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# Initial Effectiveness of the FY 1989 Medical Officer Retention Bonus

Laurie J. May  
Joyce S. McMahon

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## **Initial Effectiveness of the FY 1989 Medical Officer Retention Bonus**

Laurie J. May  
Joyce S. McMahon



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**ABSTRACT**

In response to the declining retention of military physicians, Congress enacted a Medical Officer Retention Bonus (MORB) for FY 1989. This research memorandum examines the effect the MORB is having on the retention of Navy physicians.

## EXECUTIVE SUMMARY

In a response to declining retention rates, Congress authorized funds for a Medical Officer Retention Bonus (MORB) in FY 1989. The purpose of the bonus is to induce physicians to enter into multiyear contracts and thus raise retention levels via longer service commitments. This research memorandum examines the effect the MORB is having on the retention of Navy physicians.

The MORB gives physicians annual payments that are additive to their regular military compensation and special pays. The amount of the MORB varies by specialty and the length of the agreement, which ranges from two to four years. During FY 1989, all fully trained specialists who have at least eight years of creditable service, are below the grade of O-7, and will have completed any training obligation by the end of FY 1991 are eligible for the MORB.<sup>1</sup> Table I gives the annual MORB rates by specialty and contract length. The MORB was enacted in two phases: some specialties became eligible for the MORB 1 January 1989, and others became eligible 24 March 1989.

Table I. MORB annual rates

Specialty	Contract length		
	Two years	Three years	Four years
<b>Eligible since 1 January 1989</b>			
Surgery, radiology, nuclear medicine	10,000	15,000	20,000
Anesthesiology, ophthalmology, urology, otolaryngology	8,000	12,000	16,000
OB/GYN	2,000	7,000	12,000
Cardiology	3,000	6,000	10,000
Dermatology	11,000	14,000	18,000
Gastroenterology, emergency	3,000	5,000	7,000
Internal subspecialties	11,000	13,000	15,000
<b>Eligible since 24 March 1989</b>			
Pediatric subspecialties	11,000	13,000	15,000
Undersea medicine, aerospace, occupa- tional, preventive, neurology, pathology, psychiatry, physical, general internal, general pediatrics, family practice, other	1,500	3,000	8,000

1. The MORB is targeted for senior physicians, which means that many junior physicians will reach the end of their initial training obligation and have a chance to leave before they become MORB-eligible.

## METHODOLOGY FOR EVALUATING THE EFFECT OF THE MORB

To evaluate the effectiveness of the MORB, the implied retention rates of the MORB acceptance rates are compared to estimates of the retention rate that would have been expected if there had been no MORB. Historical retention rates provide baseline estimates of the cumulative two- and four-year retention rates. MORB contract acceptance rates are minimum-bound estimates of the future retention rates. Therefore, if the contract acceptance rates exceed the historical retention, it can be concluded that the MORB has had a positive effect on retention. However, if the contract acceptance rates are below the baseline retention rates, the effect of the MORB is ambiguous given that some individuals who do not take a contract may stay. Historical retention rates are calculated using Bureau of Medicine Information System data for FY 1983 to FY 1989.

### MORB ACCEPTANCE RATES COMPARED TO HISTORICAL RETENTION

The MORB contract acceptance rate among unobligated physicians is less than the historical retention rate of MORB-eligible physicians. Table II compares contract acceptance rates to the historical retention rates of unobligated physicians who would have been eligible for the MORB had such a bonus been offered in the past.<sup>1</sup> Table II gives the two- and four-year cumulative retention rates of this subset of physicians based on the behavior of the FY 1987 and FY 1985 cohorts respectively. A two-year contract acceptance rate measures the percentage of MORB-eligible physicians who accept a contract of two or more years. The two-year historical, or cumulative, retention rate traces the percentage of the physicians in the FY 1987 cohort, who would have been MORB-eligible had the MORB existed, who stayed two or more years. Four-year comparisons are based on four-year contract acceptance and the trace of the FY 1985 cohort.

Overall, contract acceptance rates for unobligated physicians are below the historical retention rates, revealing no evidence of improved long-term retention. However, the difference between contract acceptance rates and historical retention rates is diminished for unobligated physicians not nearing a retirement eligibility decision point. Given that a number of physicians may be choosing to keep their options open by not locking into a multiyear contract, but may ultimately choose to stay in the Navy, the difference between contract acceptance rates and retention rates does not necessarily indicate that the MORB has failed.

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1. Historically, MORB eligible physicians are defined as those doctors who by the end of a given hypothetical MORB-offer year had eight years of creditable service, were below the rank of O-7, had no more than a two-year training obligation, and were fully trained in a specialty.

Table II. Aggregate contract acceptance rates and historical retention rates of MORB-eligible physicians<sup>a</sup>

	Contract acceptance rate/cumulative retention rate	
	Two years	Four years
Unobligated physicians	.64/.69	.52/.55
Unobligated physicians not nearing retirement <sup>b</sup>	.65/.68	.55/.56

a. Excludes eligible FY 1989 recalls, interservice transfers, and direct accessions.

b. Excludes physicians with 18 to 20 years of service.

#### FY 1989 RETENTION

Retention rates for FY 1989 give some preliminary indications that the MORB may be having some positive effects on short-term retention. It is difficult to interpret the one-year retention rates for FY 1989 in the context of the MORB because the MORB involves at least a two-year contract.

Table III gives preliminary results from FY 1989 that show decreased retention for the non-MORB-eligible group and increased retention for the MORB-eligible group compared to FY 1988. Furthermore, the decline in the retention rate of the non-MORB-eligible group is not due to increased losses among General Medical Officers (GMOs) but rather is due to a decline in the retention of specialists who did not qualify for the MORB. For the short term, retention has increased in the aggregate, and the improvement has occurred among the MORB-eligible physicians.

Although the timing of the MORB and the six-month lag between resignations and departures was expected to limit the MORB's effect on FY 1989 retention, the attention that was given to the issue of physician compensation prior to implementing the MORB may have caused some physicians to postpone their leave decision until a pay plan for FY 1989 was adopted. Some of the improved retention of the MORB-eligible physicians may be attributed to contract acceptance by physicians who had tentatively planned to leave. Some of the non-MORB-eligible physicians may have been angered by their exclusion from MORB coverage and decided to leave.

Table III. Comparison of retention rates by subgroup for unobligated physicians: FY 1988 and FY 1989 (population size in parentheses)

	FY 1988	FY 1989
Non-MORB-eligible		
Specialists <sup>a</sup>	.58 (154)	.54 (156)
GMOs	.66 (294)	.67 (313)
MORB eligible <sup>a</sup>	.81 (955)	.86 (943)

a. Retention rates are calculated based on the period of the fiscal year for which specialists were eligible for the MORB. Table I separates the specialists into two groups, with eligibility lengths of nine months and six months.

The evidence from the FY 1989 retention analysis reveals that a number of physicians who have not taken contracts are staying in the Navy. These physicians may have been encouraged by the MORB, but want to wait for a permanent pay plan before making the final decision to stay for multiple years. It is impossible to predict with certainty what these physicians will choose to do in FY 1990, but in FY 1989 there appears to have been at least a temporary improvement in retention.

#### POSSIBLE REASONS FOR LIMITED EFFECTIVENESS OF THE MORB

Several factors appear to be contributing to the limited effectiveness of the MORB in guaranteeing improved long-term retention. First, because many unobligated physicians are not eligible for the MORB, the maximum effect the MORB could have on the aggregate retention rate is limited.

Second, the MORB results only in a moderate reduction in the expected civilian-military pay gap over the next four years. In FY 1989, the first year of the MORB, the pay gap for eligible physicians is reduced from about \$26,500 to about \$14,400. Extrapolating the past trend of the civilian-military pay gap from FY 1984 through FY 1988 yields an estimate of the civilian-military pay gap of about \$30,000 after four years of the MORB. Finally, for physicians that are averse to locking themselves into a four-year contract at the present time, the financial incentives for two- and three-year contracts may be weak for many specialties.

## CONCLUSIONS

Measuring the net effect of the MORB at this time is difficult. Preliminary indications are that for long-term expected retention, contract acceptance rates do not demonstrate any definitive improvement. Actual retention estimates for FY 1989, however, indicate a small, short-term improvement in retention that would not be expected in the absence of the MORB, given the size of the FY 1989 pay gap without the MORB. The net improvement in retention is based on higher retention of the MORB-eligible physicians and lower retention of the non-MORB-eligible physicians as compared to historical retention rates.

Although many factors limit the MORB's appeal, including its timing and its expected lack of effectiveness in reducing the pay gap over the length of the MORB contract, there is some evidence that the MORB and the attention being paid to the issue of physician pay has at least temporarily improved retention. Whether this improvement will be long term will depend on a number of factors, and can only be determined after more data have been collected. A significant number of physicians are staying and not accepting contracts, thereby maintaining their flexibility with regard to leaving the Navy. If they plan to stay but are unwilling to commit formally to long-term contracts because the financial incentive is not very great compared to the potential costs, such as the cost of being moved, then retention may actually be improving. If they were waiting to see the permanent pay plan, and are dissatisfied with it, then retention may resume a downward trend in FY 1990.

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## INTRODUCTION

In a response to declining retention rates, Congress authorized funds for a Medical Officer Retention Bonus (MORB) in FY 1989. The purpose of the bonus is to induce physicians to enter into multiyear contracts and thus raise retention levels via longer service commitments. This research memorandum examines the effect the MORB is having on the retention of Navy physicians.

## BACKGROUND

Since FY 1984, the retention of Navy physicians has been declining. The retention rate at the end of initial obligation, which is the first time a physician can leave the Navy after completing training, has declined from 48 percent in FY 1984 to 33 percent in FY 1988 (see [1] for details). In addition to declining rates, retention rates vary significantly among specialties, with specialties that are high paying in the civilian sector having significantly poorer retention.

Paralleling the pattern of declining physician retention is the problem of a widening pay gap between civilian and military physicians. Since 1980, the relative buying power of Navy physicians' income has declined because of inflation and the fact that increases in special pay for military physicians have lagged behind raises for civilian physicians. In addition, civilian incomes have not increased uniformly across specialties, causing an uneven widening in the civilian-Navy income disparity across specialties. For FY 1988, the average pay gap for unobligated fully trained specialists in the Navy was \$25,000, whereas the differential ranged from \$1,200 for pediatricians to \$117,200 for the average thoracic-cardiovascular surgeon.

## MEDICAL CORPS COMPENSATION

Military physicians receive four types of special pay in addition to their regular military compensation (which is composed of base pay, basic allowance for quarters (BAQ), basic allowance for subsistence (BAS), variable housing allowance (VHA), and the tax advantage stemming from the tax exempt status of the allowances). All physicians receive Variable Special Pay (VSP). Physicians who are not in their initial residency and are in good standing can receive Additional Special Pay (ASP) by signing a one-year service agreement. All board-certified physicians receive Board Certified Pay (BCP). Combined, VSP, ASP, and BCP range from \$16,000 to \$21,500 for board-certified physicians and from \$14,000 to \$19,000 for those who are not board certified, depending on years of service.<sup>1</sup> In addition to this base layer of special pays, fully trained specialists are eligible for Incentive Special Pay (ISP), which, unlike the other special pays, varies in amount across specialties, with some receiving no ISP. ISP amounts and eligible specialties also vary from year to year. ISP requires a one-year service commitment (which can be worked off concurrently with any ASP agreement). Appendix A gives the current special pay schedules.

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1. This excludes interns and physicians in their initial residency, who are compensated at lower rates.

The MORB gives additional annual payments for multiyear commitments, which vary by specialty and the length of the agreement. MORB contracts range from two to four years. During FY 1989 all fully trained specialists who have at least eight years of creditable service, are below the grade of O-7, and will have completed any training obligation by the end of FY 1991 are eligible for the MORB.<sup>1</sup> Table 1 gives the annual MORB rates by specialty and contract length. The MORB was enacted in two phases: some specialties became eligible for the MORB 1 January 1989, and others became eligible 24 March 1989.

Table 1. MORB annual payment rates<sup>a</sup>

Specialty	Date eligible	Contract length		
		Two years	Three years	Four years
Surgery	1 Jan 1989	\$10,000	\$15,000	\$20,000
Anesthesiology	1 Jan 1989	8,000	12,000	16,000
Ophthalmology	1 Jan 1989	8,000	12,000	16,000
Otolaryngology	1 Jan 1989	8,000	12,000	16,000
Urology	1 Jan 1989	8,000	12,000	16,000
Radiology	1 Jan 1989	10,000	15,000	20,000
Nuclear medicine	1 Jan 1989	10,000	15,000	20,000
OB/GYN	1 Jan 1989	2,000	7,000	12,000
Cardiology	1 Jan 1989	3,000	6,000	10,000
Dermatology	1 Jan 1989	11,000	14,000	18,000
Gastroenterology	1 Jan 1989	3,000	5,000	7,000
Emergency	1 Jan 1989	3,000	5,000	7,000
Internal subspecialties	1 Jan 1989	11,000	13,000	15,000
Pediatric subspecialties	24 Mar 1989	11,000	13,000	15,000
Undersea medicine	24 Mar 1989	1,500	3,000	8,000
Aerospace	24 Mar 1989	1,500	3,000	8,000
Occupational	24 Mar 1989	1,500	3,000	8,000
Preventive	24 Mar 1989	1,500	3,000	8,000
Neurology	24 Mar 1989	1,500	3,000	8,000
Pathology	24 Mar 1989	1,500	3,000	8,000
Psychiatry	24 Mar 1989	1,500	3,000	8,000
General internal	24 Mar 1989	1,500	3,000	8,000
General pediatrics	24 Mar 1989	1,500	3,000	8,000
Family practice	24 Mar 1989	1,500	3,000	8,000
Physical	24 Mar 1989	1,500	3,000	8,000
Other	24 Mar 1989	1,500	3,000	8,000

a. Total Navy share of FY 1989 MORB authorization is approximately \$9 million.

1. The MORB is aimed at senior physicians; many junior physicians will become eligible to leave the Navy before they are eligible for the MORB.

## METHODOLOGY FOR EVALUATING THE EFFECT OF THE MORB

The MORB increases military compensation and reduces the civilian-military pay gap, which should make continued Navy service relatively more attractive to physicians. A retention-pay model, which is documented in [2], is used to yield insights into the expected effect of the MORB on retention. To evaluate the effectiveness of the MORB, the retention rates implied by the MORB acceptance rates are compared to estimates of the retention rate that would have been expected if there had been no MORB. Historical retention rates provide baseline estimates of the cumulative two- and four-year retention rates, which are used to evaluate the effect of the MORB through FY 1993.<sup>1</sup> Historical retention rates are calculated using Bureau of Medicine Information System data for FY 1983 to FY 1989.

MORB contract acceptance rates are minimum-bound estimates of the future retention rates. Therefore, if the contract acceptance rates exceed the expected retention or historical retention it can be concluded that the MORB has had a positive effect on retention. However, if the contract acceptance rates are below the baseline retention rates, the effect of the MORB is ambiguous given that some individuals who do not take a contract may stay.

In addition to an aggregate analysis, the retention implications of the MORB contract acceptance rates are evaluated based on factors that are expected to affect contract acceptance rates. The size of the civilian-military pay gap facing a physician is expected to affect the likelihood of his or her accepting a MORB contract. To analyze the effect the pay gap has on contract acceptance, physicians are divided into two groups based on the size of their civilian-military pay differential. A physician's obligation status also is expected to affect the likelihood of his or her accepting the MORB. To illuminate this issue, physicians also are categorized by their obligation status.

### MORB ACCEPTANCE RATES

The overall contract acceptance rates for all MORB-eligible physicians are presented in table 2. More than 40 percent of the eligible physicians have chosen not to accept a MORB contract of any length. Of those who have accepted contracts, 80 percent have chosen four-year contracts. There is a clear pattern that physicians tend to choose either the longest contract term available, which has the strongest financial incentive, or to not take a contract at all.

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1. Cumulative retention is calculated by tracing the number of people in a cohort who are still in the cohort after a specified period of time.

Table 2. MORB contract acceptance rates for all eligible physicians<sup>a</sup>

Contract length	Number of physicians	Percent
No contract	528	42.3
Two years	90	7.2
Three years	52	4.2
Four years	577	46.3

a. Excludes contract acceptances by 29 physicians who are recalls, interservice transfers, or direct accessions during FY 1989.

In addition to the physicians who do not take a contract, 50 physicians would have been MORB eligible based on their background characteristics had they not already left the Navy in the first two quarters of FY 1989 prior to the implementation of the MORB. In one sense, these physicians could be viewed as additions to the no-contract-acceptance group, but in another sense they could be viewed as having made a decision to leave the Navy prior to the implementation of the MORB. These physicians are excluded from all relevant calculations.

The MORB also may have had some effect on accessions. As of September of FY 1989, 29 recalls, interservice transfers, and direct accessions accepted MORB contracts. In evaluating contract acceptance rates to determine the effect the MORB is having on retention, the recall contracts and direct accessions are excluded. The effect the MORB is having on recalls is not a retention effect of the MORB but rather an accession effect; thus, it should be considered separately.

#### THE IMPLICATIONS MORB CONTRACT ACCEPTANCE RATES HAVE FOR RETENTION

##### Factors Influencing Contract Acceptance Rates

The expected effect of the MORB on retention is explored by using a model that links physician's pay and retention. The model is used to determine the important factors that influence retention behavior and thus are expected to affect contract acceptance rates. In addition, the model gives insight into the expected magnitude of the MORB's aggregate retention effect as well as its relative effect across subcategories of eligible physicians.

The pay-retention model links various characteristics of unobligated fully trained specialists to the probability that they leave the Navy in a given year.<sup>1</sup> Details of the model are given in appendix B. The model predicts the probability of leaving with a one-year time horizon. Because the model is estimated using yearly leave-decision data, it cannot readily be adapted to predict the retention behavior for a given cohort of physicians over a multiyear horizon. Additional difficulties involved in predicting for a multiyear horizon include predicting the civilian-military pay gap for future years and basing predictions beyond the first year on predicted values from the first year, which increases the potential forecasting error.

Although the model could estimate the retention rate for FY 1989 had there been no MORB, this benchmark retention rate would be of limited use in evaluating contract acceptance rates. It is difficult to evaluate the effect the MORB is having on retention in the first year because contract acceptance rates are expected to be below the actual FY 1989 retention rates, due to the fact that some individuals who do not take a multiyear contract will stay at least one year. For example, individuals who are planning on leaving in FY 1990 or FY 1991, such as those reaching retirement eligibility, would not accept a MORB contract but would remain on active duty in FY 1989.

Any physician who is considering leaving in the next two years probably would not accept a MORB contract. There may be a number of physicians who do not know whether they want to stay and are preserving their flexibility of choice. These physicians may have wanted to see what kind of permanent pay plan was selected by Congress before they would commit to a multiyear contract. In addition, since the minimum MORB contract is for two years, the correct frame of reference is a two-year retention rate instead of a one-year rate.

Although the model's ability to predict multiyear retention is limited, it identifies the factors that affect retention and thus are expected to affect contract acceptance behavior. The model controls for the effect of various personal characteristics such as age, sex, retirement eligibility, dependents, grade, source of entry, prior unobligated decisions, and the civilian-military pay gap, with the main focus of interest for policy being the pay gap. As the civilian-military pay gap increases, the probability that a physician will choose to leave the Navy also increases, other factors held constant. The model can also be used to demonstrate that obligation status is an important factor influencing retention. Physicians who have had a previous opportunity to leave the Navy and chose to stay have a significantly lower probability of leaving than those coming off an obligation. The effect of obligation status on retention also has been demonstrated in [1].

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1. These specialists are not obligated for training, augmentation, or promotion. They include individuals who are bound by ASP and or ISP contracts. Because these pay contracts are for one year, an individual has at least one opportunity during the fiscal year to leave.

### Comparison of MORB Acceptance Rates to Historical Retention Rates

The two major factors that affect physician retention behavior identified from the model (pay gap and obligation status) are used in conjunction with historical retention rates to evaluate the MORB's effectiveness. The historical retention rates of MORB-eligible physicians serve as benchmarks for evaluating contract acceptance rates. Historical rates provide measures of future cumulative retention rates. These, in turn, can be used to evaluate the expected retention rates over the next four years as implied by the MORB contract acceptance rates. The main problem associated with using historical retention rates as benchmarks is that, given the declining retention trend [1, 3], these rates may be a high measure of future retention rates.<sup>1</sup>

The MORB contract acceptance rate among unobligated physicians is significantly below the historical retention rate of MORB-eligible physicians. Table 3 compares current contract acceptance rates to the historical retention rates of the unobligated physicians who would have been eligible for the MORB had such a bonus been offered in the past. Historically, MORB-eligible physicians are defined as those doctors who by the end of a given hypothetical MORB-offer year had eight years of creditable service, were below the rank of O-7, had no more than a two-year training obligation, and were fully trained in a specialty. Table 3 gives the two- and four-year cumulative retention rates of this subset of physicians based on the behavior of the FY 1987 and FY 1985 cohorts respectively. (See appendix C for more detailed historical retention information.)

**Table 3.** Contract acceptance rates and historical retention rates of MORB-eligible physicians

	Contract acceptance rate/cumulative retention rate	
	Two years	Four years
Unobligated physicians	.64/.69	.52/.55

1. By making several simplifying assumptions, the model was adapted to provide a rough approximation of expected two-year retention for the MORB-eligible physicians on active duty at the start of FY 1989. The results indicate that the historical rates probably overestimate future retention rates by approximately 2 percentage points, and thus are overly stringent criteria for evaluating contract acceptance.

At the aggregate level, contract acceptance rates are below the historical retention rates. In addition, of the 943 MORB-eligible physicians unobligated in FY 1989, 79 percent have been unobligated previously and have elected to stay in the Navy. This group of physicians is expected to have a high contract acceptance rate, since many of them have chosen to stay in the Navy year after year without the MORB, and probably planned to stay in the Navy anyway.

In addition to comparing contract acceptance rates of the unobligated physicians to historical retention rates, the contract acceptance behavior of the MORB-eligible physicians is evaluated based on both pay and obligated service status. MORB-eligible physicians are categorized based on pay-gap size and obligated status. Physicians are divided into high- and low-pay-gap groups and into groups of those obligated through the end of FY 1989 (OBL), those coming off an obligation during FY 1989 (OFFOBL), and those previously unobligated (i.e., began FY 1989 unobligated) (PREVUNOB).

The specialties in the low-pay-gap group (LOW) are family practice, all pediatrics, pathology, psychiatry, neurology, general internal medicine, undersea medicine, aerospace medicine, occupational medicine, preventive medicine, and physical medicine. The specialties with relatively high civilian-military pay gaps (HIGH) are surgery, radiology, nuclear medicine, anesthesiology, ophthalmology, urology, otolaryngology, OB/GYN, cardiology, dermatology, gastroenterology, emergency, and the internal subspecialties. Table 4 presents the distribution of physicians by MORB eligibility, size, and obligation category.

Table 4. Composition of the physician force, FY 1989

	MORB-Eligible			Non-MORB-Eligible <sup>a</sup>			Total
	OBL	OFFOBL	PREVUNOB	OBL	OFFOBL	PREVUNOB	
HIGH	187	117	314	609	36	43	1,306
LOW <sup>b</sup>	117	82	430	706	84	47	1,466
GMO	0	0	0	844	167	146	1,157
Total	304	199	744	2,159	287	236	3,929

- a. A small number of non-MORB-eligible people in the HIGH and LOW categories would have been considered MORB eligible if the MORB had taken effect at the start of FY 1989. These are people who left prior to the start of the MORB, and are therefore considered non-MORB-eligible.
- b. The LOW group of MORB-eligible physicians includes 47 general medical officers (GMOs) in undersea medicine. GMOs are not generally eligible for the MORB.

The physician's MORB contract obligation is additive to any education or training obligation. This implies that most currently obligated physicians have little incentive to accept MORB contracts because such a contract would significantly lengthen their obligation. Since the currently obligated physicians eligible for the MORB will be off obligation by October 1991, a high contract acceptance pattern would be very positive evidence for future retention.

Table 5 compares contract acceptance rates to the historical two- and four-year cumulative retention rates of MORB-eligible physicians by obligation status and pay-gap group. Of unobligated physicians in the group with relatively high pay gaps, which make up about 46 percent of the unobligated eligible physicians, 60 percent have accepted MORB contracts of some length. Of the group of unobligated physicians with relatively low pay gaps, 68 percent have accepted MORB contracts. Since the HIGH group physicians have been eligible for the MORB for a longer period of time than the LOW group, the evidence clearly indicates that the physicians with low civilian-military pay gaps find the MORB relatively more attractive than the physicians in the HIGH group. However, the LOW group historically has had higher retention rates than the HIGH group, and contract acceptance rates of both groups are below their historical retention rates.

Table 5. Contract acceptance rates and historical retention rates of MORB-eligible physicians

Retention rate	Status (Contract acceptance rate/ historical retention rate <sup>a</sup> )			
	Obligated	Coming off obligation	Previously unobligated	All unobligated
Two-year cumulative				
HIGH	.28/.58	.26/.28	.73/.72	.60/.61
LOW	.50/.89	.52/.49	.71/.79	.68/.76
All	.37/.67	.37/.34	.72/.76	.64/.69
Four-year cumulative				
HIGH	.23/.30	.16/.25	.54/.57	.44/.49
LOW	.41/.51	.50/.45	.60/.62	.58/.60
All	.30/.38	.30/.31	.57/.60	.52/.55

a. Two- and four-year cumulative retention rates are based on the behavior of the FY 1987 and FY 1985 cohorts, respectively.

Stratifying by obligation status reveals that, of the groups examined, those coming off an obligation have the highest contract acceptance rates relative to their historical retention. Although only 37 percent of the physicians who are due off of their current obligation during FY 1989 have accepted MORB contracts, their contract acceptance rate is higher than their historical two-year retention rate of 34 percent. In particular, individuals coming off an obligation in the LOW pay-gap group have accepted MORB contracts at a high rate relative to their historical retention rate. Both the actual two- and four-year contract acceptance rates exceed the historical retention rates.

Physicians who are presently obligated have a very poor contract acceptance rate relative to the two- and four-year historical cumulative retention rates corresponding to the time period directly following contract acceptance. However, for this group, MORB obligation is additive to any current training obligation and therefore will not have an effect until after the current training obligation is completed. Therefore, it is more appropriate to compare contract acceptance rates for the obligated group to historical retention rates of those coming off an obligation, since a contract acceptance at this stage is a decision to stay in the Navy once the training obligation is completed. This comparison reveals a pattern similar to the pattern for those coming off an obligation, with two-year contract acceptance rates meeting or exceeding and four-year contract acceptance rates nearing historical retention levels.

Among unobligated physicians, those previously unobligated have a high contract acceptance rate--72 percent have taken some type of MORB contract. However, the two-year cumulative retention rate for this group is 76 percent anyway.

Many of the previously unobligated MORB-eligible physicians are nearing their first opportunity to retire. Individuals who are planning to retire within the next two years would not take a MORB contract. In addition, it is highly likely that individuals who are considering retiring but have not yet made a firm decision also would not take a MORB contract. Table 6 compares the contract acceptance rate of previously unobligated MORB-eligible physicians who are not nearing retirement to cumulative historical rates for this group. Physicians not nearing first retirement eligibility are defined as those doctors who have less than 18 or more than 21 years of service. Relative to history, the contract acceptance rates of previously unobligated physicians who are not near retirement eligibility is significantly higher than rates for all previously unobligated physicians. This reveals that many physicians who are nearing 20 years of service have chosen not to take a contract. Furthermore, the contract acceptance rate of those nearing 20 years of service is lower than their historical retention rate, which is consistent with the idea that individuals who are contemplating retirement do not want to commit to staying even though they may ultimately remain in the Navy beyond 20 years.

Table 6. Contract acceptance rates and historical retention rates of previously unobligated MORB-eligible physicians not nearing retirement

	<u>Contract acceptance rate/ historical retention rate</u>	
	<u>Two years</u>	<u>Four years</u>
HIGH	.76/.71	.61/.59
LOW	.73/.81	.64/.65
All	.74/.76	.62/.62

#### The Retention Model's Indications for Evaluating MORB Acceptance Rates

Contract acceptance rates compared to historical retention rates do not demonstrate that the MORB is successful in raising long-run retention rates for all groups. Although the pay-retention model cannot be used to directly predict the effect of the MORB, it does give insights into the expected magnitude of the MORB's effect and its relative effectiveness across physician subcategories. Even though the model is not readily capable of a formal prediction, analysis of the civilian-military pay gap gives some insight into the probable effect of the MORB. Table 7 shows the average pay gap in FY 1989 without the MORB and then with a four-year MORB for all specialists and for HIGH and LOW specialists. The data indicate that for the LOW specialists, the MORB reduces the pay gap to zero for the first year after MORB acceptance. After four years, the pay gap would be expected to have risen to approximately \$7,400 based on historical trends of the civilian-military pay gap for this group. For the HIGH group, the pay gap of about \$41,100 is reduced in the first year of the contract to about \$25,100, but will rise to about \$46,500 after four years.

From the model described in [2], the elasticity of the probability of leaving with respect to the civilian-military pay gap is estimated. The elasticity measures the percentage change in the probability of leaving given a percentage change in the size of the pay gap. Basically, the percentage reduction or increase in the pay gap from one year to another is translated into an expected decrease or increase in the percentage change in the aggregate probability of leaving for all physicians through the mechanism of the estimated elasticity. Using the estimated retention model from [2], separate elasticities are calculated for MORB-eligible unobligated physicians from the LOW and HIGH pay-gap specialties. Details of the calculations are in appendix B.

Table 7. Civilian-military pay gaps for specialists and subgroups under a four-year MORB contract

	FY 1989	FY 1989 with MORB	FY 1993 with MORB
Specialists <sup>a</sup>	\$27,100	\$14,400	\$30,000
HIGH	41,100	25,900	46,500
LOW	7,900	0	7,400

a. For calculation of the pay gap for specialists, alternative civilian data for some of the specialists are not available. The pay gaps calculated rely on the availability of civilian data, which are more complete for the HIGH group.

Since the LOW MORB-eligible unobligated group has a small overall estimated elasticity of .071 along with a high historical retention record (83 percent for FY 1988), it seems unlikely that retention would increase among this group, even given that the pay differential is eroded completely in the first year of the contract. For the HIGH MORB-eligible unobligated group, which has an overall elasticity of .345, the pay differential is diminished substantially in the first year of the contract but is still quite large and can be expected to grow substantially in each subsequent year of the contract. By the end of the MORB contract, the HIGH specialists would be expected to have a pay gap higher than the one that they currently have, based on historical trends.

The extrapolated pay gap for FY 1991, after two full years of the MORB contract, gives a rough approximation of the average expected effect of the MORB on the pay gap within the LOW and HIGH groups. This approximation of the pay-gap change was applied to the elasticities for the HIGH and LOW groups of MORB-eligible unobligated physicians.<sup>1</sup> The distribution of physicians by HIGH and LOW groups, combined with their elasticity estimates and the observed probability of leaving based on FY 1988, yielded the result that only minimal improvement in retention can be expected for specialists regardless of their pay-gap status. Low-pay-gap specialists have low elasticities and already have high retention, so little improvement is predicted for these physicians. High-pay-gap specialists have higher elasticities, but also have lower retention and lower expected reduction in the average pay gap over

1. Pay-gap measures were calculated for MORB-eligible unobligated physicians to apply to the model. The measures used are slightly higher than the calculations in table 7, which include some obligated physicians.

four years. The net result is that, although the model is not readily adapted to predicting one-year retention with multiyear MORB contracts, a rough approximation indicates that the MORB would not be expected to generate more than minor improvements in retention for any subgroup. Therefore, the lack of substantial improvement in retention measured by contract acceptance rates is not entirely unexpected.

#### FY 1989 RETENTION

Although it is difficult to interpret retention rates for FY 1989 in the context of the MORB, some preliminary indications can be seen. In general, retention for FY 1989, based on estimated total year losses as of October 1989, appears to be higher than for FY 1988, although the increase is not large. However, the pattern of retention has changed considerably compared to prior years, as can be seen in table 8. Patterns of retention for the HIGH and LOW groups controlling for MORB-eligible status are compared to historical behavior of physicians who would have been in the relevant groups if the MORB had been in effect in prior years. As an additional control, the retention behavior is tracked for GMOs who are not eligible for the MORB. For the HIGH group, retention is based on January through September, and for the LOW group, retention is based on April through September.

Table 8. Comparison of retention rates by subgroup for unobligated physicians: FY 1988 and FY 1989<sup>a</sup> (population size in parentheses)

	FY 1988		FY 1989	
GMO	.66	(294)	.67	(313)
HIGH MORB-eligible	.73	(488)	.77	(431)
HIGH non-MORB-eligible	.53	(51)	.51	(45)
LOW MORB-eligible	.89	(467)	.93	(512)
LOW non-MORB-eligible	.61	(103)	.56	(111)
Non-GMO total	.77	(1,109)	.81	(1,099)

a. Since the MORB became effective 1 January for the HIGH group and March 24 for the LOW group, the retention rates are calculated from January through September for the HIGH group, and from April through September for the LOW group.

It can be seen that, compared to FY 1988, preliminary results from FY 1989 show decreased retention for the non-MORB-eligible groups and increased retention for the MORB-eligible groups for both the HIGH and LOW categories. As a comparison, the GMO group, which is not eligible for the MORB, shows virtually no change in retention between the two years. The overall retention rate for unobligated specialists, including the few GMOs who are MORB-eligible, is higher for FY 1989 than for FY 1988. This reverses the general trend observed for FY 1988 and FY 1987, which demonstrated declining retention [1, 3].

The evidence from the FY 1989 retention analysis reveals that many physicians who have not taken contracts are staying in the Navy. It is impossible at this time to predict what will happen with regard to retention for FY 1990, but if the pattern established in FY 1989 remains stable, there will be support for the position that the MORB has been beneficial. For FY 1989, the increase in retention for the MORB-eligible group has dominated the decrease in retention for the much smaller non-MORB-eligible group.

Preliminary analysis supports the idea that the MORB has been a focus for the physicians in FY 1989, although contract acceptance has not been strong enough to guarantee long-term improved retention. For the short term, retention has increased, and the improvement has occurred among the MORB-eligible physicians. Some of the improved retention of the MORB-eligible physicians may be attributed to contract acceptance by physicians who had tentatively planned to leave. Some of the non-MORB-eligible physicians may have been angered by their exclusion from MORB coverage and decided to leave.

The timing of the MORB, however, and long lag between resignations and departures may have limited its effect on FY 1989 retention. In the medical corps, physicians must give six months notice before leaving. Therefore, when the MORB became available in January and March, physicians who were planning to leave by May and September already had submitted their letters of resignation. Although letters of resignation can be withdrawn, this is difficult to do for physicians who have made civilian job commitments. However, the discussion and attention that was given to the issue of physician compensation prior to implementing the MORB may have caused some physicians to postpone their leave decision until a pay plan for FY 1989 was adopted. In addition, much of the observed improvement in retention in FY 1989 may be due to the ongoing attention that has been given to the issue of physician compensation.

A number of physicians who did not accept FY 1989 MORB contracts may have been waiting to see whether Congress would adopt a more permanent approach to linking military compensation to civilian alternative income streams. These physicians may have been encouraged by the MORB, but wanted to wait for a permanent pay plan before making the final decision to stay for multiple years. It is impossible to predict with certainty what these physicians will choose to do in FY 1990, but in FY 1989 retention appears to have improved at least temporarily.

## POSSIBLE REASONS FOR LIMITED EFFECTIVENESS OF THE MORB

Several factors appear to contribute to the MORB's limited effectiveness in guaranteeing improved long-term retention. Because many unobligated physicians are not eligible for the MORB, the maximum effect the MORB could have on the aggregate retention rate is limited. Only 75 percent of physicians who are previously unobligated or who become unobligated during FY 1989 are eligible for the MORB. Of the unobligated physicians, the junior specialists (that is, those physicians with less than eight years of service) and GMOs are not generally eligible for the MORB. Junior personnel, especially those just completing their initial obligation, have a significantly higher sensitivity to pay than senior personnel. Although the retention behavior of junior personnel is more likely to be affected by pay changes than that of senior personnel, only about 36 percent of physicians completing their initial obligation are eligible for the MORB. Thus, because the MORB is aimed at senior personnel, it misses the opportunity to affect the retention behavior of individuals completing their initial obligation, which is the main retention decision point for Navy physicians.

Another possible reason for the weak effectiveness of the MORB is that it only moderately reduces the expected pay gap of physicians in the HIGH group over the next four years. In the first year of the MORB, the pay gap is reduced from about \$41,100 to about \$25,100. However, there is no current authority to increase special pays other than minor changes in ISP over the next few years, so any increases in military pay would come through increases in base pay or changes in ISP. Extrapolating the past trend of the civilian-military pay gap from FY 1984 through FY 1988, a period of time when special pays (except for incentive special pay) were not increased, a conservative estimate would have the civilian-military pay gap for the HIGH group at about \$46,500 after four years of the MORB. Further, there is no plan that will automatically adjust military special pays to compensate for growth in the civilian sector's comparable income levels after the four-year MORB period is over.

In addition, the MORB may be unappealing to some physicians because it introduces significant variation in pay between specialties. Although this will not be unattractive to specialists who would be highly paid in the civilian sector, it may irritate specialists with low civilian alternative income. These physicians may have enjoyed the fact that in the Navy, they were paid as well as, or nearly as well as, specialists who would command much higher pay than they would if both were in the civilian sector.

Finally, for physicians who are averse to locking themselves into a four-year contract at the present time, the financial incentives for two- and three-year contracts may appear to be weak for many specialties. An unobligated physician who rejects the MORB may have a one-year obligation for pay, but may also believe that the Navy is unlikely to reassign him given his short obligation. The same physician with a

four-year obligation may feel that it is more likely that the Navy would reassign him, which could have negative financial implications if a spouse had to seek a new job and/or a house had to be sold at short notice. For family considerations, many physicians might reject a relatively small MORB payment to avoid the problems caused by an unwanted move.

## CONCLUSIONS

Measuring a net effect of the MORB at this time is difficult. Preliminary indications are that for long-term expected retention, contract acceptance rates do not indicate any definitive overall improvement. There is some evidence that the strongest effect of the MORB, based on contract acceptance, is on the group of specialists coming off an obligation during the current fiscal year. Actual retention rates for FY 1989, however, indicate a small short-term improvement in retention that would not be expected in the absence of the MORB, based on the size of the FY 1989 pay gap without the MORB. The net improvement in retention is based on improvement for the MORB-eligible physicians and lower retention for the non-MORB-eligible physicians for both the LOW and HIGH groups.

The temporary nature of the FY 1989 MORB and the strong possibility that there would be future changes in the special pays' schedules reduced the incentives for physicians to take a MORB contract. Also, the MORB requires multiyear service commitments, which is a departure from the past one-year commitments associated with ISP and ASP.

Although many factors limit the appeal of the MORB, including its timing and its expected lack of effectiveness in reducing the pay gap over the length of the MORB contract, there is some evidence that the MORB and the attention being paid to the issue of physician pay have at least temporarily improved retention. Whether this improvement will be long term will depend on a number of factors, and can only be determined after more data have been collected. A significant number of physicians are staying and not accepting contracts, thus maintaining their flexibility with regard to leaving the Navy. If they plan to stay, but are unwilling to commit formally to long-term contracts because the financial incentive is not very great compared to the potential costs (such as the cost of being moved), then retention may actually be improving. If they were waiting for a permanent pay plan and are dissatisfied with it, then retention may resume a downward trend in FY 1990.

#### REFERENCES

- [1] CNA Research Memorandum 89-33, *Retention of Navy Physicians, FY 1984-1988*, by Amy E. Graham and Laurie J. May, Jun 1989 (27890033)<sup>1</sup>
- [2] CNA Research Memorandum 89-62, *A Retention Model for Navy Physicians*, by Joyce S. McMahon, Jun 1989 (27890062)
- [3] CNA Research Memorandum 88-231, *Medical Manpower Shortages and the Retention of Navy Physicians*, by Laurie J. May, Amy E. Graham, and Michelle A. Dolfini, Mar 1989 (27880231)

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1. The number in parentheses is a CNA internal control number.

**APPENDIX A**

**MEDICAL CORPS SPECIAL PAYS**

APPENDIX A

MEDICAL CORPS SPECIAL PAYS

Table A-1 and A-2 give the FY 1989 schedules for medical corps special pay.

Table A-1. FY 1989 Pay Schedule for ASP, VSP, and BCP

Years of creditable service	VSP	BCP	ASP
< 6	\$5,000	\$2,000	\$9,000
6 - <8	10,000	2,000	9,000
8 - <10	9,500	2,000	9,000
10 - <12	9,000	2,500	10,000
12 - <14	8,000	3,000	10,000
14 - <18	7,000	4,000	10,000
18 - <22	6,000	5,000	10,000
22+	5,000	5,000	10,000
Initial residency training	As above	0	0
Internship	1,200	0	0
Grade 0-7 and above	1,000	5,000	10,000

Table A-2. FY 1989 pay schedule for ISP

Specialty	Years since completion of residency	ISP
Surgery, Urology	<6	\$10,000
Otolaryngology, Ophthalmology, Anesthesiology, OB/GYN	≥6	16,000
Radiology <sup>a</sup> Psychiatry Emergency Cardiology <sup>b</sup> Gastroenterology <sup>b</sup>	All	8,000
Aerospace	All	3,500
Undersea medicine	All	3,000

a. Excludes radiology therapists.

b. Includes pediatric and internal medicine specialists.

**APPENDIX B**

**PHYSICIAN RETENTION-PAY MODEL**

## APPENDIX B

### PHYSICIAN RETENTION-PAY MODEL

The estimation of the retention model for Navy physicians used a logit model to analyze the characteristics of physicians as they translate into predicting the probability that a given physician will choose to leave the Navy.<sup>1</sup> The logit model is used to calculate the elasticity of the probability of leaving with respect to the civilian-military pay differential. Variation in the pay differential across individuals and across years is matched to individual physicians' decisions to leave or stay over five years, holding constant the effect of the other variables in the model. The elasticity is used to measure the sensitivity of physicians to pay gaps with regard to their decisions to stay in the Navy or seek civilian employment. The formula is:

$$\text{elasticity} = \frac{\text{percentage change in probability of leaving}}{\text{percentage change in pay differential}}$$

From the overall elasticity of the model, a separate elasticity can be calculated for each subgroup of interest. This permits prediction of the effect of different pay raises by subgroup to be translated into prediction of different retention results by subgroup. The elasticity for each subgroup is derived from:

- The overall estimated pay sensitivity of all physicians across 22 specialties and five years of data
- The most recently observed probability of leaving for physicians within each subgroup
- The most recently observed level of the average pay gap for physicians within each subgroup.

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1. The model considers physicians who are either unobligated at the beginning of the fiscal year or who will become unobligated during the course of the fiscal year.

The formula for specialty specific elasticities can be written as:

$$\text{elasticity}_j = B \times \text{paydif}_j \times (1 - \text{prob\_leave}_j) ,$$

where  $j$  indexes a subgroup and  $B$  represents the overall sensitivity of specialists to pay differentials.

All observed pay differentials and probabilities are taken from data for FY 1988 by specialty. The estimated sensitivity of specialists to pay differentials,  $B$ , is based on analysis of all 22 specialties from FY 1984 to FY 1988. The estimated  $B$  used here differs slightly from the estimate used in [2] since the model was estimated with an additional year of data, FY 1988, and the data included physicians practicing in executive medicine but assigned to their clinical subspecialty. Since the MORB is available to physicians in executive medicine, and the data now permit such physicians to be identified and assigned to a specialty, physicians in executive medicine were included in the model estimation.

In addition to the objections of comparing the one-year baseline retention rate to the MORB acceptance rate for contracts of a minimum of two years, it is very difficult to use the model to predict a one-year retention rate for FY 1989 taking the MORB into consideration. Because the model is estimated using data from a period when pay obligations did not exceed one year, it cannot predict the probability of leaving in FY 1989 based on MORB obligations ranging from two to four years. In addition, the model is not readily adapted to predicting for multiple years in the future. Finally, the model cannot fully represent the group of MORB-eligible physicians, since no measure of comparable civilian income for a number of these physicians is available.

The model cannot predict retention for multiyear contracts. However, by making several simplifying assumptions, the probable order of magnitude of the MORB's effect can be roughly calculated. By evaluating the change in the civilian-military pay gap from FY 1984 to FY 1988, we can extrapolate the pay gap's probable progression after the MORB is accepted, assuming a four-year contract is taken. Using the probable pay gap in the middle of the MORB contract period offers an average estimate of the reduction of the pay gap due to the MORB over the term of the contract.

The elasticities and pay-gap information for MORB-eligible unobligated specialists by HIGH and LOW are given in table B-1. The MORB reduces the pay gap more for the LOW group than for the HIGH group, when evaluated at the mid-point of the contract. However, using the elasticities and the FY 1988 probabilities of leaving with the relevant pay gaps, it turns out that the predicted effect of the four-year MORB is a slight decrease in the estimated probability of leaving, or in other

words, an increase in expected retention by a very small amount. The expected effect on retention is stronger for the HIGH group than for the LOW group.

**Table B-1. Estimated elasticities and effect of mid-MORB probability of leaving for MORB-eligible unobligated specialists**

	LOW	HIGH
Elasticity	.071	.345
FY 1989 pay gap without MORB	\$8,000	\$41,900
Mid-MORB pay gap	\$3,800	\$37,100
Probability of leaving in FY 1988	.170	.320
Estimated probability after adjusting for mid-MORB	.163	.310

**APPENDIX C**

**HISTORICAL RETENTION RATES**

APPENDIX C

HISTORICAL RETENTION RATES

Tables C-1, C-2, and C-3 give the historical cumulative retention rates for physicians who would have been eligible for the MORB had it been offered in the past. Historically, MORB-eligible physicians are defined as those individuals who by the end of the hypothetical MORB-offer year had eight years of service, were below the rank of O-7, had no more than a two-year training obligation, and were fully trained in a specialty. Using FY 1983 to FY 1988 data, tables C-1, C-2, and C-3 give the historical two- and four-year cumulative retention rates for MORB-eligible physicians.

Table C-1. Historical cumulative retention rates for obligated MORB-eligible physicians (population size in parentheses)

Retention rate	Cohort year (fiscal years)			
	1984	1985	1986	1987
Two-year cumulative				
HIGH	65 (142)	63 (171)	58 (150)	58 (154)
LOW	89 (64)	86 (100)	81 (57)	89 (70)
All	73 (206)	72 (271)	64 (207)	67 (224)
Four-year cumulative				
HIGH	34 (142)	30 (171)	--	--
LOW	72 (64)	51 (100)	--	--
All	46 (206)	38 (271)	--	--

Table C-2. Historical cumulative retention rates for MORB-eligible physicians coming off an obligation (population size in parentheses)

Retention rate	Cohort year (fiscal years)			
	1984	1985	1986	1987
Two-year cumulative				
HIGH	38 (120)	38 (130)	36 (140)	28 (130)
LOW	66 (71)	57 (60)	64 (56)	49 (51)
All	48 (191)	44 (190)	71 (195)	34 (181)
Four-year cumulative				
HIGH	30 (120)	25 (130)	--	--
LOW	51 (71)	45 (60)	--	--
All	38 (191)	39 (190)	--	--

Table C-3. Historical cumulative retention rates for previously unobligated MORB-eligible physicians (population size in parentheses)

Retention rate	Cohort year (fiscal years)			
	1984	1985	1986	1987
Two-year cumulative				
HIGH	67 (419)	71 (385)	68 (423)	72 (409)
LOW	78 (451)	75 (480)	77 (460)	79 (466)
All	73 (873)	73 (865)	72 (883)	76 (875)
Four-year cumulative				
HIGH	48 (419)	57 (385)	--	--
LOW	63 (451)	62 (480)	--	--
All	56 (873)	60 (865)	--	--