and Equipment (MTOE) and Table of Distribution and Allowance (TDA) units. The data are designed for analyses at both the individual and unit level. For example, effects of unit and installation factors on soldier and family experience can be analyzed and, conversely, the effects of soldiers on unit level readiness or other outcomes can be examined.

These objectives require the selection of a probability sample of Army units and soldiers. The AFRP used a sampling technique known as multi-stage cluster sampling with three stages of sample selection: (1) installations; (2) units within selected installations; and (3) soldiers (and their spouses) within selected units.

A total of 34 geographic locations participated. Within these, 542 eligible units were selected and 528 participated. A total of 20,033 soldiers (and spouses of married soldiers) from participating units were selected for the sample.

Eligibility requirements were applied at the site, unit, and soldier level. Sites were eligible if they had at least 1,000 active duty Army personnel stationed within 50 miles. This requirement was applied to control data collection costs and because Army programs and services (a key focus of the analyses) are available largely through installations. Units were eligible if they were at an eligible site and were unclassified, had more than 20 active duty personnel assigned, and were operational units. These criteria eliminated a small number of soldiers, but were required to allow for unit analyses. Soldiers were eligible if they were on active duty, assigned to an eligible unit at the time of sample selection and data collection, in ranges from private through colonel (pay grades E2 through O6), and not absent without leave (AWOL), hospitalized, incarcerated, or detached from their units at the time of data collection.

Among soldiers eligible for the survey, 11,035 completed a usable questionnaire. These represent 77 percent of eligible soldiers and 84 percent of those who were available (e.g., not on temporary duty (TDY), sick or on leave) at the time of data collection. Soldier and supervisor rating data were completed for 9,659 soldiers. Overall, the soldiers who were sampled and who responded to the survey represent over 72 percent of the active duty Army, in both MTOE and TDA units.

The modeling of soldier retention focused on male enlisted soldiers in the earlier stages of their careers. Specifically, the sample used in the analyses was 5,299 male soldiers in the ranks of private through staff sergeant, excluding soldiers who said they planned to retire at the end of their current obligation and ones for whom no measure of readiness/performance was available.

For the analyses of actual retention outcomes, the sample was limited to the subset of this sample for whom the current obligation ended between the time the survey data were collected and June 1990. Data on whether the soldier was in the Army as of June 1990 was provided by Defense Manpower Data Center. This date was selected because it was the last period for which current military service data were available prior to the beginning of Operation Desert Shield/Desert Storm. A total of 1,537 soldiers met this criterion for inclusion in the models of actual retention outcomes.

Instruments and Data Collection

The soldier questionnaire was designed to collect data for analyses of the combined effects of soldier, family, unit, and other factors on such outcomes as soldier retention, readiness (both individual and unit), and family adaptation to the demands of Army

life. It obtained data on the soldier's background, work and unit environment, readiness (individual and unit), Army attitudes and values, personal and family relationships, retention and career plans, attitudes toward Army support programs and services, and the use of these programs and services. The spouse survey was designed to obtain data on the spouse's background, Army life experience, perspectives on soldier work and careers, employment experience, use and assessment of Army programs and services for families, and other topics. This questionnaire was designed for self-administration as a mail survey. In addition to the soldier and spouse data, soldiers' first- and second-line supervisors were asked to rate soldier readiness and performance on a set of key readiness and job performance dimensions.

Trained data collection teams collected soldier and other data on site at the installations where the sampled soldiers were located. Most soldier data collection was completed in group administrations at the installations. For soldiers and units that could not attend group sessions, questionnaires were routed by the unit. Supervisor ratings of soldier readiness were obtained either in the group administrations or by routing of rating materials to supervisors. Written instructions were provided for those who could not attend group sessions, and questionnaires were returned in envelopes secured with special confidentiality tape to protect the confidentiality of soldiers' responses. Soldier data and supervisor readiness ratings were collected during the period from late February through early December, 1989, with most data collection being completed by late October, 1989.

Data Files and Analyses

The data files created for the analyses contain data from several sources. The main soldier data were collected in the survey. Soldier data from Army personnel files were merged onto this file, and variables needed for the analyses were created and added to the file. Unit-level data, from Army records (unit type, location) and from information provided by unit commanders on the Unit Information Form (UIF), also were merged to the soldier file.

For the analyses of actual soldier retention outcomes, an indicator of whether or not the soldier was still in the Army as of June 1990 was provided by Defense Manpower Data Center and merged to the soldier data file.

Analysis weights were computed and added to the file. For most complex sample survey designs, weights are necessary for unbiased estimation of population parameters. These weights can be considered as "inflation factors" to account for the number of members in a survey population that a sample member represents. The weights consist of two components: an initial sampling weight and an adjustment factor. The initial sampling weight is simply the inverse of the sample member's selection probability and reflects the different selection rates used to select the sample at each stage of the design. The adjustment factor was applied to the initial sampling weight to compensate for the potential biasing effects of differential nonresponse to the survey. For the soldier survey, adjustments were made within post-strata based on soldier pay grade, marital status, gender, type of unit, and region of the world.

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The analysis of data collected using a complex sample design also requires the use of appropriate survey data-analysis software, which correctly takes into account the sample design. Most statistical software packages provide variance estimates that are based on a simple random sample selected from an infinite population. When used on data collected as part of a complex sample survey, these variances are usually too small, resulting in tests that incorrectly conclude that differences are statistically significant. Taylor Series approximation, balanced repeated replication (BRR), and jackknife variance estimation (Cochran, 1977) are three well known techniques that have been developed to provide relatively unbiased methods for estimating the variances of descriptive statistics from a complex survey.

The SUDAAN Procedures for Descriptive Statistics (Shah, LaVange, Barnwell, Killinger, & Wheeless, 1989) developed by the Research Triangle Institute compute means, proportions, ratios, cross-tabulations and quantiles, as well as linear and logistic regression coefficients and their associated variance estimates using the Taylor series approximation.

The REGRESS procedure in SUDAAN produces linear model parameter estimates for survey data obtained from a stratified, multistage sample design. Analogously, the LOGISTIC procedure in SUDAAN fits logistic regression models to sample survey data. Both procedures produce Horvitz-Thompson estimators of the regression coefficients which are identical to weighted least squares estimates of regression coefficients that can be obtained from standard statistical analysis packages (e.g., SAS Proc Reg with a weight statement). However, the variance estimates and the test statistics produced by these packages apply to a sample of independent normally distributed responses and are not appropriate for sample survey data.

SUDAAN uses a Taylor series approximation to estimate the variance-covariance matrix of the regression coefficients. Tests of hypotheses about regression coefficients are based on a Hotelling's T^2-type statistic which is assumed to have a transformed F-distribution in repeated samples. For surveys similar in size to the AFRP, the Taylor series linearization method used by SUDAAN has been found to provide fairly robust multivariate inference about regression coefficients (Shah, Holt, & Folsom, 1977).

Modeling Approach

A multivariate modeling approach was used for the analyses in this report, employing one form of the general linear model logistic regression for dichotomous outcomes. Models were run using the SUDAAN software, described above, in order to obtain correct variance estimates with the AFRP sample survey data.

The independent variables in the models include both continuous and categorical variables. Continuous variables include scales based on single items or multiple items. (Documentation of the scales is provided in Orthner & Blankinship, 1990.) Categorical variables (e.g., soldier rank group, unit type) are entered as sets of dummy variables, coded 0 or 1, representing whether or not the case is in the designated category. For

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multi-category dummy variable sets, one category was selected as the reference category (omitted category). In the models, the coefficients for the other categories represent the predicted deviation from the reference category.

The models include both interaction and main effects terms. Interactions are included for variables, such as child care or medical services for families, where the effects of the program or service are expected to be greater for those who have children or families than for those with no family. (That is, the effect of the program variable is hypothesized to be conditional on the group or level of the categorical variable.)

For instance, we expect that programs for families may have some effect on all soldiers, because the program communicates a sense of Army commitment to soldiers and families, or because soldiers who do not currently have a family expect to have a family in the future and will use the program at that time. We expect, however, that the effect on retention intentions of services for children or families will be greater for those who already have families, because the direct benefits will be experienced in the present and will be more salient than possible future benefits.

The inclusion of interaction terms allows us to test for this kind of relationship. By including the interaction of a continuous variable (e.g., importance of a family program) with a categorical variable (e.g., soldier family status) and testing for the significance of the interaction, we can test whether the effect of the program on retention intentions differs for the different family status groups.

For statistical estimation and interpretation of effects, both the interaction term and the lower-order effects need to be included in the model. In the presence of interaction, however, the lower-order effects are not interpretable as "main effects" because the effect depends on the level of the categorical variable (Steel & Torrie, 1960). As we discuss below, interpretation of interaction effects is made easier by the use of graphical presentations that show the effect of the continuous variable for each level of the categorical variable.

For each model, we present a table of model results. The table includes:

- The value of F adjusted for the sample design, and its associated p value for each main and interaction effect in the model[1] [2]

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[1] Where significant interactions are found, the model table shows the F value for the interactions, but not for the associated main effects. This is done because the effect of one variable on the outcome is conditional on the value of the other variable it interacts with and thus the "main effect" is not interpretable (Steel & Torrie, 1960). Thus it is not appropriate to present significance tests for main effects; however, the main effect terms still need to be retained in the model for estimation and interpretation.

[2] The statistic F in the logistic model is the value of chi-square divided by the denominator degrees of freedom adjusted for design effects. In the survey environment, variances are estimated at the first stage of sampling. As a result,

- The unstandardized regression coefficient for each variable and the design-based approximation of its standard error

- The overall model variance explained (R^2), along with the overall model F and its associated p values,[2] and

- The number of cases included in the model

The logistic regression coefficients measure the effect of the independent variables on the model outcomes, net of other factors in the model. For categorical variables, the coefficients represent the relative risk of being in that category; for continuous variables, the coefficient represents the relative risk of a unit change in that variable.

The R^2 value, or multiple correlation coefficient, measures the proportion of total variation about the mean of an outcome variable that is explained by the regression. The value of R^2 in a model has several implications (Achen, 1982). A low R^2 means that the model does not predict the outcomes well for individual cases. Other variables not included in the model account for most of the variability in the outcome for individuals. From an explanatory perspective, even if there is a low R^2 the model answers questions about what variables have a significant effect on the outcome, as indicated by the significance test for the regression coefficients for those variables, while also showing that there are other variables not included in the model have important effects on the outcome. From either a predictive or explanatory perspective, a low R^2 or nonsignificant regression coefficient for a variable expected to have substantial effects on the outcome provides important negative evidence that that variable does not have the hypothesized effect.

If a significant interaction is found between two independent variables affecting an outcome, the predicted value for the outcome has to be calculated from the interaction term and the lower-order effects. This calculation, and the comparison between the different groups involved, is easier to interpret if it is presented graphically, in the form of a plot of predicted values. In the discussion of findings, plots are used to give the predicted model values for the outcome, controlling for all other variables in the model.

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denominator degrees of freedom are based on the number of first-stage sampling units (FSUs) minus the number of first-stage strata, not on the total number of observations. For the AFRP survey, 40 denominator degrees of freedom were available for modeling. When the denominator degrees of freedom are large, the F statistic converges to the Satterthwaite chi-square statistic. For single degree of freedom tests--for example, tests of significance of individual regression coefficients--the F test is equivalent to a Wald chi-square.

A Model of Army Retention

Introduction

This section describes the results of multivariate logistic models of the retention intention and actual retention decisions of male enlisted soldiers in the early career stages (ranking from private through staff sergeant). The selection of the early career stages was made because prior research (e.g., Griffith & Rakoff, In preparation) shows that soldiers in the senior enlisted ranks have high probabilities of reenlistment, whereas those in the junior enlisted and junior NCO ranks are less likely to have made a commitment to an Army career and more likely to be subject to the influences of Army, family and civilian life alternatives in making reenlistment decisions. Officers were excluded for several reasons. First, officers are more likely than enlisted soldiers to have made a long-term commitment to an Army career from an early stage. Second, although officer retention is important, the most important issue in a period of downsizing and changing requirements for soldier capabilities is retention of the best of the young enlisted force. Additionally, preliminary models were run for officers, but poor model fit indicated that the data available do not predict officer retention well enough to provide a basis for well-informed policy conclusions.

Analyses were limited to male personnel because they remain the very large majority of soldiers, and previous analyses showing different factors affecting male and female soldiers' retention indicate that including women soldiers in the retention analyses would tend to obscure patterns of factors affecting retention; at the same time, the need to model retention by level of soldier performance meant there were not enough women soldiers in the sample to allow separate analyses by gender.

Because of the Army's special interest in high quality soldiers, we have separated the data on the basis of individual readiness/performance measures into three groups-- low, middle, and high performers. The classification of soldiers by performance level was made based on the distribution of supervisor ratings for the soldiers in the sample: the highest third were classified as high performers, with the successively lower thirds classified as middle and low performers. The logistic models were estimated separately for each performance level. The results of the models provide a sound statistical basis to judge the relative importance of Army work, personal/family, and community variables in the retention decision, especially for high performing soldiers.

The models are divided into two components. First, we model determinants of the soldier's intention to reenlist at the end of the current obligation, as measured at the time of survey. Next, we model intentions and other factors that affect the actual reenlistment outcomes as of June 1990 (prior to the beginning of Operation Desert Shield/Desert Storm and the major period of downsizing). These models allow us to examine, first, the effects of Army experience, personal and family situation, and Army family policies and programs on young soldiers' commitment to continuing Army service, and, second, the linkage between these intentions and actual retention

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outcomes, once we control for such factors as the length of time intervening between the measurement of intentions and the actual retention choice.

Individual utility maximization. There is a well-developed theory of occupational choice that has been applied to military retention decisions (Hogan & Black, 1991). This theory assumes that an individual ranks military and civilian jobs based on the pecuniary and non-pecuniary aspects of each job, and they choose the job or series of jobs providing the greatest utility (satisfaction) over their lifetime.

Let $U^i(-)$ be the function describing an individual's utility derived from sector i, i = Army (A) or Civilian (C). An individual's utility depends on two major factors: work characteristics such as pay and benefits, opportunities for advancement, and job security; and personal/family aspects such as the opportunity to serve one's country, spouse employment status, and the quality of the family environment.

We cannot directly observe an individual's utility in either the Army or civilian sectors, but we do observe the retention intention, R. Define U^* as the soldier's latent utility from remaining in the Army net of his civilian utility, $U^* = U^A - U^C$. We assume R is a monotonic transformation of U^*, $R = R(U^*)$, $dR/dU^* > 0$, where d designates derivative. Therefore, retention intentions will be greater, all else equal, for those factors that increase U^*.

Family utility maximization. A career in the Army is somewhat different from a typical civilian career in that an Army career has a dominant effect not only on how the soldier spends his on-duty hours, but on the lifestyle that he and his family experience during both duty and non-duty hours. The influence of an Army career on the member's family is much greater than simply the effect on the family's pecuniary income and amount of time spent by the member away from home. An Army career permeates virtually every aspect of the family's life, affecting where the family lives, with whom they associate, the schools the children attend, the medical care they receive, how frequently they move, and the market opportunities of the member's spouse. Hence, while the focus on the individual as the primary decision-maker may be a reasonable abstraction for career choice models, it may be less appropriate for Army models. Therefore, our analysis will move beyond the traditionally narrow model of the individual reenlistment model to one that incorporates household and family factors (see Hogan, 1991).

Retention Intentions

Figure 1 presents the factors hypothesized to affect the soldier's retention intentions. The factors are grouped into five sets: personal and family, Army service variables, characteristics of the Army work environment, Army-civilian comparisons, and Army family programs and services. Figures 2 through 7 detail the variables included under each category, and the measurement of the variables. The outcome for these models is a dichotomous measure of reenlistment intention: Whether the soldier rates the probability of reenlistment as high or certain vs. moderate to no probability of reenlistment.

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┌─────────────────────────────────────────┐
│ Personal and Family Variables           │
├─────────────────────────────────────────┤
│     Education                           │
│     Race/Ethnicity                      │
│     Marital Status and Spouse Employment│
│     Accompanying Children               │
└─────────────────────────────────────────┘

┌─────────────────────────────────────────┐
│ Army Service Variables                  │
├─────────────────────────────────────────┤
│     Pay Grade                           │
│     Years of Service                    │
│     MOS Category                        │
│     Location                            │
│     Unit Type                           │
│     Unit Readiness                      │
│     Soldier Readiness/Performance       │
└─────────────────────────────────────────┘

┌─────────────────────────────────────────┐
│ Army Work Characteristics               │
├─────────────────────────────────────────┤
│     Hours Spent at Work                 │
│     How Often Don't Know the End of the │
│        Workday                          │
│     How Often Called Back for Extra Detail│
│     How Often Work Requires Leave Cancelled│
└─────────────────────────────────────────┘                    ┌──────────────┐
                                                                │  Retention   │
                                                                │  Intention   │
                                                                └──────────────┘
┌─────────────────────────────────────────┐
│ Army-Civilian Comparison                │
├─────────────────────────────────────────┤
│     Opportunity for Advancement         │
│     Pay                                 │
│     Retirement Benefits                 │
│     Job Security                        │
│     Opportunity to Serve Country        │
│     Opportunity for Excitement/Adventure│
│     Quality of Place for Children       │
│     Quality of Family Medical Care      │
│     Job Opportunities for Spouse        │
│     Quality of Schools for Children     │
└─────────────────────────────────────────┘

┌─────────────────────────────────────────┐
│ Usefulness of Army Family Programs and Services │
├─────────────────────────────────────────┤
│     Full-Day Child Daycare              │
│     Youth Recreation Programs           │
│     Spouse Programs-TDYs/Deployment     │
│     Spouse Employment Referral          │
└─────────────────────────────────────────┘
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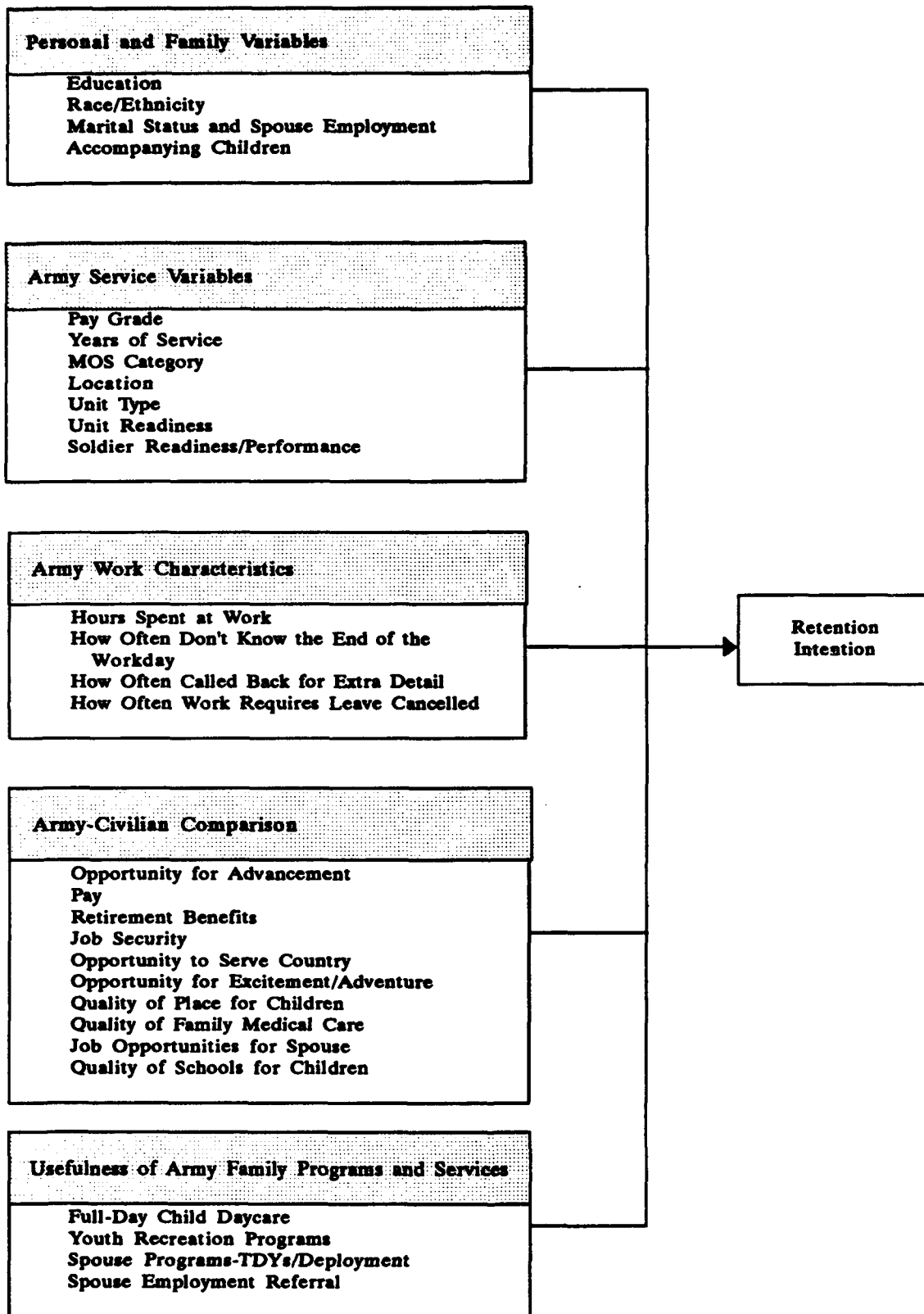
Figure 1. Factors Hypothesized to Affect Retention Intentions

The "high probability of reenlistment" category includes soldiers who say their chances of staying in the Army at the end of their current obligation are "(8 in 10) very probable", "(9 in 10) almost sure", or "(10 in 10) certain". A dichotomous variable was created rather than using the retention probability in order to represent more closely the actual stay/leave decision. That is, soldiers must make a decision as to whether or not they will stay in the Army, and the dichotomized probability variable is designed to represent this decision. Additionally, the use of a dichotomous stay/leave intention variable is parallel to the actual retention outcome modeled later in the report. Overall, 30.3 percent of the soldiers in the sample report a high retention probability.

The model includes both main effects and interactions. The interactions primarily involved measures that were defined only for some subgroups of soldiers or were expected to be most salient for some subgroups. An example is the interaction between having children and the Army vs. civilian life comparison on quality of place for children. The question about the Army as a place for children was asked of all soldiers and was potentially salient even for ones who did not have children, either because they expect to have children in the future and take child-related issues into consideration in making retention plans or because the quality of the Army as a place for children represents to them something important about the nature of the Army as a institution that is committed to all its members. In terms of immediate experience and reenlistment plans, however, the quality of place for children would be expected to be more salient for those who have children than for those with no children. For this reason we included the interaction.

The personal and family variables in our final specification include education, race/ethnicity, a compound variable indicating both marital status and spouse employment, and whether there are any children in the household (Figures 2 and 3). Army service variables include pay grade, years of service, unit type, unit readiness, location, and MOS (Figure 4). Although pay grade is often used as proxy for years of Army service, we have included both pay grade and years of service in our final models. This was dictated by early model results that showed both variables to be significant in the high performer regression. Individual soldier readiness/performance, based on supervisor rating was used in the analyses in two ways. First, soldiers included in the models were classified into three categories (with one-third of the total sample in each category), and models were run separately for each readiness/performance level category, to test whether work, family and other factors have different effects on the high-performers the Army needs to retain during the coming years, and on those with lower supervisor assessments. Second, in the models of actual retention outcomes, soldier readiness/performance was included as a control variable. The length of time from the survey to the end of the soldier's obligation also was included in the model that relates reenlistment intentions to actual retention outcomes, as a control for testing the relationship of intentions to actual retention behavior.

We include four characteristics of Army work (Figure 5): The total hours of Army work (including PT) per week; how often the soldier does not know the end of the workday; how often the soldier is called back for extra detail; and how often leaves must be canceled. The latter three variables reflect the predictability of Army work.

Race/Ethnicity

Based on two survey questions
 	
    •   Self-reported race, and
    •   Are you of Hispanic background?
 	
Soldiers were classified as
 	
    •   Hispanic
    •   Black, non-Hispanic
    •   White or other, non-Hispanic

Education

Based on the question "What is the highest level of education you have completed?
 	
Soldiers were classified as
 	
    •   Some college or more
    •   High school diploma graduate
    •   GED or less than high school graduate

Figure 2. Personal Characteristics of Soldier

Spouse and Family Characteristics

Spouse Employment Status

    Categories are based on the responses to questions asked of soldiers including:

- What is your current marital status?

- Is your spouse serving on active duty in the U.S. Armed Forces?

- Is your spouse currently working in a paid civilian job, including self-employed?

    The categories are:

- Married to member of U.S. Armed Forces.
- Married to civilian and spouse not employed.
- Married to civilian and spouse employed.
- Not married.

Presence of Children

A dichotomous variable:

- Couple has one or more dependent children in household
- No children in household

Figure 3.   Family Characteristics

Soldier Rank Group
Junior Enlisted (E2-E4) Sergeant (E5) Staff Sergeant (E6)

Individual Readiness/Performance
Soldier readiness and job performance is a scale based on ratings by the soldier's first and second line supervisors (Sadacca and DiFazio, 1990). For analysis of retention intentions, soldiers were categorized as high, middle or low on readiness, based on the distribution of the readiness measure in the sample. Separate models were developed for the 3 readiness groups. For actual retention models, readiness was included as a continuous scale.

Unit Type
Military Table of Organization and Equipment (MTOE) Table of Distribution and Allowances (TDA)

Location
In continental United States (CONUS) Outside Continental United States (OCONUS)

Unit Readiness
Unit Readiness is a scale based on survey ratings of unit readiness (Sadacca and DiFazio, 1992).

MOS
Military Occupational Specialty • Administrative • Technical • Combat This 3-category variable was coded from the detailed MOS codes by Decision Science Consortium (DSC), following DoD procedures.

Figure 4. Characteristics of Army Service

Years of Service
Soldier's years of service in Armed Forces
Months Remaining in Current Obligation
For actual retention models this is the number of months to the end of obligation (ETS date), at the time of the survey.

Figure 4. (Continued)

Work Hours
Soldier's total hours of work per week.

Work Predictability
Soldier's work predictability based on "How often do the following occur at your current duty assignment?   • At the start of the duty day you do not know when you will leave work at the end of the day.   • After you leave work at the end of the day you are called back for an additional detail.   • You have to cancel leave or important personal/family plans because of your work requirements.   Each is rated by the soldier on a 5 point scale from "very often or always" to "very seldom or never."

Figure 5. Characteristics of Soldier Work

Because we hypothesize that the difference in utility between the Army and civilian sectors ultimately determines retention intentions, we include a number of Army-civilian comparisons in the models (Figure 6). Empirically, the most important work comparisons for explaining retention intentions are comparisons of the opportunities for advancement, pay, retirement benefits, job security, opportunity to serve the country, and the opportunity for excitement. Aspects of the comparison of family life included in the models are: quality of place for children; quality of family medical care; spouse job/career opportunities; and quality of schools.

In addition, we include several variables related to family programs and services and to the quality of Army family life compared with civilian alternatives. Figure 7 shows the family life programs and comparisons included in the models. These include programs and services that are (1) important for a wide range of families, rather than targeted to those with diagnosed problems (such as financial counseling or spouse/child abuse programs), and (2) likely to have a significant impact on families and retention (for instance, we excluded such general services or facilities as information and referral services and post libraries). We also include comparisons between Army and civilian life on quality of place for children to grow up, quality of schools for children, and quality of medical care for family members. Because of the expectation that the retention intentions of soldiers with children or spouses would be more strongly affected by family programs and comparisons (e.g., schools, medical care for families) than would the intentions of soldiers without families, the model includes terms for the interaction of children or family with several measures, as shown in Figure 7.

Table 1 summarizes the results of the models of retention intentions, separately for soldiers classified as high, intermediate, and low in terms of supervisor ratings of soldier readiness/performance. The entries in Table 1 show the direction of the effect of each statistically significant variable or interaction on retention intentions (positive or negative), and the significance level for the effect. The full models, including the parameter estimates for all variables in the model, are included as Appendix Tables A-1 through A-3.

For high performers, neither personal and family variables nor work characteristics variables are significantly related to retention intention. But high performing individuals who are at the rank of staff sergeant or have greater years of Army service have a higher retention intention. The Army-civilian comparisons reveal that for high performers the opportunities for advancement and excitement, and the opportunity to serve one's country are important features of the Army that increase the attractiveness of Army life relative to civilian alternatives. In addition, the Army family experience results indicate that a favorable perception of the Army compared to the civilian sector as a place for raising children (for soldiers with accompanying children), and for job opportunities for spouses increased retention intentions for high performers.

When we turn to the results for soldiers at middle and low performance levels, it is apparent that some variables have the same effects on retention intentions for all groups, whereas others affect one group more than another.

Quality of Army vs. Civilian Jobs

These measures are based on the soldier's report of how much better or worse aspects of life related to work would be if the soldier were in civilian life rather than in the Army. The measures included are:

- Opportunities for advancement
- Pay
- Retirement benefits
- Job security
- Opportunity to serve country
- Opportunity for excitement, adventure

Each aspect is rated by the soldier on a five point scale ranging from "much better in civilian life" to "much worse in civilian life."

Quality of Army vs. Civilian Life

These measures are based on the soldier's report of how much better or worse the quality of community the family lives in would be if the soldier were in civilian life rather than in the Army. The measures included are:

- Quality of place for children
- Quality of medical care for family members
- Job/career opportunities for spouse
- Quality of schools for children.

Each item is rated by the soldier on a five point scale ranging from "much worse in civilian life" to "much better in civilian life".

For purposes of discussion we rescaled all the Army civilian comparison measures so that a positive coefficient represents a positive relationship between the assessment of Army relative to civilian alternatives and intention to remain in the Army.

Figure 6. Army-Civilian Life Comparisons

Usefulness of Army Services
Based on answers to the following question: "How useful is it (or would it be) for the Army to provide the following programs and services at your current location? • Child day care - full day • Youth recreation programs • Programs for spouses during TDYs/deployments/mobilizations • Spouse employment referrals Each item is rated by the soldier on a 3 point scale from "very useful" to "not useful."
Interactions with Family Variables

The model includes the interaction of presence of children in the household with
 	
• Comparison of civilian to Army life on
   -- quality of place for children to grow up
   -- quality of schools for children
• Usefulness of Army providing child day care at current location
 	
In addition, the model includes the interaction of the presence of family (children and/or spouse) with comparison of Army to civilian life on quality of medical care for family members.

Figure 7. Army Programs and Service for Families

Table 1

Retention Intention Regressions: Signs and Significance Levels of Significant Variables

	High	Middle	Low
Personal and Family Variables			
Marital status/spouse employment			
Has accompanying children			
Education (excluded less than high school)			
Greater than high school			
High school diploma		-**	
Race/ethnicity (excluded: white and other)			
Black		+*	-**
Hispanic		+**	
Army Service Variables			
Years of service	+***	+***	+***
Pay grade (excluded junior enlisted)			
Staff Sergeant	+**		
Sergeant			
Characteristics of Work			
Hours of work			+**
Don't know end of work day		-*	
Army-Civilian Comparisons			
Opportunity for advancement	+***	+**	+**
Pay		+**	+*
Retirement benefits		+*	+*
Job security		+*	
Opportunity to serve country	+*		
Opportunity for excitement	+*		+**
Army Family Experience			
Quality of place for children (for soldiers with children)	+*		+*
Job opportunities for spouse	+**		

Note   *   Significant at .10 level.
     **   Significant at .05 level.
     ***   Significant at .01 level.

The results for middle-level performers show a positive effect on retention intentions of demographic characteristics (less education; black or Hispanic racial/ethnic group), Army service (years of service), characteristics of work (predictability of work day), and Army-civilian work comparisons (opportunity for advancement, pay, retirement benefits and job security). For low performers, there are significant positive effects of demographic characteristics (being non-black), Army service (years of service), characteristics of work (work hours), Army-civilian work comparisons (opportunity for advancement, pay, retirement benefits and opportunity for excitement) and Army family experience (quality of place for children).

When we compare the results for the middle and low performers with those for high performers there are important inconsistencies. In particular, greater years of service and favorable perception of opportunities for advancement in the Army relative to the civilian sector increase the probability that soldiers of any performance level will intend to stay in the Army.

Years of service may represent two aspects of service related to retention. First, those with longer years of service have already chosen to stay in the Army for a longer time and have a greater time investment in their Army career. Because of the time they have already invested (and the fact that they did not leave at earlier reenlistment times), they are likely to have a greater career commitment at the time of the survey than do those who have been in the Army a shorter time.

Second, years of service also reflects differences in service obligation and differences among soldiers on that measure. Soldiers with short years of service at the time of survey include ones who enlisted for a short term, which includes soldiers who joined the Army for such reasons as getting funding for post-secondary education. For them, a short term of service reflects the reason for joining the Army, as well as the length of time already invested in Army service.

In addition to similarities, there are important differences between high and middle or lower performers in the variables that have a statistically significant effect on retention intentions. The probability of retention intention is higher for low and middle performers who view the Army as providing good pay opportunities and retirement benefits relative to civilian opportunities; on the other hand, the comparisons of pay and retirement benefits are not significant for high performing soldiers. The perception that the Army compares favorably with civilian life on job security is important for middle-level performers. And good Army opportunities for excitement and adventure significantly increases retention intentions for both high and low performing soldiers, but not for the middle performance-level group, whereas opportunity to serve the country is significant only for the high performers. Taken together, these findings suggest that intrinsic values of an Army career that cannot be found as readily in the civilian world--service and exciting work--are important to the best young soldiers and may be relatively more important to them than more extrinsic features of the work-- pay, retirement benefits, job security. Because the Army can better compete with civilian alternatives on service and excitement/adventure, efforts to ensure the opportunities to achieve these through an Army career should help retain the best young soldiers. For these soldiers, competition with civilian employment on pay,

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retirement benefits and security may be less important--as long as opportunities for Army career advancement can be maintained.

These results should not be taken to mean that high performing young soldiers are indifferent to pay and retirement benefits. In economic terms, the results suggest that, at the margin, pay and retirement benefits are less important to higher performing soldiers than other features of Army life. The findings reflect the levels of pay, retirement benefits, and career opportunities at the time of the survey; substantial changes in actual or perceived opportunities relative to civilian alternatives could lead to a different result in future research. Additionally, the use of cross-sectional survey data imposes some limitations. The inclusion in the model of a number of retention predictors, while appropriate to the hypotheses being tested and the effort to control for confounding factors, can mean that determinants that are related to one another may affect the estimates for other factors. Similarly, the association between service/excitement opportunities and retention intentions may occur because some young soldiers are both highly patriotic and highly committed to an Army career; for others who do not share the same values, increasing their opportunities for service and excitement or adventure would not be expected to have the same effect.

Overall, despite these caveats, the greater importance in the models of service and excitement or adventure, and the lower importance of pay, retirement benefits and job security for high performing soldiers is an important finding, both for policy development and for further research. From a policy perspective, it underlines the importance of continuing to provide--and to communicate--opportunities for national service, career advancement and opportunities for excitement and adventure to keep the highest performing young enlisted soldiers. For research, several lines are important, including more in-depth exploration of the meaning of Army service for young soldiers and their retention plans, and research to determine whether determinants of retention intentions are different under conditions of downsizing and in the period after the experience of Operation Desert Shield/Desert Storm.

Other differences between high and other performers include: good job opportunities for spouses are important for high performers, but not significant for middle and low performers. For high performers, work characteristics are not significant, and there are no significant race or ethnic effects. In contrast, there are significant race or ethnic effects within the middle and low performer groups; and work characteristics are significant for these groups. Whereas prior AFRP analyses of work effects show that unpredictable work affects soldier stress, the results of the retention models do not show an independent effect on retention intentions. This probably occurs because the Army-civilian life comparisons on different aspects of work quality captures the effects of work characteristics; that is, negative work conditions are likely to affect retention through the mechanism of an unfavorable perception of Army and civilian life on different dimensions of work. The model results underline the importance of Army policies and practices that contribute to a favorable quality of Army life work compared with civilian alternatives.

Several other individual and family factors--especially, marital status and (for married soldiers) spouse's current employment status, and presence of children in the household--do not significantly affect soldiers' retention intentions, once we control for

soldier performance level and for work and other factors that affect soldiers' career plans.

These findings help elaborate the picture shown by the results for pay, retirement benefits, job security and service/excitement/adventure. The comparisons between Army and civilian life on two family factors are significant for high performers: employment opportunities for the spouse and the quality of the Army environment as a place to raise children. These results underline the importance of spouse and family considerations in the decision of high-performing young soldiers to remain in the Army. In this context, it is important to recall that the large majority of young soldiers report they make retention decisions jointly with the spouse (Griffith et al., 1992), so the spouse influences decisions both directly (through participation in the decision) and indirectly (through soldier concerns with spouse and family needs).

Actual Retention

The results reported above increase the understanding of how a variety of factors affect soldiers' expectations that they will remain in the Army at the end of their current obligation. Army-civilian life comparisons regarding the soldier's opportunities, spouse job opportunities, and climate for family life affect the soldier's plans, as do career stage (years of service, pay grade), and, for some soldiers, race/ethnic background.

In the longer term, the key policy issue for the Army is whether these reenlistment intentions are translated into actual retention at the time the young enlisted soldier comes to the end of his service obligation. And, from a research perspective, it is important to know whether retention intentions (which can be measured for a cross-section of soldiers at the time of a survey or other data collection) are correlated with actual retention (which cannot be observed until a later time point).

As was discussed earlier, we merged the actual retention decisions to our analysis files for soldiers that had an opportunity to stay in or leave the Army prior to June 1990, but after the soldier participated in the survey in 1989.

To examine the effect of retention intentions on actual retention outcomes, we estimated a logistic regression model in which we included retention intention, together with controls for soldier pay grade and individual performance.[3] Additionally, past research suggests that retention intentions are poorer predictors of actual retention decisions if intentions are measured at a longer distance in time from the actual retention decision. This is likely to occur because there is greater "decay" in intention over a

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[3] Although it would have been desirable to estimate the retention outcomes model separately for each of the soldier performance levels, the smaller number of soldiers who had an ETS date between the time of survey and June 1990 led to the alternative procedure, of including performance as a control variable, rather than separate model estimation or interaction of performance level with the other variables in the model.

longer period, or because more events occur in individual's experience and in the environment in which the decision is made. To control for this, we created and used a measure of the length of time (in months) between the time the soldier participated in the survey and the date at which he would be eligible to make a retention decision (months of time remaining in obligation).

Table 2 presents the results of estimating a logistic regression of the actual retention decision as a function of retention intentions, pay grade, individual readiness/performance and a variable measuring the months remaining in the current obligation. The results show that retention intentions are a highly significant predictor of actual retention, even after controlling for soldier performance and pay grade. From a policy perspective, the results suggest that understanding the factors affecting retention intentions provide important insights into the ultimate retention decision.

In addition, holding intentions constant, the greater the number of months remaining in the current obligation, the more likely the soldier is to stay in the Army. The result suggests that the more time that is available to change the minds of soldiers who intend to leave the more likely it is that these soldiers will ultimately stay in the Army when their current obligation ends. To explicitly capture this effect, we included the interaction between retention intention at the time of survey and the length of time to the actual end of obligation, to test whether the change was greater for soldiers with different initial intentions. This interaction was not found to be statistically significant, but both intentions and length of time had significant effects.

Table 2

Actual Retention of Enlisted Soldiers

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Intercept	-2.404	0.507
Pay Grade (F=11.41, p<.001)		
Staff Sergeant (E6)	1.269	0.393
Sergeant (E5)	0.863	0.158
Junior Enlisted (E2-E4)	0.000	0.000
Retention Intention (F=122.8, p<.001)		
Yes	2.475	0.223
No	0.000	0.000
Months Remaining in Current Obligation (F=12.48, p=.001)	0.092	0.026
Individual Readiness (F=1.87, p=.18)	0.128	0.094

R^2 = .298
Overall model F=18.52, p<0.001
n = 1227

Summary and Conclusions: Implications for Army Policies and Programs

Our results for male enlisted soldiers in the early career stages (private through staff sergeant) indicate that high performing soldiers who have reached the rank of staff sergeant or have more years of service have a higher probability of intending to reenlist at the end of their obligation. The Army-civilian comparisons reveal that for high performers the opportunities for advancement, excitement and the opportunity to serve one's country are important features of the Army that increase the attractiveness of Army life relative to civilian alternatives. The results suggest strongly that in this era of Army downsizing special attention needs to be paid to advancement opportunities to keep high performing soldiers in the Army.

Our results also suggest that family factors have a substantial impact on the retention intentions of high performing soldiers. The Army family experience variables indicate that the perception that the Army compares favorably with the civilian sector as a place for raising children (for soldiers with accompanying children) and job opportunities for spouses increases retention intentions. Our results provide additional research support that high performing soldiers are very much interested in family issues, and to retain these soldiers, Army policies in the 1990s must continue to reflect the importance of family issues.

It is also useful to note several factors that are not significantly related to the retention intentions of high performing soldiers. These include the Army-civilian comparisons on pay, retirement benefits, and job security; the characteristics of Army work, including the total hours of work and the predictability of Army work; and the perceived usefulness of several Army programs. As we note above, it would be a misinterpretation of our results to conclude that these factors do not affect the retention intentions of high performing soldiers. First, in an attempt to control for omitted variable bias, the regressions include many regressors, several of which may be mutually correlated, making hypothesis testing of specific parameters potentially misleading. Second, although our results suggest that at the margin, several of these factors may not be as important to high performing soldiers as other features of Army life, it is our expectation that large changes in pay, retirement benefits, job security, characteristics of Army work, or in Army family programs would significantly change the retention intentions of high performing soldiers.

Finally, on a subset of our original data, we regressed the actual retention decision on retention intentions and other control variables, and found that retention intentions are a highly significant predictor of actual retention behavior. Our results confirm that understanding the retention intentions decision process provides important insights into the ultimate retention decision.

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APPENDIX A: Retention Intentions of Enlisted Soldiers: Readiness

Table A-1

Retention Intentions of Enlisted Soldiers: High Readiness

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Personal and Family Variables		
Intercept	2.643	0.642
Ethnic (F=.40, p=.66)		
Hispanic	0.171	0.299
Black	0.209	0.262
White and other	0.000	0.000
Education (F=.50, p=.61)		
> High school	-0.018	0.298
High school diploma	-0.188	0.280
< High school or GED	0.000	0.000
Has Children in Household		
Yes	1.353	0.858
No	0.000	0.000
Marital Status/Spouse Job (F=.63, p=.59)		
Married to military spouse	0.130	0.418
Married to civilian, spouse not employed	-0.124	0.619
Married to civilian, spouse employed	-0.264	0.195
Unmarried	0.000	0.000
Army Service Variables		
Pay Grade (F=4.24, p=.02)		
Staff Sergeant (E6)	0.709	0.313
Sergeant (E5)	0.020	0.180
Junior Enlisted (E2-E4)	0.000	0.000
Unit Type (F=.14, p=.71)		
MTOE	-0.096	0.259
TDA	0.000	0.000
Unit Readiness Measure (F=.25, p=.62)	0.300	0.601

Retention Intentions of Enlisted Soldiers: High Readiness (continued)

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Number of Complete Years of Service ($F=31.73, p=.00$)	0.182	0.032
Location ($F=1.56, p=.22$)		
OCONUS	0.225	0.181
CONUS	0.000	0.000
MOS ($F=1.38, p=.26$)		
Administrative	-0.404	0.229
Technical	-0.170	0.170
Combat	0.000	0.000
Characteristics of Army Work		
How Often Don't Know End of Workday ($F=1.41, p=.24$)	-0.074	0.062
How Often Called Back for Extra Detail ($F=2.58, p=.12$)	-0.160	0.099
How Often Work Requires Leave Cancelled ($F=.03, p=.87$)	0.017	0.104
Hours Spent Per Week in PT or Army Job ($F=.33, p=.57$)	0.003	0.004
Army-Civilian Comparisons		
Compare Opportunities for Advancement ($F=8.04, p=.01$)	0.394	0.139
Compare Pay to Civilian Life ($F=.32, p=.57$)	0.062	0.108
Compare Retirement Benefits to Civilian Life ($F=.03, p=.87$)	-0.015	0.088
Compare Job Security to Civilian Life ($F=2.54, p=.12$)	0.230	0.144
Compare Quality of Place for Children	0.019	0.151

Table A-1 (continued)

Retention Intentions of Enlisted Soldiers: High Readiness (continued)

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Compare Quality of Family Medical Care	0.151	0.153
Compare Job Opportunities for Spouse (F=6.60, p=.01)	0.169	0.066
Compare Quality of Schools for Children	-0.090	0.192
Compare Opportunity to Serve Country (F=3.63, p=.06)	0.286	0.150
Compare Opportunities for Excitement (F=3.62, p=.06)	0.202	0.106
Army Family Programs and Services		
Usefulness of Full-Day Child Daycare	0.179	0.260
Usefulness of Youth Recreation Programs (F=2.47, p=.12)	-0.363	0.231
Usefulness-Spouse Programs-TDYs/Deployment (F=.11, p=.74)	-0.067	0.204
Usefulness of Spouse Employment Referral (F=1.50, p=.23)	0.218	0.178
Interactions		
Has Children in Household * Compare Quality of Place for Children (F=3.31, p=.08)		
Yes	0.358	0.197
No	0.000	0.000
Has Children in Household * Compare Quality of Schools for Children (F=.10, p=.75)		
Yes	-0.084	0.261
No	0.000	0.000

Table A-1 (continued)

Retention Intentions of Enlisted Soldiers: High Readiness (continued)

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Has Children in Household * Usefulness of Full-Day Child Day Care *(F=.13, p=.72)*		
Yes	0.093	0.257
No	0.000	0.000
Has Family * Compare Quality of Family Medical Care *(F=2.19, p=.15)*		
Yes	-0.221	0.149
No	0.000	0.000

R^2 = .327
Overall model *F=2.743, p=0.004*
Percent high retention probability: 41.7%
n = 1039

Table A-2

Retention Intentions of Enlisted Soldiers: Middle Readiness

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Personal and Family Variables		
Intercept	4.884	0.815
Ethnic (F=3.91, p=.03)		
Hispanic	0.700	0.303
Black	0.500	0.249
White and other	0.000	0.000
Education (F=3.36, p=.05)		
> High school	-0.387	0.324
High school diploma	-0.706	0.281
< High school or GED	0.000	0.000
Has Children in Household		
Yes	-0.321	1.028
No	0.000	0.000
Marital Status/Spouse Job (F=.49, p=.67)		
Married to military spouse	-0.457	0.378
Married to civilian, spouse not employed	-0.446	0.616
Married to civilian, spouse employed	-0.233	0.260
Unmarried	0.000	0.000
Army Service Variables		
Pay Grade (F=.36, p=.69)		
Staff Sergeant (E6)	-0.134	0.361
Sergeant (E5)	0.107	0.238
Junior Enlisted (E2-E4)	0.000	0.000
Unit Type (F=.006, p=.94)		
MTOE	-0.024	0.307
TDA	0.000	0.000
Unit Readiness Measure (F=.31, p=.58)	0.383	0.686

Table A-2 (continued)

Retention Intentions of Enlisted Soldiers: Middle Readiness (continued)

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Number of Complete Years of Service ($F=24.66$, $p=.00$)	0.208	0.042
Location ($F=1.81$, $p=.19$)		
OCONUS	0.344	0.255
CONUS	0.000	0.000
MOS ($F=.20$, $p=.82$)		
Administrative	-0.095	0.273
Technical	0.051	0.196
Combat	0.000	0.000
Characteristics of Army Work		
How Often Don't Know End of Workday ($F=3.38$, $p=.07$)	-0.139	0.076
How Often Called Back for Extra Detail ($F=1.35$, $p=.25$)	-0.156	0.134
How Often Work Requires Leave Cancelled ($F=2.48$, $p=.12$)	-0.161	0.102
Hours Spent Per Week in PT or Army Job ($F=.95$, $p=.34$)	0.005	0.005
Army-Civilian Comparisons		
Compare Opportunities for Advancement ($F=6.19$, $p=.02$)	0.288	0.116
Compare Pay to Civilian Life ($F=6.38$, $p=.02$)	0.305	0.121
Compare Retirement Benefits to Civilian Life ($F=3.25$, $p=.08$)	0.233	0.129
Compare Job Security to Civilian Life ($F=3.91$, $p=.06$)	0.245	0.124
Compare Quality of Place for Children	-0.095	0.179

Table A-2 (continued)

Retention Intentions of Enlisted Soldiers: Middle Readiness (continued)

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Compare Quality of Family Medical Care	0.004	0.223
Compare Job Opportunities for Spouse (F=.04, p=.84)	0.018	0.084
Compare Quality of Schools for Children	0.148	0.203
Compare Opportunity to Serve Country (F=1.08, p=.30)	0.122	0.117
Compare Opportunities for Excitement (F=1.06, p=.31)	0.107	0.104
Army Family Programs and Services		
Usefulness of Full-Day Child Daycare	-0.387	0.321
Usefulness of Youth Recreation Programs (F=1.13, p=.29)	-0.258	0.243
Usefulness-Spouse Programs-TDYs/Deployment (F=2.29, p=.14)	0.276	0.183
Usefulness of Spouse Employment Referral (F=1.31, p=.26)	-0.183	0.160
Interactions		
Has Children in Household * Compare Quality of Place for Children (F=.002, p=.97)		
Yes	0.008	0.217
No	0.000	0.000
Has Children in Household * Compare Quality of Schools for Children (F=.03, p=.86)		
Yes	0.046	0.255
No	0.000	0.000

Table A-2 (continued)

Retention Intentions of Enlisted Soldiers: Middle Readiness (continued)

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Has Children in Household * Usefulness of Full-Day Child Day Care ($F=1.38, p=.25$)		
Yes	-0.451	0.384
No	0.000	0.000
Has Family * Compare Quality of Family Medical Care ($F=.26, p=.62$)		
Yes	0.088	0.174
No	0.000	0.000

R^2 = .269
Overall model $F=2.523, p=0.008$
Percent high retention probability: 26.4%
n = 1014

Table A-3

Retention Intentions of Enlisted Soldiers: Low Readiness

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Personal and Family Variables		
Intercept	2.368	1.013
Ethnic *(F=4.90, p=.01)*		
Hispanic	0.410	0.383
Black	-0.835	0.311
White and other	0.000	0.000
Education *(F=.70, p=.49)*		
> High school	-0.458	0.420
High school diploma	-0.161	0.279
< High school or GED	0.000	0.000
Has Children in Household		
Yes	0.904	1.181
No	0.000	0.000
Marital Status/Spouse Job *(F=1.00, p=.39)*		
Married to military spouse	0.891	0.561
Married to civilian, spouse not employed	-0.703	0.896
Married to civilian, spouse employed	0.215	0.271
Unmarried	0.000	0.000
Army Service Variables		
Pay Grade *(F=1.84, p=.17)*		
Staff Sergeant (E6)	0.555	0.514
Sergeant (E5)	0.669	0.347
Junior Enlisted (E2-E4)	0.000	0.000
Unit Type *(F=.75, p=.39)*		
MTOE	-0.450	0.520
TDA	0.000	0.000
Unit Readiness Measure *(F=.39, p=.54)*	-0.428	0.687

Table A-3 (continued)

Retention Intentions of Enlisted Soldiers: Low Readiness (continued)

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Number of Complete Years of Service (F=14.14 p=.00)	0.155	0.041
Location (F=1.38, p=.25)		
OCONUS	0.258	0.220
CONUS	0.000	0.000
MOS (F=2.42, p=.10)		
Administrative	0.694	0.334
Technical	0.231	0.249
Combat	0.000	0.000
Characteristics of Army Work		
How Often Don't Know End of Workday (F=.37, p=.55)	-0.040	0.066
How Often Called Back for Extra Detail (F=.05, p=.83)	0.022	0.105
How Often Work Requires Leave Cancelled (F=.53, p=.47)	-0.083	0.113
Hours Spent Per Week in PT or Army Job (F=6.00, p=.02)	0.015	0.006
∕-Civilian Comparisons		
Compare Opportunities for Advancement (F=6.33, p=.02)	0.290	0.115
Compare Pay to Civilian Life (F=3.68, p=.06)	0.203	0.106
Compare Retirement Benefits to Civilian Life (F=3.96, p=.05)	0.220	0.110
Compare Job Security to Civilian Life (F=2.04, p=.16)	0.193	0.135
Compare Quality of Place for Children	-0.022	0.177

Table A-3 (continued)

Retention Intentions of Enlisted Soldiers: Low Readiness (continued)

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Compare Quality of Family Medical Care	-0.054	0.212
Compare Job Opportunities for Spouse (F=.13, p=.72)	0.042	0.118
Compare Quality of Schools for Children	0.216	0.212
Compare Opportunity to Serve Country (F=.15, p=.70)	0.045	0.118
Compare Opportunities for Excitement (F=6.46, p=.02)	0.257	0.101
Army Family Programs and Services		
Usefulness of Full-Day Child Daycare	-0.076	0.301
Usefulness of Youth Recreation Programs (F=.10, p=.76)	0.083	0.268
Usefulness-Spouse Programs-TDYs/Deployment (F=.01, p=.91)	0.026	0.224
Usefulness of Spouse Employment Referral (F=.18, p=.68)	0.070	0.166
Interactions		
Has Children in Household * Compare Quality of Place for Children (F=3.48, p=.07)		
Yes	0.545	0.292
No	0.000	0.000
Has Children in Household * Compare Quality of Schools for Children (F=1.72, p=.20)		
Yes	-0.456	0.348
No	0.000	0.000

Table A-3 (continued)

Retention Intentions of Enlisted Soldiers: Middle Readiness (continued)

Independent Variables	Regression Coefficients (Unstandardized)	Sampling Error of the Regression Coefficients
Has Children in Household * Usefulness of Full-Day Child Day Care (F=1.09, p=.30)		
Yes	0.410	0.393
No	0.000	0.000
Has Family * Compare Quality of Family Medical Care (F=.17, p=.68)		
Yes	0.091	0.219
No	0.000	0.000

R^2 = .305
Overall model F=3.23, p=0.001
Percent high retention probability: 22.1%
n = 905