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Impact of Increasing Obligated Service for Graduate Medical Education

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Executive summary

Previous Center for Naval Analyses (CNA) studies, the Health Professions' Retention-Accession Incentive Study (HPRAIS) [1-2] and the Life-Cycle-Cost (LCC) study [3-4], showed that:

1. Growing fully trained military physician specialists is very expensive, and the Services need to increase their return on these investments (i.e., increase physician retention) [3-4].
2. Most uniformed physician specialties are not very responsive to increases in special pays—it takes large increases in pay to modestly increase retention [1-2].

As a result, the TRICARE Management Activity/Health Affairs (TMA/HA) is evaluating the feasibility of increasing the active duty obligation (ADO) for graduate medical education (GME) to lower costs and improve their return on investment. The Office of the Under Secretary of Defense for Personnel and Readiness (P&R) asked CNA to evaluate the impact of increasing the Armed Forces Health Professions Scholarship Program (AFHPSP) ADO—a study we completed in October 2003 [5]. The GME ADO study's tasking is to evaluate the impact of changing the GME ADO from concurrent to consecutive payback with prior obligations. Because this results in a large increase, we also evaluated the impact of smaller increases.

Major findings

This study answers two questions. If DoD increases the ADO, (1) how will total accession requirements and costs change, and (2) what will happen to the quantity and quality of the GME applicant pool?

Changes in requirements and costs

A major determinant of the degree to which accession requirements (and, ultimately, costs to DoD) fall is the way that the Services size and

are willing to alter their in-house GME programs. Moreover, seniority or experience requirements drive the optimal size of the program.

Our analysis shows that DoD can decrease its total accessions by 15 percent by altering in-house GME to access into GME only those physicians needed to fill seniority requirements versus those simply needed to fill current in-house GME startups. We estimate that DoD could save $169 million per year in the steady state through this better business practice alone.[1]

Assuming that current in-house GME startups are fixed, the Services have a severely limited ability to reap the maximum potential benefits from increasing the GME ADO. We find that each of the four alternative GME obligation policies we modeled resulted in increased costs compared with the current policy if GME startups are fixed. This occurs because the Services are constrained to access enough people to meet their fixed GME requirements—people the Services may not need to meet billet requirements. The result is a substantial excess of physicians relative to billet requirements.

When we make the GME obligation consecutive with any prior obligation *and let the model choose the economic-optimal number of GME startups*, we estimate that DoD could save $89 million compared with the current GME policy with economic-optimal GME. Interestingly, total accession requirements don't fall as a result of this policy change, but shift from AFHPSP direct to AFHPSP deferred accessions.

Changes in the applicant pool

Our analysis of the Services' ability to attract and access both the quantity and quality of candidates required for the GME program support marginal increases in the GME ADO. We based this finding on several factors.

1. The amount that could be saved is less if retention is lower or seniority requirements are higher than estimated. Specifically, the AFHPSP ADO study [5], which used different survival data of USUHS accessions, estimates these cost savings at $61 million.

First, past increases, which marginally changed the effective ADO for most specialties, resulted in small decreases in the percentage of physicians matriculating into in-house GME. Second, the GME program directors we interviewed felt that a marginal increase, such as a 1-year increase, would not significantly hamper their ability to attract qualified candidates. Third, the quality of GME applicants, as measured by medical licensing exam scores, seems stable over time. Fourth, when we asked current residents and fellows about their willingness to accept an obligation-to-training ratio of 1.25:1 compared with the current 1:1 ratio, 55 percent said they would have accepted it. We believe that this underestimates their willingness to accept a longer ADO given the respondents' incentives. Also, it seems unlikely that most physicians would fail to matriculate into a residency program because they would not want to get too far behind their cohort.

Major recommendations

Based on our analysis and findings, we do not recommend making the payback of the GME obligation consecutive with any prior obligation. We believe that such an obligation would not be supportable because of the impact it would have on the GME applicant pool as well as on the AFHPSP and USUHS applicant pools that feed the GME applicant pool. We do find that a marginal increase in the GME obligation is supportable, but the nature of the increase we recommend depends on the goals of the obligation increase.

If DoD wants to target a few specialties for which they have difficulty retaining physicians, we recommend making the residency obligation equal to the residency length plus 1 year with this obligation served concurrently with any prior obligation. This policy would increase obligated service by one year for those specialties with a long residency (and presumably low retention). At the same time, this policy would not increase the obligation of other specialties where the Services currently have overages. Similarly, if DoD wants to improve the retention of its subspecialists without affecting the obligation of its other specialties, we recommend making fellowship obligation equal to training length plus 1 year.

If DoD wants to encourage more physicians to apply for specialties with longer residencies—specialties that may have difficulty getting enough quality applicants—we recommend making the GME obligation 1 year for all specialties served consecutively with any prior obligation. We don't think that setting a flat GME obligation policy will dramatically change the propensity of physicians matriculating into the various specialties; however, there are probably some physicians who would have considered a specialty with a longer residency if it didn't have a relatively longer obligation.

If DoD wants to increase the obligation to reduce the cost of the medical corps in general, we recommend increasing the AFHPSP obligation from 4 years to 5 years for 4 years of subsidization (as we recommended in the AFHPSP ADO study [5]) rather than increasing the GME obligation. This policy change is more straightforward than the GME policy changes, and it would affect both AFHPSP direct and deferred accessions. In comparison, a GME obligation change would affect only AFHPSP direct accessions and not USUHS accessions unless it is a substantial increase, which we don't think is supportable.

We strongly recommend that the Services clearly define and closely track the desired retention rate goals for their major physician specialties. The Services currently report overages for some specialties. If force management tools are not developed and monitored—in concert with an increased GME obligation—DoD may create further specialty surpluses. In terms of addressing shortages in some specialties in the short run, we recommend that the current accession bonus authority be further evaluated to help DoD more quickly increase required inventories.

The analysis focused exclusively on the ADO for in-house training for physicians. Obviously, there are other communities with in-house training—most notably, graduate dental education (GDE) for the dental corps. It is reasonable that potential increases in the GME obligation could be applied to the GDE program as well.

Introduction

The Department of Defense charges the Military Health System (MHS) with maintaining a healthy active duty force, attending to the sick and wounded in time of conflict, and successfully competing for and treating patients within the peacetime benefit mission. To effectively perform these sometimes disparate missions, the MHS and the three Service medical departments must attract and access a sufficient number of high-quality active duty health care professionals, cultivate an environment that retains the required inventory of these highly skilled professionals, and ultimately ensure that these personnel are competent in both wartime and peacetime benefit settings.

Currently, the MHS uses an array of accession sources and in-house graduate medical education (GME) programs to attract and acquire the physician specialists it needs to accomplish the wartime and peacetime benefits missions. To initially access personnel, the Services principally rely on the Armed Forces Health Professions Scholarship Program (AFHPSP), the Uniformed Services University of the Health Sciences (USUHS), and the Financial Assistance Program (FAP).[2] Those accessed into the military through AFHPSP and USUHS require additional training before they are fully trained specialists. USUHS accessions and the majority of AFHPSP receive GME in medical treatment facilities (MTFs).

Tasking

Based on previous CNA research and findings, the TRICARE Management Activity/Health Affairs (TMA/HA) asked CNA to evaluate

2. The Services also access a few physicians through other accession programs. These include direct procurement (no subsidization), recall, and Reserve Officer Training Corps (ROTC), but we don't consider these in our analysis because the number of these accessions is small.

the impact of changing the active duty obligation (ADO) for graduate medical education. The principal tasking of this study was to evaluate the impact of changing the GME ADO from concurrent to consecutive payback with any prior obligation, such as an accession obligation. Because this is a large percentage increase, we have also evaluated the impact of more marginal increases.

By extending the ADO, policy-makers are effectively lengthening the career path (years of practice) of the average physician in the medical corps. To evaluate the impact of an ADO increase, this study will help answer two major questions for policy-makers:

- What is the potential impact on physician continuation and retention of changing the ADO for GME?
- What is the potential impact on the pool of GME applicants of changing the ADO for this training?

By increasing the GME obligation, DoD increases medical corps continuation and retention giving DoD more years of practice (or more return on its investment) on average from each accession. The catch is that increasing the obligation to improve continuation and retention may constrain the number of physicians willing to incur additional obligation for this training. Hence, increasing the GME obligation is prudent only if the reduced GME applicant pool—as well as the AFHPSP and USUHS applicant pools, which feed the GME applicant pool—will provide at least the number and quality of physicians the Services require. Essentially it is a balancing act.

Although the tasking of this study focuses on increasing the graduate medical education ADO for physicians, the study's findings and recommendations have implications to other health care professions that use graduate education to train their personnel. For example, the dental corps provides graduate dental education to some of its general dentists to help meet its requirements for dental specialists.

Accession sources

Before we discuss our approach to estimating the impact of increasing the GME obligation, it is important to understand the various types of

accessions, the predominant career paths, and how they discharge their active duty obligation. AFHPSP is the largest accession source for military physicians. As table 1 shows, AFHPSP accessions (direct and deferred) account for 70 percent of all accessions, with USUHS and financial assistance program (FAP) accessions accounting for an additional 13 and 8 percent, respectively [3].

Table 1. Percentage of physician accessions by Service and accession source (FY 1998–2001)

Source	Army	Navy	Air Force	Total
AFHPSP direct	60	52	45	52
AFHPSP deferred	12	20	21	18
USUHS	17	12	9	13
FAP	3	6	14	8
Other	8	10	10	9
Total[a]	100	100	100	100

a. Total may not equal 100 because of rounding.

AFHPSP accessions

Through AFHPSP, the Services pay medical school tuition and fees as well as stipends for civilian medical school students. In return, after graduation, program participants must serve 1 year of active duty military service for each year of their AFHPSP scholarship with a 2-year minimum obligation. Scholarship program participants also incur an obligation to serve in the reserves for a period of time that depends on the number of years of subsidization received.

Most physicians accessed into the military through AFHPSP have their medical school paid for in exchange for a 4-year active duty obligation.[3] In general, AFHPSP accessions are either direct or deferred. A few AFHPSP accessions (called 1-year delays) complete a civilian internship and then come on active duty and complete a military residency program. We don't consider these accessions in our analysis, however, because they are not a predominant accession source.

3. Based on input from Service representatives, we determined that the military predominantly subsidizes AFHPSP medical students for 4 years of medical school.

AFHPSP direct

On completing medical school, the Services access the majority of AFHPSP graduates into an active duty internship (PGY-1).[4] On completion of this internship, they enter an "in-house" residency program (PGY-2+) at a military medical center or teaching hospital. While the intern year is obligation neutral, there is a year-for-year obligation for every year a physician is in a military residency program. This is the typical career path of Army and Air Force AFHPSP direct accessions. In the Navy, after the intern year but before commencing a residency, about 73 percent of its AFHPSP direct accessions serve as general medical officers (GMOs) [6]. The typical GMO tour is 2 years and GMOs discharge a year of their initial ADO for every year they serve as a GMO.

AFHPSP deferred

The military in-house graduate medical education programs aren't large enough to handle all of the AFHPSP accessions, so the Services defer about 26 percent of AFHPSP accessions each year into civilian internships and residency programs.[5] This means that a change in the GME obligation will not affect them. On completion of their residency programs, these fully trained specialists go on active duty. Because they begin active duty as fully trained specialists, they don't serve GMO tours but go directly into specialty utilization tours.

USUHS accessions

USUHS is the DoD-sponsored medical school. Each Service receives graduates from USUHS annually. Currently, the Army gets 63 USUHS graduates annually and the Navy and Air Force each get 51. These accessions carry a 7-year ADO compared with the year-for-year

4. PGY-1 stands for the first postgraduate year, commonly referred to as an internship. PGY-2+ stands for the postgraduate years after the intern year, commonly referred to as a residency or fellowship.

5. The percentage of AFHPSP deferred accessions differs by Service—Army, 17 percent; Navy, 29 percent; and Air Force, 32 percent. (Percentages are based on FY 1998-2001 accessions.)

obligation that AFHPSP accessions carry. USUHS accessions also carry an obligation to serve in the reserves depending on how many years they serve past their ADO. Like AFHPSP direct accessions, USUHS graduates complete an active duty internship before commencing an in-house residency program. Similarly, 73 percent of Navy USUHS graduates serve a GMO tour before commencing a residency program [6].

FAP accessions

In addition to AFHPSP and USUHS accessions, the Services access a few specialists through FAP—physicians already in civilian residency programs. FAP accessions receive an annual grant for each year the Services subsidize them in addition to a monthly stipend. Because FAP accessions commence active duty only after completing a residency program, they don't go through in-house GME. Consequently, a change in the GME obligation will not affect them.[6] Despite this, FAP accessions are important in this study because, as the cost and benefits of AFHPSP and USUHS accessions change as a result of GME ADO changes, the Services' relative need for FAP accessions will also change.

GME ADO policy

For convenience in this study, we will refer to the actual number of years physicians owe before they can make a stay-leave decision as the effective ADO. The actual number of years people owe depends on the obligation (if any) they had before entering an in-house residency program because they discharge the GME obligation concurrently with any prior obligation. Consequently, before we can evaluate the prudence of changing the GME obligation policy, we must understand the current policy for discharging the AFHPSP obligation direct and USUHS accessions and their interplay with the residency obligation.

6. A few FAP accessions may eventually go through an in-house fellowship, but we don't model this because the numbers are very small.

The current GME obligation policy is 1 year for each year of training with a 2-year minimum. This obligation is served concurrently with any prior obligation, such as an accession obligation. This year-for-year obligation holds for fellowship training in addition to residency training. For example, physicians who complete a 2-year internal medicine residency and a 3-year cardiology fellowship have a 5-year obligation for GME.[7] Although the GME obligation is 5 years in this example, it is not necessarily the effective obligation. If these physicians are USUHS accessions (7-year ADO), their effective ADO would be 7 years because the USUHS and GME obligations are served concurrently. If these physicians have a 4-year AFHPSP scholarship, the effective obligation would be 5 years because the 4-year AFHPSP obligation is served concurrently with the 5-year GME obligation.

The career path of physicians also affects the effective ADO. For example, most AFHPSP direct (and USUHS) accessions in the Navy serve a 2-year GMO tour after their internship but before commencing a residency program. This means that they discharge 2 years of their AFHPSP ADO before starting their residency program, as table 2 shows. If they complete a 3-year residency, they have a 3-year GME obligation in addition to the 2 years they have remaining on their AFHPSP obligation. Combining these, their effective ADO is 3 years, not 5, because the AFHPSP and GME obligations are served concurrently rather than consecutively.

Now consider this same example except that we assume they don't serve a GMO tour (which is the predominant career path in the Army and Air Force). When their residency is complete, they will owe 4 years for AFHPSP and 3 years for GME. But, again, because the obligations are served concurrently, their effective obligation is 4 years, not 7. Essentially, the effective obligation is the larger of the two obligations.

7. This policy has not always been the same across the Services. Before this year (FY 2003), Air Force physicians in this example would have had a GME obligation of 3 years because Air Force physicians were allowed to discharge their residency obligation concurrent with their fellowship obligation. This was also the policy in the Navy until 2 years ago.

Table 2. An example of the effective ADO for those with and without a GMO tour

Reason for obligation change	With a GMO tour			Without a GMO tour		
	AFHPSP ADO	GME ADO	Effective ADO	AFHPSP ADO	GME ADO	Effective ADO
4-year AFHPSP	4		4	4		4
Internship (1 year)	4		4	4		4
GMO tour (2 years)	2		2	NA	NA	NA
Residency (3 years)	2	3	3	4	3	4

As these examples illustrate, for those with a GMO tour, it is the GME obligation that determines the effective obligation. In comparison, it is the AFHPSP obligation that determines the effective obligation for those without a GMO tour unless the residency program is 5 or 6 years. Moreover, this means that increasing the GME obligation by 1 year will increase the effective obligation for those with a GMO tour who are 4-year AFHPSP accessions. But, it will not increase the effective obligation for those without a GMO tour who have a residency program that is 3 years or fewer.

Background

This study draws from a large body of research on accessing, training, compensating, and retaining physicians and other health care professionals. The Health Professions' Retention-Accession Incentives Study (HPRAIS) examined the adequacy of military compensation for physicians and other health care professionals [1]. For physicians, that study found that the civilian-military pay gap varies widely by specialty, is larger for those with fewer years of service, and has widened over the last decade.

Given these pay gaps, HPRAIS estimated the responsiveness of physician retention with respect to pay. It found that retention of military physicians is only modestly sensitive to changes in compensation, and this sensitivity varies across the specialties [2]. Moreover, these findings are consistent with previous research looking at the same issue [7–9]. The low sensitivity to pay increases stems from the fact that the civilian-military pay gap is so large in some specialties that even a $10,000 pay increase still leaves a substantial pay gap. Consequently, the return on the investment for pay increases is relatively small.

Given the findings from HPRAIS, CNA was asked to conduct the Life-Cycle Cost (LCC) study. The purpose of estimating the life-cycle costs for physicians and other health care professionals was to determine the optimal mix of accessions taking into account the impact the system's constraints have on the optimal accession mix.

We found that the costs of accessing and training physicians account for 8 to 49 percent of costs for physicians depending on the specialty and accession source [3]. For AFHPSP accessions who complete an in-house residency program, training costs account for 33 to 46 percent of costs depending on the specialty. Similarly, training costs account for 18 to 26 percent of the cost for those who complete a civilian residency program.

These figures indicate that training costs are substantial, but *the costs of the medical corps accessions programs should not be considered in isolation.* The cost and the benefit—the return on the investment—need to be jointly considered. For example, the LCC study showed that while USUHS accessions are more costly than all other physician accession sources, the return on investment in terms of retention means that these accessions are the most cost-effective source for filling O-6 requirements [4].

The LCC study also addressed the cost of filling requirements through increased military compensation [4]. Specifically, the LCC study found that the cost-effectiveness of pay increases hinges on the predominant career path [4]. In particular, pay increases were not cost-effective for the Navy because of its policy to send most of its USUHS and AFHPSP accessions on 2-year general medical officer (GMO) tours following their internships but before their residencies. In general, Army or Air Force physicians don't serve GMO tours. This tour effectively elongates the average career path in the Navy relative to the other Services. As for the Air Force, pay increases were cost-effective because the length of the average career path of its physicians is "short" compared with the Army or Navy because a higher proportion of its AFHPSP accessions complete civilian rather than in-house residencies.

What this demonstrates is that career path—*which drives the number of years of service and years of practice before a physician becomes unobligated*—

has a significant impact on retention. The closer physicians are to retirement eligibility when they become unobligated, the better their retention will be and the less effective pay increases will be. Consequently, DoD may be able to significantly reduce cost by increasing the active duty obligation to delay the first stay-leave decision because it elongates the average career path.

We looked at the impact of past changes in the GME obligation policy to help us estimate how things may change if DoD alters the current policy. Specifically, before April 1988, GME training was obligation neutral. After April 1988, the obligation for GME is year for year but is paid back concurrently with any prior obligation. Because of the concurrent payback, the effective obligation did not change for most physicians. Only when the GME obligation was greater than the accession obligation did the effective obligation increase. This means that only physicians in the longest residency programs or those who discharged a portion of their accession obligation by serving as GMOs before commencing a residency program were affected. Previous research shows that this change in the GME obligation decreased the percentage of Navy AFHPSP physicians going into military residency programs [6].

CNA has also studied the impact of changes in the active duty obligation of aviators [10–12]. As we might expect based on what we learned in the LCC study, the optimal active duty obligation for aviators depends on the grade composition of the billet structure [10]. In the vernacular of the LCC study, the optimum is sensitive to the required experience profile.

We expect that by increasing the AFHPSP obligation there may be some negative effect on the applicant pool in terms of quantity and/or quality. In considering this issue with the aviator community, the impact on its applicant pool is mixed. First, CNA found that the average quality of aviator students declined, but this may simply be because the Navy expanded accession requirements, requiring the Navy to dig deeper into its applicant pool [12]. Second, the study found that, although the ADO increased, the aviation community continues to attract top Naval Academy students. In other words, the best candidates are not increasingly opting for other communities

because of the aviation ADO; they want to be pilots, and the increased ADO isn't deterring them.

Approach

With this research as a foundation, we present our approach to answering the question of whether DoD should increase the GME obligation. Increasing the GME obligation has two main effects. First, it will improve continuation and retention. This means that the average physician will provide more years of practice as a fully trained specialist, causing total accession requirements to fall. Second, it may reduce the size and potentially the quality of the GME applicant pool. By combining the results of these effects, we estimate whether the smaller GME applicant pool can provide what the Services need.

Impact on retention

Our goal in this section is to estimate how much accessions requirements would decrease as a result of an increase in the GME obligation. To do this, we first estimate what continuation and retention would be with a longer active duty obligation. More specifically, we use a probit model to estimate the impact of various factors on whether physicians stay in or leave the military following the completion of their obligation. Specifically, this model controls for years remaining until retirement, time elapsed since they completed their obligation, relationship between military and civilian pay, gender, race, and family characteristics.

Given this model and the predominant career paths of physicians in each Service, we then estimate the survival curves under various GME obligation policies. By comparing these to the survival curves under the current policy, we can see how much continuation and retention may improve. In addition, we can estimate how many accessions it takes under an alternative GME ADO policy to provide the same number of years of practice that are provided by accessions under the current policy.

One way we can do this is to simply extrapolate how accession requirements will change under the assumption that the current accession

mix will not change as the GME obligation changes. Although this provides a rough estimate of how accession requirements may change, the assumption that the accession mix will remain the same is unlikely given how the obligation increase would change the accession requirements and the relative costs and benefits of the various accession sources.

To solve this problem, we estimate the impact of a GME obligation increase on accession requirements using the LCC model that we developed in our LCC study. This model finds the most cost-effective accession mix (given the constraints placed on the system) and is flexible enough to allow the mix of accessions to vary from what they are currently. In addition, we use this model to show how accession requirements depend on the assumptions we make regarding in-house GME.

Impact on the applicant pool

The goal in this part of the study is to see how changes in the GME obligation may affect the pool of potential GME applicants. Specifically, we need to determine whether the GME applicant pool will still be able to provide the needed physicians if DoD increases the GME obligation. We approached this question in four parts.[8] First, we looked at the national GME applicant pool. In doing this, we note differences we observe between allopathic and osteopathic physicians.

Second, we studied the Services' applicant pools in the context of national data. We gathered available historical data from each of the Services on their applicants and matriculants. Unfortunately, the Services are not required to collect, retain, and track many of the data that are needed for this type of analysis. To the maximum extent possible, we also tried to look at applicants to selectees by specialty, USMLE scores, differences between allopathic and osteopathic physicians, and the preferences of physicians.

8. We gratefully acknowledge the assistance of numerous representatives of the Services, TMA, and Health Affairs who gave us invaluable support in acquiring available data throughout this study.

Third, we gathered the perceptions of GME program directors from each Service on the impact that an increase in the GME obligation might have on the Services' ability to meet their requirements. We felt that it was essential to our analysis to talk with program directors first-hand to understand the issues they face in running their programs.

Fourth, we questioned current residents and fellows on how a longer active duty obligation would have affected their decision to accept a military residency or fellowship. We did this by developing an e-mail questionnaire on the perceptions of current residents and fellows to gather information on their overall willingness to enter GME if the obligation were increased from the current policy. In addition, this questionnaire allowed us to understand the impact, if any, of such factors as demographics and prior military service on residents' and fellows' willingness to accept a longer active duty obligation.

Impact on retention

In this section, we focus on estimating the impact of an increase in the graduate medical education (GME) active duty obligation (ADO) on retention. Specifically, we want to know by how much does a longer GME active duty obligation reduce the total accession requirements.

In general, retention means the percentage of personnel who remain in the military following their first stay-leave decision. Furthermore, continuation describes the rate at which personnel stay in or leave the military. Usually, we think of an additional year of obligated service as an improvement in continuation because retention describes the behavior of those who are unobligated. But, as previous research shows, the closer a physician is to retirement eligibility at the first stay-leave decision, the better their retention will be [2]. Hence, an increase in obligated service improves retention in addition to continuation.

For the purpose of estimating how much accession requirements will decrease due to a longer GME obligation, we assume that there are enough qualified candidates for the GME programs to meet whatever the GME requirements are under the various active duty obligation assumptions. Our goal in this section is not to determine the feasibility of a potential active duty obligation increase, but to determine how much accession requirements will change as a result of the increase. We will look at feasibility—in terms of there being enough GME candidates to meet the requirements—in subsequent sections.

Estimating retention

Our approach to estimating the impact an ADO increase would have on retention has two parts. First, we use historical medical corps personnel data to statistically estimate the impact that various factors have on retention. Then, using these statistical estimates, we project what retention would be if DoD increased the active duty obligation. Second, we input our estimates of retention into the LCC model we

developed in a previous study [4] to see how accession requirements change as the active duty obligation increases. Here we focus on the first of these issues—estimating the impact of an ADO increase on retention. We begin with a discussion of the data.

Personnel data

Ideally, we would like to have the historical physician personnel tapes for each Service to estimate the impact of increasing the ADO on retention in the medical corps. Unfortunately, the level of granularity required and many relevant fields of information (initial active duty obligation, fellowship training, etc.) are not historically maintained in the Defense Manpower Data Center (DMDC) tapes.

The good news is that CNA has a robust 15-year panel (FY 1987-2002) of Navy medical corps data maintained by the Bureau of Medicine and Surgery (BUMED).[9] We feel confident using the Navy's personnel data because the variation in career paths in the Navy data provides a solid basis for extrapolating results to the other Services. The reason has to do with career path differences between the Services.

In the Army and Air Force, the predominant career path is to go directly from an internship into a residency. In the Navy, about one-quarter of its AFHPSP direct and USUHS accessions follow this career path; the remaining three-quarters serve a 2-year GMO tour between an internship and a residency [6]. This GMO tour elongates the career path of these physicians and, as a by-product, adds variation in the data in terms of when physicians reach their first stay-leave decision. We would not have this variability from Army or Air Force data.

Because the Navy has physicians whose career paths are very similar to those of Army and Air Force physicians (those without a GMO tour), these physicians provide a basis from which to estimate Army and Air Force physician retention behavior without having to make out-of-the-sample predictions. If we used Army or Air Force data to predict retention in the Navy, we would be forced to make out-of-the-

9. We gratefully acknowledge the assistance of CDR Kevin Magnusson and CDR Scott Jones in providing these data, known as BUMIS.

sample predictions because the 2-year GMO tour would place the initial stay-leave decision outside the Army or Air Force data. Hence, if you are going to use one Service's data to estimate retention behavior, using Navy data is the best choice statistically.

We are confident that extrapolating the results to the Army and Air Force gives reasonable estimates of their retention. Historically, the Air Force has the lowest retention and the Navy the highest with the Army in between. Although there may be some retention differences between the Services that are attributable to the Service itself, the differences are largely due to the fact that the Air Force relies more heavily on AFHPSP deferred accessions, which have much lower retention that AFHPSP direct accessions. The Navy's retention is the highest because of its GMO tours, which effectively delay the stay-leave decision.

Probit model

This section focuses on using these BUMIS data to estimate the effect on retention of various demographic and other factors, such as pay and years of service. Because the goal of this study is to determine the impact of increasing the active duty obligation for GME, we limit our sample to physicians accessed through USUHS and AFHPSP. Obviously, using direct procurement, FAP, and other accession sources would broaden the database, but it would introduce systematic variation in retention. This variation would be associated with the accession source and not the GME active duty obligation because they do not go through in-house GME and aren't affected by it.

Because BUMIS data allow us to identify the time when physicians become unobligated, we are able to further focus our sample to the period when physicians can choose to stay in or leave the military. Also, because BUMIS data allow us to clearly identify those physicians in initial residencies versus those in fellowships, we partitioned the sample accordingly. We expect the attrition behavior of residents and fellows to differ because some of the fellows may have already passed their first-stay leave decision. By focusing on each group separately, we are able to get a more accurate estimate of how the various factors affect retention.

If, however, we commingled the two groups, our estimates of retention for those with residency but not fellowship training would be too high. This bias would stem from the fact that those in fellowship training may have passed the initial obligation point for their residency, but they are still in the military—not necessarily because they have decided to stay—but because they have further obligated themselves for fellowship training. By focusing only on those physicians with residency training, we are able to more accurately model the retention behavior of those who don't choose to undergo fellowship training.

Statistically, we use a probit model to estimate the effect of an increase in the active duty obligation on retention. A probit model enables us to estimate how such factors as gender affect a binary decision, such as staying in or leaving the military.[10] From this model, we were able estimate what the survival curves look like given the current active duty obligation and what they would look like if DoD increased the active duty obligation.

To make our estimates as accurate as possible, we controlled for several variables that may be correlated with attrition. These variables include years remaining until retirement, time since the active duty obligation was completed, military-to-civilian pay ratio, gender, race, marital status, dependents, board certification, and specialty.

Table 3 shows which of these factors have a significant effect on attrition. Specifically, we estimate that the more years people have until they become eligible for retirement (meaning fewer years of service), the higher the attrition.[11] Not unrelated, the more time that has elapsed since the person has passed the first stay-leave decision, the less likely it is that he or she will attrite. This result is logical because, if you are going to attrite, it is a better economic decision to leave at

10. We also explored using various hazard models. Hazard models are either accelerated failure-time or proportional hazard models. We found that, regardless of the function form we applied, these models underpredicted attrition, meaning that none of the functional forms were a good fit for these data. We tried using a Cox proportional hazards model (which does not impose a survival function), but the proportional hazards assumption was soundly rejected.

11. This is consistent with the impact we found in HPRAIS [2].

your first opportunity rather than waiting another few years. This variable also indicates high attrition at the decision point (or shortly thereafter) and very low attrition once the person is a few years removed from the initial stay-leave decision. As for pay, the model shows that the larger the military-to-civilian pay ratio (meaning military pay is increasing relative to civilian pay), the lower the attrition.

Table 3. Effects of explanatory variables on attrition

Variable	Significant effect on attrition
Years remaining until retirement eligibility	Positive[a]
Time elapsed since completing the ADO	Negative[a]
Military-to-civilian pay ratio	Negative[a]
Males relative to females	Positive[b]
Race (comparison group: whites)	
Black	None
Other race	Negative[b]
Not married relative to married	Negative[b]
Dependent children relative to no dependent children	None
Married and dependent children relative to otherwise	None
Board certified relative to not board certified	None

a. Significant at the 99-percent level.
b. Significant at the 90-percent level.

The model also controls for gender and race, but we didn't have an expectation about whether these variables would have a positive or negative impact on retention. That is, we didn't really have an expectation that attrition should be better or worse for men compared to women. Statistically, we found that men are only slightly more likely to attrite than women. Similarly, we didn't have strong expectations about how race should affect retention. As the results show, we found no significant difference between whites and blacks, but we did find that those of "other" races have lower attrition than whites.

We also controlled for whether someone was married and if they had dependent children. The results show that those who are not married have significantly lower attrition than those who are married. Clearly, marital status is an important factor for physicians making stay-leave decisions. However, we found no significant relationship between

having dependent children and attrition. Similarly, we found no significant relationship between attrition for those who were married with dependent children compared with those who were not married and/or didn't have dependent children.

Attrition of USUHS and non-USUHS accessions

In addition to these factors, we explored whether USUHS accessions have significantly lower attrition that other sources. Of course, USUHS accessions typically remain in the military much longer than physicians from other accession sources, but they also have a substantially larger active duty obligation. What we wanted to look at was whether USUHS accessions stayed longer than other accessions once we controlled for their longer active duty obligation. That is, we wanted to look at whether USUHS accessions stay longer than AFHPSP accessions because they are USUHS accessions or because they have a longer active duty obligation.

We found that if we did not control for anything other than whether a physician was a USUHS accession, USUHS accessions had significantly lower attrition than all other physicians. However, when we controlled for years remaining until retirement eligibility, time since the active duty obligation was completed, military-to-civilian pay ratio, and other demographic variables, we found no statistical difference between the attrition rate of USUHS accessions and physicians from other accession sources.

One might argue that USUHS accessions have lower attrition than other accession sources because physicians who have a taste for military service may self-select into USUHS despite the extra obligation because they are planning on a career as a military physician. Because of this, USUHS accessions might have a higher propensity to remain in the military past their active duty obligation. However, if the AFHPSP obligation were 7 years (like the USUHS obligation), the argument of USUHS retention being higher due to self-selection goes away because many of those without a taste for military service would remove themselves from the AFHPSP applicant pool.

Attrition of allopathic and osteopathic physicians

One of the observations in the AFHPSP active duty obligation study [5] was that there were differences between allopathic and osteopathic physicians in terms of GPAs, MCAT scores, and propensity to matriculate into certain specialties. Because of these differences, we explored whether the attrition patterns of allopathic and osteopathic physicians differ in a systematic way.

We found that if we did not control for anything other than whether a physician was an allopath or osteopath, osteopathic physicians had significantly lower attrition that allopathic physicians. This difference is not surprising due to the different propensities of allopathic and osteopathic physicians to go into the various specialties. However, when we controlled for years remaining until retirement eligibility, time since active duty obligation was completed, military-to-civilian pay ratio, specialty, and other demographic variables, there is no statistical difference between the attrition rate of allopathic and osteopathic physicians.

Impact on the effective ADO and retention

In this section, we project by how much increasing the GME ADO will improve continuation and retention. We do this using the results of the probit model. When doing this, we must remember that the effective ADO—the number of years they are obligated to remain in the military following completion of GME—is the combination of the GME obligation and obligations incurred before GME. The prior obligations may be for programs like AFHPSP, USUHS, ROTC, or Service Academy education.

Under the current policy, the GME obligation is year for year, and prior obligations and GME obligations are served concurrently. For example, suppose a physician has a 4-year ADO for AFHPSP and goes through an in-house OB/GYN residency, which gives him/her a 3-year ADO for GME. Because the AFHPSP and GME obligations are discharged or burned concurrently, this physician effectively owes 4 years following his/her residency. However, if this physician did an otolaryngology or urology residency (5-year GME ADO), he/she would effectively owe 5 years following his/her residency.

Tours as general medical officers (GMOs) affect the effective ADO. A 2-year GMO tour after an internship but before residency training is the predominant career path in the Navy. To see how a GMO tour affects the effective obligation, consider how this would change our OB/GYN example. These physicians would owe 3 years for GME, but, because they were GMOs for 2 years, they would have discharged one-half of their 4-year AFHPSP obligation, leaving 2 years of obligation. Because this remaining AFHPSP and the GME obligations are served concurrently, the effective obligation is 3 years, or 1 year less than without the GMO tour.[12]

Based on how DoD alters the GME obligation, it may or may not translate into an increase in the effective ADO, depending on the prior obligations and whether the obligations are burned concurrently or consecutively. To see the impact of various kinds of GME obligation changes, we have modeled the following four GME obligation policies:

1. Consecutive payback—the GME obligation is year for year and is paid back consecutively with any prior obligation.
2. Residency length plus 1—the residency obligation is training length plus 1 year, the fellowship obligation is year for year, and these obligations are paid back concurrently with any prior obligation.
3. 2-year obligation with consecutive payback—the residency obligation is 2 years for all specialties and is paid back consecutively with any prior obligation. Those completing a fellowship owe a minimum of 4 years after completing the fellowship.
4. Fellowship length plus 1—the residency obligation is year for year, the fellowship obligation is training length plus 1 year, and it is paid back concurrently with any prior obligation.

Table 4 shows the effective obligation for AFHPSP direct and USUHS accessions both with and without a GMO tour. This table also shows

12. While the effective obligation in this example is 1 year less with than without a GMO tour, years of service are 1 year more when the obligation is completed.

the years of service these accessions would have when they complete their effective obligation.

Table 4. Impact on effective ADO due to an increase in the GME ADO

	Effective ADO and years of service at ADO completion by length of in-house residency (excluding internship) - ADO/YOS[a]						
	2 years	3 years	4 years	5 years	6 years	IM SSP	Surg SSP
Percent of specialty billets	42	28	22	3	1	4	1
AFHPSP direct accessions							
Without GMO tour							
Current policy	4/7	4/8	4/9	5/11	6/13	5/11	6/13
Consecutive payback	**6/9**	**7/11**	**8/13**	**9/15**	**10/17**	**9/15**	**10/17**
Residency length plus1	4/7	4/8	**5/10**	**6/12**	**7/14**	**6/12**	**7/14**
2-year consecutive	**6/9**	**6/10**	**6/11**	**6/12**	6/13	**6/12**	6/13
Fellowship length plus 1	4/7	4/8	4/9	5/11	6/13	**6/12**	**7/14**
With 2-year GMO tour							
Current policy	2/7	3/9	4/11	5/13	6/15	3/13	4/15
Consecutive payback	**4/9**	**5/11**	**6/13**	**7/15**	**8/17**	**5/15**	**6/17**
Residency length plus1	**3/8**	**4/10**	**5/12**	**6/14**	**7/16**	**4/14**	**5/16**
2-year consecutive	**4/9**	**4/10**	4/11	**4/12**	**4/13**	**4/14**	4/15
Fellowship length plus 1	2/7	3/9	4/11	5/13	6/15	**4/14**	**5/16**
USUHS accessions							
Without GMO tour							
Current policy	7/12	7/13	7/14	7/15	7/16	7/15	7/16
Consecutive payback	**9/14**	**10/16**	**11/18**	**12/20**	**13/22**	**12/20**	**13/22**
Residency length plus1	7/12	7/13	7/14	7/15	7/16	7/15	7/16
2-year consecutive	7/12	7/13	7/14	7/15	7/16	7/15	7/16
Fellowship length plus 1	7/12	7/13	7/14	7/15	7/16	7/15	7/16
With 2-year GMO tour							
Current policy	5/12	5/13	5/14	5/15	6/17	3/15	4/17
Consecutive payback	**7/14**	**8/16**	**9/18**	**10/20**	**11/22**	**8/20**	**9/22**
Residency length plus1	5/12	5/13	5/14	**6/16**	**7/18**	**4/16**	4/17
2-year consecutive	**6/13**	**6/14**	**6/15**	**6/16**	**6/18**	**4/16**	4/17
Fellowship length plus 1	5/12	5/13	5/14	5/15	6/17	**4/16**	**5/18**

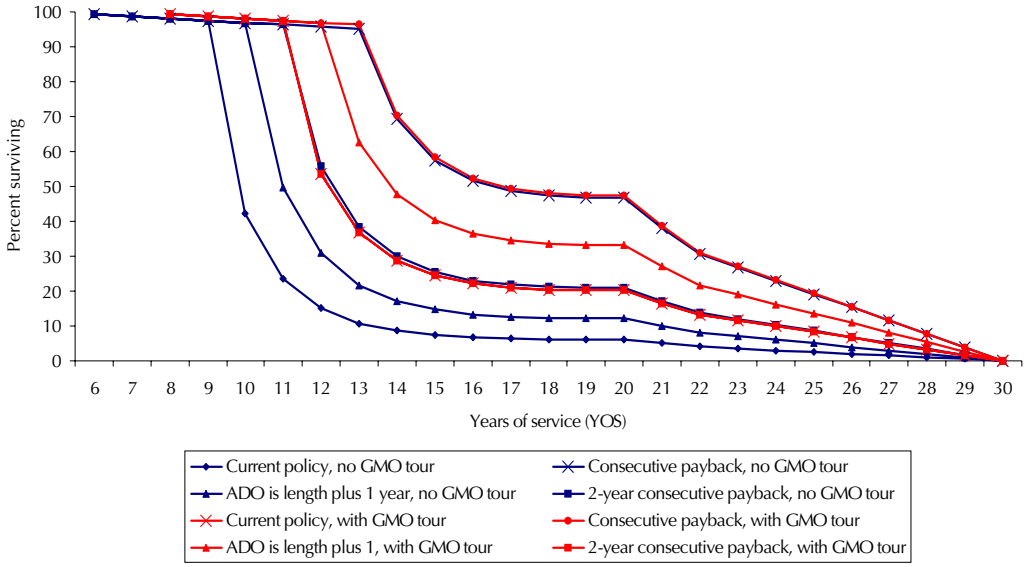
a. Bold indicates that the effective obligation for the GME ADO is different than with the current GME ADO policy.

With the exception of the GME obligation policy that makes the GME and AFHPSP/USUHS obligations served consecutively, the obligation changes do not increase the effective obligation for every

specialty. For instance, the GME obligation policy that makes the GME obligation equal to the residency length plus 1 year, does not increase the effective obligation for AFHPSP direct accessions who do not serve a GMO tour for those specialties with a 2- or 3-year residency. These specialties account for 70 percent of the billets for fully trained specialists. However, if these accessions do serve a GMO tour, the effective obligation increases for every specialty.

As an example of how survival curves would change if DoD increased the GME active duty obligation, figure 1 shows the estimated survival curves for AFHPSP direct radiologists (who have 4-year residencies) given the current GME obligation and the four GME ADO policies we modeled in this study. We estimated the survival curves using the results of our probit regression analysis. Estimates are shown for both with and without a GMO tour.

Figure 1. Estimated survival of AFHPSP direct radiologists by length of ADO and career path[a]



a. We estimated attrition before completion of the ADO at 0.6 percent. This is the average attrition rate in the BUMIS data for those with in-house GME who have yet to complete their ADO. We computed the survival curves for the period after the ADO is complete but before retirement using the estimates of our probit model. Similarly, we computed survival rates for the first 2 years of retirement eligibility using a probit model of the behavior of those eligible for retirement. We estimated survival beyond this point by computing an attrition rate that will result in all physicians leaving by 30 YOS.

Looking at this in more detail, we see that radiologists without a GMO tour will complete their residency by 5 years of service. This means that if their AFHPSP ADO is 4 years, they will become unobligated after 9 years of service given the current GME obligation policy. The model indicates that 57 percent would leave the military at the completion of their effective obligation. In addition, the model indicates that 44 percent of those remaining would leave the next year and that 6 percent of those completing a radiology residency would eventually reach retirement eligibility.

Looking at those who have served a GMO tour before going into a radiology residency, we observe that the GMO tours make a large difference in their retention—not simply because they were GMOs—but because it delays their first stay-leave decision until 11 years of service compared with 9 years of service if they didn't serve as GMOs. The model shows that 45 percent of these physicians leave the military the year their ADO is complete with 31 percent of those remaining leaving in the next year. Furthermore, 20 percent of these physicians would stay in the military long enough to reach retirement eligibility. Hence, the 2 additional years of service before the obligation is complete make a substantial difference in the number of radiologists who reach retirement eligibility.

If DoD changed policy to require that GME and AFHPSP obligations be served consecutively, it would result in substantial increases in continuation and retention. By making this change, radiologists would not reach their first stay-leave decision until 13 years of service. This is four years longer than the current policy for those without a GMO tour. The model indicates that, if radiologists became unobligated at 13 years of service, 27 percent would leave the military the first year they were unobligated compared with 57 percent under the current policy. Moreover, 47 percent of those completing radiology residencies would reach retirement eligibility compared with 6 percent under the current policy. The point is that each additional year of service physicians have toward retirement when they complete their obligation makes a sizable difference in retention.

Impact of AFHPSP direct requirements

As an example, we've shown how the survival patterns of radiologists would change if DoD increased the obligation for GME. We have computed similar survival curves for 22 other physician specialties. As previously stated, the question this section addresses is: by reducing attrition, how much do accession requirements fall?

In the next section, we use a variant of our life-cycle-cost model [4] to see how the accession mix would change due to changes in the GME obligation. Here we present a simpler illustration of how various GME obligation policies would affect the AFHPSP direct accession requirements. We chose to look at AFHPSP direct accessions because USUHS accessions are fixed and the survival patterns of AFHPSP deferred and FAP accessions are unaffected by the GME obligation policy. We use radiology to illustrate how these factors affect AFHPSP direct accession requirements.

Let's first consider AFHPSP direct accessions without a GMO tour. Under the current GME obligation policy, our probit model indicates that the average years of practice (YOP) as fully trained radiologists are 5.6. Another way to think of it is that we expect 560 years of practice for every 100 AFHPSP direct accessions who are trained as radiologists.

If DoD changed the GME obligation policy so that it is served consecutively with the AFHPSP obligation, the average years of practice would be 13.2—an increase of 7.7 years. This means that it would take 42 accessions under the consecutive obligation policy to provide the 560 (42*13.2) years of practice that 100 accessions provide under the current obligation policy. If the GME obligation policy were changed so that the GME obligation were residency length plus 1 year, the average years of practice would be 7.3. This means that 76 accessions could provide 560 years of practice. Similarly, if the GME obligation were 2 years served consecutively with the AFHPSP obligation, the average years of practice would be 9.2 and 60 accessions could provide 560 years of practice.

These reductions in accession requirements are comparable to what they would be for AFHPSP direct accessions in other specialties, as

table 5 shows. In aggregate, if DoD required that the GME obligation be served consecutively with the AFHPSP obligation, 58 accessions could replace the years of practice provided by 100 AFHPSP direct accessions (who don't serve GMO tours) under the current GME obligation policy. Similarly, if the GME obligation were residency length plus 1 year, 94 AFHPSP direct accessions could replace the years of practice provided by 100 accessions under the current policy. This policy results in a smaller change in accession requirements because it would not change the effective obligation for specialties with 2- or 3-year residencies. These specialties account for about 70 percent of specialty billets.

Table 5. Number of accessions needed to replace the years of practice (as fully trained specialists) provided by 100 AFHPSP direct accessions by residency length

Accession source and GME ADO	Needed accessions by residency length (excluding internship)[a]							
	2-year	3-year	4-year	5-year	6-year	IM-SSP[b]	GS-SSP[c]	WAVG
AFHPSP direct without GMO tour								
Consecutive	68	54	44	55	59	64	77	58
Res., length plus 1	100	100	77	80	81	84	89	94
2-yr consecutive	68	65	62	78	100	84	100	67
Fel., length plus 1	100	100	100	100	100	84	89	99
AFHPSP direct with GMO tour								
Consecutive	61	61	65	80	81	79	89	63
Res., length plus 1	75	76	78	87	87	86	93	77
2-yr consecutive	61	76	100	122	157	86	100	78
Fel., length plus 1	100	100	100	100	100	86	93	99.6

a. Figures for each residency length are a weighted average of the specialties in the group. We weighted by the number of billets in each specialty across the three Services.
b. We estimated this based on cardiology, gastroenterology, and hematology/oncology.
c. We estimated this based on plastic surgery.

If the GME obligation were 2 years for residency training regardless of the specialty served consecutively with the AFHPSP obligation, 67 AFHPSP direct accessions without a GMO tour could replace the years of practice provided by 100 accessions under the current policy. Similarly, if DoD changed the obligation for fellowship training to length plus 1 year, accession requirements would fall less than

1 percent because it would only marginally affect less than 5 percent of the billets.

Now consider AFHPSP direct accessions with a 2-year GMO tour. Because of the 2-year GMO tour, these accessions discharge 2 years of their AFHPSP obligation before entering a residency program. Consequently, the effective obligation after residency training and the years of service when the effective obligation is completed are generally different than for those who do not serve a GMO tour.

For instance, for AFHPSP direct accessions with GMO tours who are then trained as radiologists, the probit model indicates their average years of practice are 7.1. Hence, 100 of these accessions would provide on average 710 year of practice.[13] If DoD required that the GME obligation be served consecutively with the AFHPSP obligation, the average years of practice would be 11.4. Hence, 63 of these accessions could provide the 710 years of practice provided by these accessions under the current GME obligation policy.

Similarly, if the GME obligation were residency length plus 1 year, 77 AFHPSP direct accessions with a GMO tour could replace the years of practice provided by 100 accessions under the current policy. For those without a GMO tour, this policy results in a smaller change (100 to 94) in the accession requirement because it would not change the effective obligation for specialties with a 2- or 3-year residency. But, because of the dynamics between the GME and AFHPSP obligations, all specialties' effective obligations are affected for those who serve GMO tours.

If the GME obligation were 2 years for residency training regardless of the specialty served consecutively with the AFHPSP obligation, 78 AFHPSP direct accessions with a GMO tour could replace the years of practice provided by 100 accessions under the current policy. Overall, this GME policy change would reduce AFHPSP accession

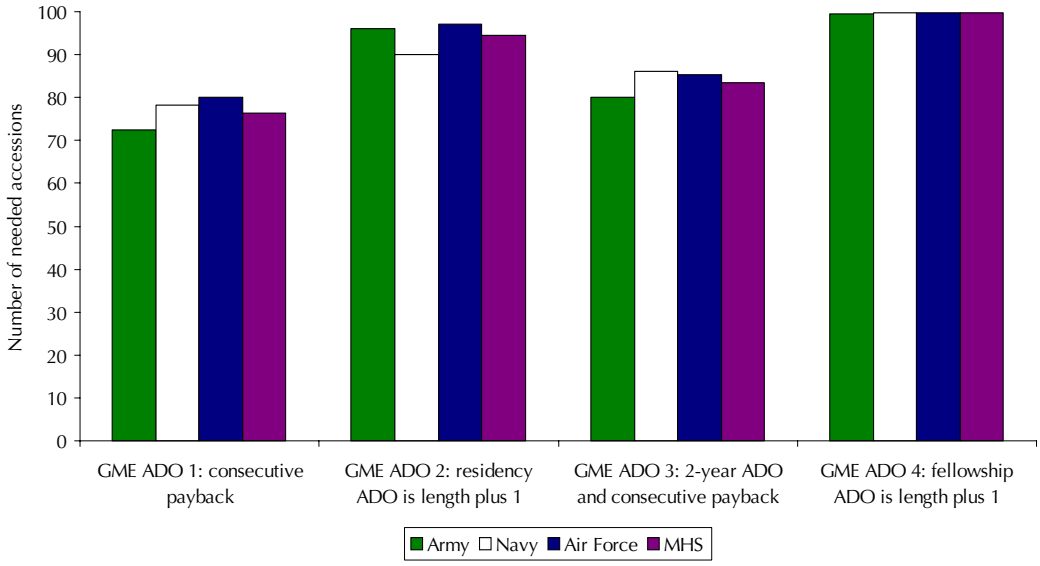
13. This is substantially more than the 560 years of practice that these accessions would provide if they didn't have a GMO tour. The reason it is more is that they have more years of service when they complete their obligations.

requirements, and there are some specialties for which it would actually increase requirements. This would occur for such specialties as otolaryngology, urology, and neurosurgery that have 5- or 6-year residencies. Under the current policy (with a 2-year GMO tour), a urologist would have a 2-year AFHPSP obligation and a 5-year GME obligation giving him or her an effective obligation of 5 years following residency training. But, with a 2-year residency obligation served consecutively with the AFHPSP obligation, the effective obligation would be 4 years, or 1 year less than the current policy. Hence, this obligation change would require more accessions to provide the same years of practice.

These examples assume that the physicians are AFHPSP accessions. We could show the same thing with USUHS accessions. What we would find is that the reduction in accession requirements is less because it takes a larger change in the GME obligation policy to increase the effective ADO for USUHS accessions than for AFHPSP accessions.

Figure 2 shows the impact of these GME obligation policies at the Service and MHS level. If DoD made the GME obligation consecutive with any prior obligation, MHS total accession requirements would fall by 24 percent. Similarly, if DoD made the GME obligation 2-years consecutive with any prior obligation, accession requirements would fall by 17 percent. If DoD maintained concurrent payback but made the GME obligation equal to the residency length plus 1 year, accession requirements would fall by 5 percent. Similarly, if DoD made the fellowship obligation equal to the fellowship length plus 1 year, accession requirements would fall less than 1 percent. This small reduction in accession requirements is not surprisingly small because this GME ADO policy would affect a very small percentage of billets.

Figure 2. Number of accessions needed to replace the years of practice (as fully trained specialists) provided by 100 accessions[a]



a. We computed needed accessions by Service using a weighted average of the accession needs of USUHS, AFHPSP direct, and all other accessions. We used each Service's historical (FY98-01) mix of USUHS, AFHPSP direct, and all other accessions as weights. We weighted the needs of USUHS and AFHPSP direct accessions with a GMO tour using the percentage of Navy physicians that served a GMO tour [6]. We also assumed that the number of all other accessions does not change—only the numbers of USUHS and AFHPSP direct accessions change.

Accession requirements from the life-cycle-cost model

This section uses the LCC model to examine how a change in the GME obligation policy changes the accession mix and total accession needs. Before we present the results, we provide a description of the LCC model. For a more comprehensive description of the model and the impact the various constraints have on the model, see the LCC study [4].

Basic model

The basic model we used to examine the optimal mix of accessions is a cost minimization model. A simple description of this model is that it *minimizes the total cost (over a long time horizon) of meeting all of the active duty requirements given the constraints the Services and DoD place on the medical corps.*

Steady-state solution

We use a long time horizon to obtain the steady-state solution to the model. What is meant by the optimal accession mix in the *steady state?* If we ran the model with a 1-year time horizon, the output of the model would tell us the optimal mix of accessions given that time horizon. Assuming that the model is currently out of equilibrium, if we ran it over a 2-year time horizon, the optimal mix of accessions would be different in the second year than in the first. This would occur because the model has 2 years to move the given corps toward its long-term optimal mix of accessions. Essentially, the steady state is a solution in which the optimal mix of accessions is the same year after year.

To find the optimal mix of accessions in the steady state, we ran the model for 80 years. This long time horizon ensures that the solution is not affected by the personnel currently in the medical corps or in one of its accession pipelines.

By looking at the steady state, we are modeling what the Services should do in the long term—not what they should do next year. The reason is that the model allows us to see the long-term consequences of various policies, constraints, and business practices. Hence, a model that is applicable only to next year's accessions has a one-time usefulness, whereas policy-makers can use the steady-state model to focus on the policies, constraints, and business practices that have a substantial impact on the system.

Model costs and retention

The costs we modeled are the life-cycle costs from the LCC study [3]. Costs are largely driven by the career path—timing of promotions, training, and board certification. In conjunction with TMA and representatives from each Service, we determined the predominant career path by specialty, accession source, and Service.

Given the predominant career paths, we computed the survival curves for AFHPSP direct and deferred accessions for each specialty using the probit model discussed previously. Because the focus of this study is on AFHPSP accessions, and not on USUHS or FAP accessions, we have not attempted to compute new survival curves for these acces-

sion sources. Instead, we use the survival curves that we developed in the LCC study.

Constraints

If we place no constraints on the model, the obvious solution to the optimal mix of accessions is to have all new accessions come from the least expensive source. Allowing the model to be unconstrained doesn't reflect the environment in which the Services operate (market supply and demand as well as unique military requirements). Consequently, we imposed the following constraints on the model:

- Billet (manning) requirements
- Experience profile requirements
- Accession source constraints
- In-house training requirements.

Billets. The first constraint is the number of billets that must be filled. From this point forward, we will use "billets" to describe the subset of billets considered for the selected specialists in our model and not the entire universe of billets (i.e., we modeled 23 physician specialties, not the entire medical corps billet file).

From a modeling standpoint, the number of billets is the *minimum* number of duty specialists the Services require—not the maximum they can have. For military personnel planners, authorized billets are more akin to the maximum number of bodies the Services can have on active duty at the end of any given fiscal year. To fill the billets with the exact same number of bodies, we would have to constrain bodies to be no less and no more than billets. Doing this, however, makes the model infeasible because of other constraints on the model that may force bodies to exceed billets or may not allow them to reach billets.

That said, the model doesn't want more bodies than billets because it is trying to minimize cost and, obviously, each extra body is costly. In other words, modeling billets as the minimum number of bodies is akin to modeling a target number of billets; in the steady state, the number of bodies exceeds billets *only* if the model's other constraints force it to do so.

Experience profile. One of the more influential constraints in the model is the desired experience profile of the force. What percentage of the duty specialists should be O-6s, and what percentage should be at least O-5s? Even though it will always be the case that it is most cost-effective to fill junior billets from the least expensive accession source, it may be more cost-effective to fill senior billets from more expensive accession sources if the retention rates of these accession sources are substantially higher than the less costly ones.[14] The specific experience constraint we use is that at least 30 percent of duty billets should be filled with O-5s or O-6s and at least 10 percent should be filled with O-6s.[15]

Accession source constraints. Even when we impose a force structure constraint on the model, the model may find that the optimal mix of accessions consists of more of some accession sources than the Services could reasonably get. For this reason, another critical constraint is the maximum number of accessions the Services can expect from each source given the subsidization of the accession programs. Hence, though the Services may want more unsubsidized accessions, they may not be able to get more without increasing the subsidization of these programs. Accession source constraints are an acknowledgment of economic and political constraints on the number of specialists that can be assessed through each accession source.

In-house training requirements. The in-house training requirements are requirements for the size of the GME program. As a starting point, we modeled the GME requirement as a target that the model must fill. We did this by setting the minimum and maximum number of GME starts at the same level. In other excursions, we allowed the model to determine the "optimal" number of GME starts. Note that this optimal number of GME starts is optimal in that sense that it is the least

14. We are not directly assigning new accessions to fill senior billets but "growing" them into senior billets. Differences in retention patterns across accession sources, therefore, can make it more or less costly to grow senior personnel from specific accession sources.

15. This constraint is based on a Health Affairs memorandum [13], which states a goal of 25 to 30 percent of physician endstrength with an experience level of 5 to 12 years beyond initial certification.

costly choice given the costs, retention, and constraints imposed on the system. It is not necessarily the optimal solution in the global sense.

Penalties. Sometimes the model's constraints will not allow it to fill all of the requirements. For example, the constraints may not allow it to fill all of the billet requirements. When this occurs, the model has not technically met the minimum billet requirement. Again, if we imposed the billet requirement as a hard minimum, the model would be infeasible because the other constraints simply don't allow the model to meet the billet requirement. To overcome this problem, we've constructed the model to handle these cases by imposing an arbitrarily large financial penalty. In other words, we allow the model to meet the requirement by buying a civilian specialist—albeit at an unrealistically high cost.

In addition to a financial penalty for failing to meet billet requirements, the model includes a financial penalty if the constraints do not allow it to fill experience profile requirements. Note that the penalty costs for failing to fill requirements with military personnel or personnel of the right experience level *are not included in the cost figures that we report.* The cost figures represent only those costs associated with military personnel, which are the life-cycle costs. However, we did adjust cost for billet requirement shortages. We make this adjustment by adding in the average billet cost for each unfilled billet. The costs don't reflect any adjustment for unfilled experience requirements. Unfilled experience requirements don't mean that there is not a body for each billet, just that the body doesn't have the right experience level.

Other modeling issues. We modeled the process of filling billets using continuous variables rather than an integer programming approach. We allowed for fractions of personnel, such as accessing 4.5 in the steady state rather than forcing the model to always use a whole number. Because we are looking for a steady-state solution, all we really want is the average number of personnel that should be accessed each year. So, if the steady state is 4.5, we interpret the steady state as accessing 4 one year and 5 in the next. Integer programming would

add substantially to the modeling complexity without meaningfully affecting the results.

Another modeling issue is the starting point—today's inventory of specialists and trainees in a given speciality as well as the inventory in the accession pipelines. The starting point is the driver for how and whether the Services will be able to meet near-term requirements. That said, the starting point we used for inventories *does not affect the optimal mix of accessions in the steady state* because, once enough time passes to let the current inventory work through the system, the model reaches the same steady state regardless of the starting point. What it affects is the time it takes to reach the steady state and the path used to reach it.

Baseline and excursions

As a starting point, we have a "baseline" set of constraints. Largely, we designed these constraints to reflect the constraints under which the Services currently operate. Then with the baseline as a reference point, we can change a constraint or parameter and see how these changes affect the results. For this study, we've developed two baselines—A and B.

Baseline A. Baseline A uses the same constraints and parameters as the one as we used in the LCC study, with two notable exceptions. First, in the LCC study, we estimated the survival curves by accession source, specialty, and career path using FY 1991-2000 data from the Defense Manpower Data Center (DMDC). In this study, we have estimated the survival curves for USUHS and AFHPSP direct and deferred accessions by specialty and career path using the results of our probit model discussed previously, which relies on Navy BUMIS data from FY 1987-2002. The reason for this substitution is that we need to be able to model how increases in the GME and AFHPSP obligations would affect survival. And, as we've already discussed, the DMDC data do not allow us to do this.

Second, in the LCC study, we set up the USUHS accession constraint with a minimum of zero and a maximum of 63 (Army) or 51 (Navy and Air Force). Because we were interested in determining the optimal mix of accessions under various constraints, we modeled USUHS

accessions in this manner to allow the model the freedom to use USUHS accessions only if it needed them—only if it were optimal. We found that the higher the experience profile required and/or the smaller the GME program, the higher the optimal number of USUHS accessions.

In execution, USUHS is really an all-or-nothing proposition—either USUHS exists and produces about the same class size year after year or the school is closed. Because USUHS costs are largely fixed, the marginal savings of reducing USUHS accessions by a few is relatively small. Accordingly, for baseline A, we model USUHS accessions as having a minimum and maximum of 63 (Army) and 51 (Navy and Air Force). We've done this because this study is not about maintaining or closing USUHS. This study is concerned with potential changes in the GME obligation, which would have no effect on the annual number of USUHS graduates.

In contrast to fixing the number of USUHS accessions, we allow FAP accessions to fluctuate in the model as the GME obligation changes. We did this because FAP accessions have always been and will likely continue to be a supplemental accession source, which the Services use to fill billet requirements not met by USUHS or AFHPSP accessions. In addition, if DoD increased the GME obligation, it would have some negative impact on the Services' ability to recruit AFHPSP. One foreseeable consequence is that a larger percentage of recruiting resources would need to be expended on AFHPSP recruiting efforts and, unless recruiting resources increased, this would require recruiting cuts in other areas, such as FAP recruiting.

Baseline B. Baseline B has the same assumptions, constraints, and parameters as baseline A, except that it allows the model to find the cost-minimizing GME or, in other words, determine the optimal size of the in-house GME program. One of the constraints in baseline A is that a certain number of physicians need to go into in-house GME training each year under the assumption that the size of the in-house GME program is fixed.

What we found in the life-cycle-cost study was that, next to USUHS, the most cost-effective way to fill experience or seniority requirements was AFHPSP direct accessions—meaning in-house GME because it

improves retention significantly compared to AFHPSP deferred accessions. If we increase the GME obligation, we increase retention, which helps the Services to fill experience requirements with fewer accessions. This also has the effect of reducing the need for in-house GME. By allowing baseline B to determine the optimal number of in-house GME starts given the other constraints and parameters, we allow the model to eliminate in-house GME positions that aren't necessary in terms of meeting the other constraints on the system.

Excursions. We have taken two sets of excursions from both baselines A and B. The first set assumes that the AFHPSP ADO is 4 years for 4 years of subsidization, which is the current policy. The second assumes that the AFHPSP ADO is 5 years for 4 years of subsidization, which is the recommendation we made in the AFHPSP ADO study [5]. Under each of these assumptions, we take four excursions to show how different GME obligation policies affect requirements. As stated previously, the four obligation policies that we have looked at are the following:

1. **GME ADO 1**: consecutive payback—the GME obligation is year for year and is paid back consecutively with any prior obligation.
2. **GME ADO 2**: residency length plus 1—the residency obligation is training length plus 1 year, the fellowship obligation is year for year, and these obligations are paid back concurrently with any prior obligation.
3. **GME ADO 3**: 2-year obligation with consecutive payback—the residency obligation is 2 years for all specialties and is paid back consecutively with any prior obligation. Those completing a fellowship owe a minimum of 4 years after completing the fellowship.
4. **GME ADO 4**: fellowship length plus 1—the residency obligation is year for year, the fellowship obligation is training length plus 1 year, and is paid back concurrently with any prior obligation.

None of these excursions alter any of the constraints on the model, but they do affect the continuation, retention, and cost parameters. The impact on continuation and retention is an obvious increase as we've already shown. Costs change with increased retention because accessions are now more likely to reach retirement eligibility than

they were previously. We have adjusted costs to account for this higher probability of receiving retirement benefits.

Results

Now that we have walked through our methodology and approach, this section discusses the output of the LCC model, which shows what impact changes in GME obligation policy may have on accession requirements and costs. Appendix A shows the output of the LCC model for both baselines and all of the excursions by Service.

Impact on accessions

As we showed with the probit analysis, a change in the GME obligation policy affects continuation and retention. In the probit analysis section, we estimated that requiring accessions to serve the GME obligation consecutively with prior obligations reduces AFHPSP direct accession requirements by 42 percent. Similarly, if we change the fellowship obligation from year for year to fellowship length plus 1 year, AFHPSP direct accession requirements fall by less than 1 percent. This policy change results in a small AFHPSP accession requirement change because there are few fellowships.

While these figures provide an initial estimate of the potential effect of these GME obligation policy changes, they do not account for the fact that any GME obligation change alters the relative costs and benefits of each accession source. This means there would likely be a more efficient mix of USUHS, AFHPSP direct, AFHPSP deferred, and FAP accessions that differs from what the Services have done historically. It is because of this dynamic that we used the LCC model to estimate how accession requirements change as a result of a GME obligation policy change.

Assuming the size of the in-house GME program is fixed. Table 6 shows the optimal accession mix when the GME program is fixed (baseline A) with the current GME obligation policy compared to GME ADO policies 1 through 4. Note that the number of USUHS accessions is unchanged. We point this out simply to remind the reader that we made an assumption to not allow the model to alter the number of USUHS accessions. Therefore, we place no meaning on the fact that USUHS is the same in each excursion.

We also observe that the number of AFHPSP accessions falls to 91 percent of the baseline number when we go from the current policy to a consecutive payback policy (GME ADO 1). The AFHPSP accessions don't fall more because the fixed size of the GME program forces the model to bring in AFHPSP accessions simply to fill GME positions even if these accessions aren't needed to fill billet requirements. This means that all of the reductions in AFHPSP accessions are reductions in AFHPSP deferred accessions. Similarly as we go from the current obligation policy to the various GME obligation policies, the model also reduces the number of FAP accessions. This occurs because the fixed GME requirement results in overmanning in some specialties, so the model reduces FAP accessions to minimize the amount of overmanning.

Table 6. Impact of GME ADO policies on accession mix assuming the GME program is fixed

Accession source	No. of accessions by GME ADO policy					Percentage of current (baseline)			
	Current	1	2	3	4	1	2	3	4
4-year AFHPSP ADO									
Accession pipeline									
USUHS	165	165	165	165	165	100	100	100	100
AFHPSP	756	687	718	707	756	91	95	94	100
FAP	51	7	25	7	51	14	49	14	100
Total	972	859	908	879	972	88	93	90	100
AFHPSP mix									
Percent direct	88	96	92	94	88				
Percent deferred	12	4	8	6	12				
Bodies as a percentage of billets	106	139	109	126	106				
5-year AFHPSP ADO									
Accession pipeline									
USUHS	165	165	165	165	165	100	100	100	100
AFHPSP	717	681	703	690	717	95	98	96	100
FAP	14	2	15	2	15	14	107	14	107
Total	896	848	883	857	897	95	99	96	100
AFHPSP mix									
Percent direct	93	97	94	96	93				
Percent deferred	7	3	6	4	7				
Bodies as a percentage of billets	112	153	114	130	112				

The main consequence of the fixed size of GME program is that the model is forced to bring in AFHPSP accessions it doesn't need to fill GME positions. In the baseline, bodies as a percentage of billets was 106 giving an excess of 6 percent. We recognize that excesses can't exist in the long run. The model generates excesses because it is forced to do so to meet all of the requirements placed on it. When we model the various GME ADO policies, the excesses increase because the GME ADO policies increase continuation and retention, but because the GME program is fixed, the GME requirement doesn't allow the model to reduce AFHPSP direct accessions that it doesn't need to fill billets.

Because the GME and AFHPSP obligations together determine the effective obligation, we have also looked at the consequence of the various GME obligations assuming that DoD increased the AFHPSP ADO to 5 years for 4 year of subsidization. Assuming a 5-year AFHPSP obligation in addition to a GME obligation change doesn't change the fact that the model can't reduce the number of AFHPSP direct accessions because it is still forced to bring them in to fill GME positions. In addition, it means that there are fewer AFHPSP deferred and FAP accessions to reduce because the additional year of AFHPSP obligation eliminates some of these to begin with. The bottom line is that the model has 12 percent excesses with a 5-year AFHPSP ADO compared with 6 percent when we assumed a 4-year AFHPSP ADO.

Assuming the in-house GME program is the economic optimum. As we have just discussed, if we assume that the size of the in-house GME program is fixed at a certain level, the model must maintain a certain number of AFHPSP direct accessions to fill GME positions even if these accessions aren't needed to fill billet requirements. We now explore what happens if we relax this assumption and let the model choose the "economic optimal" number of GME positions.

By the economic-optimal GME, *we mean the number of GME positions there should be from a cost or economic standpoint only.* We realize other factors—that we can't control for in the LCC model—also determine how large or small a GME program can be. These factors include workload, patient demographics, and accreditation standards. Additionally, for the Navy there is the operational issue of needing a

certain number of GMOs. Because GMOs come from the group of accessions that eventually go through in-house GME, this may also affect the size of the GME program. If the model were able to control for these factors, the directional impact of the model on accessions and costs would be the same, but the magnitude of the change may be different.

Before we discuss how the optimal mix of accessions changes when we increase the GME obligation with economic-optimal GME, we consider how the economic-optimal number of in-house GME starts compares with the fixed number of GME starts. Table 7 shows the number of in-house GME starts in the fixed and economic-optimal models by Service for eight specialties.[16]

Table 7. Number of in-house GME starts in the fixed and economic-optimal model (assuming the current GME ADO)

	Army		Navy		Air Force		Total	
Specialty	Fixed	Econ. optimal	Fixed	Econ. optimal	Fixed	Econ. optimal	Fixed	Econ. optimal
Anesthesiology	16	6.2	18	6.9	8	4.0	42	17.1
Cardiology	7	3.9	4	1.0	5	3.4	16	8.3
Family practice	50	35.7	43	6.5	45	26.7	138	69.0
General IM	55	37.0	31	4.2	37	18.2	123	59.4
General surgery	24	8.5	9	9.8	13	16.5	46	34.8
OB/GYN	21	9.5	13	8.0	12	6.0	46	23.5
Orthopedic surgery	20	9.5	11	8.6	8	6.0	39	24.0
Radiology	16	6.7	14	12.9	16	5.9	46	25.5
Other specialties	135	82.9	78	43.6	74	33.6	287	160.1
Total	344	200.0	221	101.5	218	120.2	783	421.7
Percentage of fixed		58		46		55		54
Spec. with FAP	219	126.8	147	56.9	158	73.4	524	257.0
Spec. without FAP	125	73.2	74	44.7	60	46.8	259	164.7

16. These eight specialties were the specialties we focused on in the LCC study. The "other specialties" category includes the figures for the remaining 15 of the 23 specialties we included in the LCC model.

Overall, the number of in-house GME starts in the economic-optimal model is 46 percent less than when GME is fixed. However, the reduction is not universal across the specialties. For example, the number of GME starts in five specialties in the Army is actually greater than in the fixed case. These specialties are otolaryngology, neurosurgery, ophthalmology, pathology, and preventive medicine. Similarly, for the Navy, the numbers of GME starts in the economic-optimal model are higher for general surgery, ophthalmology, and preventive medicine than in the fixed model. And, for the Air Force, the economic-optimal GME starts are higher for general surgery, plastic surgery, and preventive medicine. The point is that when we say the economic-optimal number of GME starts is 46 percent less than the fixed model, we are not saying the current size should be cut by 46 percent across the board. It is really specialty specific.

If we look at the economic-optimal GME starts by Service, the model indicates that the economic-optimal GME starts are 42, 54, and 45 percent less in the Army, Navy, and Air Force, respectively. The reason the Navy GME starts are so much less than the Army or Air Force has to do with the Navy's policy to send its USUHS and AFHPSP direct accessions on a 2-year GMO tour before beginning residency training. The GMO tour elongates the career path of its USUHS and AFHPSP direct accessions causing its retention to be relatively higher than in the Army and Air Force. This means that fewer AFHPSP direct accessions are needed to fill seniority requirements. Hence, the economic need for GME is less.

Note that the LCC model assumes that all USUHS and AFHPSP direct accessions in the Navy serve a GMO tour, but historically only about 73 percent do [6]. While serving a GMO tour is by far the predominant career path, the fact that the LCC model assumes all USUHS and AFHPSP direct accessions do this exaggerates the change in the number of in-house GME starts. Navy USUHS and AFHPSP direct accessions without a GMO tour exhibit about the same retention behavior as their Army and Air Force counterparts. And, because of this difference, the reduction in GME starts was only 43 percent for the Army and Air Force combined. Accounting for this, we estimate that if 27 percent of Navy USUHS and AFHPSP direct accessions didn't serve as GMOs, the Navy GME starts would be 51 percent less

in the economic-optimal GME model rather than 54 percent less than the fixed GME model.

The FAP constraint also affects the economic-optimal number of in-house GME starts. When we developed the LCC model, we set the FAP constraint by specialty based on the Services' historical success in bringing in FAP accessions. This means that for some specialties—generally those with large military-civilian pay gaps—we assumed that the Services could not get any FAP accessions.[17] In contrast, primary care specialties can get some FAP accessions. For example, the FAP accession constraints are 25 for family practice, 10 for general internal medicine, and 8 for OB/GYN.[18]

As table 7 shows, the specialties with a FAP constraint of zero had economic-optimal GME starts of 165 compared with 259 in the fixed case. This is a decease of only 36 percent. For those specialties for which FAP accessions are a feasible option, the economic-optimal GME starts were 257 compared with 524 in the fixed model. This is a decrease of 51 percent. The point is that, if FAP is a possible accession source, the economic-optimal number of GME starts will be less than if it is not.

When FAP is a possible accession source and retention for a specialty is relatively high, just a few in-house GME starts filled by USUHS and/or AFHPSP direct accessions supplemented with FAP and AFHPSP deferred accessions can fill the billets and seniority requirements. To see this more clearly, consider family practice. In the fixed GME model, the Air Force has 45 family practice in-house GME starts and brings in 7 of the 25 allowed family practice FAP accessions. The combination of these accession sources enables it to just fill its billets. In addition, this accession mix results in a seniority mix with 17 percent O-6s, allowing it to easily meet its seniority requirement of 10 percent O-6s.

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17. The FAP constraint is zero for anesthesiology, cardiology, dermatology, otolaryngology, gastroenterology, general surgery, hematology/oncology, neurology, neurosurgery, orthopedic surgery, pathology, physical medicine, plastic surgery, preventive medicine, and urology.

18. For more information on the FAP constraint, see the LCC study [4].

This means that the in-house GME program is providing more senior family practitioners than the model requires. So, when we find the economic-optimal in-house GME, the cost-minimization model wants to reduce the GME starts because not as many are needed to produce the required experience profile. This is where FAP comes into the picture. If there is no alternative to in-house GME for filling billets, in-house GME starts will not change. FAP provides one such alternative. Another alternative is AFHPSP deferred accessions. So when we go from the fixed to economic-optimal GME model, FAP accessions go from 7 to 25, while in-house GME starts fall from 45 to 26.7. Hence, fewer in-house GME starts in concert with additional FAP accessions allow the model to fill the billets and meet the experience profile at a lower cost than with a larger in-house GME program.

The size of the GME program in the economic-optimal model depends on the GME obligation policy that we've modeled. The figures in table 7 show what the economic optimum of the in-house GME program should be with the current GME policy. For the excursions where we model alternative GME policies, the optimal size of the GME program will be less. Specifically, when the GME payback is consecutive with prior obligation, the optimal number of GME starts is 54 percent less than the current policy. Similarly, if the residency obligation is training length plus 1 year, optimal GME starts are 11 percent less. If the residency obligation is 2 years served consecutively with prior obligations, optimal GME starts are 30 percent less. And, if the fellowship obligation is training length plus 1 year, optimal GME starts are only 2 percent less because only fellowships are affected.[19]

Now that we have discussed the differences in the model due to the change in how we model in-house GME starts, consider the optimal mix of accessions assuming that the in-house GME program is the economic optimum. Table 8 shows the optimal accession mix when the GME program is the economic optimum (baseline B) with the current GME obligation policy compared to GME ADO policies 1 through 4. Interestingly, with the economic-optimal number of GME

19. The economic-optimal number of GME starts in this study is less than in the AFHPSP ADO study [5]. For a detailed explanation, see appendix B.

positions, the number of total accessions changes very little regardless of whether we assume the current GME policy or one of our four alternative GME policies.

Table 8. Impact of GME ADO policies on the accession mix assuming the GME program is the economic optimum

Accession source	No. of accessions by GME ADO policy					Percentage of current (baseline)			
	Current	1	2	3	4	1	2	3	4
4-year AFHPSP ADO									
Accession pipeline									
USUHS	165	165	165	165	165	100	100	100	100
AFHPSP	658	655	639	629	657	100	97	96	100
FAP	165	165	165	165	165	100	100	100	100
Total	988	985	969	959	987	100	98	97	100
AFHPSP mix									
Percent direct	43	4	36	22	42				
Percent deferred	57	96	64	78	58				
Bodies as a percentage of billets	100.3	100.1	100.2	100.2	100.3				
5-year AFHPSP ADO									
Accession pipeline									
USUHS	165	165	165	165	165	100	100	100	100
AFHPSP	604	549	589	558	602	91	98	92	100
FAP	114	165	119	146	114	145	104	128	100
Total	883	879	873	869	881	100	99	98	100
AFHPSP mix									
Percent direct	25	1	23	17	25				
Percent deferred	75	99	77	83	75				
Bodies as a percentage of billets	100.2	100.1	100.2	100.1	100.2				

However, comparing the economic-optimal number of total accessions with the FY 1998-2001 average of 1,158, the model shows a 15-percent decrease in total accession requirements from using the economic-optimal number of GME positions without any change in the GME obligation. Again, some of the accession reductions are a result of increasing the number of GME starts in specialties where the in-house GME program doesn't provide a sufficient number of specialists to fill these specialties' seniority requirements. By using the

economic-optimal GME, the model can reduce the number of excess physicians that are a result of bringing in many more AFHPSP deferred and FAP accessions to fill seniority requirements than are necessary to fill billets.

Once we use the economic-optimal number of GME positions, changing the GME obligation policy has minimum impact on the total accession requirements, but it does substantially change the mix of accessions. For example, the total accession requirements under the current GME obligation policy are 988 annually and if DoD changes the GME obligation policy to make its payback consecutive with prior obligations, annual accession requirements only change by 2 percent to 985. The number of USUHS accessions does not change because we've fixed the USUHS class size at 165. Similarly, the number of FAP accessions remains unchanged.

What does change is the mix of AFHPSP direct and deferred accessions. Under the current GME policy, the model has 658 AFHPSP accessions annually and 43 percent of these are AFHPSP direct accessions. The remaining 57 percent are AFHPSP deferred accessions. If DoD changes the GME payback to make it consecutive with prior obligations, only 4 percent of AFHPSP accessions are direct accessions. This occurs because making the payback of the GME obligation consecutive with any prior obligation provides such extreme longevity that the economic-optimal number of GME positions falls by 54 percent compared with the current policy. Because USUHS accessions are fixed, the model is forced to achieve all of this reduction by reducing the number of AFHPSP direct accessions.

If we change the GME obligation policy in addition to increasing the AFHPSP ADO to 5 years for 4 years of subsidization, the implication of the results is the same. Namely, total accession requirements change very little when we use an alternative GME obligation policy compared with the current policy. The change that does occur is a shift from AFHPSP direct to AFHPSP deferred accessions as the economic-optimal number of GME positions decreases.

Impact on costs

Now that we have looked at the impact of various GME obligation policies on total accession requirements, we look at the impact on costs.

Recall that the LCC model doesn't model billets as the maximum number of physicians the Services can have. It models billets as the minimum number of physicians it needs. If we modeled billets as a maximum, the model would not want to have any physicians because it is trying to minimize costs. Note that while the LCC model uses billets as a minimum constraint, the model will only cause bodies to exceed billets to the degree that it is necessary to meet other requirements, such as GME or experience constraints.

Assuming the size of the in-house GME program is fixed. Considering the case in which we assume that the number of GME starts is fixed, we see that in the steady state there are enough physicians to fill 106 percent of billets, as table 9 shows. We realize that the MHS can't do this in execution, but this is the number of physicians the model requires to meet all of its constraints, including experience. The important point here is not that we have excesses in the baseline case, but how the excesses change as DoD changes the GME obligation.

Table 9. Impact of GME ADO policies on bodies v. billets and costs assuming the size of the in-house GME program is fixed

AFHPSP ADO and Service	Physicians (bodies) as a percentage of billets by GME ADO policy)					Annual cost in millions of dollars by ADO length (years)				
	Base	1	2	3	4	Base	1	2	3	4
4-year AFHPSP										
Army	106	151	108	135	107	755	1,043	782	919	761
Navy	104	122	110	114	105	614	714	647	644	616
Air Force	106	140	108	127	107	498	679	513	583	504
MHS	106	139	109	126	106	1,867	2,406	1,942	2,146	1,879
Percentage of baseline							129	104	115	101
Annual costs without excesses						1,770	1,740	1,788	1,702	1,767
5-year AFHPSP										
Army	116	168	117	135	116	818	1,134	825	919	818
Navy	106	133	110	125	107	627	763	645	708	630
Air Force	113	154	114	127	114	528	704	535	583	532
MHS	112	153	114	130	112	1,973	2,601	2,005	2,210	1,980
Percentage of baseline							132	102	112	100
Annual costs without excesses						1,766	1,705	1,764	1,706	1,765

Excesses in the model result for two reasons. First, if for some specialty the number of GME starts does not provide enough senior physicians to fill the seniority requirements, the model may need to bring in a lot of AFHPSP deferred or FAP accessions so that a few will remain in the military long enough to fill seniority requirements not met through in-house GME. If this is the case, increasing the active duty obligation may result in fewer excesses and cost savings even if GME is fixed because the improved continuation and retention of those in GME can dramatically reduce the AFHPSP deferred and FAP accession needs for some specialties.

Second, if the number of GME starts is too large, the in-house GME program may fill all of the billet requirements without much or any help from the other accession sources. If this is the case, increasing the ADO will increase excesses and costs when GME is fixed. Also, when in-house GME—meaning USUHS and AFHPSP direct accessions—easily meets seniority requirements, the model would like to reduce the number of USUHS and AFHPSP and direct accessions, but it can't because GME is fixed.

Whether costs increase for the MHS as a whole depends on the mix of specialties in these two groups. In the case of fixed GME, excesses and costs increase, no matter which of the four alternative GME obligation policies we use. And, the larger the increase in the effective obligation, the larger the increase in excesses and costs. Specifically, if DoD makes the GME obligation 2 years paid back consecutively with any prior obligation, excesses increase from 6 percent to 35 percent and costs increase by 15 percent from $1.87 billion to $2.15 billion. Similarly, if DoD changes the GME obligation so that it is paid back consecutively with any prior obligation, excesses increase to 51 percent and costs increase by 29 percent.

When we change the GME obligation policy in addition to increasing the AFHPSP ADO to 5 years for 4 years of subsidization, the direction of the impact on excesses and costs is the same, but the magnitude of the change is greater. The reason is that, with a 5-year AFHPSP ADO, in-house GME is able to fill more of the senior requirements and billet requirements in general with less need for AFHPSP deferred and FAP accessions to fill what remains.

Assuming the in-house GME program is the economic optimum. As we have discussed, fixing the size of the GME program causes the model to bring in a lot of AFHPSP direct accessions that the model doesn't need to fill billets. When we allow the model to determine the size of the GME program, the excesses we had in the fixed GME case largely go away. Specifically, in the baseline model where the model determines the economic-optimal size of the GME program, excesses are 0.3 percent of billets, as table 10 shows. Excesses do not completely go away because retention rates, in conjunction with experience constraints, force excesses in some specialties. Obviously, because the excesses are so small in the baseline model, excesses change very little in the various model excursions.

Table 10. Impact of GME ADO policies on bodies v. billets and costs when the in-house GME program is the economics optimum

AFHPSP ADO and Service	Physicians (bodies) as a percentage of billets by GME ADO policy)					Annual cost in millions of dollars by ADO length (years)				
	Base	1	2	3	4	Base	1	2	3	4
4-year AFHPSP										
Army	100.0	100.0	100.0	100.0	100.0	655	613	655	631	653
Navy	100.9	100.4	100.7	100.5	100.9	515	482	503	492	515
Air Force	100.0	100.0	100.0	100.0	100.0	436	422	435	429	435
MHS	100.3	100.1	100.2	100.2	100.3	1,606	1,517	1,593	1,552	1,603
Percentage of baseline							94	99	97	100
Annual costs without excesses						1,601	1,515	1,589	1,550	1,598
5-year AFHPSP										
Army	100.0	100.0	100.0	100.0	100.0	631	605	630	621	630
Navy	100.5	100.4	100.6	100.4	100.5	498	475	490	479	497
Air Force	100.0	100.0	100.0	100.0	100.0	427	418	427	425	426
MHS	100.2	100.1	100.2	100.1	100.2	1,556	1,498	1,547	1,525	1,553
Percentage of baseline							96	99	98	100
Annual costs without excesses						1,553	1,496	1,544	1,523	1,550

By allowing the model to find the economic-optimal GME program, we give it the flexibility to increase or decrease GME by specialty as

needed to minimize cost. Under the current GME policy with the economic-optimal GME, annual costs in the steady state are $1.61 billion. If DoD changed the GME obligation policy to make the payback of the GME obligation consecutive with any prior obligation, annual costs would fall by $89 million, or 6 percent, to $1.52 billion. If DoD made the GME obligation 2 years paid back consecutive with any prior obligation, annual costs would fall by $54 million, or 3 percent. If DoD changed the residency obligation to be training length plus 1 year, costs would fall by $13 million. Similarly, if the fellowship obligation was training length plus 1 year, costs would fall by $3 million. Because this change affects very few specialties, the cost change is relatively small.

In the model where we assume a 5-year rather than a 4-year AFHPSP ADO, we observe similar cost savings. However, the cost savings associated with changing the GME policy are less than with a 4-year AFHPSP ADO because the additional continuation and retention from the higher AFHPSP ADO reduces the potential continuation and retention gains from the various GME obligation policies.

Comparing the results of the fixed and economic-optimal GME models, we observe that the costs assuming a 4-year AFHPSP ADO are $261 million (1,867 - 1,606) less in the economic-optimal GME model than in the fixed GME model. Part of the reason for this difference is that the economic-optimal GME reduces the excess physicians to only 0.3 percent of billets from 6 percent of billets in the fixed GME case. This difference is an accurate reflection of the annual cost differences between the steady states of the two models.

To the extent that these excesses don't exist in execution, the model exaggerates the cost savings from using the economic-optimal GME. But, the excesses also mean that the Services are not currently meeting all of their requirements. To estimate the actual cost savings that would result from using the economic-optimal GME program, we have removed the costs of the excesses to make a comparison of cost in an environment that reflects more how the Services operate. In doing this, we are effectively *not* fixing GME or meeting all of the seniority requirements. Meeting these requirements forces the model to have excesses, so by removing the costs of the excesses we are not

meeting all requirements. That said, annual costs without the excesses are $1.77 billion in the fixed GME model and $1.61 billion in the economic-optimal GME model. This means that using the economic-optimal GME would save about $169 million.[20]

To look at it a little differently, small changes in seniority requirements (or the ability to meet them) have large implications on the need—from a cost perspective—for in-house GME. As the LCC study showed, the most influential constraint on the LCC model for physicians is the experience profile or seniority constraint [4]. And, as the different estimates of the cost savings from using the economic-optimal GME show, small changes in seniority requirement or ability to meet these requirements have substantial cost implications.

Costs also decrease because the model is less constrained in finding the mix of accessions that most cost-effectively meets requirements. Again, we note that the economic-optimal GME model for the Navy exaggerates the reduction in the number of GME starts because it assumes that all USUHS and AFHPSP direct accessions serve a GMO tour. Historically, we know that not all do so. This means the cost savings in the Navy model are exaggerated as well.

Timing of cost savings. The cost savings we have shown are annual cost savings in the steady state. Because of the time it takes to put physicians through the training pipeline—both medical school and GME—and to gain enough experience to fill seniority requirements, the steady state is many years off. That said, some cost savings would

20. The cost savings estimate of $169 million from using the economic-optimal GME is substantially more that the $61-million estimate from the AFHPSP ADO study [5]. The reason the two estimates are different is that we used DMDC data to estimate survival for USUHS accessions in the AFHPSP ADO study; in this study, we used BUMIS data to estimate survival for USUHS accessions. As we've discussed previously, the differences in the survival data are such that the BUMIS data will result in a few more O-6s for each 100 accessions than the DMDC data. Which data provide more accurate survival estimates for USUHS accessions is debatable, but the point is that small changes in survival of senior people makes a significant difference in the ability to meet seniority requirements. For further explanation, see appendix B.

begin to accrue in the first year DoD changes the GME obligation because there would be fewer accessions and fewer people in GME.

Historically (FY98-01), for example, the MHS had about 811 new AFHPSP matriculants each year. Assuming that all are 4-year scholarships, this would give a total student load of 3,244. By using the economic-optimal GME with no GME obligation change, annual AFHPSP matriculants could be cut by 19 percent to 658 annually.[21] As table 11 shows, this reduction in scholarships would save $7 million in the first year and $14 million in the second year because the student load would be reduced again by a second group of 658 matriculants. By the fourth year and beyond, the annual cost savings would be $28 million.

Table 11. Cost savings from decreased physician AFHPSP student load

	4-year ADO	Cost by year with economic-optimal GME			
		1st year	2nd year	3rd year	4th year
Annual AFHPSP matriculants	811	658	658	658	658
Total AFHPSP students	3,244	3,091	2,938	2,785	2,632
Cost per student ($K)	46	46	46	46	46
Total annual costs ($M)	151	143	136	129	12
Annual savings ($M)		7	14	21	28

In addition to savings from reduced accessions, savings would begin to accrue in the first year the GME obligation is changed assuming that the Services also reduce the number of people in GME. The LCC study showed that the average annual cost per person in GME is $104,000 [3]. This means the savings from reducing GME positions by 100 would be $10.4 million annually.

Long-term savings would come from two sources. First, savings would result from adjusting the accession mix to the most cost-effective accession mix to meet requirements. Second, savings result from the improved continuation and retention due to an obligation change.

21. Annual AFHPSP matriculants don't change much from this figure even when we change the GME obligation policy. It merely shifts much of the requirements from AFHPSP direct to AFHPSP deferred accessions.

For example, if DoD makes the GME obligation 2 years served consecutively with any prior obligation, we estimate that expected years of practice for anesthesiologists in the Army would increase from 5.86 to 9.48 years. And, as a result, the cost per year of practice would fall from $267,000 to $239,000.[22] The cost per year of practice falls because accession and training costs for medical school and GME are amortized over 9.48 years rather than 5.86 years.

Findings

We have drawn from our analysis the following findings in relation to the retention aspects of a GME obligation increase. First, increasing the GME obligation does not automatically translate into an increase in the effective obligation for all those in GME. Whether it does depends on the specialty, career path, and how DoD alters the GME obligation policy. In general, more physicians are affected by an obligation policy change that makes the payback of the GME and accession obligations consecutive rather than concurrent. Also, physicians who serve a 2-year GMO tour are typically affected more by a GME obligation change than physicians who don't serve as GMOs.

Second, an additional year of obligated service increases the average years of practice as a fully trained specialist more for USUHS than for AFHPSP accessions. The reason for this is that USUHS accessions are closer to retirement when they become unobligated than AFHPSP accessions are, and the closer physicians are to retirement eligibility, the more likely they are to remain in the military.

Third, assuming that the accession mix would remain the same as it has historically, if DoD changed the GME obligation policy from concurrent to consecutive payback, it would reduce accession requirements by 24 percent. If the GME obligation were 2 years paid back consecutively with any prior obligation, accession requirements would fall by 17 percent. If it changed the residency obligation to training length plus 1 year, accession requirements would fall by 5 percent. Similarly, if it changed the fellowship obligation to training length plus 1 year, accession requirements would fall by 0.3 percent.

22. The $239,000 figure includes an adjustment to retirement accrual costs to reflect the greater likelihood of reaching retirement eligibility.

This last change has a much smaller impact than the other policy changes because it would affect a very small percentage of billets.

Fourth, using the LCC model to find the optimal mix of accessions, we found that the degree to which AFHPSP accession requirements can decrease as a result of an ADO increase depends on whether the size of the in-house GME program can be changed. If the size of the in-house GME program cannot be changed, altering the GME obligation would increase costs. This occurs because the increased obligation increases continuation and retention, but the fixed GME doesn't allow the Services to significantly reduce accession requirements.

Fifth, using the economic-optimal GME would result in reductions in accession requirements and cost savings without any change in the GME ADO. Using the LCC model, we estimate that, if the size of the in-house GME program is the economic-optimum, total accessions could fall 15 percent and save $169 million compared with when GME is fixed.[23]

Sixth, using the economic-optimal GME results in more GME positions in some specialties and fewer in others. Generally, GME starts increase in specialties where the size of the GME program is insufficient to meet experience requirements. On an MHS level, these specialists are neurosurgery and preventive medicine. Conversely, the number of GME starts was generally less in the economic-optimal case compared with the fixed case for specialties where FAP is a feasible accession source. These specialties include family practice, internal medicine, and pediatrics.

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23. This is substantially larger than the $61 million the AFHPSP ADO study [5] estimated could be saved from using the economic-optimal GME. The difference is a result of using the BUMIS data to estimate USUHS survival in this study compared with using DMDC data in the AFHPSP ADO study. The estimated USUHS survival from the BUMIS data make filling seniority requirements easier than with the survival from the DMDC data. What this demonstrates is that seniority requirements are extremely influential and costly. If they can be more easily met—through improved retention or lower seniority requirements—substantial savings can be realized.

Impact on applicant pool

The preceding section focused on estimating the impact of various GME active duty obligation increases in terms of continuation and retention, accession requirements, and costs. This section focuses on whether changing the GME active duty obligation is feasible in terms of having a sufficient applicant pool—both in quantity and quality—to support the obligation change.

In looking at feasibility, we first examined the impact of historical changes in the GME active duty obligation. Second, we looked at the Services' historical applicant pool in terms of quantity and quality. To put these findings in context, we presented similar information for the national GME applicant pool. Third, to help us understand how the applicant pool might change, we have gathered the perceptions of both GME program directors and current residents and fellows on the effect an increase in the GME active duty obligation would likely have on the ability to fill current GME programs.

In this section, we also report various distinctions between allopathic and osteopathic physicians because there are systematic differences between them in terms of their specialty choice. Allopathic physicians are the traditional doctors of medicine (MDs) and osteopathic physicians are doctors of osteopathy (DOs). Both may prescribe medication and perform surgery. The difference between the two lies in the philosophy of these branches of medicine. Allopathic medicine has existed for several centuries; osteopathic medicine dates back to 1874. Andrew Taylor Still, the founder of osteopathy, focused on treating the whole person. There are 125 allopathic medicine schools and 20 osteopathic medical schools in the United States [14, 15].

Historical GME obligation changes

While there is no history of changes in the AFHPSP ADO from which to estimate the impact on the AFHPSP applicant pool for the AFHPSP

ADO study, there has been a change in the GME obligation policy that we can use for a comparison. Before April 1988, the GME training was obligation neutral, just as internships are obligation neutral today. The only requirement was that those completing in-house GME were required to serve a minimum of 2 years following their training. After April 1988, physicians in GME residency training incur a year-for-year obligation, but they serve this obligation concurrently with any prior obligation such as AFHPSP or USUHS obligations [16]. Because of the concurrent payback, the change in the GME obligation did not change the effective ADO (ADO following completion of residency training) for the vast majority of physician specialties. Whether it did depended on the specialty, accession source, and career path.

Before April 1988, 4-year AFHPSP accessions who did not serve as GMOs had effective obligations of 4 years. After April 1988, these accessions still had effective obligations of 4 years if their residency programs were 4 years or less because the AFHPSP and GME obligations were served concurrently. Only for those specialties with 5- or 6-year residencies did the GME obligation exceed the AFHPSP obligation and increase the effective ADO, as table 12 shows. Even if the accession obligation is a 3-year AFHPSP scholarship, the effective ADO is only less than with a 4-year AFHPSP scholarship for those with a 2- or 3-year residency; otherwise, the effective obligations are the same.

Table 12. Effective ADO before and after the 1988 GME ADO change

Accession source and career path	Residency length in years (excluding internship)				
	2	3	4	5	6
4-year AFHPSP, no GMO tour					
Before April 1988	4	4	4	4	4
After April 1988	4	4	4	5	6
3-year AFHPSP, no GMO tour					
Before April 1988	3	3	3	3	3
After April 1988	3	3	4	5	6
3- or 4-year AFHPSP, with GMO tour					
Before April 1988	2	2	2	2	2
After April 1988	2	3	4	5	6

The effective ADO for physicians with a 4-year AFHPSP scholarship who served a 2-year GMO tour before residency training would be 2 years following residency training before April 1988. Similarly, if it were a 3-year AFHPSP scholarship with a 2-year GMO tour, the effective obligation would still be 2 years because of the required minimum obligation of 2 years following residency training. So whether the AFHPSP scholarship is for 3 or 4 years, the effective ADO is the same for those with a GMO tour. After April 1988, the year-for-year GME obligation increased the effective ADO for physicians in specialties with a 3-year residency or longer. This effective obligation is the same for 3-year AFHPSP accessions as it is for 4-year AFHPSP accessions.

While table 12 does not show the effective ADO for USUHS accessions, these accessions were virtually unaffected by the April 1988 GME obligation change. For those without a GMO tour, there is no change in the effective ADO because the 7-year USUHS ADO is greater than the longest residency (6 years). This means that the effective obligation is still 7 years because the USUHS and GME obligations are served concurrently. Similarly, for those USUHS accessions who served a 2-year GMO tour and completed a residency that is 5 years or shorter, their effective obligation is unaffected by the April 1988 policy. This means that only those with a 6-year residency had their effective obligation increased from 5 to 6 years by the April 1988 policy.

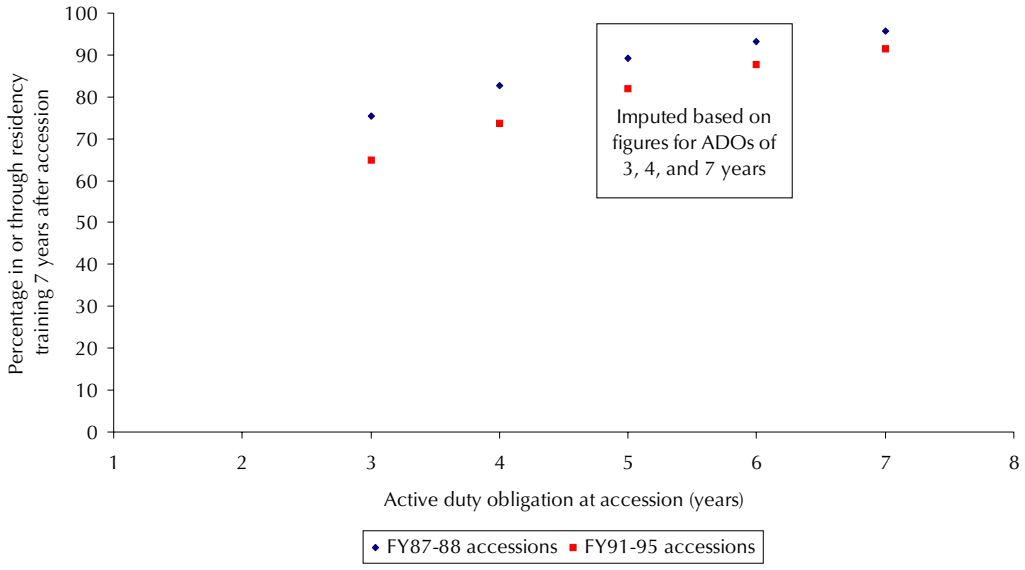
To estimate what effect the April 1988 GME obligation policy change had on the GME applicant pool, we have looked at the percentage of accessions that eventually tracked into a residency program. The supposition is that, if incurring the additional obligation is too unpalatable for some physicians, they will burn their ADO as general medical officers and leave the military without ever matriculating into a residency program. We have looked at this behavior both before and after the April 1988 change using the BUMIS data from FY 1987-2002. Specifically, we used FY 1987-1988 accessions to represent the before group and the FY 1991-1995 accessions as the after group.

We have used FY 1991 as the first accession cohort in the after group on the assumption that it took a few years to implement the policy. We used the FY 1995 cohort as the last cohort in the after group because

we wanted to look at whether physicians had sorted into a residency program within 7 years of accession. The FY 1995 accession cohort is the last one for which we can look at this behavior 7 years out given FY 1987-2002 data.

We found that 76 percent of the FY 1987-1988 accession cohort with a 3-year ADO at accession were in or had completed residencies by 7 years after accession, as figure 3 shows. This is 11 percentage points higher than the 65 percent of the FY 1991-1995 accession cohort that were in or had completed residencies by 7 years after accession (see figure 3). Similarly, we observe a 9-percentage-point drop for those with a 4-year ADO at accession.

Figure 3. Estimated survival of Army/Air Force orthopedists from USUHS by data source



While we observe these 9- and 11-percentage-point drops between the before and after periods, we do not believe that they are completely attributable to the change in the ADO policy. The reasoning for this has to do with what we observe for those with a 7-year ADO at accession. These accessions are in large part USUHS accessions. For this group, we observe a 4-percentage-point drop in the number of these accessions who enter or complete a residency program by 7 years after accession.

As we have discussed, the April 1988 change in the GME obligation policy did not change the effective obligation for those with a 7-year accession obligation who did not serve a GMO tour. And, for those who serve a 2-year GMO tour, it only increased the effective obligation by one year (from 5 to 6) for those who go into a 6-year residency. Because this group represents less than 1 percent of all USUHS accessions, it seems reasonable to infer that the 4-percentage-point drop we observe in the matriculation rate of new accessions in residencies is not attributable to the April 1988 obligation policy change.

Using the assumption that there is a 4-percentage-point drop in the rate at which new accessions matriculate into residencies that is not attributable to the GME obligation policy change, table 13 shows the impact of the April 1988 obligation policy change on the applicant pool. Specifically, there is a 6-percentage-point drop in the number of accessions with a 3-year ADO who go into specialties by 7 years after accession. Similarly, there is a 5-percentage-point drop for those with a 4-year accession ADO.

Table 13. Inferred impact of the April 1988 obligation policy change on GME applicants (percentage becoming residents by 7 years after accession)[a]

	Accession ADO (years)				
	3	4	5	6	7
FY 1987-1988 accessions	75.5	82.8	89.3	93.3	95.8
FY 1991-1995 accessions	65.0	73.8	82.0	87.7	91.5
Difference	10.6	9.0	7.2	5.6	4.3
Difference less difference for 7-year accession ADO	6.3	4.7	2.9	1.3	0.0

a. Figures for accession ADOs of 5 and 6 years are imputed based on the data for those with 3-, 4-, and 7-year accession ADOs.

Note that these figures are based on Navy BUMIS data. Because 73 percent of Navy USUHS and AFHPSP direct accessions serve a GMO tour before going into a residency [6], one needs to be careful when applying these figures to the Army and Air Force. For example, suppose a Navy physician with a 6-year obligation serves a 2-year GMO tour. Following this tour, he/she has a remaining obligation of 4 years when he/she would typically enter a residency program. The effect of the April 1988 GME obligation policy change on such accessions was

a 1.3-percentage-point drop in the matriculation rate into residency training. These physicians are comparable to Army or Air Force physicians with a 4-year accession obligation because they have a 4-year obligation when they enter a residency program. The point is that the GME applicant pools in the Army and Air Force will be less affected than in the Navy by a GME obligation change because they still owe all of their accession obligation when they typically enter a residency program.

Quantity and quality of applicants

Ideally, we would have presented an array of GME applicant and quality information for all three Services, but this was not possible. The Services were able to provide some quantity and quality information, but, in general, the data from the different Services gave information about different aspects of quantity and quality. Here we present the Service data we have and compare them with national data when possible.

Applicants per selectee

In strict terms, the size of the GME applicant pool is the number of USUHS and AFHPSP accessions because that is how the Services fill their in-house GME positions. In this sense, Service accession requirements determine the GME applicant pool. Because the size of the GME program varies by specialty, we look at the applicant pool in terms of applicants to selectee by specialty. Table 14 shows the average applicant-to-selectee ratio for the Army over the FY 1996-2003 period. Overall, the applicant-to-selectee ratio is about 1.3 compared with the 2.8 National Residency Matching Program (NRMP) applicant per match. Despite this difference, the reader should not conclude that military GME programs are in less demand that civilian programs.

If the number of GME starts equals the total number of USUHS and AFHPSP accessions, the applicant-to-selectee ratio will be 1 overall. When the number of GME starts is less than the total number of USUHS and AFHPSP accessions, the applicant-to-selectee ratio will be greater than 1 and those who are not selected for in-house GME will have their active duty obligation deferred until after they complete a civilian residency program. Consequently, the Services'

applicant-to-selectee ratio is a function of program size and the number of accessions they require rather than a function of applicants' interest in military GME compared with civilian GME.

Table 14. Army applicants per selectee compared to NRMP data[a]

Specialty	Army applicants per selectee	NRMP applicants per position	NRMP applicants per match
Aerospace med.	1.8		
Anesthesiology	1.1	2.4	2.5
Dermatology	1.9	3.1	3.1
Emergency med.	1.6	1.9	2.0
Family practice	1.1	2.6	3.4
General surgery	1.5	2.2	2.7
Internal medicine	1.1	2.4	2.5
Neurology	1.2		
Neurosurgery	1.4		
OB/GYN	1.1	2.0	2.2
Occup. medicine	1.3		
Ophthalmology	1.6		
Ortho. surgery	1.6	2.0	2.1
Otolaryngology	1.2		
Pathology	1.1	3.8	4.2
Pediatrics	1.1	2.1	2.2
Physical medicine	1.4	3.2	3.5
Psychiatry	1.0	3.1	3.3
Radiation onc.	1.3	2.9	2.9
Radiology (diag.)	1.3	2.2	2.3
Urology	1.6	8.5	9.0
All specialties	1.3	2.5	2.8

a. Army applicants per selectee are averages for FY96-03. National Residency Matching Program (NRMP) applicant, position, and match data are from the Association of American Medical Colleges (AAMC). Applicant data are from the Electronic Residency Application Service [17]; position and match data are from the NRMP [18].

While the overall applicant-to-selectee ratio is not comparable to national data, we can compare which specialties get a disproportionate share of applicants. The specialties that receive the most applicants vary somewhat between the Army and the NRMP data, but we find similarities. For example, dermatology, physical medicine, radiation oncology, and urology have above-average applicant-to-selectee

ratios in both the military and the civilian sector. Conversely, anesthesiology, internal medicine, OB/GYN, pediatrics, and diagnostic radiology have below-average applicant-to-selectee ratios both in and out of the military.

Looking at the applicant-to-selectee ratio for Army fellowships, we observe a higher ratio than with residencies. Specifically, table 15 shows that the average applicant-to-selectee ratio for Army fellowships is 1.8 for the FY 1996-2003 period compared with 1.3 for residencies we've already shown. Looking at the fellowship groups, orthopedic surgery fellowships had the highest applicant-to-selectee ratio (2.5) for the FY 1996-2003 period.

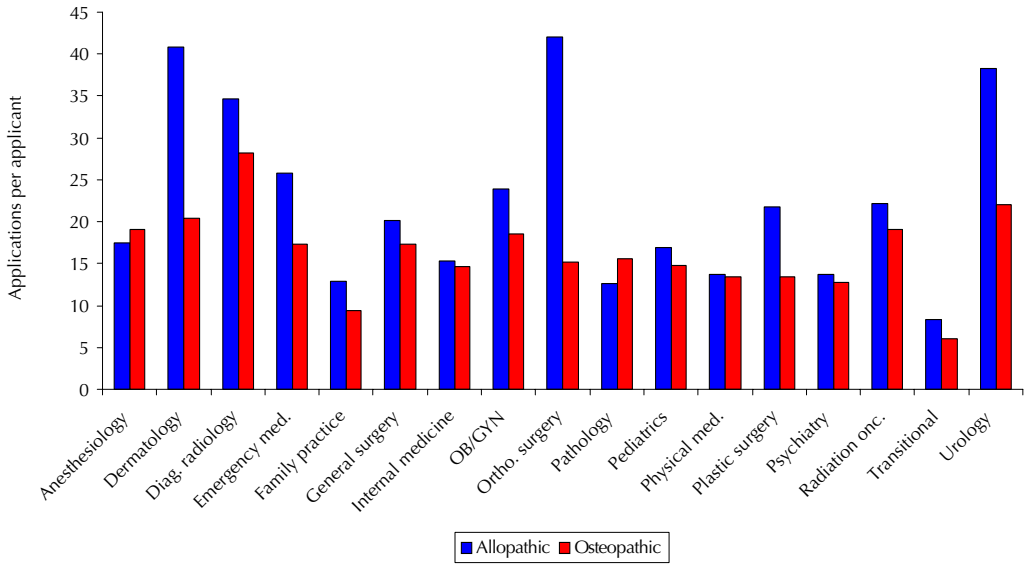
Table 15. Army fellowship applicant per selectees

Fellowship group	Applicant per selectee
General surgery subspecialties	1.8
Internal medicine subspecialties	1.4
Orthopedic surgery subspecialties	2.5
Other subspecialties	2.0
Total	1.8

Applications per applicant

Another way to look at interest in the various residency programs is to look at the number of applications per applicant. Though we do not have this information for the Services, we present national data from the Electronic Residency Application Service (ERAS). Figure 4 shows the average number of applications per applicant nationally for the 2001-2003 period. Note the differences in the applications per applicant between allopathic and osteopathic physicians for dermatology, orthopedic surgery, plastic surgery, and urology. For each of these specialties, the applications per selectee are substantially higher for allopaths than for osteopaths. The most striking of these is orthopedic surgery, which had 42 applications per allopathic applicant compared with 15 applications per osteopathic applicant.

Figure 4. ERAS applications per applicant by specialty (2001-2003)



It is also noteworthy that the specialties with substantial differences in the applications per applicant between allopaths and osteopaths are mostly surgical specialties. In only 2 of the 17 specialties listed in figure 4 are the applications per applicant higher for osteopaths than for allopaths. This may reflect the fact that osteopaths also participate in the matching program for residencies accredited by the American Osteopathic Association (AOA). Hence, for physicians participating in the NRMP, allopathic physicians typically cast a wider net than do osteopathic physicians when it comes to finding a residency program.

USMLE and COMLEX scores

Physicians' scores on medical licensing exams are a critical measure of quality. The United States Medical Licensing Examination (USMLE) is the exam taken by allopaths to obtain a license to practice medicine. The Comprehensive Osteopathic Medical Licensure Examination (COMLEX) is the exam typically taken by osteopaths to obtain a license to practice medicine. Historically, some osteopathic physicians take the USMLE in place of or in addition to the COMLEX.

Table 16 presents the average pass rate for first-time and repeat takers of the USMLE. Note that allopaths have a higher pass rate than osteopaths. However, this is not surprising because the curriculum of osteopathic medical schools is designed to help their students pass the osteopathic medical licensing exam. In addition to the average pass rates, the National Board of Medical Examiners (NBME) expects that the ultimate pass rate for an examinee group will rise to 99 percent (for all three steps of the USMLE) after those who fail initially pass in later attempts [19]. Currently, the passing scores for the USMLE are 182, 174, and 182, for steps 1 through 3, respectively.

Table 16. Percentage passing the USMLE[a]

Exam and taker type	1998		1999		2000		2001		2002	
	MD	DO	MD	DO	MD	DO	MD	DO	MD	DO
USMLE - step 1										
First attempt	95	87	94	82	93	77	91	72	92	70
Repeat taker	51	28	54		58	40	58	31	59	32
USMLE - step 2										
First attempt	95	85	95	92	95	92	95	93	97	89
Repeat taker	63		66		66		66		70	
USMLE - step 3										
First attempt	95	97	95	89	95	89	94	89	95	97
Repeat taker	65		59		61		56		65	

a. Figures are for examinees from U.S./Canadian schools. Data are from the National Board of Medical Examiners (NBME) [19]. We have not reported the percentage pass rate for those groups with less than 25 individuals.

Table 17 presents the average pass rate, average score, and minimum passing score for the COMLEX exam. The pass rate for first-time COMLEX takers is about 90 percent for steps 1 through 3. Note that this is a higher first-time pass rate than osteopaths have on the USMLE exam. Again, this is logical given that the osteopathic curriculum is designed to help its students pass the osteopathic medical licensing exam.

Table 17. COMLEX pass rate, mean score, and minimum passing score[a]

Item	Step 1	Step 2	Step 3
Percentage pass rate (2002)			
First attempt	89	91	89
Repeat takers	60	61	67
Mean score	500	500	500
Minimum passing score	400	400	350

a. Pass rate, mean scores, and minimum passing score data are from the National Board of Osteopathic Medical Examiners (NBOME) [20-21].

With this national data as a background, table 18 shows the USMLE and COMLEX data we have for Army AFHPSP matriculants between FY 1996 and FY 2002. These data are not for any one examination. For example, if an AFHPSP student takes the exam and fails on the first attempt, but passes on a later attempt, it is the passing score that is represented. One this basis, 99 and 98 percent of USMLE step 1 and step 2 takers, respectively, ultimately passed. This is the same as the ultimate pass rate reported by the NBME [19]. In addition, the average score on steps 1 and 2 of the USMLE is 215 for the Army AFHPSP matriculants.

As with USMLE takers, about 99 percent of COMLEX step 1 and 2 takers ultimately passed. Also, note that the AFHPSP cohort's average score on step 1 of the COMLEX is 515 compared with the national average of 500. Similarly, the AFHPSP cohort's average 505 on step 2 compared with the national average of 500. While these AFHPSP cohort averages are not statistically different from the national average, it is clear that the osteopaths in the military fare at least as well as their civilian counterparts.[24]

Because the USMLE and COMLEX exams have different means and distributions, it can be hard to compare their scores. This is particularly true if a GME selection board is considering two candidates—one who took the USMLE and one who took the COMLEX—who

24. The average for the Army AFHPSP cohort is also higher than the average test scores for any one administration of the COMLEX because lower scores on prior attempts are overwritten with higher scores.

have equal marks on all other measures. Previous research has examined this issue by looking at a group of osteopathic students who took both the USMLE and COMLEX [22]. This research found that one could reasonably predict a USMLE score based on the COMLEX score and, by default, vice versa.[25]

Table 18. USMLE and COMLEX scores of Army AFHPSP matriculants[a]

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	Total
USMLE								
Step 1[b]								
Takers	145	144			185	49	10	953
Average score	214	214			217	218	218	215
Percent passing	100	98			99	98	100	99
Step 2								
Takers	148	12	191	157	54	12	1	575
Average score	210	195	215	219	219	218	232	215
Percent passing	97	100	98	99	100	100	100	98
COMLEX								
Step 1								
Takers	63	75	82	68	69	33	10	400
Average score	499	543	505	522	505	512	512	515
Percent passing	98	100	100	100	99	100	100	100
Step 2								
Takers	57	2	81	65	24	10	2	241
Average score	507	417	496	523	501	477	499	505
Percent passing	96	50	100	100	100	100	100	99

a. The number of takers is smaller in the most recent years because the USMLE and COMLEX are not taken until after the second year of medical school. Many of those in the later cohorts have not reached this point.
b. We have not reported step 1 data for the FY 1998-1999 cohorts. Data for these years do not appear to have the updated scores for individuals who failed on the first attempt, but passed on a later attempt.

Using this prediction method, the average COMLEX step 1 score of 515 translates into a USMLE score of 192. Similarly, the average

25. The equations to predict a USMLE score from a COMLEX score are the following for steps 1 and 2:

$$\text{USMLEstep1} = 67.97 + 0.24*\text{COMLEXstep1}$$

$$\text{USMLEstep2} = 102.21 + 0.18*\text{COMLEXstep2}.$$

COMLEX step 2 score of 505 translates into a USMLE score of 193. Note that these scores are less than the USMLE step 1 and 2 averages of 215 for the Army AFHPSP students. Again, this is as we expect because COMLEX takers are osteopaths whose medical training is designed to help them pass the osteopathic medical licensing exam rather than the USMLE.

Specialty choice

The AFHPSP ADO study [5] discusses the mix of allopathic and osteopathic AFHPSP accessions. For GME, the allopathic-osteopathic accession mix is an issue to the degree that they differ in their propensities to matriculate into the various specialties. For DoD, this may or may not be an issue. It depends on the allopathic-osteopathic mix of physicians the Services bring. If the accession mix provides the Services with a group of physicians that, as a whole, matriculate into the various specialties in the proportions that the Services need them, the allopathic-osteopathic accession mix is not an issue.

As figure 5 shows, the propensity of allopathic and osteopathic physicians to matriculate into the various specialties varies significantly on the national level. For example, 10 percent of allopathic physicians matching to a residency through the National Residency Matching Program matched to a family practice residency. As for osteopathic physicians participating in the NRMP, 23 percent matched to family practice. Conversely, a higher percentage of allopathic than osteopathic physicians matched to general surgery, orthopedic surgery, radiology, otolaryngology, urology, and neurosurgery. From this it is clear that allopaths are much more inclined to go into the procedure-based specialties than osteopaths.

We used the Navy BUMIS data to examine the propensity of allopathic and osteopathic physicians to go into the various military residency programs. The pattern is similar to what we observe nationally. As figure 6 shows, 30 percent of Navy osteopathic physicians matched to a family practice residency compared with 15 percent of allopathic physicians. Similarly, Navy allopathic physicians have a much higher propensity than osteopathic physicians to match to procedure-based specialties. Specifically, the propensity to matriculate into general

surgery, orthopedic surgery, radiology, urology, and neurosurgery is higher for allopathic physicians than for osteopathic physicians, just as we observe with the NRMP data.

Figure 5. Propensity of allopathic and osteopathic physicians to go into the various specialties based on the NRMP matching data (1999-2003)

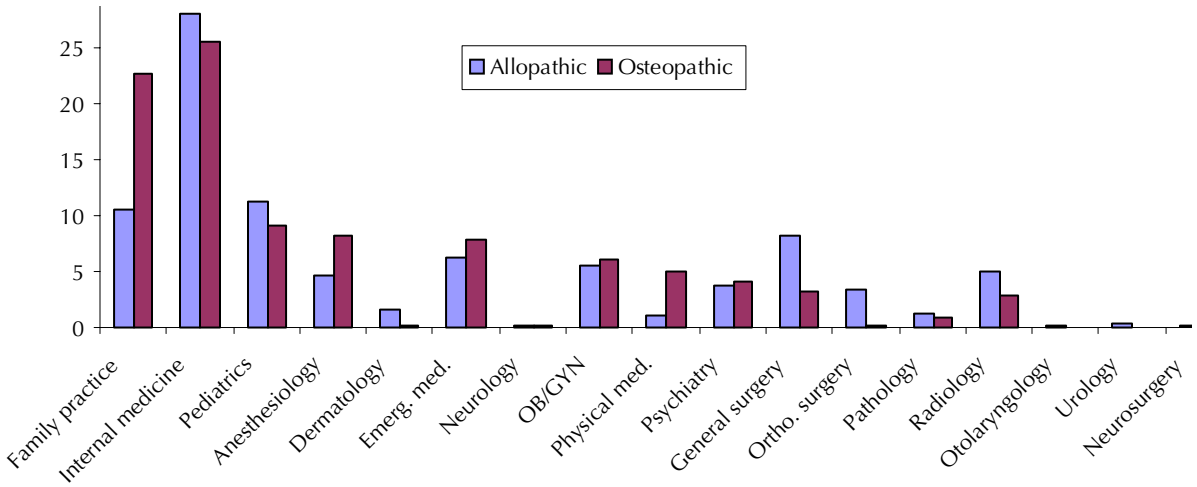
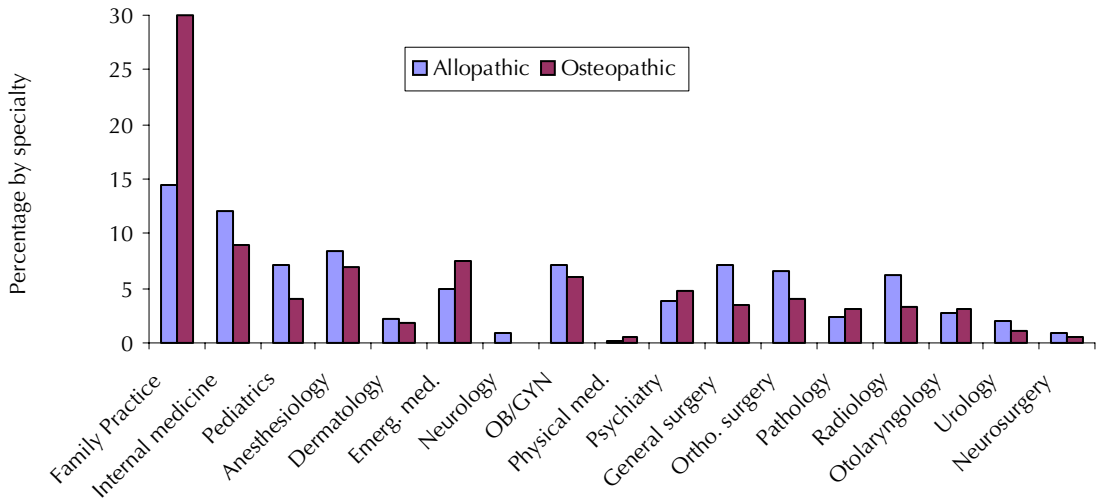


Figure 6. Propensity of Navy allopathic and osteopathic physicians to go into the various specialties based on Navy BUMIS data (FY 1987-2002)



While the propensity of allopathic and osteopathic physicians to go into the various specialties has changed a little over time, the biggest change is the increase in the number of residents who are osteopaths. For example, osteopaths accounted for 2.9 percent of PGY-1s (without prior GME) in the 1996-1997 academic year. By 2002-2003, this figure was 6.0 percent [23]. Similarly, osteopaths accounted for 3.4 percent of all residents in 1996-1997 compared with 5.4 percent in 2002-2003 [23–24].[26]

Note that we are not attempting to determine what is the appropriate or optimal allopathic-osteopathic mix for the Services. But, because of the differing propensities of allopathic and osteopathic physicians, the Services should carefully consider what mix will best allow them to channel physicians into the specialties they need to meet their billet and readiness requirements.

Because of the differing propensities to matriculate into the various specialties between allopathic and osteopathic physicians, we have examined whether we can detect any quality differences between them. As we already showed, about 99 percent of those taking the USMLE eventually pass, as do about 99 percent of those taking the COMLEX. Hence, from a standpoint of obtaining a medical license, we do not observe a difference between allopathic and osteopathic physicians.

Another way to compare the quality of the two groups is to compare their promotion rates. To the degree that the Services' promotion boards accurately identify and promote quality candidates, promotion rates may tell us something about the average quality of the two groups. We have looked at this issue using the Navy BUMIS data for the FY 1987-2002 period. Table 19 shows that for this period, 97 percent of allopathic physicians were promoted to O-4 compared with 96 percent of osteopathic physicians. This difference is not statistically significant. The pattern for O-4 promotion rates is the opposite of what we observe for promotion rates to O-5 and O-6. Specifically, the promotion rate to O-5 was 4 percentage points higher for osteopathic

26. For more information on trends in graduate medical education on a national level, see [23–28].

physicians than for allopathic physicians. Similarly, the promotion rate to O-6 was 3 percentage points higher for osteopaths than for allopaths. But, as with promotion to O-4, the promotion rates to O-5 and O-6 are not statistically different for allopaths and osteopaths. Hence, we find no quality difference as measured by promotion rates.

Table 19. Percentage of Navy allopaths and osteopaths promoted

	Promoted to O-4	Promoted to O-5	Promoted to O-6
Allopaths	97	82	65
Osteopathic	96	86	68

The final way we have compared allopathic and osteopathic physicians is to see if there is a difference in the time it takes to become board certified. To do this, we compared the percentage of allopathic and osteopathic physicians that are board certified 3 years after they complete their residency training. The choice of 3 years is somewhat arbitrary, but we wanted to allow enough time to reasonably expect the physicians to take the boards realizing that, for some specialties, a certain amount of time needs to pass before they are eligible to take the boards. Similarly, we didn't want to go further out than 3 years because we wanted to be able to see what percentage were board certified before many completed their initial obligation.

Table 20 shows by specialty the number and percentage of allopathic and osteopathic physicians who were board certified 3 years after completing their residency training. First, looking at family practice, we observe that there is no statistical difference between the percentage of allopathic and osteopathic physicians who are board certified by 3 years after completing residency training. Similarly, looking at primary care in general, there is no statistical difference between the two groups.

Table 20. Number and percentage of allopaths and osteopaths board certified (BC) 3 years after completing residency training

Specialty	Allopaths		Osteopaths		Percentage BC		
	Not BC	BC	Not BC	BC	Allo.	Osteo.	Diff.
Primary care specialties[a]	**88**	**1,103**	**11**	**122**	**92.6**	**91.7**	**0.9**
Family practice	27	443	6	89	94.3	93.7	0.6
Internal medicine	44	451	4	22	91.1	84.6	6.5
Pediatrics	17	209	1	11	92.5	91.7	0.8
Surgical specialties[b]	**228**	**756**	**22**	**45**	**76.8**	**67.2**	**9.7**
General surgery	30	216	7	8	87.8	53.3	34.5
OB/GYN	89	168	6	12	65.4	66.7	-1.3
Orthopedic surgery	65	150	7	6	69.8	46.2	23.6
Other specialties[c]	**163**	**757**	**27**	**58**	**82.3**	**68.2**	**14.0**
Anesthesiology	46	233	10	16	83.5	61.5	22.0
Radiology	34	162	3	9	82.7	75.0	7.7
All specialties	**503**	**2,641**	**63**	**228**	**84.0**	**78.4**	**5.7**

a. Primary care specialties include family practice, internal medicine, and pediatrics.
b. Surgical specialties include general surgery, neurosurgery, OB/GYN, ophthalmology, orthopedic surgery, otolaryngology, and urology.
c. Other specialties include aerospace medicine, anesthesiology, emergency medicine, neurology, preventive and occupational medicine, psychiatry, radiology, dermatology, nuclear medicine, pathology, physical medicine and rehabilitation, and undersea medicine.

Second, we find that a smaller percentage of osteopathic physicians than allopathic physicians in surgical specialties or other specialties are board certified 3 years after completing residency training. However, not all specialties in these groups have a lower percentage of osteopaths who are board certified compared with allopaths. For example, there is no statistical difference between the percentage of OB/GYN physicians who are board certified 3 years after completing residency training. Overall, the figures in table 20 seem to indicate—in the specialties to which osteopathic medical schools are geared—no difference in the board certification rates of allopathic and osteopathic physicians. However, there do appear to be differences in the procedure-based specialties.

Channeling

As we have shown, allopathic and osteopathic physicians have different propensities to go into the various specialties. Depending on the

allopathic-osteopathic mix in future accession cohorts, the Services may or may not have difficulty getting physicians into the specialties they need to meet their billet and readiness requirements. Because of this, we are interested in looking at the Services' ability to "channel" physicians into the specialties they need.

Table 21 shows the percentage of Air Force physicians matched to their first choice specialty. If we assume that those put in a transitional year are a match, the Air Force matched about 98 percent of its physicians to their first choice specialty. This assumption is essentially that of a delayed match—physicians got their first choice specialty the next year. However, we don't know whether this is the case because we don't know what happened to them the next year. Taking the other extreme, if we assume that those in a transitional year were *not* matched to their first choice specialty, the Air Force has matched about 91 percent of its physicians to their first choice specialty.

Table 21. Percentage of Air Force physicians matched to their specialty of first choice

Year	Assuming a transitional year is a match	Assuming a transitional year is a not a match
FY 1996	100	92
FY 1997	96	91
FY 1998	99	93
FY 1999	98	91
FY 2000	99	89
FY 2001	100	91
Average	98	91

While the true match rate is somewhere between these extremes, we surmise that the actual match rate is closer to the 98-percent figure, which essentially assumes that those in transition years are a delayed match. There are a couple of ways to interpret the 98-percent match rate. First, it could indicate that the Services don't channel physicians into the specialties, but simply put them where they have a propensity to go. Second, it could mean that channeling physicians into the various specialties has not been necessary because the propensity of their physicians as a whole matches pretty well the Air Force's specialty needs.

Another aspect of channeling we have looked at is whether physicians got their preference between military and civilian GME. Using Air Force data for FY 1996-2001, we found that, for those whose first choice was civilian GME, 80 percent went to civilian GME. Similarly, 80 percent of those whose first choice was military GME went to military GME. Hence, while Air Force physicians have almost always gotten their specialty of choice, they have been somewhat less successful in getting their choice of civilian or military programs.

Perceptions of GME program directors

Thus far, we have looked at the feasibility of a GME active duty obligation increase by examining the impact of historical changes in the GME active duty obligation and by looking at the Services' historical applicant pool in terms of quantity and quality. We now turn to discussing GME program directors' perceptions of the impact a GME active duty obligation increase would have on the ability to fill the current GME programs. In doing this, we reviewed the process DoD uses to select candidates for its GME programs for the reader's information. In the next section, we look at feasibility based on the perceptions of current residents and fellows.

To gather GME program directors' perceptions on a GME obligation increase, we conducted telephone interviews with representatives involved in the graduate medical education programs of the Army, Navy, and Air Force. We conducted the interviews with people at the respective headquarters and individual medical treatment facility (MTF) academic program director levels. To help obtain a broad view, we spoke with academic directors from various medical disciplines, including family practice, surgery, and internal medicine fellowship programs.

The purpose of these interviews was to gather the perceptions of these subject matter experts on how increases in the ADO might affect their ability to acquire the required number of resident/fellow startups annually. The following synthesis of the interviews we conducted augments the quantitative aspects of this report.

GME program directors responses

We begin by summarizing the information and opinions provided by GME program directors in relation to a GME obligation increase. In the next section, we summarize the GME selection process.

Quantity and quality of GME applicants

We asked all the GME program directors we interviewed to assess their historical, current, and future ability to attract a sufficient number of qualified applicants to their respective residency/fellowship programs. Overall, respondents indicated that they receive an adequate number of qualified applicants to fill their annual GME startups with quality individuals. A few program directors reported that some training programs are more difficult to fill than others. For example, residencies in dermatology and radiology appear to be more popular—and receive a larger number of applicants—than other programs, such as psychiatry and general surgery. Although the number of GME startups fluctuates a little from year to year, based on the needs of the Services, most individuals felt that their GME program requirements were fairly stable.

Perceived impact of an ADO increase

With one exception, the vast majority of those we interviewed felt that marginally increasing the GME ADO—such as increasing the ADO by 1 year—would not significantly hamper their ability to attract qualified applicants to military residency programs. However, almost all those we interviewed expressed notable trepidation with DoD making significant increases in the active duty obligation. All of them felt that major increases in the ADO would hamper their ability to attract quality applicants into their residency programs.

Increase the GME or AFHPSP ADO?

We asked each of the GME program directors, "If DoD were to increase the ADO by one year, should the additional obligation be associated with AFHPSP or GME?" The vast majority of those interviewed think it is more prudent, easier to administer, and more equitable policy for DoD to increase the AFHPSP obligation rather than the GME obligation.

This seems a natural response from GME program directors who perceive they would have to negotiate the potential policy change in the GME obligation, while the recruiters would bear the brunt of the responsibility of increasing the AFHPSP obligation. Moreover, the majority think that increasing the obligation for AFHPSP accessions is fairer than increasing the ADO for residencies, which often penalizes those matriculating into specialties with longer residency programs.

Most felt that increasing the AFHPSP obligation was fairer than changing the GME obligation, which could be perceived as changing the rules in the middle of the game. We think it is worth noting that one experienced headquarters subject matter expert does not concur with increasing the AFHPSP obligation because of the impact it might have on the quantity and quality of the AFHPSP applicant pool.

Selection process

Every year DoD convenes a joint-service GME selection board (GMESB). Overall, the GME program directors we interviewed think the selection process works. We provide an overview of this process here for the reader's information. We describe scoring guidance and sheets being used for FY 2003 GMESB. The selection board completes a score sheet for all residency/fellowship applicants.[27]

The Services developed the applicant and composite score sheets for use in joint selection of applicants for graduate medical education. The purpose of the score sheet is to provide a quantitative basis for ranking applicants. It is designed to give increasing weight to performance as an individual progresses through the various phases of medical education and utilization tours. The applicant score sheet includes the following:

- Preclinical years of medical school
- Clinical years of medical school

27. Appendix C provides the scoring sheet being used for the FY 2003 GMESB. Appendix D shows the location of the various in-house residency programs by Service and specialty.

- Internship (PGY-1)
- Residency
- Post-internship operational/utilization tour (OP/UT)
- Potential for successful practice as a specialist and career officer.

Preclinical years of medical school

The selection board scores the preclinical, or first 2, years of medical school using the medical school transcript and dean's letter. The expectation is that the top 20 to 25 percent will be considered outstanding and score 2 points, and the majority of those remaining will be considered good and score 1 point. The selection board considers scores on step 1 of the USMLE or COMLEX in this part of the evaluation.

Clinical years of medical school

The selection board scores the clinical, or last 2, years of medical school using the medical school transcript and dean's letter. The expectation is that 20 to 25 percent will be considered outstanding and score 3 points; 20 to 25 percent will be evaluated as good and score 2 points, while the majority of those remaining are considered acceptable with a score of 1 point. The selection board considers scores on step 2 of the USMLE or COMLEX in this part of the evaluation.

Internship (PGY-1)

The selection board scores the intern year using interview results, letters of recommendation, and performance reports.[28] The expectation is that only the top 20 to 25 percent will be scored as outstanding (5 points). The rest will rank in the excellent (4 points), good (3 points), and acceptable (2 points) categories. The maximum possible score for applicants currently in internships is 3 points (good) since only limited data are available on their performance. The selection board considers scores on step 3 of the USMLE or COMLEX in this part of the evaluation for those who have completed an internship.

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28. Performance reports include officer evaluation reports (OER), officer performance reports (OPR), and fitness reports (FITREP).

Residency

The selection board scores residencies using interview results, letters of recommendation, and performance reports. The maximum score possible for those who have completed residency and are in a utilization tour and applying for fellowship training is 10 points (outstanding). The expectation is that only the top 20 to 25 percent will score that high. The maximum possible score for applicants currently in residency who are applying for fellowship training is 7 points (good).[29]

Post-internship operational/utilization tour (OP/UT)

The selection board scores operational/utilization tours using military performance reports (OERs, OPRs or FITREPs), letters of recommendation, and command endorsements. It is recognized that most performance reports and letters will be highly complimentary to the applicant; however, the selection board makes every effort to identify the truly outstanding applicants. If the applicant has served in more than one assignment in this category, the score reflects a composite of the performance data.

Potential for successful practice as a specialist and career officer

Potential for success as a specialist and a career officer reflects the overall impression of the applicant based on the performance reports, interview results, letters of recommendation, and endorsement. The selection board reserves the outstanding category (5 points) for those for whom there is objective evidence of truly exceptional potential.

Panel member score

The maximum possible score on the applicant score sheet is 30 points for a residency-trained staff physician who has served a utilization tour and is applying for fellowship. The maximum score for an

29. This item is only to be scored for residency-trained individuals who are applying for fellowship. Individuals who are applying for a second residency should receive no score in this category. The only exception is for Navy applicants applying for residency training in aerospace medicine, who must receive a score in this category.

applicant currently in residency who served as a general medical officer, and is asking for fellowship is 27 points. The maximum for a current resident who did not serve as a GMO/flight surgeon and is applying for fellowship is 22 points. The maximum score for an applicant for residency who has served a tour as a GMO/flight surgeon is 20 points. The maximum possible score for an applicant currently in their internship (PGY-1) is 13 points. This illustrates that the selection board gives higher weight to those who have progressed further in their medical and military careers.

Perceptions of current residents and fellows

The preceding section discussed GME program directors' perceptions of the impact an ADO increase would have on future applicants' willingness to go into the various GME programs and on their ability to fill their programs with quality candidates. In this section, we discuss the results of an e-mail questionnaire we used to ask current residents and fellows what they would have done if the GME obligation were longer than their current obligation.

Currently, the active duty obligation for GME is year for year and is served concurrently with any prior obligation. This means the active duty commitment to years of subsidization is a 1:1. The specific tasking of this study is to look at the impact of altering the concurrent payback to some form of consecutive payback. Because the relationship between the GME obligation and prior obligations is complicated, we designed the survey to ask about simpler changes in the active duty obligation so that what we were asking was clear, allowing us to be confident in what the results of the questionnaire mean.

Questionnaire design

Appendix E shows the complete GME questionnaire and average response to each question.

Objective

In designing this questionnaire, we had three principle objectives. First, we wanted the questionnaire to be short, simple, and easy to answer. Second, we wanted to identify some basic demographic and

other factors that might affect residents' and fellows' willingness to accept a longer active duty obligation. Third, because there is no upside for any of the respondents to say they would have accepted a longer GME obligation, we wanted to design the questions to encourage respondents to be honest in their responses.

In general, we did not want responding to the questionnaire to be onerous because we wanted to ensure a reasonable response rate. This meant making a tradeoff between asking additional questions that may shed light on why individuals said they would or would not accept a longer GME obligation and getting higher response rate. Also, the questions needed to be straightforward to reduce confusion, make answering them easy, and make responses more accurate.

To accomplish these objectives, we settled on 14 multiple-choice questions and a 15th question that gave respondents an opportunity to provide any comments they had regarding the matter.[30] The questions were such that respondents should have been able to answer all in less than 5 minutes.

Because there was no incentive for respondents to say they would have accepted a longer active duty obligation, we wanted to make them really think about what they would have done to obtain graduate medical education (or if they would have pursued it at all before they left the medical corps) if they were not willing to incur a longer GME obligation. It was our hope that by doing this respondents would be more honest when they answered the question about how they would have responded to a longer active duty obligation.

Although we wanted to estimate willingness of residents and fellows to accept active duty obligations of different commitments—obligation-to-training ratios of 1.25:1, 1.5:1, or 1.75:1—we were concerned that if we asked every respondent about all three of these ADOs, the questions might "lead the witness" to say that he or she would accept an obligation-to-training ratio of 1.25:1 but not a ratio of 1.5:1 or 1.75:1. Essentially, we feared that respondents might treat it as a

30. We gratefully acknowledge the representatives from each Service and TMA/HA who kindly gave input on the questionnaire.

multiple choice between these options rather than considering each one individually.

To avoid this problem, we produced three versions of the questionnaire. All questions in each version were identical with the exception of the one asking about their willingness to accept a longer GME ADO. The first version asked about an obligation-to-training ratio of 1.25:1, the second about a ratio of 1.5:1, and the third about a ratio of 1.75:1. This meant that each person had only one ADO length to think about, allowing them to consider it in isolation without the biasing influence of other ADO questions.

Also to obtain a more honest response to the willingness to accept a longer ADO, we wanted to ask a question about a longer active duty obligation in a more subtle way. To this end, we asked about whether they intended to remain in the military at least until they reach retirement eligibility. It is our assumption that those who expressed an intention to remain until retirement eligibility would be willing to consider a longer GME obligation.

Sample

We sent this e-mail questionnaire to 1,318 current residents and fellows who are in their PGY-3 year or greater. We did not send the questionnaire to interns or first-year residents for two reasons. First, we did not want to interfere with those who were new to graduate medical education. Second, we wanted a sample of respondents who were thoroughly familiar with their program and the military. Note that the 1,318 residents and fellows to whom we sent the questionnaire do not represent all of the residents and fellows who are PGY-3 or greater. It represents all of those for whom we received e-mail addresses from the Services.

As table 22 shows, we sent 30 percent version 1 of the questionnaire, 30 percent version 2, and 40 percent version 3. We felt it prudent to send version 3 (which asked about a obligation-to-training ratio of 1.75:1) to a higher percentage for two reasons. First, the tasking of this study was specifically to look at changing the GME obligation so that it is paid back consecutively rather than concurrently with any prior obligation, such as AFHPSP, USUHS, ROTC, or Service academy. Changing to consecutive payback means a large percentage

increase in the active duty obligation.[31] Second, we expected the affirmative response to the obligation-to-training ratio of 1.75:1 question to be low. Hence, we wanted to ensure a large enough sample so that one more or one less affirmative response would not substantially change the average response.

Table 22. Questionnaire response rate[a]

	Questionnaire version			
	1	2	3	Total
Questionnaires e-mailed	396	395	527	1,318
Questionnaires returned (bad e-mail address)	46	57	64	167
Net number of questionnaires e-mailed	350	338	463	1,151
Percentage of total questionnaires e-mailed	30.4	29.4	40.2	100.0
Number of respondents	108	105	128	341
Percentage response rate	30.9	31.1	27.6	29.6

a. Versions 1, 2, and 3 ask about respondents' willingness to accept an obligation-to-training ratio for GME of 1.25:1, 1.5:1, and 1.75:1, respectively.

Overall, the response rate was about 30 percent, giving us a sample of 341 for the three versions combined. The response rate was about 31 percent for versions 1 and 2 and about 28 percent for version 3; however, the differences in these response rates are not statistically significantly different. We conclude from this that the questions about the differing ADO lengths did not cause recipients of one version to (1) fail to respond or (2) respond in greater numbers in a way that was systematically different from the recipients of one of the other versions.

Results

This section presents the results from the questionnaire. Please see appendix E for specifics about the questions we asked as well as the

31. We acknowledge that a ratio of 1.75:1 is not equivalent to a change from a concurrent to consecutive payback of accession and GME ADOs. The general consensus of those with whom we discussed the questionnaire was that, to keep the questionnaire simple and straightforward, we should not ask about changes from concurrent to consecutive payback because it may be confusing. To this end, we chose to ask about changes in the GME obligation-to-training ratio.

average responses. We begin by presenting the results to the principal question of interest: would current residents and fellows still have gone into their current residency or fellowship program if the active duty obligation were longer than their current obligation? Once we have done that, we present the impact of demographics and other factors on current residents' and fellows' willingness to accept a longer active duty obligation.

Willingness to accept a longer ADO

Overall, 55 percent of respondents indicated that they would have still gone into their current residency or fellowship if the active duty obligation were 1.25 years for each year of GME training, as table 23 shows. Not unexpectedly, respondents' willingness to go into their current residency or fellowship falls as the obligation increases. Specifically, if the obligation-to-training ratio were 1.5:1, about 34 percent indicated they would have still accepted their current residency of fellowship. It is interesting to note that, when we increased the obligation-to-training ratio to 1.75:1, about 34 percent were still willing to accept their current residency or fellowship. Hence, going from an active duty obligation of 1.5 to 1.75 years for 1 year of training did not significantly change respondents' willingness to incur the additional obligation.

Table 23. Respondents' willingness to accept a longer obligation-to-training ratio by Service

Response by ADO ratio	Army		Navy		Air Force		Total[a]	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1.25:1 ratio								
Yes	29	58.0	16	57.1	14	50.0	59	54.6
No	21	42.0	12	42.9	14	50.0	47	43.5
No response	0	0.0	0	0.0	0	0.0	2	1.9
1.5:1 ratio								
Yes	15	37.5	13	37.1	8	26.7	36	34.3
No	25	62.5	20	57.1	22	73.3	67	63.8
No response	0	0.0	2	5.7	0	0.0	2	1.9
1.75:1 ratio								
Yes	17	28.3	18	41.9	8	32.0	43	33.6
No	43	71.7	25	58.1	15	60.0	83	64.8
No response	0	0.0	0	0.0	2	8.0	2	1.6

a. Totals may not match the sum of Army, Navy, and Air Force respondents because they include those who didn't indicate their Service.

Impact of demographics

In this section, we look at the impact of gender, marital status, and dependents on current in-house residents' or fellows' willingness to accept a larger obligation-to-training ratio.

Gender. About 25 percent of the residents and fellows who responded to the questionnaire were female. As table 24 shows, gender does not seem to systematically alter residents' and fellows' willingness to accept an increased obligation. Specifically, 58 percent of men said they would have accepted an obligation-to-training ratio of 1.25:1 compared with 48 percent of women. However, when we asked about ratios of 1.5:1 or 1.75:1, a higher percentage of women were more willing to accept a longer obligation. Specifically, 42 percent of women would have accepted a ratio of 1.5:1 compared with 32 percent for men. Similarly, 44 percent of women indicated they would have accepted a ratio of 1.75:1 compared with 30 percent of men. Likely the differences by gender can be attributed to the relatively small sample size for women.

Table 24. Respondents' willingness to accept a longer obligation-to-training ratio by gender

Response by ADO ratio	Male		Female	
	Number	Percent	Number	Percent
1.25:1 ratio				
Yes	46	58.2	13	48.1
No	33	41.8	14	51.9
No response	0	0.0	0	0.0
1.5:1 ratio				
Yes	26	32.1	10	41.7
No	54	66.7	13	54.2
No response	1	1.2	1	4.2
1.75:1 ratio				
Yes	28	29.5	14	43.8
No	66	69.5	17	53.1
No response	1	1.1	1	3.1

Marital status and dependents. Marital status and whether they have dependents does not have a consistent impact on respondents'

willingness to accept a longer obligation-to-training ratio. For example, table 25 shows that 59 percent of those who are married were willing to accept a ratio of 1.25:1 compared with 46 percent of those who are not married. However, the results indicate that a higher percentage of those who are not married were willing to accept a 1.5:1 or 1.75:1 ratio than for those who are married. Statistically, there is no significant difference in the willingness to accept a larger obligation-to-training ratio between those who are married and those who are not.

Table 25. Respondents' willingness to accept a longer obligation-to-training ratio by family status

Response by ADO ratio	Married		Not married		With dependent child		No dependent child	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1.25:1 ratio								
Yes	47	58.8	12	46.2	30	52.6	29	59.2
No	33	41.3	14	53.8	27	47.4	20	40.8
No response	0	0.0	0	0.0	0	0.0	0	0.0
1.5:1 ratio								
Yes	28	33.3	8	40.0	17	28.3	19	42.2
No	54	64.3	12	60.0	41	68.3	26	57.8
No response	2	2.4	0	0.0	2	3.3	0	0.0
1.75:1 ratio								
Yes	28	30.4	14	40.0	25	36.2	18	31.0
No	63	68.5	20	57.1	43	62.3	39	67.2
No response	1	1.1	1	2.9	1	1.4	1	1.7

Similarly, we find no consistent pattern between the willingness to accept a larger obligation-to-training ratio between those with and without dependent children. For example, 53 percent of those with dependent children were willing to accept a ratio of 1.25:1 compared with 59 percent for those without dependent children. This would indicate that those without dependent children are more willing to incur a longer obligation. But, when we asked about a ratio of 1.75:1, a higher percentage of those with dependent children (36 percent) were willing to accept the longer obligation compared with those without dependent children (31 percent). As with marital status, there is no significant difference between the average response of those with and without dependent children.

Impact of other factors

We now consider the impact that "other" factors—such as residency or fellowship, specialty, years of service, accession source, prior military service, and retirement plans—have on a resident's or fellow's willingness to accept a larger obligation-to-training ratio.

Residency or fellowship. Approximately 19 percent of those responding to the survey were fellows. Not surprisingly, fellows were more willing to accept a larger obligation-to-training ratio than residents. Specifically, as table 26 shows, 63 percent of fellows were willing to accept a ratio of 1.25:1 compared with 54 percent of residents. Similarly, 42 percent of fellows were willing to accept a ratio of 1.75:1 compared with 32 percent of residents.[32]

Table 26. Respondents' willingness to accept a longer obligation-to-training ratio by training status

Response by ADO ratio	Residents		Fellows	
	Number	Percent	Number	Percent
1.25:1 ratio				
Yes	44	53.7	15	62.5
No	38	46.3	9	37.5
No response	0	0.0	0	0.0
1.5:1 ratio				
Yes	33	37.1	3	20.0
No	54	60.7	12	80.0
No response	2	2.2	0	0.0
1.75:1 ratio				
Yes	33	32.0	10	41.7
No	68	66.0	14	58.3
No response	2	1.9	0	0.0

The fact that fellows are more willing to incur a longer obligation than residents is logical because they are closer to retirement eligibility. Also, many of them may have already passed their first stay-leave

32. The lower percentage of fellows indicating a willingness to accept a ratio of 1.5:1 compared with residents may simply be due to the small sample size (15) for fellows.

decision; if so, the fact that they are still in the military is an indication that they are more likely to make a career out of military medicine.

Specialty. We are also interested in the potential impact physicians' specialties have on their willingness to accept a larger obligation-to-training ratio. Because the number of respondents in many specialties is small, we have placed physicians in the following specialty groups:

- Primary care—family practice, internal medicine, and pediatrics.
- Surgical—general surgery, neurosurgery, OB/GYN, ophthalmology, orthopedic surgery, otolaryngology, and urology.
- Other—aerospace medicine, anesthesiology, emergency medicine, neurology, preventive and occupational medicine, psychiatry, radiology, dermatology, nuclear medicine, pathology, physical medicine and rehabilitation, and undersea medicine.

As table 27 shows, 67 percent of those in primary care specialties were willing to accept an obligation-to-training ratio of 1.25:1 compared with 47 percent of those in either surgical specialties or other specialties. This difference is statistically significant. However, we do not observe a statistically significant difference between the specialty groups in their willingness to accept obligation-to-training ratios of 1.5:1 or 1.75:1.

Table 27. Respondents' willingness to accept a longer obligation-to-training ratio by specialty group (excludes those in fellowships)

Response by ADO ratio	Primary care		Surgical		Other	
	Number	Percent	Number	Percent	Number	Percent
1.25:1 ratio						
Yes	18	66.7	10	50.0	16	45.7
No	9	33.3	10	50.0	19	54.3
No response	0	0.0	0	0.0	0	0.0
1.5:1 ratio						
Yes	9	34.6	12	38.7	12	37.5
No	17	65.4	19	61.3	18	56.3
No response	0	0.0	0	0.0	2	6.3
1.75:1 ratio						
Yes	10	29.4	10	30.3	13	36.1
No	23	67.6	23	69.7	22	61.1
No response	1	2.9	0	0.0	1	2.8

Years of service. It is not surprising that respondents with more years of service were more willing to accept a larger obligation-to-training ratio. Specifically, 49 percent of those with 4 or fewer years of service were willing to accept a ratio of 1.25:1, as table 28 shows. This is slightly less than the 54 percent of those with 5 or 6 years of service who were willing to accept a ratio of 1.25:1. Furthermore, moving up to those with 7 to 10 years of service, 64 percent were willing to accept an obligation-to-training ratio of 1.25:1. Similarly, 77 percent of those with 11 or more years of service were willing to accept a ratio of 1.25:1. We observe similar patterns for those respondents asked about obligation to training ratios of 1.5:1 or 1.75:1.

Table 28. Respondents' willingness to accept a longer obligation-to-training ratio by years of service

Response by ADO ratio	4 or less years		5 to 6 years		7 to 10 years		11 or more years	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1.25:1 ratio								
Yes	24	49.0	15	53.6	9	64.3	10	76.9
No	25	51.0	13	46.4	5	35.7	3	23.1
No response	0	0.0	0	0.0	0	0.0	0	0.0
1.5:1 ratio								
Yes	14	35.9	8	23.5	9	40.9	5	55.6
No	25	64.1	25	73.5	13	59.1	3	33.3
No response	0	0.0	1	2.9	0	0.0	1	11.1
1.75:1 ratio								
Yes	14	24.6	7	31.8	8	34.8	13	61.9
No	42	73.7	15	68.2	15	65.2	8	38.1
No response	1	1.8	0	0.0	0	0.0	0	0.0

Accession source. About 66 percent of respondents were brought into the medical corps through AFHPSP. Another 27 percent were brought into the medical corps through USUHS. While the vast majority were brought into the medical corps through one of these two programs, some were brought in through the combination of two accession sources. Specifically, 16 percent of respondents who were either AFHPSP or USUHS accessions also had an obligation for a U.S. Service Academy or Reserve Officer Training Corps (ROTC).

As expected, a higher percentage of USUHS accessions were more willing to accept a larger obligation-to-training ratio than AFHPSP accessions because their accession obligation is longer. Specifically, 73 percent of USUHS accessions were willing to accept a ratio of 1.25:1 compared with 51 percent of AFHPSP accessions (see table 29). Similar differences exist for respondents that we asked about a ratio of 1.5:1 or 1.75:1. We also observe a higher willingness to accept a larger obligation-to-training ratio for those that have a Service Academy or ROTC obligation in addition to a USUHS or AFHPSP obligation. Specifically, 65 percent of these were willing to accept a ratio of 1.25:1.

Table 29. Respondents' willingness to accept a longer obligation-to-training ratio by accession source

Response by ADO ratio	USUHS		AFHPSP		USUHS or AFHPSP and Academy or ROTC[a]	
	Number	Percent	Number	Percent	Number	Percent
1.25:1 ratio						
Yes	19	73.1	36	50.7	15	65.2
No	7	26.9	35	49.3	8	34.8
No response	0	0.0	0	0.0	0	0.0
1.5:1 ratio						
Yes	15	42.9	18	28.1	6	37.5
No	18	51.4	46	71.9	10	62.5
No response	2	5.7	0	0.0	0	0.0
1.75:1 ratio						
Yes	14	46.7	25	27.5	11	73.3
No	15	50.0	66	72.5	4	26.7
No response	1	3.3	0	0.0	0	0.0

a. Those in this group have one of the following accession source combinations: USUHS and Service Academy, USUHS and ROTC, AFHPSP and Service Academy, and AFHPSP and ROTC.

Prior military service. Similar to the differences between USUHS and AFHPSP accessions, we observe that respondents with active duty military service before medical school are more willing to accept a larger obligation-to-training ratio than those without prior service. This pattern holds for all of the obligation-to-training ratios we asked current residents and fellows about, as table 30 shows. Specifically, 68 percent

of respondents with prior military service were willing to accept a ratio of 1.25:1 compared with 51 percent of those without prior service. For those asked about a ratio of 1.5:1, 39 percent with prior service were willing to accept it compared with 33 percent of those without prior service. Similarly, 55 percent of respondents without prior service were willing to accept a ratio of 1.75:1 compared with 38 percent of those without prior service.

Table 30. Respondents' willingness to accept a longer obligation-to-training ratio by military service prior to medical school

Response by ADO ratio	Prior service		No prior service	
	Number	Percent	Number	Percent
1.25:1 ratio				
Yes	19	67.9	39	50.6
No	9	32.1	38	49.4
No response	0	0.0	0	0.0
1.5:1 ratio				
Yes	10	38.5	25	32.5
No	15	57.7	51	66.2
No response	1	3.8	1	1.3
1.75:1 ratio				
Yes	17	54.8	26	27.7
No	14	45.2	67	71.3
No response	0	0.0	1	1.1

Retirement plans. About 45 percent of respondents indicated that they planned to remain in the military until at least 20 years of service (retirement eligibility). Separating out residents and fellows, 51 percent of fellows planned to remain in the military until retirement eligibility compared with 44 percent of residents.

It is not surprising to find a high correlation between retirement intentions and willingness to accept a larger obligation-to-training ratio. For example, 71 percent of those planning to stay until retirement were willing to accept a ratio of 1.25:1 compared with 38 percent of those not planning on staying until retirement, as table 31 shows.[33] Similarly, 49 percent of those planning to stay until retirement were willing to accept a ratio of 1.5:1 compared with 22 percent of those not

planning to stay until retirement. The disparity becomes particularly striking when we look at the responses of those asked about a ratio of 1.75:1. For this group, 57 percent of those planning to stay until retirement were willing to accept the longer obligation compared with only 8 percent of those not planning to stay until retirement.

Table 31. Respondents' willingness to accept a longer obligation-to-training ratio by retirement plans

Response by ADO ratio	Planning to stay until retirement eligibility		Not planning to stay until retirement eligibility		No response	
	Number	Percent	Number	Percent	Number	Percent
1.25:1 ratio						
Yes	35	71.4	17	37.8	7	50.0
No	14	28.6	28	62.2	5	35.7
No response	0	0.0	0	0.0	2	14.3
1.5:1 ratio						
Yes	21	48.8	11	22.0	4	33.3
No	21	48.8	38	76.0	8	66.7
No response	1	2.3	1	2.0	0	0.0
1.75:1 ratio						
Yes	35	57.4	4	7.5	4	28.6
No	26	42.6	49	92.5	8	57.1
No response	0	0.0	0	0.0	2	14.3

Alternatives to a longer ADO

For those respondents who were not willing to accept a larger obligation-to-training ratio, we questioned them regarding what they would have done instead. We found that 58 percent of respondents would have pursued a civilian GME program in their current specialty, 29 percent would have completed their obligation and left the military without entering their residency program, 11 percent would have pursued

33. One might expect that nearly all of those planning to stay until retirement would accept a longer obligation, but this is not the case. Judging from respondents' written comments, we believe that the reason it is 71 percent rather than 100 percent relates to the desire for flexibility—having the option to get out if their plans or circumstances change.

an "other" option, and 2.5 percent would have pursued a military GME program in a specialty with a short residency (see table 32).

Table 32. What alternative(s) current residents and fellows would have pursued if they were not willing to accept a longer ADO

Response by ADO ratio	Residents		Fellows		Total[a]	
	No.	Percent	No.	Percent	No.	Percent
Alternatively pursued a civilian GME program in current specialty	96	60.0	17	48.6	114	57.9
Pursued a military GME program in a specialty with a shorter residency	4	2.5	1	2.9	5	2.5
Completed their ADO and left the military without entering a residency program	44	27.5	13	37.1	57	28.9
Other	16	10.0	4	11.4	21	10.7
No response	0	0.0	0	0.0	0	0.0
Total	160	100.0	35	100.0	197	100.0

a. The total may exceed the sum of the residents and fellows due to respondents who did not indicate whether they were a resident or fellow.

Pursuing a civilian GME program instead of a military program could mean (1) attempting to defer the medical school obligation and complete a civilian residency program before coming on active duty, (2) pursuing non-sponsored out-Service training, or (3) pursuing sponsored out-Service training. While 58 percent of respondents indicated that they would have pursued civilian training in their current specialty, it is difficult to stay how many would have been successful in obtaining the civilian training. Civilian training options are limited by the number of individuals that the Services are willing to grant deferred status given the size of their in-house training requirements and the specialties for which they grant deferred status.

Similarly, civilian training options are limited by the number of sponsored out-Service training positions that the Services would be willing to fund. It is unlikely that sponsored out-Service training is an option many would have pursued because its obligation is additive to any prior obligation. As for non-sponsored out-Service training, to the degree that the Services limit the number of people they are willing to let go into this status, this may also be a hard option for physicians to pursue. Hence, while many physicians expressed a desire for

civilian training in place of in-house GME if the obligation were longer, it is likely an option that few physicians would be successful in achieving.

About 28 percent of residents indicated that they would have burned their active duty obligation and left the military without entering a residency program if the GME obligation were longer. For fellows, this figure was 37 percent. It is logical that the percentage is higher for fellows than for residents because fellows are already fully trained specialists and presumably have more options than residents, who are not yet fully trained specialists.

It is also noteworthy that only 2.5 percent of respondents said that they would have gone into a specialty with a shorter residency if the obligation were extended. This indicates that physicians are relatively set on their chosen specialty and that a marginal change in the GME obligation would not change most respondents' specialty choice. Hence, channeling physicians into specialties may be difficult.

Comments from current residents and fellows

As we discussed earlier, the questionnaire we sent the residents and fellows has a small section at the end for them to write in relevant comments. Overall, the remarks were driven by concern in the possibility of increasing the GME active duty obligation. Upon reviewing these remarks, we have placed their comments into six broad categories for policy-makers.

First, respondents indicated that there may be increased reluctance to take AFHPSP scholarships to begin with if the obligation following residency training is significantly increased.

Second, several respondents indicated that, knowing what they know now after having been in GME for a few years, they would have accepted the longer commitment. However, at the time they were applying to GME, they said that they probably wouldn't have accepted the extra commitment.

Third, some respondents indicated that changes in the obligation rules from the way they existed when they went into USUHS or

AFHPSP foster feelings that the military is changing the rules in the middle of the game.

Fourth, those respondents who plan to stay until retirement, have prior military service, or prior obligation from another accession program (Service academy or ROTC) seem to realize that increasing the ADO won't significantly affect them because they are already committed for many years.

Fifth, because the GMO/flight surgery tours delay graduate medical education, there is some concern that it will increase the obligation more for those that are required to be GMOs or flight surgeons.

Sixth, several respondents recognized that for some specialties increasing the GME obligation-to-training ratio would not increase the effective obligation so long as the AFHPSP and GME ADOs are paid back concurrently.

Findings

We have drawn from our analysis the following findings in relation to the AFHPSP applicant pool:

1. We estimate that the April 1988 change in the GME obligation policy, which made the GME obligation year for year rather than obligation neutral, increased the number of physicians that left the military without entering a residency program. We estimate that the number of Navy physicians leaving the military without going into a residency increased by 4.7 percentage points as a result of the April 1988 policy change. We estimate this change at 1.3 percentage points for the Army and Air Force. The Army and Air Force GME applicant pools are less affected than Navy physicians due to the GMO tour that most Navy physicians serve before entering a residency.
2. There is a positive correlation between the specialties with an above-average applicant-to-selectee ratio in the military compared with national data.

3. The percentage of AFHPSP accessions who pass the USMLE/COMLEX steps 1 and 2 is about 99 percent in the military and nationally. Hence, there does not appear to be a difference in the percentage of physicians who eventually obtain a medical license.

4. The propensity of allopathic physicians to matriculate into the various specialties differs substantially from osteopathic physicians both in the military and nationally. Osteopaths are twice as likely as allopaths to matriculate into family practice. Similarly, they are less likely than allopaths to matriculate into surgical or procedure-based specialties.

5. Looking at the quality of allopathic and osteopathic physicians in terms of promotion rates, we find no compelling evidence that the promotion rates of these groups are statistically different.

6. Looking at the percentage of physicians who are board certified 3 years after completing their residency, we find no significant difference in the percentage of allopathic and osteopathic primary care physicians who are board certified. Conversely, we find that, for surgical or procedure-based specialties, a higher percentage of allopaths than osteopaths are board certified 3 years after residency completion.

7. Many of the data regarding the GME applicant pool are not available or are incomplete. While we obtained some information from each of the Services on various aspects of the applicant pool, we were not able to get a complete picture of the GME applicant pool from any one Service. Consequently, we assumed that what we observed for one Service's applicant pool was true for the other two.

8. In general, the GME program directors we interviewed felt that marginally increasing the GME obligation by 1 year would not significantly affect their ability to attract qualified candidates. However, those we interviewed expressed concern with DoD making significant increases in the GME obligation.

9. Of the residents and fellows responding to our question about their willingness to accept an obligation-to-training ratio of 1.25:1, about 55 percent said they would have accepted it. Similarly, 34 percent would have accepted an obligation-to-training ratio of 1.5:1 or 1.75:1.

10. We found that gender, married status, and dependent children do not seem to have a significant impact on willingness to accept a longer GME obligation. However, those with prior military service were more willing to accept a longer obligation. Similarly, fellows or those in primary care were more willing to accept a longer obligation than residents or those other specialties. And, not surprisingly, those with longer obligations or those planning on staying until retirement eligibility were more willing to accept a longer obligation than those with shorter obligations or those not planning to stay until retirement.

11. Some of the residents and fellows providing written comments with their questionnaire answers indicated that a longer GME obligation may have influenced their decision to accept an AFHPSP scholarship in the first place. Hence, the Services need to consider the fact that increases in the GME obligation will affect the accession applicant pools in addition to the GME applicant pool.

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Findings and recommendations

Findings

Our analysis of the impact of increasing the GME active duty obligation has several important findings. This section presents these finding in terms of the impact on retention and on the applicant pool.

Impact on retention

The degree to which total accession requirements can decrease as a result of an ADO increase depends on whether the size of the in-house GME program can be changed. If it cannot be changed, increasing the GME obligation results in reduced accession requirements for each of the four GME ADO policies we modeled, as table 33 shows. Specifically, accession requirements fall by 12 percent if the policy makes the GME obligation consecutive with any prior obligation. The other GME obligation policies we modeled result in smaller accession requirement changes because they result in smaller obligation increases.

Table 33. Impact of GME ADO increase on total costs and accession requirements

Annual accessions and costs by GME modeling assumption	GME active duty obligation policy				
	Current	1	2	3	4
Fixed GME					
Number of total accessions	972	859	908	879	972
Percentage of current accessions		88	93	90	100
Annual medical corps costs ($M)	1,867	2,406	1,942	2,146	1,879
Percentage of current costs		129	104	115	101
Bodies as a percentage of billets	106	139	109	126	106
Annual med. corps costs without excesses ($M)	1,770	1,740	1,788	1,702	1,767
Economic-optimal GME					
Number of total accessions	988	985	969	959	987
Percentage of current accessions		100	98	97	100
Percentage of FY98-01 accessions (1,158)	85	85	84	83	85
Annual medical corps costs ($M)	1,606	1,517	1,593	1,552	1,603
Percentage of current costs		94	99	97	100
Bodies as a percentage of billets	100.3	100.1	100.2	100.2	100.3
Annual med. corps costs without excesses ($M)	1,601	1,515	1,589	1,550	1,598

If the size of the in-house GME program can vary to the point where GME is used only if it is the most cost-effective solution, total accessions requirements can be substantially reduced resulting in cost savings. Specifically, the model indicates that by using the economic-optimal GME, accession requirements could fall by 15 percent and costs would fall by $169 million. Note that using the economic-optimal GME program results in more GME in some specialties and less in others. Furthermore, if we start with the economic-optimal GME and add to it one of the GME obligation increases we have modeled, total accession requirements don't change significantly. What does occur is substantial shift from AFHPSP direct to AFHPSP deferred accessions. If we start with economic-optimal GME and make the GME obligation consecutive with any prior obligation, costs would fall by $89 million.

It is clear from these findings that the flexibility of the GME program is key to realizing cost savings. This finding is consistent with the AFHPSP ADO study [5]. Moreover, the results of this study in conjunction with the results of the AFHPSP ADO study illustrate how important seniority requirements are in determining how much can be saved. As we have stated, the survival estimates we have used in this study make meeting seniority requirements easier than the survival estimates in the AFHPSP ADO study. Because the model is trying to minimize cost, it wants the minimum number of senior physicians because senior physicians are more costly than junior physicians. And, because GME is the principal means of filling seniority requirements, once seniority requirements are filled, no more GME is needed at least from an economic standpoint. This means that if it is slightly more difficult to fill seniority requirements than we have modeled, the magnitude of the cost savings would be less. But, the point is that there would still be substantial cost savings.

Impact on the applicant pool

Based on the impact of past changes in the GME obligation, we estimate that there would be a small change in the percentage of AFHPSP direct accessions who would go into an in-house GME program given a small increase in the obligation. We estimate that the April 1988 GME obligation policy change increased the percentage

of Navy AFHPSP direct accessions leaving the military without going into a residency program by 4.7 percentage points. Similarly, we estimate this change at 1.3 percentage points for the Army and Air Force. This change is less than in the Navy due to the GMO tour that most Navy physicians serve before entering a residency program.

Consistent with what we observe with past changes in the GME obligation, the GME program directors we interviewed felt that marginally increasing the GME obligation by 1 year would not significantly affect their ability to attract qualified candidates. However, note that most of those we interviewed expressed concern with DoD making significant increases in the GME obligation.

We found that the military GME applicant pool is similar to the national applicant pool. The pass rates on the medical licensing exams (USMLE/COMLEX) are about 99 percent nationally and in the military. Similarly, the propensity to matriculate into the various specialties is about the same nationally and in the military for allopathic and osteopathic physicians. Overall, osteopathic physicians are about twice as likely as allopathic physicians to go into family practice. And, osteopaths are less likely than allopaths to matriculate into surgical or procedure-based specialties.

While military osteopaths and allopaths seem to have about the same propensity as their civilian counterparts, the mix of allopaths and osteopaths is an important issue for the Services to consider because they are currently accessing a disproportionate share of osteopathic physicians [5]. This means that the overall propensity of military physicians to go into the various specialties differs from the national average. This may be an important issue for the Services if the allopathic and osteopathic physicians they access don't matriculate into the specialties they need to meet billet and readiness requirements.

When we asked current residents and fellows about their willingness to consider and accept GME if the obligation-to-training ratio were 1.25:1 instead of the current 1:1 ratio, 55 percent said they would have accepted it. When we asked about larger obligation-to-training ratios, 34 percent would have accepted a ratio of 1.5:1 or 1.75:1.

We found that gender and martial status do not seem to have a significant impact on willingness to accept a longer GME obligation. However, those with prior military service were more willing to accept a longer ADO. Similarly, fellows or those in primary care were more willing to accept a longer ADO than residents or those in other specialties. And, those with longer obligations or those planning on staying until they reach retirement eligibility were more willing to accept a longer ADO than those with shorter obligations or those not planning on staying until retirement.

Recommendations

The specific tasking CNA received for this study was to determine the feasibility of changing the GME obligation policy so that physicians discharge their GME obligation consecutively rather than concurrently with any prior obligation. Based on our findings regarding the impact this change would have on accession requirements and the applicant pool, we do not recommend making the current year-for-year GME obligation consecutive with any prior obligation.

Such a policy change would result in very large increases in the effective obligation. For some specialty-accession-source combinations, this policy would obligate them to or nearly to retirement. Large increases in the GME obligation would negatively impact the applicant pool for AFHPSP and USUHS accessions, which feed the GME applicant pool. Furthermore, it is not clear to us what the desired retention rate is. Clearly, the Services do not want everyone to remain in the military, so obligating physicians to a point very near retirement may not give the Services the flexibility they need to shape their forces.

Because making the current GME obligation consecutive with any prior obligation is a large increase in percentage terms, we have also looked at more marginal increases. Specifically, we looked at (1) making the GME obligation 2 years for all specialties served consecutively with any prior obligation up to a maximum of 6 years, (2) making residency obligation equal to the residency length plus 1 year, and (3) making the fellowship obligation equal to the fellowship length plus 1 year.

Making the GME obligation 2 years served consecutively with any prior obligation would make the effective obligation 6 years for those with a 4-year AFHPSP scholarship, and the effective obligation for USUHS accessions would remain at 7 years. Given the past changes in the GME obligation, we do not think that this obligation policy would have a large impact on the behavior of those deciding whether to enter a military residency program, *but it may have a significant impact on the AFHPSP applicant pool.*

To the degree the AFHPSP applicants understand that their effective obligation is the combined effect of the AFHPSP and GME obligations, they would realize that they are effectively committing to 6 years after residency. The AFHPSP ADO study found that increasing the AFHPSP ADO to 6 years was not supportable due to the reduced applicant pool [5]. Whether the 6-year obligation is from AFHPSP or GME is irrelevant, the impact on the applicant pool should be the same *assuming that AFHPSP applicants truly understand how long they are committing themselves for.* On this basis, we don't recommend changing the GME obligation to be 2 years served consecutively with any prior obligation.

In contrast, we feel that increasing the residency ADO to residency length plus 1 year and/or increasing the fellowship ADO to fellowship length plus 1 year are supportable options. These options are supportable for the following reasons:

1. The April 1988 change in the GME obligation, which resulted in a marginal increase in the effective obligation, resulted in only a small increase in the percentage of physicians who completed their obligation without entering a residency program.
2. GME medical program directors we interviewed felt that marginal increases in the GME obligation would not have a significant impact on the Services' ability to get quality candidates for their GME programs.
3. About 55 percent of current residents and fellows indicated that they would still have accepted the GME obligation if the obligation-to-training ratio were 1.25:1 compared with the current ratio of 1:1. We believe this to be an underestimate of the

percentage who would be willing to accept the additional obligation because there was no benefit to answering the question affirmatively. In addition, it seems unlikely that most physicians would rather burn their obligation (with the intention of entering a residency program once they are out of the military) and get several years behind their cohort than accept a marginal increase in the GME obligation.

4. We do not observe that the quality of GME applicants has changed in recent years based on the data available to us.

If DoD wants to target a few specialties for which they have difficulty retaining physicians, we recommend making the residency obligation equal to the residency length plus 1 year with this obligation served concurrently with any prior obligation. This policy would increase obligated service by one year for those specialties with a long residency (and presumably low retention). At the same time, this policy would not increase the obligation of other specialties where the Services currently have overages. Similarly, if DoD wants to improve the retention of its subspecialists without affecting the obligation of its specialties, we recommend making fellowship obligation equal to training length plus 1 year.

If DoD wants to encourage more physicians to apply for specialties with longer residencies—specialties that may have difficulty getting enough quality applicants—we recommend making the GME obligation 1 year for all specialties served consecutively with any prior obligation. Note that we don't think that setting a flat GME obligation policy will dramatically change the propensity of physicians to matriculate into the various specialties; however, there are likely some physicians who would have considered a specialty with a longer residency if it didn't have a relatively longer obligation.

If DoD wants to increase the obligation to reduce the cost of the medical corps in general, we recommend increasing the AFHPSP obligation from 4 to 5 years for 4 years of subsidization, as we recommended in the AFHPSP ADO study [5], rather than increasing the GME obligation. This policy change is more straightforward than the GME policy changes, and it would affect both AFHPSP direct and deferred accessions. In comparison, a GME obligation change would affect

only AFHPSP direct accessions and not USUHS accessions unless it is a substantial increase, which we don't think is supportable.

Key factors to consider

The results of the LCC model from both this and the AFHPSP ADO study clearly indicate that, if DoD wants to increase the return on its investment to reduce overall costs, it needs to be willing to alter the size of the GME program. If changing the GME program is not a reasonable option for operational, political, or other reasons, we do not recommend changing the AFHPSP or GME obligations in any significant way.

In addition, it is not clear to us what the desired retention rates are for physician specialties. We strongly recommend that the Services clearly define and closely track the desired retention rate goals for their major physician specialties. The Services currently report overages for some physician specialties. If force management tools are not developed and monitored—in concert with an increased AFHPSP obligation—DoD may create further specialty surpluses. In terms of addressing shortages in some specialties in the short run, we recommend that the current accession bonus authority be further evaluated to help DoD more quickly increase required inventories.

We recommend that desired retention rates be set in conjunction with the desired seniority requirement or experience profile. The LCC study [4] clearly showed that in-house GME—meaning USUHS and AFHPSP direct accessions—was the most cost-effective means of meeting seniority requirements. But, in-house GME is not the most cost-effective way to access physicians once all of the seniority requirements are met. Seniority requirements are important to consider in conjunction with obligation changes because each additional year of obligated service improves continuation and retention. This additional continuation and retention makes filling seniority requirement easier and consequently reduces the need of in-house GME.

Impact on other health professions

This study is clearly limited to assessing the impact of potential GME obligation increases on the medical corps. However, the Services use

in-house training for other health professions—most notably with the dental corps. DoD provides graduate dental education to some of its dentists to provide fully trained dental specialists to help meet its billets and readiness requirements. Because civilian opportunities are more lucrative for physicians than for dentists, it seems reasonable that the dental corps could absorb an increase in the GDE obligation more easily than the medical corps could absorb an increase in the GME obligation.

While the Services predominantly don't offer GDE to its general dentists until they have completed their accession obligation, there are indications that more dentists are being offered graduate education at earlier career conjunctures. Such a shift will lower retention [3]. If such a shift occurs, additional obligation for GDE could be helpful to improve continuation and retention if it is necessary to meet the dental corps' mission.

Appendix A: Life-cycle-cost model results

Tables A-1 through A-8 show the results of the life-cycle-cost model under the assumption that the size of the GME program is fixed. These tables show the model's results when we go from the current GME obligation to one of the following alternative GME obligations:

1. **GME ADO 1**: consecutive payback—the GME obligation is year for year and is paid back consecutively with any prior obligation.
2. **GME ADO 2**: residency length plus 1—the residency obligation is training length plus 1 year, the fellowship obligation is year for year, and these obligations are paid back concurrently with any prior obligation.
3. **GME ADO 3**: 2-year obligation with consecutive payback—the residency obligation is 2 years for all specialties and is paid back consecutively with any prior obligation. Those completing a fellowship owe a minimum of 4 years after completing the fellowship.
4. **GME ADO 4**: fellowship length plus 1—the residency obligation is year for year, the fellowship obligation is training length plus 1 year, and is paid back concurrently with any prior obligation.

Tables A-9 through A-16 show the results of the life-cycle-cost model when we allow it to find the economic-optimal GME program. These tables show the model's results when we go from the current GME obligation to one of the four alternatives. All tables show the results for each Service separately.

Table A-1 (Army): fixed GME, 4-year AFHPSP ADO, and consecutive payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	17	63	18
AFHPSP (200/400)	299	80	291	82
FAP (0/60)	11	3	0	0
Total	374	100	354	100
Accession mix at YOP-1				
USUHS	59	18	59	19
AFHPSP direct	255	77	256	81
AFHPSP deferred	7	2	0	0
FAP	11	3	0	0
Total	332	100	315	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	1,162	1,131
AFHPSP deferred	29	0
FAP	34	0
Total	1,477	1,383
Training pipeline		
Interns	330	330
Residents/fellows	884	885
Total	1,214	1,215

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	755	1,043
Cost per fully trained duty physician ($)	262,298	253,610
Shortage of fully trained duty physicians	9.4	5.7
Cost adjusted for shortages ($M)	758	1,044
Cost as a percentage of baseline		137.8

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	89	22	15	125	114	34	28	176	4.3	54.6	16.0	16.0
Cardio	50	37	15	12	64	41	39	24	104	13.9	54.1	7.0	7.0
Family practice	491	331	81	79	491	375	133	133	641	0.0	150.0	50.0	50.0
General IM	309	226	48	45	319	291	87	83	461	10.1	151.6	55.0	55.0
General surgery	185	123	38	25	185	154	117	77	348	0.0	163.1	24.0	24.0
OB/GYN	170	125	32	19	176	148	31	23	202	5.6	32.2	21.0	21.0
Orthopedic surgery	145	108	28	15	152	134	59	34	228	7.0	82.7	20.0	20.0
Radiology	140	95	28	17	140	107	58	42	208	0.0	67.9	16.0	16.0
Other specialties	1104	803	234	190	1228	935	449	360	1745	124.0	640.6	135.0	135.0
Overall	2,715	1,938	525	417	2,880	2,299	1,007	805	4,112	164.8	1396.8	344.0	344.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	71	17	12	65	19	16	0	0	0.0	0.0
Cardio	57	28	15	59	23	19	39	38	23	0	0	0.0	0.0
Family practice	68	15	17	67	16	16	58	21	21	25	25	8.4	0.0
General IM	64	16	20	71	15	14	63	19	18	10	10	0.0	0.0
General surgery	49	28	22	66	20	13	44	34	22	0	0	0.0	0.0
OB/GYN	73	16	11	71	18	11	73	15	12	8	8	0.0	0.0
Orthopedic surgery	55	36	10	71	19	10	59	26	15	0	0	0.0	0.0
Radiology	68	18	15	68	20	12	52	28	20	2	2	2.0	0.0
Other specialties	52	25	23	65	19	15	54	26	21	15	15	1.0	0.0
Overall	59	22	19	67	18	14	56	25	20	60	60	11.4	0.0

Table A-1 (Navy): fixed GME, 4-year AFHPSP ADO, and consecutive payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	15	51	18
AFHPSP (200/400)	268	77	223	79
FAP (0/60)	28	8	7	2
Total	347	100	280	100
Accession mix at YOP-1				
USUHS	45	15	52	22
AFHPSP direct	169	57	162	68
AFHPSP deferred	56	19	18	7
FAP	26	9	6	3
Total	297	100	238	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	1,041	865
AFHPSP deferred	276	94
FAP	82	20
Total	1,604	1,182
Training pipeline		
Interns	235	235
GMOs	454	454
Residents/fellows	616	615
Total	1,305	1,304

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	614	714
Cost per fully trained duty physician ($)	291,859	290,822
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	614	714
Cost as a percentage of baseline		116.3

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	87	30	21	138	97	39	32	168	0.0	29.6	18.0	18.0
Cardio	25	8	16	12	35	8	23	14	45	10.0	19.7	4.0	4.0
Family practice	403	252	77	74	403	246	118	115	479	0.0	76.1	43.0	43.0
General IM	135	111	26	25	162	142	51	49	243	26.5	107.6	31.0	31.0
General surgery	139	114	25	17	156	84	44	28	156	17.1	17.1	9.0	9.0
OB/GYN	124	69	34	20	124	71	32	21	124	0.0	0.0	13.0	13.0
Orthopedic surgery	133	82	33	18	133	53	51	30	133	0.0	0.0	11.0	11.0
Radiology	112	76	21	16	112	66	50	37	152	0.0	40.4	14.0	14.0
Other specialties	806	496	189	155	840	456	279	220	955	34.4	148.8	78.0	78.0
Overall	2,015	1,294	451	357	2,103	1,222	687	546	2,454	88.1	439.3	221.0	221.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	63	22	15	58	23	19	0	0	0.0	0.0
Cardio	52	30	19	22	44	34	17	51	31	0	0	0.0	0.0
Family practice	65	20	15	62	19	18	51	25	24	25	25	17.9	0.0
General IM	73	14	13	69	16	15	59	21	20	10	10	0.0	0.0
General surgery	48	30	22	73	16	11	54	28	18	0	0	0.0	0.0
OB/GYN	83	12	5	56	28	16	57	26	17	8	8	0.0	0.0
Orthopedic surgery	69	19	13	62	25	13	40	38	22	0	0	0.0	0.0
Radiology	48	40	12	68	18	14	43	33	24	2	2	0.0	0.0
Other specialties	42	36	22	59	23	18	48	29	23	15	15	10.0	6.6
Overall	55	28	17	62	21	17	50	28	22	60	60	27.9	6.6

Table A-1 (Air Force): fixed GME, 4-year AFHPSP ADO, and consecutive payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	20	51	23
AFHPSP (150/400)	189	75	173	77
FAP (0/60)	12	5	0	0
Total	252	100	224	100
Accession mix at YOP-1				
USUHS	48	21	48	24
AFHPSP direct	149	66	149	74
AFHPSP deferred	16	7	3	2
FAP	11	5	0	0
Total	225	100	201	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	733	673
AFHPSP deferred	75	16
FAP	23	0
Total	1,035	893
Training pipeline		
Interns	202	201
Residents/fellows	587	585
Total	789	787

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	498	649
Cost per fully trained duty physician ($)	253,770	251,099
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	498	649
Cost as a percentage of baseline		130.3

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	55	14	9	78	57	17	14	88	0.0	9.8	8.0	8.0
Cardio	31	27	10	8	46	29	28	17	74	14.6	43.4	5.0	5.0
Family practice	439	294	73	73	439	338	120	119	577	0.0	137.9	45.0	45.0
General IM	162	145	29	28	201	189	56	54	299	39.2	136.9	37.0	37.0
General surgery	111	66	27	18	111	78	64	40	181	0.0	70.4	13.0	13.0
OB/GYN	116	81	22	13	116	85	20	15	120	0.0	3.8	12.0	12.0
Orthopedic surgery	91	55	24	13	91	52	25	14	91	0.0	0.0	8.0	8.0
Radiology	124	87	23	14	124	103	56	41	200	0.0	75.8	16.0	16.0
Other specialties	701	509	140	107	757	532	246	177	955	55.9	254.3	74.0	74.0
Overall	1,853	1,319	362	282	1,963	1,461	632	492	2,585	109.8	732.3	218.0	218.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	70	18	12	65	19	16	0	0	0.0	0.0
Cardio	71	11	18	59	23	19	39	38	23	0	0	0.0	0.0
Family practice	84	11	5	67	17	17	58	21	21	25	25	7.0	0.0
General IM	80	13	7	72	14	14	63	19	18	10	10	0.0	0.0
General surgery	73	13	15	60	24	16	43	35	22	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	71	17	12	8	8	1.5	0.0
Orthopedic surgery	75	19	6	60	26	14	57	27	16	0	0	0.0	0.0
Radiology	71	21	8	70	18	11	52	28	20	2	2	1.1	0.0
Other specialties	69	20	11	67	19	14	56	26	19	15	15	2.2	0.0
Overall	76	15	9	67	18	14	57	24	19	60	60	11.8	0.0

Table A-2 (Army): fixed GME, 4-year AFHPSP ADO, residency ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	17	63	17
AFHPSP (200/400)	299	80	292	81
FAP (0/60)	11	3	5	2
Total	374	100	360	100
Accession mix at YOP-1				
USUHS	59	18	60	19
AFHPSP direct	255	77	255	80
AFHPSP deferred	7	2	0	0
FAP	11	3	6	2
Total	332	100	321	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	1,162	1,132
AFHPSP deferred	29	0
FAP	34	17
Total	1,477	1,401
Training pipeline		
Interns	330	330
Residents/fellows	884	885
Total	1,214	1,215

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	755	782
Cost per fully trained duty physician ($)	262,298	266,000
Shortage of fully trained duty physicians	9.4	9.4
Cost adjusted for shortages ($M)	758	784
Cost as a percentage of baseline		103.5

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	89	22	15	125	89	22	14	125	4.3	4.2	16.0	16.0
Cardio	50	37	15	12	64	40	21	16	77	13.9	26.7	7.0	7.0
Family practice	491	331	81	79	491	327	85	79	491	0.0	0.0	50.0	50.0
General IM	309	226	48	45	319	226	48	45	319	10.1	10.1	55.0	55.0
General surgery	185	123	38	25	185	132	31	24	188	0.0	2.8	24.0	24.0
OB/GYN	170	125	32	19	176	125	32	19	176	5.6	5.6	21.0	21.0
Orthopedic surgery	145	108	28	15	152	118	28	15	162	7.0	16.5	20.0	20.0
Radiology	140	95	28	17	140	95	27	18	140	0.0	0.0	16.0	16.0
Other specialties	1104	803	234	190	1228	786	266	210	1263	124.0	158.5	135.0	135.0
Overall	2,715	1,938	525	417	2,880	1,938	559	442	2,940	164.8	224.5	344.0	344.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	71	17	12	71	17	12	0	0	0.0	0.0
Cardio	57	28	15	59	23	19	52	27	21	0	0	0.0	0.0
Family practice	68	15	17	67	16	16	67	17	16	25	25	8.4	5.5
General IM	64	16	20	71	15	14	71	15	14	10	10	0.0	0.0
General surgery	49	28	22	66	20	13	70	17	13	0	0	0.0	0.0
OB/GYN	73	16	11	71	18	11	71	18	11	8	8	0.0	0.0
Orthopedic surgery	55	36	10	71	19	10	73	17	10	0	0	0.0	0.0
Radiology	68	18	15	68	20	12	68	20	13	2	2	2.0	0.0
Other specialties	52	25	23	65	19	15	62	21	17	15	15	1.0	0.0
Overall	59	22	19	67	18	14	66	19	15	60	60	11.4	5.5

Table A-2 (Navy): fixed GME, 4-year AFHPSP ADO, residency ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	15	51	17
AFHPSP (200/400)	268	77	246	80
FAP (0/60)	28	8	9	3
Total	347	100	307	100
Accession mix at YOP-1				
USUHS	45	15	45	17
AFHPSP direct	169	57	169	65
AFHPSP deferred	56	19	38	14
FAP	26	9	9	3
Total	297	100	260	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	1,041	956
AFHPSP deferred	276	189
FAP	82	28
Total	1,604	1,377
Training pipeline		
Interns	235	235
GMOs	454	454
Residents/fellows	616	615
Total	1,305	1,304

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	614	647
Cost per fully trained duty physician ($)	291,859	292,011
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	614	647
Cost as a percentage of baseline		105.3

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	87	30	21	138	87	29	23	138	0.0	0.0	18.0	18.0
Cardio	25	8	16	12	35	8	19	15	41	10.0	16.2	4.0	4.0
Family practice	403	252	77	74	403	219	92	91	403	0.0	0.0	43.0	43.0
General IM	135	111	26	25	162	125	38	36	199	26.5	64.1	31.0	31.0
General surgery	139	114	25	17	156	101	34	21	156	17.1	17.1	9.0	9.0
OB/GYN	124	69	34	20	124	70	34	20	124	0.0	0.0	13.0	13.0
Orthopedic surgery	133	82	33	18	133	82	33	18	133	0.0	0.0	11.0	11.0
Radiology	112	76	21	16	112	66	34	26	125	0.0	13.3	14.0	14.0
Other specialties	806	496	189	155	840	479	227	188	895	34.4	88.5	78.0	78.0
Overall	2,015	1,294	451	357	2,103	1,237	539	438	2,214	88.1	199.3	221.0	221.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	63	22	15	63	21	16	0	0	0.0	0.0
Cardio	52	30	19	22	44	34	19	46	36	0	0	0.0	0.0
Family practice	65	20	15	62	19	18	54	23	23	25	25	17.9	0.8
General IM	73	14	13	69	16	15	63	19	18	10	10	0.0	0.0
General surgery	48	30	22	73	16	11	65	22	13	0	0	0.0	0.0
OB/GYN	83	12	5	56	28	16	57	27	16	8	8	0.0	0.0
Orthopedic surgery	69	19	13	62	25	13	62	25	13	0	0	0.0	0.0
Radiology	48	40	12	68	18	14	52	27	20	2	2	0.0	0.0
Other specialties	42	36	22	59	23	18	54	25	21	15	15	10.0	8.5
Overall	55	28	17	62	21	17	56	24	20	60	60	27.9	9.3

Table A-2 (Air Force): fixed GME, 4-year AFHPSP ADO, residency ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	20	51	21
AFHPSP (150/400)	189	75	180	75
FAP (0/60)	12	5	11	4
Total	252	100	242	100
Accession mix at YOP-1				
USUHS	48	21	48	22
AFHPSP direct	149	66	149	69
AFHPSP deferred	16	7	9	4
FAP	11	5	10	5
Total	225	100	216	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	733	700
AFHPSP deferred	75	40
FAP	23	21
Total	1,035	966
Training pipeline		
Interns	202	202
Residents/fellows	587	587
Total	789	789

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	498	513
Cost per fully trained duty physician ($)	253,770	257,272
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	498	513
Cost as a percentage of baseline		102.9

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	55	14	9	78	50	17	11	78	0.0	0.0	8.0	8.0
Cardio	31	27	10	8	46	28	15	12	55	14.6	23.8	5.0	5.0
Family practice	439	294	73	73	439	294	73	72	439	0.0	0.0	45.0	45.0
General IM	162	145	29	28	201	145	29	28	201	39.2	39.2	37.0	37.0
General surgery	111	66	27	18	111	70	24	17	111	0.0	0.0	13.0	13.0
OB/GYN	116	81	22	13	116	81	22	13	116	0.0	0.0	12.0	12.0
Orthopedic surgery	91	55	24	13	91	55	24	13	91	0.0	0.0	8.0	8.0
Radiology	124	87	23	14	124	90	22	15	127	0.0	3.2	16.0	16.0
Other specialties	701	509	140	107	757	495	159	120	774	55.9	73.4	74.0	74.0
Overall	1,853	1,319	362	282	1,963	1,308	384	301	1,993	109.8	139.6	218.0	218.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	70	18	12	64	22	14	0	0	0.0	0.0
Cardio	71	11	18	59	23	19	52	27	21	0	0	0.0	0.0
Family practice	84	11	5	67	17	17	67	17	17	25	25	7.0	7.0
General IM	80	13	7	72	14	14	72	14	14	10	10	0.0	0.0
General surgery	73	13	15	60	24	16	63	22	15	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	19	11	8	8	1.5	1.5
Orthopedic surgery	75	19	6	60	26	14	60	26	14	0	0	0.0	0.0
Radiology	71	21	8	70	18	11	71	17	12	2	2	1.1	0.0
Other specialties	69	20	11	67	19	14	64	21	16	15	15	2.2	2.2
Overall	76	15	9	67	18	14	66	19	15	60	60	11.8	10.6

Table A-3 (Army): fixed GME, 4-year AFHPSP ADO, 2-year residency ADO, consecutive payback (6-year maximum), and fellowship ADO is a minimum of 4 years

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	17	63	18
AFHPSP (200/400)	299	80	291	82
FAP (0/60)	11	3	0	0
Total	374	100	354	100
Accession mix at YOP-1				
USUHS	59	18	59	19
AFHPSP direct	255	77	256	81
AFHPSP deferred	7	2	0	0
FAP	11	3	0	0
Total	332	100	315	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	1,162	1,131
AFHPSP deferred	29	0
FAP	34	0
Total	1,477	1,383
Training pipeline		
Interns	330	330
Residents/fellows	884	885
Total	1,214	1,215

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	755	919
Cost per fully trained duty physician ($)	262,298	250,953
Shortage of fully trained duty physicians	9.4	9.4
Cost adjusted for shortages ($M)	758	921
Cost as a percentage of baseline		121.6

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	89	22	15	125	105	22	18	145	4.3	23.9	16.0	16.0
Cardio	50	37	15	12	64	41	33	19	93	13.9	42.9	7.0	7.0
Family practice	491	331	81	79	491	384	150	136	670	0.0	179.2	50.0	50.0
General IM	309	226	48	45	319	291	87	83	461	10.1	151.6	55.0	55.0
General surgery	185	123	38	25	185	146	45	36	227	0.0	42.1	24.0	24.0
OB/GYN	170	125	32	19	176	140	31	20	191	5.6	21.4	21.0	21.0
Orthopedic surgery	145	108	28	15	152	127	28	16	170	7.0	25.0	20.0	20.0
Radiology	140	95	28	17	140	101	25	19	145	0.0	5.2	16.0	16.0
Other specialties	1104	803	234	190	1228	906	363	290	1559	124.0	455.3	135.0	135.0
Overall	2,715	1,938	525	417	2,880	2,240	783	639	3,662	164.8	946.6	344.0	344.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	71	17	12	72	15	13	0	0	0.0	0.0
Cardio	57	28	15	59	23	19	44	36	21	0	0	0.0	0.0
Family practice	68	15	17	67	16	16	57	22	20	25	25	8.4	0.0
General IM	64	16	20	71	15	14	63	19	18	10	10	0.0	0.0
General surgery	49	28	22	66	20	13	64	20	16	0	0	0.0	0.0
OB/GYN	73	16	11	71	18	11	73	16	11	8	8	0.0	0.0
Orthopedic surgery	55	36	10	71	19	10	74	16	9	0	0	0.0	0.0
Radiology	68	18	15	68	20	12	70	17	13	2	2	2.0	0.0
Other specialties	52	25	23	65	19	15	58	23	19	15	15	1.0	0.0
Overall	59	22	19	67	18	14	61	21	17	60	60	11.4	0.0

Table A-3 (Navy): fixed GME, 4-year AFHPSP ADO, 2-year residency ADO, consecutive payback (6-year maximum), and fellowship ADO is a minimum of 4 years

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	15	51	17
AFHPSP (200/400)	268	77	240	81
FAP (0/60)	28	8	7	2
Total	347	100	298	100
Accession mix at YOP-1				
USUHS	45	15	49	19
AFHPSP direct	169	57	165	65
AFHPSP deferred	56	19	33	13
FAP	26	9	6	2
Total	297	100	253	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	1,041	932
AFHPSP deferred	276	163
FAP	82	19
Total	1,604	1,317
Training pipeline		
Interns	235	235
GMOs	454	454
Residents/fellows	616	615
Total	1,305	1,304

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	614	664
Cost per fully trained duty physician ($)	291,859	288,759
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	614	664
Cost as a percentage of baseline		108.1

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	87	30	21	138	87	29	23	138	0.0	(0.0)	18.0	18.0
Cardio	25	8	16	12	35	8	19	15	41	10.0	16.2	4.0	4.0
Family practice	403	252	77	74	403	246	118	115	479	0.0	76.1	43.0	43.0
General IM	135	111	26	25	162	142	51	49	243	26.5	107.6	31.0	31.0
General surgery	139	114	25	17	156	92	40	24	156	17.1	17.1	9.0	9.0
OB/GYN	124	69	34	20	124	69	34	21	124	0.0	0.0	13.0	13.0
Orthopedic surgery	133	82	33	18	133	62	47	24	133	0.0	0.0	11.0	11.0
Radiology	112	76	21	16	112	61	30	20	112	0.0	0.0	14.0	14.0
Other specialties	806	496	189	155	840	486	213	174	873	34.4	66.7	78.0	78.0
Overall	2,015	1,294	451	357	2,103	1,254	580	465	2,299	88.1	283.7	221.0	221.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	63	22	15	63	21	16	0	0	0.0	0.0
Cardio	52	30	19	22	44	34	19	46	36	0	0	0.0	0.0
Family practice	65	20	15	62	19	18	51	25	24	25	25	17.9	0.0
General IM	73	14	13	69	16	15	59	21	20	10	10	0.0	0.0
General surgery	48	30	22	73	16	11	59	25	15	0	0	0.0	0.0
OB/GYN	83	12	5	56	28	16	56	27	17	8	8	0.0	0.0
Orthopedic surgery	69	19	13	62	25	13	47	35	18	0	0	0.0	0.0
Radiology	48	40	12	68	18	14	55	27	18	2	2	0.0	0.0
Other specialties	42	36	22	59	23	18	56	24	20	15	15	10.0	6.5
Overall	55	28	17	62	21	17	55	25	20	60	60	27.9	6.5

Table A-3 (Air Force): fixed GME, 4-year AFHPSP ADO, 2-year residency ADO, consecutive payback (6-year maximum), and fellowship ADO is a minimum of 4 years

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	20	51	23
AFHPSP (150/400)	189	75	176	77
FAP (0/60)	12	5	0	0
Total	252	100	227	100
Accession mix at YOP-1				
USUHS	48	21	48	24
AFHPSP direct	149	66	149	74
AFHPSP deferred	16	7	5	2
FAP	11	5	0	0
Total	225	100	202	100

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	733	681
AFHPSP deferred	75	23
FAP	23	0
Total	1,035	908
Training pipeline		
Interns	202	202
Residents/fellows	587	587
Total	789	789

a. Annual accession source constraints are in parentheses (minimum/maximum).
The USUHS constraint for the excursion is 58.65.

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	498	583
Cost per fully trained duty physician ($)	253,770	247,494
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	498	583
Cost as a percentage of baseline		117.1

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	55	14	9	78	54	14	11	78	0.0	0.0	8.0	8.0
Cardio	31	27	10	8	46	29	24	14	66	14.6	35.4	5.0	5.0
Family practice	439	294	73	73	439	338	120	119	577	0.0	137.9	45.0	45.0
General IM	162	145	29	28	201	189	56	54	299	39.2	136.9	37.0	37.0
General surgery	111	66	27	18	111	74	22	18	114	0.0	3.3	13.0	13.0
OB/GYN	116	81	22	13	116	82	21	14	117	0.0	1.0	12.0	12.0
Orthopedic surgery	91	55	24	13	91	54	24	13	91	0.0	0.0	8.0	8.0
Radiology	124	87	23	14	124	97	24	18	139	0.0	15.5	16.0	16.0
Other specialties	701	509	140	107	757	526	202	147	875	55.9	174.0	74.0	74.0
Overall	1,853	1,319	362	282	1,963	1,442	507	408	2,357	109.8	504.0	218.0	218.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	70	18	12	69	18	13	0	0	0.0	0.0
Cardio	71	11	18	59	23	19	44	36	21	0	0	0.0	0.0
Family practice	84	11	5	67	17	17	58	21	21	25	25	7.0	0.0
General IM	80	13	7	72	14	14	63	19	18	10	10	0.0	0.0
General surgery	73	13	15	60	24	16	64	20	16	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	18	12	8	8	1.5	0.0
Orthopedic surgery	75	19	6	60	26	14	60	26	14	0	0	0.0	0.0
Radiology	71	21	8	70	18	11	70	17	13	2	2	1.1	0.0
Other specialties	69	20	11	67	19	14	60	23	17	15	15	2.2	0.0
Overall	76	15	9	67	18	14	61	22	17	60	60	11.8	0.0

Table A-4 (Army): fixed GME, 4-year AFHPSP ADO, fellowship ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	17	63	17
AFHPSP (200/400)	299	80	299	80
FAP (0/60)	11	3	11	3
Total	374	100	374	100
Accession mix at YOP-1				
USUHS	59	18	59	18
AFHPSP direct	255	77	255	77
AFHPSP deferred	7	2	7	2
FAP	11	3	11	3
Total	332	100	332	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	1,162	1,162
AFHPSP deferred	29	29
FAP	34	34
Total	1,477	1,476
Training pipeline		
Interns	330	330
Residents/fellows	884	884
Total	1,214	1,214

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	755	761
Cost per fully trained duty physician ($)	262,298	261,709
Shortage of fully trained duty physicians	9.4	9.4
Cost adjusted for shortages ($M)	758	764
Cost as a percentage of baseline		100.7

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	89	22	15	125	89	22	15	125	4.3	4.3	16.0	16.0
Cardio	50	37	15	12	64	40	21	16	77	13.9	26.7	7.0	7.0
Family practice	491	331	81	79	491	331	81	79	491	0.0	0.0	50.0	50.0
General IM	309	226	48	45	319	226	48	45	319	10.1	10.1	55.0	55.0
General surgery	185	123	38	25	185	123	38	25	185	0.0	0.0	24.0	24.0
OB/GYN	170	125	32	19	176	125	32	19	176	5.6	5.6	21.0	21.0
Orthopedic surgery	145	108	28	15	152	108	28	15	152	7.0	7.0	20.0	20.0
Radiology	140	95	28	17	140	95	28	17	140	0.0	0.0	16.0	16.0
Other specialties	1104	803	234	190	1228	805	242	196	1243	124.0	139.3	135.0	135.0
Overall	2,715	1,938	525	417	2,880	1,943	538	427	2,908	164.8	193.0	344.0	344.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	71	17	12	71	17	12	0	0	0.0	0.0
Cardio	57	28	15	59	23	19	52	27	21	0	0	0.0	0.0
Family practice	68	15	17	67	16	16	67	16	16	25	25	8.4	8.4
General IM	64	16	20	71	15	14	71	15	14	10	10	0.0	0.0
General surgery	49	28	22	66	20	13	66	20	13	0	0	0.0	0.0
OB/GYN	73	16	11	71	18	11	71	18	11	8	8	0.0	0.0
Orthopedic surgery	55	36	10	71	19	10	71	19	10	0	0	0.0	0.0
Radiology	68	18	15	68	20	12	68	20	12	2	2	2.0	2.0
Other specialties	52	25	23	65	19	15	65	19	16	15	15	1.0	1.0
Overall	59	22	19	67	18	14	67	19	15	60	60	11.4	11.4

Table A-4 (Navy): fixed GME, 4-year AFHPSP ADO, fellowship ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	15	51	15
AFHPSP (200/400)	268	77	268	77
FAP (0/60)	28	8	28	8
Total	347	100	347	100
Accession mix at YOP-1				
USUHS	45	15	45	15
AFHPSP direct	169	57	169	57
AFHPSP deferred	56	19	56	19
FAP	26	9	26	9
Total	297	100	296	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	1,041	1,040
AFHPSP deferred	276	274
FAP	82	82
Total	1,604	1,600
Training pipeline		
Interns	235	235
GMOs	454	454
Residents/fellows	616	616
Total	1,305	1,305

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	614	616
Cost per fully trained duty physician ($)	291,859	291,457
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	614	616
Cost as a percentage of baseline		100.4

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	87	30	21	138	87	30	21	138	0.0	0.0	18.0	18.0
Cardio	25	8	16	12	35	8	19	15	41	10.0	16.2	4.0	4.0
Family practice	403	252	77	74	403	252	77	74	403	0.0	0.0	43.0	43.0
General IM	135	111	26	25	162	111	26	25	162	26.5	26.5	31.0	31.1
General surgery	139	114	25	17	156	114	25	17	156	17.1	17.1	9.0	8.9
OB/GYN	124	69	34	20	124	69	34	20	124	0.0	0.0	13.0	13.0
Orthopedic surgery	133	82	33	18	133	82	33	18	133	0.0	0.0	11.0	11.0
Radiology	112	76	21	16	112	76	21	16	112	0.0	0.0	14.0	14.0
Other specialties	806	496	189	155	840	494	192	158	845	34.4	39.0	78.0	78.0
Overall	2,015	1,294	451	357	2,103	1,293	458	363	2,114	88.1	98.8	221.0	221.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	63	22	15	63	22	15	0	0	0.0	0.0
Cardio	52	30	19	22	44	34	19	46	36	0	0	0.0	0.0
Family practice	65	20	15	62	19	18	62	19	18	25	25	17.9	17.9
General IM	73	14	13	69	16	15	69	16	15	10	10	0.0	0.0
General surgery	48	30	22	73	16	11	73	16	11	0	0	0.0	0.0
OB/GYN	83	12	5	56	28	16	56	28	16	8	8	0.0	0.0
Orthopedic surgery	69	19	13	62	25	13	62	25	13	0	0	0.0	0.0
Radiology	48	40	12	68	18	14	68	18	14	2	2	0.0	0.0
Other specialties	42	36	22	59	23	18	59	23	19	15	15	10.0	10.0
Overall	55	28	17	62	21	17	61	22	17	60	60	27.9	27.9

Table A-4 (Air Force): fixed GME, 4-year AFHPSP ADO, fellowship ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	20	51	20
AFHPSP (150/400)	189	75	189	75
FAP (0/60)	12	5	12	5
Total	252	100	251	100
Accession mix at YOP-1				
USUHS	48	21	48	22
AFHPSP direct	149	66	149	66
AFHPSP deferred	16	7	16	7
FAP	11	5	11	5
Total	225	100	224	100

a. Annual accession source constraints are in parentheses (minimum/maximum).
The USUHS constraint for the excursion is 58.65.

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	733	732
AFHPSP deferred	75	73
FAP	23	23
Total	1,035	1,032
Training pipeline		
Interns	202	202
Residents/fellows	587	587
Total	789	789

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	498	502
Cost per fully trained duty physician ($)	253,770	253,226
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	498	502
Cost as a percentage of baseline		100.8

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	55	14	9	78	55	14	9	78	0.0	0.0	8.0	8.0
Cardio	31	27	10	8	46	28	15	12	55	14.6	23.8	5.0	5.0
Family practice	439	294	73	73	439	294	73	72	439	0.0	0.0	45.0	45.0
General IM	162	145	29	28	201	145	29	28	201	39.2	39.2	37.0	37.0
General surgery	111	66	27	18	111	66	27	18	111	0.0	0.0	13.0	13.0
OB/GYN	116	81	22	13	116	81	22	13	116	0.0	0.0	12.0	12.0
Orthopedic surgery	91	55	24	13	91	55	24	13	91	0.0	0.0	8.0	8.0
Radiology	124	87	23	14	124	87	23	14	124	0.0	0.0	16.0	16.0
Other specialties	701	509	140	107	757	510	146	112	769	55.9	67.8	74.0	74.0
Overall	1,853	1,319	362	282	1,963	1,321	372	290	1,984	109.8	130.7	218.0	218.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	70	18	12	70	18	12	0	0	0.0	0.0
Cardio	71	11	18	59	23	19	52	27	21	0	0	0.0	0.0
Family practice	84	11	5	67	17	17	67	17	17	25	25	7.0	7.0
General IM	80	13	7	72	14	14	72	14	14	10	10	0.0	0.0
General surgery	73	13	15	60	24	16	60	24	16	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	19	11	8	8	1.5	1.5
Orthopedic surgery	75	19	6	60	26	14	60	26	14	0	0	0.0	0.0
Radiology	71	21	8	70	18	11	70	18	11	2	2	1.1	1.1
Other specialties	69	20	11	67	19	14	66	19	15	15	15	2.2	2.2
Overall	76	15	9	67	18	14	67	19	15	60	60	11.8	11.8

Table A-5 (Army): fixed GME, 5-year AFHPSP ADO, and consecutive payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	18	63	18
AFHPSP (50/400)	291	82	291	82
FAP (0/60)	0	0	0	0
Total	354	100	354	100
Accession mix at YOP-1				
USUHS	59	19	59	19
AFHPSP direct	256	81	256	81
AFHPSP deferred	0	0	0	0
FAP	0	0	0	0
Total	315	100	315	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	1,131	1,131
AFHPSP deferred	0	0
FAP	0	0
Total	1,383	1,383
Training pipeline		
Interns	330	330
Residents/fellows	885	885
Total	1,214	1,215

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	818	1,134
Cost per fully trained duty physician ($)	259,607	248,857
Shortage of fully trained duty physicians	9.4	5.7
Cost adjusted for shortages ($M)	820	1,136
Cost as a percentage of baseline		138.4

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	96	21	15	133	119	48	39	206	11.7	84.6	16.0	16.0
Cardio	50	37	15	12	64	41	39	24	104	13.9	54.1	7.0	7.0
Family practice	491	335	98	98	532	400	164	163	727	40.5	236.3	50.0	50.0
General IM	309	258	61	59	378	313	112	107	533	69.0	223.7	55.0	55.0
General surgery	185	132	31	24	187	154	127	80	360	2.3	175.5	24.0	24.0
OB/GYN	170	133	31	20	184	156	49	37	242	13.7	72.2	21.0	21.0
Orthopedic surgery	145	118	28	15	161	134	80	50	265	16.2	119.6	20.0	20.0
Radiology	140	94	28	18	140	107	72	55	234	0.0	93.9	16.0	16.0
Other specialties	1104	840	298	234	1372	968	503	416	1887	268.2	783.4	135.0	135.0
Overall	2,715	2,044	612	495	3,151	2,392	1,194	972	4,558	435.6	1843.2	344.0	344.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	73	16	11	58	23	19	0	0	0.0	0.0
Cardio	57	28	15	59	23	19	39	38	23	0	0	0.0	0.0
Family practice	68	15	17	63	18	18	55	23	22	25	25	0.0	0.0
General IM	64	16	20	68	16	16	59	21	20	10	10	0.0	0.0
General surgery	49	28	22	70	17	13	43	35	22	0	0	0.0	0.0
OB/GYN	73	16	11	72	17	11	64	20	15	8	8	0.0	0.0
Orthopedic surgery	55	36	10	73	17	10	51	30	19	0	0	0.0	0.0
Radiology	68	18	15	67	20	13	46	31	23	2	2	0.0	0.0
Other specialties	52	25	23	61	22	17	51	27	22	15	15	0.0	0.0
Overall	59	22	19	65	19	16	52	26	21	60	60	0.0	0.0

Table A-5 (Navy): fixed GME, 5-year AFHPSP ADO, and consecutive payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	16	51	19
AFHPSP (50/400)	252	80	218	80
FAP (0/60)	12	4	2	1
Total	315	100	271	100
Accession mix at YOP-1				
USUHS	45	17	53	23
AFHPSP direct	169	63	161	70
AFHPSP deferred	42	16	14	6
FAP	12	4	2	1
Total	268	100	230	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	976	846
AFHPSP deferred	209	74
FAP	37	6
Total	1,426	1,130
Training pipeline		
Interns	235	235
GMOs	454	454
Residents/fellows	616	615
Total	1,305	1,304

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	627	763
Cost per fully trained duty physician ($)	293,810	283,957
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	627	763
Cost as a percentage of baseline		121.6

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	82	34	22	138	102	55	45	202	0.0	64.3	18.0	18.0
Cardio	25	8	16	12	35	8	23	14	45	10.0	19.7	4.0	4.0
Family practice	403	229	88	86	403	268	145	142	555	0.0	151.7	43.0	43.0
General IM	135	123	36	35	194	156	66	63	285	58.9	150.0	31.1	31.0
General surgery	139	108	29	19	156	82	45	29	156	17.1	17.1	8.9	8.8
OB/GYN	124	69	34	20	124	74	31	23	129	0.0	4.5	13.0	13.0
Orthopedic surgery	133	82	34	18	133	52	50	30	133	0.0	0.0	11.0	11.0
Radiology	112	75	21	16	112	66	62	47	175	0.0	62.7	14.0	14.0
Other specialties	806	491	190	159	840	454	312	242	1008	34.4	202.3	78.0	78.0
Overall	2,015	1,267	481	387	2,136	1,262	789	636	2,687	120.5	672.5	221.0	220.7

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	59	25	16	51	27	22	0	0	0.0	0.0
Cardio	52	30	19	22	44	34	17	51	31	0	0	0.0	0.0
Family practice	65	20	15	57	22	21	48	26	26	25	25	3.8	0.0
General IM	73	14	13	63	19	18	55	23	22	10	10	0.0	0.0
General surgery	48	30	22	69	19	12	53	29	18	0	0	0.0	0.0
OB/GYN	83	12	5	56	28	16	57	24	18	8	8	0.0	0.0
Orthopedic surgery	69	19	13	61	25	13	39	38	23	0	0	0.0	0.0
Radiology	48	40	12	67	19	14	38	35	27	2	2	0.0	0.0
Other specialties	42	36	22	58	23	19	45	31	24	15	15	8.7	2.1
Overall	55	28	17	59	23	18	47	29	24	60	60	12.5	2.1

Table A-5 (Air Force): fixed GME, 5-year AFHPSP ADO, and consecutive payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	22	51	23
AFHPSP (50/400)	174	77	172	77
FAP (0/60)	2	1	0	0
Total	228	100	223	100
Accession mix at YOP-1				
USUHS	48	24	48	24
AFHPSP direct	149	73	149	75
AFHPSP deferred	4	2	3	1
FAP	2	1	0	0
Total	204	100	200	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	677	669
AFHPSP deferred	18	13
FAP	5	0
Total	904	886
Training pipeline		
Interns	202	201
Residents/fellows	587	586
Total	789	787

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	528	704
Cost per fully trained duty physician ($)	253,215	246,834
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	528	704
Cost as a percentage of baseline		133.2

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	52	16	10	78	59	24	20	103	0.0	24.8	8.0	8.0
Cardio	31	27	10	8	46	29	28	17	74	14.6	43.4	5.0	5.0
Family practice	439	302	88	88	478	360	148	147	655	39.3	215.6	45.0	45.0
General IM	162	167	40	38	245	203	73	70	346	83.3	183.7	37.0	37.0
General surgery	111	70	25	17	111	78	64	40	181	0.0	70.4	13.0	13.0
OB/GYN	116	81	22	13	116	89	28	21	138	0.0	22.4	12.0	12.0
Orthopedic surgery	91	54	24	13	91	52	31	19	102	0.0	10.6	8.0	8.0
Radiology	124	90	22	15	127	105	76	53	233	3.0	109.1	16.0	16.0
Other specialties	701	503	166	125	793	551	267	200	1018	92.1	317.4	74.0	74.0
Overall	1,853	1,345	413	328	2,085	1,525	738	587	2,850	232.3	997.5	218.0	218.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	66	20	13	58	23	19	0	0	0.0	0.0
Cardio	71	11	18	59	23	19	39	38	23	0	0	0.0	0.0
Family practice	84	11	5	63	18	18	55	23	22	25	25	0.0	0.0
General IM	80	13	7	68	16	16	59	21	20	10	10	0.0	0.0
General surgery	73	13	15	63	22	15	43	35	22	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	64	20	15	8	8	0.4	0.0
Orthopedic surgery	75	19	6	60	26	14	51	30	19	0	0	0.0	0.0
Radiology	71	21	8	71	18	12	45	32	23	2	2	0.0	0.0
Other specialties	69	20	11	63	21	16	54	26	20	15	15	2.0	0.0
Overall	76	15	9	64	20	16	54	26	21	60	60	2.4	0.0

Table A-6 (Army): fixed GME, 5-year AFHPSP ADO, residency ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	18	63	18
AFHPSP (50/400)	291	82	291	82
FAP (0/60)	0	0	0	0
Total	354	100	354	100
Accession mix at YOP-1				
USUHS	59	19	59	19
AFHPSP direct	256	81	256	81
AFHPSP deferred	0	0	0	0
FAP	0	0	0	0
Total	315	100	315	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	1,131	1,131
AFHPSP deferred	0	0
FAP	0	0
Total	1,383	1,383
Training pipeline		
Interns	330	330
Residents/fellows	885	884
Total	1,214	1,214

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	818	825
Cost per fully trained duty physician ($)	259,607	260,229
Shortage of fully trained duty physicians	9.4	9.4
Cost adjusted for shortages ($M)	820	827
Cost as a percentage of baseline		100.8

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	96	21	15	133	96	21	15	133	11.7	11.7	16.0	16.0
Cardio	50	37	15	12	64	41	31	19	91	13.9	40.6	7.0	7.0
Family practice	491	335	98	98	532	335	98	98	532	40.5	40.5	50.0	50.0
General IM	309	258	61	59	378	258	61	59	378	69.0	69.0	55.0	55.0
General surgery	185	132	31	24	187	132	31	24	187	2.3	2.3	24.0	24.0
OB/GYN	170	133	31	20	184	133	31	20	184	13.7	13.7	21.0	21.0
Orthopedic surgery	145	118	28	15	161	118	28	15	161	16.2	16.3	20.0	20.0
Radiology	140	94	28	18	140	95	28	18	140	0.0	0.0	16.0	16.0
Other specialties	1104	840	298	234	1372	836	292	236	1365	268.2	260.5	135.0	135.0
Overall	2,715	2,044	612	495	3,151	2,043	623	504	3,170	435.6	454.7	344.0	344.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	73	16	11	73	16	11	0	0	0.0	0.0
Cardio	57	28	15	59	23	19	45	35	21	0	0	0.0	0.0
Family practice	68	15	17	63	18	18	63	18	18	25	25	0.0	0.0
General IM	64	16	20	68	16	16	68	16	16	10	10	0.0	0.0
General surgery	49	28	22	70	17	13	70	17	13	0	0	0.0	0.0
OB/GYN	73	16	11	72	17	11	72	17	11	8	8	0.0	0.0
Orthopedic surgery	55	36	10	73	17	10	73	17	10	0	0	0.0	0.0
Radiology	68	18	15	67	20	13	68	20	13	2	2	0.0	0.0
Other specialties	52	25	23	61	22	17	61	21	17	15	15	0.0	0.0
Overall	59	22	19	65	19	16	64	20	16	60	60	0.0	0.0

Table A-6 (Navy): fixed GME, 5-year AFHPSP ADO, residency ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	16	51	17
AFHPSP (50/400)	252	80	237	79
FAP (0/60)	12	4	12	4
Total	315	100	301	100
Accession mix at YOP-1				
USUHS	45	17	45	18
AFHPSP direct	169	63	169	66
AFHPSP deferred	42	16	30	12
FAP	12	4	12	5
Total	268	100	256	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	976	921
AFHPSP deferred	209	151
FAP	37	37
Total	1,426	1,313
Training pipeline		
Interns	235	235
GMOs	454	454
Residents/fellows	616	615
Total	1,305	1,304

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	627	645
Cost per fully trained duty physician ($)	293,810	291,742
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	627	645
Cost as a percentage of baseline		102.7

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	82	34	22	138	87	29	23	138	0.0	0.0	18.0	18.0
Cardio	25	8	16	12	35	8	19	15	41	10.0	16.2	4.0	4.0
Family practice	403	229	88	86	403	229	88	86	403	0.0	0.0	43.0	43.0
General IM	135	123	36	35	194	123	36	35	194	58.9	58.9	31.1	31.1
General surgery	139	108	29	19	156	99	36	22	156	17.1	17.1	8.9	8.8
OB/GYN	124	69	34	20	124	70	34	20	124	0.0	0.0	13.0	13.0
Orthopedic surgery	133	82	34	18	133	82	34	18	133	0.0	0.0	11.0	11.0
Radiology	112	75	21	16	112	66	34	26	125	0.0	13.3	14.0	14.0
Other specialties	806	491	190	159	840	476	228	190	895	34.4	88.6	78.0	78.0
Overall	2,015	1,267	481	387	2,136	1,239	537	434	2,209	120.5	194.2	221.0	220.9

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	59	25	16	63	21	16	0	0	0.0	0.0
Cardio	52	30	19	22	44	34	19	46	36	0	0	0.0	0.0
Family practice	65	20	15	57	22	21	57	22	21	25	25	3.8	3.8
General IM	73	14	13	63	19	18	63	19	18	10	10	0.0	0.0
General surgery	48	30	22	69	19	12	63	23	14	0	0	0.0	0.0
OB/GYN	83	12	5	56	28	16	57	27	16	8	8	0.0	0.0
Orthopedic surgery	69	19	13	61	25	13	61	25	13	0	0	0.0	0.0
Radiology	48	40	12	67	19	14	52	27	20	2	2	0.0	0.0
Other specialties	42	36	22	58	23	19	53	26	21	15	15	8.7	8.6
Overall	55	28	17	59	23	18	56	24	20	60	60	12.5	12.5

Table A-6 (Air Force): fixed GME, 5-year AFHPSP ADO, residency ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	22	51	22
AFHPSP (50/400)	174	77	175	77
FAP (0/60)	2	1	3	1
Total	228	100	229	100
Accession mix at YOP-1				
USUHS	48	24	48	24
AFHPSP direct	149	73	149	73
AFHPSP deferred	4	2	4	2
FAP	2	1	2	1
Total	204	100	204	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	677	679
AFHPSP deferred	18	20
FAP	5	5
Total	904	908
Training pipeline		
Interns	202	202
Residents/fellows	587	587
Total	789	789

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	528	535
Cost per fully trained duty physician ($)	253,215	253,496
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	528	535
Cost as a percentage of baseline		101.4

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	52	16	10	78	52	16	10	78	0.0	0.0	8.0	8.0
Cardio	31	27	10	8	46	28	15	12	55	14.6	23.8	5.0	5.0
Family practice	439	302	88	88	478	302	88	88	478	39.3	39.3	45.0	45.0
General IM	162	167	40	38	245	167	40	38	245	83.3	83.3	37.0	37.0
General surgery	111	70	25	17	111	70	25	17	111	0.0	0.0	13.0	13.0
OB/GYN	116	81	22	13	116	81	22	13	116	0.0	0.0	12.0	12.0
Orthopedic surgery	91	54	24	13	91	55	24	13	91	0.0	0.0	8.0	8.0
Radiology	124	90	22	15	127	90	22	15	127	3.0	3.0	16.0	16.0
Other specialties	701	503	166	125	793	507	173	130	811	92.1	109.6	74.0	74.0
Overall	1,853	1,345	413	328	2,085	1,351	424	337	2,112	232.3	259.0	218.0	218.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	66	20	13	66	20	13	0	0	0.0	0.0
Cardio	71	11	18	59	23	19	52	27	21	0	0	0.0	0.0
Family practice	84	11	5	63	18	18	63	18	18	25	25	0.0	0.0
General IM	80	13	7	68	16	16	68	16	16	10	10	0.0	0.0
General surgery	73	13	15	63	22	15	63	22	15	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	19	11	8	8	0.4	0.6
Orthopedic surgery	75	19	6	60	26	14	60	26	14	0	0	0.0	0.0
Radiology	71	21	8	71	18	12	71	18	12	2	2	0.0	0.0
Other specialties	69	20	11	63	21	16	63	21	16	15	15	2.0	2.0
Overall	76	15	9	64	20	16	64	20	16	60	60	2.4	2.6

Table A-7 (Army): fixed GME, 5-year AFHPSP ADO, 2-year residency ADO, consecutive payback (6-year maximum), and fellowship ADO is a minimum of 4 years

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	18	63	18
AFHPSP (50/400)	291	82	291	82
FAP (0/60)	0	0	0	0
Total	354	100	354	100
Accession mix at YOP-1				
USUHS	59	19	59	19
AFHPSP direct	256	81	256	81
AFHPSP deferred	0	0	0	0
FAP	0	0	0	0
Total	315	100	315	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	1,131	1,131
AFHPSP deferred	0	0
FAP	0	0
Total	1,383	1,383
Training pipeline		
Interns	330	330
Residents/fellows	885	885
Total	1,214	1,215

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	818	919
Cost per fully trained duty physician ($)	259,607	250,926
Shortage of fully trained duty physicians	9.4	9.4
Cost adjusted for shortages ($M)	820	921
Cost as a percentage of baseline		112.3

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	96	21	15	133	105	22	18	145	11.7	23.9	16.0	16.0
Cardio	50	37	15	12	64	41	33	19	93	13.9	42.9	7.0	7.0
Family practice	491	335	98	98	532	384	150	137	670	40.5	179.5	50.0	50.0
General IM	309	258	61	59	378	291	87	83	461	69.0	151.6	55.0	55.0
General surgery	185	132	31	24	187	146	45	36	227	2.3	42.1	24.0	24.0
OB/GYN	170	133	31	20	184	140	31	20	191	13.7	21.4	21.0	21.0
Orthopedic surgery	145	118	28	15	161	127	28	16	170	16.2	25.0	20.0	20.0
Radiology	140	94	28	18	140	101	25	19	145	0.0	5.2	16.0	16.0
Other specialties	1104	840	298	234	1372	906	363	290	1559	268.2	455.2	135.0	135.0
Overall	2,715	2,044	612	495	3,151	2,240	783	639	3,662	435.6	946.8	344.0	344.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	73	16	11	72	15	13	0	0	0.0	0.0
Cardio	57	28	15	59	23	19	44	36	21	0	0	0.0	0.0
Family practice	68	15	17	63	18	18	57	22	20	25	25	0.0	0.0
General IM	64	16	20	68	16	16	63	19	18	10	10	0.0	0.0
General surgery	49	28	22	70	17	13	64	20	16	0	0	0.0	0.0
OB/GYN	73	16	11	72	17	11	73	16	11	8	8	0.0	0.0
Orthopedic surgery	55	36	10	73	17	10	74	16	9	0	0	0.0	0.0
Radiology	68	18	15	67	20	13	70	17	13	2	2	0.0	0.0
Other specialties	52	25	23	61	22	17	58	23	19	15	15	0.0	0.0
Overall	59	22	19	65	19	16	61	21	17	60	60	0.0	0.0

Table A-7 (Navy): fixed GME, 5-year AFHPSP ADO, 2-year residency ADO, consecutive payback (6-year maximum), and fellowship ADO is a minimum of 4 years

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	16	51	18
AFHPSP (50/400)	252	80	225	81
FAP (0/60)	12	4	2	1
Total	315	100	278	100
Accession mix at YOP-1				
USUHS	45	17	49	21
AFHPSP direct	169	63	165	70
AFHPSP deferred	42	16	20	8
FAP	12	4	2	1
Total	268	100	236	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	976	872
AFHPSP deferred	209	103
FAP	37	6
Total	1,426	1,186
Training pipeline		
Interns	235	235
GMOs	454	454
Residents/fellows	616	615
Total	1,305	1,304

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	627	708
Cost per fully trained duty physician ($)	293,810	281,061
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	627	708
Cost as a percentage of baseline		112.9

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	82	34	22	138	97	39	32	168	0.0	29.6	18.0	18.0
Cardio	25	8	16	12	35	8	19	15	41	10.0	16.2	4.0	4.0
Family practice	403	229	88	86	403	268	145	142	555	0.0	151.7	43.0	43.0
General IM	135	123	36	35	194	156	66	63	285	58.9	150.0	31.1	31.0
General surgery	139	108	29	19	156	91	41	25	156	17.1	17.1	8.9	8.8
OB/GYN	124	69	34	20	124	72	32	21	124	0.0	0.0	13.0	13.0
Orthopedic surgery	133	82	34	18	133	62	47	24	133	0.0	0.0	11.0	11.0
Radiology	112	75	21	16	112	66	34	26	125	0.0	13.3	14.0	14.0
Other specialties	806	491	190	159	840	458	267	208	933	34.4	127.5	78.0	78.0
Overall	2,015	1,267	481	387	2,136	1,276	688	556	2,520	120.5	505.4	221.0	220.8

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	59	25	16	58	23	19	0	0	0.0	0.0
Cardio	52	30	19	22	44	34	19	46	36	0	0	0.0	0.0
Family practice	65	20	15	57	22	21	48	26	26	25	25	3.8	0.0
General IM	73	14	13	63	19	18	55	23	22	10	10	0.0	0.0
General surgery	48	30	22	69	19	12	58	26	16	0	0	0.0	0.0
OB/GYN	83	12	5	56	28	16	58	25	17	8	8	0.0	0.0
Orthopedic surgery	69	19	13	61	25	13	47	35	18	0	0	0.0	0.0
Radiology	48	40	12	67	19	14	52	27	20	2	2	0.0	0.0
Other specialties	42	36	22	58	23	19	49	29	22	15	15	8.7	2.1
Overall	55	28	17	59	23	18	51	27	22	60	60	12.5	2.1

Table A-7 (Air Force): fixed GME, 5-year AFHPSP ADO, 2-year residency ADO, consecutive payback (6-year maximum), and fellowship ADO is a minimum of 4 years

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	22	51	23
AFHPSP (50/400)	174	77	174	77
FAP (0/60)	2	1	0	0
Total	228	100	225	100
Accession mix at YOP-1				
USUHS	48	24	48	24
AFHPSP direct	149	73	149	74
AFHPSP deferred	4	2	4	2
FAP	2	1	0	0
Total	204	100	201	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	677	677
AFHPSP deferred	18	18
FAP	5	0
Total	904	899
Training pipeline		
Interns	202	202
Residents/fellows	587	587
Total	789	789

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	528	583
Cost per fully trained duty physician ($)	253,215	247,469
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	528	583
Cost as a percentage of baseline		110.5

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	52	16	10	78	54	14	11	78	0.0	0.0	8.0	8.0
Cardio	31	27	10	8	46	29	24	14	66	14.6	35.4	5.0	5.0
Family practice	439	302	88	88	478	338	120	119	577	39.3	137.9	45.0	45.0
General IM	162	167	40	38	245	189	56	54	299	83.3	136.9	37.0	37.0
General surgery	111	70	25	17	111	74	22	18	114	0.0	3.3	13.0	13.0
OB/GYN	116	81	22	13	116	82	21	14	117	0.0	1.0	12.0	12.0
Orthopedic surgery	91	54	24	13	91	54	24	13	91	0.0	0.0	8.0	8.0
Radiology	124	90	22	15	127	97	24	18	139	3.0	15.5	16.0	16.0
Other specialties	701	503	166	125	793	525	202	148	875	92.1	174.0	74.0	74.0
Overall	1,853	1,345	413	328	2,085	1,441	508	408	2,357	232.3	504.0	218.0	218.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	66	20	13	69	18	13	0	0	0.0	0.0
Cardio	71	11	18	59	23	19	44	36	21	0	0	0.0	0.0
Family practice	84	11	5	63	18	18	58	21	21	25	25	0.0	0.0
General IM	80	13	7	68	16	16	63	19	18	10	10	0.0	0.0
General surgery	73	13	15	63	22	15	64	20	16	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	18	12	8	8	0.4	0.0
Orthopedic surgery	75	19	6	60	26	14	60	26	14	0	0	0.0	0.0
Radiology	71	21	8	71	18	12	70	17	13	2	2	0.0	0.0
Other specialties	69	20	11	63	21	16	60	23	17	15	15	2.0	0.0
Overall	76	15	9	64	20	16	61	22	17	60	60	2.4	0.0

Table A-8 (Army): fixed GME, 5-year AFHPSP ADO, fellowship ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	18	63	18
AFHPSP (50/400)	291	82	291	82
FAP (0/60)	0	0	0	0
Total	354	100	354	100
Accession mix at YOP-1				
USUHS	59	19	59	19
AFHPSP direct	256	81	256	81
AFHPSP deferred	0	0	0	0
FAP	0	0	0	0
Total	315	100	315	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	1,131	1,131
AFHPSP deferred	0	0
FAP	0	0
Total	1,383	1,383
Training pipeline		
Interns	330	330
Residents/fellows	885	884
Total	1,214	1,214

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	818	818
Cost per fully trained duty physician ($)	259,607	259,834
Shortage of fully trained duty physicians	9.4	9.4
Cost adjusted for shortages ($M)	820	821
Cost as a percentage of baseline		100.0

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	96	21	15	133	96	21	15	133	11.7	11.7	16.0	16.0
Cardio	50	37	15	12	64	41	31	19	91	13.9	40.8	7.0	7.0
Family practice	491	335	98	98	532	335	98	98	532	40.5	40.5	50.0	50.0
General IM	309	258	61	59	378	258	61	59	378	69.0	69.0	55.0	55.0
General surgery	185	132	31	24	187	132	31	24	187	2.3	2.3	24.0	24.0
OB/GYN	170	133	31	20	184	133	31	20	184	13.7	13.7	21.0	21.0
Orthopedic surgery	145	118	28	15	161	118	28	15	161	16.2	16.3	20.0	20.0
Radiology	140	94	28	18	140	95	28	18	140	0.0	0.0	16.0	16.0
Other specialties	1104	840	298	234	1372	833	283	229	1344	268.2	240.0	135.0	135.0
Overall	2,715	2,044	612	495	3,151	2,039	614	496	3,149	435.6	434.4	344.0	344.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	73	16	11	73	16	11	0	0	0.0	0.0
Cardio	57	28	15	59	23	19	45	35	21	0	0	0.0	0.0
Family practice	68	15	17	63	18	18	63	18	18	25	25	0.0	0.0
General IM	64	16	20	68	16	16	68	16	16	10	10	0.0	0.0
General surgery	49	28	22	70	17	13	70	17	13	0	0	0.0	0.0
OB/GYN	73	16	11	72	17	11	72	17	11	8	8	0.0	0.0
Orthopedic surgery	55	36	10	73	17	10	73	17	10	0	0	0.0	0.0
Radiology	68	18	15	67	20	13	68	20	13	2	2	0.0	0.0
Other specialties	52	25	23	61	22	17	62	21	17	15	15	0.0	0.0
Overall	59	22	19	65	19	16	65	19	16	60	60	0.0	0.0

Table A-8 (Navy): fixed GME, 5-year AFHPSP ADO, fellowship ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	16	51	16
AFHPSP (50/400)	252	80	251	80
FAP (0/60)	12	4	12	4
Total	315	100	315	100
Accession mix at YOP-1				
USUHS	45	17	45	17
AFHPSP direct	169	63	169	63
AFHPSP deferred	42	16	42	16
FAP	12	4	12	4
Total	268	100	268	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	976	975
AFHPSP deferred	209	207
FAP	37	37
Total	1,426	1,424
Training pipeline		
Interns	235	235
GMOs	454	454
Residents/fellows	616	616
Total	1,305	1,305

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	627	630
Cost per fully trained duty physician ($)	293,810	293,438
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	627	630
Cost as a percentage of baseline		100.4

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	82	34	22	138	82	34	22	138	0.0	0.0	18.0	18.0
Cardio	25	8	16	12	35	8	19	15	41	10.0	16.2	4.0	4.0
Family practice	403	229	88	86	403	229	88	86	403	0.0	0.0	43.0	43.0
General IM	135	123	36	35	194	123	36	35	194	58.9	58.9	31.1	31.1
General surgery	139	108	29	19	156	108	29	19	156	17.1	17.1	8.9	8.9
OB/GYN	124	69	34	20	124	69	34	20	124	0.0	0.0	13.0	13.0
Orthopedic surgery	133	82	34	18	133	82	34	18	133	0.0	0.0	11.0	11.0
Radiology	112	75	21	16	112	75	21	16	112	0.0	0.0	14.0	14.0
Other specialties	806	491	190	159	840	490	193	162	845	34.4	39.0	78.0	78.0
Overall	2,015	1,267	481	387	2,136	1,266	488	393	2,146	120.5	131.2	221.0	221.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	59	25	16	59	25	16	0	0	0.0	0.0
Cardio	52	30	19	22	44	34	19	46	36	0	0	0.0	0.0
Family practice	65	20	15	57	22	21	57	22	21	25	25	3.8	3.8
General IM	73	14	13	63	19	18	63	19	18	10	10	0.0	0.0
General surgery	48	30	22	69	19	12	69	19	12	0	0	0.0	0.0
OB/GYN	83	12	5	56	28	16	56	28	16	8	8	0.0	0.0
Orthopedic surgery	69	19	13	61	25	13	61	25	13	0	0	0.0	0.0
Radiology	48	40	12	67	19	14	67	19	14	2	2	0.0	0.0
Other specialties	42	36	22	58	23	19	58	23	19	15	15	8.7	8.7
Overall	55	28	17	59	23	18	59	23	18	60	60	12.5	12.5

Table A-8 (Air Force): fixed GME, 5-year AFHPSP ADO, fellowship ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	22	51	22
AFHPSP (50/400)	174	77	175	77
FAP (0/60)	2	1	3	1
Total	228	100	229	100
Accession mix at YOP-1				
USUHS	48	24	48	24
AFHPSP direct	149	73	149	73
AFHPSP deferred	4	2	4	2
FAP	2	1	2	1
Total	204	100	204	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	677	679
AFHPSP deferred	18	20
FAP	5	5
Total	904	908
Training pipeline		
Interns	202	202
Residents/fellows	587	587
Total	789	789

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	528	532
Cost per fully trained duty physician ($)	253,215	252,755
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	528	532
Cost as a percentage of baseline		100.8

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	52	16	10	78	52	16	10	78	0.0	0.0	8.0	8.0
Cardio	31	27	10	8	46	28	15	12	55	14.6	23.8	5.0	5.0
Family practice	439	302	88	88	478	302	88	88	478	39.3	39.3	45.0	45.0
General IM	162	167	40	38	245	167	40	38	245	83.3	83.3	37.0	37.0
General surgery	111	70	25	17	111	70	25	17	111	0.0	0.0	13.0	13.0
OB/GYN	116	81	22	13	116	81	22	13	116	0.0	0.0	12.0	12.0
Orthopedic surgery	91	54	24	13	91	54	24	13	91	0.0	0.0	8.0	8.0
Radiology	124	90	22	15	127	90	22	15	127	3.0	3.0	16.0	16.0
Other specialties	701	503	166	125	793	506	170	128	805	92.1	103.9	74.0	74.0
Overall	1,853	1,345	413	328	2,085	1,350	421	335	2,106	232.3	253.3	218.0	218.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	66	20	13	66	20	13	0	0	0.0	0.0
Cardio	71	11	18	59	23	19	52	27	21	0	0	0.0	0.0
Family practice	84	11	5	63	18	18	63	18	18	25	25	0.0	0.0
General IM	80	13	7	68	16	16	68	16	16	10	10	0.0	0.0
General surgery	73	13	15	63	22	15	63	22	15	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	19	11	8	8	0.4	0.6
Orthopedic surgery	75	19	6	60	26	14	60	26	14	0	0	0.0	0.0
Radiology	71	21	8	71	18	12	71	18	12	2	2	0.0	0.0
Other specialties	69	20	11	63	21	16	63	21	16	15	15	2.0	2.0
Overall	76	15	9	64	20	16	64	20	16	60	60	2.4	2.6

Table A-9 (Army): economic-optimal GME, 4-year AFHPSP ADO, and consecutive payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	16	63	16
AFHPSP (200/400)	261	68	275	69
FAP (0/60)	60	16	60	15
Total	384	100	398	100
Accession mix at YOP-1				
USUHS	59	18	59	17
AFHPSP direct	126	37	10	3
AFHPSP deferred	97	29	224	64
FAP	56	17	56	16
Total	339	100	350	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	1,010	1,069
AFHPSP deferred	478	979
FAP	176	176
Total	1,916	2,476
Training pipeline		
Interns	192	71
Residents/fellows	510	214
Total	702	285

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	655	613
Cost per fully trained duty physician ($)	241,242	225,916
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	655	613
Cost as a percentage of baseline		93.6

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	85	22	14	121	85	22	14	121	0.0	0.0	6.2	4.0
Cardio	50	35	8	7	50	35	9	6	50	0.0	0.0	3.9	1.6
Family practice	491	344	75	72	491	344	78	70	491	0.0	0.0	35.7	7.1
General IM	309	216	49	43	309	216	52	40	309	0.0	0.0	37.0	9.4
General surgery	185	130	35	21	185	129	34	21	185	0.0	0.0	8.5	6.1
OB/GYN	170	119	32	19	170	119	32	19	170	0.0	0.0	9.5	5.2
Orthopedic surgery	145	101	28	15	145	102	28	16	145	0.0	0.0	9.5	5.0
Radiology	140	98	27	15	140	98	26	16	140	0.0	0.0	6.7	4.5
Other specialties	1104	767	188	148	1104	751	200	153	1104	0.0	0.0	82.9	32.1
Overall	2,715	1,895	465	355	2,715	1,878	482	355	2,715	0.0	0.0	200.0	75.0

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	57	28	15	70	17	13	70	17	13	0	0	0.0	0.0
Family practice	68	15	17	70	15	15	70	16	14	25	25	25.0	25.0
General IM	64	16	20	70	16	14	70	17	13	10	10	10.0	10.0
General surgery	49	28	22	70	19	11	70	19	11	0	0	0.0	0.0
OB/GYN	73	16	11	70	19	11	70	19	11	8	8	8.0	8.0
Orthopedic surgery	55	36	10	70	20	10	70	19	11	0	0	0.0	0.0
Radiology	68	18	15	70	19	11	70	19	11	2	2	2.0	2.0
Other specialties	52	25	23	69	17	13	68	18	14	15	15	15.0	15.0
Overall	59	22	19	70	17	13	69	18	13	60	60	60.0	60.0

Table A-9 (Navy): economic-optimal GME, 4-year AFHPSP ADO, and consecutive payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	15	51	15
AFHPSP (200/400)	253	72	243	72
FAP (0/60)	45	13	45	13
Total	349	100	339	100
Accession mix at YOP-1				
USUHS	44	15	44	15
AFHPSP direct	54	18	6	2
AFHPSP deferred	158	53	200	68
FAP	42	14	42	14
Total	299	100	293	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	978	942
AFHPSP deferred	717	913
FAP	132	132
Total	2,031	2,191
Training pipeline		
Interns	110	54
GMOs	212	106
Residents/fellows	321	158
Total	644	318

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	515	482
Cost per fully trained duty physician ($)	253,377	238,153
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	515	482
Cost as a percentage of baseline		93.5

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	97	26	16	138	97	26	16	138	0.0	0.0	6.9	4.5
Cardio	25	17	4	3	25	17	4	3	25	0.0	0.0	1.0	0.8
Family practice	403	282	64	57	403	282	63	58	403	0.0	0.0	6.5	5.2
General IM	135	95	23	18	135	94	23	18	135	0.0	0.0	4.2	4.2
General surgery	139	116	24	17	157	106	26	16	148	18.4	8.6	9.8	9.8
OB/GYN	124	87	23	14	124	87	23	14	124	0.0	0.0	8.0	4.4
Orthopedic surgery	133	93	26	14	133	93	25	15	133	0.0	0.0	8.6	4.5
Radiology	112	78	19	14	112	78	21	13	112	0.0	0.0	12.9	3.6
Other specialties	806	564	130	111	806	564	138	104	806	0.0	0.0	43.6	20.7
Overall	2,015	1,429	340	265	2,033	1,419	349	256	2,024	18.4	8.6	101.5	57.7

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	52	30	19	70	17	13	70	17	13	0	0	0.0	0.0
Family practice	65	20	15	70	16	14	70	16	14	25	25	25.0	25.0
General IM	73	14	13	70	17	13	70	17	13	10	10	10.0	10.0
General surgery	48	30	22	74	15	11	72	17	11	0	0	0.0	0.0
OB/GYN	83	12	5	70	19	11	70	19	11	8	8	0.0	0.0
Orthopedic surgery	69	19	13	70	20	10	70	19	11	0	0	0.0	0.0
Radiology	48	40	12	70	17	13	70	19	11	2	2	0.0	0.0
Other specialties	42	36	22	70	16	14	70	17	13	15	15	10.0	10.0
Overall	55	28	17	70	17	13	70	17	13	60	60	45.0	45.0

Table A-9 (Air Force): economic-optimal GME, 4-year AFHPSP ADO, and consecutive payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	20	51	21
AFHPSP (150/400)	144	57	137	55
FAP (0/60)	60	23	60	24
Total	255	100	248	100
Accession mix at YOP-1				
USUHS	48	21	48	22
AFHPSP direct	59	26	5	2
AFHPSP deferred	65	28	112	50
FAP	57	25	58	26
Total	230	100	223	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	560	532
AFHPSP deferred	292	476
FAP	118	119
Total	1,174	1,331
Training pipeline		
Interns	111	53
Residents/fellows	333	175
Total	444	229

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	436	422
Cost per fully trained duty physician ($)	235,039	227,683
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	436	422
Cost as a percentage of baseline		96.9

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	55	15	9	78	55	15	9	78	0.0	0.0	4.0	2.6
Cardio	31	18	7	6	31	12	11	8	31	0.0	0.0	3.4	2.1
Family practice	439	302	71	67	439	299	73	67	439	0.0	0.0	26.7	6.3
General IM	162	111	27	24	162	93	38	31	162	0.0	0.0	18.2	9.9
General surgery	111	78	20	14	111	47	37	26	111	0.0	0.0	16.5	8.0
OB/GYN	116	81	22	13	116	81	22	13	116	0.0	0.0	6.0	3.3
Orthopedic surgery	91	64	18	9	91	64	17	10	91	0.0	0.0	6.0	3.1
Radiology	124	87	23	13	124	87	23	14	124	0.0	0.0	5.9	3.9
Other specialties	701	478	129	94	701	471	133	97	701	0.0	0.0	33.6	20.6
Overall	1,853	1,274	331	249	1,853	1,209	369	275	1,853	0.0	0.0	120.2	59.8

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	71	11	18	59	23	19	39	35	26	0	0	0.0	0.0
Family practice	84	11	5	69	16	15	68	17	15	25	25	25.0	25.0
General IM	80	13	7	68	17	15	58	23	19	10	10	10.0	10.0
General surgery	73	13	15	70	18	12	43	34	24	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	19	11	8	8	7.8	8.0
Orthopedic surgery	75	19	6	70	20	10	70	19	11	0	0	0.0	0.0
Radiology	71	21	8	70	19	11	70	18	11	2	2	2.0	2.0
Other specialties	69	20	11	68	18	13	67	19	14	15	15	15.0	15.0
Overall	76	15	9	69	18	13	65	20	15	60	60	59.8	60.0

Table A-10 (Army): economic-optimal GME, 4-year AFHPSP ADO, residency ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	16	63	17
AFHPSP (200/400)	261	68	254	67
FAP (0/60)	60	16	60	16
Total	384	100	377	100
Accession mix at YOP-1				
USUHS	59	18	59	18
AFHPSP direct	126	37	112	34
AFHPSP deferred	97	29	106	32
FAP	56	17	56	17
Total	339	100	334	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	1,010	983
AFHPSP deferred	478	499
FAP	176	176
Total	1,916	1,910
Training pipeline		
Interns	192	179
Residents/fellows	510	461
Total	702	639

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	655	655
Cost per fully trained duty physician ($)	241,242	241,138
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	655	655
Cost as a percentage of baseline		100.0

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	85	22	14	121	85	22	14	121	0.0	0.0	6.2	6.2
Cardio	50	35	8	7	50	35	8	7	50	0.0	0.0	3.9	2.7
Family practice	491	344	75	72	491	344	75	73	491	0.0	0.0	35.7	32.1
General IM	309	216	49	43	309	216	49	43	309	0.0	0.0	37.0	34.8
General surgery	185	130	35	21	185	130	31	24	185	0.0	0.0	8.5	22.6
OB/GYN	170	119	32	19	170	119	32	19	170	0.0	0.0	9.5	9.5
Orthopedic surgery	145	101	28	15	145	102	28	15	145	0.0	0.0	9.5	9.5
Radiology	140	98	27	15	140	98	27	15	140	0.0	0.0	6.7	6.7
Other specialties	1104	767	188	148	1104	762	195	147	1104	0.0	0.0	82.9	59.3
Overall	2,715	1,895	465	355	2,715	1,890	468	357	2,715	0.0	0.0	200.0	183.5

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	57	28	15	70	17	13	70	17	13	0	0	0.0	0.0
Family practice	68	15	17	70	15	15	70	15	15	25	25	25.0	25.0
General IM	64	16	20	70	16	14	70	16	14	10	10	10.0	10.0
General surgery	49	28	22	70	19	11	70	17	13	0	0	0.0	0.0
OB/GYN	73	16	11	70	19	11	70	19	11	8	8	8.0	8.0
Orthopedic surgery	55	36	10	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	68	18	15	70	19	11	70	19	11	2	2	2.0	2.0
Other specialties	52	25	23	69	17	13	69	18	13	15	15	15.0	15.0
Overall	59	22	19	70	17	13	70	17	13	60	60	60.0	60.0

Table A-10 (Navy): economic-optimal GME, 4-year AFHPSP ADO, residency ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	15	51	15
AFHPSP (200/400)	253	72	244	72
FAP (0/60)	45	13	45	13
Total	349	100	340	100
Accession mix at YOP-1				
USUHS	44	15	44	15
AFHPSP direct	54	18	37	13
AFHPSP deferred	158	53	169	58
FAP	42	14	42	14
Total	299	100	292	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	978	946
AFHPSP deferred	717	774
FAP	132	132
Total	2,031	2,056
Training pipeline		
Interns	110	89
GMOs	212	172
Residents/fellows	321	259
Total	644	519

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	515	503
Cost per fully trained duty physician ($)	253,377	247,747
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	515	503
Cost as a percentage of baseline		97.6

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	97	26	16	138	97	26	16	138	0.0	0.0	6.9	6.9
Cardio	25	17	4	3	25	18	4	3	25	0.0	0.0	1.0	0.9
Family practice	403	282	64	57	403	282	64	57	403	0.0	0.0	6.5	6.5
General IM	135	95	23	18	135	94	23	18	135	0.0	0.0	4.2	4.2
General surgery	139	116	24	17	157	112	23	18	154	18.4	14.9	9.8	9.8
OB/GYN	124	87	23	14	124	87	23	14	124	0.0	0.0	8.0	8.0
Orthopedic surgery	133	93	26	14	133	93	26	14	133	0.0	0.0	8.6	8.6
Radiology	112	78	19	14	112	78	19	14	112	0.0	0.0	12.9	7.8
Other specialties	806	564	130	111	806	564	131	111	806	0.0	0.0	43.6	32.3
Overall	2,015	1,429	340	265	2,033	1,425	339	265	2,030	18.4	14.9	101.5	84.9

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	52	30	19	70	17	13	70	17	13	0	0	0.0	0.0
Family practice	65	20	15	70	16	14	70	16	14	25	25	25.0	25.0
General IM	73	14	13	70	17	13	70	17	13	10	10	10.0	10.0
General surgery	48	30	22	74	15	11	73	15	12	0	0	0.0	0.0
OB/GYN	83	12	5	70	19	11	70	19	11	8	8	0.0	0.0
Orthopedic surgery	69	19	13	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	48	40	12	70	17	13	70	17	13	2	2	0.0	0.0
Other specialties	42	36	22	70	16	14	70	16	14	15	15	10.0	10.0
Overall	55	28	17	70	17	13	70	17	13	60	60	45.0	45.0

Table A-10 (Air Force): economic-optimal GME, 4-year AFHPSP ADO, residency ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	20	51	20
AFHPSP (150/400)	144	57	141	56
FAP (0/60)	60	23	60	24
Total	255	100	251	100
Accession mix at YOP-1				
USUHS	48	21	48	21
AFHPSP direct	59	26	48	21
AFHPSP deferred	65	28	73	32
FAP	57	25	57	25
Total	230	100	226	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	560	546
AFHPSP deferred	292	318
FAP	118	118
Total	1,174	1,186
Training pipeline		
Interns	111	97
Residents/fellows	333	304
Total	444	401

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	436	435
Cost per fully trained duty physician ($)	235,039	234,696
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	436	435
Cost as a percentage of baseline		99.9

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	55	15	9	78	55	15	9	78	0.0	0.0	4.0	4.0
Cardio	31	18	7	6	31	16	8	7	31	0.0	0.0	3.4	2.8
Family practice	439	302	71	67	439	300	73	66	439	0.0	0.0	26.7	14.4
General IM	162	111	27	24	162	111	27	24	162	0.0	0.0	18.2	17.0
General surgery	111	78	20	14	111	78	19	15	111	0.0	0.0	16.5	14.7
OB/GYN	116	81	22	13	116	81	22	13	116	0.0	0.0	6.0	6.0
Orthopedic surgery	91	64	18	9	91	64	18	9	91	0.0	0.0	6.0	6.0
Radiology	124	87	23	13	124	87	23	13	124	0.0	0.0	5.9	5.9
Other specialties	701	478	129	94	701	476	129	96	701	0.0	0.0	33.6	34.4
Overall	1,853	1,274	331	249	1,853	1,267	333	253	1,853	0.0	0.0	120.2	105.3

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	71	11	18	59	23	19	52	27	21	0	0	0.0	0.0
Family practice	84	11	5	69	16	15	68	17	15	25	25	25.0	25.0
General IM	80	13	7	68	17	15	68	17	15	10	10	10.0	10.0
General surgery	73	13	15	70	18	12	70	17	13	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	19	11	8	8	7.8	7.8
Orthopedic surgery	75	19	6	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	71	21	8	70	19	11	70	19	11	2	2	2.0	2.0
Other specialties	69	20	11	68	18	13	68	18	14	15	15	15.0	15.0
Overall	76	15	9	69	18	13	68	18	14	60	60	59.8	59.8

Table A-11 (Army): economic-optimal GME, 4-year AFHPSP ADO, 2-year residency ADO, consecutive payback (6-year maximum), and fellowship ADO is a minimum of 4 years

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	16	63	17
AFHPSP (200/400)	261	68	252	67
FAP (0/60)	60	16	60	16
Total	384	100	375	100
Accession mix at YOP-1				
USUHS	59	18	59	18
AFHPSP direct	126	37	60	18
AFHPSP deferred	97	29	157	47
FAP	56	17	56	17
Total	339	100	333	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	1,010	982
AFHPSP deferred	478	693
FAP	176	176
Total	1,916	2,104
Training pipeline		
Interns	192	125
Residents/fellows	510	356
Total	702	481

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	655	631
Cost per fully trained duty physician ($)	241,242	232,439
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	655	631
Cost as a percentage of baseline		96.4

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	85	22	14	121	85	23	14	121	0.0	0.0	6.2	6.2
Cardio	50	35	8	7	50	35	9	6	50	0.0	0.0	3.9	2.8
Family practice	491	344	75	72	491	344	73	74	491	0.0	0.0	35.7	14.6
General IM	309	216	49	43	309	216	49	44	309	0.0	0.0	37.0	19.6
General surgery	185	130	35	21	185	130	35	21	185	0.0	0.0	8.5	8.5
OB/GYN	170	119	32	19	170	119	32	19	170	0.0	0.0	9.5	9.5
Orthopedic surgery	145	101	28	15	145	102	28	15	145	0.0	0.0	9.5	9.5
Radiology	140	98	27	15	140	98	27	15	140	0.0	0.0	6.7	6.7
Other specialties	1104	767	188	148	1104	763	192	149	1104	0.0	0.0	82.9	53.4
Overall	2,715	1,895	465	355	2,715	1,891	467	358	2,715	0.0	0.0	200.0	130.7

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	57	28	15	70	17	13	70	17	13	0	0	0.0	0.0
Family practice	68	15	17	70	15	15	70	15	15	25	25	25.0	25.0
General IM	64	16	20	70	16	14	70	16	14	10	10	10.0	10.0
General surgery	49	28	22	70	19	11	70	19	11	0	0	0.0	0.0
OB/GYN	73	16	11	70	19	11	70	19	11	8	8	8.0	8.0
Orthopedic surgery	55	36	10	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	68	18	15	70	19	11	70	19	11	2	2	2.0	2.0
Other specialties	52	25	23	69	17	13	69	17	14	15	15	15.0	15.0
Overall	59	22	19	70	17	13	70	17	13	60	60	60.0	60.0

Table A-11 (Navy): economic-optimal GME, 4-year AFHPSP ADO, 2-year residency ADO, consecutive payback (6-year maximum), and fellowship ADO is a minimum of 4 years

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	15	51	15
AFHPSP (200/400)	253	72	244	72
FAP (0/60)	45	13	45	13
Total	349	100	340	100
Accession mix at YOP-1				
USUHS	44	15	44	15
AFHPSP direct	54	18	23	8
AFHPSP deferred	158	53	184	63
FAP	42	14	42	14
Total	299	100	293	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	978	947
AFHPSP deferred	717	842
FAP	132	132
Total	2,031	2,126
Training pipeline		
Interns	110	72
GMOs	212	140
Residents/fellows	321	209
Total	644	421

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	515	492
Cost per fully trained duty physician ($)	253,377	243,153
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	515	492
Cost as a percentage of baseline		95.6

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	97	26	16	138	97	26	16	138	0.0	0.0	6.9	5.5
Cardio	25	17	4	3	25	17	4	3	25	0.0	0.0	1.0	0.9
Family practice	403	282	64	57	403	282	59	62	403	0.0	0.0	6.5	8.5
General IM	135	95	23	18	135	94	23	18	135	0.0	0.0	4.2	4.2
General surgery	139	116	24	17	157	107	26	16	149	18.4	9.9	9.8	9.8
OB/GYN	124	87	23	14	124	87	23	14	124	0.0	0.0	8.0	6.0
Orthopedic surgery	133	93	26	14	133	93	26	14	133	0.0	0.0	8.6	6.2
Radiology	112	78	19	14	112	78	21	12	112	0.0	0.0	12.9	4.4
Other specialties	806	564	130	111	806	564	135	107	806	0.0	0.0	43.6	28.0
Overall	2,015	1,429	340	265	2,033	1,420	343	261	2,025	18.4	9.9	101.5	73.4

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	52	30	19	70	17	13	70	17	13	0	0	0.0	0.0
Family practice	65	20	15	70	16	14	70	15	15	25	25	25.0	25.0
General IM	73	14	13	70	17	13	70	17	13	10	10	10.0	10.0
General surgery	48	30	22	74	15	11	72	17	11	0	0	0.0	0.0
OB/GYN	83	12	5	70	19	11	70	19	11	8	8	0.0	0.0
Orthopedic surgery	69	19	13	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	48	40	12	70	17	13	70	19	11	2	2	0.0	0.0
Other specialties	42	36	22	70	16	14	70	17	13	15	15	10.0	10.0
Overall	55	28	17	70	17	13	70	17	13	60	60	45.0	45.0

Table A-11 (Air Force): economic-optimal GME, 4-year AFHPSP ADO, 2-year residency ADO, consecutive payback (6-year maximum), and fellowship ADO is a minimum of 4 years

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	20	51	21
AFHPSP (150/400)	144	57	133	55
FAP (0/60)	60	23	60	25
Total	255	100	244	100
Accession mix at YOP-1				
USUHS	48	21	47	22
AFHPSP direct	59	26	35	16
AFHPSP deferred	65	28	80	37
FAP	57	25	57	26
Total	230	100	220	100

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	560	517
AFHPSP deferred	292	344
FAP	118	118
Total	1,174	1,183
Training pipeline		
Interns	111	84
Residents/fellows	333	267
Total	444	351

a. Annual accession source constraints are in parentheses (minimum/maximum).
The USUHS constraint for the excursion is 58.65.

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	436	429
Cost per fully trained duty physician ($)	235,039	231,652
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	436	429
Cost as a percentage of baseline		98.6

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	55	15	9	78	55	15	9	78	0.0	0.0	4.0	4.0
Cardio	31	18	7	6	31	16	8	7	31	0.0	0.0	3.4	2.8
Family practice	439	302	71	67	439	300	71	68	439	0.0	0.0	26.7	11.1
General IM	162	111	27	24	162	103	30	29	162	0.0	0.0	18.2	13.5
General surgery	111	78	20	14	111	69	24	18	111	0.0	0.0	16.5	12.2
OB/GYN	116	81	22	13	116	81	22	13	116	0.0	0.0	6.0	6.0
Orthopedic surgery	91	64	18	9	91	64	18	9	91	0.0	0.0	6.0	6.0
Radiology	124	87	23	13	124	87	23	13	124	0.0	0.0	5.9	5.9
Other specialties	701	478	129	94	701	476	130	95	701	0.0	0.0	33.6	30.3
Overall	1,853	1,274	331	249	1,853	1,250	341	262	1,853	0.0	0.0	120.2	91.8

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	71	11	18	59	23	19	52	26	22	0	0	0.0	0.0
Family practice	84	11	5	69	16	15	68	16	15	25	25	25.0	25.0
General IM	80	13	7	68	17	15	63	19	18	10	10	10.0	10.0
General surgery	73	13	15	70	18	12	62	21	17	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	19	11	8	8	7.8	7.8
Orthopedic surgery	75	19	6	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	71	21	8	70	19	11	70	19	11	2	2	2.0	2.0
Other specialties	69	20	11	68	18	13	68	19	14	15	15	15.0	15.0
Overall	76	15	9	69	18	13	67	18	14	60	60	59.8	59.8

Table A-12 (Army): economic-optimal GME, 4-year AFHPSP ADO, fellowship ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	16	63	16
AFHPSP (200/400)	261	68	261	68
FAP (0/60)	60	16	60	16
Total	384	100	384	100
Accession mix at YOP-1				
USUHS	59	18	59	18
AFHPSP direct	126	37	123	36
AFHPSP deferred	97	29	100	29
FAP	56	17	56	17
Total	339	100	339	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	1,010	1,011
AFHPSP deferred	478	493
FAP	176	176
Total	1,916	1,932
Training pipeline		
Interns	192	190
Residents/fellows	510	501
Total	702	691

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	655	653
Cost per fully trained duty physician ($)	241,242	240,673
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	655	653
Cost as a percentage of baseline		99.8

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	85	22	14	121	85	22	14	121	0.0	0.0	6.2	6.2
Cardio	50	35	8	7	50	35	8	7	50	0.0	0.0	3.9	2.7
Family practice	491	344	75	72	491	344	75	72	491	0.0	0.0	35.7	35.7
General IM	309	216	49	43	309	216	49	43	309	0.0	0.0	37.0	34.8
General surgery	185	130	35	21	185	129	35	21	185	0.0	0.0	8.5	8.4
OB/GYN	170	119	32	19	170	119	32	19	170	0.0	0.0	9.5	9.5
Orthopedic surgery	145	101	28	15	145	101	28	15	145	0.0	0.0	9.5	9.5
Radiology	140	98	27	15	140	98	27	15	140	0.0	0.0	6.7	6.7
Other specialties	1104	767	188	148	1104	767	188	148	1104	0.0	0.0	82.9	81.8
Overall	2,715	1,895	465	355	2,715	1,895	465	355	2,715	0.0	0.0	200.0	195.3

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	57	28	15	70	17	13	70	17	13	0	0	0.0	0.0
Family practice	68	15	17	70	15	15	70	15	15	25	25	25.0	25.0
General IM	64	16	20	70	16	14	70	16	14	10	10	10.0	10.0
General surgery	49	28	22	70	19	11	70	19	11	0	0	0.0	0.0
OB/GYN	73	16	11	70	19	11	70	19	11	8	8	8.0	8.0
Orthopedic surgery	55	36	10	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	68	18	15	70	19	11	70	19	11	2	2	2.0	2.0
Other specialties	52	25	23	69	17	13	70	17	13	15	15	15.0	15.0
Overall	59	22	19	70	17	13	70	17	13	60	60	60.0	60.0

Table A-12 (Navy): economic-optimal GME, 4-year AFHPSP ADO, fellowship ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	15	51	15
AFHPSP (200/400)	253	72	253	72
FAP (0/60)	45	13	45	13
Total	349	100	349	100
Accession mix at YOP-1				
USUHS	44	15	44	15
AFHPSP direct	54	18	53	18
AFHPSP deferred	158	53	158	53
FAP	42	14	42	14
Total	299	100	298	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	978	977
AFHPSP deferred	717	719
FAP	132	132
Total	2,031	2,033
Training pipeline		
Interns	110	110
GMOs	212	212
Residents/fellows	321	319
Total	644	640

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	515	515
Cost per fully trained duty physician ($)	253,377	253,153
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	515	515
Cost as a percentage of baseline		99.9

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	97	26	16	138	97	26	16	138	0.0	0.0	6.9	6.9
Cardio	25	17	4	3	25	17	4	3	25	0.0	0.0	1.0	0.9
Family practice	403	282	64	57	403	282	64	57	403	0.0	0.0	6.5	6.5
General IM	135	95	23	18	135	95	23	18	135	0.0	0.0	4.2	3.7
General surgery	139	116	24	17	157	116	24	17	157	18.4	18.3	9.8	9.9
OB/GYN	124	87	23	14	124	87	23	14	124	0.0	0.0	8.0	8.0
Orthopedic surgery	133	93	26	14	133	93	26	14	133	0.0	0.0	8.6	8.6
Radiology	112	78	19	14	112	78	19	14	112	0.0	0.0	12.9	12.9
Other specialties	806	564	130	111	806	564	130	111	806	0.0	0.0	43.6	43.3
Overall	2,015	1,429	340	265	2,033	1,429	340	265	2,033	18.4	18.3	101.5	100.6

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	52	30	19	70	17	13	70	17	13	0	0	0.0	0.0
Family practice	65	20	15	70	16	14	70	16	14	25	25	25.0	25.0
General IM	73	14	13	70	17	13	70	17	13	10	10	10.0	10.0
General surgery	48	30	22	74	15	11	73	15	11	0	0	0.0	0.0
OB/GYN	83	12	5	70	19	11	70	19	11	8	8	0.0	0.0
Orthopedic surgery	69	19	13	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	48	40	12	70	17	13	70	17	13	2	2	0.0	0.0
Other specialties	42	36	22	70	16	14	70	16	14	15	15	10.0	10.0
Overall	55	28	17	70	17	13	70	17	13	60	60	45.0	45.0

Table A-12 (Air Force): economic-optimal GME, 4-year AFHPSP ADO, fellowship ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	20	51	20
AFHPSP (150/400)	144	57	143	56
FAP (0/60)	60	23	60	24
Total	255	100	254	100
Accession mix at YOP-1				
USUHS	48	21	48	21
AFHPSP direct	59	26	58	25
AFHPSP deferred	65	28	65	28
FAP	57	25	57	25
Total	230	100	228	100

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	560	554
AFHPSP deferred	292	292
FAP	118	118
Total	1,174	1,169
Training pipeline		
Interns	111	109
Residents/fellows	333	327
Total	444	436

a. Annual accession source constraints are in parentheses (minimum/maximum).
The USUHS constraint for the excursion is 58.65.

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	436	435
Cost per fully trained duty physician ($)	235,039	234,530
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	436	435
Cost as a percentage of baseline		99.8

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	55	15	9	78	55	15	9	78	0.0	0.0	4.0	4.0
Cardio	31	18	7	6	31	16	8	7	31	0.0	0.0	3.4	2.8
Family practice	439	302	71	67	439	302	71	67	439	0.0	0.0	26.7	26.7
General IM	162	111	27	24	162	111	27	24	162	0.0	0.0	18.2	17.0
General surgery	111	78	20	14	111	78	20	14	111	0.0	0.0	16.5	16.4
OB/GYN	116	81	22	13	116	81	22	13	116	0.0	0.0	6.0	6.0
Orthopedic surgery	91	64	18	9	91	64	18	9	91	0.0	0.0	6.0	6.0
Radiology	124	87	23	13	124	87	23	13	124	0.0	0.0	5.9	5.9
Other specialties	701	478	129	94	701	476	130	95	701	0.0	0.0	33.6	32.9
Overall	1,853	1,274	331	249	1,853	1,269	333	251	1,853	0.0	0.0	120.2	117.7

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	71	11	18	59	23	19	52	27	21	0	0	0.0	0.0
Family practice	84	11	5	69	16	15	69	16	15	25	25	25.0	25.0
General IM	80	13	7	68	17	15	68	17	15	10	10	10.0	10.0
General surgery	73	13	15	70	18	12	70	18	12	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	19	11	8	8	7.8	7.8
Orthopedic surgery	75	19	6	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	71	21	8	70	19	11	70	19	11	2	2	2.0	2.0
Other specialties	69	20	11	68	18	13	68	19	14	15	15	15.0	15.0
Overall	76	15	9	69	18	13	68	18	14	60	60	59.8	59.8

Table A-13 (Army): economic-optimal GME, 5-year AFHPSP ADO, and consecutive payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	18	63	18
AFHPSP (50/400)	249	72	234	66
FAP (0/60)	35	10	60	17
Total	347	100	357	100
Accession mix at YOP-1				
USUHS	59	19	59	19
AFHPSP direct	65	21	2	1
AFHPSP deferred	148	48	198	63
FAP	33	11	56	18
Total	305	100	315	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	965	908
AFHPSP deferred	628	854
FAP	103	176
Total	1,948	2,190
Training pipeline		
Interns	131	62
Residents/fellows	369	190
Total	500	252

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	631	605
Cost per fully trained duty physician ($)	232,573	222,716
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	631	605
Cost as a percentage of baseline		95.8

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	85	22	14	121	85	22	14	121	0.0	0.0	6.0	3.8
Cardio	50	35	8	7	50	35	10	5	50	0.0	0.0	3.7	1.5
Family practice	491	344	66	81	491	344	73	74	491	0.0	0.0	10.3	4.4
General IM	309	216	48	44	309	216	51	42	309	0.0	0.0	27.8	7.8
General surgery	185	129	35	21	185	130	35	21	185	0.0	0.0	7.9	5.6
OB/GYN	170	119	32	19	170	119	32	19	170	0.0	0.0	9.5	5.2
Orthopedic surgery	145	102	28	15	145	101	28	16	145	0.0	0.0	9.5	5.0
Radiology	140	98	27	15	140	98	26	16	140	0.0	0.0	6.6	4.3
Other specialties	1104	769	187	148	1104	752	199	153	1104	0.0	0.0	56.4	27.6
Overall	2,715	1,896	454	364	2,715	1,879	476	360	2,715	0.0	0.0	137.7	65.3

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	70	19	11	70	18	12	0	0	0.0	0.0
Cardio	57	28	15	70	17	13	70	19	11	0	0	0.0	0.0
Family practice	68	15	17	70	13	17	70	15	15	25	25	0.0	25.0
General IM	64	16	20	70	16	14	70	16	14	10	10	10.0	10.0
General surgery	49	28	22	70	19	11	70	19	11	0	0	0.0	0.0
OB/GYN	73	16	11	70	19	11	70	19	11	8	8	8.0	8.0
Orthopedic surgery	55	36	10	70	20	10	70	19	11	0	0	0.0	0.0
Radiology	68	18	15	70	19	11	70	19	11	2	2	2.0	2.0
Other specialties	52	25	23	70	17	13	68	18	14	15	15	15.0	15.0
Overall	59	22	19	70	17	13	69	18	13	60	60	35.0	60.0

Table A-13 (Navy): economic-optimal GME, 5-year AFHPSP ADO, and consecutive payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	17	51	17
AFHPSP (50/400)	229	76	199	67
FAP (0/60)	20	7	45	15
Total	300	100	295	100
Accession mix at YOP-1				
USUHS	44	17	46	18
AFHPSP direct	34	13	0	0
AFHPSP deferred	162	63	169	66
FAP	19	7	42	17
Total	259	100	257	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	890	773
AFHPSP deferred	711	766
FAP	59	132
Total	1,864	1,876
Training pipeline		
Interns	86	49
GMOs	166	96
Residents/fellows	250	145
Total	502	290

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	498	475
Cost per fully trained duty physician ($)	245,746	234,716
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	498	475
Cost as a percentage of baseline		95.4

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	97	25	16	138	97	25	16	138	0.0	0.0	6.6	4.3
Cardio	25	18	4	3	25	17	5	3	25	0.0	0.0	1.0	0.7
Family practice	403	282	52	69	403	282	61	60	403	0.0	0.0	4.7	3.3
General IM	135	95	21	19	135	94	22	18	135	0.0	0.0	5.1	2.7
General surgery	139	108	26	16	150	105	26	16	147	10.5	7.8	5.4	4.0
OB/GYN	124	87	23	14	124	87	23	14	124	0.0	0.0	7.9	4.3
Orthopedic surgery	133	93	26	14	133	93	25	14	133	0.0	0.0	8.5	4.5
Radiology	112	78	20	13	112	78	21	13	112	0.0	0.0	10.6	3.5
Other specialties	806	564	133	109	806	556	144	106	806	0.0	0.0	29.7	19.3
Overall	2,015	1,421	332	272	2,026	1,410	353	260	2,023	10.5	7.8	79.4	46.6

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	70	18	12	70	18	12	0	0	0.0	0.0
Cardio	52	30	19	70	18	12	70	19	11	0	0	0.0	0.0
Family practice	65	20	15	70	13	17	70	15	15	25	25	0.0	25.0
General IM	73	14	13	70	16	14	70	16	14	10	10	10.0	10.0
General surgery	48	30	22	72	17	10	72	18	11	0	0	0.0	0.0
OB/GYN	83	12	5	70	19	11	70	19	11	8	8	0.0	0.0
Orthopedic surgery	69	19	13	70	20	10	70	19	11	0	0	0.0	0.0
Radiology	48	40	12	70	18	12	70	19	11	2	2	0.0	0.0
Other specialties	42	36	22	70	17	13	69	18	13	15	15	10.0	10.0
Overall	55	28	17	70	16	13	70	17	13	60	60	20.0	45.0

Table A-13 (Air Force): economic-optimal GME, 5-year AFHPSP ADO, and consecutive payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	22	51	22
AFHPSP (50/400)	126	53	116	51
FAP (0/60)	59	25	60	26
Total	235	100	227	100
Accession mix at YOP-1				
USUHS	48	23	48	23
AFHPSP direct	33	15	1	0
AFHPSP deferred	76	36	99	48
FAP	56	26	58	28
Total	213	100	206	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	490	452
AFHPSP deferred	316	415
FAP	116	119
Total	1,126	1,190
Training pipeline		
Interns	82	49
Residents/fellows	271	163
Total	353	212

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	427	418
Cost per fully trained duty physician ($)	230,373	225,758
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	427	418
Cost as a percentage of baseline		98.0

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	55	14	9	78	55	14	9	78	0.0	0.0	3.9	2.5
Cardio	31	18	7	6	31	13	11	7	31	0.0	0.0	3.4	2.1
Family practice	439	297	70	71	439	297	71	71	439	0.0	0.0	5.4	4.0
General IM	162	107	29	26	162	93	38	32	162	0.0	0.0	16.2	9.7
General surgery	111	78	19	14	111	47	39	25	111	0.0	0.0	15.0	7.9
OB/GYN	116	81	22	13	116	81	22	13	116	0.0	0.0	6.0	3.2
Orthopedic surgery	91	64	18	9	91	64	17	10	91	0.0	0.0	5.9	3.1
Radiology	124	88	23	13	124	88	23	14	124	0.0	0.0	5.8	3.8
Other specialties	701	478	127	95	701	471	133	97	701	0.0	0.0	29.7	18.7
Overall	1,853	1,266	330	258	1,853	1,208	368	276	1,853	0.0	0.0	91.3	55.1

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	71	11	18	58	23	19	41	36	23	0	0	0.0	0.0
Family practice	84	11	5	68	16	16	68	16	16	25	25	23.7	25.0
General IM	80	13	7	66	18	16	57	23	20	10	10	10.0	10.0
General surgery	73	13	15	70	17	13	43	35	22	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	19	11	8	8	7.8	8.0
Orthopedic surgery	75	19	6	70	20	10	70	19	11	0	0	0.0	0.0
Radiology	71	21	8	71	19	11	71	18	11	2	2	2.0	2.0
Other specialties	69	20	11	68	18	14	67	19	14	15	15	15.0	15.0
Overall	76	15	9	68	18	14	65	20	15	60	60	58.5	60.0

Table A-14 (Army): economic-optimal GME, 5-year AFHPSP ADO, residency ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	18	63	18
AFHPSP (50/400)	249	72	247	72
FAP (0/60)	35	10	35	10
Total	347	100	345	100
Accession mix at YOP-1				
USUHS	59	19	59	20
AFHPSP direct	65	21	61	20
AFHPSP deferred	148	48	150	50
FAP	33	11	33	11
Total	305	100	303	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	965	957
AFHPSP deferred	628	646
FAP	103	103
Total	1,948	1,957
Training pipeline		
Interns	131	126
Residents/fellows	369	347
Total	500	473

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	818	825
Cost per fully trained duty physician ($)	301,257	303,814
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	818	825
Cost as a percentage of baseline		100.8

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	85	22	14	121	85	22	14	121	0.0	0.0	6.0	6.0
Cardio	50	35	8	7	50	35	9	6	50	0.0	0.0	3.7	2.6
Family practice	491	344	66	81	491	344	66	81	491	0.0	0.0	10.3	10.3
General IM	309	216	48	44	309	216	48	44	309	0.0	0.0	27.8	25.6
General surgery	185	129	35	21	185	129	35	21	185	0.0	0.0	7.9	7.8
OB/GYN	170	119	32	19	170	119	32	19	170	0.0	0.0	9.5	9.5
Orthopedic surgery	145	102	28	15	145	101	28	15	145	0.0	0.0	9.5	9.5
Radiology	140	98	27	15	140	98	27	15	140	0.0	0.0	6.6	6.6
Other specialties	1104	769	187	148	1104	762	191	151	1104	0.0	0.0	56.4	52.7
Overall	2,715	1,896	454	364	2,715	1,889	459	367	2,715	0.0	0.0	137.7	130.6

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	57	28	15	70	17	13	70	17	13	0	0	0.0	0.0
Family practice	68	15	17	70	13	17	70	13	17	25	25	0.0	0.0
General IM	64	16	20	70	16	14	70	16	14	10	10	10.0	10.0
General surgery	49	28	22	70	19	11	70	19	11	0	0	0.0	0.0
OB/GYN	73	16	11	70	19	11	70	19	11	8	8	8.0	8.0
Orthopedic surgery	55	36	10	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	68	18	15	70	19	11	70	19	11	2	2	2.0	2.0
Other specialties	52	25	23	70	17	13	69	17	14	15	15	15.0	15.0
Overall	59	22	19	70	17	13	70	17	14	60	60	35.0	35.0

Table A-14 (Navy): economic-optimal GME, 5-year AFHPSP ADO, residency ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	17	51	17
AFHPSP (50/400)	229	76	218	74
FAP (0/60)	20	7	25	8
Total	300	100	294	100
Accession mix at YOP-1				
USUHS	44	17	44	17
AFHPSP direct	34	13	23	9
AFHPSP deferred	162	63	168	66
FAP	19	7	19	7
Total	259	100	254	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	890	847
AFHPSP deferred	711	731
FAP	59	66
Total	1,864	1,848
Training pipeline		
Interns	86	74
GMOs	166	143
Residents/fellows	250	220
Total	502	436

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	498	490
Cost per fully trained duty physician ($)	245,746	241,698
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	498	490
Cost as a percentage of baseline		98.5

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	97	25	16	138	97	25	16	138	0.0	0.0	6.6	6.6
Cardio	25	18	4	3	25	18	4	3	25	0.0	0.0	1.0	0.8
Family practice	403	282	52	69	403	282	54	67	403	0.0	0.0	4.7	2.3
General IM	135	95	21	19	135	94	22	18	135	0.0	0.0	5.1	3.2
General surgery	139	108	26	16	150	110	24	18	152	10.5	12.9	5.4	6.7
OB/GYN	124	87	23	14	124	87	23	14	124	0.0	0.0	7.9	7.9
Orthopedic surgery	133	93	26	14	133	93	26	14	133	0.0	0.0	8.5	8.5
Radiology	112	78	20	13	112	78	19	14	112	0.0	0.0	10.6	7.6
Other specialties	806	564	133	109	806	564	134	108	806	0.0	0.0	29.7	24.9
Overall	2,015	1,421	332	272	2,026	1,423	333	272	2,028	10.5	12.9	79.4	68.5

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	70	18	12	70	18	12	0	0	0.0	0.0
Cardio	52	30	19	70	18	12	70	18	12	0	0	0.0	0.0
Family practice	65	20	15	70	13	17	70	13	17	25	25	0.0	4.7
General IM	73	14	13	70	16	14	70	16	14	10	10	10.0	10.0
General surgery	48	30	22	72	17	10	73	16	12	0	0	0.0	0.0
OB/GYN	83	12	5	70	19	11	70	19	11	8	8	0.0	0.0
Orthopedic surgery	69	19	13	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	48	40	12	70	18	12	70	17	13	2	2	0.0	0.0
Other specialties	42	36	22	70	17	13	70	17	13	15	15	10.0	10.0
Overall	55	28	17	70	16	13	70	16	13	60	60	20.0	24.7

Table A-14 (Air Force): economic-optimal GME, 5-year AFHPSP ADO, residency ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	22	51	22
AFHPSP (50/400)	126	53	124	53
FAP (0/60)	59	25	59	25
Total	235	100	234	100
Accession mix at YOP-1				
USUHS	48	23	48	23
AFHPSP direct	33	15	31	15
AFHPSP deferred	76	36	76	36
FAP	56	26	57	27
Total	213	100	212	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	490	483
AFHPSP deferred	316	318
FAP	116	117
Total	1,126	1,121
Training pipeline		
Interns	82	80
Residents/fellows	271	263
Total	353	343

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	427	427
Cost per fully trained duty physician ($)	230,373	230,671
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	427	427
Cost as a percentage of baseline		100.1

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	55	14	9	78	55	14	9	78	0.0	0.0	3.9	3.9
Cardio	31	18	7	6	31	16	8	7	31	0.0	0.0	3.4	2.8
Family practice	439	297	70	71	439	297	70	71	439	0.0	0.0	5.4	5.4
General IM	162	107	29	26	162	107	29	26	162	0.0	0.0	16.2	15.1
General surgery	111	78	19	14	111	78	19	14	111	0.0	0.0	15.0	14.9
OB/GYN	116	81	22	13	116	81	22	13	116	0.0	0.0	6.0	6.0
Orthopedic surgery	91	64	18	9	91	64	18	9	91	0.0	0.0	5.9	5.9
Radiology	124	88	23	13	124	88	23	13	124	0.0	0.0	5.8	5.8
Other specialties	701	478	127	95	701	476	129	96	701	0.0	0.0	29.7	28.6
Overall	1,853	1,266	330	258	1,853	1,261	332	259	1,853	0.0	0.0	91.3	88.3

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	71	11	18	58	23	19	52	26	21	0	0	0.0	0.0
Family practice	84	11	5	68	16	16	68	16	16	25	25	23.7	24.2
General IM	80	13	7	66	18	16	66	18	16	10	10	10.0	10.0
General surgery	73	13	15	70	17	13	70	17	13	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	19	11	8	8	7.8	7.8
Orthopedic surgery	75	19	6	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	71	21	8	71	19	11	71	19	11	2	2	2.0	2.0
Other specialties	69	20	11	68	18	14	68	18	14	15	15	15.0	15.0
Overall	76	15	9	68	18	14	68	18	14	60	60	58.5	59.0

Table A-15 (Army): economic-optimal GME, 5-year AFHPSP ADO, 2-year residency ADO, consecutive payback (6-year maximum), and fellowship ADO is a minimum of 4 years

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	18	63	19
AFHPSP (50/400)	249	72	234	69
FAP (0/60)	35	10	43	13
Total	347	100	339	100
Accession mix at YOP-1				
USUHS	59	19	59	19
AFHPSP direct	65	21	43	14
AFHPSP deferred	148	48	159	52
FAP	33	11	44	14
Total	305	100	305	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	965	920
AFHPSP deferred	628	687
FAP	103	128
Total	1,948	1,986
Training pipeline		
Interns	131	109
Residents/fellows	369	315
Total	500	423

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	818	919
Cost per fully trained duty physician ($)	301,257	338,430
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	818	919
Cost as a percentage of baseline		112.3

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	85	22	14	121	85	22	14	121	0.0	0.0	6.0	6.0
Cardio	50	35	8	7	50	35	9	6	50	0.0	0.0	3.7	2.6
Family practice	491	344	66	81	491	344	65	82	491	0.0	0.0	10.3	7.3
General IM	309	216	48	44	309	216	48	44	309	0.0	0.0	27.8	17.5
General surgery	185	129	35	21	185	130	35	21	185	0.0	0.0	7.9	7.9
OB/GYN	170	119	32	19	170	119	32	19	170	0.0	0.0	9.5	9.5
Orthopedic surgery	145	102	28	15	145	102	29	15	145	0.0	0.0	9.5	9.5
Radiology	140	98	27	15	140	98	27	15	140	0.0	0.0	6.6	6.6
Other specialties	1104	769	187	148	1104	764	191	150	1104	0.0	0.0	56.4	46.5
Overall	2,715	1,896	454	364	2,715	1,891	457	367	2,715	0.0	0.0	137.7	113.4

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	57	28	15	70	17	13	70	17	13	0	0	0.0	0.0
Family practice	68	15	17	70	13	17	70	13	17	25	25	0.0	7.6
General IM	64	16	20	70	16	14	70	16	14	10	10	10.0	10.0
General surgery	49	28	22	70	19	11	70	19	11	0	0	0.0	0.0
OB/GYN	73	16	11	70	19	11	70	19	11	8	8	8.0	8.0
Orthopedic surgery	55	36	10	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	68	18	15	70	19	11	70	19	11	2	2	2.0	2.0
Other specialties	52	25	23	70	17	13	69	17	14	15	15	15.0	15.0
Overall	59	22	19	70	17	13	70	17	14	60	60	35.0	42.6

Table A-15 (Navy): economic-optimal GME, 5-year AFHPSP ADO, 2-year residency ADO, consecutive payback (6-year maximum), and fellowship ADO is a minimum of 4 years

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	17	51	17
AFHPSP (50/400)	229	76	204	68
FAP (0/60)	20	7	43	15
Total	300	100	298	100
Accession mix at YOP-1				
USUHS	44	17	44	17
AFHPSP direct	34	13	10	4
AFHPSP deferred	162	63	164	63
FAP	19	7	41	16
Total	259	100	259	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	890	791
AFHPSP deferred	711	739
FAP	59	128
Total	1,864	1,861
Training pipeline		
Interns	86	58
GMOs	166	113
Residents/fellows	250	174
Total	502	345

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	498	479
Cost per fully trained duty physician ($)	245,746	236,849
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	498	479
Cost as a percentage of baseline		96.3

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	97	25	16	138	97	26	16	138	0.0	0.0	6.6	5.3
Cardio	25	18	4	3	25	17	4	3	25	0.0	0.0	1.0	0.8
Family practice	403	282	52	69	403	282	60	61	403	0.0	0.0	4.7	3.5
General IM	135	95	21	19	135	95	22	18	135	0.0	0.0	5.1	3.0
General surgery	139	108	26	16	150	106	26	16	148	10.5	9.0	5.4	4.6
OB/GYN	124	87	23	14	124	87	23	14	124	0.0	0.0	7.9	5.9
Orthopedic surgery	133	93	26	14	133	93	26	14	133	0.0	0.0	8.5	6.1
Radiology	112	78	20	13	112	78	21	12	112	0.0	0.0	10.6	4.2
Other specialties	806	564	133	109	806	564	134	108	806	0.0	0.0	29.7	21.5
Overall	2,015	1,421	332	272	2,026	1,419	343	262	2,024	10.5	9.0	79.4	54.9

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	70	18	12	70	18	12	0	0	0.0	0.0
Cardio	52	30	19	70	18	12	70	18	12	0	0	0.0	0.0
Family practice	65	20	15	70	13	17	70	15	15	25	25	0.0	23.4
General IM	73	14	13	70	16	14	70	16	14	10	10	10.0	10.0
General surgery	48	30	22	72	17	10	72	18	11	0	0	0.0	0.0
OB/GYN	83	12	5	70	19	11	70	19	11	8	8	0.0	0.0
Orthopedic surgery	69	19	13	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	48	40	12	70	18	12	70	19	11	2	2	0.0	0.0
Other specialties	42	36	22	70	17	13	70	17	13	15	15	10.0	10.0
Overall	55	28	17	70	16	13	70	17	13	60	60	20.0	43.4

Table A-15 (Air Force): economic-optimal GME, 5-year AFHPSP ADO, 2-year residency ADO, consecutive payback (6-year maximum), and fellowship ADO is a minimum of 4 years

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	22	51	22
AFHPSP (50/400)	126	53	120	52
FAP (0/60)	59	25	60	26
Total	235	100	230	100
Accession mix at YOP-1				
USUHS	48	23	48	23
AFHPSP direct	33	15	26	12
AFHPSP deferred	76	36	76	37
FAP	56	26	57	28
Total	213	100	208	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	490	465
AFHPSP deferred	316	320
FAP	116	118
Total	1,126	1,107
Training pipeline		
Interns	82	75
Residents/fellows	271	248
Total	353	323

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	427	425
Cost per fully trained duty physician ($)	230,373	229,535
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	427	425
Cost as a percentage of baseline		99.6

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	55	14	9	78	55	14	9	78	0.0	0.0	3.9	3.9
Cardio	31	18	7	6	31	16	8	7	31	0.0	0.0	3.4	2.8
Family practice	439	297	70	71	439	297	71	71	439	0.0	0.0	5.4	5.4
General IM	162	107	29	26	162	102	31	29	162	0.0	0.0	16.2	13.5
General surgery	111	78	19	14	111	70	23	18	111	0.0	0.0	15.0	12.6
OB/GYN	116	81	22	13	116	81	22	13	116	0.0	0.0	6.0	6.0
Orthopedic surgery	91	64	18	9	91	64	18	9	91	0.0	0.0	5.9	5.9
Radiology	124	88	23	13	124	88	23	13	124	0.0	0.0	5.8	5.8
Other specialties	701	478	127	95	701	476	129	96	701	0.0	0.0	29.7	27.3
Overall	1,853	1,266	330	258	1,853	1,248	339	266	1,853	0.0	0.0	91.3	83.2

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	71	11	18	58	23	19	52	27	22	0	0	0.0	0.0
Family practice	84	11	5	68	16	16	68	16	16	25	25	23.7	25.0
General IM	80	13	7	66	18	16	63	19	18	10	10	10.0	10.0
General surgery	73	13	15	70	17	13	63	21	17	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	19	11	8	8	7.8	7.8
Orthopedic surgery	75	19	6	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	71	21	8	71	19	11	71	19	11	2	2	2.0	2.0
Other specialties	69	20	11	68	18	14	68	18	14	15	15	15.0	15.0
Overall	76	15	9	68	18	14	67	18	14	60	60	58.5	59.8

Table A-16 (Army): economic-optimal GME, 5-year AFHPSP ADO, fellowship ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (63/63)	63	18	63	18
AFHPSP (50/400)	249	72	249	72
FAP (0/60)	35	10	35	10
Total	347	100	347	100
Accession mix at YOP-1				
USUHS	59	19	59	19
AFHPSP direct	65	21	63	21
AFHPSP deferred	148	48	150	49
FAP	33	11	33	11
Total	305	100	305	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	252	252
AFHPSP students	965	965
AFHPSP deferred	628	641
FAP	103	103
Total	1,948	1,961
Training pipeline		
Interns	131	128
Residents/fellows	369	360
Total	500	488

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	818	818
Cost per fully trained duty physician ($)	301,257	301,405
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	818	818
Cost as a percentage of baseline		100.0

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	121	85	22	14	121	85	22	14	121	0.0	0.0	6.0	6.0
Cardio	50	35	8	7	50	35	9	6	50	0.0	0.0	3.7	2.6
Family practice	491	344	66	81	491	344	66	81	491	0.0	0.0	10.3	10.3
General IM	309	216	48	44	309	216	48	44	309	0.0	0.0	27.8	25.6
General surgery	185	129	35	21	185	130	35	21	185	0.0	0.0	7.9	7.8
OB/GYN	170	119	32	19	170	119	32	19	170	0.0	0.0	9.5	9.5
Orthopedic surgery	145	102	28	15	145	102	28	15	145	0.0	0.0	9.5	9.5
Radiology	140	98	27	15	140	98	27	15	140	0.0	0.0	6.6	6.6
Other specialties	1104	769	187	148	1104	769	187	148	1104	0.0	0.0	56.4	55.2
Overall	2,715	1,896	454	364	2,715	1,896	455	364	2,715	0.0	0.0	137.7	133.1

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	71	20	8	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	57	28	15	70	17	13	70	17	13	0	0	0.0	0.0
Family practice	68	15	17	70	13	17	70	13	17	25	25	0.0	0.0
General IM	64	16	20	70	16	14	70	16	14	10	10	10.0	10.0
General surgery	49	28	22	70	19	11	70	19	11	0	0	0.0	0.0
OB/GYN	73	16	11	70	19	11	70	19	11	8	8	8.0	8.0
Orthopedic surgery	55	36	10	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	68	18	15	70	19	11	70	19	11	2	2	2.0	2.0
Other specialties	52	25	23	70	17	13	70	17	13	15	15	15.0	15.0
Overall	59	22	19	70	17	13	70	17	13	60	60	35.0	35.0

Table A-16 (Navy): economic-optimal GME, 5-year AFHPSP ADO, fellowship ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	17	51	17
AFHPSP (50/400)	229	76	229	76
FAP (0/60)	20	7	20	7
Total	300	100	300	100
Accession mix at YOP-1				
USUHS	44	17	44	17
AFHPSP direct	34	13	33	13
AFHPSP deferred	162	63	163	63
FAP	19	7	19	7
Total	259	100	258	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	890	889
AFHPSP deferred	711	712
FAP	59	59
Total	1,864	1,864
Training pipeline		
Interns	86	86
GMOs	166	165
Residents/fellows	250	248
Total	502	498

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	498	497
Cost per fully trained duty physician ($)	245,746	245,498
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	498	497
Cost as a percentage of baseline		99.9

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	138	97	25	16	138	97	25	16	138	0.0	0.0	6.6	6.6
Cardio	25	18	4	3	25	18	4	3	25	0.0	0.0	1.0	0.8
Family practice	403	282	52	69	403	282	52	69	403	0.0	0.0	4.7	4.7
General IM	135	95	21	19	135	94	21	19	135	0.0	0.0	5.1	4.6
General surgery	139	108	26	16	150	108	26	16	149	10.5	10.5	5.4	5.4
OB/GYN	124	87	23	14	124	87	23	14	124	0.0	0.0	7.9	7.9
Orthopedic surgery	133	93	26	14	133	93	26	14	133	0.0	0.0	8.5	8.5
Radiology	112	78	20	13	112	78	20	13	112	0.0	0.0	10.6	10.6
Other specialties	806	564	133	109	806	564	133	109	806	0.0	0.0	29.7	29.5
Overall	2,015	1,421	332	272	2,026	1,421	332	272	2,025	10.5	10.5	79.4	78.5

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	64	24	12	70	18	12	70	18	12	0	0	0.0	0.0
Cardio	52	30	19	70	18	12	70	18	12	0	0	0.0	0.0
Family practice	65	20	15	70	13	17	70	13	17	25	25	0.0	0.0
General IM	73	14	13	70	16	14	70	16	14	10	10	10.0	10.0
General surgery	48	30	22	72	17	10	72	17	10	0	0	0.0	0.0
OB/GYN	83	12	5	70	19	11	70	19	11	8	8	0.0	0.0
Orthopedic surgery	69	19	13	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	48	40	12	70	18	12	70	18	12	2	2	0.0	0.0
Other specialties	42	36	22	70	17	13	70	17	13	15	15	10.0	10.0
Overall	55	28	17	70	16	13	70	16	13	60	60	20.0	20.0

Table A-16 (Air Force): economic-optimal GME, 5-year AFHPSP ADO, fellowship ADO is length plus 1, and concurrent payback

Steady-state accessions and accession and training inventories

	Baseline		Excursion	
Accession mix	Number	Percent	Number	Percent
Accession pipeline mix[a]				
USUHS (51/51)	51	22	51	22
AFHPSP (50/400)	126	53	124	53
FAP (0/60)	59	25	59	25
Total	235	100	234	100
Accession mix at YOP-1				
USUHS	48	23	48	23
AFHPSP direct	33	15	32	15
AFHPSP deferred	76	36	75	36
FAP	56	26	56	27
Total	213	100	212	100

a. Annual accession source constraints are in parentheses (minimum/maximum).

Inventory	Baseline	Excursion
Accession pipepline		
USUHS students	204	204
AFHPSP students	490	483
AFHPSP deferred	316	316
FAP	116	116
Total	1,126	1,119
Training pipeline		
Interns	82	81
Residents/fellows	271	265
Total	353	346

Steady-state annual life-cycle cost

	Baseline	Excursion
Total cost of medical corps ($M)	427	426
Cost per fully trained duty physician ($)	230,373	229,830
Shortage of fully trained duty physicians	0.0	0.0
Cost adjusted for shortages ($M)	427	426
Cost as a percentage of baseline		99.8

Steady-state annual experience profile shortages

Experience group	Baseline	Excursion
O-5/6 shortage	0.0	0.0
O-6 shortage	0.0	0.0

Steady-state annual inventory by specialty and paygrade

		Baseline				Excursion				Excess (shortage)		GME starts	
Specialty	Billets	O-3/4	O-5	O-6	Total	O-3/4	O-5	O-6	Total	Baseline	Excursion	Baseline	Excursion
Anesthesiology	78	55	14	9	78	55	14	9	78	0.0	0.0	3.9	3.9
Cardio	31	18	7	6	31	16	8	7	31	0.0	0.0	3.4	2.8
Family practice	439	297	70	71	439	297	71	71	439	0.0	0.0	5.4	5.3
General IM	162	107	29	26	162	107	29	26	162	0.0	0.0	16.2	15.1
General surgery	111	78	19	14	111	78	19	14	111	0.0	0.0	15.0	14.8
OB/GYN	116	81	22	13	116	81	22	13	116	0.0	0.0	6.0	6.0
Orthopedic surgery	91	64	18	9	91	64	18	9	91	0.0	0.0	5.9	5.9
Radiology	124	88	23	13	124	88	23	13	124	0.0	0.0	5.8	5.8
Other specialties	701	478	127	95	701	476	129	96	701	0.0	0.0	29.7	29.1
Overall	1,853	1,266	330	258	1,853	1,261	332	259	1,853	0.0	0.0	91.3	88.7

Steady-state annual percentage paygrade distribution and FAP accessions by specialty

	FY 2000			Baseline			Excursion			FAP constraint		FAP accessions	
Specialty	O-3/4	O-5	O-6	O-3/4	O-5	O-6	O-3/4	O-5	O-6	Baseline	Excursion	Baseline	Excursion
Anesthesiology	81	10	9	70	19	11	70	19	11	0	0	0.0	0.0
Cardio	71	11	18	58	23	19	52	26	21	0	0	0.0	0.0
Family practice	84	11	5	68	16	16	68	16	16	25	25	23.7	24.0
General IM	80	13	7	66	18	16	66	18	16	10	10	10.0	10.0
General surgery	73	13	15	70	17	13	70	17	13	0	0	0.0	0.0
OB/GYN	83	11	6	70	19	11	70	19	11	8	8	7.8	7.8
Orthopedic surgery	75	19	6	70	20	10	70	20	10	0	0	0.0	0.0
Radiology	71	21	8	71	19	11	71	19	11	2	2	2.0	2.0
Other specialties	69	20	11	68	18	14	68	18	14	15	15	15.0	15.0
Overall	76	15	9	68	18	14	68	18	14	60	60	58.5	58.8

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Appendix B: Comparison of economic-optimal GME to the AFHPSP ADO study

Due to the differences in data used between the AFHPSP ADO study [5] and this study, the economic-optimal number of GME starts in this study is less than in the AFHPSP ADO study [5]. This appendix discusses why and how data differed between the two studies and why these differences generate the results they do.

As we've shown, using the constraints and parameters that we've used in this study, the optimal number of GME starts is 46 percent less than in the fixed model. In the AFHPSP ADO study, the optimal number of GME starts was 25 percent less. The constraints that we used in both studies are the same, but the survival data vary between the studies and are the source of the difference. And, as we will show, the magnitude of the difference has to do with the importance of the seniority requirement in driving the results of the LCC model.

In the LCC study, we based the survival data for all accession sources on the DMDC data. In the AFHPSP ADO study, we used Navy BUMIS data to estimate the survival data for AFHPSP accessions. This was necessary because we needed to be able to model how increases in the AFHPSP obligation would affect survival, which DMDC data do not allow us to do. We didn't use the Navy data to estimate survival for USUHS and FAP accessions because we wanted the assumptions in the LCC study and the AFHPSP ADO study to be as similar as possible for comparison purposes.

Because the GME obligation affects the effective obligation of USUHS and AFHPSP accessions, it was necessary for us to estimate survival data for USUHS accessions using the BUMIS data, as we did for AFHPSP accessions. Hence, the only difference in the model's parameters between the AFHPSP and GME ADO studies is that we have used BUMIS data to estimate the survival of USUHS accessions.

To show how the estimated survival data differ, figure B-1 presents the estimated USUHS survival curves for family practitioners in the Navy using the DMDC data compared to the BUMIS data.

Figure B-1. Estimated survival of Navy family practitioners from USUHS by data source

Recall that, on average, USUHS accessions have 2 years of service before starting medical school [3]. Once they complete medical school, they will complete an internship and a 2-year GMO tour given the predominant career path in the Navy before completing the 2-year family practice residency program. This means they will have 7 years of service when they complete their training and they will have an active duty obligation of 5 years.[1] This means they should be obligated until 12 years of service.

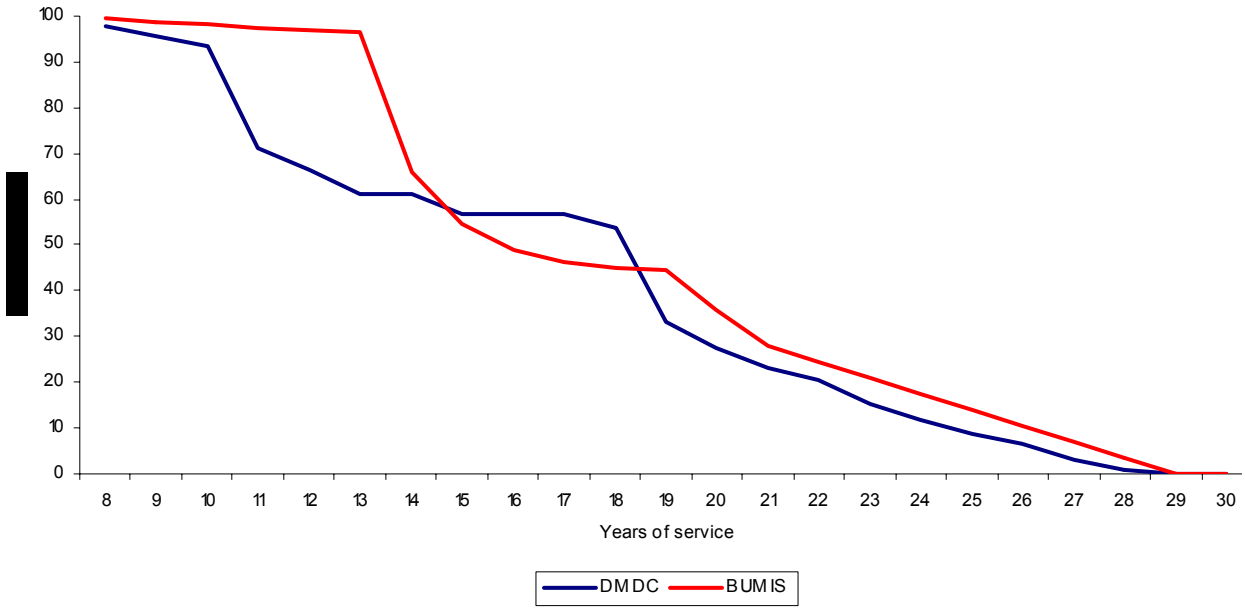
The survival curve we estimated based on the BUMIS data is consistent with this and shows almost no attrition until the end of 12 years of service. In contrast, the survival curve based on the DMDC data shows substantial attrition at the end of 10 years of service *2 years before they should be unobligated*. This high attrition before completion of the

1. The ADO is 5 years not 7 because they would have discharged 2 years of their commitment while they were a GMO.

initial active duty obligation may be due in part to the fact that the DMDC data from FY 1991-2000 would capture those who were forced out during the drawdown in the 1990s. From this standpoint, we feel that the estimated survival curves from the BUMIS data more actually reflect the attrition behavior and because the BUMIS data allow us to identify the initial obligation while the DMDC data does not.

As another example of how the survival curves estimated from the DMDC and BUMIS data differ, figure B-2 shows the survival data for orthopedic surgeons in the Army or Air Force. Again, the principal difference between the Navy and the Army and Air Force is that the predominant career path in the Army and Air Force does not include a GMO tour. Because USUHS accessions have 2 years of service on average before they enter medical school, they complete their residency training at the end of 7 years of service. They also have a 7-year obligation, which obligates them until the end of 14 years of service.

Figure B-2. Estimated survival of Army/Air Force orthopedists from USUHS by data source

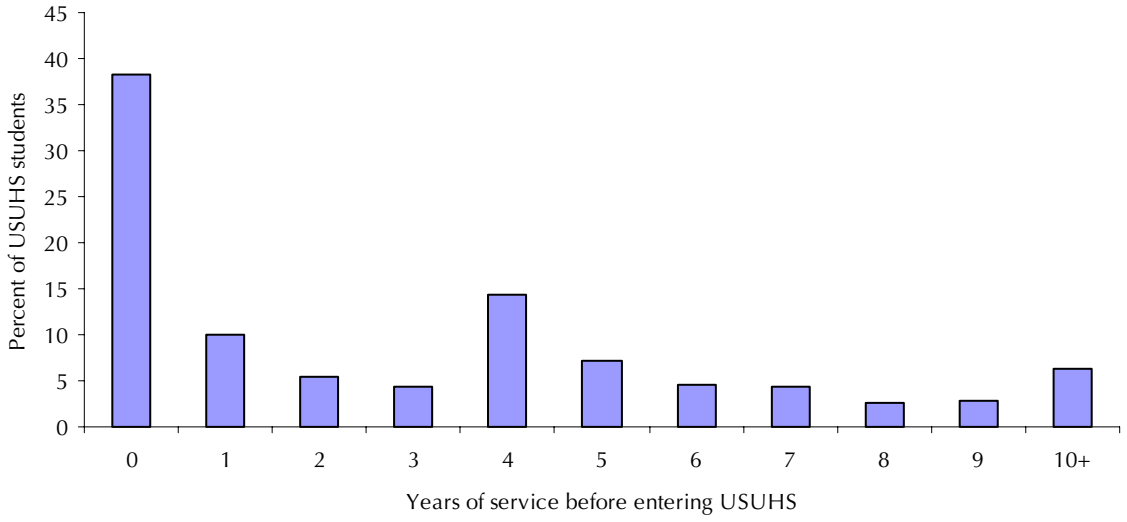


The estimated survival curve from the BUMIS data show almost no attrition until the end of 14 years of service. In contrast, the DMDC data show substantial attrition at the end of 11 years of service *3 years*

before they should be unobligated. As with Navy family practitioners, this high attrition before completion of the initial active duty obligation may reflect in part those who were forced out during the drawdown in the 1990s. Additionally, the estimated survival curve from the DMDC data reflect the combined survival behavior of all three Services. Because many Navy physicians serve as GMOs, which means that they would have a 5-year ADO rather than a 7-year ADO following residency training, some of the attrition before 14 years of service may reflect the Navy experience. Given these factors, we feel that the estimated survival curves from the BUMIS data better reflect the attrition behavior, and the BUMIS data allow us to identify the initial obligation while the DMDC data does not.

While the BUMIS data are superior to the DMDC data from the standpoint of being able to clearly define the initial ADO, there is one factor that may tend to support the survival estimates of the DMDC data. As we have discussed, USUHS accessions on average have 2 years of service before medical school. While this is the average, there is great variance in the distribution, as figure B-3 shows. Specifically, 38 percent of USUHS accessions had no prior Service before entering USUHS, and 14 percent had 4 years of service.

Figure B-3. Average years of service before entering USUHS (DMDC data: FY 1991-2000)



Because we are able to clearly identify the initial ADO, our estimates of survival from the BUMIS data accurately reflect survival, assuming they have 2 years of prior service. However, because there is tremendous variance in the amount of prior service and because the distribution of prior service is highly skewed, assuming that all USUHS accessions have 2 years of prior service may not accurately reflect the survival behavior of USUHS accessions as a whole. In contrast, because we were not able to isolate the initial ADO in the DMDC data, these survival curves are somewhat of a composite of the survival information for USUHS accessions with various amounts of prior service.

Because USUHS accessions have 2 years of prior service, predominantly they would be promoted to O-6 at the end of 20 years of service. In either of these examples, the survival data using the BUMIS data are higher than estimates from the DMDC data for those with more than 20 years of service. While the differences in the survival curves is relatively small, the differences that do exist make filling seniority requirements easier using the BUMIS survival curves than with the DMDC survival curves.

While it is difficult to tell whether the survival data from BUMIS or DMDC more actually reflect retention behavior, it is clear from the LCC study that the experience profile or seniority requirement is by far the most influential factor in the model. And, in many cases, it was the driving factor in determining the optimal mix of accessions [4]. In this sense, one can compare the differences between the results in this study to the AFHPSP ADO study to show how important it is for policy-makers to clearly define the seniority level they require because a little more or less seniority can result in substantial differences in the optimal mix of accessions and economic-optimal GME requirements.

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Appendix C: GME applicant score sheet

This appendix shows the FY 2003 Joint Service Graduate Medical Education Selection Board applicant score sheet.

2003 JOINT SERVICE
GRADUATE MEDICAL EDUCATION SELECTION BOARD

APPLICANT SCORE SHEET

Applicant Name _____ SSN _____

Specialty _____ Service _____

COMMENTS:

RATE THE APPLICANTS PERFORMANCE:

(The number in parenthesis represents the score(s) associated with and to be used for each rating box.)

	Outstanding	Excellent	Good	Acceptable	Marginal	Unsatisfactory
1. Pre-Clinical Years of Medical School * (Including USMLE Step 1/COMLEX)	(2)		(1)			(0)
2. Clinical Years of Medical School * (Including USMLE Step 2/COMLEX)	(3)		(2)	(1)		(0)
3. Internship (USMLE Step 3/COMLEX) Maximum score of 3 for current interns	(5)	(4)	(3)	(2)	(1)	(0)
4. Residency (Fellowship applicants ONLY) Maximum score of 7 for current residents	(10)	(8-9)	(5-7)	(3-4)	(1-2)	(0)
5. Post-Internship Operational/Utilization Tour (OP/UT)	(5)	(4)	(3)	(2)	(1)	(0)
6. Potential for successful practice as specialist and career officer	(5)	(4)	(3)	(2)	(1)	(0)

PANEL MEMBER SCORE
(30 points maximum)

* See Scoring Guidance for definitions of points for medical school years.

_____ _____

Panel Member Signature Date

(CIRCLE ONE: ARMY AIR FORCE NAVY)

_____

Printed Name

2003 JOINT SERVICE
GRADUATE MEDICAL EDUCATION SELECTION BOARD

COMPOSITE SCORE SHEET

Applicant Name _____ SSN _____

Specialty _____ Service _____

COMMENTS:

PANEL MEMBER SCORES:

A. Army Member

B. Air Force Member

C. Navy Member

D. COMPOSITE SCORE

E. Research

F. Prior Military Service

G. BONUS POINTS

H. TOTAL SCORE

_____
Panel Chair Signature

_____ _____
Printed Name Date

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Appendix D: GME sites

Table D-1 shows the military treatment facilities (MTFs) or DoD associated sites/programs that make up the in-house graduate medical education program and the residency programs these sites provide.

Table D-1. Residency program by Service and location

Program	Army	Navy	Air Force
Aviation medicine		NAMI[a]	USAFSAM[b]
Anesthesiology	NCC[c] and SAUSHEC[d]	NCC, Portsmouth, and San Diego	SAUSHEC
Dermatology	NCC and SAUSHEC	NCC and San Diego	SAUSHEC
Emergency medicine	Darnall, Madigan, and SAUSHEC	Portsmouth and San Diego	SAUSHEC and Wright-Patterson
Family practice	Darnall, Eisenhower, Madigan, Martin, NCC, Tripler, and Womack	Bremerton, Camp Lejeune, Camp Pendleton, Jacksonville, and Pensacola	David Grant, Eglin, Ehrling Berquist, NCC, and Scott
General surgery	Eisenhower, Madigan, NCC, SAUSHEC, Tripler, and William Beaumont	NCC, Portsmouth, and San Diego	David Grant, Keesler, SAUSHEC, and Wright-Patterson
Internal medicine	Eisenhower, Madigan, NCC, SAUSHEC, Tripler, and William Beaumont	NCC, Portsmouth, and San Diego	David Grant, Keesler, SAUSHEC, and Wright-Patterson
IM/psychiatry	NCC and Tripler		
Neurology	NCC and Madigan	NCC	SAUSHEC
Neurosurgery	NCC	NCC	
OB/GYN	Madigan, NCC, SAUSHEC, and Tripler	NCC, Portsmouth, and San Diego	David Grant, Keesler, SAUSHEC, and Wright-Patterson
Occupational medicine	USUHS[e]	USUHS	USAFSAM and USUHS
Ophthalmology	Madigan, NCC, and SAUSHEC	San Diego	SUASHEC
Orthopedic surgery	Eisenhower, Madigan, NCC, SAUSHEC, Tripler, and William Beaumont	NCC, Portsmouth, and San Diego	SAUSHEC

Table D-1. Residency program by Service and location (continued)

Program	Army	Navy	Air Force
Otolaryngology	Madigan, NCC, SAUSHEC, and Tripler	NCC, Portsmouth, and San Diego	SAUSHEC
Pathology	Madigan, NCC, and SAUSHEC	NCC and San Diego	SAUSHEC
Pediatrics	Madigan, NCC, SAUSHEC, and Tripler	NCC, Portsmouth, and San Diego	David Grant, Keesler, SAUSHEC, and Wright-Patterson
Physical medicine	NCC		
Preventive medicine	Madigan, USUHS, and WRIAR[f]	USUHS	USAFSAM and USUHS
Psychiatry	NCC and Tripler	NCC, Portsmouth, and San Diego	NCC and Wright-Patterson
Psychiatry/FP	Tripler		NCC
Radiation oncology	NCC		
Radiology	Madigan, NCC, SAUSHEC, and Tripler	NCC, Portsmouth, and San Diego	David Grant and SAUSHEC
Transitional	Eisenhower, Madigan, NCC, SAUSHEC, Tripler, and William Beaumont	NCC, Portsmouth, and San Diego	David Grant, NCC, and SAUSHEC
Urology	Madigan, NCC, SAUSHEC, and Tripler	San Diego	SAUSHEC

a. Naval Aerospace Medical Institute (NAMI).
b. Air Force School of Aviation Medicine (USAFSAM).
c. National Capital Consortium (NCC)—includes Walter Reed, Bethesda, and Malcolm Grow.
d. San Antonio Uniformed Services Health Education Consortium (SAUSHEC).
e. Uniformed Services University of the Health Sciences (USUHS).
f. Walter Reed Army Medical Institute of Research (WRAIR).

Table D-2 shows the residency programs that each MTF or DoD associated site/program supports.

Table D-2. Residency programs by location

Location	Residency programs
Bremerton	Family practice
Camp Lejeune	Family practice
Camp Pendleton	Family practice
Darnall	Emergency medicine and family practice
David Grant	Family practice, general surgery, internal medicine, OB/GYN, pediatrics, radiology, and transitional

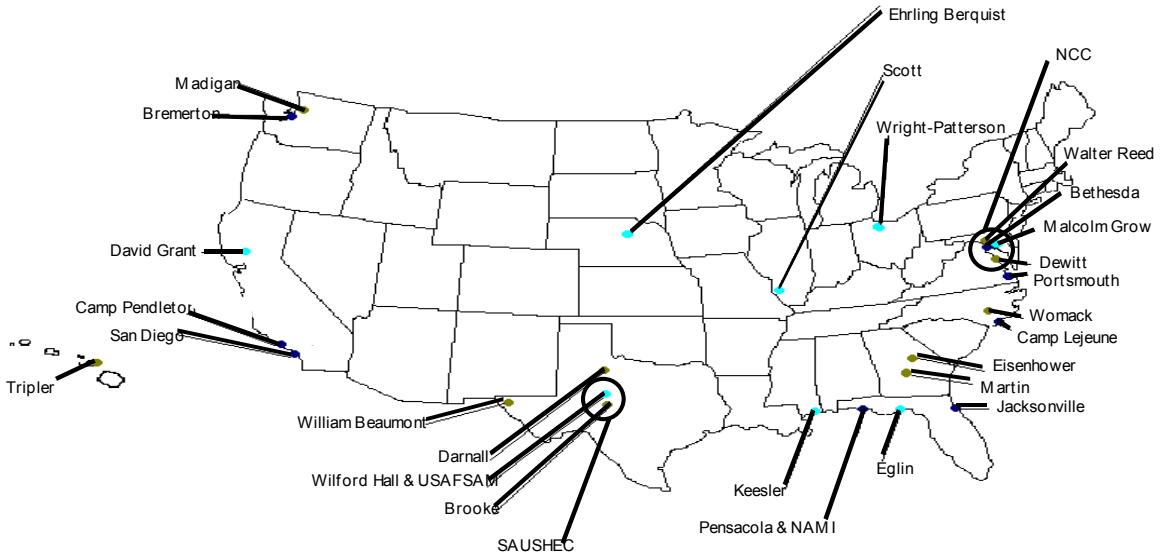
Table D-2. Residency programs by location (continued)

Location	Residency programs
Eglin	Family practice
Ehrling Berquist	Family practice
Eisenhower	Family practice, general surgery, internal medicine, orthopedic surgery, and transitional
Jacksonville	Family practice
Keesler	General surgery, internal medicine, OB/GYN, and pediatrics
Madigan	Emergency medicine, family practice, general surgery, internal medicine, neurology, OB/GYN, ophthalmology, orthopedic surgery, otolaryngology, pathology, pediatrics, preventive medicine, radiology, transitional, and urology
Martin	Family practice
NAMI[a]	Aviation medicine
NCC[b]	Anesthesiology, dermatology, family practice, general surgery, internal medicine, IM/psychiatry, neurology, neurosurgery, OB/GYN, ophthalmology, orthopedic surgery, otolaryngology, pathology, pediatrics, physical medicine, psychiatry, psychiatry/FP, radiation oncology, radiology, transitional, and urology
Pensacola	Family practice
Portsmouth	Anesthesiology, emergency medicine, general surgery, internal medicine, OB/GYN, orthopedic surgery, otolaryngology, pediatrics, psychiatry, radiology, and transitional
San Diego	Anesthesiology, dermatology, emergency medicine, general surgery, internal medicine, OB/GYN, ophthalmology, orthopedic surgery, otolaryngology, pathology, pediatrics, psychiatry, radiology, transitional, and urology
SAUSHEC[c]	Anesthesiology, dermatology, emergency medicine, general surgery, internal medicine, neurology, OB/GYN, ophthalmology, orthopedic surgery, otolaryngology, pathology, pediatrics, radiology, transitional, and urology
Scott	Family practice
Tripler	Family practice, general surgery, internal medicine, IM/psychiatry, OB/GYN, orthopedic surgery, otolaryngology, pediatrics, psychiatry, psychiatry/FP, radiology, transitional, and urology
USAFSAM[d]	Aviation medicine, occupational medicine, and preventive medicine
USUHS[e]	Occupational medicine and preventive medicine
William Beaumont	General surgery, internal medicine, orthopedic surgery, and transitional
Womack	Family practice
WRIAR[f]	Preventive medicine
Wright-Patterson	Emergency medicine, general surgery, internal medicine, OB/GYN, pediatrics, and psychiatry

a. Naval Aerospace Medical Institute (NAMI).
b. National Capital Consortium (NCC)—includes Walter Reed, Bethesda, and Malcolm Grow.
c. San Antonio Uniformed Services Health Education Consortium (SAUSHEC).
d. Air Force School of Aviation Medicine (USAFSAM).
e. Uniformed Services University of the Health Sciences (USUHS).
f. Walter Reed Army Medical Institute of Research (WRAIR).

Figure D-1 shows the location of the in-house graduate medical education sites.

Figure D-1. Residency program location



Appendix E: GME questionnaire

This appendix shows the questionnaire that we administered to current residents and fellows who are in their PGY-3 year or more. It consists of 14 multiple-choice questions.[1] We administered three versions of the questionnaire. All versions of the questionnaire were identical with the exception of question 13, which dealt with the length of the active duty obligation (ADO). As discussed in the text, we did not want to ask any individual about more than one ADO length because we felt that doing so might bias the results. We present these results as questions 13A, 13B, and 13C. Note that we asked each person only one version of question 13, not all three.

We prefaced the questionnaire with the following information about why we were conducting the questionnaire and its impact on them:

This questionnaire is part of a study that is being conducted for Health Affairs/TRICARE Management Activity. We are seeking your opinion about the active duty obligation associated with graduate medical education. This questionnaire provides an important source of information for decision-makers at all levels within the Department of Defense. We respectfully request that you respond to this questionnaire in a timely fashion.

Your answers will not be shared with anyone, and your name will not be associated with your answers. All information that would identify you will be kept private, and your responses will in no way affect your current active duty obligation.

The actual questions and responses follow:

1. As a 15th question, we gave respondents an opportunity to provide comments in relation to subject matter of the questionnaire. We don't present the responses in this appendix.

1. What Service are you in? (See table E-1 for responses.)

Table E-1. Respondents' Service

Service	Number	Percent
Army	150	44.0
Navy	106	31.1
Air Force	83	24.3
No answer	2	0.6
Total	341	100.0

2. What is your gender? (See table E-2 for responses.)

Table E-2. Respondents' gender by Service

	Army		Navy		Air Force		Total	
Gender	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Male	120	80.0	79	74.6	56	67.5	255	75.2
Female	30	20.0	26	24.5	27	32.5	83	24.5
No answer	0	0.0	1	0.9	0	0.0	1	0.3
Total	150	100.0	106	100.0	83	100.0	339	100.0

3. Are you married? (See table E-3 for responses.)

Table E-3. Respondents' marital status by Service

Marital	Army		Navy		Air Force		Total	
status	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Yes	118	78.7	76	71.7	62	74.7	256	75.5
No	32	21.3	29	27.4	20	24.1	81	23.9
No answer	0	0.0	1	0.9	1	1.2	2	0.6
Total	150	100.0	106	100.0	83	100.0	339	100.0

4. Do you have dependent children? (See table E-4 for responses.)

Table E-4. Respondents with dependent children by Service

Dependent status	Army		Navy		Air Force		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Yes	81	54.0	53	50.0	52	62.6	186	54.9
No	69	46.0	52	49.1	31	37.4	152	44.8
No answer	0	0.0	1	0.9	0	0.0	1	0.3
Total	150	100.0	106	100.0	291	100.0	339	100.0

5. Are you in a residency or a fellowship? (See table E-5 for responses.)

Table E-5. Respondents' medical school type by Service

Program type	Army		Navy		Air Force		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Residency	106	70.6	94	88.7	74	89.2	274	80.8
Fellowship	43	28.7	12	11.3	8	9.6	63	18.6
No answer	1	0.7	0	0	1	1.2	2	0.6
Total	150	100.0	106	100.0	291	100.0	339	100.0

6. What is the specialty of your current residency or fellowship (for fellowships, specify the specialty with which it is associated)? (See table E-6 for responses.)

Table E-6. Services to which respondents applied by respondents' Service

	Army		Navy		Air Force		Total	
Specialty	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Aerospace	0	0.0	3	2.8	6	7.2	9	2.7
Anesthesiology	1	0.7	11	10.4	3	3.6	15	4.4
Dermatology	1	0.7	2	1.9	3	3.6	6	1.8
Emergency	2	1.3	5	4.7	3	3.6	10	2.9
Family practice	9	6.0	17	16.0	14	16.9	40	11.8
General surgery	13	8.7	12	11.3	3	3.6	37	10.9
Internal medicine	30	20.0	18	17.0	14	16.9	62	18.3
Neurology	3	2.0	0	0.0	0	0.0	3	0.9
Neurosurgery	1	0.7	0	0.0	0	0.0	1	0.3
Nuclear medicine	0	0	0	0.0	0	0.0	0	0.0
OB/GYN	12	8.0	1	0.9	0	0.0	13	3.8
Ophthalmology	0	0	2	1.9	1	1.2	3	0.9
Ortho. surgery	11	7.3	8	7.5	1	1.2	20	5.9
Otolaryngology	5	3.3	3	2.8	2	2.4	10	2.9
Pathology	4	2.7	3	2.8	3	3.6	10	2.9
Pediatrics	12	8.0	8	7.5	10	12.0	30	8.8
Phys. med. & rehab.	4	2.7	0	0.0	0	0.0	4	1.2
Prev/occ medicine	9	6.0	0	0.0	3	3.6	12	3.5
Psychiatry	12	8.0	8	7.5	8	9.6	28	8.3
Radiology	9	6.0	2	1.9	5	6.0	16	4.7
Undersea medicine	0	0.0	0	0.0	0	0.0	0	0.0
Urology	8	5.3	3	2.8	2	2.4	13	3.8
No answer	4	2.7	0	0.0	2	2.4	6	1.8
Total	150	100.0	106	100.0	83	100.0	339	100.0

7. How many years do you have left to complete your residency or fellowship? (See table E-7 for responses.)

Table E-7. Respondents' residency/fellowship years remaining by Service

	Army		Navy		Air Force		Total	
Years remaining	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	71	47.3	49	46.2	49	59.0	169	49.9
2	45	30.0	31	29.2	21	25.3	97	28.6
3	27	18.0	20	18.9	11	13.3	58	17.1
4	7	4.7	5	4.7	1	1.2	13	3.8
5	0	0.0	0	0.0	0	0.0	0	0.0
6	0	0.0	0	0.0	0	0.0	0	0.0
No answer	0	0.0	1	0.9	1	1.2	2	0.6
Total	150	100.0	106	100.0	83	100.0	339	100.0

8. How many years of service do you currently have? (See table E-8 for responses.)

Table E-8. Respondents' current YOS by Service

	Army		Navy		Air Force		Total	
Years of service	Number	Percent	Number	Percent	Number	Percent	Number	Percent
4 or less	69	46.0	36	34.0	40	48.2	145	42.8
5 years	19	12.7	18	17.0	9	10.8	46	13.6
6 years	17	11.3	10	9.4	11	13.3	38	11.2
7 years	12	8.0	10	9.4	6	7.2	33	9.7
8 years	11	7.3	5	4.7	2	2.4	18	5.3
9 years	5	3.3	5	47	2	2.4	12	3.5
10 years	0	0	1	0.9	0	0.0	1	0.3
11 years	4	2.7	1	0.9	1	1.2	6	1.8
12 years	5	3.3	4	3.8	4	4.8	13	3.8
13 years	0	0	3	2.8	2	2.4	5	1.5
14 years	2	1.3	4	3.8	0	0.0	6	1.8
15 years	0	0	2	1.9	1	1.2	3	0.9
16 or more	2	1.3	6	5.7	2	2.4	10	2.9
No answer	4	2.7	1	0.9	3	3.6	8	2.4
Total	150	100.0	106	100.0	83	100.0	339	100.0

9. How did you enter into the medical corps? Mark all that apply. (See table E-9 for responses.)

Table E-9. Respondents' entry method into medical corps by Service

	Army		Navy		Air Force		Total	
Entered via	Number	Percent	Number	Percent	Number	Percent	Number	Percent
AFHPSP	103	45.0	79	49.1	46	38.7	228	44.8
USUHS	48	21.0	34	21.1	34	28.6	116	22.8
FAP	0	0.0	0	0.0	0	0.0	0	0.0
ROTC	36	15.7	16	10.0	14	11.8	66	13.0
Service Academy	26	11.3	19	11.8	13	10.9	58	11.4
Direct	0	0.0	1	0.6	1	0.8	2	0.4
Other	16	7.0	11	6.8	10	8.4	37	7.2
No answer	0	00	1	0.6	1	0.8	2	0.4
Total	229	100.0	161	100.0	119	100.0	509	100.0

10. If you had military service prior to medical school, how many years? (See table E-10 for responses.)

Table E-10. Respondents' years of active duty service prior to medical school, by Service

	Army		Navy		Air Force		Total	
Service in Years	Number	Percent	Number	Percent	Number	Percent	Number	Percent
None	111	74.0	74	69.8	63	75.9	248	73.2
1	5	3.3	1	0.9	2	2.4	8	2.4
2	1	0.7	1	0.9	4	4.8	6	1.8
3	2	1.3	1	0.9	2	2.4	5	1.5
4	17	11.3	9	8.5	2	2.4	28	8.3
5	2	1.3	4	3.8	3	3.6	9	2.7
6	2	1.3	6	5.7	0	0.0	8	2.4
7	1	0.7	2	1.9	3	3.6	6	1.8
8 or more	4	2.7	8	7.5	3	3.6	15	4.4
No answer	5	3.3	0	0	1	1.2	6	1.8
Total	150	100.0	106	100.0	83	100.0	339	100.0

11. What will be your active duty obligation in years once your residency/fellowship is complete (i.e., net obligation for any remaining accession obligation and residency/fellowship obligation or how long until you can make a decision to leave military service)? (See table E-11 for responses.)

Table E-11. Respondents' active duty obligation, by Service

	Army		Navy		Air Force		Total	
ADO in Years	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	1	0.7	0	0.0	0	0.0	1	0.3
2	8	5.3	15	14.2	2	2.4	25	7.4
3	20	13.3	26	17.3	18	21.7	64	18.9
4	51	34.0	38	25.3	27	32.5	116	34.2
5	21	14.0	8	7.5	5	6.0	34	10.0
6	9	6.0	1	0.9	2	2.4	12	3.5
7	21	14.0	6	5.7	16	19.3	43	12.7
8 or more	1	0.7	1	0.9	0	0.0	2	0.6
No answer	18	12.0	11	7.3	13	15.7	42	12.4
Total	150	100.0	106	100.0	83	100.0	339	100.0

12. Do you plan to remain in the military until at least 20 years of service? (See table E-12 for responses)

Table E-12. Respondents' plans to retire from military in 20 years by Service

	Army		Navy		Air Force		Total	
Plan to retire	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Yes	70	46.7	49	46.2	34	41.0	153	45.1
No	69	46.0	40	37.7	39	47.0	148	43.7
No answer	11	7.3	17	16.0	10	12.0	38	11.2
Total	150	100.0	106	100.0	81	100.0	339	100.0

13. (Version A) Currently, the active duty obligation for military GME is year for year, meaning 1 year of obligation for each GME year beyond the PGY-1 year. Would you have still gone into your current residency or fellowship program if the commitment increased from 1 to 1.25 years for each year of training? (For example, for a 3-year residency (excluding internship), the commitment would increase from 3 to 3.75 years.)[2] (See table E-13 for responses.)

Table E-13. Respondents' willingness to accept a 3.75-year ADO by Service

Would accept	Army		Navy		Air Force		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Yes	29	58.0	16	57.1	14	50.0	59	55.7
No	21	42.0	12	42.9	14	50.0	47	44.3
No answer	0	0.0	0	0.0	0	0.0	0.0	0.0
Total	50	100.0	28	100.0	28	100.0	106	100.0

(Version B) Currently, the active duty obligation for military GME is year for year, meaning 1 year of obligation for each GME year beyond the PGY-1 year. Would you have still gone into your current residency or fellowship program if the commitment increased from 1 to 1.50 years for each year of training? (For example, for a 3-year residency (excluding internship), the commitment would increase from 3 to 4.5 years.) (See table E-14 for responses.)

Table E-14. Respondents' willingness to accept a 4.5-year ADO by Service

Would accept	Army		Navy		Air Force		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Yes	15	37.5	13	37.2	8	26.7	36	34.3
No	25	62.5	20	57.1	22	73.3	67	63.8
No answer	0	0.0	2	5.7	0	0.0	2	1.9
Total	40	100.0	35	100.0	30	100.0	105	100.0

2. We asked 30 percent of the questionnaire population version A. Similarly, we asked 30 percent version B and 40 percent version C.

(Version C) Currently, the active duty obligation for military GME is year for year, meaning 1 year of obligation for each GME year beyond the PGY-1 year. Would you have still gone into your current residency or fellowship program if the commitment increased from 1 to 1.75 years for each year of training? (For example, for a 3-year residency (excluding internship), the commitment would increase from 3 to 5.25 years.) (See table E-15 for responses.)

Table E-15. Respondents' willingness to accept a 5.25-year ADO by Service

Would accept	Army		Navy		Air Force		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Yes	17	28.3	18	41.9	8	32.0	43	33.6
No.	43	71.7	25	58.1	15	60.0	83	64.8
No answer	0	0.0	0	0.0	2	8.0	2	1.6
Total	60	100.0	43	100.0	25	100.0	128	100.0

14. If you answered no to question 13, would you have. (See table E-16 for responses.)

Table E-16. Respondents' medical school funding options in place of GME by Service

Medical school funding options	Army		Navy		Air Force		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Alternatively pursued a civilian GME program in your current specialty?	57	64.0	32	56.1	25	49	114	57.9
Pursued a military GME program in a specialty with a shorter residency?	2	2.3	0	0.0	3	5.9	5	2.5
Completed your active duty obligation and left the military without entering a residency program?	21	23.6	24	42.1	12	23.5	57	29.0
Other?	9	10.1	1	1.8	11	21.6	21	10.6
Total	89	100.0	646	100.0	531	100.0	197	100.0

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References

[1] S. Brannman et al. *HPRAIS Report to Congress (Phase I: Compensation Comparison of Selected Uniform and Private-Sector Health Care Professionals),* Feb 2001 (CNA Research Memorandum D0003360.A1)

[2] S. Brannman et al. *Health Professions' Retention-Accession Incentives Study (Phases II & III: Adequacy of Special Pays and Bonuses for Medical Officers and Selected Other Health Care Professionals),* Mar 2002 (CNA Research Memorandum D0004460.A5)

[3] E. Christensen et al. *Life-Cycle Costs of Selected Uniformed Health Professions (Phase I: Cost Model Methodology),* Apr 2003 (CNA Research Memorandum D0006686.A3)

[4] S. Brannman et al. *Life-Cycle Costs of Selected Uniformed Health Professions (Phase II: The Impact of Constraints and Policies on the Optimal-Mix-of-Accession Model),* Apr 2003 (CNA Research Memorandum D0007887.A2)

[5] E. Christensen et al. *Impact of Increasing Obligated Service for Physician Scholarships,* Oct 2003 (CNA Research Memorandum D0008900.A2)

[6] E. Christensen et al. *Navy Specialty Physician Study: Historical Overview, Retention Analysis, and Synopsis of Current Civilian-Sector Practices,* Jan 2002 (CNA Research Memorandum D0004916.A2)

[7] J. McMahon et al. *Pay and Retention of Navy Physicians,* May 1989 (CNA Research Memorandum 88-266)

[8] L. May et al. *Initial Effectiveness of the FY 1989 Medical Officer Retention Bonus,* Jan 1990 (CNA Research Memorandum 89-304)

[9] M. Lane et al. "The Impact of Pay on Navy Physician Retention in a Health Care Reform Environment," Naval Postgraduate School, Mar 1998

[10] D. Cymrot. *An Analysis of the ADSO for Marine Corps Aviators*, May 1988 (CNA Research Memorandum 88-54)

[11] D. Cymrot et al. *An Analysis of the Active Duty Service Obligation (ADSO) for Navy Pilots*, Oct 1988 (CNA Research Memorandum 88-173)

[12] C. Moore. *Are Aviation Obligations Driving Students Away?* Oct 2000 (CNA Annotated Briefing D0002644.A1)

[13] Assistant Secretary of Defense (Health Affairs) Memorandum. *Medical Program Guidance, FY 1998-2003*, 14 Feb 1996

[14] *Minority Students in Medical Education: Facts and Figures XII.* Association of Amercian Medical Colleges, 2002

[15] A. Singer. 2002 *Annual Report on Osteopathic Medical Education.* American Association of Colleges of Osteopathic Medicine, Jun 2003

[16] U.S. Department of Defense. *Minimum Terms of Service and Active Duty Obligation for Health Services Officers*, Apr 1988 (DoD Directive No. 6000.2)

[17] Electronic Residency Applicant Service (ERAS), Association of American Medical Colleges (AAMC) <http://www.aamc.org/programs/eras/programs/stats/start.htm>

[18] National Residency Matching Program, NRMP Data Warehouse as of 30 Jul 2003, unpublished data

[19] National Board of Medical Examiners (NBME), Annual Reports, various years

[20] *The Osteopathic Examiner.* National Board of Osteopathic Medical Examiners (NBOME), Winter 2003

[21] COMLEX Scores. National Board of Osteopathic Medical Examiners (NBOME) <http://www.nbome.org/comlex_scores.htm>

[22] P. Slocum and J. Johnson. "Prediction of Step I and Step II USMLE scores from COMLEX-USA Scores." Central Group on Educational Affairs (CGEA); University of Iowa, Iowa City, IA; Mar 2003

[23] S. Brotherton et al. "US Graduate Medical Education, 2002-2003." *Journal of the American Medical Association*, 3 Sep 2003, Vol. 290, No. 9, pp. 1197-1202

[24] S. Brotherton et al. "US Graduate Medical Education, 2001-2002." *Journal of the American Medical Association*, 4 Sep 2002, Vol. 288, No. 9, pp. 1073-1078

[25] S. Brotherton et al. "US Graduate Medical Education, 2000-2001." *Journal of the American Medical Association*, 5 Sep 2001, Vol. 286, No. 9, pp. 1056-1060

[26] S. Brotherton et al. "US Graduate Medical Education, 1999-2000." *Journal of the American Medical Association*, 6 Sep 2000, Vol. 284, No. 9, pp. 1121-1126

[27] R. Miller et al. "Graduate Medical Education, 1998-1999." *Journal of the American Medical Association*, 1 Sep 1999, Vol. 282, No. 9, pp. 855-860

[28] M. Dunn et al. "Graduate Medical Education, 1997-1998." *Journal of the American Medical Association*, 2 Sep 1998, Vol. 280, No. 9, pp. 809-812, 836-845

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