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A TURNOVER ANALYSIS FOR DEPARTMENT
OF DEFENSE PHYSICIANS

by

James K. Gaffney

June 1988

Thesis Advisor: George W. Thomas

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A Turnover Analysis for
Department of Defense Physicians

by

James K. Gaffney
Lieutenant, United States Navy
B.S., Kings College, 1980


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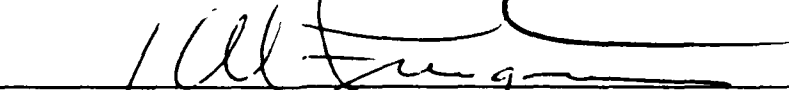

James K. Gaffney

Approved by:


George W. Thomas, Thesis Advisor


Kathryn Kocher, Second Reader


David R. Whipple, Chairman
Department of Administrative Sciences


James M. Fremgen
Acting Dean of Information and Policy Sciences

ABSTRACT

This thesis analyzes the career orientation of military physicians. Career orientation is analyzed using a logistic regression (logit) model with a dichotomous dependent variable career intention (short-term/long-term). The model is used to analyze the career intentions of four cohorts: all physicians, single physicians, married physicians, and couples (married physicians plus their spouses). The relative importance of various demographic and cognitive/perceptual factors to the career orientation decision is assessed. The results highlight potential policy variables which can be impacted by manpower policy planners to manage the career orientation of military physicians.



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I. INTRODUCTION AND LITERATURE REVIEW

The Department of Defense (DOD) is experiencing difficulty developing a Medical Corp (MC) structure which is composed of career oriented physicians. This problem did not appear recently, but has been in existence since the transition from a Draft Service to the All-Volunteer Force (AVF) in 1973.

The medical care and services physicians provide to military personnel and their families are essential to maintaining high states of personnel readiness within the Armed Services. The retention and career orientation of physicians has therefore become a major concern within the Department of Defense and among today's manpower analyst's.

The All-Volunteer Force has achieved manning levels which are at Post-Vietnam highs, but the expenses associated with educating the physicians who will provide medical care and services to military personnel and their families are also at all time highs. Additionally, physician's have opportunities and benefits available in the private sector which the military has been unable to duplicate, resulting in high rates of physician turnover within the Department of Defense. This encourages a review of current policies applicable to DOD physicians and makes the identification and understanding of those factors which physicians consider

important in choosing between a military and a civilian career an extremely high priority.

The purpose of this thesis is to (1) identify those factors which result in physicians choosing the military as a career, (2) analyze current policies and make recommendations which would be effective in retaining physicians, and (3) determine how these policies will affect the future manning requirements of physicians within the Department of Defense. This thesis will use data from the 1985 DOD Survey of Officer and Enlisted Personnel and Military Spouses to analyze career orientation among physicians and current policies associated with military physicians.

A. BACKGROUND

Prior to the evolution of the All-Volunteer Force the "Selective Service Draft" was used to insure adequate supplies of physicians, dentists, and other medical specialists who were available to provide medical and dental care to DOD personnel and their dependents. During this period the Armed Forces was able to procure physicians despite depressed salaries because of the existence of conscription. [Ref. 1]

The Department of Defense's Medical Corps currently is made up of Army, Navy, and Air Force personnel who compose the Military Health Service System (MHSS). The MHSS has experienced problems in the retention of physicians since

the inception of the All-Volunteer Force, primarily because of perceived inequalities between military physicians and their civilian counterparts. The All-Volunteer Force brought significant changes to retention policies previously used within the Department of Defense. Successful retention is based upon the Department of Defense's ability to compete with the physician's perception of civilian employment opportunities especially in the form of higher salaries within the private sector. Although income is certainly a major consideration when choosing between a military or civilian career it is not the only factor. Other factors such as benefits, education, esprit de corps, promotions, travel, etc., must also be weighed when making such a decision. [Ref. 2]

The Health Personnel All-Volunteer Task Force was formed in February of 1973 to investigate specific problems associated with the establishment of an All-Volunteer Medical Corps: first, the task force found that there was a national shortage of health professionals; second, they identified a large gap between the pay of most military health professionals and their civilian counterparts; and third, they found that the Veterans Administration and the Department of Health Education and Welfare appeared to be successful in attracting sufficient numbers of physicians due to the autonomy and flexibility the physicians were allowed in those agencies. [Ref. 2]

The following are the recommendations of the task force for improving recruitment and retention of physicians:

1. The most important factor in improving recruitment and retention is to improve pay comparability.
2. Provide the option of a permanent assignment for selected physicians.
3. Provide the option of a five year assignment for most physicians.
4. Allow physicians to take a year's sabbatical, with pay, after each seven years of active service, followed by at least one additional year of active duty.
5. Budget to guarantee \$500 per year for each board eligible physician to finance additional education and medical conference attendance.
6. Provide for the establishment of an enrollment and family practice format at most DOD outpatient facilities.

These recommendations were the basis for many of the changes which have become reality for today's Medical Corps. Some of the current programs used by the Department of Defense to acquire military physicians are the Medical School Scholarship Program, the Armed Forces Health Professions Scholarship Program, and the Uniformed Services University of the Health Sciences which provide a Medical School Education to prospective physicians at the government's expense. Additionally, accelerated promotion programs, residency training programs and monetary incentives, such as special pay and continuation pay have been provided to physicians as retention incentives. There are also other inducements such as retirement incentives and

personal benefits which have been implemented to attain desired manning levels among DOD physicians.

Even with all of these advances in programs and incentives the Department of Defense has still experienced difficulty developing a career oriented Medical Corps. This thesis will attempt to identify additional factors which may assist in future policy making decisions to aid in the development of a Medical Corps composed of career military physicians.

B. LITERATURE REVIEW

Numerous studies related to physician turnover and retention have been undertaken since the inception of the All-Volunteer Force. These works have ranged from behavioral research to analytical studies, but the purpose of each study was similar: to determine effective ways of retaining DOD physicians. The following is a brief summary of the literature beginning with previous thesis work on physician turnover conducted at the Naval Postgraduate School.

Menifee conducted a study using the 1978 DOD Survey of Officer and Enlisted Personnel data base which is similar to the data base I will use in this thesis. He demonstrated that career decisions were dependent on monetary benefits, satisfaction with military life and the work environment, and the organizational commitment of physicians. For example, in the case of physicians with less than ten years

of service, the most important factor was the wage-salary perception, but when looking at physicians with over ten years of service the perception of retirement benefits was most significant, with the perception of immediate supervisors being a close second. [Ref. 1]

Cain's thesis identified socioeconomic and personal factors which affected the retention of Medical Officers. In his analysis he identified variables which seemed to cause dissatisfaction among military physicians. Most physicians felt inadequately compensated for their efforts and felt they could receive more equitable monetary compensation as civilian physicians. Additionally, factors such as permanent change of station transfers, and the altering of individual lifestyles also contributed to dissatisfaction among this cohort of Medical Officers. [Ref. 2]

Feris and Peters conducted a study which also addressed organizational commitment and retention among military physicians. Their work suggested that in many cases the leadership necessary to develop loyalty and dedication within the Medical Corps was deficient. They also recommended that increased emphasis be placed upon individual needs and personal expectations in combatting the turnover problem among Medical Officers. [Ref. 3]

King's thesis (September 1973) states that the Navy has experienced retention problems among Medical Officers for a

period of 25 years. He argues that "token treatments in the form of: expanded training programs, subsidized medical education, liberalized promotion policies, and special and continuation pay all resulted in limited or no improvement." He concludes that additional sacrifices and policy adjustments will be necessary if we are to insure quality medical care for service members and their families. [Ref. 4]

The Center for Naval Analysis completed a study in November of 1973 concluding that the combination of scholarship programs and variable incentive programs will allow the Navy to attract and retain the required number of physicians to perform at or below currently authorized levels. These factors will additionally enable the Navy to achieve a better distribution of physicians by experience levels than is possible through conscription. [Ref. 5]

In March of 1975 the Consulting Department of Boeing Computer Services, Inc., completed a technical report which predicted that the Navy Medical Corps would experience Medical Officer shortages during the transition from a draft based Medical Corps to an All-Volunteer Corps. These shortfalls would last until approximately 1980, and at that time the implementation of both scholarship and educational programs would allow the Navy to regain its strength. The study also concluded that during the period of physician shortfalls some augmentation of the Medical Corps would be

necessary to provide medical care to military personnel and their dependents. They analyzed various methods of augmentation and recommended the CHAMPUS Program as the best alternative. [Ref. 6]

A research study done by Rand Corporation on the flow of physicians to the United States suggests that unless developing countries shift away from an emphasis on medical specialization an increasing number of specialists will leave to practice medicine in the United States. If increasing numbers of foreign medical school students and physicians leave their countries to practice medicine in the U.S. eventually a larger supply of prospective Medical Officers will be available to the military. [Ref. 7]

The Navy Personnel Research and Development Center conducted a study following the demise of the "doctor draft" to identify factors which influence career motivation among physicians. The findings suggest that 47 percent of the Navy Medical Officers responding to a questionnaire which was administered in March of 1973 planned to leave active duty at their earliest opportunity, while 36 percent were undecided, and only 17 percent planned to remain on active duty until retirement. The physicians responding to the questionnaire were dissatisfied with remuneration, the quality of facilities and equipment, and the amount of say they had in decisions which affected their careers. [Ref. 8]

Another study by Rand Corporation related to the procurement of Air Force Physicians. Their findings suggested that the Air Force Health Professions Scholarship Program (AFHPSP) provides a consistent source of military physicians in addition to a more stable distribution of physician attributes when compared to direct recruiting. [Ref. 9]

Finally, some psychological studies conducted by both Abraham Maslow and Frederick Herzberg in the specific areas of job satisfaction and motivation were reviewed. These works provided some insight into the reasons why certain factors are considered important by physicians, while other factors are not when considering a career in the military.

Maslow is famous for his development of the "hierarchy" of needs "theory" which divides motivational needs into two orders of progression: higher order and lower order. He then divides the orders into five types of needs: physiological, safety, social, self-esteem, and self-actualization. Maslow made several additional observations related to his theory:

1. Behavior is dominated and determined by those needs that are unfulfilled.
2. An individual will systematically satisfy his or her needs by starting with the most basic and working up the hierarchy.
3. Basic needs take precedence over all those higher in the hierarchy.

The theory also states that as individuals gradually move up in the hierarchy, they will be motivated by increasingly higher-level needs. This leads to the conclusion that physicians at different levels of the hierarchy will be motivated by different factors. [Ref. 10]

Herzberg developed a theory called the "two factor theory" which relates job satisfaction to motivation. He divides work factors into two basic classes: satisfiers and dissatisfies. Satisfiers are composed of content variables such as recognition, achievement, etc., while dissatisfies were divided into context variables such as good salaries, working conditions, etc. He also states that, when considering satisfiers, a high degree of reward will result in satisfaction and a low degree in dissatisfaction. Conversely, with dissatisfies, a high degree of reward will result in indifference and a low degree of reward in dissatisfaction. This theory should be valuable when selecting factors which may explain the career intentions of military physicians. [Ref. 11]

II. DATA AND METHODOLOGY

A. SURVEY DESCRIPTION

The data used in this study were acquired from the 1985 DOD Surveys of Officers and Enlisted Personnel and Military Spouses (Couples Survey). Selected individuals from each branch of service received a survey questionnaire as did their spouses in an effort to gather the needed data to develop a Couples File. Some individuals did not respond, but those questionnaires returned which were completely answered by both the service member and spouse totaled 33,724. The number of questionnaires answered by one member of the couple amounted to 27,303. Unmarried physicians are also included in the survey, along with those who were married and whose spouse did not respond to the survey. In the latter case, spouse responses were coded as missing data. The file contains 409 physicians; of these physicians, 264 were married and, for the married physicians, 216 spouses responded to the survey.

The sample was organized by branch of service and gender. Problems associated with the duplication of data were addressed by ensuring selection was based on the premise that a spouse had not previously answered a questionnaire. This was considered a necessary procedure

since some military physicians have spouses who are also military physicians. [Ref. 12]

The survey population consisted of military couples who were married at the time the survey population was identified. This excluded couples who were newly married, divorced, or separated. Table 2-1 is provided to display the response rates of officer couples broken down by gender. As can be seen, the average response rate of the officer community was 57.15 which is above the 45.63 average of all couples sampled. The only group of officers with less than a 50 percent response rate were Army females. [Ref. 12]

TABLE 2-1
NUMBER OF COUPLES SELECTED, ELIGIBLE, AND RESPONDING
BY GENDER

Officer Gender	Service	Number Selected	Number Eligible	Couple Responses	Response Rate
Male	Air Force	4,830	4,417	2,281	51.64
	Navy	2,750	2,550	1,653	64.82
	Marines	2,980	2,738	1,844	67.35
	Air Force	4,649	4,325	2,854	65.99
Female	Army	1,109	865	326	37.69
	Navy	500	415	241	58.07
	Marines	286	232	140	60.34
	Air Force	1,112	951	488	51.31

* The set of respondents consists of all couples for which both partners responded.

Source: 1985 DOD Surveys of Officer and Enlisted Personnel and Military Spouses.

The following criteria were established for selection of couples for the sample:

1. He or she had to be currently married.
2. If the member did not respond, but his/her spouse did respond, the spouse (present marital state) was used to determine if the couple were currently married.
3. The service member had to be currently in the service for at least four months as of September 30, 1984. [Ref. 12]

Previous thesis studies conducted at the Naval Postgraduate School used similar data, but this is the first study using a combination of physician and spouse data to determine those factors which affect the career intentions of military physicians. The use of spouse data hopefully will provide greater insight into the military physician's career decision process.

B. SAMPLE DESCRIPTION

A preliminary analysis of the sample group was conducted to gain some insight into the characteristics associated with the cohort. In describing the sample I have divided the variables provided by the survey into categories. These categories are as follows.

1. Physician Descriptive Categories

1. Demographic--biographical information.
2. Monetary incentives--variables used to measure the monetary rewards available to military physicians.
3. Physician's perceptions--used to evaluate the feelings physicians have toward the military.

4. Civilian opportunities--evaluation of opportunities physicians have in a civilian environment.

2. Spouse Descriptive Categories

1. Demographic--biographical information.
2. Monetary incentives--variables used to measure the monetary rewards available to spouses.
3. Spouse perceptions of military--used to evaluate the feelings spouses have toward the military.

A description of the sample is provided below in Tables 2-2--2-8 using responses from the survey.

In summary, these tables depict a sample of military physicians having demographic backgrounds similar to their spouses. They seem to be satisfied with most aspects of military life, but the opportunities available in civilian life are seen as "improvements" over a career in the military.

C. VARIABLE SELECTION AND METHODOLOGY

The development of a model requires the selection of both dependent and explanatory variables. The variable selection decisions for this thesis are based upon the analysis and theories developed by both Maslow and Herzberg, namely the "hierarchy of needs" and the "two factor" theories which support the hypothesis that job satisfaction is an important factor in determining the career intentions of military physicians.

In determining why some physicians remain the the military while others leave we can use Figure 2-1 to provide

TABLE 2-2

DEMOGRAPHIC CHARACTERISTICS

Description	Percentage
Service	
Army	45.5
Navy	29.3
Air Force	25.2
Gender	
Male	71.9
Female	28.1
Race	
Black	7.8
Asian	6.6
White	81.7
Other	3.9
Age	
25-30	35.7
31-35	27.1
36-40	16.2
41-45	10.7
46-50	4.4
51-58	5.9
Rank	
O-3	10.5
O-4	36.2
O-5	14.5
O-6	34.7
O-7+	4.0
Present Marital State	
Married 1st time	64.5
Remarried	12.8
Divorced/Separated	3.4
Single, Never Married	17.6

n = 409 Physicians

Demographic Characteristics--The sample is primarily composed of physicians who are married, white, and male in the paygrades O-3 or O-4 having received their commissions through a direct appointment or a health professional school.

Source: Developed by the author.

TABLE 2-3
 MONETARY INCENTIVES

Description	Percentage
Enough Income	
Pleased	23.0
Mostly Satisfied	40.6
Mixed Feelings	20.3
Mostly Dissatisfied	8.2
Satisfied with Military Pay/Allowances	
Very Satisfied	5.9
Satisfied	51.7
Mixed Feelings	16.9
Dissatisfied	19.4
Very Dissatisfied	6.1

n = 409 Physicians

Monetary Incentives-The cohort appears to be satisfied with their military incomes and the cost of living at their current duty station. A majority of physicians receive special pay.

Source: Developed by the author.

TABLE 2-4

PHYSICIAN'S PERCEPTIONS

Description Responses:	VSat	Sat	Dsat	VDsat
Personal freedom	4.9	43.5	24.7	10.3
Friendships	15.4	61.9	7.3	.7
Stability	8.4	47.8	19.8	6.2
Pay	5.9	51.7	19.4	6.1
Moving	5.4	35.9	23.8	5.7
Retirement	5.9	46.1	7.6	2.0
Serve country	22.7	58.9	1.7	.2
Year benefits	2.0	20.6	2.8	2.3
Medical care	23.8	55.0	7.6	.5
Dental care	15.9	46.8	16.7	6.9
Commissary services	10.8	52.1	14.0	2.9
Military life	4.4	33.7	13.0	6.4

* Vsat = very satisfied
 Dsat = dissatisfied

Sat = satisfied
 VDsats = very dissatisfied

n = 409 Physicians

Physician's Perceptions--The sample's perceptions of military life and factors associated with military life are generally favorable.

Source: Developed by the author.

TABLE 2-5
CIVILIAN OPPORTUNITIES

Description	Percentage
Past Yr Received Civilian Job Offers	
Yes	62.5
No	37.5
Past Yr. Looked for Civilian Job	
Yes	19.7
No	80.3
Better off with Civilian Job	
Strongly agree	49.4
Agree	23.6
Mixed	19.1
Disagree	6.4
Strongly disagree	1.5

n = 409 Physicians

Civilian Opportunities--Most physicians appear to feel they would be better off with a civilian job, since the opportunities available in the civilian job market are more profitable financially.

Source: Developed by the author.

TABLE 2-6

SPOUSE DEMOGRAPHIC CHARACTERISTICS

Description	Percentage
Gender	
Male	21.3
Female	78.7
Race	
Black	4.7
Asian	6.1
White	87.7
Other	1.4
Present Marital State	
Married, 1st time	85.8
Remarried, Div.	11.8
Remarried, Widowed	1.4
Separated	.9

n = 216 Spouses

Demographic--The sample of physician's spouses can be described as primarily white females who are married for the first time.

Source: Developed by the author.

TABLE 2-7

SPOUSE MONETARY INCENTIVES

Description	Percentage
Enough Income	
Pleased	26.1
Mostly satisf.	34.1
Mostly dissat.	8.5
Unhappy/Terrible	2.3

n = 216

Monetary Incentives--Spouses appear to be pleased with the financial support military physicians are capable of providing.

Source: Developed by the author.

TABLE 2-8

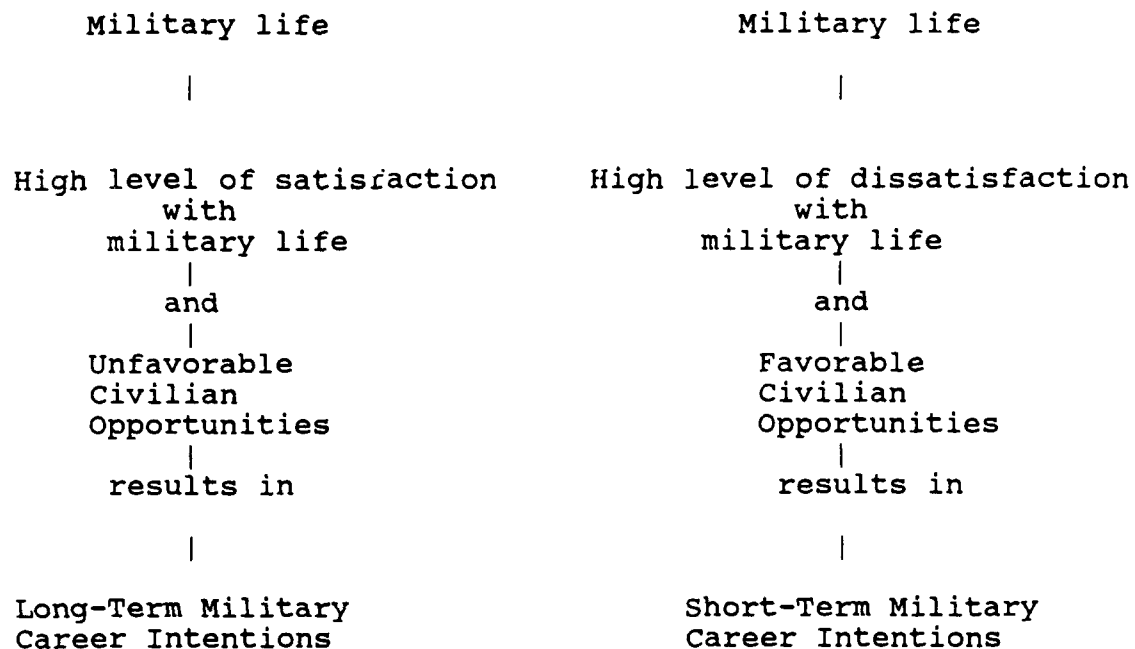
SPOUSES PERCEPTION OF THE MILITARY

Description	Percentage
Attitudes toward Military Family	
Excellent	15.5
Good	52.2
Fair	22.2

n = 216

Spouses Perceptions of Military--Table 2-8 indicates that spouses seem to support the idea of raising a family within a military environment.

Source: Developed by the author.



Source: Developed by the author.

Figure 2-1 Career Intentions Flow Chart

a simple flow chart which shows those factors which affect the career intentions of a military physician. The flow chart defines two paths, one resulting in long-term career intentions, and the other resulting in short-term career intentions. The flow chart indicates that career intentions are determined by satisfaction with military life and civilian opportunities.

The flow chart does not depict a scenario in which a physician has a high or low level of satisfaction with military life and favorable or unfavorable civilian opportunities. I would expect military physician's to have

a high level of satisfaction with military life, and favorable civilian opportunities. This expectation results in a flow which differs from those of Figure 2-1. The military physician will make a decision based upon the extent to which one of these factors outweighs the other. For example, if satisfaction with military life has a greater influence upon the physician's decision than civilian opportunities, he will choose a military career. The opposite effect may also occur, where civilian opportunities outweigh the physician's satisfaction with military life resulting in a civilian career.

In conducting the analysis a dichotomous variable, Career Intention, will be used as the dependent variable. The dependent variable will be constructed using Total Years Expected to Serve (O26E27) to indicate career intention. Career Intention will distinguish between two intended behaviors, short-term and long-term. Each of these behaviors results in two different outcomes relative to career intention. Physicians displaying short-term behavioral characteristics will leave the military to pursue a civilian career, while physician's with long-term characteristics will tend to be career-oriented. Physicians who expect to serve less than 20 years will be placed in the short-term category, while those intending to serve greater than 20 years will be placed in the long-term category. Additionally, candidate explanatory variables will be placed

in one of the ten categories described in the preceding section to determine their effects on the career intentions of military physicians.

The methods I will use in attempting to analyze career intentions among military physicians are multiple-regression analysis, factor analysis, and logit analysis.

Multiple-Regression Analysis will be used for the following purposes: (1) to estimate an equation which describes the relationship between the dependent variable (Career Intention) and various explanatory variables, and (2) to identify explanatory variables which predict the dependent variable most accurately.

Logit Analysis has been selected for its ability to correctly predict the membership of individual cases in the groups defined by the dependent variable, career intention (e.g., short-term, long-term). This capability will be used to validate regression results by distinguishing between career and non-career oriented physicians.

Factor Analysis provides the capability to identify factors which explain the correlation between variables, test hypotheses related to the variables, and summarize a large number of variables. These properties will be useful since many candidate explanatory variables in the survey are highly correlated. Factor analysis provides a means of identifying these variables and of grouping them so as to reduce the number of candidate variables. [Ref. 13].

III. MODEL DEVELOPMENT

A. EXPLANATORY VARIABLE SELECTION CRITERIA

Explanatory variables were selected based on their ability to explain the commitment and career intentions of military physicians and their spouses. Job Turnover theory was used as the basis for selection and classification of these variables. The factors selected to explain the commitment and career orientation of military physicians were classified by the following groups: Demographic Factors, Monetary Incentive Factors, Physician Perception Factors, and Civilian Opportunity Factors. Additionally, factors were grouped to assess the effect spouses have on the commitment and career intentions of military physicians. These factors were placed in the following groups: Spouse Demographic Factors, Spouse Monetary Factors, and Spouse Perception Factors.

The theories of Maslow and Herzberg were used to support this selection and grouping of factors. Maslow's "hierarchy of needs theory" placed needs into five progressive groups: Physiological, Safety, Social, Self-Esteem, and Self-Actualization. The factor groups selected for this study correspond to Maslow's "hierarchy of needs theory" as depicted in Table 3-1. The relationship of Factor Groups and Needs is displayed by the presence of an (X) in the

appropriate column. Factors can correspond to more than one Need as is evident in the Correlation Table.

TABLE 3-1

HIERARCHIAL CLASSIFICATION OF FACTOR GROUPS
RELATIONSHIP TABLE

Factor Groups	PN	SN	SCN	SEN	SAN
Demographic	X				
Monetary Incentive		X			
Phys. Perceptions				X	X
				X	X
Sps. Demographic	X				
Sps. Monetary		X			
Sps. Perceptions				X	X
* PN = Physiological Needs		SN = Safety Needs			
SCN = Social Needs		SEN = Self-Esteem Needs			
SAN = Self-Actualization Needs					

Source: Developed by the author.

Herzberg's "two factor theory" proposed two general classes of variables, satisfiers (content factors that result in satisfaction) and dissatisfiers (context factors producing dissatisfaction). The relationship between factor groups identified by this study and Herzberg's two general classes of variables is depicted in Table 3-2. Note that practically all factor groups (with the exception of

demographic factors) can be classified as either satisfiers or dissatisfiers. Classification is denoted by an (X) in the appropriate column.

TABLE 3-2
 SATISFIERS AND DISSATISFIERS
 CLASSIFICATION TABLE

Factor Groups	Satisfiers	Dissatisfiers
Monetary Incentives		X
Physicians Perceptions	X	X
Civilian Opportunities		X
Sps. Monetary Incentives		X
Sps. Perceptions	X	X

Source: Developed by the author.

B. GROUPING OF EXPLANATORY VARIABLES (ALL PHYSICIANS)

Groups were composed of explanatory variables which were selected from the 1985 DOD Surveys of Officer and Enlisted Personnel and Military Spouses User's Manual and Codebook. The variables were intentionally placed in specific groups to assist in explaining commitment and career intention among military physicians. The explanatory variables and groups used to explain how physicians view the military as a career option are presented in Tables 3-3 through 3-6. Variable names and survey index numbers are included in all

tables to facilitate referencing the 1985 User's Manual and Codebook. Factor Analysis results are included in Table 3-5 since a series of variables was used to form the factor groups.

TABLE 3-3
DEMOGRAPHIC FACTORS

Variable Name	Survey Index #
Sex	O35E34
Race/Ethnic Group	O39E38
Present Marital State	O51E48
Branch of Service	O3E3

Source: Developed by the author.

TABLE 3-4
MONETARY INCENTIVE FACTORS

Variable Name	Survey Index #
Wages	WAGES

Source: Developed by the author.

TABLE 3-5

PHYSICIAN PERCEPTION FACTORS
(ALL PHYSICIANS)

Variable	Survey Index Number	FG*	FL**
Satisfaction with:			
Personal Freedom	0109105A		***
Opp. to Serve Country	0109105I		***
Job Training	0109105L		***
Work/Environmental Cond.	0109105N		***
Pay & Allowances	0109105E	1	.5258
Family Environment	0109105F	1	.4266
Frequency of Moves	0109105G	1	.4647
Retirement Benefits	0109105H	1	.4475
Job Security	0109105M	1	.3468
Commissary Services	0109105R	1	.3465
Acquaintances/Friendships	0109105B	2	.6128
Work Group/Co-Workers	0109105C	2	.7691
Current Job	0109105J	2	.6287
Medical Care	0109105P	3	.4557
Dental Care	0109105Q	3	.9944
Satisfaction with:			
Adj. Higher Cost of Living	018E17A	1	.3670
Move/Set-Up New Household	018E17B	1	.8034
Cost Set-Up New Residence	018E17D	1	.7314
Transport Cost in Move	018E17E	1	.7913
Find Permanent Housing	018E17K	1	.5075
Recreation/Shopping Area	018E17L	1	.6660
Off Duty Employment (Phys)	018E17F	2	.5532
Civilian Employment (Spouse)	018E17G	2	.5864
Family Separations	018E17H	2	.5442
Continuing Ed. (Spouse)	018E17I	2	.6116
Transfer College Credits	018E17J	2	.7360
Child Adj. New Environment	018E17M	3	.5872
Spouse Adj. New Environment	018E17N	3	.8316
Self Adj. New Environment	018E17O	3	.3350
FG*	Factor Group		
FL**	Factor Loading		
***	Indeterminate Loading		

Source: Developed by the author.

TABLE 3-6

CIVILIAN OPPORTUNITY FACTORS

Variable Name	Survey Index #
Past Year Received Civilian Job Offer	O94E90
Past Year Looked For Civilian Job	O95E91
Family Better If Took Civilian Job	O108104D

Source: Developed by the author.

C. GROUPING OF EXPLANATORY VARIABLES (SINGLE PHYSICIANS)

The groups presented in Tables 3-3, 3-4, and 3-6 contain variables which are also used to explain commitment and career intentions among single military physicians. Table 3-5 represents the most significant change, since factor grouping and loading relative to the perceptions of single physicians differs from all physicians. Table 3-7 is presented with revised factor groups and factor loading values.

D. GROUPING OF EXPLANATORY VARIABLES (MARRIED PHYSICIANS)

The groups used in explaining commitment and career intentions among married physicians are similar to those previously employed with the exception of Table 3-5. Table 3-8 represents significant changes to factor grouping and loading relative to the perceptions of married physicians. This table is presented with revised factor analysis values.

TABLE 3-7

PHYSICIAN PERCEPTION FACTORS
(SINGLE PHYSICIANS)

Variable	Survey Index Number	FG*	FL**
Satisfaction with:			
Current Job	O109105J		***
Commissary Services	O109105R		***
Personal Freedom	O109105A		***
Pay & Allowances	O109105E	1	.5451
Family Environment	O109105F	1	.5449
Frequency of Moves	O109105G	1	.4093
Retirement Benefits	O109105H	1	.5814
Opp. to Serve Country	O109105I	1	.3881
Job Training	O109105L	1	.5853
Job Security	O109105M	1	.3666
Work/Environmental Cond.	O109105N	1	.6483
Acquaintances/Friendships	O109105B	2	.6317
Work Group/Co-Workers	O109105C	2	.9523
Medical Care	O109105P	3	.4434
Dental Care	O109105Q	3	.9914
Satisfaction with:			
Civilian Employment (Spouse)	O18E17G	1	.8046
Continuing Ed. (Spouse)	O18E17I	1	.9956
Child Adj. New Environment	O18E17M	1	.7462
Spouse Adj. New Environment	O18E17N	1	.6556
Move/Set-Up New Household	O18E17B	2	.6716
Cost Set-Up New Residence	O18E17D	2	.4641
Transport Cost in Move	O18E17E	2	.7270
Find Permanent Housing	O18E17K	2	.5495
Recreation/Shopping Area	O18E17L	2	.7203
Off Duty Employment (Phys)	O18E17F	3	.3869
Family Separations	O18E17H	3	.3132
Transfer College Credits	O18E17J	3	.9809
FG*	Factor Group		
FL**	Factor Loading		
***	Indeterminate Loading		

Source: Developed by the author.

TABLE 3-8

PHYSICIAN PERCEPTION FACTORS
(MARRIED PHYSICIANS)

Variable	Survey Index Number	FG*	FL**
Satisfaction with:			
Personal Freedom	O109105A		***
Family Environment	O109105F		***
Work/Environmental Cond.	O109105N		***
Acquaintances/Friendships	O109105B	1	.4594
Work Group/Co-Workers	O109105C	1	.6409
Opp. to Serve Country	O109105I	1	.4241
Current Job	O109105J	1	.8384
Job Training	O109105L	1	.5421
Job Security	O109105M	1	.3679
Pay & Allowances	O109105E	2	.5566
Frequency of Moves	O109105G	2	.4406
Retirement Benefits	O109105H	2	.4613
Medical Care	O109105P	3	.5914
Dental Care	O109105Q	3	.7899
Satisfaction with:			
Recreation/Shopping Area	O18E17L		***
Adj. Higher Cost of Living	O18E17A	1	.3713
Move/Set-Up New Household	O18E17B	1	.7764
Cost Set-Up New Residence	O18E17D	1	.7903
Transport Cost in Move	O18E17E	1	.8079
Off Duty Employment (Phys)	O18E17F	2	.5879
Civilian Employment (Spouse)	O18E17G	2	.5904
Continuing Ed. (Spouse)	O18E17I	2	.5992
Transfer College Credits	O18E17J	2	.7246
Child Adj. New Environment	O18E17M	3	.4084
Spouse Adj. New Environment	O18E17N	3	.6572
Self Adj. New Environment	O18E17O	3	.5956
FG*	Factor Group		
FL**	Factor Loading		
***	Indeterminate Loading		

Source: Developed by the author.

E. GROUPING OF EXPLANATORY VARIABLES (COUPLES)

The groups used in explaining commitment and career intentions among all physicians, single physicians, and married physicians are similar to those used among couples (physicians + spouses). Tables 3-6, 3-7, and 3-9 represent those factors considered important to military physicians and their spouses. The most significant differences are in the factor analysis of physician and spouse perceptions, since several series of variables are being used to characterize these perceptions. Table 3-9 presents these factor analysis results. Tables 3-10 and 3-11 are used to represent demographic and monetary factors relevant to military spouses.

F. FACTOR ANALYSIS GROUPS (REASONING)

The factor analysis results presented in the tables so far are of limited use unless we can determine why particular variables load into specific factors. The following discussion should assist in developing an understanding of the factor loadings depicted in each table.

1. Factor Loadings in Table 3-5

(a) Variable Series--Employment Considerations

1. Factor Group #1 (Work Concerns)--contains explanatory variables which are related to monetary incentives and job benefits.
2. Factor Group #2 (Social Concerns)--contains explanatory variables associated with friendships and work groups.
3. Factor Group #3 (Health Concerns)--contains explanatory variables related to medical and dental benefits.

TABLE 3-9

PHYSICIAN PERCEPTION FACTORS
(COUPLES)

Variable	Survey Index Number	FG*	FL**
Satisfaction with:			
Work/Environmental Cond.	O109105N		***
Personal Freedom	O109105A	1	.6499
Acquaintances/Friendships	O109105B	1	.4094
Work Group/Co-Workers	O109105C	1	.5707
Family Environment	O109105F	1	.3514
Frequency of Moves	O109105G	1	.3014
Opp. to Serve Country	O109105I	1	.3781
Current Job	O109105J	1	.7341
Job Training	O109105L	1	.5736
Job Security	O109105M	1	.4095
Pay & Allowances	O109105E	2	.9921
Medical Care	O109105P	3	.6895
Dental Care	O109105Q	3	.7028
Satisfaction with:			
Spouse Adj. New Environment	O18E17N		***
Adj. Higher Cost of Living	O18E17A	1	.3398
Move/Set-Up New Household	O18E17B	1	.7896
Cost Set-Up New Residence	O18E17D	1	.7861
Transport Cost in Move	O18E17E	1	.7911
Recreation/Shopping Area	O18E17L	1	.7757
Self Adj. New Environment	O18E17O	1	.6537
Off Duty Employment (Phys)	O18E17F	2	.6361
Civilian Employment (Spouse)	O18E17G	2	.5429
Continuing Ed. (Spouse)	O18E17I	2	.5823
Transfer College Credits	O18E17J	2	.7485
Child Adj. New Environment	O18E17M	3	.6297

TABLE 3-9 (CONTINUED)

Satisfaction with:

PCS Moves	S84A		***
Services Attitudes to Fam.	S84N		***
Pay & Allowances	S84B	1	.5335
Job Security	S84C	1	.4035
Medical Care	S84K	1	.6159
Environment for Families	S84L	1	.6045
Time Avail. with Family	S84O	1	.4204
Military Housing	S84A	2	.6195
Family Separations	S84H	2	.4763
Opp. for Education	S84M	2	.4788
Military Retire Benefits	S84D	3	.9032
Opp. Military Promotion	S84E	3	.5221
FG*	Factor Group		
FL**	Factor Loading		
***	Indeterminate Loading		

Source: Developed by the author.

TABLE 3-10

SPOUSE DEMOGRAPHIC FACTORS

Variable Name	Survey Index #
Sex	S36
Race/Ethnic Group	S40

Source: Developed by the author.

TABLE 3-11

SPOUSE MONETARY CONCERNS

Variable Name	Survey Index #
Total Amount of Debt	S66
Feelings about Family Income	S67

Source: Developed by the author.

b. Variable Series--Transfer Considerations

1. Factor Group #1 (Relocation Concerns)--contains explanatory variables which are related to moving and establishing a new residence.
2. Factor Group #2 (Off-Duty Concerns)--contains explanatory variables associated with the use of off-duty time through work or education.
3. Factor Group #3 (Adaptability Concerns)--contains explanatory variables related to a family's ability to adjust to a new environment.

2. Factor Loadings in Table 3-7

a. Variable Series--Employment Considerations

1. Factor Group #1 (Work Concerns)--contains explanatory variables which are related to monetary incentives and job benefits.
2. Factor Group #2 (Social Concerns)--contains explanatory variables associated with friendships and work groups.
3. Factor Group #3 (Health Concerns)--contains explanatory variables related to medical and dental benefits.

b. Variable Series--Transfer Considerations

1. Factor Group #1 (Dependent Concerns)--contains explanatory variables which are related to dependent's adjustment to new environment.
2. Factor Group #2 (Relocation Concerns)--contains explanatory variables which are related to moving and establishing a new residence.

3. Factor Group #3 (Personal Concerns)--contains explanatory variables related to the physician's use of off-duty time and educational opportunities.

3. Factor Loadings in Table 8

a. Variable Series--Employment Considerations

1. Factor Group #1 (Work Benefit Concerns)--contains explanatory variables which are related to job benefits, friendships, and training.

2. Factor Group #2 (Work Incentive Concerns)--contains explanatory variables associated with pay and retirement benefits.

3. Factor Group #3 (Health Concerns)--contains explanatory variables related to medical and dental benefits.

b. Variable Series--Transfer Considerations

1. Factor Group #1 (Relocation Concerns)--contains explanatory variables which are related to moving and establishing a new residence.

2. Factor Group #2 (Off-Duty Concerns)--contains explanatory variables associated with the use of off-duty time through work or education.

3. Factor Group #3 (Adaptability Concerns)--contains explanatory variables related to a family's ability to adjust to a new environment.

4. Factor Loadings in Table 3-9

a. Variable Series--Employment Considerations

1. Factor Group #1 (Work Concerns)--contains explanatory variables which are related to job benefits, friendships, and training.

2. Factor Group #2 (Monetary Concerns)--contains explanatory variables associated with pay and retirement benefits.

3. Factor Group #3 (Health Concerns)--contains explanatory variables related to medical and dental benefits.

b. Variable Series--Transfer Considerations

1. Factor Group #1 (Relocation Concerns)--contains explanatory variables which are related to moving and establishing a new residence.
2. Factor Group #2 (Off-Duty Concerns)--contains explanatory variables associated with the use of off-duty time through work or education.
3. Factor Group #3 (Adaptability Concerns)--contains explanatory variables related to a family's ability to adjust to a new environment.

c. Variable Series--Spouse Considerations

1. Factor Group #1 (Family Concerns)--contains explanatory variables which are related to the family environment, medical care, and time spent together.
2. Factor Group #2 (Physiological Concerns)--contains explanatory variables associated with the basic needs of every family such as: housing, family separation, and education.
3. Factor Group #3 (Work Incentive Concerns)--contains explanatory variables related to promotion and retirement benefits.

G. DEPENDENT VARIABLE SELECTION

The survey response used to develop the dependent variable **Career Intentions** is **Total Years Expected to Serve** (O27E26). **Total Years Expected to Serve** is used to form a new dichotomous variable, **Career Intentions**, by coding the responses into two groups representing those military physicians who are career oriented and those who are not career oriented. The 20 year mark of expected service will be the standard for constructing the dependent variable. Physicians intending to serve less than 20 years are placed in the non-career oriented group, while physicians who intend

to remain for 20 years or more are placed in the career oriented group.

Table 3-12 indicates the number of career oriented and non-career oriented military physicians. Fifty-seven percent of the 409 physicians are classified as non-career oriented while 43 percent are classified career oriented.

TABLE 3-12

CATEGORIZATION OF PHYSICIANS
(CAREER VS. NON-CAREER)

Career Intentions	Number of Physician's
Non-Career Oriented	224
Career Oriented	<u>185</u>
Total	409

Source: Developed by the author.

H. MODEL DEVELOPMENT

Factor Analysis is used to summarize groups of explanatory variables. Logit analysis provides a means of classifying military physicians into career and non-career oriented groups. The final product to be derived from this study will be a model which can accurately explain the career intentions of military physicians.

IV. RESULTS OF LOGIT ANALYSIS

A. ANALYSIS METHODOLOGY

Logit analysis was used to estimate the turnover model for physicians. The formula used in constructing these probabilities was the individual probability of a physician remaining in the military given individual characteristics X_{ij} :

$$P_i = \frac{1}{1 + e^{-e(a + \sum b_{ij}x_{ij})}}$$

where:

P_i = the probability of the i th physician remaining in the military.

a = the intercept derived from the logit regression analysis.

b_{ij} = the coefficient of the i th explanatory variable.

x_{ij} = the value of the j th explanatory variable for individual i .

The career orientation probabilities associated with a reference individual were used to calculate the partial effects of a change in an explanatory variable. Such changes can be calculated as the difference between the alternative value of an explanatory variable when compared

to the reference individual, while all other explanatory variables remain constant.

B. ANALYSIS RESULTS FOR ALL PHYSICIANS

As shown in Table 4-1, the reference physician for this analysis was a white, married, male, in the Army, who had not received a job offer, was not seeking employment, and did feel he would be better off with a civilian job.

TABLE 4-1
REFERENCE PHYSICIAN FOR LOGIT ESTIMATION
ALL PHYSICIANS

Attribute	Value
Gender	Male
Race	White
Marital Status	Married
Service	Army
Received job offer	No
Sought civilian job	No
Better off with civilian job	Yes

Source: Developed by the author.

The results of the all physician logit model are presented in Table 4-2. The impacts of individual variables are discussed below.

1. Individual Effects

Those factors identified as significant in explaining the career orientation, of all military physicians, listed in order of their relative importance

TABLE 4-2

CAREER INTENTION PROBABILITIES
ALL PHYSICIANS

Variables	Probability	Delta
Reference Individual	.348	
Gender		
Female		-.081
Race		
Non-white		.116
Marital State		
Single		.201
Service		
Navy		.156
Air Force		.141
Wages		
Avg. Wages + 10%		.630 ***
Civilian Employment		
Received Offers		.114
Sought Civilian Job		-.269 ***
Family Not Better Off		-.050
Family Separation		
Avg. Separation + 2 mos.		.009
Factors (mean + 1 s.d.)		
Work Concerns		-.110 ***
Social Concerns		-.111 ***
Health Concerns		.026
Relocation Concerns		-.017
Off-Duty Concerns		-.035
Adaptability Concerns		.017

n= 262

- *** significant at the .01 level
 ** significant at the .05 level
 * significant at the .10 level

Source: Developed by the author.

(from most important to least important), include: wages, sought civilian job, social concerns, and work concerns.

Gender was not significant, but results indicate that, if significant, gender would have a negative influence on the career orientation of military physicians.

Race was not significant. Results indicate that, if significant, race would have a positive effect on the career orientation of physicians.

Marital state was not significant. Results again indicate marital state would have a positive effect on the career orientation of military physicians if it were significant.

Navy and Air Force branches of service were also not significant, but results indicate that, if significant, these branches of service would have a positive influence on the career orientation of military physicians.

Wages were significant at the .01 level. An increase in the average wage of 10 percent or by \$4,361 results in a 63 percent increase in the probability that a military physician would be career oriented.

Physician's job offers were not significant, but results indicate this variable would have a positive effect on career orientation among military physicians.

Not seeking civilian employment was significant at the .01 level. If a physician did look for civilian employment, the probability of career orientation would

decrease by 26.9 percent. This was expected because many opportunities are available in the civilian sector for military physicians.

The variable indicating how a family felt about a military physician's employment in a civilian sector job was not significant. If significant this variable would have a negative effect on the career orientation of military physicians.

Family separation was not significant, but results indicate that, if significant, family separation would have a positive effect on the career orientation of military physicians. This unexpected effect is probably caused by the minimal amount of separation experienced by physicians in this sample.

Work Concerns were significant at the .01 level. Decreasing satisfaction levels among factors such as: pay, the family environment, moves, retirement benefits, job security, and commissary services result in an 11 percent decrease in the career orientation of physicians.

Social Concerns were also significant at the .01 level. Decreases in satisfaction with relationships with co-workers, friendships, and the current job would result in an 11.1 percent decrease in the probability of career orientation for physicians.

Health concerns were not significant but, if significant, health concerns would have a positive effect on career orientation.

Relocation concerns were not significant. Results indicate that, if significant, these concerns would have a negative effect on the career orientation of military physicians.

Off-duty concerns were not significant but, if significant, they would have a negative impact on career orientation.

Adaptability was also not significant but, results indicate that if these concerns were significant they would positively affect career orientation of military physicians.

As an overall measure of the adequacy of the model, a contingency table showing estimated vs. actual career intent was constructed as shown in Table 4-3. Seventy-eight percent of the 262 observations in this logit regression analysis were correctly classified. Results indicated that 47 percent of the 262 physicians were classified as career oriented, while 53 percent were classified as non-career oriented.

C. ANALYSIS RESULTS FOR SINGLE PHYSICIANS

As shown in Table 4-4, the reference physician for this analysis was a white, single, male, in the Army, who had not received a job offer, and was not seeking employment.

TABLE 4-3

CAREER INTENTIONS
ACTUAL VS. ESTIMATED

		Estimated		
		Non-Career	Career	Total
Actual	Non-Career	113 (43.1)	26 (9.9)	139 (53.0)
	Career	30 (11.5)	93 (35.5)	123 (47.0)
Total		143 (54.6)	119 (45.4)	262 (100.0)

Source: Developed by the author.

TABLE 4-4

REFERENCE PHYSICIAN FOR LOGIT ESTIMATION
SINGLE PHYSICIANS

Attribute	Value
Gender	Male
Race	White
Marital Status	Single
Service	Army
Received job offer	No
Sought civilian job	No

Source: Developed by the author.

The results of the single physician logit model are presented in Table 4-5. The impacts of individual variables are discussed below.

TABLE 4-5

CAREER INTENTION PROBABILITIES
SINGLE PHYSICIANS

Variables	Probability	Delta
Reference Individual	.102	
Gender		
Female		.166 *
Race		
Non-white		.085
Service		
Navy		.181
Air Force		.006
Wages		
Avg. Wages + 10%		.272 *
Civilian Employment		
Received Offers		.078
Sought Civilian Job		-.049
Factors (mean + 1 s.d.)		
Work Concerns		-.063 ***
Social Concerns		.021
Health Concerns		-.001
Dependent Concerns		.075 *
Relocation Concerns		-.050 **
Personal Concerns		-.020

n= 88

- *** significant at the .01 level
 ** significant at the .05 level
 * significant at the .10 level

Source: Developed by the author.

1. Individual Effects

Those factors identified as significant in explaining the career orientation, of single military

physicians, listed in order of their relative importance (from most important to least important), include: wages, gender, dependent concerns, work concerns, and relocation concerns.

Gender was significant at the .10 level. The probability of career orientation for a single female would increase by 16.6 percent as compared to a single male.

Race was not significant. Results indicate that, if race were significant, it would positively affect the career orientation of physicians.

Navy and Air Force branches of service were not significant. Results indicate that, if significant, these branches of service would have a positive influence on career orientation.

Wages were significant at the .10 level. Increasing the average wage by 10 percent or by \$3,685 results in a 27.2 percent increase in the probability of career orientation among single physicians.

Physicians receiving job offers and seeking employment were also not significant, but results indicate that, if significant, receiving a job offer would have a positive effect on career orientation while seeking employment would have a negative effect on career orientation.

Work Concerns were significant at the .01 level. Decreasing levels of satisfaction associated with pay,

moves, benefits, job training, and security resulted in a 6.3 percent decrease in the probability of career orientation among single military physicians.

Social and health concerns were not significant but, if significant, social concerns would have a positive effect on career orientation, while health concerns would have a negative effect on the career orientation of military physicians.

Dependent Concerns were significant at the .10 level. This variable was not expected to be significant among single physicians, but may be the result of the responses associated with divorced or separated physicians. Increases in the level of satisfaction associated with dependent employment, education, and the ability of both the spouse and children to adjust to a new environment results in a 7.5 percent increase in the probability of career orientation among single military physicians.

Relocation was significant at the .05 level. Decreased satisfaction with relocation factors such as: the costs associated with moving or setting up a new residence, the ability to find adequate housing, and the availability of recreational areas results in a 5 percent decrease in the probability of career orientation among single physicians.

Personal concerns were not significant, but results indicate that, if significant, these concerns would have a

negative effect on the career orientation of single military physicians.

As an overall measure of the adequacy of the model, a contingency table of estimated vs. actual career intent was constructed as shown in Table 4-6. Eighty percent of the 88 observations used in analyzing career orientation among single physicians were correctly classified. Of the 88 observations 37.5 percent were classified as career oriented, and 62.5 percent were classified as non-career oriented.

TABLE 4-6

CAREER INTENTIONS
ACTUAL VS. ESTIMATED

		Estimated		
		Non-Career	Career	Total
Actual	Non-Career	48 (54.5)	7 (8.0)	55 (62.5)
	Career	10 (11.5)	23 (26.0)	33 (37.5)
Total		58 (66.0)	30 (34.0)	88 (100.0)

Source: Developed by the author.

D. ANALYSIS RESULTS FOR MARRIED PHYSICIANS

As shown in Table 4-7, the reference physician for this analysis was a white, married, male, in the Army, who had not received a job offer, was not seeking employment, and did not feel his family would be better off with a civilian job.

TABLE 4-7

REFERENCE PHYSICIAN FOR LOGIT ESTIMATION MARRIED PHYSICIANS

Attribute	Value
Gender	Male
Race	White
Marital Status	Married
Service	Army
Received job offer	No
Sought civilian job	No
Better off with civilian job	Yes

Source: Developed by the author.

The results of the married physician logit model are presented in Table 4-8. The impacts of individual variables are discussed below.

1. Individual Effects

Those factors identified as significant in explaining the career orientation, of married military physicians, listed in order of their relative importance (from most important to least important), include: wages,

TABLE 4-8

CAREER INTENTION PROBABILITIES
MARRIED PHYSICIANS

Variables	Probability	Delta
Reference Individual	.292	
Gender		
Female		-.060
Race		
Non-white		.099
Service		
Navy		.125
Air Force		.151
Wages		
Avg. Wages + 10%		.670 ***
Civilian Employment		
Received Offers		.110
Sought Civilian Job		-.216 ***
Family Not Better Off		.083
Family Separation		
Avg. Separation + 2 mos.		.004
Factors (mean + 1 s.d.)		
Work Benefit Concerns		-.127 ***
Work Incentive Concerns		-.073 **
Health Concerns		-.016
Relocation Concerns		-.018
Off-Duty Concerns		-.017
Adaptability Concerns		.025

n= 254

- *** significant at the .01 level
- ** significant at the .05 level
- * significant at the .10 level

Source: Developed by the author.

sought civilian job, work benefit concerns, and work incentive concerns.

Gender was not significant. Results indicate that, if a physician was female and this variable was significant, there would be a negative influence on the career orientation of military physicians.

Race was not significant. Results indicate that, if significant, race would have a positive effect on the career orientation of physicians.

Navy and Air Force branches of service were also not significant. Results indicate that, if significant, these branches of service would have a positive influence on career orientation.

Wages were significant at the .01 level. Increasing average wages by 10 percent or by \$4306 results in a 67 percent increase in the probability of career orientation among married physicians.

The variable indicating physician's job offers was not significant, but results indicate that, this variable would have a positive effect on career orientation among military physicians.

Not seeking civilian employment was significant at the .01 level. Seeking employment decreases the probability of career orientation by 21.6 percent. This was expected because opportunities deemed attractive by physicians exist in the civilian sector.

The variable indicating a family's feelings about whether they would be better off if the physician were employed in a civilian sector job was not significant. Results indicate that, if significant, this variable would have a positive effect on the career orientation of military physicians.

Family separation was not significant. Results indicate that, if significant, family separation would have a positive effect on the career orientation of military physicians. This unexpected effect is probably caused by the minimal amount of separation experienced by physicians in this sample.

Work Benefit Concerns were significant at the .01 level. Decreases in the amount of job training or security, and the quality of friendships with co-workers resulted in a 12.7 percent decrease in the probability of career orientation among military physicians.

Work Incentive Concerns were significant at the .05 level. Inadequate pay, insufficient retirement benefits, and increasing the number of moves resulted in a 7.3 percent decrease in the probability of career orientation among married physicians.

Health concerns were not significant but, if significant, health concerns would have a negative effect on career orientation among military physicians.

Relocation was not significant, but results indicate that, if significant, relocation concerns would have a negative effect on the career orientation of military physicians.

Off-duty concerns were not significant but, if significant, these concerns would have a negative impact on the career orientation of military physicians.

Adaptability concerns were also not significant. Results indicate that if these concerns were significant they would positively affect the career orientation of military physicians.

As an overall measure of the adequacy of the model, a contingency table of estimated vs. actual career orientation intent was constructed as shown in Table 4-9. Seventy-eight percent of the 254 observations used to analyze career orientation among married physicians were classified correctly. Results indicated that 45.6 percent of the physicians were classified as career oriented, while 54.4 percent were classified as non-career oriented.

E. ANALYSIS RESULTS FOR COUPLES (PHYSICIANS AND SPOUSES)

As shown in Table 3-10, the reference couple for this analysis was comprised of: a white, married, male physician who was in the Army and who had not received a job offer, was not seeking employment, did not feel his family would be better off if he had a civilian job; and a female spouse, who was white, the couple has incurred debts in excess of

TABLE 4-9

CAREER INTENTIONS
ACTUAL VS. ESTIMATED

	Estimated		
	Non-Career	Career	Total
Non-Career	112 (44.1)	26 (10.3)	138 (54.4)
Actual			
Career	29 (11.4)	87 (34.2)	116 (45.6)
Total	141 (55.5)	113 (44.5)	254 (100.0)

Source: Developed by the author.

TABLE 4-10

REFERENCE PHYSICIAN FOR LOGIT ESTIMATION
COUPLES

Attribute	Value
Gender	Male
Race	White
Marital Status	Married
Service	Army
Received job offer	No
Sought civilian job	No
Better off with civilian job	Yes
Spouse Gender	Female
Spouse Race	White
Outstanding debt	> 5,000 dollars
Satisfaction with family income	Not satisfied

Source: Developed by the author.

5,000 dollars, and the spouse was not satisfied with the current family income.

The results of the couples logit model are presented in Table 4-11. The impacts of individual variables are discussed below.

1. Individual Effects

Those factors identified as significant in explaining the career orientation, of couples, listed in order of their relative importance (from most important to least important), include: wages, branch of service (naval and air force), received civilian job offer, sought civilian job, spouse and physician gender, work incentive concerns, work concerns, adaptability concerns, family concerns, and relocation concerns.

Physician's race was not significant. Results indicate that, if race were significant, it would positively affect the career orientation of physicians.

Navy was a significant branch of service at the .05 level. Physicians in the Naval service experienced an increase in the probability of career orientation of 62.5 percent over other services.

Air Force was significant at the .05 level. Among couples, a physician in the Air Force experiences increases in the probability of career orientation of 29.1 percent over other services.

TABLE 4-11

CAREER INTENTION PROBABILITIES
COUPLES

Variables	Probability	Delta
Reference Individual	.085	
Race		
Non-white		.065
Service		
Navy		.625 **
Air Force		.291 **
Wages		
Avg. Wages + 10%		.906 ***
Civilian Employment		
Received Offers		.133 *
Sought Civilian Job		-.082 ***
Family Not Better Off		.223
Family Separation		
Avg. Separation + 2 mos.		-.042
Spouse Gender		
Male		-.070 **
Spouse Race		
Non-White		-.012
Outstanding Debt		
< Five Thousand Dollars		.062
Satisfaction with Total Income		
Satisfied		-.027
Factors (mean + 1 s.d.)		
Work Concerns		-.048 **
Monetary Concerns		-.026
Health Concerns		-.012
Relocation Concerns		-.037 *
Off-Duty Concerns		-.027

TABLE 4-11 (CONTINUED)

Adaptability Concerns	-.039 **
Family Concerns	-.038 *
Physiological Concerns	-.004
Work Incentive Concerns	-.052 ***

n = 150

- *** significant at the .01 level
- ** significant at the .05 level
- * significant at the .10 level

Source: Developed by the author.

Wages were significant at the .01 level. Increasing wages by 10 percent or by \$4,234 resulted in a 90.6 percent increase in the probability of career orientation among military physicians.

Physicians not receiving a job offer in the past year was significant at the .10 level. Physicians receiving a job offer display a 12.3 percent increase in the probability of career orientation over those who have not received job offers.

Not seeking civilian employment was significant at the .01 level. Those physicians who have sought civilian employment experienced a 8.2 percent decrease in the probability of career orientation.

The variable indicating a family's feelings about whether they would be better off if the physician were employed in a civilian sector job was not significant. Results indicate that, if significant, this variable would

have a positive effect on the career orientation of military physicians.

Family separation was also not significant, but results indicate that, if significant, family separation would have a positive effect on the career orientation of military physicians. This unexpected effect is probably caused by the minimal amount of separation experienced by physicians in this sample.

Spouse and physician gender were significant at the .01 level. Male spouses cause the probability of career orientation among female physicians to decrease by 7 percent.

Spouse race was not significant, but results indicate that, if significant, spouse race would have a negative impact on the career orientation of military physicians.

Outstanding debts were not significant. Results indicate that, if significant, outstanding debts would have a positive effect on career orientation of military physicians.

Satisfaction with total income was not significant. Results indicate that, if significant, this variable would have a negative impact on the career orientation of military physicians.

Work Concerns were significant at the .05 level. Decreases in factors such as: personal freedom, friendships,

job training, and job security resulted in a 4.8 percent decrease in the probability of career orientation among military physicians.

Monetary concerns were not significant but, if significant, this variable would have a negative impact on career orientation.

Health concerns were also not significant but, if significant, health concerns would have a negative effect on career orientation.

Relocation Concerns were significant at the .10 level. Physicians experiencing decreased levels of satisfaction relative to moving costs and the ability to adjust to new environments caused a 3.7 percent decrease in the probability of career orientation.

Off-duty concerns were not significant but, if significant, these concerns would have a negative impact on career orientation.

Adaptability Concerns of dependents were significant at the .05 level. The inability of children to adapt to new environmental conditions resulted in a 3.9 percent decrease in the probability of career orientation among physicians.

Family Concerns were also significant at the .10 level. Inefficient medical care, poor family environmental conditions, and the inability of physicians to spend time with their families as perceived by spouses results in a 3.8

percent decrease in the probability of career orientation among military physicians.

Physiological concerns were not significant but, results indicate that, if significant, these concerns would have a negative effect on the career orientation of military physicians.

Work Incentive Concerns were significant at the .01 level. Perceived deficiencies in promotion opportunities and retirement benefits by spouses resulted in a 5.2 percent decrease in the probability of career orientation among military physicians.

As an overall measure of the adequacy of the model, a contingency table of estimated vs. actual career orientation intent was constructed as shown in Table 4-12. Eighty-six percent of the 150 observations used to analyze career orientation among couples were correctly classified. Career oriented physicians amounted to 45.4 percent of the 150 observations, while 54.6 percent were classified as non-career oriented.

TABLE 4-12

CAREER INTENTIONS
ACTUAL VS. ESTIMATED

		Estimated		
		Non-Career	Career	Total
Actual	Non-Career	74 (49.3)	8 (5.3)	82 (54.6)
	Career	12 (8.0)	56 (37.4)	68 (45.4)
Total		86 (57.3)	64 (42.7)	150 (100.0)

Source: Developed by the author.

V. CONCLUSION

A. SUMMARY

The purpose of this study was to identify those factors which result in the retention and career orientation of military physicians. The results of this study may be used to modify existing policies for military physicians in order to reduce physician turnover rates and eventually result in a more efficient medical health care system. In conducting this study the following research questions were asked:

1. Primary Question

What are the primary factors and their relative importance which are associated with military physicians choosing to remain for a 20 year career?

2. Secondary Questions

What policies would be most effective in retaining military physicians?

How will current policies affect the future manning levels of military physicians?

In answering these questions several techniques (factor analysis, logit analysis, and multiple regression analysis) were used to analyze the attitudes and intentions of military physicians and their spouses. The results indicate several factors such as wages, civilian employment opportunities, work incentives, social relationships,

gender, relocation costs, branch of service and family concern are significant in explaining career intentions. These factors and an explanation of their current and future effects upon the retention and career orientation of military physicians are discussed in the following sections.

B. CONCLUSIONS

1. All Physicians

All physicians considered wages a significant factor in deciding whether they would make the military a career. Physicians are an extremely marketable group of professionals because of the great demand for their services within the civilian environment. They are capable of receiving wages in the public sector which are equivalent to or exceed their military earnings. Results of the analysis indicated the strong effect that an increase in wages can have on the retention of military physicians, but wage increases are controlled via the defense budget and acquiring additional funding to support increased salaries is often difficult. Additionally, since the military pay structure represents an equitable distribution of funds based upon performance, rank, and tenure, salary increases must be approved for all military personnel not simply for one group of individuals.

The significance of this variable indicates the need to increase the comparability of wages between civilian and military physicians if we are to retain a greater percentage of the physicians on active duty. The wages of military

physicians can only be raised through an extensive legislative process requiring presidential and congressional approval of across-the-board wage increases for all military personnel. Such increases may occur, but they take time and usually will not achieve levels which decrease the perceived wage inequities existing between military physicians and their civilian counterparts.

Civilian employment opportunities are readily available for all groups of military physicians. This study indicates that most physicians on active duty do not seek civilian employment, but they believe employment can be obtained with little difficulty. Results indicate that if physicians decide to pursue civilian employment, retention will be adversely affected. Military policy makers must consider this fact when developing incentive programs. The most efficient and economical means of combatting this problem may be to provide greater incentives to military physicians at specific times (just prior to a physician's first and second EAOS) in his or her career. This will assist in swaying physicians considering a career change to remain on active duty.

Work incentives (pay, retirement benefits, and job security) are another group of significant variables for all groups of physicians. Pay issues have been addressed, but retirement benefits provide an additional mechanism which can be used to improve career orientation among all

physicians. The current retirement policy of averaging an individual's three highest pay levels and providing him with a percentage of this average does not encourage retention among physicians. Retirement benefits are one of the best means of developing a career oriented force of military physicians. This incentive makes the military an attractive career option since a physician can spend 20 years in the military, and when pursue a civilian practice or career.

Social relationships (friendships, acquaintances, and co-worker relationships) are an incentive which has always been inherent in the military service. The military provides military physicians with the opportunity to associate with fellow physicians. Policy makers may consider allowing those physicians desiring to do so the opportunity of remaining in geographic locations for longer periods of time to facilitate the effects such an incentive.

2. Single Physicians

Gender was a significant variable in explaining career orientation among single physicians. Single female physicians were more apt to become career oriented than their male counterparts. This finding may support increased recruiting and quota development for single female physicians.

Relocation costs associated with moving and establishing a new residence were another significant factor among career oriented single physicians. Increased

financial support for single physicians involved in a permanent change of station (PCS) move should be considered as another avenue for retaining military physicians.

3. Married Physicians

Results show that wages and military benefits are extremely important to married physicians since they must support the needs of their families. Military pay scales must be standard so a certain degree of equity is guaranteed to all military personnel, and an increase in wages is constrained by budgetary considerations. Increases in incentives such as BAQ and VHA may be used as a means of supplementing the wages of married personnel and of increasing the probability of retaining a larger number of married physicians.

Relocation is a significant factor when considering career orientation among married physicians. The planning and financial requirements associated with a family's PCS move are extensive and place a strain upon a military family. Children must be taken out of school, spouses must seek new employment, new housing must be acquired, and the family must start over again in a new environment. Policy makers may desire to reduce the frequency of PCS moves. This would result in a higher degree of satisfaction for physicians and their families and would reduce the amount of funding required to support these moves.

4. Couples (Physicians and Spouses)

Navy and Air Force physicians have a greater probability of being career oriented when compared to Army physicians. This may be the result of many different factors, but since branch of service is significant only among couples, the premise is that Navy and Air Force spouses are actually more satisfied with the military. Determining why these spouses are more satisfied would require a comparison of factors which affect the attitudes of military spouses. Such a comparison is beyond the scope of this thesis, but may warrant a follow on study.

Family related concerns such as the family environment, and time spent with the family are significant among couples. These concerns affect retention among military physicians, since physicians who are either overworked, or are able to acquire only low quality housing in a poor environment. Physicians will develop poor attitudes toward the military and these attitudes will be affected by the attitudes of their spouses. Policy makers should consider such factors when determining physician manning levels for geographic locations and duty stations. Insufficient numbers of physicians in a certain geographic location will result in physicians having to work extra hours to support the medical needs of the military communities they service. Additionally, locations which have sub-standard environments need to have excellent military housing facilities which

will be available to physicians and their spouses. These two policy decisions may improve retention among military physicians.

C. RECOMMENDATIONS FOR FURTHER RESEARCH

Military physicians provide extremely valuable services to military communities throughout the world. Retention of these professionals is a priority issue within the Department of Defense. The factors identified by this study and the policy considerations addressed indicate a need for additional research and provide opportunities for analysts interested in the career orientation of military physicians.

In recommending areas for further research, the relative importance of factors and the impact these factors have on the career orientation of military physicians should be considered. Some areas which deserve further attention are: the comparability of actual wages between military and civilian physicians, the comparison of factors influencing career orientation among spouses of physicians by branch of service, and a career orientation study of female physicians.

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