

Tricare Tidewater: An Analysis of Military Physician Satisfaction

Cori R. Rattelman

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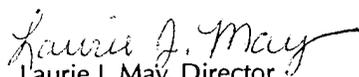
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Summary

In October of 1992, the Tidewater area of Virginia was designated as a demonstration site for Tricare. The demonstration project makes fundamental changes in the financing and delivery of health care to military beneficiaries currently served by Naval Hospital, Portsmouth; McDonald Army Hospital, Ft. Eustis; and 1st Medical Group (TAC), Langley Air Force Base. Tricare Tidewater is a triservice managed-care initiative, designed to enhance military beneficiaries' access to care, improve mechanisms for quality assurance, control rising costs, and increase coordination between the military and civilian components of the Military Health Services System (MHSS).¹

Although increasing physician satisfaction was not a direct goal of the program, many of the changes implemented may affect the way that military physicians practice medicine in the Tidewater region and their attitudes regarding their role in the MHSS. Certainly, any positive effects would be welcomed, but a decline in physician satisfaction could lead to lower retention rates for military physicians, as well as lower levels of physician performance, patient satisfaction, and quality of care. Therefore, it is important to monitor physicians throughout the program implementation process. In this research memorandum, we measure the impact of the first two years of the Tricare program on physician satisfaction.

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1. We recognize that Tricare Tidewater is an evolving program. Since the initiation of Tricare Tidewater, DOD has developed a military-wide health care reform plan, also called Tricare. This plan, which we refer to as national Tricare, evolved to a great degree from the CHAMPUS Reform Initiative and the original concepts set forth in the Tidewater version of Tricare. The national plan is being implemented, at the regional level, in stages. The Tidewater, VA, area is part of region two and is expected to come on line with national Tricare in 1997.

The evaluation of physician satisfaction

As the lead agent in the demonstration project, the Navy tasked CNA to monitor Tricare's impact on physician satisfaction, as part of a larger CNA effort that examines Tricare's success in achieving its objectives. To accomplish this, we developed a survey designed to assess military physicians' satisfaction. We administered this survey to military physicians at nine MTFs—the three Tricare sites and six comparison, or non-Tricare sites, in southern California and North Carolina—*before* the implementation of Tricare and again two years into the program.

Using the results from the initial survey [1], and data collected from the follow-up survey, we measure any changes in physician satisfaction that occurred the first two years. To isolate the changes in satisfaction that resulted from the implementation of Tricare, we compare changes in physician satisfaction that occurred in the Tidewater region to changes that occurred over the same time period in the two non-Tricare regions, North Carolina and southern California. Any change that occurred in Tidewater that was significantly different from the change that occurred in North Carolina is what we refer to as a "Tricare effect." Southern California allows us to compare Tricare, a new managed-care program, to a more mature managed-care program, the CHAMPUS Reform Initiative (CRI).

Results

Even though several aspects of the Tricare program probably will affect the Tidewater military physician's practice both directly and indirectly, we did not expect to see much impact on physician satisfaction at this time. The main reason is that Tricare Prime—the HMO option of Tricare—had not been fully implemented at the time of our follow-up survey.

We did not find any statistically significant effect on physicians' overall satisfaction; however, when we looked at several submeasures of satisfaction (e.g., dimensions of satisfaction, perceptions of resource availability, and satisfaction with referrals) we found that:

- Several of the submeasures showed an increase in satisfaction over time for *all* military physicians in our study.
- Small but significant negative Tricare effects were found with regard to self-actualization and the availability of equipment and physical resources.

There is little corroborating evidence that, as of the winter of 1995, Tricare had affected physicians in these three areas. As a result, we believe that this decline in satisfaction probably was driven more by concern about impending changes under Tricare Prime, and unfulfilled expectations regarding increased resources, than any actual changes in autonomy or resource support.

In addition, a new hospital opened up at Cherry Point in North Carolina during the time frame of our analysis. This may have caused an unusually high increase in physician satisfaction in the North Carolina region. In that case, we would expect these already small Tricare effects to be even smaller than estimated.

Overall, we found very little, if any, Tricare effect on physicians' satisfaction. We believe this lack of effect is not because the program, once fully implemented, won't affect physicians but because Tricare had not been fully implemented at the two-year mark and therefore had not reached the stage where both physicians and beneficiaries would face significant changes in the way care is delivered.

Background

The Tricare program

Tricare is a triservice managed-care initiative, designed to enhance military beneficiaries' access to care, improve mechanisms for quality assurance, control rising costs, and increase coordination between the military and civilian components of the MHSS. To achieve the program's objectives, and ensure the most efficient use of military medical treatment facilities (MTFs), the plan offers beneficiaries three health care options:

- Tricare Standard—the standard CHAMPUS benefits plan.
- Tricare Extra—a network of preferred providers. On a case-by-case basis, beneficiaries can choose to use the preferred providers' network and reduce their level of cost sharing.
- Tricare Prime—a managed-care option centered on the MTF and supplemented by a network of civilian providers. Enrolled beneficiaries will be guaranteed access and will receive increased coverage. Except for emergency care, enrollees must obtain all primary care from either their primary care manager or another provider to whom the member is referred.

At the request of the Navy and the Office of the Assistant Secretary of Defense, Health Affairs (OASD(HA)), CNA was tasked to measure the impact of Tricare Tidewater on physician satisfaction in the first two years of the program.

Why monitor physician satisfaction?

While the primary goals of Tricare focus on increasing beneficiary access to health care and controlling spiraling health care costs, the program contains several elements that may have a direct effect on physician satisfaction. These include:

- **The role of military physician as primary care manager (PCM).** This may increase satisfaction for primary care providers who assume the role of PCM, through increased opportunities to establish better patient-physician relationships and to facilitate continuity of patient care. Satisfaction may also be increased as the “gatekeeper” component of the PCM reduces the number of nonsevere cases seen by other specialists and increases the variety of cases seen by the PCM. Alternatively, satisfaction may fall as the result of additional administrative burdens for PCM physicians and because some specialists may not respect the new role of their colleagues as gatekeeper.
- **The establishment of Tricare Service Centers (TSCs).** The TSC will function as an administrative office to support PCMs with the specialty referral process. This may increase physician satisfaction by reducing the administrative burden of referrals and ensuring their patients timely access to specialists.
- **The Health Care Finder (HCF).** Beneficiaries not enrolled in Tricare Prime will be encouraged to use the HCF function of the TSC to obtain care. The HCF is designed to facilitate beneficiary access to care and ensure the most efficient use of military facilities. This may increase physician satisfaction as a result of increased continuity of patient care.
- **Comprehensive quality management program.** Using national standards for utilization review and peer review of selected cases, this program will attempt to optimize resources while ensuring high-quality care throughout the Tidewater region. This may increase satisfaction of physicians by maintaining consistent, high-quality care across the MTFs and the civilian network. Physician satisfaction may also fall if this process is seen to question or limit their professional autonomy.

Each item above functions primarily through the managed-care option—Tricare Prime.² Physicians’ job satisfaction may also be affected indirectly through their patients’ responses to the Tricare

2. Reference [2] gives a general description of each program.

program, depending on whether the program increases beneficiary access and satisfaction or frustrates and confuses beneficiaries.

Because the Tricare program may affect physicians in so many ways, it is unclear a priori what the overall effect will be on physician satisfaction.³ Physicians play such a pivotal role in the delivery of health care that their acceptance of a program's goals and their satisfaction with resulting changes are critical to the success of any new program. In addition, a growing body of research has found evidence of:⁴

- Links between job satisfaction of physicians and their job performance, quality of care, and patient satisfaction [6, 7, 8, 9, 10]
- A strong positive relationship between physician job satisfaction and job retention in the civilian sector [11], as well as in the military [12].

All of these reasons suggest that monitoring physician satisfaction throughout the Tricare project may provide important information on the effectiveness of the program in reaching many of its goals and may help to safeguard against any negative impact on physician retention.

Status of Tricare

Our analysis is based on the first two years of the Tricare demonstration project. In this two-year period, while much groundwork was laid to prepare physicians for changes under Tricare, very little took place that had a *direct* impact on the way that military physicians in the region practice medicine. That is because, by January 1995, Tricare Prime was still in its infancy. It was open to only junior active-duty enlisted family members (E-1 to E-4).⁵ Only 5 percent of the eligible population was enrolled in the program, and all enrollees were from

3. See [3] and [4] for a discussion of the mixed implications of managed care and the role of PCMs on satisfaction levels of generalists and specialists. See [5] for evidence of a positive relationship between continuity of patient care and physician satisfaction.

4. See [1], appendix A, for an expanded review of the literature.

the Langley and Eustis catchment areas. This represented less than 1 percent of the non-active-duty population eligible to receive care in the direct care system.⁶ Therefore, most physicians in the region had very little, if any, experience with Tricare Prime.

In addition, many of the quality management and utilization review programs that were expected to accompany Prime had not been fully implemented. A case management program was initiated during this time, as well as a region-wide transplant notification program. While anecdotal evidence suggests that the physicians affected by these programs were pleased, only a small number of physicians were involved.

Tricare Extra was much further along by January 1995. The network of civilian physicians for Tricare Extra was fully implemented, but the Tricare Service Centers and the Health Care Finders (TSC/HCFs) were not providing centralized appointments and referral assistance, and beneficiaries and physicians were not able to use the TSC/HCFs to schedule appointments with some Portsmouth NMC clinics. If Tricare Extra increases access and satisfaction among the beneficiaries, however, there may be some indirect effects on physician satisfaction.

Overall, we expected to find little, if any, Tricare effect on physicians' satisfaction—not because we believe that the program, once fully implemented, won't affect physicians but because at the two-year mark Tricare had not yet reached the stage where both physicians and beneficiaries faced significant changes in the way care is delivered.

5. All active-duty members were enrolled in Prime by June 1994, but this represented very little change to the way that care had previously been delivered to the active-duty.

6. Based on an October 1995 Tricare Project Office brief, the Tricare Tidewater population included 176,596 active-duty family members and 130,055 retirees, family members of retirees, and survivors.

Methodology

To determine the impact of Tricare on physician satisfaction we assess the changes in physicians' responses to a survey designed to measure physicians' satisfaction with many aspects of their military practice. We compare responses between two periods:

- Fall 1992—the baseline period⁷
- Winter 1995—the follow-up period.

As opposed to simply looking at the change in physician satisfaction that took place between the baseline and follow-up periods, we want to determine how much, if any, of the change that took place is attributable to the implementation of the Tricare program. We attempt to isolate the effect of Tricare by comparing changes that occurred in physician satisfaction at the Tricare sites with changes that occurred in physician satisfaction at non-Tricare sites over the same time period.

We chose two sets of comparison sites for our study. Two North Carolina catchment areas, Cherry Point and Camp Lejeune, were chosen as control sites because they provide health care through the traditional military health care system, a combination of MTFs and CHAMPUS. This is the same health care delivery system used in the Tidewater region *before* the implementation of Tricare (at baseline). Given that these North Carolina sites continued to provide health care in this traditional method throughout the two-year period of interest, any change in physician satisfaction that occurred at the North Carolina sites will provide an estimate of the change in physician satisfaction that we would have expected to occur among

7. The baseline surveys were administered to the Tidewater facilities in October 1992, to the southern California facilities in November 1992, and to the North Carolina facilities in January 1993.

Tidewater physicians *in the absence* of Tricare.⁸ Therefore, we conclude that any change in Tidewater physicians' satisfaction that is more (less) than the change that occurred for North Carolina physicians would represent our best estimate of the positive (negative) effect resulting from the implementation of Tricare.

We also chose four southern California catchment areas as additional comparison sites: San Diego, March Air Force Base, Fort Irwin, and Camp Pendleton. In this region, military health care is provided through a preexisting DOD demonstration project, the CHAMPUS Reform Initiative (CRI). CRI is a managed-care delivery system that began in 1988.⁹ Because there is always the chance that physicians will react strongly during the initial phases of implementation, the southern California sites allow us to compare the effects of Tricare to changes that occur in a more mature military managed-care program.

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8. Since the selection of the North Carolina sites as controls, Cherry Point and Camp Lejeune have begun developing the Eastern Carolina Coordinated Care Program (EC3). Under EC3, these two catchment areas are developing a civilian preferred provider network and, eventually, a health maintenance organization (HMO) option for the beneficiaries in this region. At the time of our follow-up survey, the EC3 preferred provider network was just beginning to come on-line. Before our follow-up survey, the region had seen cost savings from negotiated reductions with area physicians and hospitals, although beneficiaries saw very little impact on their cost and were not formally made aware of the "network." Based on the time line of our survey, we felt that very little had taken place through the EC3 program that would have affected military physicians at the North Carolina sites.
 9. CRI attempted to enhance health care services and control escalating cost through a managed-care approach. Two alternatives to the standard CHAMPUS benefit are offered: a preferred provider option (PPO), similar to Tricare Extra, and an exclusive provider option (EPO). With each option, beneficiaries' choices are restricted in exchange for reduced out-of-pocket costs. Under CRI, the PPO and EPO are provided through a civilian contractor. While this allowed for a more immediate shift from the "traditional" health delivery system to a managed-care system, the delivery system in this region has continued to evolve. In fact, the southern California facilities were changing from CRI to National Tricare at the time of our follow-up survey.

Using regression analysis, we are able to estimate changes in physician satisfaction, controlling for:

- Differences in population mix between regions and over time
- Region-specific differences (such as differences between facilities and services provided in a particular region)
- Time trend changes (such as other DOD policy that affects the MHSS uniformly)

We are not able to control for region-specific changes that occur between the baseline and follow-up period, such as any new programs, systems, or rules initiated during this time that are unique to a region. If these types of changes occur in the Tidewater region, we will not be able to separate their effects on physician satisfaction from the effects of Tricare. If region-specific changes occur in our comparison sites, the effect of such changes may mask our ability to identify Tricare effects in the Tidewater region. We have tried to identify region-specific changes and account for them when interpreting the results of our analysis.

Survey implementation

We designed a survey to measure the various components of provider satisfaction identified in the job satisfaction literature.¹⁰ We asked questions on physician training, certification, specialties, workload, military service history, and personal and family demographics. In addition, we devote much of the survey to ascertaining the physicians' attitudes with regard to:

- Resource constraints on their practice

10. The survey was based, in large part, on a survey developed for the 1991 RAND study of CRI [13]. Based on results from the baseline analysis and recommendations by experts, we made format changes and added some clarifying questions to the follow-up survey. We kept questions used to develop satisfaction measures consistent between the baseline and follow-up surveys. A copy of the follow-up survey is reproduced in appendix A. See [1] for literature review and a detailed description of the survey development.

- Satisfaction with referral procedures
- Satisfaction with military life
- Satisfaction with practice.

We surveyed the entire population of active-duty military physicians assigned to each of the facilities in the Tricare program and at each of the six comparison sites.¹¹ We distributed the baseline surveys throughout the fall of 1992 and early winter of 1993. And, we distributed the follow-up surveys in winter 1995. At the time of distribution, we briefed each command on the purpose of the surveys, and we made systematic follow-up telephone calls to each facility to maximize the response rate.

We achieved a yield rate of 63 percent (781 physicians) for the baseline survey (the yield adjusts response rates for undeliverable and ineligible surveys) and 58 percent (779 physicians) for the follow-up. Appendix B provides more detailed information regarding the number of physicians surveyed and yield rates by region, MTF, and paygrade.

Satisfaction measures

We began our analysis by looking at a global measure of satisfaction—the proportion of physicians who are very or somewhat satisfied with their overall practice. We found this measure was highly correlated with several dimensions of job satisfaction [1]—rewards, power, self-actualizations, quality, general environment, and task requirements.

11. When surveying military physicians, their high rate of mobility is a concern because we want a physician to have been at an MTF long enough to have formed opinions based on his or her experiences at that particular site. In the baseline survey, we did not have a perfect measure of tenure at the MTF, but we did ask physicians how long they had been in the area. Using this measure, only 13 percent of our baseline sample said they had been in the area less than 6 months, and only 6 percent were in the area for less than 4 months. We also found, using this measure, that satisfaction did not vary significantly with increased tenure (see [1]). In the follow-up survey, we surveyed only physicians who had been at the facility for 6 months before the survey was conducted.

Dimensions of job satisfaction

Although a global measure of overall satisfaction provides an aggregate way to look at the impact of Tricare, this type of summary measure may mask Tricare's effect on particular aspects of physician job satisfaction. Therefore, we also examine changes that may have occurred in the six underlying dimensions of job satisfaction that we developed as a result of our baseline analysis [1].

We surveyed physicians on their satisfaction with several aspects of their practices by asking 32 questions. We asked physicians to rank their level of satisfaction on a 5-point scale in which a response of 1 corresponds to the highest level of satisfaction and a response of 5 corresponds to the highest level of dissatisfaction. We reversed the satisfaction scale so that higher numbers would reflect higher levels of satisfaction.¹²

Looking at changes in these 32 measures of job satisfaction provides too narrow of a focus to interpret results in any meaningful way. Therefore, we hypothesized that these 32 questions actually measure 6 distinct dimensions of satisfaction. Using psychometric analysis, we identified and developed the following satisfaction scales.¹³

- "Self-actualization" describes satisfaction with your practice's ability to provide opportunities for professional growth and to accomplish professional goals.
- "Rewards/status" refers to satisfaction with pecuniary and non-pecuniary rewards of a military practice. It includes not only salary, nonsalary benefits, and job security, but your standing and status within the military and among your civilian colleagues.
- "Power" is a measure we link with the concept of "power perspective." It reflects satisfaction with the level of autonomy, responsibility, and status within the organization.

12. See appendix C for details on these 32 questions, including the percentage of baseline and follow-up physicians satisfied with each item.

13. See [1] for a full description of the analysis and interpretation of the satisfaction measures.

- “Quality” describes satisfaction with the quality of care provided through your facility.
- “General environment” measures satisfaction with more general or global aspects of the practice, including the overall physical and working environment.
- “Task requirement” refers to satisfaction with the daily activities of the physician. It focuses on time allocation, with an emphasis on the pace and continuity of patient care one is able to provide.

We use a composite of items from the 32 original questions to represent one dimension of job satisfaction. The composites, or scales, are based on a factor analysis of responses to the 32 questions in the pooled sample (both baseline and follow-up physicians). This technique identifies groupings of items that are more highly correlated with each other than with any other grouping. For example, the scale that measures satisfaction with “quality” was created for each physician by summing his or her responses to the five survey questions:

1. How satisfied are you with the overall quality of medicine at your MTF?
2. How satisfied are you with the quality of nursing staff?
3. How satisfied are you with the abilities of physicians at your MTF?
4. How satisfied are you with the teamwork and cooperation between medical and nursing staff?
5. How satisfied are you with the priority given to patient care at your facility?

If a physician responded to all five of these questions, the resulting sum would be divided by five. If the physician failed to respond to one of the questions, we would divide by four. In cases where more than half of the relevant items were missing, no factor score was calculated for that physician. In this same way, we created composite scores for each of the six satisfaction scales.¹⁴

14. See appendix D for a complete description of the six composite scales, including results from the factor analysis and validity testing.

Table 1 reports summary statistics for all six underlying satisfaction measures for the baseline sample of physicians as well as the follow-up sample. Note that valid responses to the survey questions on physicians' satisfaction with their practices range from 1 to 5. Therefore, the composite factor scores are continuous variables ranging from 1 to 5, where higher scores reflect higher levels of satisfaction.

Table 1. Summary statistics for composite measures of the underlying factors of satisfaction

Factors of satisfaction	Baseline		Follow-up	
	Mean	S.D.	Mean	S. D.
Self-actualization	3.61	(0.85)	3.80	(0.83)
Rewards/status	3.14	(0.70)	3.39	(0.68)
Power	2.92	(0.97)	3.20	(0.96)
Quality	3.73	(0.74)	3.82	(0.73)
General environment	2.78	(0.94)	3.01	(0.97)
Task requirement	3.60	(0.68)	3.70	(0.69)

Lack of efficiency

In addition to measures of job satisfaction, we wanted to examine physicians' perceptions of the availability of resources in their MTF, and their satisfaction with referral policies. Our interest in these areas was driven by the dissatisfaction of physicians in the baseline sample regarding the efficiency of their practice and their ability to delegate routine tasks, as well as our belief that Tricare Tidewater would make changes that might affect both the availability of resources and the referral process.

Availability of resources

We asked physicians to rate how often their ability to see patients and the quality of care they could provide was limited by the availability of:

- Physical resources—examining rooms or special-care units

- Staff or human resources—nursing, other allied, or clerical staff
- Medicines or equipment—medications, supplies, standard medical equipment, or state-of-the-art equipment.

From our analysis of the baseline sample of physicians, we found that 50 percent of physicians felt that, at least some of the time, the availability of physical resources, human resources, and state-of-the-art equipment limited their ability to see patients. A lack of allied staff (other than nurses) and clerical staff seems to pose the biggest problem. Between 45 and 50 percent of physicians felt that the lack of these human resources frequently, if not always, caused an impediment to seeing patients.

More than 50 percent of physicians felt that their ability to provide quality care was limited by the availability of human resources and state-of-the-art equipment. Once again, the biggest impediment to providing quality care was caused by a lack of allied and clerical staff.

We created composite measures of resource availability by averaging the responses to questions referring to the availability of physical resources, staff, or equipment, as described above. Appendix E presents descriptive statistics for the individual survey questions and the composite measures for both the baseline and follow-up samples.

Referral processes

Physicians' satisfaction with the current referral processes was assessed through a series of 16 questions. We asked physicians to rate their satisfaction with the effort required to refer patients to a specialist, the patient's wait time to see the specialist, and follow-up information provided by the specialist at:

- One's MTF or affiliated clinic
- MTFs in one's region operated by another service
- Civilian facilities in one's region.

Physicians from the baseline sample were least satisfied with the follow-up information provided by specialists at all three types of facilities. Satisfaction was highest overall when referring patients to civilian facilities and lowest when referring them to an MTF other than

one's own. Because a major goal of Tricare is to increase the ability of the three services to work together to increase efficiency, we were interested to see if satisfaction with referrals to an MTF other than their own would be affected.

As with resource availability, composite measures were created. In this case, we created three composites to reflect physicians' satisfaction with referrals at each of the three sites mentioned above. Appendix E contains descriptive statistics for the individual survey questions and the composite measures for both the baseline and follow-up samples.

Results

We found that military physicians' satisfaction with several aspects of their practice appeared to increase by the same degree for physicians in each of the three regions. In addition, though we found some indication of a Tricare effect with some aspects of the physician's practice, there was no statistically significant overall effect on physician job satisfaction.

Our analysis attempts to isolate the effect of the first two years of the Tricare program on physician satisfaction. For each measure of satisfaction, we present estimates of the average level of predicted satisfaction (or composite score) at the baseline—fall of 1992, *before* Tricare was implemented—for each region in our study, and the predicted average satisfaction (or composite score) for winter 1995, a little more than two years later. These predicted values are estimated using either a Least Squares linear regression or a nonlinear maximum likelihood regression to control for population differences (see appendix F for regression results and a detailed explanation of the estimation procedure).

The third column of each table presents the difference in predicted satisfaction (or composite scores) between the two periods—baseline and follow-up. This represents the change in satisfaction that occurred in the region over the two years that we studied. By looking at the differences rather than just the level of satisfaction that existed in each region in 1995, we remove any constant region-specific effects. Finally, to isolate changes specifically due to Tricare, we compare the difference, or change, that occurred in the Tidewater region to the change that occurred in North Carolina. Recall that our analysis assumes that the change in North Carolina represents the change that we would have expected to occur in Tidewater had Tricare not been implemented. Therefore, any statistically significant difference that exists between the change in Tidewater and the change in North Carolina represents the estimate of the effect of Tricare. A significant

difference is marked with an asterisk in the fourth and final column of each table.

In addition, we look to see if the difference between changes that occurred in Tidewater and southern California are statistically significant. Because southern California represents a mature managed-care program, we believe that making this comparison could give some insight into what one might expect from a more mature Tricare program.

Satisfaction with practice

Using a measure of global satisfaction, we found that, although the percentage of physicians who were satisfied with their overall practice increased, these changes were not statistically significant. Table 2 shows the estimated percentages. All three regions show an increase in the percentage of satisfied physicians, with the Tidewater region making the smallest gains relatively. However, none of these increases (column 3) or the differences in the magnitude of the increases between the regions (column 4) are statistically significant.

Table 2. Predicted satisfaction with overall practice over time

Region	Predicted percentage satisfied			Tricare effect ^a
	1992	1995	Difference over time	
Tidewater	55	57	2	
N. Carolina	51	59	8	-6
S. California	65	72	7	-5

a. The Tricare effect is the difference between the "difference over time" in Tidewater and the "difference over time" in North Carolina (southern California).

As we stated above, global measures provide a simple summary statistic, but they may be too broad. Therefore, we looked at physicians' satisfaction with six dimensions of their practice (table 3). We found statistically significant increases in satisfaction scores among physicians in all three regions with regard to the rewards, power, and work environment associated with their practice. This may be an effect of

the national health care debate, which focused so much attention and critical evaluation on the civilian sector. As a result, military physicians may have felt protected from the pending changes facing civilian physicians.

Table 3. Predicted dimensions of job satisfaction over time

Region	Mean predicted scores ^a			
	1992	1995	Difference over time	Tricare effect ^b
Self-actualization				
Tidewater	3.61	3.71	0.10	
N. Carolina	3.07	3.48	0.41	-0.31*
S. California	3.76	3.91	0.15	-0.05
Rewards/status				
Tidewater	3.14	3.38	0.24 ^c	
N. Carolina	3.07	3.25	0.18	0.06
S. California	3.31	3.46	0.15	0.09
Power perspective				
Tidewater	2.83	3.13	0.30 ^c	
N. Carolina	3.03	3.19	0.16	0.14
S. California	3.00	3.25	0.25	0.05
Quality				
Tidewater	3.74	3.75	0.01	
N. Carolina	3.83	3.89	0.06	-0.05
S. California	3.78	3.87	0.09	-0.08
General environment				
Tidewater	2.55	2.77	0.22 ^c	
N. Carolina	2.91	3.33	0.42	-0.20
S. California	3.04	3.13	0.09	0.11
Task requirements				
Tidewater	3.55	3.64	0.09	
N. Carolina	3.45	3.61	0.16	-0.07
S. California	3.69	3.74	0.05	0.04

a. Satisfaction scores are measured as a continuous scale from 1 to 5.

b. The Tricare effect is the difference between the "difference over time" in Tidewater and the "difference over time" in North Carolina (southern California). Values that are statistically different from zero are marked with an asterisk (*); they represent a significant difference in the change that occurred in the satisfaction score over time in this region and the change in the satisfaction score that occurred over time in the Tidewater region.

c. The changes in satisfaction scores over time are statistically significant for all physicians.

We also found statistically significant evidence of a negative Tricare effect on physicians' satisfaction with self-actualization—the ability of their practice to provide opportunities for professional growth and to accomplish their professional goals. Because there did not appear to be any specific Tricare programs implemented by the winter of 1995 that would have directly affected physicians' practices in this way, we believe that Tricare may have indirectly had a negative effect on physicians' satisfaction with self-actualization. For example, Tidewater physicians may have feared that the final implementation of Tricare Prime might limit the variation in their case load, and that utilization management and quality review programs, once fully implemented, might also place restrictions on their practice.

Resource availability and referrals

We explored the possible impact of Tricare on physicians' perceptions of the availability of resources. Also, because one of the major goals of Tricare was to increase the efficiency of the region by improving cooperation between the three services, we examined physicians' satisfaction with referrals to specialists throughout the MHSS in their region.

Resources

Table 4 shows that physicians' perceptions of the availability of physical resources and equipment did not improve as much under Tricare as they did in North Carolina.¹⁵ Again, this negative Tricare effect may have been caused by increased expectations that simply did not come to fruition in the first two years of the program. We must point out, however, that the opening of a new hospital at Cherry Point might have caused an unusually large shift in perceptions of resource availability in the North Carolina region. As stated before, we cannot untangle this type of region-specific change from the estimate of the Tricare effect. If the new hospital had some positive influence on North Carolina physicians' perceptions of

15. When measuring resource availability, a larger number reflects a more positive perception of the availability of physical resources.

resources, then the true Tricare effect would be smaller than the already small negative effect estimated by our model.

Table 4. Predicted physician perception of the availability of resources over time

Satisfaction with availability of resources (by region)	Mean predicted scores ^a			
	1992	1995	Difference over time	Tricare effect ^b
Availability of staff				
Tidewater	3.12	3.40	0.28 ^c	
N. Carolina	3.26	3.50	0.24	0.04
S. California	3.14	3.51	0.37	-0.09
Availability of physical resources				
Tidewater	3.19	3.22	0.03	
N. Carolina	3.76	4.19	0.43	-0.40*
S. California	3.69	3.82	0.13	-0.10
Availability of equipment				
Tidewater	3.74	3.86	0.12	
N. Carolina	3.55	4.02	0.47	-0.35*
S. California	3.71	3.97	0.26	-0.14

a. Scores are measured as a continuous variable from 1 to 5.

b. The Tricare effect is the difference between the "difference over time" in Tidewater and the "difference over time" in North Carolina (southern California). Values that are statistically different from zero are marked with an asterisk (*); they represent a significant difference in the change that occurred in the satisfaction score over time in this region and the change in the satisfaction score that occurred over time in the Tidewater region.

c. The changes in satisfaction scores over time are statistically significant for all physicians.

In addition, we found that, even though southern California continued to invest heavily in resources through the resource sharing agreements they had with their CRI contractor, there was no significant difference in the change in physicians' perceptions of resource availability over this time period between southern California and Tidewater physicians.¹⁶ This bolsters our belief that perhaps an

Tidewater physicians.¹⁶ This bolsters our belief that perhaps an unusually large jump in physician satisfaction in North Carolina, due to building the new hospital, caused an overestimation of the Tricare effect on physicians' perceptions of resource support.

Referrals

Even with the implementation of the TSC/HCFs in the Tidewater region, we found that Tricare had no statistically significant effect on physicians' satisfaction with referrals to their own MTF or affiliated clinics, MTFs in their region operated by another service, or civilian physicians in their region (table 5). But recall that the TSC/HCFs were not centralized. One needed to deal with the Langley TSC to book appointments at the Langley MTF or with the Portsmouth TSC to book an appointment with a Portsmouth specialist. In addition, many of the Portsmouth clinics were not booking appointments through the TSC/HCFs.¹⁷

We did find that physician satisfaction with civilian referrals fell significantly in southern California in contrast to Tidewater. This may indicate southern California physicians' dissatisfaction with the change in contractors that took place over the past two years, as well as some possible trepidation about shifting from CRI to national Tricare (resulting in another change in contractors).

16. The baseline study [1] found that physician satisfaction, while higher in southern California than Tidewater, fell to a rate almost equivalent to the Tidewater rate of satisfaction once we controlled for the physicians' perceptions of resource availability.

17. Since the follow-up survey, this has changed. While separate Langley and Eustis TSCs still exist, they function primarily as health benefits advisors. The central TSC/HCF located in Portsmouth schedules appointments for all Tricare MTFs and consults for the civilian network.

Table 5. Predicted satisfaction with referrals over time

Satisfaction with referrals (by region)	Mean predicted satisfaction scores ^a			
	1992	1995	Difference over time	Tricare effect ^b
To your own facility or affiliated clinics				
Tidewater	3.17	3.32	0.15	
N. Carolina	3.69	3.51	-0.18	0.33
S. California	3.50	3.56	0.06	0.09
To MTFs in your region operated by another service				
Tidewater	2.70	2.86	0.16	
N. Carolina	2.61	2.51	-0.10	0.26
S. California	3.05	3.18	0.13	0.03
To civilian facilities in your region				
Tidewater	3.54	3.56	0.02	
N. Carolina	3.48	3.82	0.34	-0.32
S. California	3.69	3.48	-0.21	0.23*

a. Satisfaction scores are measured as a continuous scale from 1 to 5.

b. The Tricare effect is the difference between the "difference over time" in Tidewater and the "difference over time" in North Carolina (southern California). Values that are statistically different from zero are marked with an asterisk (*); they represent a significant difference in the change that occurred in the satisfaction score over time in this region and the change in the satisfaction score that occurred over time in the Tidewater region.

Context

Although we found very little or, in most cases, no impact of Tricare on military physicians' job satisfaction, Tricare Tidewater is a fast-moving train. Many aspects of the program that were expected to have the greatest effect on physicians' practices were not in place as of the winter of 1995, but significant changes have occurred since then.

Anecdotal evidence suggests that, as of October 1995, when the primary care contract went into effect in Tidewater (increasing Tricare Prime enrollment to nearly 23,000, or 13 percent of the active-duty dependent population in Tidewater), physicians felt the impact. Conversations indicate a significant level of confusion, trepidation, and frustration on the part of the physicians and their patients. We believe these types of attitude changes typically accompany major changes in health care delivery, but extreme reactions should be temporary, or short term. How long do short-term effects last? We don't know. It depends on how quickly the programs come on line, and how quickly the new processes become institutionalized. Further analysis and close monitoring of physicians' satisfaction should be continued throughout the first two years of the new Tricare program (Prime via the primary care contract) as instituted in October 1995.

Conclusion

We found no statistically significant effect of Tricare on physicians' *overall* satisfaction. However, when we looked at dimensions of satisfaction, perceptions of resource availability, and satisfaction with referrals, we did find that physician satisfaction with some aspects of their practice increased over time for physicians in the Tricare and non-Tricare sites. We also found evidence that Tricare negatively affected:

- Physicians' satisfaction with the professional challenge and growth potential of their practice
- Physicians' perceptions of the availability of equipment and physical resources.

Because Tricare was not fully implemented in the winter of 1995, we feel it is more likely that Tricare *indirectly* affected satisfaction through physicians' concern about impending changes under Prime, and unfulfilled expectations regarding increased resources, rather than directly affecting the physicians' practices in these areas. We also believe that the new hospital in North Carolina increased physicians' perceptions of resource availability in the region, which suggests that the true Tricare effects on physicians' perceptions of resource availability are even smaller than we estimated.

Appendix A: Follow-up physician survey

RCS 6000-10
Expires 31 Oct. 1995

Health Care Evaluation Survey

Physician Questionnaire

Conducted by
the Center for Naval Analyses for the Department of Defense



Are you military or civilian?

Military

Please complete this questionnaire if you are on active duty in the military.

Civilian

Please return this questionnaire (unmarked) in the enclosed, postage-paid envelope.

ABOUT THE SURVEY

Thank you for participating in this important survey. You are part of a carefully selected sample of military physicians being asked to provide information and opinions about their medical practice. Your contributions are greatly appreciated.

The military services are looking for ways to improve the delivery of military health care benefits. This survey is part of a Department of Defense study that is comparing existing programs with new military health care programs in effect in selected areas. If a new program improves health care delivery, military hospitals nationwide may offer a similar program.

STATEMENT OF CONFIDENTIALITY

Your confidentiality is guaranteed. The information you provide will be combined with other survey responses and will be used only for this study. No information identifying you will be released as part of this study or any other effort.

Section 1: Occupation and Specialization

1. Which of the following best describes your occupation at your military facility? (Circle one number)

- 1 Physician (Continue with the next question.)
- 2 Physician assistant
- 3 Nurse practitioner
- 4 Nurse midwife
- 5 Other

(Please return the questionnaire in the enclosed, postage-paid envelope.)

Specify other _____

2. What year did you graduate from medical school? (Write a number in the space below)

19 ____ Year of medical school graduation.

3. Are you a graduate of a U.S. medical school? (Circle one number)

- 1 Yes
- 2 No

4. Are you either an intern or a GMO (have not started residency training)? (Circle one number)

- 1 Yes (Skip to question 7 on the next page.)
- 2 No (Continue with the next question.)

5. Are you currently in post-graduate medical education? (Circle one number)

- 1 Yes (Continue with the next question.)
- 2 No (Skip to question 7 on the next page.)

6. What type of training? (Circle one number)

- 1 Initial residency
- 2 Subsequent residency
- 3 Fellowship



Questions about specialty should be answered using the codes listed below:

01 Aerospace Medicine	12 Gastroenterology	23 Obstetrics/Gynecology	34 Psychiatry
02 Allergy/Immunology	13 General Practice	24 Occupational Medicine	35 Pulmonary Disease
03 Anesthesiology	14 General Surgery	25 Oncology	36 Radiology
04 Aviation Medicine	15 Hematology	26 Ophthalmology	37 Rheumatology
05 Cardiology	16 Infectious Disease	27 Orthopedic Surgery	38 Undersea Medicine
06 Child Psychiatry	17 Internal Medicine	28 Otolaryngology	39 Thoracic Surgery
07 Colon/Rectal Surgery	18 Neonatology	29 Pathology	40 Urology
08 Dermatology	19 Nephrology	30 Pediatrics	41 Other Specialty
09 Emergency Medicine	20 Neurology	31 Physical Medicine	
10 Endocrinology	21 Neurosurgery	32 Plastic Surgery	
11 Family Practice	22 Nuclear Medicine	33 Preventive Medicine	

7. What is your primary specialty? By primary, we mean the specialty in which you spend the **most** hours of practice. (Write a number in the space below)

_____ Primary specialty code.

a. If you listed specialty code 41 as your primary specialty, please specify what **other** specialty.

8. Which of the following best describes your current board status for your primary specialty? (Circle one number)

- 1 Board certified
- 2 Board eligible
- 3 Not yet board eligible
- 4 No boards for this specialty
- 5 Does not apply
- 6 Other status

Specify other _____

9. Please list any other specialties you may have. (Write number(s) in the space below)

_____ Other specialty code(s).



Section 2: Professional Activities

10. How many **outpatient** visits do you have in a **typical week**? Please do not include telephone consultations. (Write a number in the space below)

_____ Visits per week.

11. What **percentage** of these visits are by active-duty patients? (Write a percentage in the space below)

_____ % per week.

12. Where do you see most of your outpatients? (Circle one number)

- 1 Military hospital
- 2 Outlying clinic
- 3 Other (please specify) _____

13. How many **inpatients** are you responsible for on an **average day**? (Write a number in the space below)

_____ Inpatients per day.

14. What **percentage** of these inpatients are active-duty patients? (Write a percentage in the space below)

_____ % per day.

15. When you see a patient for a problem that requires follow-up in your specialty, how often do you personally see that patient? (Circle one number on each line)

	Always	Usually	Sometimes	Rarely	Never	Does not Apply
a. Active-duty patient	1	2	3	4	5	6
b. Non-active-duty patient	1	2	3	4	5	6

16. Do you oversee residents or other trainees in your specialty? (Circle one number)

- 1 Yes
- 2 No

17. How often are you on call at night during a **typical month**? (Circle one number)

- 1 Not on call at night on a regular basis (Skip to question 19 on this page.)
- 2 Almost every night
- 3 About every other night
- 4 About every third night
- 5 About every fourth night
- 6 About every fifth to seventh night
- 7 Less than once a week

(Continue with the next question.)

18. When you are on call, how often are you called in? (Circle one number)

- 1 Always
- 2 Usually
- 3 Sometimes
- 4 Rarely
- 5 Never

19. How many hours do you spend in a **typical week** of practice performing the following activities at your medical facility? (Write a number reflecting hours in the spaces below)

- a. Clinical activities (such as seeing outpatients and inpatients, making rounds, and working in the operating, emergency, and labor and delivery rooms) _____ hours per week
- b. Teaching and/or research _____ hours per week
- c. Patient-related administrative duties (such as reviewing charts, issuing nonavailability statements, or signing insurance forms) _____ hours per week
- d. Administrative duties _____ hours per week
- e. Military readiness _____ hours per week
- f. Other activities _____ hours per week
- g. Total hours _____ hours per week

20. How does the quality of care at **your** facility compare to the quality of care at local civilian facilities? (Circle one number)

- 1 Much better quality
- 2 Somewhat better quality
- 3 About the same quality
- 4 Somewhat worse quality
- 5 Much worse quality



21. How satisfied are you with the **effort required** to refer patients to specialists at each of the following? (Circle one number on each line)

	Very Satisfied	Somewhat Satisfied	Neither Satisfied nor Dissatisfied	Somewhat Dissatisfied	Very Dissatisfied	Does not Apply
--	----------------	--------------------	------------------------------------	-----------------------	-------------------	----------------

- | | | | | | | |
|--|---|---|---|---|---|---|
| | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| a. Your own facility or affiliated clinics | 1 | 2 | 3 | 4 | 5 | 6 |
| b. Military facilities operated by the same service as your facility | 1 | 2 | 3 | 4 | 5 | 6 |
| c. Military facilities in your region operated by another service | 1 | 2 | 3 | 4 | 5 | 6 |
| d. Civilian facilities in your region | 1 | 2 | 3 | 4 | 5 | 6 |

22. How satisfied are you with the **length of time** the patient must wait to see the specialist you referred them to at these local/regional facilities? (Circle one number on each line)

	Very Satisfied	Somewhat Satisfied	Neither Satisfied nor Dissatisfied	Somewhat Dissatisfied	Very Dissatisfied	Does not Apply
--	----------------	--------------------	------------------------------------	-----------------------	-------------------	----------------

- | | | | | | | |
|--|---|---|---|---|---|---|
| | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| a. Your own facility or affiliated clinics | 1 | 2 | 3 | 4 | 5 | 6 |
| b. Military facilities operated by the same service as your facility | 1 | 2 | 3 | 4 | 5 | 6 |
| c. Military facilities in your region operated by another service | 1 | 2 | 3 | 4 | 5 | 6 |
| d. Civilian facilities in your region | 1 | 2 | 3 | 4 | 5 | 6 |

23. How satisfied are you with the **follow-up information** you receive from specialists at these local/regional facilities? (Circle one number on each line)

	Very Satisfied	Somewhat Satisfied	Neither Satisfied nor Dissatisfied	Somewhat Dissatisfied	Very Dissatisfied	Does not Apply
--	----------------	--------------------	------------------------------------	-----------------------	-------------------	----------------

- | | | | | | | |
|--|---|---|---|---|---|---|
| | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| a. Your own facility or affiliated clinics | 1 | 2 | 3 | 4 | 5 | 6 |
| b. Military facilities operated by the same service as your facility | 1 | 2 | 3 | 4 | 5 | 6 |
| c. Military facilities in your region operated by another service | 1 | 2 | 3 | 4 | 5 | 6 |
| d. Civilian facilities in your region | 1 | 2 | 3 | 4 | 5 | 6 |

24. How often is your department's ability **to see patients** limited by the availability of the following resources? (Circle one number on each line)

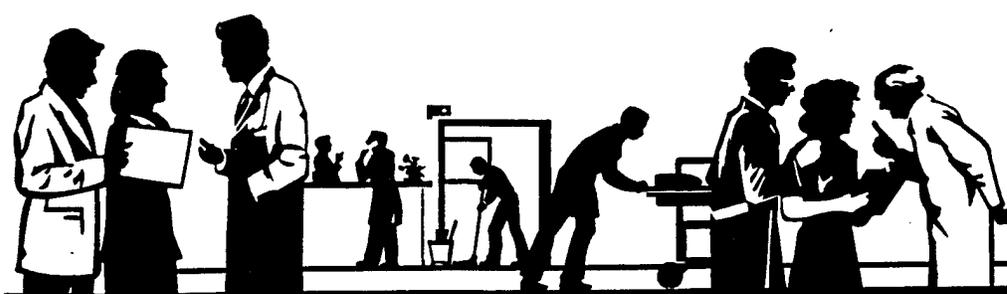
	Almost Never	Rarely	Sometimes	Frequently	Almost Always
a. Examining rooms.....	1	2	3	4	5
b. Special care units.....	1	2	3	4	5
c. Registered nurses.....	1	2	3	4	5
d. Other nursing staff.....	1	2	3	4	5
e. Allied medical staff other than nurses.....	1	2	3	4	5
f. Clerical staff.....	1	2	3	4	5
g. Medications.....	1	2	3	4	5
h. Supplies.....	1	2	3	4	5
i. Standard medical equipment.....	1	2	3	4	5
j. State-of-the-art equipment.....	1	2	3	4	5
k. Some other resources.....	1	2	3	4	5

What other resource? _____

25. How often is your department's ability **to provide quality care** limited by the availability of the following resources? (Circle one number on each line)

	Almost Never	Rarely	Sometimes	Frequently	Almost Always
a. Examining rooms.....	1	2	3	4	5
b. Special care units.....	1	2	3	4	5
c. Registered nurses.....	1	2	3	4	5
d. Other nursing staff.....	1	2	3	4	5
e. Allied medical staff other than nurses.....	1	2	3	4	5
f. Clerical staff.....	1	2	3	4	5
g. Medications.....	1	2	3	4	5
h. Supplies.....	1	2	3	4	5
i. Standard medical equipment.....	1	2	3	4	5
j. State-of-the-art equipment.....	1	2	3	4	5
k. Some other resources.....	1	2	3	4	5

What other resource? _____



Section 3: Satisfaction with Practice

26. How **satisfied** or **dissatisfied** are you with each of the following? (Circle one number on each line)

	Very Satisfied	Somewhat Satisfied	Neither Satisfied nor Dissatisfied	Somewhat Dissatisfied	Very Dissatisfied
	↓	↓	↓	↓	↓
a. Amount of time you are able to spend with each patient	1	2	3	4	5
b. The efficiency with which you are able to practice in your facility	1	2	3	4	5
c. Your overall professional practice	1	2	3	4	5
d. Your ability to delegate routine tasks	1	2	3	4	5
e. Continuity of patient care you are able to provide	1	2	3	4	5
f. Opportunities to acquire new medical skills and knowledge	1	2	3	4	5
g. Your opportunity to treat challenging cases	1	2	3	4	5
h. Your opportunity to practice medicine according to your own best judgment.....	1	2	3	4	5
i. Teamwork and cooperation between medical and nursing staffs	1	2	3	4	5
j. Your opportunity to help form policies at this facility	1	2	3	4	5
k. Quality of nursing staff	1	2	3	4	5
l. Your current work environment.....	1	2	3	4	5
m. The non-salary benefits of being a military officer	1	2	3	4	5
n. Your ability to arrange referrals to civilian providers	1	2	3	4	5
o. Your salary/income	1	2	3	4	5
p. Your opportunity to initiate changes to improve your medical practice.....	1	2	3	4	5

Very Satisfied	Somewhat Satisfied	Neither Satisfied nor Dissatisfied	Somewhat Dissatisfied	Very Dissatisfied
----------------	--------------------	------------------------------------	-----------------------	-------------------

	↓	↓	↓	↓	↓
q. Extent to which your current practice has met your expectations.....	1	2	3	4	5
r. Quality of care you are able to provide.....	1	2	3	4	5
s. Your physical working conditions	1	2	3	4	5
t. Potential to achieve your professional goals.....	1	2	3	4	5
u. Number of outpatients you see on a typical day	1	2	3	4	5
v. Professional abilities of physicians in your facility	1	2	3	4	5
w. Command support for the decisions you make.....	1	2	3	4	5
x. Priority given to patient care at your facility	1	2	3	4	5
y. Your opportunity to use your skills and knowledge to the fullest.....	1	2	3	4	5
z. Overall quality of military medicine at your facility	1	2	3	4	5
aa. Line support for your medical facility	1	2	3	4	5
bb. Amount of time you spend working outside your specialty, including time in the emergency room	1	2	3	4	5
cc. Amount of time you spend on call	1	2	3	4	5
dd. Level of job security you have	1	2	3	4	5
ee. Financial support for your facility	1	2	3	4	5
ff. Availability of specialists for consultation	1	2	3	4	5
gg. Opportunity to attend medical meetings and continuing medical education courses	1	2	3	4	5

Section 4: About TRICARE Tidewater

27. Are you currently practicing medicine at a TRICARE military facility in the Virginia Tidewater region? (Circle one number)

- 1 Yes (Continue with the next question.)
- 2 No (Skip to question 30 on the next page.)

28. Are you a Primary Care Manager under TRICARE Prime? (Circle one number)

- 1 Yes, full time
- 2 Yes, part time
- 3 No

29. What effect do you think TRICARE Tidewater has had on each of the following aspects of your practice? (Circle one number on each line)

	Increased	No Effect	Decreased	Not Enough Information To Comment
a. Your outpatient load	1	2	3	4
b. Your inpatient load	1	2	3	4
c. Diversity of outpatients you see	1	2	3	4
d. Diversity of inpatients you are responsible for	1	2	3	4
e. Continuity of care you are able to provide	1	2	3	4
f. Your administrative burden	1	2	3	4
g. Quality of care at your facility	1	2	3	4
h. Efficiency of your facility	1	2	3	4
i. Level of resources	1	2	3	4
j. Coordination between your facility and providers in civilian practice	1	2	3	4
k. Coordination between your facility and other TRICARE Tidewater military facilities	1	2	3	4
l. Medical readiness at your facility	1	2	3	4



Section 5: Satisfaction with Military Life

30. Please rate the following features of your community: (Circle one number on each line)

	Excellent	Very Good	Good	Fair	Poor	Does not Apply
--	-----------	-----------	------	------	------	----------------

a. Availability of affordable housing.....	1	2	3	4	5	6
b. Employment opportunities for spouse	1	2	3	4	5	6
c. Availability of goods/services at the post	1	2	3	4	5	6
d. Recreational facilities	1	2	3	4	5	6
e. Local attitudes toward military families.....	1	2	3	4	5	6
f. Quality of schools	1	2	3	4	5	6
g. Availability of family services.....	1	2	3	4	5	6

31. As of today, how many **months** have you been living in your **current** geographic location? (Write a number in the space below)

_____ Months in current location.

32. How many permanent change of station (PCS or official military) moves have you made in your career? (Write a number in the space below)

_____ Number of PCS moves.

33. **Overall**, how satisfied are you with the military as a way of life? (Circle one number)

- 1 Very satisfied
- 2 Satisfied
- 3 Neutral
- 4 Dissatisfied
- 5 Very dissatisfied

34. Do you think civilian physicians with your experience and training earn more or less—after expenses—than military physicians? (Circle one number)

- 1 Civilian physicians earn more
- 2 Civilian physicians earn less



35. What is the size of the gap? (Circle one number)

- 1 \$0-\$10,000
- 2 \$10,000-\$25,000
- 3 \$25,000-\$50,000
- 4 \$50,000-\$75,000
- 5 Over \$75,000

Section 6: Military Service

36. Did you serve in the military **before** entering the medical corps? (Circle one number)

- 1 Yes
- 2 No

37. Through which program did you first enter the military **medical corps**? (Circle one number)

- 1 Uniformed Services University of the Health Sciences (USUHS)
- 2 Armed Forces Health Professions Scholarship Program (AFHPSP)
- 3 Berry plan or draft
- 4 Volunteer
- 5 Some other way

What other way? _____

38. In what month and year did you first start practicing medicine at a military facility? (Include any internship/residency at a military facility. Write the numbers in the spaces below)

_____ Month/19_____ Year

39. **Since completing medical school or training**, has your military service been interrupted by time in civilian practice? (Circle one number)

- 1 Yes (Continue with the next question.)
- 2 No (Skip to question 41 on the next page.)

40. For how many years did civilian practice interrupt your military service? (Write the number in the space below)

_____ Years of civilian practice

41. How many total years have you served in the military **medical corps**? Please **exclude** time at USUHS, but **include** any internship/residency at a military facility. (Write a number in the space below)

_____ Years of military medical service

42. Are you currently...? (Circle one number)

- 1 Either an intern or a GMO? (Skip to question 44 on this page.)
- 2 Either a resident or a specialist? (Continue with next question.)

43. Are you **still** under obligation for an accession contract or training (obligations incurred through **medical school or direct accession**, and any **additional** training obligation incurred through **residency training**)? (Circle one number)

- 1 Yes (Continue with the next question.)
- 2 No (Skip to question 45 on this page.)

44. How much time do you have remaining under your **current** obligation? (Write the numbers in the spaces below)

_____ Years and _____ months of obligation remaining

45. What are your military career plans? (Circle one number)

- 1 Definitely stay until retirement
- 2 Probably stay until retirement
- 3 Undecided
- 4 Probably not stay until retirement
- 5 Definitely not stay until retirement
- 6 Eligible to retire now and have decided to leave
- 7 Eligible to retire now, but undecided

46. What is your branch of service? (Circle one number)

- 1 Army
- 2 Navy
- 3 Air Force

47. What is your paygrade? (Circle one number)

- 1 O-1
- 2 O-2
- 3 O-3
- 4 O-4
- 5 O-5
- 6 O-6



48. Did you deploy any time in the last 6 months? (Circle one number)

- 1 Yes (Continue with the next question.)
- 2 No (Skip to question 50 on this page.)

49. How many months were you deployed? (Write the number in the space below)

_____ months deployed

Section 7: You and Your Family

50. Are you male or female? (Circle one number)

- 1 Male
- 2 Female

51. How old are you? (Write a number in the space below)

_____ Years old

52. What is your marital status? (Circle one number)

- 1 Never married
 - 2 Separated/divorced
 - 3 Widowed
 - 4 Married (Continue with the next question.)
- } (Skip to question 54 on this page.)

53. Is your spouse...? (Circle one number)

- 1 Employed
- 2 Unemployed by choice
- 3 Unemployed, but actively job hunting

54. How many persons now live in your household? Include **yourself**, plus spouse, children, and other dependents. (Write a number in the space below)

_____ Persons

55. How many **financially dependent** children do you have? (Write a number in the space below)

_____ Dependent children

56. How many children do you have in **high school** or **college**? (Write a number in the space below)

_____ Children in high school or college

57. Do you consider yourself to be...? (Circle one number)

- 1 White, not Hispanic
- 2 Black/African American, not Hispanic
- 3 Hispanic
- 4 Asian or Pacific Islander
- 5 American Indian or Alaskan Native
- 6 Other group

What other group? _____

Please use this remaining space to write down any additional comments that you might have.

*Thank you for completing this questionnaire.
Please put your questionnaire in the postage-paid envelope and mail it right away.*

Survey control number

Appendix B: Response rates

For all response rate analyses, we calculated an adjusted response rate, referred to as a yield rate. The yield rate is calculated as follows:

$$\text{Yield rate} = \frac{\text{Returns} - \text{Ineligibles}}{\text{Sent} - \text{Undeliverables} - \text{Ineligibles}}$$

where:

Returns = number of completed surveys returned

Ineligibles = number of ineligible surveys returned

Sent = number of surveys delivered to physicians

Undeliverables = number of surveys returned as undeliverable.

We administered the follow-up survey to 1,470 military physicians at the 9 sites. We received 788 completed surveys. In addition, we received 120 surveys that were classified as undeliverable or ineligible, giving us an overall yield rate for the follow-up survey of 58 percent.¹⁸ This is comparable to the 63-percent yield rate from the baseline survey (table 6).

Overall, we are confident that our sample of military physicians adequately represents the population of physicians surveyed. There does seem to be some underrepresentation of those in a lower paygrade (table 7) and those in southern California. The yield rates for these subpopulations are essentially above 50 percent, however, so we do not perceive this to be a substantial problem. Nevertheless, the fact deserves some attention when interpreting the results.

18. The response rate (returned/sent) was 54 percent.

Table 6. Yield rates by region and site

Region and site	Percentage yield ^a	
	Baseline	Follow-up
Total survey population	63 (1,249)	58 (1,350)
Tidewater region	71 (389)	59 (488)
Portsmouth	74	59
Langley AFB	46	52
Fort Eustis	70	81
Southern California region	57 (775)	56 (783)
San Diego	57	49
Camp Pendleton	67	70
March AFB	48	84
Fort Irwin	65	86
North Carolina region	67 (83)	71 (80)
Cherry Point	80	76
Camp Lejeune	63	78

a. The number in parentheses is the number of surveys sent minus undeliverables and ineligible.

Table 7. Yield rates by paygrade (for site and region)

Region/MTF	Percentage yield by paygrade							
	Baseline survey				Follow-up survey			
	O-3	O-4	O-5	O-6	O-3	O-4	O-5	O-6
Total survey population	51 (452) ^a	68 (452) ^a	69 (209) ^a	73 (134) ^a	51 (578) ^a	61 (416) ^a	63 (220) ^a	74 (137) ^a
Tidewater region	59	74	73	91	56	57	63	77
Portsmouth	63	75	84	93	55	58	63	75
Langley AFB	38	67	33	75	57	37	60	80
Fort Eustis	67	75	50	100	67	100	71	100
Southern California region	47	63	64	67	47	59	62	71
San Diego	45	63	64	70	40	53	56	69
Camp Pendleton	58	71	72	75	62	74	70	82
March AFB	45	45	64	38	82	92	80	80
Fort Irwin	67	100	33	50	86	100	100	0
North Carolina region	58	70	75	50	68	81	77	83
Cherry Point	67	79	100	NA	50	91	67	100
Camp Lejeune	57	68	67	50	77	77	80	80

a. The number in parentheses is the number of surveys sent minus undeliverables and ineligible.

Appendix C: Physicians' satisfaction with their practice—32 individual items

We found that the physicians surveyed for the *follow-up* were generally pleased (table 8). In response to the question on satisfaction with their overall professional practice, 64 percent of physicians said that they were very satisfied or somewhat satisfied. However, the responses to other questions on specific aspects of their practice varied—revealing very high satisfaction in some areas and quite low satisfaction in others.

Physicians were most satisfied with:

- The abilities of their colleagues (86 percent)
- The quality of care they are able to provide (84 percent)
- The overall quality of medicine at their MTFs (83 percent).

More than 70 percent of military physicians in this sample were also pleased with the level of job security, opportunities to treat challenging cases, time spent with patients, and their ability to practice medicine according to their own judgments.

On the other hand, physicians were least satisfied with:

- Their ability to delegate routine tasks (33 percent)
- The efficiency of their practices (34 percent)
- The financial support for their MTF (36 percent).

Satisfaction was also low with respect to the rewards and status associated with practicing military medicine: opportunity to help form policy, and initiate change, line support for one's MTF, salary benefits, opportunity to attend medical meetings, and ability to arrange referrals to civilian providers. In each of these areas, less than half of the physicians in the sample were satisfied.

Table 8. Physicians' satisfaction with individual aspects of their practices^a—follow-up sample

How satisfied are you with....	Percentage of physicians		
	Somewhat to very satisfied	Neutral	Very to somewhat dissatisfied
Opportunity to acquire skills	68	13	20
Opportunity to treat challenging cases	71	14	15
Opportunity to reach professional goals	65	15	20
Practice has met expectations	63	19	19
Opportunity to use skill to fullest	68	15	17
Quality of care you are able to provide	84	9	7
Able to practice according to own judgment	77	14	9
Availability of specialist for consultation	61	22	18
Nonsalary benefits	54	27	20
Able to arrange referrals to civilian providers	44	37	19
Salary benefits	43	23	34
Line support for MTF	41	44	14
Level of job security	74	20	6
Financial support for MTF	36	28	35
Opportunity to attend medical meetings	48	18	34
Opportunity to help form policies	38	34	28
Opportunity to initiate change	37	27	35
Command support for your decisions	53	31	16
Cooperation between medical and nurse staff	61	19	20
Quality of nursing staff	54	27	20
Priority given to patient care	61	20	19
Abilities of physicians at MTF	86	10	4
Overall quality of medicine at MTF	83	12	5
Able to practice efficiently	34	11	55
Ability to delegate routine tasks	33	16	51
Current work environment	55	20	25
Physical working conditions	51	16	34
Time able to spend w/ each patient	71	13	17
Continuity of patient care	60	18	22
Number of patients per day	56	27	17
Time spent outside specialty	50	40	10
Time spent on call	54	29	17

a. Physicians were asked to rate their satisfaction on a 5-point scale, from very satisfied to very dissatisfied, with 3 equal to a response of neither satisfied nor dissatisfied.

While the responses to many of these questions suggested that the follow-up sample of physicians may be marginally more satisfied than the baseline physicians, the patterns of high and low satisfaction are nearly identical to the baseline sample (see table 9 and [1]). These patterns of high and low satisfaction were also found in RAND's study of military physicians at 22 MTFs [13], and prior studies of Navy [14] and Army [15] physicians. All of these studies found that physicians were dissatisfied with the availability and quality of equipment and staff, the amount of participation they had in making decisions affecting their careers, and compensation. Physicians were most satisfied with quality of care, colleagues, and amount of free time.

Table 9. Physicians' satisfaction with individual aspects of their practices^a—baseline sample

How satisfied are you with....	Percentage of physicians		
	Somewhat to very satisfied	Neutral	Very to somewhat dissatisfied
Opportunity to acquire skills	60	14	27
Opportunity to treat challenging cases	71	12	17
Opportunity to reach professional goals	56	16	28
Practice has met expectations	47	29	25
Opportunity to use skill to fullest	63	14	23
Quality of care you are able to provide	78	12	11
Able to practice according to own judgment	77	12	11
Availability of specialist for consultation	57	16	27
Nonsalary benefits	47	27	26
Able to arrange referrals to civilian providers	42	35	23
Salary benefits	44	17	39
Line support for MTF	34	37	29
Level of job security	75	17	8
Financial support for MTF	25	19	55
Opportunity to attend medical meetings	34	14	52
Opportunity to help form policies	31	31	38
Opportunity to initiate change	24	27	49
Command support for your decisions	45	31	24
Cooperation between medical and nurse staff	58	20	22
Quality of nursing staff	53	26	22
Priority given to patient care	58	15	27
Abilities of physicians at MTF	89	8	3
Overall quality of medicine at MTF	77	12	12
Able to practice efficiently	23	11	66
Ability to delegate routine tasks	24	15	61
Current work environment	51	19	31
Physical working conditions	50	13	37
Time able to spend w/ each patient	60	15	25
Continuity of patient care	58	17	25
Number of patients per day	51	30	19
Time spent outside specialty	49	40	11
Time spent on call	57	27	16

a. Physicians were asked to rate their satisfaction on a 5-point scale, from very satisfied to very dissatisfied, with 3 equal to a response of neither satisfied nor dissatisfied.

Appendix D: Dimensions of job satisfaction— composite measures

The dimensions of job satisfaction were developed in the baseline analysis [1]. Based on our review of the literature, we hypothesized that the 32 questions regarding physician satisfaction with their practice actually measured six underlying constructs of physician job satisfaction. We tested this hypothesis using factor analysis. Based on the results, we developed six composite scales of job satisfaction that measure satisfaction with:

- Self-actualization
- Rewards/status
- Power perspective
- Quality of care
- General work environment
- Task requirements.

Factor analysis

Factor analysis is a statistical tool that can be used to represent a set of measurable variables (such as job satisfaction questions) in terms of a smaller number of hypothetical factors (dimensions of satisfaction). Observable variables are grouped to form hypothetical factors. These groupings are based on the factorization of the correlation matrix of observable variables, such that correlations among variables within a factor should be greater than correlations among variables across factors.

The results of the principal factor analysis that we performed on the pooled sample of military physicians (both baseline and follow-up

physicians) are summarized by the correlations between the individual satisfaction items and each of the underlying hypothetical factors (factor loadings). These factor loadings (shown in table 10) range from -1 to 1, with 0 representing no correlation and 1 representing a perfect correlation.

The factors can be interpreted by discerning which items are most salient to a particular factor.¹⁹ This can be accomplished by determining which items load highest on the factor and do not load highly on any of the other factors. For example, looking at the table of factor loadings, we can see that the third factor (power) is most highly correlated with three items: opportunity to help form policies, opportunity to initiate change, and command support for your decisions. These three items all refer to the physicians' satisfaction with the level of autonomy, responsibility, and status within the organization. Therefore, the third factor is interpreted as measuring the dimension of overall satisfaction that reflects physicians' satisfaction with their level of power in the MTF. In this same manner, we interpret the remaining factors.

These factors are comparable to those found throughout the job satisfaction literature (see [1], appendix A).

Measuring the factors of satisfaction

Six composite factor scores were created for each physician by calculating the mean of the scaled satisfaction variables identified as the most important within each of the six factors, ignoring all the other variables.²⁰

We used the item remainder coefficient and the Cronbach alpha coefficient to estimate internal-consistency reliability of these scales.

19. The important satisfaction items, or variables, within each factor appear in boldface in table 10.

20. Using this method to create factor scores, rather than using factor loadings to create a weighted factor score, allowed us to retain information for the 300 physicians (out of 1,560) who were missing one or more responses to the 32 questions used in the factor analysis.

Table 10. Factor loadings: Correlations of individual satisfaction items with the underlying factors of physician satisfaction^a

Individual satisfaction items	Underlying factors					
	Self-actualization	Rewards	Power	Quality	General environment	Task requirements
Opportunity to treat challenging cases	0.69	0.06	0.03	0.24	0.07	0.13
Opportunity to acquire skills	0.67	0.31	0.10	0.01	0.15	0.15
Opportunity to reach professional goals	0.62	0.31	0.17	0.18	0.26	0.12
Opportunity to use skill to fullest	0.61	0.21	0.22	0.34	0.19	0.05
Practice has met expectations	0.53	0.28	0.22	0.25	0.41	0.19
Quality of care you are able to provide	0.43	0.12	0.08	0.42	0.34	0.27
Able to practice according to own judgment	0.42	0.06	0.24	0.30	0.19	0.33
Financial support for MTF	0.13	0.56	0.16	0.08	0.30	0.11
Salary benefits	0.14	0.54	0.02	0.07	0.05	0.08
Nonsalary benefits	0.20	0.52	0.13	0.20	0.21	0.14
Line support for MTF	0.09	0.43	0.21	0.25	0.29	0.12
Opportunity to attend medical meetings	0.28	0.42	0.24	-0.07	0.15	0.24
Availability of specialist for consultation	0.31	0.36	0.06	0.25	0.13	0.21
Level of job security	0.17	0.30	0.14	0.16	0.00	0.27
Able to arrange referrals to civilian providers	0.02	0.26	0.19	0.18	0.15	0.21
Opportunity to help form policies	0.13	0.15	0.76	0.15	0.18	0.22
Opportunity to initiate change	0.25	0.31	0.56	0.11	0.35	0.14
Command support for your decisions	0.17	0.31	0.51	0.35	0.21	0.12
Overall quality of medicine at MTF	0.36	0.28	0.12	0.66	0.20	0.10
Abilities of physicians at MTF	0.28	0.13	0.04	0.50	0.00	0.20
Priority given to patient care	0.15	0.27	0.38	0.49	0.26	0.06
Quality of nursing staff	0.08	0.04	0.28	0.41	0.19	0.18
Cooperation between medical and nurse staff	0.13	0.06	0.38	0.41	0.26	0.16
Able to practice efficiently	0.11	0.19	0.21	0.10	0.68	0.09
Ability to delegate routine tasks	0.11	0.25	0.28	0.06	0.53	0.07
Current work environment	0.33	0.25	0.24	0.30	0.49	0.13
Physical working conditions	0.22	0.24	0.08	0.23	0.45	0.10
Time spent on call	0.09	0.14	0.11	0.09	0.06	0.56
Time able to spend w/ each patient	0.13	0.04	0.10	0.07	0.44	0.42
Time spent outside specialty	0.10	0.15	0.09	0.11	0.10	0.41
Number of patients per day	0.24	0.15	0.02	0.15	0.39	0.39
Continuity of patient care	0.20	0.07	0.14	0.21	0.34	0.31

a. These factor loadings result from principal factor analysis with varimax rotation. Varimax is an orthogonal rotation method that allows for a cleaner interpretation of the factors.

The item-remainder coefficient is the correlation of an individual item with the sum of the remaining items that make up the composite factor score. The item-remainder coefficient for each of the 32 survey items ranged from 0.32 to 0.74. This shows that there is a great deal of intercorrelation among the 32 items that make up the 6 satisfaction composites.

The Cronbach alpha coefficient uses the variance of each item in the composite and the variance of the entire composite to estimate reliability. Survey literature suggests that an alpha coefficient of 0.70 or above is typically required to interpret a scale as internally consistent [16]. The alpha coefficients for our six multiple-item scales range between 0.72 to 0.88 (table 11).

Table 11. Summary statistics for composite measures of the underlying factors of satisfaction

Factors of satisfaction	Baseline		Follow-up		Cronbach's alpha coefficient
	Mean	S.D.	Mean	S.D.	
Self-actualization	3.61	(0.85)	3.80	(0.83)	0.88
Rewards/status	3.14	(0.70)	3.39	(0.68)	0.77
Power	2.92	(0.97)	3.20	(0.96)	0.81
Quality	3.73	(0.74)	3.82	(0.73)	0.77
General environment	2.78	(0.94)	3.01	(0.97)	0.77
Task requirement	3.60	(0.68)	3.70	(0.69)	0.72

Appendix E: Resource availability and satisfaction with referrals—composite measures

Table 12. Physicians' perception of resource availability—baseline sample

Composite and item description	Almost never or rarely (percent)	Sometimes (percent)	Frequently or almost always (percent)	Mean	(S.D.)	Item-facet coefficient
Physical resources (alpha = 0.79)	NA	NA	NA	3.48	(0.79)	NA
Ability to see patients limited by:						
Examining rooms	39	25	37	3.14	(1.33)	0.57
Special care units	48	27	25	3.42	(1.23)	0.61
Quality care limited by:						
Examining rooms	60	22	18	3.70	(1.23)	0.60
Special care units	58	24	18	3.68	(1.17)	0.61
Staff (alpha = 0.91)	NA	NA	NA	3.08	(0.99)	NA
Ability to see patients limited by:						
Registered nurses	35	28	37	3.07	(1.27)	0.71
Other nursing staff	35	28	37	3.07	(1.30)	0.76
Other allied staff	28	26	45	3.77	(1.27)	0.69
Clerical staff	28	23	50	2.70	(1.30)	0.63
Quality care limited by:						
Registered nurses	45	32	24	3.38	(1.21)	0.73
Other nursing staff	45	31	25	3.37	(1.22)	0.78
Other allied staff	38	32	29	3.18	(1.18)	0.72
Clerical staff	41	25	35	3.12	(1.29)	0.65
Equipment (alpha = 0.91)	NA	NA	NA	3.68	(0.81)	NA
Ability to see patients limited by:						
Medications	73	22	6	4.02	(0.93)	0.59
Supplies	53	32	15	3.57	(1.04)	0.74
Standard medical equipment	61	27	12	3.72	(1.02)	0.75
State-of-the-art equipment	43	33	24	3.30	(1.18)	0.69
Quality care limited by:						
Medications	70	23	7	3.98	(0.96)	0.61
Supplies	54	33	13	3.62	(1.01)	0.75
Standard medical equipment	61	27	12	3.75	(1.05)	0.79
State-of-the-art equipment	50	32	19	3.47	(1.14)	0.71

Table 13. Physicians' perception of resource availability—follow-up sample

Composite and item description	Almost never or rarely (percent)	Sometimes (percent)	Frequently or almost always (percent)	Mean	(S.D.)	Item-facet coefficient
Physical resources (alpha = 0.78)	NA	NA	NA	3.59	(0.96)	NA
Ability to see patients limited by:						
Examining rooms	44	22	34	3.23	(1.35)	0.55
Special care units	51	29	20	3.53	(1.21)	0.59
Quality care limited by:						
Examining rooms	66	16	17	3.81	(1.22)	0.62
Special care units	64	24	12	3.82	(1.14)	0.60
Staff (alpha = 0.92)	NA	NA	NA	3.42	(1.00)	NA
Ability to see patients limited by:						
Registered nurses	47	27	27	3.38	(1.24)	0.74
Other nursing staff	48	27	26	3.41	(1.26)	0.77
Other allied staff	41	29	31	3.19	(1.25)	0.71
Clerical staff	40	25	35	3.10	(1.32)	0.66
Quality care limited by:						
Registered nurses	57	27	17	3.66	(1.18)	0.78
Other nursing staff	59	26	16	3.71	(1.16)	0.81
Other allied staff	51	28	21	3.51	(1.18)	0.78
Clerical staff	51	23	26	3.44	(1.29)	0.69
Equipment (alpha = 0.91)	NA	NA	NA	3.91	(0.79)	NA
Ability to see patients limited by:						
Medications	84	12	4	4.23	(0.82)	0.64
Supplies	63	25	11	3.79	(1.02)	0.77
Standard medical equipment	69	22	9	3.91	(0.99)	0.78
State-of-the-art-equipment	53	29	17	3.57	(1.10)	0.71
Quality care limited by:						
Medications	79	16	4	4.19	(0.88)	0.64
Supplies	65	26	9	3.86	(1.00)	0.80
Standard medical equipment	71	22	8	3.98	(0.98)	0.81
State-of-the-art-equipment	60	27	14	3.73	(1.08)	0.74

Table 14. Physician satisfaction with referrals—baseline sample

Composite and item description	Somewhat or very dissatisfied (percent)	Neutral (percent)	Somewhat or very satisfied (percent)	Mean	(S.D.)	Item-facet coefficient
Your MTF or affiliated clinic (alpha = 0.71)	NA	NA	NA	3.36	(1.12)	NA
Effort required to refer pat. to specialist	18	19	64	3.64	(1.14)	0.57
Patient's wait time to see specialist	16	19	66	3.71	(1.12)	0.60
Follow-up info. from specialist	27	19	55	3.37	(1.25)	0.43
MTFs operated by another service (alpha = 0.83)	NA	NA	NA	2.81	(1.01)	NA
Effort required to refer pat. to specialist	33	27	40	3.03	(1.20)	0.76
Patient's wait time to see specialist	42	29	28	2.73	(1.12)	0.71
Follow-up info. from specialist	47	28	26	2.61	(1.21)	0.61
Civilian facilities in your region (alpha = 0.69)	NA	NA	NA	3.64	(0.89)	NA
Effort required to refer pat. to specialist	17	20	63	3.64	(1.11)	0.56
Patient's wait time to see specialist	10	21	70	3.87	(1.00)	0.57
Follow-up info. from specialist	25	20	55	3.40	(1.24)	0.41

Table 15. Physician satisfaction with referrals—follow-up sample

Composite and item description	Somewhat or very dissatisfied (percent)	Neutral (percent)	Somewhat or very satisfied (percent)	Mean	(S.D.)	Item-facet coefficient
Your MTF or affiliated clinic (alpha = 0.79)	NA	NA	NA	3.48	(1.03)	NA
Effort required to refer pat. to specialist	19	11	70	3.78	(1.19)	0.64
Patient's wait time to see specialist	34	13	54	3.27	(1.27)	0.69
Follow-up info. from specialist	27	18	54	3.37	(1.23)	0.52
MTFs operated by another service (alpha = 0.79)	NA	NA	NA	2.91	(1.00)	NA
Effort required to refer pat. to specialist	32	26	42	3.12	(1.23)	0.70
Patient's wait time to see specialist	39	27	35	2.87	(1.17)	0.67
Follow-up info. from specialist	40	28	31	2.77	(1.18)	0.53
Civilian facilities in your region (alpha = 0.74)	NA	NA	NA	3.57	(0.90)	NA
Effort required to refer pat. to specialist	16	25	60	3.62	(1.08)	0.61
Patient's wait time to see specialist	11	24	66	3.79	(1.00)	0.63
Follow-up info. from specialist	27	23	50	3.30	(1.25)	0.48

Appendix F: Linear and nonlinear regression results

To estimate predicted values for all of the satisfaction measures used in our study, we used either Ordinary Least Squares (OLS) or logistic regression analysis, depending on whether the satisfaction measure was a continuous or dichotomous variable.

The OLS model takes the form:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k, \quad (1)$$

where Y is the continuously measured satisfaction score, X represents the k independent variables (such as age and years of service), and α and β represent coefficients to be estimated.

In the case of dichotomous variables, such as the 0/1 measure of satisfaction with your overall practice, we estimate a logistic equation. The logistic regression model takes the form:

$$\log \left[\frac{P}{1-P} \right] = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k, \quad (2)$$

where P is the probability of some event, in this case being satisfied with overall practice, and X , α , and β are as described for equation 1. The logistic regression model constrains all predicted probabilities to be between 0 and 1. Using the estimated coefficients, we can calculate the predicted probability from:

$$P = \frac{1}{(1 + \exp(\alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k))} \quad (3)$$

All of the regression models contain the same set of independent control variables, including:

- Personal and family demographics (age, gender, etc.)

- Military service history (branch of service, years of military practice, number of PCS moves, etc.)
- Medical experience (specialty, post-graduate, any civilian practice, etc.)
- Satisfaction with military life.

This set of independent variables allows us to control for differences in population between time periods and across regions that may affect satisfaction.

In addition, we include a set of 0/1 indicator variables to identify whether a person was part of the baseline survey time and whether the respondent is a physician in the southern California or North Carolina region. The time variable allows us to control for general time trend changes that apply to all military medical physicians (such as a DOD system-wide policy change that affects both Tricare and non-Tricare sites alike). The region indicator controls for region-specific differences. Finally, we include interactions between the time and region indicator variables. The coefficient on these variables represents our best estimate of the "Tricare effect."²¹

21. The coefficient of the variable that controls for the interaction between North Carolina and the baseline (pre-Tricare) time period is our estimate of the Tricare effect—the difference in the change in physician satisfaction that occurred over time in Tidewater from the change that occurred over time in North Carolina. This is based on our assumption that the change in satisfaction that occurred over time in North Carolina represents the change we would have expected to occur in Tidewater in the absence of Tricare. The coefficient of the variable that controls for the interaction between southern California and baseline allows us to make comparisons between the changes that took place over time in Tidewater and those that took place in southern California, *but* it does not represent the Tricare effect. California does not represent a true control for Tidewater because the region was already under a managed-care demonstration program at the time of the baseline survey. Instead, it allows us to compare the changes in a new managed-care program to changes in a mature and more stable managed-care delivery system.

We estimate either the OLS or logistic regression for the pooled sample of physicians (both baseline and follow-up, $N=1,560$). From this, we get estimates of the intercept α , and the β coefficients for each satisfaction measure. To calculate the predicted satisfaction for each region, we use only the follow-up population from the Tidewater region. The X values for these respondents as well as the estimated α , and β 's are plugged into equation 1 for continuous variables or into equation 3 for dichotomous variables to give us a predicted Y value (or satisfaction value). This is done six times. Each time a different set of indicator variables is "turned on" to reflect:

- Tidewater baseline
- Tidewater follow-up
- North Carolina baseline
- North Carolina follow-up
- Southern California baseline
- Southern California follow-up.

We then compute the mean of these predicted values to get the average level of satisfaction (or composite score) for each of the six combinations of region and time period. In this way, we estimate the predicted level of satisfaction (or satisfaction composite score) for each region at baseline and follow-up, controlling for all the characteristics included as independent variables.

Tables 16 through 20 present the estimated coefficients from the logistic and linear regressions.²²

22. Although the R^2 -values for the linear regression models range from .09 to .31, they are well within the range found throughout the job satisfaction literature (for examples, see [17, 18, and 19]. R^2 -values tend to be low for human behavior models, especially when using micro-level, cross-sectional data (for discussion, see [20], pp. 26–27).

Table 16. Logistic regression estimates^a

Variable ^b	Satisfaction with one's overall practice		Plan to stay until retirement	
	Est. coef.	S.E.	Est. coef.	S.E.
Constant	-0.97*	0.48	-4.80**	0.74
Age:				
<30	0.08	0.25	0.10	0.34
36-40	0.17	0.19	0.74**	0.26
41-45	0.02	0.28	2.40**	0.40
>45	0.52	0.37	2.92**	0.53
Years of military practice:				
0-2	-0.23	0.23	0.29	0.33
3-5	0.08	0.19	-0.10	0.26
11-15	0.01	0.22	1.27**	0.27
>15	0.47	0.34	4.03**	0.75
Recruitment:				
Berry/draft	0.18	0.47	-1.35*	0.65
Volunteer	-0.08	0.27	-0.29	0.40
Other	0.21	0.25	1.75**	0.36
Branch of service:				
Army	-0.28	0.32	-0.74	0.56
Air Force	-0.17	0.27	0.61	0.42
In post-graduate training	0.23	0.17	0.46	0.24
Still under obligation	-0.15	0.17	-0.27	0.23
Internal medicines	0.85**	0.23	-0.01	0.34
Pediatrics	0.99**	0.30	0.75	0.45
Ob/Gyn	0.40	0.31	-0.54	0.50
Surgery	0.68**	0.23	-0.10	0.33
Psychiatry	1.56**	0.37	-0.03	0.48
RAP ^c	1.20**	0.25	-0.48	0.37
Other specialty	0.52	0.28	-0.04	0.41
Satisfied with military life	1.39**	0.13	2.97**	0.27
Months in current location	-0.003	0.003	-0.004	0.004
No. of PCS moves in career	-0.07*	0.04	0.20**	0.05
Ever been in civilian practice	-0.15	0.22	0.09	0.32
Gender: Female	0.19	0.19	-0.09	0.25
Marital status:				
Never married	-0.40	0.25	0.13	0.34
Sep./div. or widowed	-0.51	0.34	0.28	0.48
Persons in household	-0.05	0.13	0.07	0.18
No. of dependent children	0.03	0.13	-0.04	0.18

Table 16. Logistic regression estimates^a (continued)

Variable ^b	Satisfaction with one's overall practice		Plan to stay until retirement	
	Est. coef.	S.E.	Est. coef.	S.E.
Race/ethnicity:				
Black	0.92*	0.40	-0.25	0.52
Hispanic	-0.36	0.39	-0.01	0.49
Asian	0.08	0.29	-0.79	0.45
Other group	-0.07	0.42	-1.47*	0.63
Southern California region	0.76**	0.19	-0.04	0.26
North Carolina region	0.06	0.34	-0.34	0.57
Survey year 92	-0.09	0.21	-0.35	0.31
S. California*survey 1992	-0.30	0.26	0.12	0.37
N. Carolina*survey 1992	-0.28	0.48	0.26	0.83
No. of Obs:	1,383		1,390	
-2 LOG L	1,591.609		890.95	

a. * $p \leq 0.05$, ** $p \leq 0.01$.

b. Omitted variables: age, 30–35; years of military practice, 6–10; recruitment path, scholarship/USUHS; specialty, general/family practice; gender, male; marital status, married; race/ethnicity, white; region, Tidewater, VA; survey year, 1995.

c. Radiology, anesthesiology, or pathology.

Table 17. Least Squares regression estimates:^a Satisfaction with one's practice by underlying dimensions of job satisfaction

Variable ^b	Self-actualization		Rewards/status		Power	
	Est. coef.	S.E.	Est. coef.	S.E.	Est. coef.	S.E.
Constant	3.09**	0.15	2.84**	0.13	2.78**	0.19
Age:						
<30	-0.05	0.08	-0.004	0.07	-0.05	0.10
36-40	0.02	0.06	0.01	0.05	0.01	0.08
41-45	-0.06	0.09	-0.04	0.08	0.04	0.11
>45	0.04	0.11	0.10	0.10	0.21	0.14
Years of military practice:						
0-2	-0.08	0.07	0.04	0.06	0.04	0.09
3-5	0.01	0.06	-0.01	0.05	0.05	0.07
11-15	-0.03	0.07	0.03	0.06	0.001	0.09
>15	0.11	0.10	0.15	0.08	0.19	0.12
Recruitment:						
Berry/draft	0.04	0.14	-0.13	0.11	-0.06	0.17
Volunteer	-0.09	0.08	-0.04	0.07	-0.14	0.11
Other	0.010	0.08	-0.09	0.07	0.13	0.10
Branch of service:						
Army	-0.49**	0.10	-0.08	0.09	0.23	0.13
Air Force	-0.20*	0.09	0.11	0.07	0.17	0.11
In post-graduate training	0.18**	0.05	0.09*	0.04	-0.20*	0.07
Still under obligation	-0.06	0.05	0.01	0.04	-0.10	0.07
Internal medicines	0.30**	0.07	0.15*	0.06	0.08	0.09
Pediatrics	0.44**	0.10	0.28**	0.08	0.18	0.12
Ob/Gyn	0.06	0.10	-0.02	0.08	-0.07	0.12
Surgery	0.20**	0.07	0.04	0.06	-0.11	0.09
Psychiatry	0.25*	0.11	0.28**	0.09	0.24	0.13
RAP ^c	0.24**	0.08	0.06	0.07	0.17	0.1
Other specialty	0.02	0.09	0.03	0.08	0.03	0.11
Satisfied with military life	0.70**	0.04	0.62**	0.04	0.66**	0.05
Months in current location	0.001	0.001	-0.001	0.001	-0.001	0.001
No. of PCS moves in career	-0.02	0.01	-0.02*	0.01	-0.04**	0.01
Ever been in civilian practice	-0.04	0.07	-0.02	0.06	-0.02	0.08
Gender: Female	0.02	0.06	0.06	0.05	-0.04	0.07
Marital status:						
Never married	-0.09	0.08	-0.02	0.06	0.05	0.10
Sep./div. or widowed	-0.08	0.10	-0.12	0.09	-0.003	0.13
Persons in household	0.01	0.04	0.02	0.03	0.06	0.05
No. of dependent children	-0.01	0.04	-0.04	0.03	-0.05	0.05

Table 17. Least Squares regression estimates:^a Satisfaction with one's practice by underlying dimensions of job satisfaction (continued)

Variable ^b	Self-actualization		Rewards/status		Power	
	Est. coef.	S.E.	Est. coef.	S.E.	Est. coef.	S.E.
Race/ethnicity:						
Black	0.23*	0.11	0.22*	0.10	0.32*	0.14
Hispanic	-0.02	0.12	-0.12	0.11	-0.22	0.16
Asian	0.08	0.09	0.14	0.08	0.09	0.11
Other group	-0.08	0.13	-0.07	0.11	-0.21	0.16
Southern California region	0.21**	0.06	0.09	0.05	0.12	0.08
North Carolina region	-0.23*	0.11	-0.12	0.09	0.06	0.14
Survey year 92	-0.10	0.07	-0.24**	0.06	-0.30**	0.08
S. California*survey 1992	-0.05	0.08	0.09	0.07	0.04	0.10
N. Carolina*survey 1992	-0.31*	0.15	0.05	0.13	0.13	0.19
No. of Obs:	1,389		1,387		1,360	
R-square	0.31		0.29		0.2	
Adj. R-sq.	0.29		0.27		0.17	

a. * $p \leq 0.05$, ** $p \leq 0.01$.

b. Omitted variables: age, 30–35; years of military practice, 6–10; recruitment path, scholarship/USUHS; specialty, general/family practice; gender, male; marital status, married; race/ethnicity, white; region, Tidewater, VA; survey year, 1995.

c. Radiology, anesthesiology, or pathology.

Table 18. Least Squares regression estimates:^a Satisfaction with one's practice by underlying dimensions of job satisfaction

Variable ^b	Quality		General environment		Task requirements	
	Est. coef.	S.E.	Est. coef.	S.E.	Est. coef.	S.E.
Constant	3.59**	0.14	1.96**	0.18	3.30**	0.13
Age:						
<30	-0.03	0.08	0.07	0.09	-0.12	0.07
36-40	0.07	0.06	0.03	0.07	0.03	0.05
41-45	0.12	0.09	-0.09	0.11	-0.12	0.08
>45	0.14	0.11	0.07	0.13	-0.002	0.10
Years of military practice:						
0-2	-0.10	0.07	0.12	0.09	-0.03	0.06
3-5	0.02	0.06	0.03	0.07	0.01	0.05
11-15	-0.10	0.07	0.002	0.08	0.02	0.06
>15	0.21*	0.10	0.45**	0.12	0.17*	0.09
Recruitment:						
Berry/draft	-0.02	0.13	0.13	0.16	0.05	0.12
Volunteer	-0.05	0.08	0.07	0.10	-0.04	0.07
Other	0.08	0.08	0.16	0.09	-0.05	0.07
Branch of service:						
Army	-0.10	0.10	0.16	0.12	-0.24**	0.09
Air Force	-0.22**	0.08	0.11	0.10	0.04	0.08
In post-graduate training	0.001	0.05	0.16**	0.06	-0.21**	0.05
Still under obligation	-0.02	0.05	-0.04	0.06	0.05	0.05
Internal medicines	0.14*	0.07	0.24**	0.09	0.20**	0.06
Pediatrics	0.13	0.09	0.02	0.11	0.23**	0.08
Ob/Gyn	-0.01	0.09	0.20	0.12	-0.08	0.08
Surgery	-0.01	0.07	0.21*	0.09	0.11	0.06
Psychiatry	0.35**	0.10	0.54**	0.12	0.11	0.09
RAP ^c	0.18*	0.08	0.59**	0.09	0.26**	0.07
Other specialty	0.15	0.09	0.40**	0.10	0.01	0.08
Satisfied with military life	0.49**	0.04	0.62**	0.05	0.44**	0.04
Months in current location	-0.001	0.001	-0.0002	0.001	0.001	0.001
No. of PCS moves in career	-0.02	0.01	-0.03**	0.01	-0.01	0.01
Ever been in civilian practice	-0.08	0.07	0.12	0.08	0.04	0.06
Gender: Female	0.01	0.06	-0.03	0.07	0.06	0.05
Marital status:						
Never married	-0.13	0.07	0.003	0.09	-0.06	0.07
Sep./div. or widowed	-0.22*	0.10	0.03	0.12	-0.04	0.09
Persons in household	-0.07*	0.04	0.004	0.05	-0.01	0.03
No. of dependent children	0.06	0.04	0.001	0.05	0.01	0.03

Table 18. Least Squares regression estimates:^a Satisfaction with one's practice by underlying dimensions of job satisfaction (continued)

Variable ^b	Quality		General environment		Task requirements	
	Est. coef.	S.E.	Est. coef.	S.E.	Est. coef.	S.E.
Race/ethnicity:						
Black	0.32**	0.11	0.44**	0.14	0.35**	0.10
Hispanic	-0.03	0.12	0.02	0.15	-0.04	0.11
Asian	0.10	0.09	0.35**	0.10	0.18*	0.08
Other group	-0.03	0.13	-0.12	0.15	-0.04	0.11
Southern California region	0.12*	0.06	0.36**	0.07	0.10	0.05
North Carolina region	0.14	0.11	0.56**	0.13	-0.03	0.10
Survey year 92	-0.01	0.06	-0.22**	0.08	-0.09	0.06
S. California*survey 1992	-0.08	0.08	0.13	0.10	0.04	0.07
N. Carolina*survey 1992	-0.05	0.15	-0.19	0.18	-0.07	0.13
No. of Obs:	1,361		1,394		1,381	
R-square	0.18		0.27		0.22	
Adj. R-sq.	0.15		0.25		0.2	

a. * $p \leq 0.05$, ** $p \leq 0.01$.

b. Omitted variables: age, 30–35; years of military practice, 6–10; recruitment path, scholarship/USUHS; specialty, general/family practice; gender, male; marital status, married; race/ethnicity, white; region, Tidewater, VA; survey year, 1995.

c. Radiology, anesthesiology, or pathology.

Table 19. Least Squares regression estimates:^a Satisfaction with the availability of resources

Variable ^b	Physical resources		Staff		Equipment	
	Est. coef.	S.E.	Est. coef.	S.E.	Est. coef.	S.E.
Constant	3.09**	0.20	3.08**	0.20	3.54**	0.16
Age:						
<30	-0.07	0.10	-0.05	0.10	0.01	0.08
36-40	0.02	0.08	0.04	0.08	0.08	0.07
41-45	-0.06	0.12	-0.02	0.12	0.11	0.10
>45	0.13	0.15	0.15	0.15	0.09	0.12
Years of military practice:						
0-2	0.09	0.09	0.30**	0.10	-0.06	0.08
3-5	0.04	0.08	0.05	0.08	0.08	0.06
11-15	0.003	0.09	-0.06	0.09	0.06	0.07
>15	0.19	0.13	0.20	0.13	0.16	0.11
Recruitment:						
Berry/draft	0.08	0.18	-0.13	0.19	-0.08	0.15
Volunteer	-0.13	0.11	-0.08	0.11	-0.10	0.09
Other	-0.07	0.10	0.08	0.10	0.01	0.08
Branch of service:						
Army	-0.06	0.13	0.15	0.13	-0.23*	0.11
Air Force	0.04	0.11	0.17	0.12	-0.02	0.09
In post-graduate training	0.10	0.07	0.15*	0.07	0.03	0.06
Still under obligation	-0.003	0.07	0.01	0.07	-0.02	0.06
Internal medicines	0.44**	0.10	0.40**	0.10	0.34**	0.08
Pediatrics	-0.21	0.12	-0.12	0.13	0.31**	0.10
Ob/Gyn	0.04	0.12	-0.24	0.13	0.04	0.10
Surgery	0.19*	0.09	0.21*	0.10	0.14	0.08
Psychiatry	0.69**	0.14	0.71**	0.14	0.74**	0.12
RAP ^c	0.38**	0.11	0.60**	0.11	0.28**	0.09
Other specialty	-0.21	0.12	0.19	0.12	0.18	0.10
Satisfied with military life	0.25**	0.05	0.32**	0.06	0.34**	0.05
Months in current location	-0.002	0.001	-0.002	0.001	-0.001	0.001
No. of PCS moves in career	-0.02	0.01	-0.02	0.01	-0.01	0.01
Ever been in civilian practice	0.06	0.09	0.10	0.09	0.01	0.07
Gender: Female	-0.02	0.08	0.01	0.08	0.04	0.06
Marital status:						
Never married	-0.17	0.10	-0.10	0.10	-0.05	0.08
Sep./div. or widowed	-0.24	0.14	-0.18	0.14	-0.21	0.12
Persons in household	-0.09	0.05	-0.09	0.05	-0.05	0.04
No. of dependent children	0.10	0.05	0.08	0.05	0.06	0.04

Table 19. Least Squares regression estimates:^a Satisfaction with the availability of resources (continued)

Variable ^b	Physical resources		Staff		Equipment	
	Est. coef.	S.E.	Est. coef.	S.E.	Est. coef.	S.E.
Race/ethnicity:						
Black	0.15	0.15	0.35*	0.15	0.05	0.12
Hispanic	-0.06	0.16	-0.13	0.16	0.14	0.13
Asian	-0.19	0.12	-0.12	0.12	-0.28**	0.10
Other group	-0.15	0.17	-0.21	0.18	-0.11	0.14
Southern California region	0.61**	0.08	0.10	0.08	0.11	0.06
North Carolina region	0.97**	0.14	0.09	0.15	0.16	0.12
Survey year 92	-0.03	0.08	-0.28**	0.09	-0.12	0.07
S. California*survey 1992	-0.11	0.11	-0.08	0.11	-0.14	0.09
N. Carolina*survey 1992	-0.40*	0.20	0.05	0.21	-0.35*	0.17
No. of Obs:	1,316		1,355		1,336	
R-square	0.18		0.15		0.14	
Adj. R-sq.	0.16		0.12		0.11	

a. * $p \leq 0.05$, ** $p \leq 0.01$.

b. Omitted variables: age, 30–35; years of military practice, 6–10; recruitment path, scholarship/USUHS; specialty, general/family practice; gender, male; marital status, married; race/ethnicity, white; region, Tidewater, VA; survey year, 1995.

c. Radiology, anesthesiology, or pathology.

Table 20. Least Squares regression estimates:^a Satisfaction with the referrals by facility type

Variable ^b	Own MTF		Other service MTF		Civilian facilities	
	Est. coef.	S.E.	Est. coef.	S.E.	Est. coef.	S.E.
Constant	3.32**	0.22	2.71**	0.27	3.50**	0.21
Age:						
<30	-0.03	0.11	-0.07	0.13	-0.13	0.11
36-40	-0.07	0.09	0.12	0.11	0.08	0.09
41-45	-0.16	0.13	-0.10	0.17	-0.19	0.13
>45	0.13	0.17	0.34	0.21	-0.15	0.16
Years of military practice:						
0-2	-0.02	0.11	0.07	0.13	-0.02	0.10
3-5	0.01	0.09	-0.13	0.11	-0.01	0.08
11-15	-0.03	0.10	0.01	0.13	-0.14	0.10
>15	-0.01	0.15	0.22	0.19	0.05	0.14
Recruitment:						
Berry/draft	0.14	0.20	0.14	0.26	0.27	0.20
Volunteer	0.04	0.12	0.09	0.16	0.10	0.12
Other	-0.19	0.11	0.05	0.14	-0.09	0.11
Branch of service:						
Army	0.70**	0.14	-0.57**	0.14	0.36**	0.13
Air Force	0.47**	0.13	-0.04	0.13	0.26*	0.11
In post-graduate training	-0.01	0.08	-0.01	0.10	-0.08	0.08
Still under obligation	-0.07	0.08	0.07	0.10	-0.06	0.07
Internal medicines	-0.30**	0.11	0.09	0.13	-0.004	0.10
Pediatrics	-0.04	0.14	0.46**	0.17	0.08	0.12
Ob/Gyn	0.00	0.14	0.35*	0.16	0.26	0.14
Surgery	-0.22*	0.11	0.09	0.12	-0.02	0.10
Psychiatry	0.18	0.15	0.27	0.18	-0.06	0.15
RAP ^c	0.09	0.12	0.17	0.16	-0.03	0.12
Other specialty	-0.78**	0.13	-0.36*	0.15	-0.46**	0.12
Satisfied with military life	0.44**	0.06	0.41**	0.08	0.19**	0.06
Months in current location	0.0004	0.001	-0.004**	0.001	0.0002	0.001
No. of PCS moves in career	-0.01	0.02	-0.05*	0.02	0.01	0.02
Ever been in civilian practice	-0.11	0.10	-0.21	0.12	-0.04	0.10
Gender: Female	-0.06	0.09	-0.25*	0.11	-0.05	0.08
Marital status:						
Never married	-0.02	0.11	-0.20	0.14	-0.05	0.11
Sep./div. or widowed	0.07	0.15	0.26	0.20	-0.04	0.15

Table 20. Least Squares regression estimates:^a Satisfaction with the referrals by facility type (continued)

Variable ^b	Own MTF		Other service MTF		Civilian facilities	
	Est. coef.	S.E.	Est. coef.	S.E.	Est. coef.	S.E.
Persons in household	0.001	0.06	0.10	0.08	0.03	0.05
No. of dependent children	-0.02	0.06	-0.18*	0.08	-0.03	0.05
Race/ethnicity:						
Black	0.30	0.17	0.38*	0.10	0.13	0.16
Hispanic	-0.05	0.18	-0.10	0.20	-0.08	0.16
Asian	0.08	0.13	-0.09	0.16	0.09	0.12
Other group	-0.04	0.19	-0.02	0.24	-0.14	0.20
Southern California region	0.24**	0.09	0.31**	0.11	-0.09	0.08
North Carolina region	0.19	0.17	-0.36	0.21	0.25	0.15
Survey year 92	-0.15	0.10	-0.16	0.11	-0.03	0.09
S. California*survey 1992	0.09	0.12	0.03	0.15	0.24*	0.12
N. Carolina*survey 1992	0.33	0.23	0.26	0.28	-0.31	0.21
No. of Obs:	1,302		710		1,046	
R-square	0.16		0.19		0.09	
Adj. R-sq.	0.13		0.15		0.05	

a. * $p \leq 0.05$, ** $p \leq 0.01$.

b. Omitted variables: age, 30–35; years of military practice, 6–10; recruitment path, scholarship/USUHS; specialty, general/family practice; gender, male; marital status, married; race/ethnicity, white; region, Tidewater, VA; survey year, 1995.

c. Radiology, anesthesiology, or pathology.

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