

INDIVIDUAL MOTIVATIONAL FACTORS

IMPACTING UNITED STATES

AIR FORCE RESERVE

RECRUITING

by

BRIAN EDWARD WISH

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Abstract

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Brian Edward Wish, PhD

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Supervising Professor: Alejandro Rodriguez

This research seeks to discern the latent motivational factors that prompt individuals to join the Air Force Reserve. It is hypothesized that the decision to affiliate has a large non-economic component; this study also seeks to determine whether enlistment motivations have been stable over the last decades or whether motivations have recently evolved in light of over a decade of constant armed conflict.

The project utilizes a questionnaire given at selected reserve units to members who are in their first few months of service. These surveys consisted of both motivational and discouragement panels of questions; returned questionnaires were analyzed using factor analysis identify underlying motivations. Latent factors identified were reviewed in the context of the Institutional/Occupational paradigm as well as Public Service Motivation theory.

The results of this research should inform recruiting practitioners as they seek cheaper and more effective methods to accomplish their mission. Further, the results of this effort can inform policy makers, avoiding overreliance on econometric models and suggesting methods to maintain recruiting goals while still controlling costs.

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Chapter 1

Introduction

The preamble to Constitution of the United States cites “providing for the common defense” as one of the fundamental purposes for enacting the constitution. The constitution goes on to award the legislative branch the responsibility for raising and governing armies and navies, and gives the executive branch the role of commanding and administering the armed forces. While the constitution does not mention reserve forces for the regular components, it makes provision to govern and employ militias of the states, laying a firm foundation for the role of citizen-soldier.

On July 26, 1947, President Harry S. Truman signed Executive Order 9877, Functions of the Armed Forces. On the same day, he also signed the National Security Act of 1947 into law. These two documents established the United States Air Force (USAF) as a separate and independent service, an equal partner to the Army and Navy in the defense of the republic. Pursuant to that mission and as authorized by law, the armed services have established reserve forces separate and apart from the state sponsored National Guard.

The National Military Strategy of the United States of America (Mullen, 2011, p. 17) states that “The Reserve component...is essential as it provides strategic and operational depth to the Joint Force.” In line with this, Secretary of

the Air Force Michael Donley (2011), affirmed the commitment of the Air Force to its reserve components:

I don't need to tell you that the Air Force depends on the Air Force Reserve, and that we will continue to remain committed to the Total Force Enterprise - the powerful combination of the Active Duty and Reserve Components that together make up the United States Air Force.

More recently, the current Secretary of the Air Force, Deborah Lee James, in testimony to the Senate Armed Services Committee, noted that the active duty Air Force is planned for a fifteen percent cut in fiscal year 2015, while the reserve components of the Air Force are slated for a three percent cut. She further stated additional missions may be moved to the reserve components in the future to avoid further end strength cuts, and that the Air Force estimated an increase in the days worked by guardsmen and reservists, known as “man-days”, of seventy percent.

Given then that the reserve components are acknowledged by military leadership as an integral part of the functioning of the services, and so are important to the contribution of those services to the security of the nation, it is incumbent on military and civilian leaders to find the most efficient way to balance competing priorities in the recruiting and retention of reserve members.

Problem Overview

The United States has been engaged in some level of armed conflict since 1991. Attracting qualified recruits and retaining trained personnel as they leave

service is an ongoing enterprise. A finely honed model would allow the most efficient use of resources to execute this recruiting effort. Unfortunately, very little literature exists to guide Air Force recruiters and policy makers. A large body of research was developed with the advent of the All-Volunteer Force (AVF), mostly aimed at regular rather than reserve components. The majority of literature on reserve recruiting dates from the 1970's and 1980's; there appears to be a complete hiatus of research from the mid 1990's to the mid 2000's. Further, the bulk of this early research focuses on non USAF reserve components.

Of research published in the last decade, Arkes and Kilburn (2005) and Waite (2005), respectively focusing on Air Force and Navy reservists, both used macroeconomic models for analysis. Griffith (2008) uses a micro-level approach similar to what is advocated here, but focuses on just one division within the Army National Guard (ARNG).

Purpose of the Study

This research will provide decision-makers with a description of motivational factors that influence men and women to join the Air Force Reserve, as well as their relative strength. Additionally, the analysis of this data in light of different economic and motivational frameworks will provide a theoretical underpinning for recruiting research.

Theoretical Perspectives

Theoretical perspectives addressed include both a quantitative orientation that views recruiting as an econometric exercise in balancing compensation to the civilian labor market, and an individually focused model which views enlistment as an individual decision which includes, among other things, an economic component. These views can be aligned with the Institutional/Occupational (I/O) model of military motivation. Public Service Motivation (PSM) theory, though not generally applied to this specific subset of public service, can also inform conclusions.

Significance of the Study

Incorrect assessment of individual motivational factors which lead to joining a reserve component have the potential to drive policy decisions which could be detrimental to the effectiveness of not only the reserve component, but the active component as well. For example, drilling reservists are eligible to enroll in Tricare Reserve Select, a health care plan for the member or their family, with rates highly competitive to privately available insurance premiums. Is the availability of health care an important factor in reserve accession? Does the availability of reserve health care serve as an enabler for members to make the leap from an active duty career? Or are future reservists more focused on retirement benefits, or some other factor?

Further, the economy of the United States has been plagued by slow growth for several years. In times of fiscal constraint, labor costs will be evaluated and if possible trimmed. This is not a mere hypothetical argument; *The Report of the Eleventh Quadrennial Review of Military Compensation*, published by the Department of Defense (DoD) in 2012, actually called for a sweeping reorganization of pay and benefits for reserve component members by mostly eliminating inactive duty service; this would reduce typical paid compensation from 62 days to 38 days, though adding in housing and subsistence pays equivalent to those received by active duty members. This would also reduce retirement benefits in the out years by reducing the point basis for total days worked. Acknowledging that the new lower pay scale would not by itself sustain the required force, the review suggests offering incentive pays which can be tailored to specific career fields, pay grades, years of service, and amount of participation in order to maintain required end strength. Understanding the motivations behind a recruitment decision would be beneficial when crafting such an incentive plan.

The reverse of poor times and austerity can also trigger a recruiting crisis. If economic conditions make a marked improvement, what effect will this have on recruiting? If economic considerations are primary drivers of the enlistment decision, as some research suggests, then military branches face the possibility of

personnel shortfalls or budgetary shortfalls as pay and bonuses are increased to maintain end strength goals in competition with the civilian labor marketplace.

Aside from economics, there are other policy decisions which could suffer from lack of information. The Air Force Reserve, for example, could fail to properly target the right recruits with the right message. For example, Elig, Johnson, Gade, & Hertzbach (1984) point out that recruiting slogans from the 1970's, like "Join The People Who've Joined The Army" were clearly not reflective of identified motivations; the Army Research Institute (ARI) survey from 1983 found that associational motivations ranked very low. In contrast, "Be All That You Can Be" was on target; the survey confirmed that recruits identified strongly with self-improvement motivations.

Generalizability and Limitations

This study focuses on Air Force Reserve recruiting. Conclusions should be generalizable to some degree to other reserve services or reserve components, at least with respect to defining motivations behind service. Air National Guard units would be expected to have the most alignment; training, missions, culture, and the military experience are similar between the AFR and ANG, with the primary difference being the state control and use of the National Guard in civil emergencies, with slightly less congruence to other services.

Motivation, however, cannot be confused with preference. Army reserve and guard units, as well as Marine Corps and Navy reserves, have different

circumstances. Latent motivational factors with respect to a desire to serve might be expected to be similar, but when operationalizing this research one would need to bear in mind that the different attributes of the Army, Navy, Air Force, and Marine Corps will resonate with differently with individual preferences. Advertising or recruitment strategies need to be tailored to the specific services in order to be most effective. (Brockett, Cooper, Kumbhakar, Kwinn, & McCarthy, 2004).

Summary

Determining individual motivations for enlistment may be valuable for determining if current policies are correctly targeted to the current generation of enlistees, and whether the tactical recruiting message is striking the most appropriate responses. Also, the unique attempt to divining dis-satisfiers that may weed potential recruits may point to policies and recruiting messages to allay the concerns of the target markets. To this end, survey research of Non-Prior Service (NPS) and Prior Service (PS) enlistees will be conducted to determine individual motivations. Statistical analysis should identify both economic and non-pecuniary motivational factors, as well as the relative strength of each. These factors will be compared with past research to see if conclusions are consistent with past trends.

Chapter 2

Literature Review

Researchers did not turn attention to recruitment into air reserve forces until the late 1960's and early 1970's, with the end of conscription in the United States. Military planners were concerned that a large portion of personnel who enlisted in the National Guard and Reserve forces were motivated primarily by draft avoidance. With the end of the draft, not only would active duty recruiting efforts have to adapt, but reserve component efforts would also need to evolve.

The Air Force Reserve, like other reserve components, needs clear objective data about why personnel enlist. Historically, efforts have relied on gut feel and opinion, rather than objective research; for example, various research projects in the 1970's and early 1980's showed that enlistment terms did little to encourage or discourage enlistment. Later researchers supposed that recruitment would be more difficult after the 1991 Gulf War due to the new awareness of mobilization vulnerability, a concern that did not manifest. An entire branch of research fails to explain why, if recruiting were simply an economic model, that differing services would have different success rates meeting recruiting goals when salaries and benefits are generally identical. Millions of dollars in advertising campaigns and recruiting costs could be more finely tuned if better data were available.

Two main theoretical orientations emerge from the literature. In the first branch, the decision to enlist is treated largely as an economic issue amenable to study by analysis of demographics and of macroeconomic variables such as prevailing wage rate, unemployment, or similar factors. In general, these studies predict the supply of reservists available for recruitment based on economic indicators. The other theoretical orientation, taken by this dissertation, is an examination of the individual motivations leading enlistees to join the Air Force Reserve. No typology is perfect, of course, and some studies blur the lines between the two camps by including both individual motivations and macroeconomic factors into research.

Outside of but in parallel to research on military recruiting, a newer paradigm of public service has also arisen; Public Service Motivation (PSM) theory suggests a motivational component that encourages some people towards public service, and influences them while so employed. In concept this is similar to the idea of institutional motivations, so this research acknowledges and explores the applicability. This research, however, uses the I/O framework, since previous research and tools available for PSM research are not as good a fit for the research questions.

Theoretical Foundation

The Institutional/Occupational Dichotomy

Two approaches to research in military recruiting emerge from the studies. Authors make an implicit assumption through their choices of research methods and variables. In one view, enlistment in the military is strictly an economic decision, bounded by the value of leisure time, current income, and the monetary returns on service. Other authors believe that both economics and non-monetary play a significant role in enlistment. These differing viewpoints are addressed directly in some previous research; other studies must be analyzed to discern whether the theoretical orientation of the author. This is a generally simple exercise; strict reliance on econometric models indicates an occupational orientation while examination of human interactions and motivations point to an institutional orientation within research. Table 2-1 illustrates the divide and provides an approximate chronological context for the writings.

Enlistees surely weigh the economics of a decision to join a reserve component; it may be a large or even the largest component of decision-making. However, there are clearly other factors that influence the individual decision to enlist. Mehay (1991) concludes that the reserve enlistment market and the moonlighting market are different, but if similar economics lead to differing decisions in the two markets, what else could resolve the split but a difference in

Table 2-1 Economic and motivational studies timeline

Economic Studies	Motivational Studies
Rostker & Shishko, 1973	
Rostker & Shishko, 1974	
	Haggstrom, 1975
	Orend, Gaines, & Michaels, 1977
	Market Facts, Inc., 1977
	Stephens, 1977
McNaught & Francisco, 1981	Haggstrom, Blaschke, Chow, & Lisowski, 1981
	Faris, 1981
Brinkerhoff & Grissmer, 1984	Elig, Johnson, Gade, & Hertzbach, 1984
	Faris, 1984
Asch, 1986	
Shiells, 1986	Pliske, Elig, & Johnson, 1986
Marquis & Kirby, 1989	Halverson, 1989
Mehay, 1990	Baker, 1990
Mehay, 1991	Gorman & Thomas, 1991
Tan, 1991	Griffith & Perry, 1993
Asch, 1993	
Mehay, 1993	
Buddin & Kirby, 1996	
Arkes & Kilburn, 2005	
Waite, 2005	Griffith, 2008

attitudes and preferences between the populations? Both Tan (1991) and Arkes & Kilburn (2005) include numbers of recruiters in their model; availability of information is a prerequisite for an efficient market, but information availability

in and of itself is a clearly non-economic variable. Waite (2005), while stating flatly that enlistment is an economic decision, at least proposes differing social attitudes to explain regional variation, similar to Mehay (1990) describing propensity to enlist with a regional dummy variable.

The differing outlooks can be explained by the paradigm presented in an article by Moskos (1977) and by the outlook of the times that the article represented. Moskos defined two models; his institutional model views military service as legitimized by the norms and values of the institution. These norms and values are justification for any number of non-market based activities; base exchanges and commissaries for shopping, special clubs for entertainment, differing pay rates for married and single members, as well as a host of other features. In his occupational model, service is legitimized only by the marketplace. His observation was that the United States military was clearly moving towards an occupational model. The end of the draft was the most obvious sign, but he also pointed to the civilianization of support functions, moves by Congress to consolidate various pay scales, increasing numbers of members living off base, and other factors. He also predicted a possible rise of unionization among military members.

Even though trends appeared to be moving towards a strictly occupationally oriented military, many researchers focusing on actual motivations to join have found non-occupational motivations with respect to reserve service

(Orend, et al., 1977; Stephens, 1977; Haggstrom, et al., 1981; Elig et al., 1984; Pliske, et al., 1986; Halverson, 1989; Baker, 1990, Gorman & Thomas, 1991, Griffith & Perry, 1993; Griffith, 2008). Faris (1981), though examining active duty service, found that family participation in the military was a significant factor in propensity to serve. Following up a few years later (Faris, 1984) and analyzing with Moskos' model in mind, Faris found that non-economic factors outweighed economic motivators; he observed that compensation policy had been implemented as if to attract occupationally oriented individuals, but recruiters owed much of their success to institutional motivations.

In summary, there appears to be adequate support to postulate institutional motivations, whether or not they outweigh occupational motivations, are at least a significant contributor to recruiting. These orientations can be used to guide development of research instruments and to provide an outline for analysis of data.

Public Service Motivation Foundations

The theoretical construct proposed by this paper is similar in concept Public Service Motivation (PSM) theory. Perry & Wise (1990) postulated that there are differing rational, normative, and affective motivations that make individuals receptive to public service. These motivations are often shaped by education and social institutions prior to joining public service (Perry, 2000) and

are typically reinforced or degraded over time by the nature of the institutions themselves (Moynihan & Pandey, 2008).

In these respects, PSM theory is similar to the I/O construct. However, as noted by Moynihan & Pandey (2008), not only their research but Perry's (2000) and others have found significant positive correlation between PSM level and education. This does not seem to be the case in reserve recruiting; Gorman and Thomas (1991), for example, find that more educated or higher mental category recruits are more occupationally motivated, while less educated and lower quality recruits are motivated by self-improvement, an institutional value.

Still, returning to Perry & Wise (1990), they clearly believe that there is a public service motivation present in some individuals that leads to them be more likely to join public organizations. Like Moskos & Wood (1988), Perry & Wise decry the rise of both the idea that individuals are primarily self-interested actors and the increasing use of monetary incentives as motivational tools. It is perhaps reasonable that if such a propensity for service exists in some individuals such that it makes them more likely to seek public sector employment, then the same or similar service ethic might be present in those who have a greater propensity for military service as well. The correlation between PSM level and education might be irrelevant in the special case of military service where often enlisted members join at their age of majority before they have had a chance to obtain education. Even among officers, though they almost uniformly obtain college diplomas, the

actual decision to seek a position or career in the military is typically made early or at the beginning of the education process by joining a Reserve Officer Training Corps detachment or attending a service academy.

With that in mind, this research will not only make conclusions with respect to the I/O model prevalent in previous research, but will make well-grounded conjecture as to the relevance of PSM theory. However, determining PSM levels of recruits joining the Air Force Reserve is beyond the scope of this research initiative. From a practical standpoint, addition standard panels of PSM questions would have greatly increased the length and time of the questionnaire and subsequently decreased the likelihood of approval.

From a substantive perspective, this research is intended to give practitioners and policy-makers potentially actionable information about the motivations of personnel who affiliate with the Air Force Reserve. Determining PSM levels of citizens entering military service would be a valid and worthwhile direction for research, but would also be different research question, and only address the tensions between institutional and occupational courses of action that are currently playing out in the military compensation arena in a tangential manner.

Literature Review

Researchers did not focus on air reserve forces recruitment until the late 1960's and early 1970's, with the end of conscription in the United States.

Military planners were concerned that a large portion of personnel who enlisted in the National Guard and Reserve forces were motivated primarily by draft avoidance. With the end of the draft, not only would active duty recruiting efforts have to adapt, but reserve component efforts would also need to evolve.

Development of the Institutional / Occupational Model

Defining the Dichotomy

In an important piece not aimed directly at military recruiting, Moskos (1977) defined the military as an institution, and postulated that the trends of the time were moving the United States military from an institutional construct to an occupational construct. Institutional motivations and values, in his paradigm, are non-salary benefits, either social or tangible, related to membership in the institution. The antithesis, an occupational orientation, views joining the military as a strictly transactional event; labor is simply traded for a salary as with many civilian jobs. He cited elimination of the draft, with its implicit assumption of military service as a societal obligation, and transition to the All-Volunteer Force (AVF), which relied on monetary inducements in a competitive marketplace. This article later also provides a paradigm other writers use for research on militaries (Moskos & Wood, 1988). From a recruiting perspective, Moskos was specifically referring to ongoing structural changes and their social consequences; a close reading of his 1977 article indicates that he was offering observations about what he perceived to be trends at the time, and tried to fit them into a descriptive

framework to classify different inducements. Latter authors commonly adopted and adapted this paradigm as a predictive model in an attempt to discern institutional versus occupational motivations for joining.

In a follow-up to Moskos (1977), Moskos & Wood (1988) published *The Military: More than Just a Job?* They expanded on the basic theme of the I/O dialectic, and invited other authors to submit relevant chapters, including a section of the book focusing on the I/O orientations of non-US militaries. The authors believe that the rise of bureaucratic rationalism has been detrimental to recruitment, retention, and effectiveness of the military, noting occupationally oriented members have lower levels of morale and unit cohesion. In this variety of bureaucratic rationalism, planners focus on numbers and believe that everything can be understood if it is examined and tested enough; this mindset lends itself to econometric studies but not to an analysis that includes patriotism or esprit de corps. In the view of the authors, the advent of the all-volunteer force moved the United States military to attempt to compete with civilian labor markets, and so attracted a higher portion of occupationally motivated recruits. They suggest an initiative to restore institutional values to shore up the long-term health of the institution by attracting institutionally motivated recruits.

Researchers studying recruiting over the last several decades have come to rely on the I/O framework to analyze motivations and incentives. Originally merely an observation that the United States was moving occupational incentives,

the framework sparked the next logical assumptions, that some people might be more motivated by occupational interests and others might be more motivated by the factors described as institutions. Analyzing this split came to define much of the research on recruiting motivation in the 1980's and early 1990's, while refuting the idea that personal preferences were important became somewhat of a goal for econometric analysts.

Economic Modeling

The first attempt to deal with the post draft environment and quantify the projected shortfall was carried out by Rostker & Shishko (1973), and was carried out along an exclusively economic orientation. Working for the RAND Corporation, they completed their work under contract for the Air Force. In *Air Reserve Personnel Study: Volume II. The Air Reserve Forces and the Economics of Secondary Labor Market Participation*, the authors analyze the secondary labor market with an eye towards applying their research to the Air Force. They use a Tobit model to analyze panel data collected by the University of Michigan from 1967 to 1969. Using this, they estimate the elasticity of basic variables, and determine that a typical participant in the secondary labor market will be young and have high consumption needs relative to income.

The authors point to previous research which had attempted to either extend typical labor theory to moonlighting (Moses, 1962, and Perlman, 1968) or merely describe characteristics of moonlighters (Guthrie, 1965, Hamel, 1967, and

Guthrie, 1969), but note that they are the first to combine demographic analysis with labor theory with regards to the secondary labor market.

In a follow up to their 1973 study, Rostker & Shishko (1974) make specific predictions about reserve recruiting based their developed model. This new subset of labor economics that attempts to quantify the benefit derived from holding a second job, colloquially known as ‘moonlighting’, by determining the reservation wage, the wage at which one would be attracted to secondary employment. The authors generally conclude that pay would be inadequate to attract required numbers of personnel.

All econometric analysis of reserve recruiting is essentially an exercise in analysis of the secondary labor markets or moonlighting economics, whether explicitly termed as moonlighting or not. The authors follow up their theory development in Shishko & Rostker (1976), applying their methods to the broader question of moonlighting behavior, and this 1976 article is widely cited in many different disciplines with regard to moonlighting behavior, not strictly limited to reserve enlistment.

McNaught & Francisco (1981) built on Rostker & Shishko (1973) to develop a participation model. Manpower in the Army, Navy and Marine Corps Reserve and the Army National Guard was chronically understrength in the 1970’s, even after authorizations were reduced and pay was increased. Notably, Air National Guard and Air Force Reserve actually grew their force in the 1970’s,

and their authorized strength remained relative stable. While a strictly econometric exercise, the study cautions that reserve participation can be influenced by local factors, citing Stephens (1977). The author's most important conclusion from the perspective of reserve recruiting is that the supply model is unable to confirm or refute the general elasticity of reserve participation with respect to wages.

Brinkerhoff & Grissmer (1984) conducted a detailed review of the all-volunteer military. They summarized the results of PS and NPS recruiting efforts, and noted where estimates of the Gates commission failed to predict the reserve strength shortfalls in the 1970's, and noted that the commission failed to predict that recruitment of PS personnel into the reserve components actually increased in the later part of the 1970's. The authors conjecture that PS accessions were demand constrained, and never accepted numbers of PS reservists willing to join, but rather focused on the supply of NPS personnel until that supply declined. The authors take no issue with the general econometric modeling, but conclude that better assumptions of elasticities and better understanding of the availability of PS enlistees would make prediction more accurate.

Focusing strictly on PS enlistees, Asch (1986), writing for the Center for Naval Analysis (CNA), devised a method for measuring enlistment propensity of PS Navy veterans. She suggests that personnel exiting service be matched by social security number to personnel on active reserve roles in the next fiscal year.

Using this technique, Shiells (1986) detailed elasticities by rating and location. The technique described by Asch and used by Shiells provides conclusions tailored to the requirements of the Navy at the time: estimating characteristics to target recruiting efforts against various ratings in different geographic areas. In general, the conclusions are consistent with other purely economic models, finding a positive relationship between higher reserve pay and higher affiliation.

Marquis & Kirby (1989) take a fairly straightforward approach, using a multivariate analysis to determine what factors are significant on the decision to affiliate with the Army Reserve and the Army Guard, as well as the attrition rate of prior-service personnel. They determine a positive elasticity between pay and recruiting and retention, but note that concentrating on recruiting the proper demographic groups and targeted bonuses for reenlistment may be a better approach than focusing on compensation.

Mehay (1990) takes a strong position on enlistment as a primarily economic decision. During his literature review, he outlines both large scale economic models and micro-level studies, but ultimately concludes that the initial decision to join a reserve component is most dependent on market considerations exogenous to the individual. He suggests that the enlistment rate is dependent upon local economic conditions, recruiting activity, demographics, and propensity for military service. Cross-sectional data was used from market areas, defined as a 35 mile radius around a USAR facility. Economic data was used by county, and

the number of recruiters was available for each market area for the year in question (1985). General attitude towards military service was measured by including a regional dummy variable to capture regional variations in propensity to enlist. Mehay cautions that regional differences may be confounded with regional economic or other factors. Also, because the regions correlate with Army recruiting brigades' areas of responsibility, differences may also stem from regional management practices.

The effect of unemployment was found to be statistically significant but small for NPS enlistees, with an elasticity of .19, and not significant for PS enlistees. Pay is significant in both NPS and PS, with elasticities of .13 and .4, respectively. Pay rate is apparently a greater influence to prior service personnel. The number of recruiters is very important for NPS enlistees, with a coefficient of .59, while the PS coefficient is only .16, probably reflecting that military personnel make their decision to enlist in the reserves based on their experience, not on contact with recruiters. Finally, regional dummy variables were found to be significant, with all areas correlating negatively with the Northeast. Mehay speculates that this could be due to the concentration of reserve centers in that area and the subsequent aggregation of recruiting effort (Mehay, 1990).

Attempting to resolve questions raised by Moskos and Wood (1988), Mehay (1991) attempted to directly test whether participation in the reserves was appropriate to model strictly from a moonlighting economics perspective, or

where there were unique characteristics that make reserve affiliation different from moonlighting. Mehay constructs a choice based model with three possible states; reserve affiliation, civilian moonlighting, and holding a single job. He combines samples from separate surveys of civilians and reservists, and uses a multinomial logit model to determine whether the characteristics of those who chose to affiliate with a reserve component are the same as those who choose to moonlight.

Mehay ultimately finds that both moonlighting and reserve affiliation to be influenced by economic variables. However, the variables and the magnitude are different than each other, indicating that they are competing labor markets, rather than different aspects of the same market. For example, reservists are more sensitive to local unemployment rates and family income, but not as sensitive to wages of the primary employment; moonlighters are more sensitive to the wages in the primary job. As the author himself notes, this study still approaches reserve participation from a strictly economic perspective, and does not attempt to capture or characterize the complexity of the individual decision (Mehay, 1991).

Writing just before Desert Storm, Tan (1991) used a econometric supply model. with the Military Enlistment Processing Station (MEPS) as the unit of analysis. Military personnel data was supplemented with local labor market statistics to develop the data set. This research attempted to discern the effects of not only economic competition with the local market, but competition between

and among the active and reserve components. Data was analyzed and presented for Army Reserve, Army National Guard, and Naval Reserve forces; Air Force Reserve and Air National Guard data were developed and used, since reserve competition was an independent variable, but the author did not present air component data. Another aim of the study was to control for not only the number of recruiters, but recruiting goals and whether recruiters were focused on PS or NPS personnel.

Mehay (1993) also identified factors which could affect reserve recruiting supply. At his writing in 1993, the military was going through dramatic changes. The Army, Mehay's focus, had projected budget and force structure cuts of around 25 percent. In addition to the disruption of the force structure cuts, money for modernization was expected to be scarce, while at the same time the modern battlefield was becoming more technical. Mehay also identified demographic shifts and economic shifts which could also affect reserve participation. Finally, he looked at policy choices which affect reserve recruiting; the Army was transitioning to a period where reserves could recruit only for actual or projected vacancies, and was attempting to divest itself of excess personnel.

The effects of the first Gulf War were further analyzed by Buddin & Kirby (1996). Personnel data for fiscal year (FY) 1989 to 1994 were reviewed to determine the effects of environmental changes on reserve forces. Using personnel records, the study found that all branches and reserve components had

been successful at attracting increasing numbers of PS personnel, and fears of an immediate post ODS reserve recruiting deficit were unfounded. However, the reserve components benefited from large numbers of separating personnel during the drawdown, and would need greater numbers of NPS personnel in the future.

The most recent RAND report about reserve recruiting is *Modeling Reserve Recruiting: Estimates of Enlistments* (Arkes & Kilburn, 2005). The authors develop PS and NPS models, noting that the PS model is problematic since population of eligible recruits by state is impossible to determine. They also caution that variables used for NPS enlistees may not be relevant to the PS population. For example, the percentage of the adult population who are military veterans probably has little explanatory power when an enlistee has already experienced the military. The authors ultimately conclude that PS accessions cannot be reliably modeled given their data limitations.

Arkes & Kilburn (2005) compiled demographic and enlistment data from a number of different data sources, grouped by state and by year from fiscal years 1992 to 1999. The authors use typical demographic data, such as unemployment rate, median high school and college graduate wages, percentage of eligible recruits black or Hispanic, etc. They also include recruiting policy variables, such as the number of active duty recruiters per capita and the availability of state education and tuition incentives for the National Guard. Other education variables are also included; average tuition at a four year college and percentage of adults

with a bachelor's degree. Finally, workforce characteristics such as percentage of persons employed at firms of over 25 people and percentage of persons who work for the government round out the model.

Utilizing a multinomial logit model, the authors assess the effects of the independent variables against the propensity for an eligible recruit to enter either active duty or reserve service. Against these two possible options, the authors assign statistical significance to nearly every variable, including to state of origin. By far the most powerful explanatory variable in the model is the number of active duty recruiters, with addition of one recruiter per 1000 eligible causing a 25.3 percent increase in number of active duty recruits and a 28.6 percent increase in number of reserve recruits. The authors note that these changes are dependent on local recruiting density, and the effects decline with the additional recruiters added. They conclude that PS personnel cannot be modeled with available data.

Published the same year, a somewhat narrower study analyzed affiliation of PS Navy veterans into the selected reserves (Waite, 2005). Personnel records of separations from the Navy during FY 1990 to 2002 were matched with Naval Reserve records from FY 1990 to 2003. A logit model was used to estimate likelihood of affiliation, with rating group, reserve wages, unemployment rate, region, demographic characteristics (gender, race, marital status, dependents, and age), high school diploma, and mental category. All of these were found to be significant predictors of the affiliation decision. In general, Waite (2005)

concludes that veterans with better civilian prospects (technical ratings groups, higher mental category, etc.) were less likely to affiliate, while minorities or those in lower mental categories were more likely to affiliate. Further, affiliation was positively related to the unemployment rate.

Waite (2005) states unequivocally that affiliation “continues to be an economic decision”. However, when explaining significant regional variation, he postulates both economic factors and non-pecuniary factors “such as patriotism” as drivers of the regional variation, plus proximity of drilling locations.

Finally, *The Report of the Eleventh Quadrennial Review of Military Compensation* (United States, 2012) demonstrates that calculated elasticities are often used the primary means for analyzing changes to military compensation. The volume proposes several scenarios for reducing basic pay among reservists and using incentive pays to tailor the force to requirements. The methodology behind the analysis is detailed in the *Report of The Eleventh Quadrennial Review of Military Compensation: Supporting Research Papers* (Mattock, Hosek, & Asch, 2012). This chapter is a reprint of research done by the RAND Corporation, and provides no context for non-economic motivations in its analysis of PS personnel accessions into reserve components.

Econometric analysis of reserve participation, known variously as recruiting supply models, moonlighting economics, or secondary labor market participation, are little changed from the early 1970’s. These analyses all attempt

to factor in various economic variables, and ultimately calculate elasticities, including for reserve participation wages. A few studies attempt to include information variables, such as recruiting, but otherwise explicitly or implicitly discount non-quantifiable motivations. Personal preferences are assumed to be constant, or subsumed into regional variables.

Motivational Analysis

Alongside the economic modeling, a roughly equal number of studies were done to assess affiliation from an individual standpoint. Immediately after the end of the draft, reserve components of the Army, Marine Corps, and Air Force embarked on an actual quantitative experiment to test the prevailing wisdom that young NPS potential volunteers were dissuaded by the six-year term of enlistment (Haggstrom, 1975). In the Army, some states were selected to offer three and four year enlistment options, while others were selected as control groups. Army Reserve (AR) and Army National Guard (ARNG) enlistments in states offering the shortened enlistments increased dramatically over the non-option states, but several flaws marred the results. The Army did not randomly assign the states, but directed the 3 and 4 year option programs to states which had the worst current recruiting deficit. At the same time, because those states were in crises, the Army increased their recruiting budget and number of recruiters in those states. Analysis also showed that even if the results were

reliable, the elevated numbers of three and four year enlistments were not enough to offset the reduction in man-years from the loss of six year enlistments.

More broadly focused on motivators, the U. S. Army Research Institute for the Behavioral Sciences contracted with the Human Resources Research Organization (HRRO) to author a study entitled Reserve Enlistment Motivation (Orend, Gaines, & Michaels, 1977). The HRRO administered a questionnaire to NPS Army Reserve personnel in two sample groups: a smaller one given to new recruits by recruiters at time of enlistment, and a larger sample given on in-processing at a training installation. Subsequent analysis found these samples to be similar, so they were combined into one pool. The researchers rejected utilization of a Likert type scale. Instead, the heart their instrument consisted of two lists. The first had 25 reasons that personnel might want to join the reserves; the second list had 12 incentives provided by reserve service. The enlistees were asked to identify their three most important reasons and incentives and their three least important from each. Analysis of the data showed that factors around improving financial prospects were the most significant, with the top three being “Expand my career opportunities”, “Learn New Skills”, and “Earn extra money”. The next group of responses tended to be more oriented to personal development, and included “Serve my country”, “Become a better individual”, and “Become more mature and self-reliant”. After these, responses dropped off fairly sharply.

Another report from 1977, prepared by Market Facts, Inc. for the Department of Defense, used a different research approach. The intent of the project was to determine motivational factors towards joining guard and reserve forces so as to propose program options for increasing both NPS accessions and retention. Two samples were drawn, one from civilians interviewed in representative reserve markets, and one from current guard and reserve personnel above the grade of E4 but still in their first six year enlistment. The study devised a list of thirteen ‘attributes’, for example Post/Base Exchange (PX/BX) and Commissary privileges, and developed levels for each. These attributes and levels were randomly presented to the respondent in pairs utilizing a computer assisted survey. The study found that direct financial compensation was the most effective means of increasing accessions, and specifically called out educational assistance, higher pay, and enlistment bonuses. Ultimately, this study looks at reserve service as a product being sold to the enlistee, and suggests improvements to the product to increase sales.

A third article from 1977 details a study performed on the Wisconsin Army National Guard, with data taken from 1973-1974 (Stephens, 1977). The primary focus of the study was to test an organizational communications model as a predictor of recruiting and retention, but the survey reveals several items of interest with regard to enlistment motivations. Members of twelve like units, six successful and six unsuccessful, were surveyed to determine communications,

attitudes, and demographics. Seventy-five percent of those surveyed joined before the draft ended, and of those 78% stated that they would not have joined had the draft not been in place. Of the post-draft population, 32% cited earning extra money as their primary reason for joining, with an additional 10% focused on retirement benefits. Most non-draft eligible enlistees had a variable enlistment program available; about 20% stated that they would not have enlisted without it, while 61% said enlistment term did not affect their decision. This appears consistent with Haggstrom's (1975) analysis of enlistment terms. More importantly, Stephens noted unit to unit variation, which implied non-economic factors such as perceptions of unit leadership and communication internal to each unit had an impact attracting recruits.

Another study by the OASD, M/RA&L and contracted to the RAND Corporation turned again to enlistment lengths. The Army, Navy, and Marine Corps participated in the Multiple Option Recruiting Experiment (MORE) in 1979 (Haggstrom, Blaschke, Chow, & Lisowski, 1981). This study primarily focused on enticing high quality recruits into hard to fill active duty positions, with a secondary aim to increase the flow of recruits into reserve components. Various combinations of incentives were offered by each service in different recruiting areas in a designed experiment in order to analyze the variation introduced by the options. Factors applied included a two year enlistment option, enhanced educational benefits, restrictions that those entering the program take

only a European assignment, and an Individual Ready Reserve (IRR) option, which deferred the decision to join an active or reserve component until after initial training. The study determined that neither the additional educational benefits nor the two year enlistment option could be conclusively shown to increase recruiting of high quality candidates. The IRR option, in one area where it was both offered and promoted, did manage to attract a substantial increase in low quality recruits into hard to fill combat branches.

Though focused on active recruiting, *The Army Enlistment Decision: An Overview of the ARI Recruit Surveys, 1982 and 1983* (Elig, Johnson, Gade, & Hertzbach, 1984) provides an early example of methodology for recruitment motivation research. An Army Research Institute for the Behavioral Sciences report analyzed data from active duty enlistment surveys carried out in 1979, 1982, and 1983. They note that the forced choice methodology used when ranking reasons to enlist is sensitive to the order the questions are asked, and is also sensitive to minor changes in the survey questions. The authors suggest using a scale to rate different reasons for joining: “not important”, “somewhat important”, “very important”, and “would not have joined without it”. In either case, the major themes emerge are self-improvement, learning a skill, and educational assistance, all of which have direct current or future economic impact. Service and patriotism are again significant but lower, with other factors receding to noise level; this parallels research on reserve enlistment motivators.

In a companion piece, Pliske et. al. (1986) introduce Principal Component Analysis (PCA) as a more robust method of grouping enlistment motivations factors. This article was actually referenced in the prior research (Elig, et al., 1984), though apparently not formally released until 1986. Using the same data set as the earlier published report, the PCA developed six broad factors: Self Improvement, Economic Advancement, Military Service, Time Out, Travel, and Education. These were further able to be combined into three higher order categories: Self Improvement, Economic, and Time Out, with Self Improvement being the generally higher explanatory category and Economic and Time Out categories rating somewhat lower.

Halverson (1989) followed up on previous work (Pliske, et. al., 1986) with analysis of the 1987 Army NRS. Two methods were pursued; a log-linear analysis of a forced choice response asking for the most important reason for enlisting, and a factor analysis of the 29 motivational scale questions. Halverson found four factors explained enlistment motivations. These included Self Improvement, Skill Training, Military Service, and Educational Money. These factors were then analyzed by mean factor score against various demographic variables to determine what groups are most influenced by what factors. The author concludes that recruits enlist for both economic and non-economic reasons.

Baker (1990) takes an approach similar to Pilske, Elig, & Johnson (1986) and Halverson (1989). Using Army NRS data from 1986 to 1989, Baker discerned

eight factors: Self-Improvement, Soldiering, Job Skills, Education Money, Serve Part Time, Benefits, Time Out, and Woman's Opportunities. Overall, this analysis yielded similar results to other factor analysis, with Self-Improvement being the highest contributor. However, the author notes Woman's Opportunities were not identified on earlier survey analysis, and postulates that the more recent NRS data made finer distinctions possible. Also noted were low reliability scores for some of the identified factors; Baker recommends that some items be re-written or deleted in order to increase the correlation between similar items.

Gorman & Thomas (1991) analyzed the same data from the Army's 1987 NRS as was used by Halverson (1989), with three categories of independent variables: service, self-improvement, and money. Educational benefits were grouped in with monetary compensations; the authors argue that in both situations the enlistee used the Army Reserve as a means to an end to finance something extraneous to the organization. Data was further divided by age of the enlistee, whether at under 18, 19-22 years old, or older than 22 years. Also, the authors separated groups by mental category of the enlistee and education level. Using a logit method, probabilities were calculated for each combination of variables that money, service, or self-improvement would be the primary motivation.

Younger personnel in higher mental categories tended to join for financial remuneration, with an estimate of 70% probability of money as a primary motive for joining if the enlistee was in the highest mental category, engaged in post-

secondary education, 18 or younger, and had no plans to transfer to the active Army. Older enlistees, on the other hand, tend to rank self-improvement as more important, especially if they are in a lower mental category. The authors propose that this may be because their educational plans are complete (Gorman & Thomas, 1991). Service was generally ranked with 10-20 percent probability of being the primary reason for joining, with typically double the probability in a given category for those planning on transferring to the active component. The highest service probability was 37 percent, for those without high school or post-secondary education and older than 22 years.

One study of enlistment motivation fortuitously straddled the Operation Desert Storm (ODS) (Griffith & Perry, 1993). The first sample of Army Reserve enlistees was taken in early 1990, well before mobilization. The next sample of enlistees was in late 1991, after the conflict was over and forces had returned to the United States. Beginning with demographics and survey answers, the groups had several significant differences. The later cohort tended to be older (17 years old dropped from 10.2% to 5%, 18 years from 30.9 to 13.3%, etc.), more likely to be married (14.4% vs 9%), more likely to be employed full time (32.7% to 40%), and less likely to be in school (58.4 to 42.1%). Also, the expectation for mobilization rose, as well as the professed likelihood of reporting. It is internally consistent that as the number of students decrease, the force becomes older and more likely to be married and employed. Interestingly, however, the average

earnings in the sample went up; for example, the portion of the sample making > \$30K/year rose from .9 % to 8.3%. While again possibly consistent with a reduction in young, student population, it is at odds with an assumption of that increased mobilization risk would discourage enlistment (Rostker & Shishko, 1974, Asch, 1993).

In Griffith and Perry's (1993) study, enlistees were also given a list of enlistment motivators they rated on a Likert type scale. Results were subjected to a factor analysis, with motivations grouped variously onto four factors: Wanting to Experience the Military, Pay and Benefits, Personal Development, and Job/Career Development. The total variance explained by the first factor rose from 44.8% to 62.7% from 1990 to 1991. Job/Career Development also rose, Personal Development fell, and Pay and Benefits remained flat. The authors then conducted regression by factor and cohort, for a total of eight regression analyses, providing data across various demographic dimensions as to who is most likely to enlist for what particular reason. Ultimately, however, the R^2 values for these regressions are fairly low, ranging from .08 to .20. The authors conclude that primary motivation for joining the Army Reserve shifted somewhat, from personal improvement to wanting to be a part of the military, probably consistent with the patriotic surge surrounding ODS.

Finally, a recent study by Griffith (2008) examined enlistment motivations, using the Moskos (1988) paradigm of an I/O dichotomy as a guide.

Guardsmen in various battalions of a single division were surveyed in 2005; respondent surveys of junior enlisted members were used in factor analysis. The author found that motivations could in fact be grouped and analyzed by this method, resulting in four general categories: wanting to experience military life, wanting material benefits, wanting occupational development, and wanting future opportunities. The first was designated an institutional factor, with the next two being occupational motivators. The author is unclear as to which category future benefits fall in, but it appears to be an institutional variable. Overall, Griffith concludes institutionally oriented soldiers are a significant group, and that this group is generally more effective.

The motivational analysis branch of recruiting literature has developed from relatively basic questionnaires and analysis techniques in the 1970's to more recent use of relatively sophisticated statistical analysis, particularly factor analysis. In concert with the refinement of the I/O paradigm, researchers have adopted that model as a theoretical framework. However, there has been very little work done on reserve enlistment motivation since the early 1990's, with the exception of Griffith (2008). Filling this void is one of the roles of this research.

Development of the Public Service Motivation Paradigm

PSM theory was defined in an article by Perry & Wise (1990), which laid the foundation for PSM as a framework of analysis in much the same way that Moskos (1977) defined the I/O paradigm in the smaller academic niche of

military motivation. They assert that there is an element of motivation, an orientation towards society that influences people to seek public employment and, when so employed, perform better. The authors begin by examining various previous theories proposed relating to individual proclivity for public service, classifying these theories as rational, norm-based, and affective per the taxonomy of Knoke & Wright-Isak (1982). Synthesizing these, they then propose three rules that essentially define the genre:

1. The greater an individual's public service motivation, the more likely the individual will seek membership in a public organization.
2. In public organizations, public service motivation is positively related to individual performance.
3. Public organizations that attract members with high levels of public service motivation are likely to be less dependent on utilitarian incentives to manage individual performance effectively (Perry and Wise, 1990)

Most further research in the PSM realm take Perry & Wise (1990) as a starting point, attempting to amplify, prove, or disprove his assertions.

In order to operationalize his theories, Perry (1996) devised a battery of questions to measure the levels of PSM in individuals. Drawing a sample from a wide variety of respondents, either students or employed in the public sector, he used confirmatory factor analysis to reduce his construct down to four dimensions: Attraction to Public Policy Making, Commitment to the Public Interest/Civic Duty, Compassion, and Self Sacrifice. He notes that the model

could be further refined, or even reduced to a three factor solution, which would conform to the framework of rational, norm-based, and affective motivations.

In a broad follow-up to his 1990 definition of PSM, Perry (2000) expands on the themes laid out Perry & Wise (1990). He posits four premises on which to build a theoretical base. First, he revisits rational, normative, and affective motivations. Next, he states that individual motivations spring from people's self-concepts. The third point is that preferences should be endogenous to motivational theories. He turns to Wildavsky (1987) to explain that interests and preferences are not the same thing, and that economic theory fails to account for preferences. Thus, any motivational theory should acknowledge that preferences are part of the system, not apart from it. Finally, Perry suggests that preferences are learned, and that learning can come often come from institutions.

Perry (2000) goes on to propose what he calls a process model of PSM. His complex construct unifies the Sociohistorical Context, Motivational Context, Individual Characteristics, resulting in Behaviors which align with his first premise, calling them Rational Choice, Rule-Governed Behavior, and Obligation.

Moynihan & Pandey (2007) take three of the measures from Perry (1996), excluding self-sacrifice variables but retaining attraction to policy-making, public interest, and compassion, and surveyed managers in health and human services fields. They found that institutional characteristics were associated with levels of PSM, concluding that administrative policies can attract promote and strengthen

PSM within the organization. Some (Vandenabeele, 2008) interpret this as saying that PSM values spring from the organization itself, but Moynihan & Pandey (2007) seems to draw a more subtle relationship, and does not refute the proposition that PSM is inherent in personnel before affiliating with organizations.

In Vandenabeele's (2008) analysis, he finds theoretical rationale whereby additional dimensions might be needed to assess PSM due to differences in national culture. He validates the addition of an additional dimension, democratic governance values. He also explores the dimensions self-sacrifice and public interest from Perry (1996), and concludes that models may be equally valid when either combining these dimensions or keeping them separate.

More directly related to individual motivations, Coursey, Brudney, Littlepage, & Perry (2011) where they used survey based on Perry (1996) to gather data from President's Community Volunteer Award and Daily Point of Light Award winners. The authors find differences in PSM values between religious organizations and other volunteer organizations and infer that PSM levels and specific distributions across the PSM dimensions can influence the choice of domain, and presumably employment.

The development of PSM theory is intriguing; a public service orientation seems to manifest and influence workers choices of employment. However, more research is needed in a greater variety of settings to determine if the

characteristics of high PSM personnel are generalizable across public service opportunities, particularly within the military.

As suggested by the examination of the literature, PSM theory and the I/O model have at heart a similar perspective; there are a range of motivations that lead men and women to choose various professions and not all of these are motivations are strictly monetary. The orientation towards public service may be quite similar to the susceptibility to institutional values among military members, merely two different ways of analyzing similar phenomena.

Research Question

The aim of this research is to determine the motivational factors that influence men and women to join the Air Force Reserve, as well as their relative strength. It is probable that motivational factors can be categorized into general groupings, such as personal improvement, monetary compensation, or non-monetary benefit. Motivational factors could then likely be characterized using I/O model proposed by Moskos (1977). Further, the research will attempt to discern whether any particular institutional or occupational motivations are endemic to any particular demographic group, with an eye towards increasing the efficiency and effectiveness of recruiting efforts.

Research Hypothesis

The following two hypotheses are derived from review of the existing literature on reserve recruiting:

H1: Enlistment motivations have a large non-economic component.

Many studies approach recruiting from a narrow economic viewpoint. Data is analyzed, elasticities are calculated, and the research is sent to the field. However, Pliske, Elig, & Johnson (1986) point to and agree with Faris (1984), who found that non-economic motivations are important to re-enlistment decisions, and to Dale and Gilroy (1984), who found that including a non-economic variable changes the analysis of enlistment supply models. While there is a strong body of research to indicate non-economic impacts, recruiting supply methodologies typically commissioned by the military and conducted by the RAND corporation exclude such analysis.

Previous research using similar methodology has consistently shown that economic incentives are neither the sole nor even always the greatest motivator. Researchers relying on econometric models consistently conclude that recruiting is simply a labor supply function, with unaccounted variables. This study is unlikely to resolve the debate, but may add weight to the argument for an individual perspective.

H2: Enlistment motivations in the Air Force Reserve are different in relative magnitude from those identified between 1972 and 2001.

The limited body of work from earlier decades has guided decision-makers for years. It is possible, however, that Air Force enlistees have different attitudes, values, or beliefs than Army or Navy recruits, resulting in the need for

different recruiting tactics. As McNaught & Francisco (1981) point out, Army reserve components were chronically understrength in the 1970's, while the air reserve components, the Air Force Reserve (AFR) and the Air National Guard (ANG) gained strength. This could be evidence that airmen have differing motivations than soldiers.

Also, the sheer time since previous research has been accomplished lends urgency to the work. With a continual state of war since 2001, it is easily possible that today's enlistees have a different outlook from those of the 1970's or 1980's. It is even possible that recruits may have different motivations that just a few years ago in the immediate wake of the events of September 11th, 2001, since motivation of reservists has been shown to rise in times of national crisis (Bendor, Pedahzur, Canetti-Nisim, Zaidise, Perliger, & Bermanis, 2008).

Finally, the nature of the Airmen being recruited is different than previous generations. Howe & Strauss (2000) describe how the 'Millennial' generation is different than the prior 'Generation X'. In general those born between 1980 and 2000, the current recruiting population, are more technology savvy, more attuned to their peers and the community, and more trusting of institutions than the previous generation. Generation X, defined as those born from 1960 to 1980, are seen as more self-reliant and individualistic, and somewhat self-oriented. These generational differences may actually increase the efficacy of institutionally based incentives and motivators.

In any of the cases described above, it will be helpful to determine if today's recruits are similar in outlook to those in the past. This will validate or refute institutionalized policies based on older information.

Chapter 3

Methodology & Analysis

Research Plan

In order to answer the questions posed by examination of previous research, a survey was given to Non-Prior Service (NPS) personnel, those who had no previous federal or state military enlistment, within the first 3 drill weekends after technical training in their first enlistment. PS personnel received a different survey instrument, tailored for their status, within the first three drill weekends of their enlistment at their new duty station. PS personnel were required to be on their first enlistment after a one year or break in service from a reserve component, or be in transition from an active component.

An initial survey was given to a small group of relatively recent entrants to the Air Force Reserve. In order to obtain this focus group in one sitting, the time since entry was relaxed to a year in service. This group was used to validate the survey instrument, and was also questioned afterwards to see if there were any motivational factors not covered by the survey instrument.

Administration of the finalized survey instrument was by pencil and paper, carried out at five geographically separated Air Force Reserve units. Administration was carried out by personnel responsible for conducting newcomer orientations at the installations selected.

Surveys collected demographic data, as well as two sets of response scales. The first set of scales will focused on reasons for joining the Air Force Reserve; the next set will focused on reasons why interested individuals might have hesitated to enlist. This should help policy makers identify both incentives and disincentives.

Responses and demographic data were subjected to analysis using typical descriptive statistics. The two groups of response scales were then subjected to EFA with oblique rotation to determine which responses loaded together. CFA was then used to verify adequacy of the EFA derived model. The response groups were also subjected to ordinary least squares regression against the identified factors to provide understanding of which demographic groups favor one factor or another more heavily.

Coordination

This research was conducted in full compliance with United States Air Force policies and regulations. In order to minimize survey burden levied on Air Force members, Air Force Instruction (AFI) 38-501, *Air Force Survey Program*, details specific requirements for engaging in survey research. Surveys may not be conducted solely for academic purposes; research must be requested and utilized by an Air Force agency. Typically, this must be a commander of sufficient level to have command authority over the personnel involved.

An initial package was sent to the Air Force Survey Office (AFSO), who reviewed the questions for adequacy, appropriateness, and duplication with other survey efforts. The survey was then approved pending return of a sponsorship letter. In this case, sponsorship was sought and received from the Air Force Reserve Recruiting Service (AFRRS). This agency works directly for the Air Force Reserve Command (AFRC) commander, who is dual-hatted as head of Air Force Reserve Affairs (AF/RE). The AFRRS coordinated approval among various AFRC staff agencies, and the AFRC commander approved the research going forward to the AFSO.

Upon confirmation of sponsorship from AFRC, the AFSO issued a Survey Control Number (SCN), authorizing the survey to be given to the target population of Air Force personnel and requiring additional information and disclaimers to be added to the survey instructions (Appendix A).

Survey Development

Derivation of Survey Questions

Survey questions follow the same general themes of previous research, which addressed salient issues of the era. With three exceptions, each question on the questionnaire can be traced back to a theme explored in the forced choice questions researched by Orend, Gaines, and Michaels (1977). Within their survey were lists of motivations, incentives, and discouraging factors; respondents were asked to list their most and least important of each. While this is a different

structure than a scaled response, the themes are carried throughout later research. For example, this survey's "I want to defend my country" is a direct analogue to "Help defend our country against enemies" from the 1977 study. Similarly, "I want to be more physically fit" aligns with "Keep in good physical condition".

The first exception concerns educational benefits. Education was recognized as a powerful recruitment incentive in the later 1970's, and questions began to appear in research. Elig, Johnson, Gade, & Hertzbach (1984) looked survey data from 1982 and 1983, which included questions on educational benefits, and analyzed data with particular respect to availability and utilization of the Army College Fund.

The second area of departure from previous research is inclusion of medical benefits. Reserve personnel have been given expanded access to purchase military healthcare over the last decade, beginning first with dental benefits and ultimately expanding to include the option to purchase full healthcare coverage at heavily subsidized rates. Questions #10 and #19 on the NPS and #10 and #20 on the PS surveys touch on this.

Finally, in a nod to the social nature and interconnectedness of today's youth (Howe & Strauss, 2000), questions #20 and #18 on the NPS survey were added to assist in gaging the impact of the social dimension. This question may load with other questions on influence, such as family member's service or

friends who enlisted, but could conceivably trend opposite and be a disincentive to service in some cases.

Demographic Data

The survey header for NPS enlistees collected basic demographic data, asking for gender, race, age, and education level. Race categories included whether the respondent considered themselves “White”, “Black”, “Hispanic”, “Asian”, or “Other”. Respondents indicating multiple racial identifications were listed under “Other”. Age was divided into four ordinal categories, 18 to 20 years, 21 to 24 years, 25 to 29 years, and 30 years and older. Educational level was classified as “High School or Equivalent”, “Some College”, or “Four Year College Degree”.

In addition to these standard demographic categories, certain military specific information was collected. This included current rank, and whether the respondent lives inside the commuting area, typically defined as less than fifty miles away. This is a significant point because it indicates whether a service member would normally be provided lodging to stay overnight away from home, or whether a member would normally return to their home each night. In either case, mileage or other transportation costs for weekend drills are generally borne by the member.

Similar demographic information was collected from prior service personnel, with the addition of an additional question relating to their most recent

break in service, 0-2 years, 2-5 years, or greater than 5 years. Also, the age dimension added another category, bounding the fourth choice from 30 to 40 years of age and including a fifth choice of over forty.

Question Selection and Structure

Questions about specific motivations and incentives are not directly repeated. However each question is either repeated in a different form, or the underlying theme is addressed by other questions. For example, medical benefits and health care are restatements of the same basic questions. On the other hand, being physically fit and being a better person are both generally linked to “Self Improvement” and typically load together in previous similar research (Halverson, 1989).

The questions themselves are on a five point scale, with responses ranging from “Not at all Important” to “Would Not Have Enlisted Otherwise” on the first panel of questions and responses from “Not a Concern” to “Almost Did Not Enlist” on the second. Both sets contain a “Don’t Know” option. This allows each extreme to be bounded with concrete meaning that should be understood across a variety of personnel. The middle categories measure relative strength if there is not absolute acceptance or rejection of the motivation by the survey taker.

Survey Instrument Validation

The survey was given to four volunteers at NAS JRB Fort Worth in order to prove out the structure, coherence, and presumed difficulty of completing the

questionnaire. All four persons found the survey understandable, though their comments did yield one change to the demographic portion. The question about ‘break in service’ could be read with different interpretations and could be confusing. This item was corrected before the final surveys were printed and distributed. The proving out process also yielded minor grammatical corrections. None of these items impacted the substance or structure of the questions themselves.

Institutional Review Board

A request for Institutional Review Board (IRB) approval was submitted to the university IRB through the institution’s web based research portal, with a request to sample up to five hundred subjects. The request was identified for expedited approval based on its low risk to the test subjects, and was subsequently approved before the research instrument was distributed.

With regard to the Air Force, the AFSO psychologists evaluated the questionnaire and research plan before issuing an SCN, and determined that no further IRB was required.

Statistical Analysis

The analysis of collected survey information occurs in four phases. First, examination of demographic characteristics gives an overall feel for the data and highlights any areas of concern. Next, an Exploratory Factor Analysis (EFA) procedure detects latent factors for both motivational and discouragement

question panels for both PS and NPS respondents. Then, these models developed by EFA will be subjected to Confirmatory Factor Analysis (CFA) to test whether the models are appropriate. Finally, and Ordinary Least Squares (OLS) regression analysis will review whether there are any predictors of motivation or discouragement in the collected demographic data.

Survey Response Demographics

Table 3-1 details the demographic characteristics of survey respondents. A total of 284 NPS members answered returned the survey instrument, along with 156 PS members. Counts and percentages do not add up to the total population and to one hundred percent; as with any survey some respondents did not answer some questions.

Gender and race characteristics are consistent between NPS and PS respondents. Also, living inside or outside the commuting area appears consistent between the two groups. As can be expected, the PS respondents tend to be older, better educated, and higher ranking than those who had never before participated in military service.

The results are also consistent with expectations, indicating that the general structure of the demographic questions asked is valid. Some outliers may exist in the data; for example, it is unlikely that a new service member would arrive at their first duty station as an E6. On the other hand, it is possible that the two NPS officers are medical personnel, and are indeed arriving at their first duty

stations in the grade of O3. Overall, the results are intuitive and reflect the nature of the structural differences between PS and NPS personnel.

Table 3-1 Characteristics of persons responding to the survey

	NPS (# / %)	PS (# / %)
Gender		
Male	200 / 70.4	111 / 71.2
Female	80 / 28.2	45 / 28.8
Race		
Asian	10 / 3.5	7 / 4.5
Black	63 / 22.2	26 / 16.7
Hispanic	54 / 19.0	23 / 14.7
White	140 / 49.3	99 / 57.0
Other	11 / 3.9	10 / 6.4
Age		
18-20 yrs	92 / 32.4	0 / 0
21-24 yrs	86 / 30.3	24 / 15.4
25-29 yrs	59 / 20.8	53 / 34.0
30 + yrs	43 / 15.1	58 / 37.2
40 + yrs	N/A	19 / 12.3
Rank		
E1	81 / 28.5	1 / .6
E2	39 / 13.7	1 / .6
E3	141 / 49.6	9 / 5.8
E4	12 / 4.2	57 / 36.5
E5	0 / 0	56 / 35.9
E6	1 / .4	8 / 5.1
E7	N/A	3 / 1.9
O1	0 / 0	0 / 0
O2	0 / 0	2 / 1.3
O3	2 / .7	9 / 5.8
O4	N/A	6 / 3.8
O5	N/A	2 / 1.3
Education Level		
High School	69 / 24.3	13 / 8.3
Some College	173 / 60.9	97 / 62.2
4 Year Degree	34 / 12.0	45 / 28.8
Commuting Distance		
Less than 50 Miles	129 / 45.4	74 / 47.4
More than 50 Miles	134 / 47.2	70 / 44.9
Break in Service		
0-2 Years	N/A	105 / 67.3
2-5 Years	N/A	20 / 12.8
>5 Years	N/A	26 / 16.7

Descriptive Statistics by Question

For NPS recruits, results show wanting to be part of something bigger than oneself as the highest scoring question, followed mostly by similarly high scoring questions that, as will be seen below in the factor analysis discussion, will

Table 3-2 Descriptive statistics for non-prior service motivational questions

	N	Mean	Std. Dev	Skewness	Kurtosis
I want to be a part of something bigger than myself	282	4.03	.985	-.986	.600
I want to be a better person	284	3.94	.934	-1.105	1.626
I want to defend my country	280	3.90	.859	-.823	.943
I want money for school	278	3.79	1.068	-.937	.459
I want to have a career in the military	277	3.60	1.158	-.689	-.346
I want to travel to different places	283	3.52	1.174	-.654	-.304
I am seeking skill training that will help me get a civilian job	283	3.47	1.278	-.577	-.705
I want to be more physically fit	279	3.32	1.224	-.504	-.695
My friends support my enlistment	281	3.30	1.311	-.507	-.883
I want to participate in reserve medical benefits	283	3.21	1.231	-.376	-.876
I need extra income	281	2.85	1.100	-.161	-.935
I know military veterans who influenced me	271	2.69	1.455	.167	-1.419
I have a family member who has served	266	2.68	1.430	.092	-1.446
I need healthcare access	272	2.54	1.277	.212	-1.166
I have friends who also joined the military	278	2.52	1.390	.308	-1.293
I want to serve in the Middle East	264	2.13	1.232	.720	-.643
My civilian job is uncertain in this economy	257	2.10	1.252	.770	-.641
I might have trouble finding a civilian job	269	1.93	1.163	1.006	-.137
I was attracted by an enlistment bonus	262	1.71	1.178	1.431	.712
A recruiter contacted me and told me about the Air Force Reserve	261	1.33	.841	2.899	8.261

ultimately load on the first and most explanatory factor, Self-Improvement. By far the least important reported reason for joining was being contacted by a recruiter. This item also had the smallest standard deviation, indicating that the average was uniformly low, as demonstrated by the histogram. This does not necessarily mean

that recruiter contact was unimportant in facilitating enlistment, only that the recruiters are not generally perceived as being important to the enlistment decision.

Among the questions from the discouragement panel, questions relating to absence top the list with the highest means. Questions relating to social factors

Table 3-3 Descriptive statistics for non-prior service discouragement questions

	N	Mean	Std. Dev	Skewness	Kurtosis
I may be away from my family too long	276	2.29	1.252	.695	-.535
I could be deployed a combat zone	273	2.26	1.184	.642	-.420
I could get hurt or killed in training	274	2.01	1.135	.803	-.526
Education benefits may not be enough to get me through college	270	1.95	1.079	.908	-.141
I had trouble getting or did not get my desired job in the Air Force Reserve	271	1.90	1.249	1.162	.142
If I am called up, I could miss school	273	1.89	1.179	1.117	.100
I could not get an enlistment bonus	263	1.76	1.153	1.390	.805
Initial training may take me out of school	273	1.75	1.103	1.284	.507
The pay is not enough for the time and effort	267	1.70	.951	1.407	1.604
I might deploy away from my civilian job	273	1.67	1.033	1.400	.982
I know someone who had a bad experience in the military	252	1.67	.978	1.509	1.718
I have to stay 20 years to make a career and get retirement benefits (pay/medical)	272	1.66	.966	1.465	1.487
I will be away from my civilian job during training	273	1.44	.894	2.160	4.083
I didn't think I could make it in the military	267	1.41	.806	2.070	3.930
My recruiter turned me off	258	1.30	.805	2.919	8.244
One weekend/month is going to be a hassle	270	1.24	.687	3.195	10.381
My employer discouraged me from joining	257	1.19	.656	3.784	14.618
My friends think it is a bad idea	267	1.18	.601	3.782	14.982

score low on the list, and also have low standard deviations. In a reverse to the motivational panel, these questions will actually group to be the strongest loading factor for NPs recruits, Social Discouragement.

Raw scores for the motivational panel of question indicate that “Defend My Country” has the highest average score and a very narrow Standard Deviation. This question also scored highly in the NPS results, but not at the top. Because of the near unanimity of answers, this question did not vary with any

Table 3-4 Descriptive statistics for prior service motivational questions

	N	Mean	Std. Dev	Skewness	Kurtosis
I want to defend my country	153	3.82	.846	-.696	.750
I want to stay a part of the Air Force family	154	3.58	1.170	-.777	-.135
I want to have a career in the military	154	3.58	1.192	-.750	-.291
I want to be a part of something bigger than myself	156	3.55	1.246	-.696	-.450
I want to be a better person	154	3.23	1.182	-.441	-.625
I want to participate in reserve medical benefits	152	3.14	1.407	-.246	-1.203
I want to travel to different places	154	3.14	1.311	-.356	-1.008
I want money for school	153	2.78	1.390	.111	-1.293
I need extra income	154	2.73	1.216	.083	-.980
I want to be more physically fit	156	2.63	1.359	.157	-1.322
I am seeking skill training that will help me get a civilian job	155	2.62	1.465	.232	-1.384
I need healthcare access	154	2.58	1.481	.304	-1.371
I want to serve in the Middle East	153	2.07	1.356	.875	-.687
I might have trouble finding a civilian job	153	2.04	1.240	.931	-.288
My civilian job is uncertain in this economy	148	2.00	1.229	.892	-.508
I have friends who also joined the military	152	1.81	1.183	1.276	.450
I have a family member who has served	150	1.72	1.124	1.204	-.084
I met reservists who influenced me	153	1.69	1.079	1.418	.886
I was attracted by an enlistment bonus	147	1.39	.933	2.569	5.951
A recruiter contacted me and told me about the Air Force Reserve	150	1.29	.822	3.171	9.696

particular factor among PS respondents and was ultimately dropped from the factor analysis, along with “A recruiter contacted me...” and “I met reservists who influenced me”.

The strongest scoring questions in the discouragement panel all relate to being absent, consistent with the AD factor described below. No obvious anomalies present themselves from this panel of questions.

Table 3-5 Descriptive statistics for prior service discouragement questions

	N	Mean	Std. Dev	Skewness	Kurtosis
I may be away from my family too long	154	2.10	1.192	.771	-.404
I might deploy away from my civilian job	153	1.75	1.133	1.452	1.109
I could be deployed a combat zone	154	1.71	1.101	1.452	1.144
I had a bad experience in the military	151	1.67	.964	1.251	.555
If I am called up, I could miss school	152	1.63	1.096	1.693	1.816
I couldn't get the career field I wanted	151	1.63	1.105	1.739	2.136
I had trouble getting my desired job in the Air Force Reserve	153	1.61	1.008	1.672	2.128
I will be away from my civilian job during training	153	1.56	.945	1.804	2.783
The pay is not enough for the time and effort	153	1.54	.811	1.792	3.750
I have to stay 20 years to make a career and get retirement benefits (pay/medical)	155	1.54	.982	1.962	3.235
One weekend/month is going to be a hassle	154	1.48	.902	2.036	3.865
I could get hurt or killed in training	154	1.47	.930	2.096	3.817
I could not get an enlistment bonus	147	1.45	.893	2.205	4.638
Initial training may take me out of school	153	1.43	.916	2.313	4.797
Education benefits may not be enough to get me through college	152	1.41	.767	1.986	3.409
My recruiter turned me off	146	1.21	.704	4.140	17.960
My employer discouraged me from joining	150	1.13	.552	4.925	26.098
I was discouraged by reservists I met	151	1.12	.461	4.167	17.630

Factor Analysis

A number of previous studies have used principal components analysis or factor analysis to analyze and categorize recruit motivations. Previous efforts include Pliske, Elig, & Johnson, 1986, Halverson, 1989, and Baker, 1990, Griffith & Perry, 1993, and Griffith, 2008. This study builds on those efforts.

When performing EFA, the researcher faces a host of choices. This effort follows the general recommendations of Costello & Osborne (2005). They offer a well-cited guide to the intermediate practitioner when choosing among the numerous procedures and tinkering with parameters. In the end, many of the options available yield very similar results. If a factor model arrives at a reasonably parsimonious solution, then it is likely that primary latent factors have been identified.

One of the first decisions in factor analysis is the choice of extraction methodologies. IBM's SPSS, the software used for this research, defaults to PCA. Citing research by Fabrigar, Wegener, MacCallum, & Strahan (1999), Costello & Osborne recommend that the maximum likelihood method be used when variable data is expected to be roughly normally distributed. The variable data in this case however, exhibits a variety of distributions. Some variables approach normality, such as "Defend My Country". Other variables offer what appear to be half-normal distributions, in cases where the respondents find a question overwhelmingly important or not important. Finally, some variables elicit bi-

modal responses, where there is a polarizing set of opinions or influences. Tables 3-2 through Table 3-5 describe measures of central tendency for this data set, and examples taken from NPS data are shown in Figure 3-1 below. In cases such as this, the principal axis factor (PAF) method is recommended instead (Costello & Osborne, 2005), and was used to extract the factors for this effort.

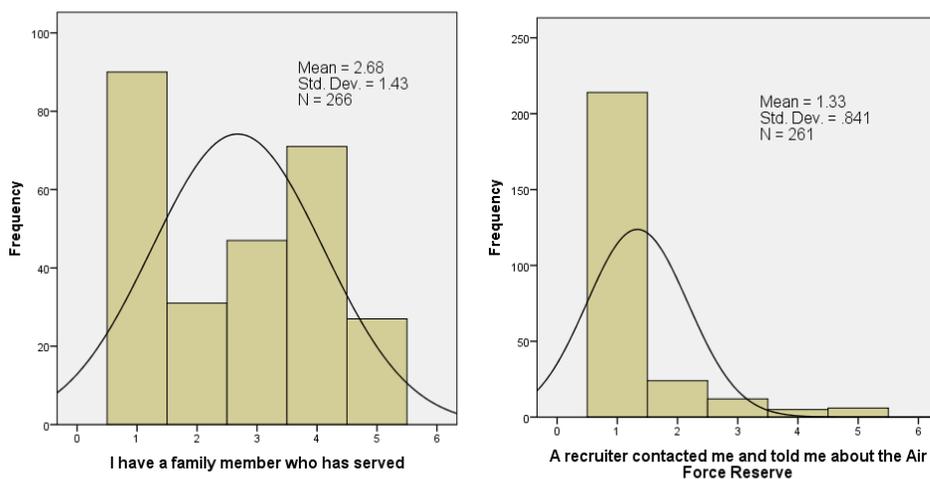


Figure 3-1 Examples of non-normal response distributions

The next decision point is how many factors to retain from extraction. Costello & Osborne (2005) use a Monte Carlo analysis to estimate that one typical method, retaining factors with eigenvalues greater than 1.0, leads to retention of too many factors in up to thirty-six percent operations. While there are other more accurate methods to calculate the appropriate number of factors, those methods are not widely available in software. The authors suggest relying on visual evaluation of the scree plot, and determining the number of factors by identifying the inflection point. In the four factor analysis operations presented,

this generally meant discarding factors that were only slightly above an eigenvalue of 1.0.

The next choice facing the researcher is choice of rotation method. In a departure from previous research, this study uses PROMAX rotation, rather than an orthogonal rotation, VARIMAX. As Costello and Osborne (2005) discuss, rotation does not change the outcome of the analysis in the sense of explaining any more variation. Instead, the different rotation methods merely allow clearer resolution of the factors. The difference between the two methods is that VARIMAX rotation is orthogonal, assuming that the factors are uncorrelated with each other. PROMAX is an oblique procedure, and allows correlation between the two factors.

Costello & Osborne (2005) make the point that there should be no firm expectation in a social science data analysis that the factors would not have some correlation. Indeed, the structure of the I/O dialectic makes it likely that some factors may be related to each other, and thus shows some correlation. Or, it is possible that institutionally oriented factors and occupationally related factors would show some degree of negative or inverse correlation with each other.

Table 3-6 Non-prior service motivating factor correlation matrix

Factor	1	2	3	4
1	1.000	.542	.308	.223
2	.542	1.000	.303	.441
3	.308	.303	1.000	.382
4	.223	.441	.382	1.000

As can be seen in Table 3-6, typical of the four separate data runs, actual practice bears out assumptions of correlation. The first and second factors, in particular, seem to vary together. When this analysis was run with VARIMAX rotation, the variables resolved themselves into the same factors in the same order of importance, but the loadings were not as strong, and there were more cross-loadings. Oblique rather than orthogonal rotation thus results both a theoretically consistent and more parsimonious latent factor construct.

With regard to factor loadings themselves, Costello & Osborne (2005) refer the reader to Tabachnick & Fidell (2001) do determine what counts a 'loading' on a factor and what does not. Based on their advice, factor loadings of less than .32 were screened out. This appears to have been a good choice; as seen in the resulting pattern matrices, very few questions were eliminated from the analysis, and there was very little cross-loading among factors.

Finally, with regard to sampling adequacy, SPSS reports the Kaiser-Meyer-Olkin (KMO) Measure of Sampling adequacy. Reported values were roughly .8 for all four data sets, indicating an adequate sample (Cermy & Kaiser, 1977). Bartlett's Test of Sphericity is disregarded as the sample sizes in this study are large enough that the Chi Square statistic would nearly always be significant (Tabachnick & Fidell, 2001). In order to increase sample size, all four factor analysis were run with pair-wise deletions, rather than list-wise. The additional

sample size appeared to better regulate the results to arrive at the simplest solution.

Non-Prior Service Factor Loadings

NPS analysis detected four factors underlying the responses to the positive questions. The first group, labeled Self Improvement (SI), relates to the individuals desire to improve themselves and grow as a person. The next factor, Social Encouragement (SE) looks at motivators such as support or role models among friends and family.

The third factor, Monetary Encouragement (ME) addresses compensation, bonuses, or benefits as a motivating force. Finally, Employment Opportunity (EO) groups questions together that are related to gaining skills and abilities to enhance a civilian career and concern with civilian employment. One question was excluded from the factor analysis because it did not load above the cut-off level on any factor. Note that “I want to serve in the Middle East” loads on two factors, possibly indicating that it is seen both as part of the theme of service and improvement in the first factor as well as an opportunity to generate income through deployment for those personnel for whom the last factor is strong.

The overarching theme in the first factor, Social Discouragement (SD), is discouragement by external agencies. It is possible that the one question that does not fit this theme, “One weekend a month is going to be a hassle,” loads with this

factor because among the NPS population, monthly drill is perceived to crowd out their other social engagements.

Table 3-7 Non-prior service motivational factors

	Factor			
	SI	SE	ME	EO
I want to be a part of something bigger than myself	.869			
I want to defend my country	.694			
I want to have a career in the military	.669			
I want to be a better person	.636			
I want to travel to different places	.541			
I want to be more physically fit	.484			
I have a family member who has served		.763		
I know military veterans who influenced me		.653		
I have friends who also joined the military		.644		
My friends support my enlistment		.454		
I want to participate in reserve medical benefits			.580	
I need healthcare access			.535	
I need extra income			.477	
I want money for school			.477	
I was attracted by an enlistment bonus			.436	
I might have trouble finding a civilian job				.697
My civilian job is uncertain in this economy				.675
I am seeking skill training that will help me get a civilian job				.391
I want to serve in the Middle East	.352			.382

The next factor, Transactional Discouragement (TD), relates to inadequacy of what the Air Force is giving to the member, or what may be taken away in terms of civilian employment. It appears that these concerns are not strictly economic.

The third factor, Absence Discouragement (AD), seems to capture possible absences due to mission needs, while in the last factor, Educational Discouragement (ED), NPS enlistees expressed concern about absence taking them out of school. Typically, factors where only two questions load are not optimal. In this case, however, alternative formulations of more or less factors

Table 3-8 Non-prior service discouragement factors

	Factor			
	SD	TD	AD	ED
One weekend/month is going to be a hassle	.697			
My recruiter turned me off	.681			
My employer discouraged me from joining	.582			
I didn't think I could make it in the military	.562			
My friends think it is a bad idea	.531			
The pay is not enough for the time and effort		.740		
I could not get an enlistment bonus		.586		
I will be away from my civilian job during training		.444		
I had trouble getting or did not get my desired job in the Air Force Reserve		.438		
Education benefits may not be enough to get me through college		.420		
I could be deployed a combat zone			.985	
I may be away from my family too long			.502	
I might deploy away from my civilian job		.402	.422	
I could get hurt or killed in training			.396	
Initial training may take me out of school				.857
If I am called up, I could miss school				.724

proved to be less satisfactory, so they are included here as an alternative to excluding the two closely related questions altogether. This factor is distinct from the AD latent motivation, which seems to indicate that enlistees concerned about missing school are not necessarily concerned about being absent from family or friends, or vice versa.

Two questions were deleted from this analysis, “I have to stay 20 years...” and “I know someone who had a bad experience in the military.” Neither of these questions loaded on a factor.

Prior Service Factor Loadings

The pattern matrix for PS personnel is somewhat different than for NPS personnel. In this case, the best fit for the data was three underlying factors. Again, Self-Improvement (SI) questions loaded together, though physical fitness

loaded partially with the Social Encouragement (SE) factor. A notable absence on the SI factor is “I want to defend my country.” This question had the highest mean, of 3.82, and the second lowest standard deviation, at .842, and what variation was available in the results did not correlate with the variation of other questions. In contrast to the NPS data, desire to defend ones country is a broadly held motivation among veterans choosing to enlist, as opposed to being more pronounced in individuals where the SI factor is strong and less pronounced when other factors are dominant. In addition to “I want to defend my country,” the questions “A recruiter contacted me...” and “I met reservists who influenced me” were also excluded from the analysis for failing to load on a factor.

The middle factor, Employment & Monetary Interest (E&MI), appears to be a conglomeration of Monetary Interest (MI) and Employment Opportunity (EO) from the NPS analysis. Presumably, veterans influenced by this factor view the direct accumulation of money and benefits as part of a continuum with increasing employment opportunity, rather than as separate considerations.

Social Encouragement, in contrast to NPS results, is the weakest factor. In addition to questions about friends and family, “enlistment bonus” loaded on this factor, with no underlying explanation. “Fitness” and “serving in the Middle East”

In the case of the Discouragement Panel, the best data fit was obtained also loaded on the third factor. It is possible that PS members, with exposure to an expeditionary culture, view deployment as a social interaction. Also possible is

that fitness is now viewed partially as a somewhat social activity or fills a social need for those who have already served. One question was excluded from analysis; “My recruiter turned me off” did not load with any factor.

Table 3-9 Prior service motivational factors

	Factor		
	SI	E&MI	SE
I want to be a part of something bigger than myself	.914		
I want to have a career in the military	.859		
I want to stay a part of the Air Force family	.643		
I want to be a better person	.445		
I want to travel to different places	.394		
I want to participate in reserve medical benefits		.866	
I need healthcare access		.798	
I need extra income		.516	
I want money for school		.488	
I might have trouble finding a civilian job		.485	
My civilian job is uncertain in this economy		.456	
I am seeking skill training that will help me get a civilian job		.330	
I have friends who also joined the military			.738
I have a family member who has served			.679
I was attracted by an enlistment bonus			.523
I want to be more physically fit	.346		.396
I want to serve in the Middle East			.391

Absence Discouragement (AD) was by far the strongest factor; these questions reflect an underlying theme being away from family, employment, etc. Note that Educational Discouragement (ED), the fourth and least powerful factor, stands distinctly apart from the first factor. While being absent is still a big part of this concern, it appears that for a PS enlistee the effect on schooling is separate and distinct from the effect of absence on other parts of his or her life.

The second factor, Transactional Discouragement (TD), stems from dissatisfaction with facets of military and reserve service in general, including pay, benefits, dealing with employers, and previous experience with military life.

The third factor, FD, is specific to not being able to obtain a desired job in the Air Force Reserve. Normally, a model that loads a factor on only two questions should be avoided, but analysis of the scree plot as well as examination of alternative models left this one as the best fit. Not that in contrast to the NPS results, getting the desired career field stands on its own as opposed to being part of a broader pattern. This factor indicates that some personnel are focused on getting a specific job or position, and that this concern stands on its own relative to the other questions.

Table 3-10 Prior service discouragement factors

	Factor			
	AD	TD	FD	ED
I could be deployed a combat zone	.808			
I might deploy away from my civilian job	.780			
I could get hurt or killed in training	.541			
I will be away from my civilian job during training	.519			
I may be away from my family too long	.468			
I had a bad experience in the military		.681		
One weekend/month is going to be a hassle		.608		
I was discouraged by reservists I met		.448		
The pay is not enough for the time and effort		.438		
I could not get an enlistment bonus		.432		
My employer discouraged me from joining		.430		
I have to stay 20 years to make a career and get retirement benefits (pay/medical)	.327	.330		
I had trouble getting my desired job in the Air Force Reserve			.817	
I couldn't get the career field I wanted			.808	
Initial training may take me out of school				.814
If I am called up, I could miss school				.720
Education benefits may not be enough to get me through college				.378

Finally, concerns about education load together as ED, with education benefits grouping together with the questions related to absence. Again, this

indicates that education is very important, but only to a smaller group of personnel.

Confirmatory Factor Analysis

EFA and CFA fill two very different research niches. EFA takes a population of variables and attempts to derive latent variables that explain common variation. CFA, on the other hand, uses a pre-defined model of variables and their respective latent factors, and examines the fit of a data sample to that model. On the surface, using CFA to confirm the model using the same data set from which it was derived may appear to be a non-value added exercise. However, such an exercise can play a valuable function in validating research.

This effort follows the path laid out by Van Prooijen & Van Der Kloot (2001). They argue that EFA results should be validated by CFA; if, in future research using similar methodology, the data fail to conform to the CFA model based on an earlier EFA, then there will be no way to distinguish the cause. In such a case, subsequent failure of the CFA on a new sample could be for substantive reasons, such as an evolving survey population, or methodological reasons, such as failure to produce a solid EFA result in the first place. One would not expect this particular survey instrument to be used in the future to collect data for CFA; subsequent studies exploratory studies would likely develop their own instrument, as would an on-going effort such as described in the conclusion

section of this paper. Nevertheless, reviewing the model for mis-specification or other methodological concerns is a minimum due diligence.

Van Prooijen & Van Der Kloot (2001) review ten previous EFA solutions, and use CFA on the same data according to three models. In the first, they fix all correlation coefficients to the same coefficients found in the EFA. In this analysis, they judged eight of ten solutions to exhibit acceptable fit. In the second model the authors set correlations where pattern loadings were found above the cutoff threshold by the original EFA research as free parameters, and set correlations for all other variables to zero. This is a very restrictive model, and seven of ten solutions could not be confirmed. Finally, in the third model, Van Prooijen & Van Der Kloot add back in any pattern loadings greater than .2, and allow correlation between latent factors in cases where the original solution had been orthogonal. Following this methodology, six of nine solutions were found to be acceptable, with the tenth Model 3 construction being identical to Model 2. The authors judge that this method is comparable to Model 1. This research applies Model 3 to each of the four factor solutions previously described.

Three measures of fit were selected. The standardized root mean square residual (SRMR) relates to absolute fit, similar to χ^2 , and measures differences between inputted and predicted correlations. For parsimony, the root mean square error of approximation (RMSEA) relies on error from the χ^2 fitting to the population distribution (Brown 2006). Brown does not suggest χ^2/df , though it is

included by Schreiber, Nora, Stage, Barlow & King (2006) since the χ^2 test is typically not helpful with large samples.

Brown (2006) refers to Hu & Bentler (1999) as one example for assessing goodness of fit statistics. In short, they recommend an SRMR of $< .08$ and RMSEA $< .06$, though allow that based on specific circumstances these are only approximate. Brown also cites Browne & Cudeck (1993) who divide RMSEA into ranges of $< .05$ for good, $< .08$ for adequate, and recommend rejection for $> .1$. Schreiber, Nora, Stage, Barlow & King (2006) agree with research cited by Brown, recommending χ^2/df as < 2 or 3 , SRMR $< .08$, and RMSEA “ $< .06$ to $.08$ with confidence interval.”

Following Van Prooijen & Van Der Kloot's (2001) methodology for Model 3, the four analyses were run with any factor loadings above a $.200$ threshold added to the model as free parameters. This seems reasonable since, as the authors point out, these are likewise free parameters in the base EFA. Latent factors were already allowed covariance, since this model was developed from an oblique rotation, but no other changes were made. Error terms were not allowed covariance, as the authors note that correlated errors may be an indicator of poor specification and additional latent factors.

The χ^2/df statistics all well below 2.0 . Likewise, all SRMR data are under $.8$ and RMSEA values range from $.060$ to $.077$, with all but the last reasonably confirmed by PCLOSE.

Table 3-11 Fit indicators with relaxed assumptions

	n	Fit Indicator			
		χ^2/df	SRMR	RMSEA	PCLOSE
NPS Motivational	198	1.707	.0624	.060	.106
NPS Discouragement	215	1.866	.0540	.064	.065
PS Motivational	123	1.585	.0722	.069	.057
PS Discouragement	135	1.785	.0652	.077	.009

Several factors could contribute to variations in fit between the question panels, and could improve fit in the future. The number of PS responses was lower than the number available NPS analysis. Plus, within that more limited PS group, the number of responses used for the CFA was smaller yet than the number used for EFA. For the CFA procedure, records with missing data were eliminated, as opposed to pairwise deletion used in the EFA. Also, given the nature of social science and the expected myriad of interactions among the variables, one would expect that tightly constrained models would have decreased fit, in a way that a CFA example from biology or medicine with uniformly high initial factor loadings would not. Finally, the CFA may suffer from range restriction from highly skewed or non-normal data. The answer set yielded a wide range of distributions, as shown in Tables 3-2 through Table 3-5, and demonstrated in Figure 3-2, above.

Reviewing standardized coefficients of the relaxed model for NPs data shows generally good correlation for the postulated relationships between factors and variables, with loadings between .5 and .8 for both panels of questions. In

exception to this, of course, are the items “I want to serve in the Middle East” and “I might deploy away from my civilian job” which show to load on two factors on the EFA. These variables are retained because the purpose of this study is to explore the relationship between variables, rather than develop a replicable survey instrument.

Correlations are noticeably weaker on the PS sample, but this should not be surprising given the relatively lower factor loadings from the PS results of the EFA. Sample size is again probably the single biggest improvement that could be made to resolve indeterminate or weak relationships in the PS portion of both the EFA and CFA.

The only previous research which used CFA to confirm the initial EFA model was Griffith (2008). CFA results for Griffith’s tested model of Soldier’s motivations for joining the Army Guard yielded a χ^2/df of 2.81, CFI of .93, and an RMSEA of .066. However, the questionnaire used to collect data for that research asked 13 questions about reasons for joining, then coded them 0 or 1 based on agree or disagree; this is a much different method than using continuous response scales as this effort does.

Were this model to be further developed, variables could be eliminated and the CFA refined to make an even better fitting model, as with Perry (1996), but the intent here was merely to determine if there is any gross specification error in the model. Based on the results of the CFA, the EFA models presented do not

appear to have any large specification errors, and are consistent with what would be expected given the EFA results. There is thus no reason to reject the factor structure of the EFA model.

Ordinary Least Squares

Non-Prior Service Results

One objective of this research was to identify what demographic groups, if any, had a stronger propensity towards one motivation or another. To do this, each record, or survey respondent, was given a score based on the strength of each factor. Ordinary Least Squares (OLS) regression performed between the various demographic variables and these scores indicates statistically significant correlations between a number of factors and various demographic dimensions. The nature of this type of analysis requires a control variable; for variables with

Table 3-12 Non-prior service demographic correlations

	SI	SE	ME	EO	SD	TD	AD	ED
Sex (Female)	.192	.169				.143		-.156
<50 Miles		.163						
Race = Black			.238					
Ed Level						.182		.202
Base = Westover						.149		
Base = March							.164	
Age								-.250
Model Adj R ²	.028	.036	.052	N/A	N/A	.065	.022	.058

Standardized Coefficients, with p < .05 for reported values

multiple categories, one category is designated as the baseline from which variation is measured. For race, this is “White”, the largest group of respondents.

For Base, Hill Air Force Base was chosen as the excluded reference category. Few of these dimensions, however, are likely to be of substantial use in practice. Factors with statistically significant correlations at greater than the 95% level are recorded in Table 3-13, along with their standardized coefficient. The standardized coefficient indicates how many standard deviations in overall change of the factor score would occur for a one unit change in the dependent variable. The Adjusted R^2 at the bottom of the table indicates the overall level of variation explained by each model. So, while there is a statistically significant relationship between Self Improvement and Females, the magnitude of the overall variation explained is only 2.8%.

In this case, women have a slightly higher affinity for SI than men do. The difference between males and females would be .192 standard deviations, as indicated by the standardized coefficient. Social Encouragement, on the other hand, has two statistically significant demographic variables, gender and commuting area. Again, the amount of variation explained is small, as demonstrated by the low Adjusted R^2 values and the small standardized coefficients, but it appears that females are slightly more receptive to influence of friends and family than males. Further, the factor also correlates to living within 50 miles of the enlistee's duty location, indicating that it is diminished in intensity when one has to travel distances do drill weekends and typically stay overnight.

The third factor, ME, had only one particular demographic which correlated; respondents identifying themselves as Black tended to identify with questions which related to pecuniary benefits, such as pay, tuition assistance, medical benefits, etc. Finally, no demographic variables correlated with the fourth factor, EO, meaning that none of the demographic groups identified had a greater propensity towards employment as a motivational factor.

Likewise, no demographic variables correlated with Social Discouragement. However, three variables had correlations with Transactional Discouragement. Both education level and identifying as Hispanic were positively correlated with this factor. Within these demographics, there is more concern about tangible rewards or tangible costs incurred. Females, however, were negatively correlated with this factor, indicating that they are less sensitive to discouragement by this factor by a statistically significant margin. Naturally, the opposite articulation is also true; men are more discouraged by lack of tangible benefits or costs than women.

The third factor, Absence Discouragement, correlates with one demographic variable, March ARB. As noted in Chart 1, March ARB had the lowest number of surveys returned for NPS personnel, so it is possible that this is a sample size issue.

Finally, the fourth discouragement factor, Educational Discouragement, again correlates with three demographic variables. It is negatively correlated with

age and gender, indicating that women and older recruits are less likely to be concerned by this factor. It is positively correlated with current education level, indicating that potential recruits with some college or a degree may be concerned about continuing their education. Note that unlike many of the other variables, age as constructed on this survey has four ordinal categories: 18 to 20, 21 to 24, 25 to 29, and 30+. Moving from one category to another may only move the factor score .25 standard deviations, but there begins to be quite a difference between the 18 to 20 year olds and the over 30 group.

Prior Service Results

PS demographic analysis display similar patterns. Females are again correlated with SI. Economic and Monetary Interest has the best overall fit of any model in the study, explaining around 17% of the variation. As with NPS data and March ARB, however, Westover ARB has the lowest return rate among PS respondents. Social Encouragement did not appear to correlate with any particular demographic.

Table 3-13 Prior service demographic correlations

	SI	E&MI	SE	AD	TD	FD	ED
Sex (Female)	.247						
Age		-.279				-.194	-.225
Race = Asian		.174					
Base = Westover		.268					
Race = Other					.201		.192
Officer / Enlisted		-.196					
Model Adj R ²	.053	.169	N/A	N/A	.033	.030	.065

Standardized Coefficients, with p < .05 for reported values

Likewise, among discouragement factors, Absence Discouragement appears to be evenly distributed across demographics. Transactional Discouragement correlates with the “Other” race category, possibly due to small sample size. Age group is negatively correlated with discouragement about getting one’s choice of career field in the reserves, and age and race of “Other” negatively correlate with Educational Discouragement. Older PS enlistees may thus be less likely to be discouraged by educational concerns than younger PS candidates.

Methodological Concerns

Sampling Issues

The most critical concern in this study design is the sampling methodology. First, the sample must be considered non-random. In a random sample, every member of the population would have an equal chance of being sampled. In this case, the Air Force Reserve recruits approximately 8,000 personnel per year, who are spread across approximately 40 major centers of activity across the continental United State (CONUS), with additional locations in Alaska and Hawaii. Further, some number of personnel (though not typically new accessions) are gained into the Individual Mobilization Augmentee (IMA) program, assigned directly to an active duty unit rather than to a reserve organization. This research attempted to minimize the impact on Air Force

operations while gaining adequate sample response, therefore some subjective decisions were necessary.

The sampling plan employed is referred to by Kalton (1983) as a judgment sample. In this case, the researcher selects sites to sample based on an informed understanding of the population distribution. In this case, sites in California, Texas, Maryland, Massachusetts, and Utah attempted to ensure variation geographic location. In addition, while California and Utah are geographically similar, March ARB is located in the vicinity of Las Angeles, while Hill AFB is located near Salt Lake City; the surrounding culture of these two areas might be expected to differ. Westover ARB is near Springfield, Massachusetts, at the smaller end of the metropolitan spectrum, while Andrews AFB is located between Washington D.C. and Baltimore. Westover ARB and March ARB are stand-alone reserve bases, while the reserve wings at Hill AFB and Andrews AFB are tenants on active duty installations. The reserve wing at NAS JRB Fort Worth is a tenant on a joint base administered by the Navy. There is also variation to some extent in mission, with transport and air transport in Massachusetts, air refueling in California, air refueling in Maryland, and fighter wings in Texas and Utah.

Kalton notes that when the number of locations is few, making an informed judgment is likely superior to choosing locations at random, as the selection bias is likely to be small relative to the population variance; a large sample, for example 25 of 40 locations, would need to be selected randomly,

since the variance should decrease as the sample increases, and the judgment bias becomes relatively more important.

Resulting survey response showed wide variation from base to base, with some units having higher or lower response rates. In some cases, high rates of NPS response were driven by “developmental flights”; these administrative holding units allow new enlistees to drill for points and pay before attending training. For survey purposes these units were deemed equivalent to newcomer’s orientations, which would not generally be needed after Basic Military Training (BMT) and/or technical school if the newcomer had previously participated at that base. The number of responses per base also likely varies based on the random or seasonal fluctuation of both PS and NPS accessions specific to a given location and possibly varies due to the enthusiasm of the administrator.

A more even response pattern would be desirable, as would a higher number responses among the NPS at March ARB and the PS at Westover ARB. However, as Table 3-13 and Table 3-14 illustrate, the aggregate effect of statistically significant regional variations, for which base of assignment serves as a proxy, is low. As discussed, however, this might change if different statistical techniques were used for correlation.

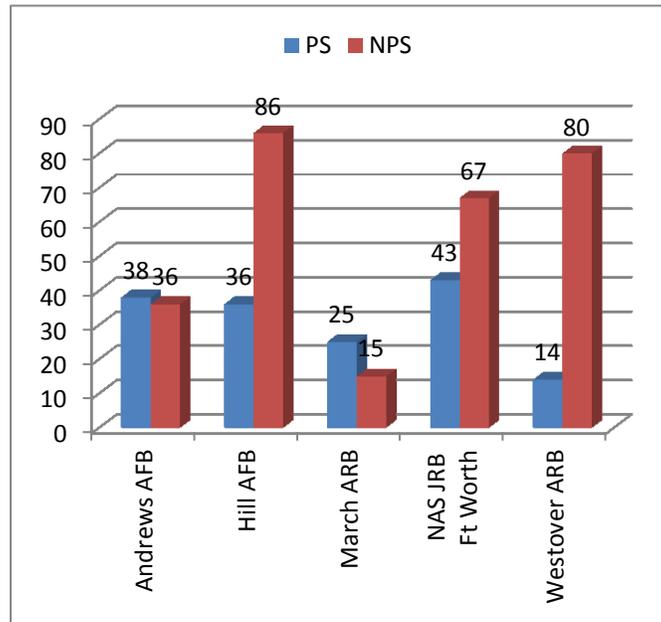


Figure 3-2 Survey response by base

Limitations of Questionnaires

Questionnaires used to gather survey data have inherent limitations. Saris & Gallhofer (2007) describe validity, and reliability, two measures of the quality of a survey question. Reliability describes how well an observed answer agrees with the ‘true’ score. Validity measures how well the true score tracks the variable of interest. Put another way, reliability measures whether the question accurately measures the respondent’s choices accurately and repeatedly measure the dimension. In contrast, validity describes whether how well the survey question measures variable of interest.

Saris & Gallhofer are particularly wary of response batteries, the meat of the surveys in Appendix A and Appendix B. Throughout their book they note

several reasons. First, the instruction in a battery is given only once; the respondent must remember and interpret the instruction again for subsequent statements. Batteries can become complex and difficult for the respondent to understand. Also, survey takers may become tired, and tend to begin answering questions similarly. Still, the authors concede that battery response sets are widely used in social research, and can be constructed so as to minimize confusion.

To this end, the survey instruments were constructed with the following features to ameliorate survey concerns:

- Statements are kept as short as possible
- Single syllable words are preferred over multi-syllable words
- Surveys are short to minimize fatigue
- Response scales are anchored at the ends with a clear magnitude measure
- Scales contain a neutral choice separate from the no response option
- Scales have response levels (1-5) repeated at each line

Personal Bias

The researcher in this case has spent an entire 20+ year career in the Air Force, with the last 13 years in the Air Force Reserve. Reserve service has included two mobilizations, with deployment to Qatar in 2002 and one to Iraq in 2008. Military experience is helpful in pursuit of this effort in that it provides the

interest, easier access, and an understanding of the Air Force culture that a non-affiliated researcher might lack.

However, this perspective also gives a predisposition to project institutional values upon the organization and its personnel, and to also discount occupational incentives and motivations. Recognizing and acknowledging this bias is essential to proper analysis of the data. Conscious effort was made to ensure, for example, that the ‘best’ solution set is used after factor rotation, rather than the most emotionally satisfying answer.

Chapter 4

Results and Conclusions

With regard to the first research hypothesis, it appears based on this data that there is a major contribution from non-economic motivational factors. The strongest variables that are the strongest in the absolute sense load together into a large “Self Improvement” factor, which overshadows monetary considerations. Monetary and employment come in second for PS personnel, and third and fourth for NPS personnel. One cannot disregard recruiting supply models; economic motivations are clear contributory to the enlistment decision. Sufficient economic inducement might indeed increase enlistment propensity. However, barring drastic increases in compensation, it appears that motivations such as the ability to be a better person, belong to something, and patriotism are more pronounced in the population that is currently enlisting than pecuniary concerns.

With regard to the second research hypothesis, it there seems to be no sharp distinction between the results of the factor analysis conducted here and the results of Halverson, 1989, Baker, 1990, and Griffith & Perry, 1993, and Griffith, 2008. The factors are labeled with different names, but the questions that load onto the first factor are broadly consistent among the earlier studies of other services and this study of the Air Force Reserve. The only exception is the loading of social factors on to a distinct factor rather than being diluted and combined with other factors relating to military life, especially with regard to

NPS enlistees where this motivational factor ranked second. This seems to bear out the idea that Millennials coming of age are more attuned to the social environment and opinions of their family and friends than previous generations might have been. The contrast between PS and NPS results also has intuitive explanation; older entrants into the reserve forces have already experienced military life and now rely on their own experiences and perceptions, rather than on the opinions of others.

A similar dynamic manifests in the factor analysis of the discouragement questions. Among those never before experiencing the military, the largest factor negatively influencing their decision appears tied to external opinions. The Social Discouragement factor encompasses opinions of friends, family, and employers who are not supportive of a decision to enlist. In contrast, among PS personnel, the primary concern among those joining is that they will be absent from family or their employers. This reflects the experience of today's expeditionary Air Force and its high operations tempo. Social concerns, or the opinions of others, do not resolve themselves into a factor for PS personnel.

The Institutional/Occupational Divide

The concerns of Moskos & Wood (1988) still ring true today. The brand of bureaucratic rationalism that they described in military policy decision making still exists. As demonstrated by the recent quadrennial review of military compensation (United States, 2012), primary analysis of the impact of recruiting

changes is done through application of pay elasticities. This is an understandable tendency, since quantifiable projections are essential to planning. However, there is no recognition that institutional factors are at play in enlistment decisions, and presumably in individual retention decisions as well.

The originators of the I/O paradigm might be heartened to know that despite the administrative bureaucracy's focus on elasticities, the members joining actually continue to hold and be motivated by institutional concepts. As this research suggests, the strongest considerations when joining are non-economic. It is difficult to discern whether the larger latent motivational factors outlined in this research fit the exact conceptualization of institutional motivation held by Moskos & Wood (1988), but they are clearly not occupational motivations. Economic and monetary incentives and disincentives all appear to be lower in explanatory power, and these are the motivations that are clearly occupational.

Public Service Motivation

One cannot use this survey data to assess PSM per any established and validated dimensions (Perry, 1996, Vandenberg, 2008). However, the defined latent motivations of this research can be analyzed through the lens of Perry's (2000) process model for PSM. First, one would exclude the Monetary Interest, Employment Opportunity in the case of NPS recruits and Employment & Monetary Interests in the case of PS accessions. They are rational from a self-interest perspective, but not rational or self-interested in the sense that Perry uses

for his first category; the motivating facets are rewards given to the individual, not rewards flowing to the individual resulting from the execution of a public service mission. An example of this would be the increased marginal safety benefit to one's residence accrued from joining a neighborhood watch organization.

The Self Improvement factor, on the other hand, clearly touches on PSM themes. In particular, defending one's country and being a part of something bigger than oneself touch on themes of public interest/civic duty and self-sacrifice on traditional PSM scales. Being a better person is closely aligned with these two variables, possibly because recruits believe the act of serving makes them better. This motivation could also be classified as affective under Knoke & Wright-Isak's (1982) typology, expressing emotional response to social contexts such as patriotism and duty.

Social Encouragement, on the other hand, would relate well to Knoke & Wright Isak's (1982) concept of normative motivation, where collective preferences drive action. From the perspective of PSM dimensions, social norms are not explicitly measured.

Recommendations for Recruiters

The motivational model in Figure 4-1 was developed from this research for deployment to reserve recruiters in the field, along with guidance about what specific kinds of questions or indicators would indicate a propensity towards dominance of one factor or another within a specific individual. The top and

bottom halves of the diagram graphically illustrate the differences between PS and NPS member. The left half, in red, show factors that pull potential Airmen away from the Air Force, while the right half in green shows the factors which motivate affiliation. Finally, the size of the contributor arrows illustrates the relative strength of the factors; in all cases the first factor was substantially more

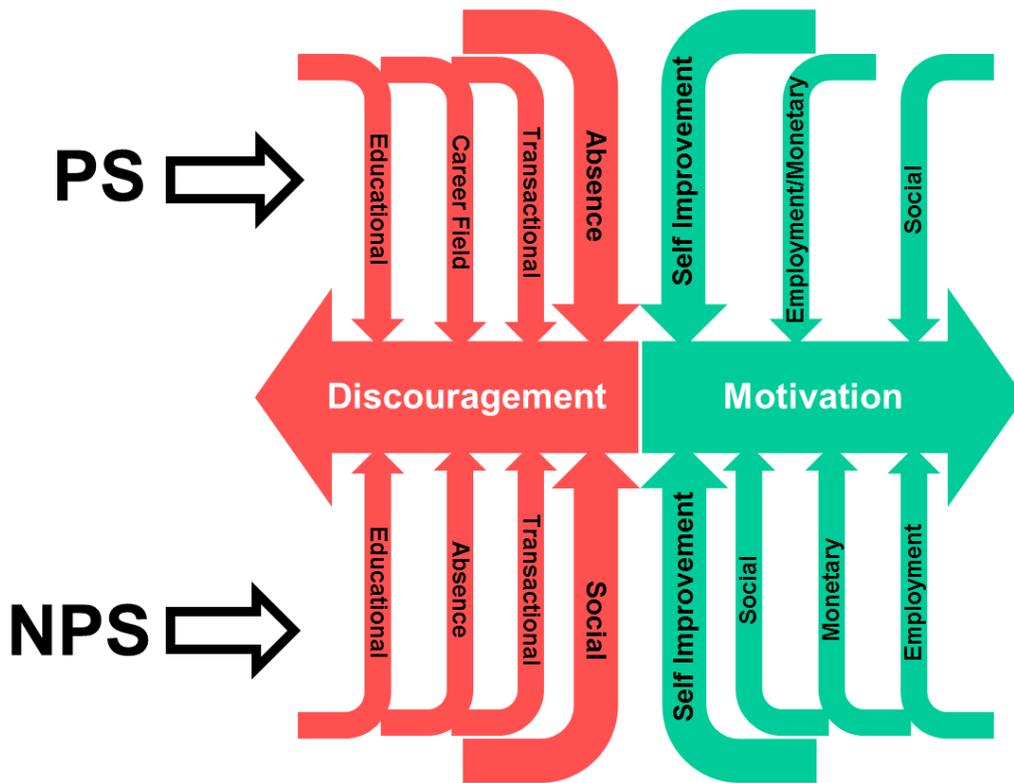


Figure 4-1 Motivational model

powerful than the others, which were at similar relative strength. This relative strength was roughly estimated from the overall amount of variation explained from the extraction of factors in the factor analysis portion.

Several other important points may also be made to the recruiting workforce. First, PS and NPS enlistees are similar in many ways, and different in others. As discussed, PS members are less influenced by their peers and society with regards to the enlistment decisions. On the other hand, they share many of the same motivations when it comes to being a part of something, defending their country, and being a better person.

Next, neither this study nor previous research on reserve recruiting has identified demographic characteristics of such overwhelming power as to allow profiling of prospective recruits. While there are some statistically significant correlations, none is of a sufficient magnitude allow stereotyping of a new recruit when he or she walks through the door. Future research may be able to draw stronger correlations, but currently each recruiter should strive to treat each contact as a blank slate; despite similar age, gender, educational and ethnic backgrounds, recruits can and do hold a variety of motivational profiles.

Recommendations for Policy Makers

The most important recommendation for policy makers is to put econometric analysis into perspective. Recruiting supply models do not capture the individual decision to enlist. This concern was raised by Faris (1981), who rejected recruiting supply models for their exclusion of noneconomic variables, and also noted that even internal motivations of recruits are not necessarily “internally consistent and static”. As he points out, econometric models often

dismiss these factors. For example, Mehay, firmly committed to the idea that recruiting is an economic decision, finds both statistically significant regional variations (Mehay, 1990) and differing sensitivities to economic factors requiring differentiation of the military and civilian secondary employment labor markets (Mehay, 1991). Wildavsky (1987) makes a broad and strong argument against the assumptions about individual preferences that are generally excluded in economic analysis due to their complexity and inability to be reduced to an easily captured variable.

Likewise, researchers who include recruiting efforts into their econometric analysis (Mehay, 1990, Tan, 1991, Arkes & Kilburn, 2005) are implicitly recognizing that widespread information is necessary for the functioning of efficient markets. Waite (2005) stands firm in his assertion that affiliation is primarily an economic decision, but offers patriotism as a possible explanatory factor for regional variation.

The Report of the Eleventh Quadrennial Review of Military Compensation (United States, 2012) proposes sweeping changes to the compensation system, and blithely projects confidence in the elasticities used to calculate the costs of incentives necessary to attract and retain projected force structure requirements, noting that they are based on numerous previous economic studies. However, such confidence among the report writers as well as researchers is perhaps based on failure to account for violation of the basic assumption of *ceteris paribus*.

As Wooldridge (2003) explains, a basic tenant of econometric analysis, *ceteris paribas*, is the requirement that for meaningful results, all other factors must be held equal. Econometric elasticities are only a certainty when the rest of the system is held stable. It is likely true that if the number of recruiters, societal mores and values, social perception of the military, patriotism among the populations, support for the policies of the United States, and numerous other factors were all to be held exactly stable, then X increase in compensation would cause Y increase in recruiting; however, such stability is not and never will be the case. For example, as Griffith & Perry (1993) demonstrated, the propensities of the population can shift in response to national events; essentially, there was a somewhat different population before and after ODS; econometric analysis performed before and after would thus present different elasticities.

What the Quadrennial Review of Military Compensation (QRMC) failed to account for is that the proposal to radically restructure military compensation would necessarily change the nature of the relationship with the individual reserve component member, rendering the calculated solutions void. The current system emphasizes membership, participation, and longevity; the proposed system would emphasize incentive pays to promote operational utilization. This deemphasizing of the institution in favor of occupational incentives would violate the requirement of *ceteris paribas*; compensation elasticities calculated under the current compensation system cannot be assumed to carry over after a radical

restructuring of the compensation system itself, which would likely influence the nature of the individuals relationship with the institution and alter the dynamics of the enlistment decision.

Econometric recruiting supply models have value when analyzing incremental changes in compensation. It is reasonable to use such estimates for planning and budgeting in order to determine the effects of the difference between a two percent and a two and a half percent pay raise. Even then, intervening social and political changes can affect the next year's recruiting and retention.

A second recommendation, after putting econometric analysis into perspective, is to also realize that compensation itself is not an overriding concern. While gross under or over payment of pay and benefits relative to the value of the services provided would of course affect recruiting, other than such a situation, however, it is likely based on this and previous research that individual recruits are not overly sensitive to minor variation in pay. From the PSM standpoint, Wise (2010) also cautions that public organization send conflicting messages when they focus on pay and benefits in their recruiting, which makes them more less likely to attract public oriented employees; the same caution aptly describes dependence on pay and benefits to attract Soldiers, Sailors, Airmen, and Marines. The research presented here suggests several way that recruiting can be affected other than compensation; it may be possible to lower compensation

growth for the military in general, or even reduce pay for the reserves as suggested by the QRMC, yet still attract sufficient numbers of candidates.

The most immediate method suggested by the literature would be to increase recruiting resources. This research found that the influence of a recruiter was not generally important to the decision itself, but other researchers (Mehay, 1990, Tan, 1991, Arkes & Kilburn, 2005) found recruiters to be important factors in supply models. This is similar to a private company selling a product; decreasing price will generate more sales, but adding salespeople may also increase sales, and do it in a more cost effective manner. The salesperson may not 'convince' the customer to make a purchase, but provides information needed for the customer to make an informed decision. From a quantitative analysis perspective, econometric models demonstrate that increasing recruiting resources does, in fact, increase volume (Hanssens & Levian, 1983, Lovell, Morey, & Wood, 1991, Lovell, Morey, 1991).

Another approach, of which the recruiting process is really a subset, is to increase advertising and educate the target population as to how membership in the Air Force Reserve can meet their personal needs. Tailored advertising focused on self-improvement and concentrating on the themes contained within the self-improvement latent factor may attract more recruits, even if pay begins to decline in real terms.

Finally, the Air Force Reserve must continue to burnish its brand, particularly in order to attract NPS recruits. Social Discouragement is the leading discouragement factor, and Social Encouragement is the second largest motivational factor; NPS Millennials rely greatly on the opinions of others. The Air Force must build a consensus among those groups that it is a viable, honorable, and rewarding career path.

Directions for Future Research

Future research in this area would be value added to the Air Force. A good approach would be to administer a survey instrument to all or a sample of personnel during BMT. This data could then be tracked and trended to signal shifts in the outlook prospective Air Force recruits, and provide real-time feedback to the recruiting force. Such a project would be long term, but could probably be carried out at minimal cost.

A corollary to the first recommendation is to develop and refine a standard question set, along the lines of what Perry (1996) and Vandenabeele (2008) have proposed. Such a survey could be tailored to the military, and be applicable both as a measure of PSM while still being relevant for analysis under the I/O paradigm. An effort to develop a military tailored PSM questionnaire would be pointless, however, without an explicit decision by a military organization for ongoing research. Several iterations might be required to confirm and validate the

instruments veracity, and only an ongoing survey effort would allow an instrument to be properly tuned.

Finally, with regards to the methodology itself, more advanced statistical techniques may be able to resolve demographic correlations with greater fidelity. As noted, even where there were strong correlations between factor scores and demographic models, the total variation explained was low. It is possible this is due to the two-stage nature of the analysis and the ensuing accumulation of error; the factor loadings retained in this effort range from moderate to strong, rather than being uniformly powerful. Alternate techniques, for example Structural Equation Modeling (SEM) applied to motivational datasets might yield larger coefficients.

Conclusion

The decision to enlist in the Air Force Reserve rests on more than a cold calculation costs and benefits. There appears to be a hunger, a drive to serve and to improve oneself, lurking in the minds of Airmen. Akin to the motivations outlined in PSM theory and directly in line with institutional motivations from the I/O paradigm, this undercurrent potentially undermines analysis and prediction based solely on calculated elasticities.

With the data and tools currently available, it is impossible to discern a demographic pattern of consequence for the latent motivations in the study; each potential recruit must be treated as a unique opportunity. Within that broad

parameter, however, it may be possible to identify a potential recruit's interests and concerns, providing for a more effective recruiting experience.

Appendix A
Survey Approval Letter



19 September 2013

MEMORANDUM FOR AFRC/RS
ATTENTION: LT COL BRIAN WISH

FROM: AFPC/MAPP
550 E Street East, Suite 116
Randolph AFB TX 78150-4451

SUBJECT: Survey Approval – Air Force Reserve Enlistment Motivation Study Survey.

1. The survey is approved for use with the following population(s):

Population:	Number(s):
Air Force Active-Duty Officers	0
Air Force Active-Duty Enlisted	5,000
Air Force Civilians	0
Air Force Retirees and/or AF Family Members	0
Total Number to be Surveyed	5,000

The Survey Control Number (SCN) for this effort is AF13-196AFRCRS. This SCN is valid from 09/20/2013 through 06/30/2014.

Please ensure compliance with the following guidance, as applicable, while administering your survey.

a. Invitations to participate in the survey must include:

- (1) Survey title (as shown in the subject line of this memo).
- (2) AF Survey Control Number (SCN).
- (3) Statement that completion of the survey is voluntary.

(4) Link to the list of Air Force approved surveys: <https://www.my.af.mil/gcss-af/USAF/ep/browse.do?programId=t2D8EB9D6297405FA012980243147010A&channelPageId=s5FDEA9F02134FFA70121351677C80048>.

(5) Government contact name or office, with official contact information (e.g., e-mail address, telephone number, etc.), to provide a point of contact for questions about the survey.

(6) Identifying information of the survey's sponsor, to inform survey recipients under whose authority the survey is being conducted.

(7) All AF attitude and opinion surveys must include the following statement on the questionnaire: "We cannot provide confidentiality to a participant regarding comments involving criminal activity/behavior, or statements that pose a threat to yourself or others. Do NOT discuss or comment on classified or operationally sensitive information."

j. Data collected under this survey may be subject to the Privacy Act of 1974. Please ensure compliance with this act as set forth in Title 5 United States Code (USC), Sec 552a; Title 10 USC, Sec 55 and 8013; Executive Order 9397; and Air Force Instruction 33-332, *Privacy Act Program*.

2. If you have any questions, please call the Air Force Survey Office at DSN 487-5332 or send an e-mail to af.survey@us.af.mil.

//Signed//
RENEE TEALER
Management Analyst
Air Force Survey Office

Appendix B

Survey Instrument – Non-Prior Service

Air Force Reserve Enlistment Motivation Study Survey

QUESTIONNAIRE FOR NON-PRIOR SERVICE (NPS) PERSONNEL

The following Questionnaire is **VOLUNTARY**. You do not have to participate. If you chose not to participate, you may continue with the rest of your duties without repercussions. You are encouraged to participate because the information gained may help the Air Force accomplish its mission more effectively. This survey is officially sponsored by the Air Force Reserve Command under the authority of General Jackson, AFRC/CC, (POC: Col Paul Kirby, DSN 497-0670) and coordinated with the Air Force Survey Office. The Survey Control Number is **AF13-196AFRCRS** and may be verified at:

<https://www.my.af.mil/gcssaf/USAF/ep/browse.do?programId=t2D8EB9D6297405FA012980243147010A&channelPageId=s5FDEA9F02134FFA70121351677C80048>

- 1) This survey is for **Non-Prior Service (NPS)** personnel. In general, this means that you have never before been in an Active, Guard, or Reserve component of the Air Force, Army, Navy, Marine Corps, or Coast Guard. If you are Prior Service (PS), please take the other survey.
- 2) This research is being conducted by Brian Wish, a PhD candidate at the University of Texas at Arlington (UTA) as part of a dissertation project. It is expected to encompass approximately 500 participants over six months. The estimated time to complete the survey is approximately 10 minutes, and there is no compensation for participating.
- 3) Personally Identifiable Information (PID) such as name, SSAN, etc. is not required to participate in this survey. Please do not indicate your name, SSAN, or any other information that could be used to associate you with this questionnaire. Note that per AF policy, "We cannot provide confidentiality to a participant regarding comments involving criminal activity/behavior, or statements that pose a threat to yourself or others. Do NOT discuss or comment on classified or operationally sensitive information."
- 4) Completion of this survey will be construed as informed consent to participate. When you complete the survey, please return it to the person who gave it to you, where it will be returned to the Principle Investigator. Your data will not be maintained with your Air Force records. The results of this study may be published or presented at meetings without naming you as a participant. Additional studies could evolve from the information you have provided, but your information will not be linked to you in any way. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the UTA Institutional Review Board (IRB), and personnel particular to their research have access to study records.
- 5) Questions about this research may be directed to Brian Wish, Principle Investigator, 817-707-3788 or to Dr. Alejandro Rodriguez, Supervising Professor, 817-272-3357. Questions about your rights as a participant may be directed to the UTA Office of Research Administration, Regulatory Services, 817-272-2105.
- 6) Thank you for your time in completing this survey, and thank you for your service.

QUESTIONNAIRE FOR NON-PRIOR SERVICE (NPS) PERSONNEL

I. Demographic Information:

I am: Male Female

I consider myself to be: White Black Asian Hispanic Other

My current rank is: E-1 E-2 E-3 E-4 E-5 E-6
 O-1 O-2 O-3 O-4 O-5

I live: Inside the Commuting Area (less than 50 miles away)
 Outside the Commuting Area (more than 50 miles away)

My Age is: 18-20 21-24 25-29 30+

I have: High School or Equivalent
 Some College
 Four-Year College Degree

II. Please rate each influence for your decision to join the Air Force Reserve from “Not at All Important” to “Would Not Have Joined Otherwise”. Focus on your reasons at the time you signed up, not on your current experience after training. If you don’t understand the question or don’t have an answer, choose “Don’t Know”.

	Reason	Don't Know	Not at All Important	Slightly Important	Somewhat Important	Very Important	Would not have joined otherwise
1	I need extra income	?	1	2	3	4	5
2	I have a family member who has served	?	1	2	3	4	5
3	I want to defend my country	?	1	2	3	4	5
4	I want money for school	?	1	2	3	4	5
5	I am seeking skill training that will help me get a civilian job	?	1	2	3	4	5
6	I want to serve in the Middle East	?	1	2	3	4	5
7	My civilian job is uncertain in this economy	?	1	2	3	4	5
8	A recruiter contacted me and told me about the Air Force Reserve	?	1	2	3	4	5
9	I want to be a better person	?	1	2	3	4	5
10	I want to participate in reserve medical benefits	?	1	2	3	4	5
11	I have friends who also joined the military	?	1	2	3	4	5
12	I was attracted by an enlistment bonus	?	1	2	3	4	5
13	I want to be more physically fit	?	1	2	3	4	5
14	I want to travel to different places	?	1	2	3	4	5
15	I want to have a career in the military	?	1	2	3	4	5
16	I want to be a part of something bigger than myself	?	1	2	3	4	5
17	I might have trouble finding a civilian job	?	1	2	3	4	5
18	I know military veterans who influenced me	?	1	2	3	4	5
19	I need healthcare access	?	1	2	3	4	5
20	My friends support my enlistment	?	1	2	3	4	5

III. This section measures reasons that might have discouraged you from joining the Air Force Reserve from “Not at All Concerned” to “Almost Did Not Join”. Focus on your reasons at the time you signed up, not on your current experience after training. If you don’t understand the question or don’t have an answer, choose “Don’t Know”

	Reason	Don't Know	Not at All Concerned	Slightly Concerned	Somewhat Concerned	Very Concerned	Almost Did Not Join
1	I could be deployed a combat zone	?	1	2	3	4	5
2	I know someone who had a bad experience in the military	?	1	2	3	4	5
3	I might deploy away from my civilian job	?	1	2	3	4	5
4	The pay is not enough for the time and effort	?	1	2	3	4	5
5	Education benefits may not be enough to get me through college	?	1	2	3	4	5
6	Initial training may take me out of school	?	1	2	3	4	5
7	I could get hurt or killed in training	?	1	2	3	4	5
8	If I am called up, I could miss school	?	1	2	3	4	5
9	My recruiter turned me off	?	1	2	3	4	5
10	I didn't think I could make it in the military	?	1	2	3	4	5
11	My employer discouraged me from joining	?	1	2	3	4	5
12	I may be away from my family too long	?	1	2	3	4	5
13	I had trouble getting or did not get my desired job in the Air Force Reserve	?	1	2	3	4	5
14	I have to stay 20 years to make a career and get retirement benefits (pay/medical)	?	1	2	3	4	5
15	One weekend/month is going to be a hassle	?	1	2	3	4	5
16	I could not get an enlistment bonus	?	1	2	3	4	5
17	I will be away from my civilian job during training	?	1	2	3	4	5
18	My friends think it is a bad idea	?	1	2	3	4	5

Appendix C

Survey Instrument – Prior Service

Air Force Reserve Enlistment Motivation Study Survey

QUESTIONNAIRE FOR PRIOR SERVICE (PS) PERSONNEL

The following Questionnaire is **VOLUNTARY**. You do not have to participate. If you chose not to participate, you may continue with the rest of your duties without repercussions. You are encouraged to participate because the information gained may help the Air Force accomplish its mission more effectively. This survey is officially sponsored by Air Force Reserve Command under the authority of General Jackson, AFRC/CC, (POC: Col Paul Kirby, DSN 497-0670) and coordinated with the Air Force Survey Office. The Survey Control Number is **AF13-196AFRCRS** and may be verified at:

<https://www.my.af.mil/gcssaf/USAF/ep/browse.do?programId=t2D8EB9D6297405FA012980243147010A&channelPageId=s5FDEA9F02134FFA70121351677C80048>

- 1) This survey is for **PRIOR SERVICE (PS)** personnel. This means that you are now:

 - a. Transitioning from **Active Duty** from the Air Force, Army, Navy, Marine Corps, or Coast Guard, regardless of how long ago.

OR

 - b. Have previously served in a **Guard or Reserve** component of the Air Force, Army, Navy, Marine Corps, or Coast Guard, with a **break in service of over two years.**

If you are PCS or PCA from another Guard or Reserve organization within the last two years, please do not fill out this survey. If you are Non-Prior Service (NPS), please fill out the other survey.

- 2) This research is being conducted by Brian Wish, a PhD candidate at the University of Texas at Arlington (UTA) as part of a dissertation project. It is expected to encompass approximately 500 participants over six months. The estimated time to complete the survey is approximately 10 minutes, and there is no compensation for participating.
- 3) Personally Identifiable Information (PID) such as name, SSAN, etc. is not required to participate in this survey. Please do not indicate your name, SSAN, or any other information that could be used to associate you with this questionnaire. Note that per AF policy, "We cannot provide confidentiality to a participant regarding comments involving criminal activity/behavior, or statements that pose a threat to yourself or others. Do NOT discuss or comment on classified or operationally sensitive information."
- 4) Completion of this survey will be construed as informed consent to participate. When you complete the survey, please return it to the person who gave it to you, where it will be returned to the Principle Investigator. Your data will not be maintained with your Air Force records. The results of this study may be published or presented at meetings without naming you as a participant. Additional studies could evolve from the information you have provided, but your information will not be linked to you in any way. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the UTA Institutional Review Board (IRB), and personnel particular to their research have access to study records.
- 5) Questions about this research may be directed to Brian Wish, Principle Investigator, 817-707-3788 or to Dr. Alejandro Rodriguez, Supervising Professor, 817-272-3357. Questions about your rights as a participant may be directed to the UTA Office of Research Administration, Regulatory Services, 817-272-2105.
- 6) Thank you for your time in completing this survey, and thank you for your service.

QUESTIONNAIRE FOR PRIOR SERVICE (PS) PERSONNEL

I. Demographic Information:

I am: Male Female

I consider myself to be: White Black Asian Hispanic Other

My current rank is: E-1 E-2 E-3 E-4 E-5 E-6
 O-1 O-2 O-3 O-4 O-5

I live: Inside the Commuting Area (less than 50 miles away)
 Outside the Commuting Area (more than 50 miles away)

My Age is: 18-20 21-24 25-29 30-40 40+

I have: High School or Equivalent
 Some College
 Four-Year College Degree

My most recent break in service is: 0-2 years 2-5 years >5 years

II. Please rate each influence for your decision to join the Air Force Reserve from “Not at All Important” to “Would Not Have Joined Otherwise”. Focus on your reasons at the time you signed up. If you don’t understand the question or don’t have an answer, choose “Don’t Know”

	Reason	Don't Know	Not at All Important	Slightly Important	Somewhat Important	Very Important	Would not have joined otherwise
1	I need extra income	?	1	2	3	4	5
2	I have a family member who has served	?	1	2	3	4	5
3	I want to defend my country	?	1	2	3	4	5
4	I want money for school	?	1	2	3	4	5
5	I am seeking skill training that will help me get a civilian job	?	1	2	3	4	5
6	I want to serve in the Middle East	?	1	2	3	4	5
7	My civilian job is uncertain in this economy	?	1	2	3	4	5
8	A recruiter contacted me and told me about the Air Force Reserve	?	1	2	3	4	5
9	I want to be a better person	?	1	2	3	4	5
10	I want to participate in reserve medical benefits	?	1	2	3	4	5
11	I have friends who also joined the military	?	1	2	3	4	5
12	I was attracted by an enlistment bonus	?	1	2	3	4	5
13	I want to be more physically fit	?	1	2	3	4	5
14	I want to stay a part of the Air Force family	?	1	2	3	4	5
15	I want to travel to different places	?	1	2	3	4	5
16	I want to have a career in the military	?	1	2	3	4	5
17	I want to be a part of something bigger than myself	?	1	2	3	4	5

Reason		Don't Know	Not at All Important	Slightly Important	Somewhat Important	Very Important	Would not have joined otherwise
18	I might have trouble finding a civilian job	?	1	2	3	4	5
19	I met reservists who influenced me	?	1	2	3	4	5
20	I need healthcare access	?	1	2	3	4	5

III. This sections measures reasons that might have discouraged you from joining the Air Force Reserve from “Not at All Concerned” to “Almost Did Not Join”. Focus on your reasons at the time you signed up, not on your current experience after training. If you don’t understand the question or don’t have an answer, choose “Don’t Know”

Reason		Don't Know	Not at All Concerned	Slightly Concerned	Somewhat Concerned	Very Concerned	Almost Did Not Join
1	I could be deployed a combat zone	?	1	2	3	4	5
2	I had a bad experience in the military	?	1	2	3	4	5
3	I might deploy away from my civilian job	?	1	2	3	4	5
4	The pay is not enough for the time and effort	?	1	2	3	4	5
5	Education benefits may not be enough to get me through college	?	1	2	3	4	5
6	Initial training may take me out of school	?	1	2	3	4	5
7	I could get hurt or killed in training	?	1	2	3	4	5
8	If I am called up, I could miss school	?	1	2	3	4	5
9	My recruiter turned me off	?	1	2	3	4	5
10	I couldn't get the career field I wanted	?	1	2	3	4	5
11	My employer discouraged me from joining	?	1	2	3	4	5
12	I may be away from my family too long	?	1	2	3	4	5
13	I had trouble getting my desired job in the Air Force Reserve	?	1	2	3	4	5
14	I have to stay 20 years to make a career and get retirement benefits (pay/medical)	?	1	2	3	4	5
15	One weekend/month is going to be a hassle	?	1	2	3	4	5
16	I could not get an enlistment bonus	?	1	2	3	4	5
17	I will be away from my civilian job during training	?	1	2	3	4	5
18	I was discouraged by reservists I met	?	1	2	3	4	5

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Biographical Information

Brian Wish received a Bachelor of Science from the United States Air Force Academy in Colorado Springs, Colorado. During 7 years of active duty, he earned a Master of Arts in Administrative Management from Bowie State University in Bowie, Maryland. He has held several private sector jobs, including positions at General Motors and Lockheed Martin, within the Quality discipline. He is currently an American Society for Quality (ASQ) Certified Quality Engineer (CQE) and an ASQ Certified Six Sigma Black Belt (CSSBB).

He continues to serve in the Air Force Reserve, mobilizing after September 11th, 2001 and again for deployment to Iraq in 2008. He has attended a graduate level Air Force Institute of Technology (AFIT) short course on Police Operations, at Eastern Kentucky University's College of Justice and Safety in Richmond, Kentucky. Additionally, he has completed both Air Command and Staff College and Air War College with the Air University located at Maxwell Air Force Base, Alabama, and attended the Reserve Component National Security Course at the National Defense University in Washington, DC.

After completing this program, he hopes to teach as an adjunct professor at local university. Further, he hopes to shift his civilian career focus from private industry to quality and continuous improvement in the public sector, combining education, military public sector experience, and industrial experience to improve the efficiency and effectiveness of federal, state, local, or non-profit institutions.