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The MHS Optimization Project: Estimating the Potential for Recapturing CHAMPUS Workload in the MHS

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Estimating the Potential for Recapturing CHAMPUS Workload in the MHS

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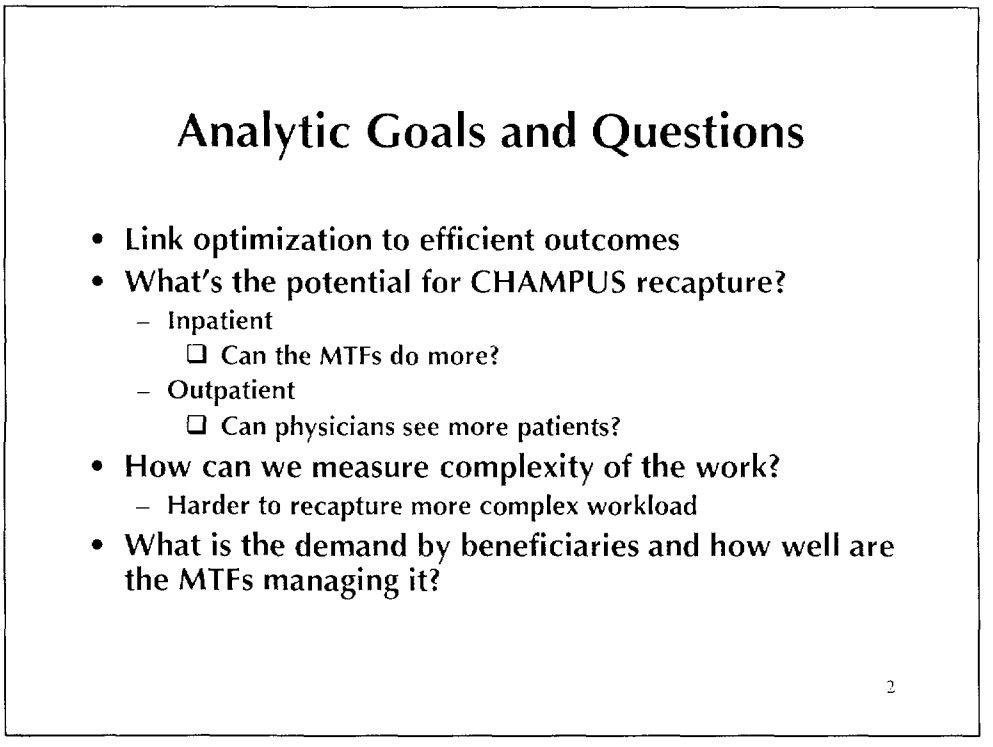
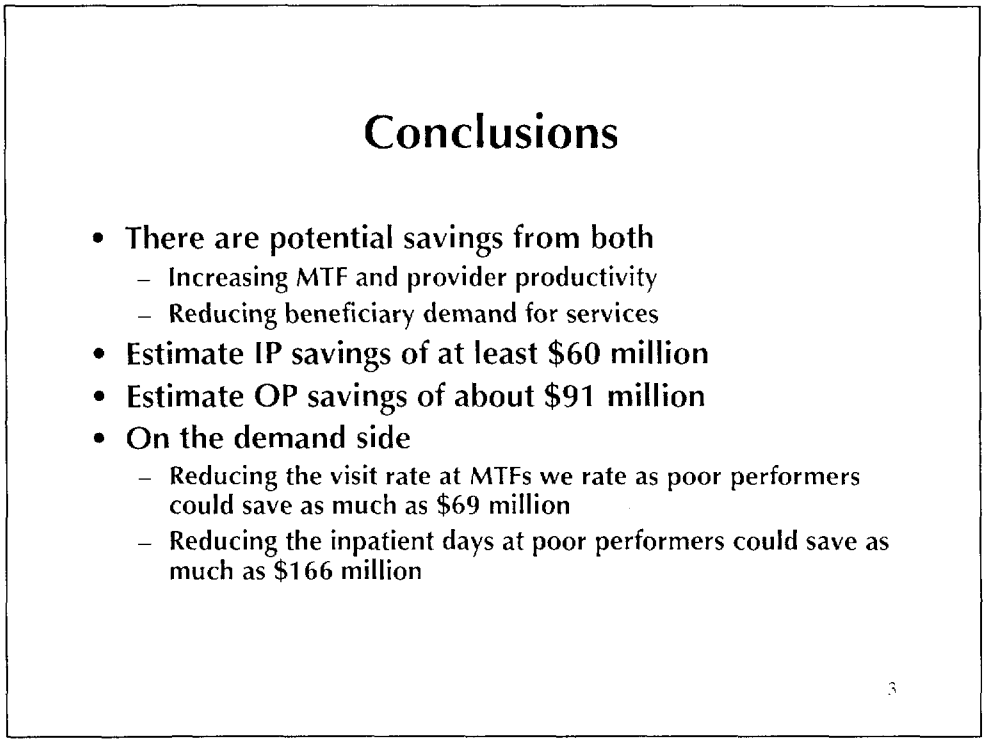


This briefing reports the results of a study for the Office of the Assistant Secretary of Defense for Health Affairs (OASD/HA) and the TRICARE Management Activity (TMA) on the Optimization Plan of the Military Health System (MHS). The plan is designed to make the MHS more efficient as well as to increase the overall health of DOD beneficiaries. Our main goal is to determine the link between optimization and several measures of system efficiency. We explore how greater efficiency can increase system capacity so that current workload that is going to the managed care support contractors (MCSCs) can come back into the MTFs. This "recapture" of CHAMPUS workload is the main focus of this study.

We examine recapture in several ways: by the military's medical treatment facilities (MTFs) providing more of the inpatient (IP) workload (the overnight stays that go "downtown") and more of the outpatient (OP) visits that today might go to civilian providers. Some of the workload may be part of the Prime network of civilian providers that the MCSCs have set up for DOD beneficiaries, but the majority is for non-network services for which DOD ultimately pays. For both IP and OP workload, we examine whether MTF physicians can provide more of these services and compare the "complexity" of the work with that provided by civilian providers.

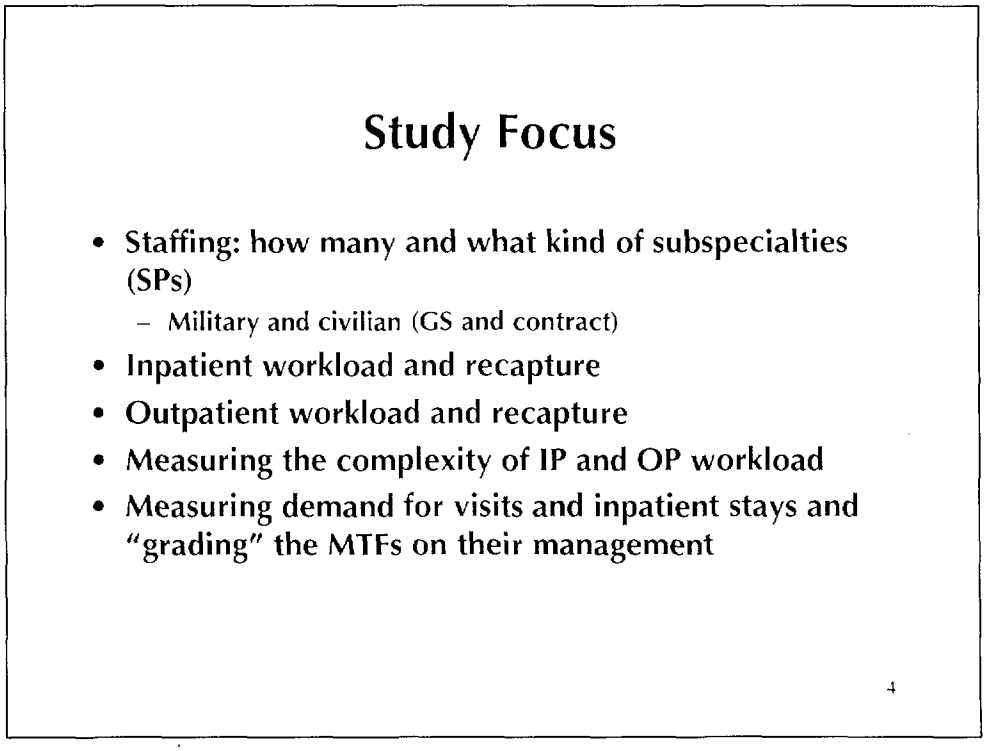
Lastly, we examine the demand for services, by measuring the demand rates of DOD beneficiaries and how well that demand is managed by local MTFs.



We present some of our main conclusions in this slide. We found the potential for savings from increasing MTF and provider productivity, for both inpatient and outpatient workload. Also, savings could result from reducing the beneficiary demand for services—another way of expanding system capacity.

We estimate that, if the MTFs were to provide more of the inpatient stays than they did for the period of study, the savings would amount to at least $60 million. We calculated this by using some of the higher performing MTFs as benchmarks. If MTF physicians and physician extenders were to provide visits at annual rates roughly equivalent to civilian providers (after discounting for military-unique time spent away from patient care), we estimate savings at just over $90 million.

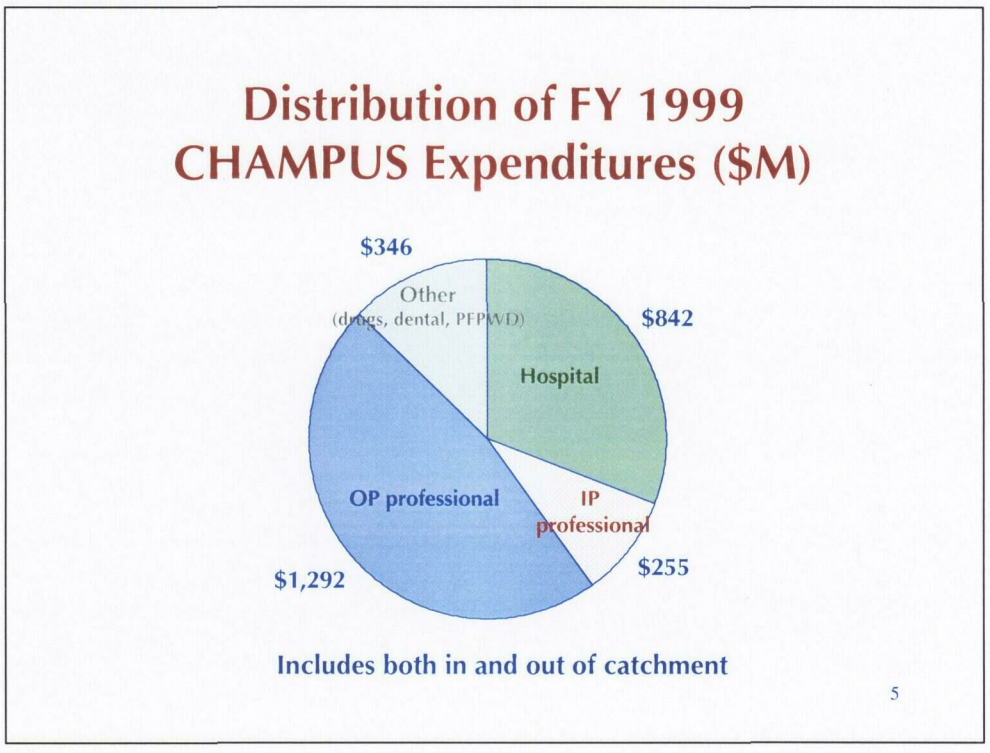
On the demand side, we examined MTFs throughout the system and estimated which ones were effectively managing the demand of their beneficiaries by keeping inpatient and visit rates lower than the rates of their peers (under the assumption that they still provided appropriate care). If those who performed worse than their peers performed even at average rates, the system could save $69 million in OP costs and as much as $166 million in IP costs.



We focused on a number of different areas, shown in the slide above. We began by collecting staffing data for each site in the MHS (for Regions 1 through 12). We gathered data on physicians and non-physician extenders (i.e., physician assistants (PAs) and nurse practitioners (NPs)), both military and civilian. Second, we examined IP workload and the extent to which that workload could be "recaptured" from CHAMPUS and directed back to the MTFs. Third, we examined OP workload and the potential for recapture. Fourth, we measured the complexity of services offered, both at the MTFs and by civilian providers, but paid for by the government through the managed care support contracts, which we will often refer to as CHAMPUS, the somewhat older term for the contracts.

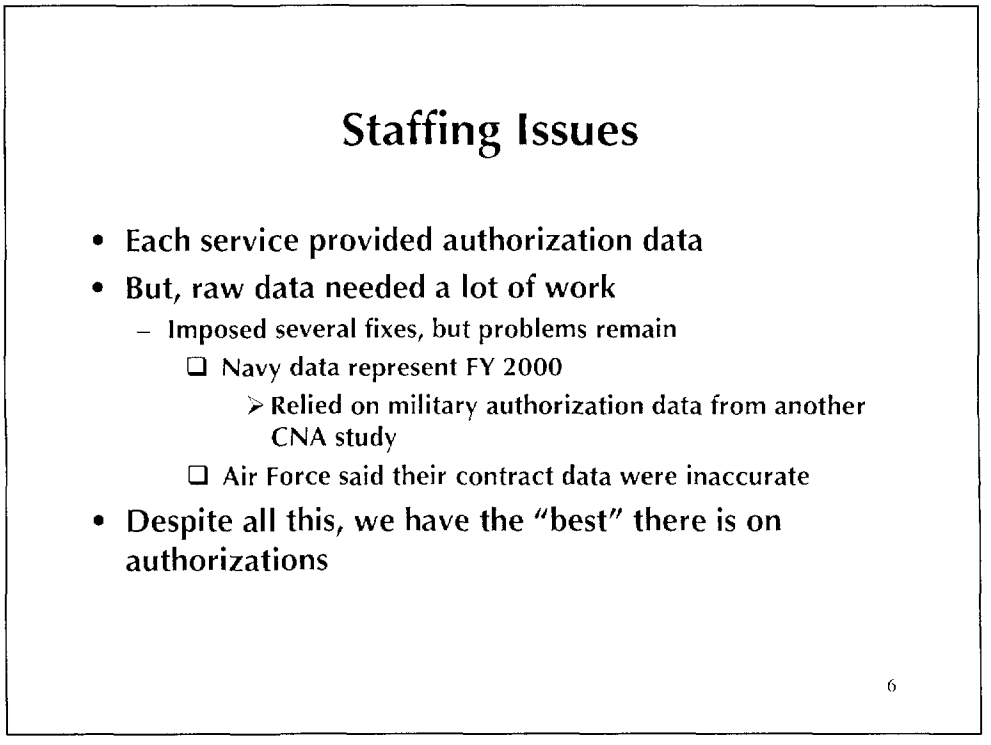
The fifth and final area focused on measuring the demand for services by DOD beneficiaries—for OP visits, IP hospital stays, or OP surgical procedures. As part of this effort, we also performed a statistical analysis that allowed us to determine how well the MTFs were managing the demand of their beneficiaries for health care services.

Before proceeding, we point out that another focus might have been to reduce system capacity and outsource even more services from the MTFs. But, we felt it was appropriate to begin with the premise that there are readiness-related constraints that would limit reductions in staff and facilities. Future analyses may want to use our results to determine whether reallocating or reducing staff at selected facilities would lead to more efficient outcomes, yet still meet any readiness requirements.



Before we show our counts of staffing throughout the system, we thought it would be useful to place in perspective the expenditures on services paid through CHAMPUS. We often hear about the many "billions" of dollars in CHAMPUS expenditures, but the reality is that the potential for recapture may be more limited. The pie chart shows that, for FY 1999, CHAMPUS spent a little more than $2.7 billion on health care expenditures for both in- and out-of-catchment beneficiaries, with another $600 million spent on contractor and government administrative cost. Of this total, about $842 million was for hospital charges and almost $1.6 billion for professional charges—$255 million on inpatient professional charges and just under $1.3 billion on outpatient professional charges. In addition to these costs, almost $350 million was paid for pharmacy, dental, and the program for persons with disabilities (PFPWD).

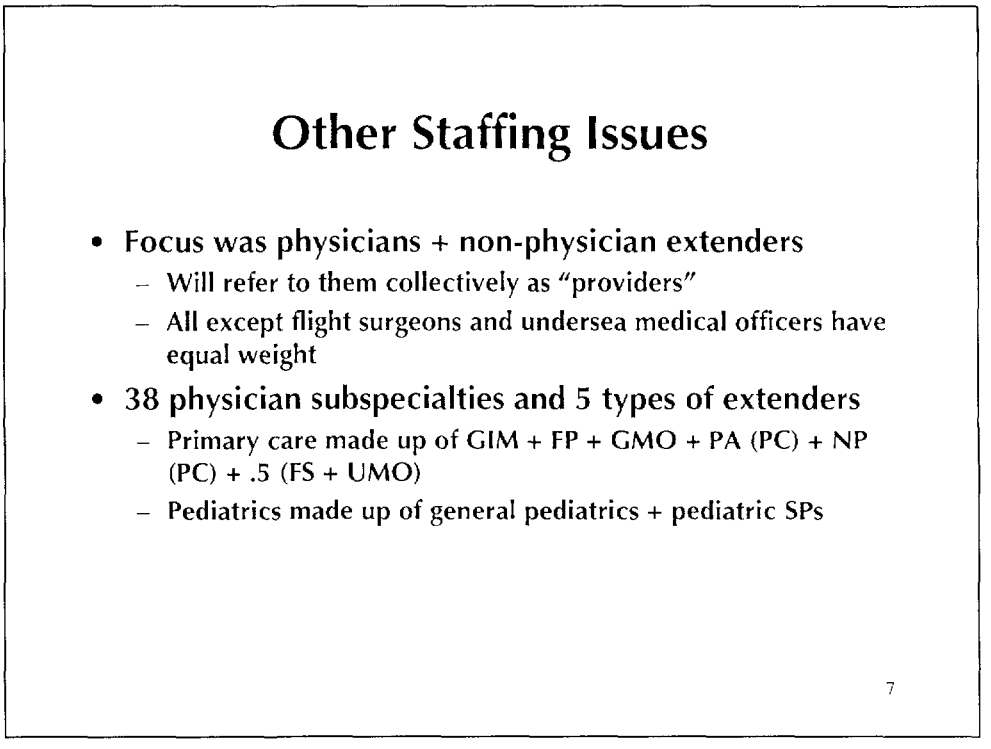
One important point here is that these values include the costs for out-of-catchment beneficiaries, which turns out to be almost 55 percent of the total expenditures. In our study, we examine the potential to recapture care of in-catchment beneficiaries (which is less than half of the $2.7 billion shown in the figure), but recapturing care for those out-of-catchment beneficiaries is beyond the scope of our analysis.



Our analysis of staffing began by consulting with our sponsor at HA and the three services' manpower experts. We all recognized that any measure of staffing is imperfect, but the decision was made to rely on authorization data. Authorized billets may not always be filled, but the actual "bodies" filling MTF positions may change from month to month, and full-time-equivalents (FTEs) are not always counted consistently across services or even across specialties. Authorizations imply what DOD is buying when it receives its manpower dollars and, although not constant over time, do not vary as much as the other potential staffing variables.

The data we received clearly required a lot of work before they could be made useful. We imposed several corrections after conferring with eac h service's manpower experts, but certain problems remain. The Navy could not offer us its FY 1999 authorization data, telling us it had data only for FY 2000 or FY 2001. So, despite the fact that we had FY 1999 health care claims data, we had to use the FY 2000 data under the assumption that the two years would be close. The Air Force manpower expert felt that the Air Force did not have reliable data on the number of contract personnel at its MTFs. We've been told the numbers would be small, but we have no way to confirm that.

Despite all of these problems, we believe that our data are reasonable estimates of staffing and the best available, but any study of system efficiency and productivity requires good staffing data. More needs to be done here.

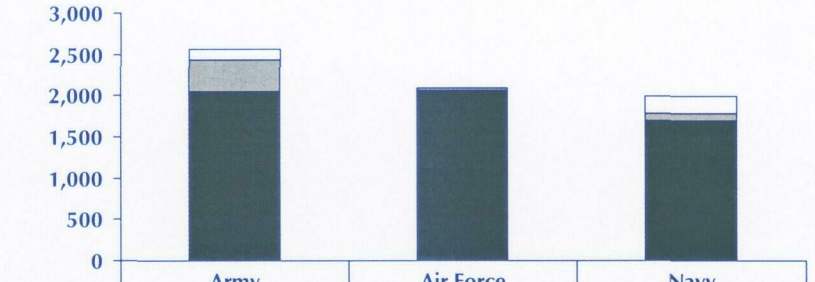


As we said earlier, our focus has been to collect data on physicians and extenders, whom we collectively refer to as providers. All of the providers, with a few exceptions, were given equal weight, in terms of the care they deliver. In other words, we made no distinction in our count between physicians and extenders. We did, however, follow the HA "rule" that flight surgeons (FSs) or undersea medical officers (UMOs), although both have medical degrees, count only as one-half of the other providers, mainly because of other duties they may be required to perform.

We gathered information on 38 subspecialties (SPs) and 5 types of extenders. For the latter, we had what was called primary care, pediatric PAs, primary care, pediatric NPs, OB/GYN NPs, and other PAs and other NPs.

In some cases, we created aggregate provider specialties, such as for adult primary care and pediatrics. For adult primary care, which we will simply call primary care (PC), we added up the number of general internal medicine (GIM) physicians, family practitioners (FPs), general medical officers (GMOs), the PC PAs and NPs, and the FSs and UMOs (each weighted by 0.5). For pediatrics, we included all general pediatricians and pediatrics SPs, the latter under the assumption that they are used mainly for general pediatric care and offer their particular specialty only when requested.

Provider Counts by Service



	Army	Air Force	Navy
Contract	130	NA	203.5
GS-civ	388	33	87
Military	2,052	2,063	1,701
Total	2,570	2,096	1,991.5

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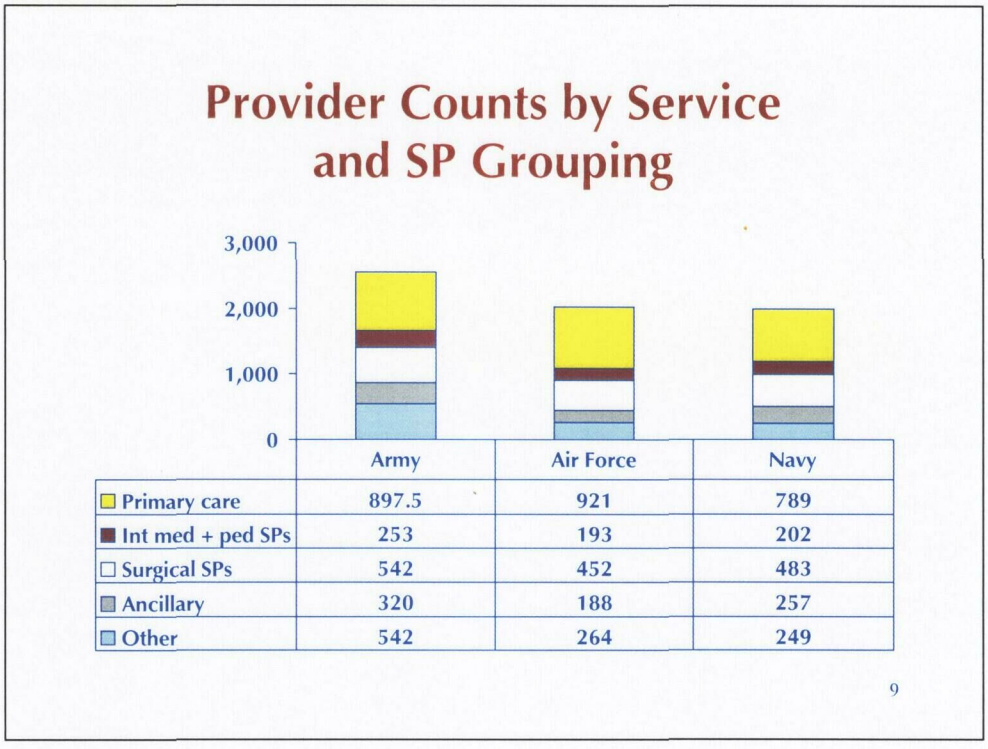
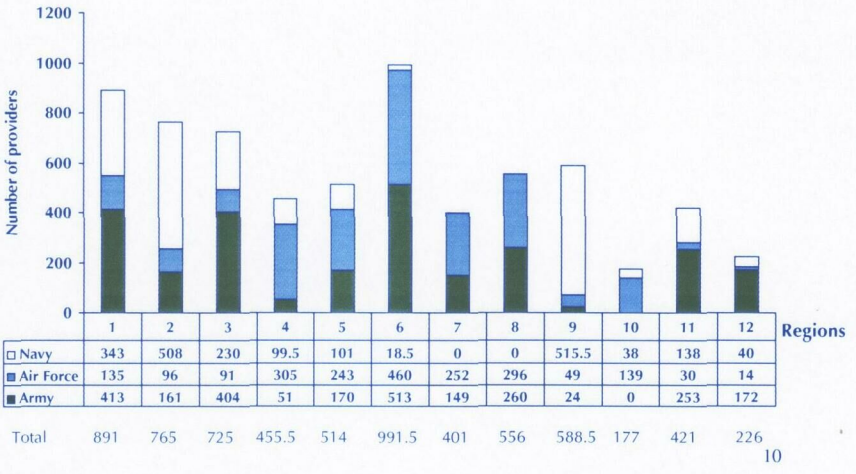
In this slide, we present the raw counts for military, GS-civilian, and contract-civilian providers for the three services (i.e., not discounted for the numbers of FSs and UMOs). The Army has the highest total number of providers (again, physicians + extenders) and the highest number of GS-civilians. The Navy has the fewest in total, but the highest number of contract physicians—more than 200 (contracts are usually written as purchases of care on an FTE basis, not an authorization).



Another way to examine the staffing data is by the providers' specific subspecialties. We indicated earlier that there were more than 40 different SPs in total for the two groups, but here we've aggregated their various specialties into 5 categories—primary care (defined by adult PC and pediatrics on slide 7), the internal medicine SPs (cardiology, nephrology, gastroenterology, etc.), the surgical SPs (general surgery, neurosurgery, orthopedic surgery, OB/GYN, etc.), the ancillary or hospital-based SPs (anesthesiology, radiology, pathology, etc.), and the other group, which really includes the rest and has no easily defined grouping. It would include psychiatry, neurology, and preventive and occupational medicine.

These numbers don't quite match the total values in the previous slide because here we've applied the 0.5 weight to the FSs and UMOs. Nonetheless, the values show that between 33 and 40 percent of the total physicians at the three services' MTFs are in one of the primary care SPs, and the next largest category (with the Army an exception, although close) would be the surgical SPs, ranging from about 17 to 23 percent (the Air Force at the lower bound, the Navy at the upper bound).

Provider Staffing By Region



	1	2	3	4	5	6	7	8	9	10	11	12
Navy	343	508	230	99.5	101	18.5	0	0	515.5	38	138	40
Air Force	135	96	91	305	243	460	252	296	49	139	30	14
Army	413	161	404	51	170	513	149	260	24	0	253	172
Total	891	765	725	455.5	514	991.5	401	556	588.5	177	421	226

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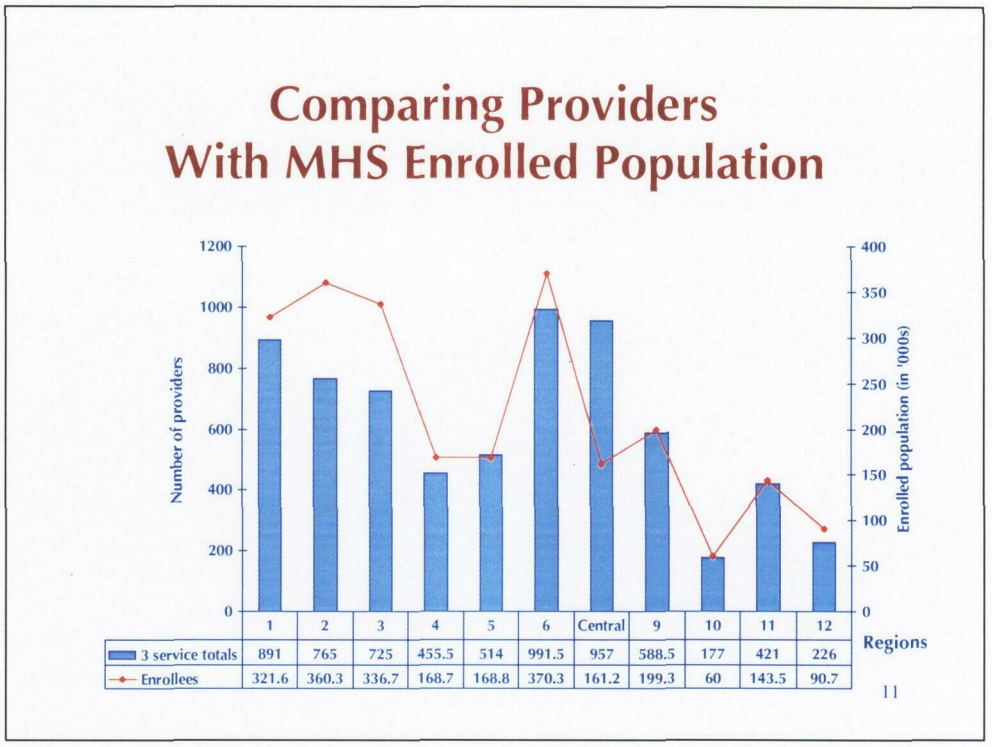
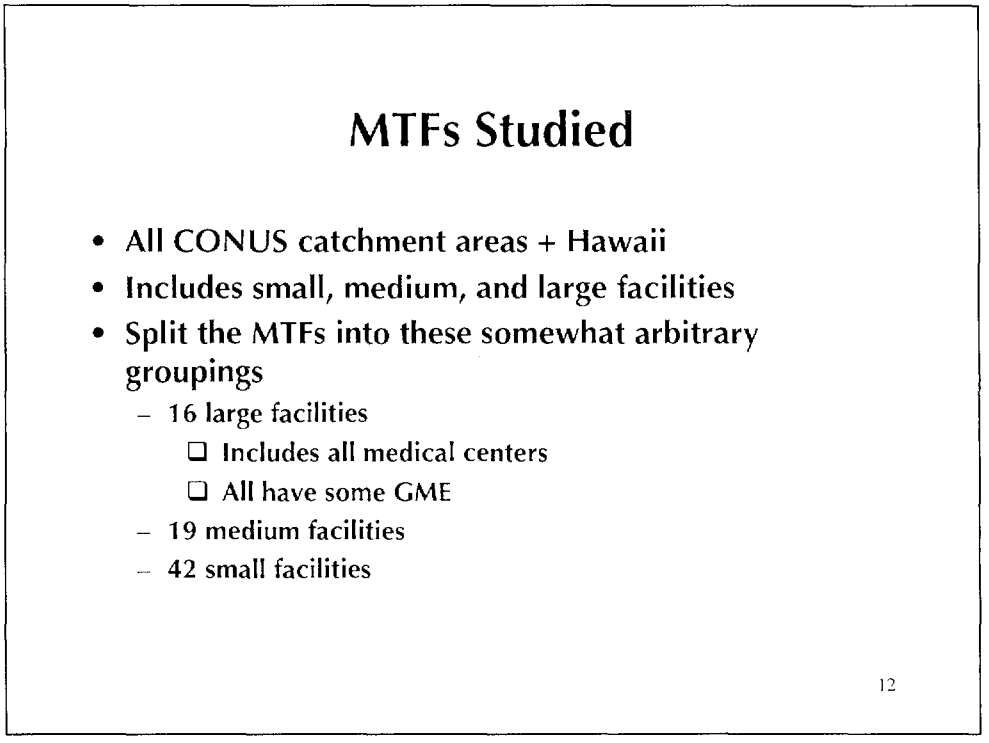
This slide presents yet another view of the data, broken out for each region, by service and the overall total. The largest region, at least as measured by the total number of authorizations, is Region 6, with almost 1,000 total providers, and the smallest is Region 10 with about 177.

We've also indicated the services' staffing by region. The Army has large numbers of staff in Regions 1, 3, 6, 8 and 11, the Air Force in Regions 4, 5, 6, 7, and 8, and the Navy in Regions 1, 2, and 9. Note that Region 12 includes the staff at the Navy and Air Force clinics at Pearl Harbor and Hickam Air Force Base (AFB).



Does the staffing match the workload in each region? Later in the briefing, we'll present several measures of both inpatient and outpatient workload. But, a simple measure often used to determine the appropriate number of staff is the population served. Determining the population served is made more difficult in the Defense Health Plan (DHP) than for most other plans because there is no well-defined insured population. The number of eligibles includes many beneficiaries who never use the system at all. Total users of the system can be broken out by those who enroll and those who don't and go to the MTFs on a space-available basis.

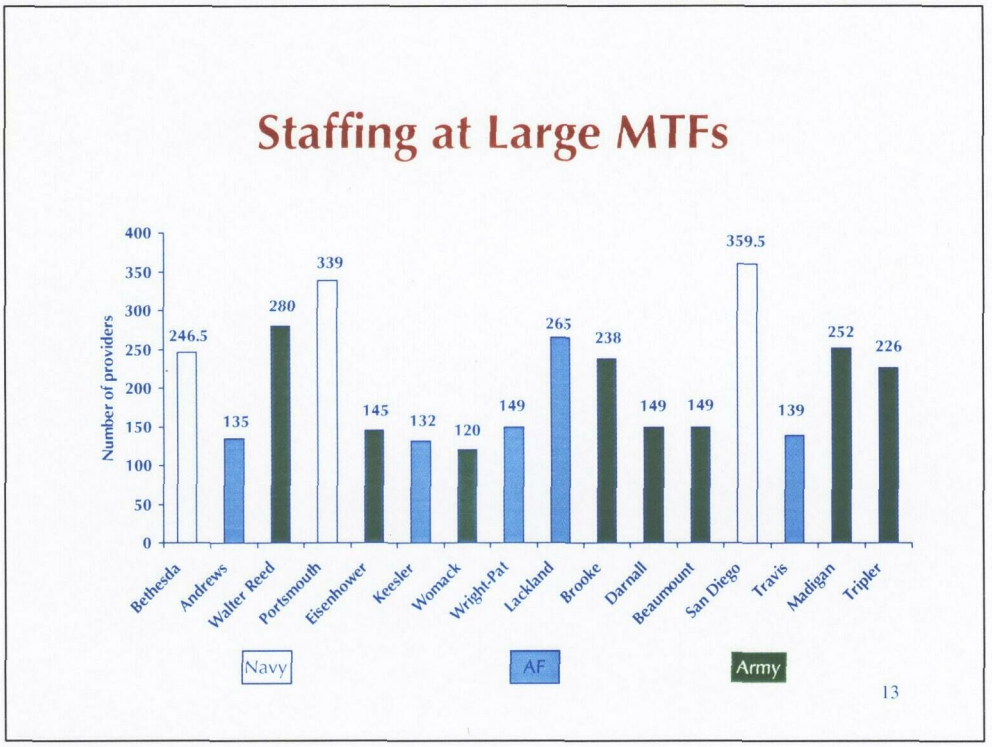
At least the enrollees can be thought of as full-time users. Therefore, in this slide we plot the total staff, as shown in the previous slide, and compare that with the number of MTF enrollees in each region (which includes all active duty personnel in the regions as well).



Our analysis examined all MTFs in the 12 regions (excluding Alaska). The MTFs studied ranged from very small to large medical centers. Given the varied nature of these facilities, we felt it was necessary to group them into three general categories, which we simply call large, medium, and small. The group of large MTFs was made up of 16 MTFs and ranged in size from about 120 physicians or equivalents to more than 350. This group contained all of the medical centers, including several somewhat smaller Army hospitals, which are called Army medical centers (AMCs). All of these provide some graduate medical education (GME), but a few provide GME for many SPs, whereas others may concentrate on only a few SPs.

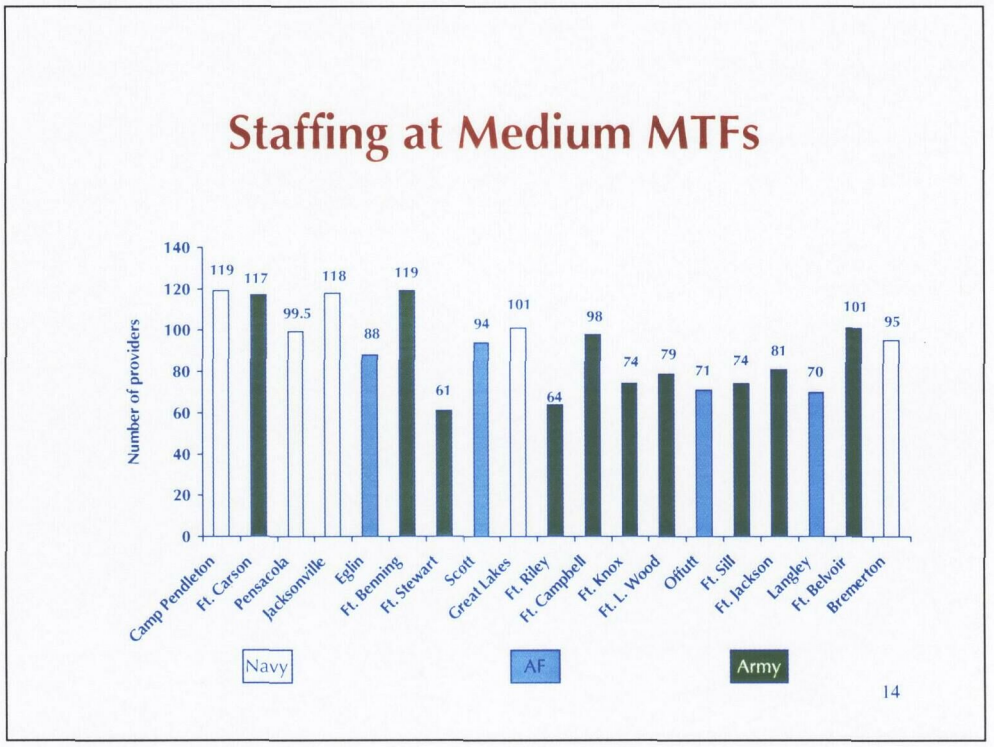
There were 19 medium-sized facilities, and a few of these also provided GME, but most do not. The small category was composed of 42 facilities.

We'll provide more details on each group in the next few slides.



In this slide, we show the relative sizes of the large MTFs. We've also used color and shading to indicate the service of each. For example, the green bars indicate Army facilities, the blue bars indicate Air Force facilities, and the white bars indicate Navy facilities.

Clearly, even within this group of MTFs, there is variation in size and potentially in the services they provide. There are only 3 Navy facilities, but 2 of them—Naval Medical Centers (NMCs) at San Diego and Portsmouth—are the 2 largest facilities in the group, with about 360 and 339 physicians and extenders, respectively. There are 5 Air Force facilities; Lackland is the largest with 266 providers. The Army has 8 facilities, ranging in size from 120 providers at Womack Army Community Hospital (ACH) to 280 at Walter Reed AMC.



This slide shows the 19 medium-sized facilities. There are 10 Army, 4 Air Force, and 5 Navy facilities, ranging in size from about 61 physicians at Ft. Stewart to 119 physicians at Camp Pendleton and Ft. Benning. We use the same color-coding scheme as in the large facilities (and will continue in this manner for the entire presentation).

Small MTFs

- Range in size from 11.5 (Pax River) to 69 (Nellis)
- A few provided no inpatient care
  - Examples: Groton, Davis-Monthan, Fairchild
- But several provided more than half of inpatient stays in their catchment areas
  - Examples: 29 Palms, Mountain Home, Kirtland, Grand Forks, Oak Harbor
  - General characteristic is their isolation

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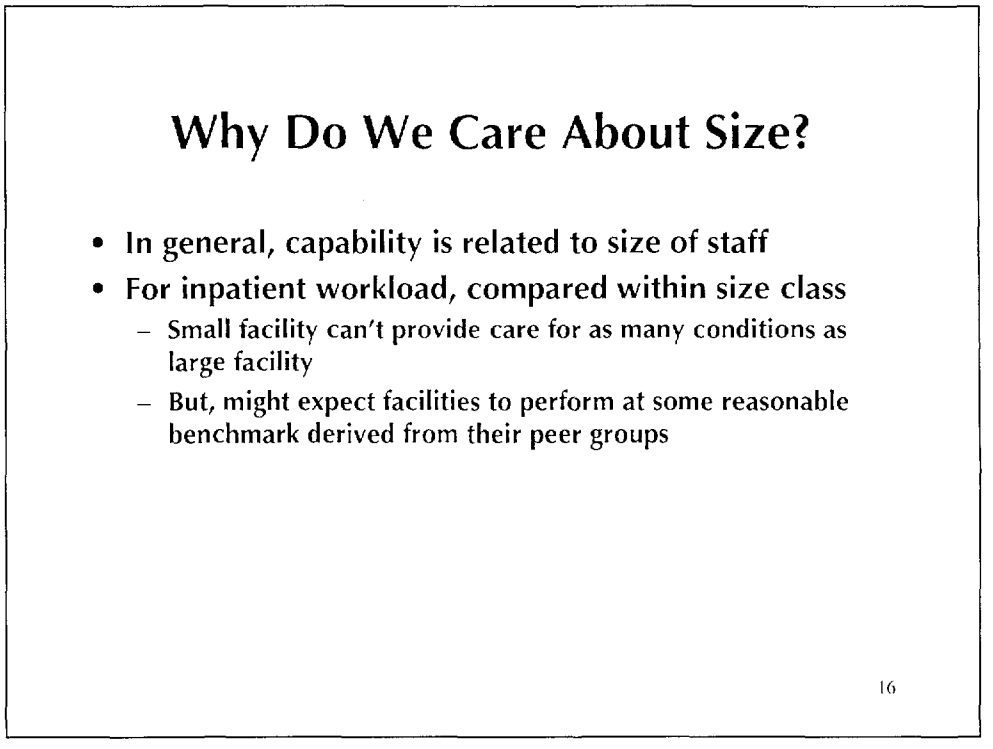
The small facilities were too numerous to show in a bar chart. They range from very small—11.5 physicians at NH Patuxent River—to almost medium size—69 at Nellis Air Force Base. We found that, even though there were defined catchment areas for each, several in FY 1999 had no inpatient facilities, implying that they have probably been downsized since the catchment areas were first defined.

Although these were mainly small facilities, several did offer a lot of care to their local beneficiaries. NHs 29 Palms and Oak Harbor and Air Force hospitals at Mountain Home, Kirtland, and Grand Forks provided more than half of all inpatient stays in their catchment areas. One reason appears to be their relative isolation, which probably means they are the largest and/or most capable hospital in the local area.



We care about the size of the facilities because larger facilities can typically handle more complex cases than smaller ones. A large medical center will usually have many SPs, whereas a small facility may focus mainly on providing primary care to its beneficiaries. We didn't want to compare across all MTFs, but we felt it would be appropriate to compare across similar-sized facilities. That would allow us to create internal benchmarks within each size class for the purpose of making different kinds of comparisons on what the MTFs are doing and on their relative efficiency for providing services.

Focus of Inpatient Cost Recapture

- Examine numbers of inpatient stays at MTF and compare with CHAMPUS numbers
  - Calculate the percentage seen at MTF
  - Calculate the CHAMPUS costs of those who receive civilian care
    - ❑ At present, includes only institutional costs
- Examine specific conditions of DOD beneficiaries
  - By diagnosis-related group (DRG) and major diagnosis category (MDC)

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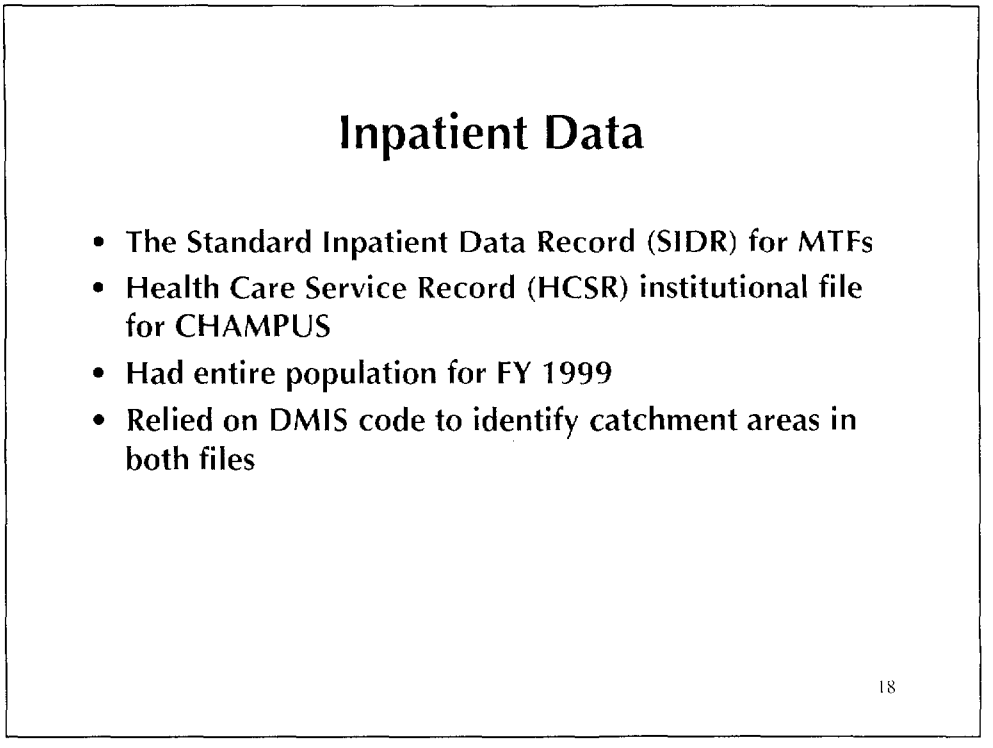
We'll begin by examining the IP workload and the associated cost savings that would result if some of this workload were recaptured. Our measure is based on the number of inpatient stays at a given MTF relative to the number going to catchment area civilian facilities. Civilian health care providers, such as Kaiser or Aetna, may concern themselves with the number of stays per patient, total hospital days per patient, or lengths of stay per patient—some of which we will look at later in the briefing. But only a system like the MHS really has to concern itself with keeping its current staff busy and productive and tracking patients who go elsewhere. This is mainly because civilian health care plans that own their facilities can usually direct patients to the most cost-effective facilities. If patients do not heed, the insurers may simply refuse to pay the bills. Also, if these civilian plans find that their own facilities are too large or unneeded, they can typically adjust the size and number of staff. However, if the MTFs' staffing is reasonably constrained by readiness, DOD must pay when its eligible beneficiaries go to civilian facilities. Then, the system can usually save money by performing more of the workload in-house. For that reason, we calculated the percentage of this in-house care for each facility as well as the CHAMPUS cost.

To understand what kind of work is being done, we use the standard measure of IP workload, the DRG, and, when appropriate, the more aggregate MDC. There are about 50 MDC categories (divided up among medical and surgical categories).



The IP data for the MTFs were processed from the SIDR and the IP data for CHAMPUS were processed from the HCSR institutional file. For both datasets, we had the entire population of IP stays for DOD beneficiaries across the system. We calculated the workload and costs for all catchment areas based on the Defense Medical Information Code (DMIS) code. Once we had all stays at the MTF and the local area civilian facilities, we created the required measures.

Inpatient Workload and Cost Comparisons

Type of facility	Percentage seen at MTF	CHAMPUS cost (in $ millions)
Small	33.8	160.4
Medium	63.5	118.7
Large	80.0	119.3
Noncatchment	0	428.0
Total	44.8	826.4

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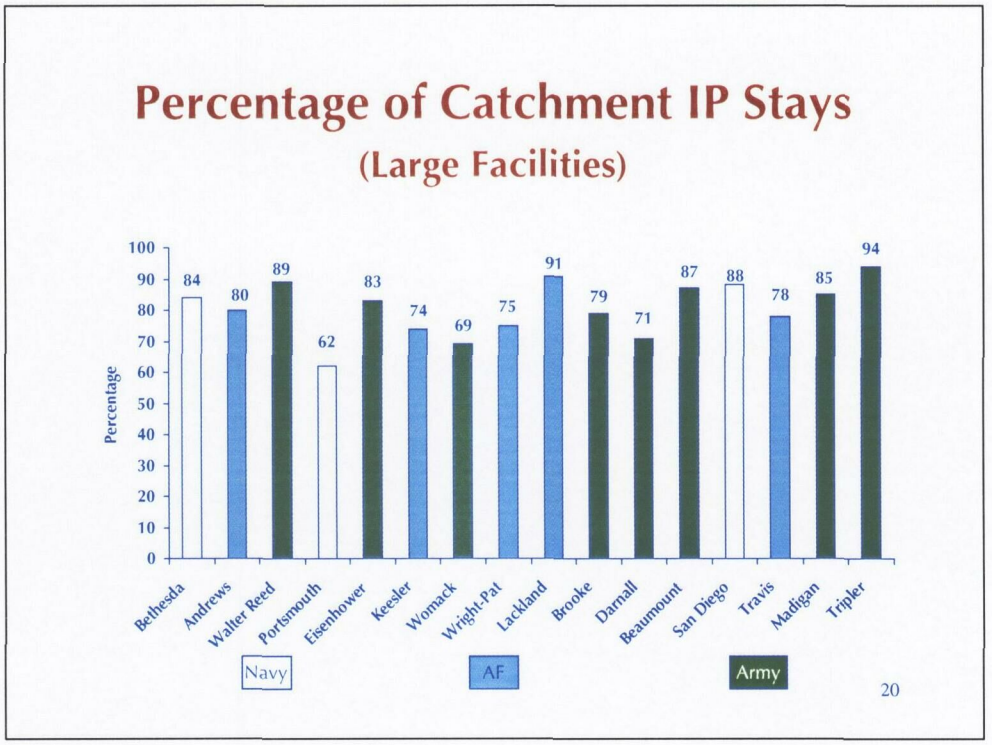
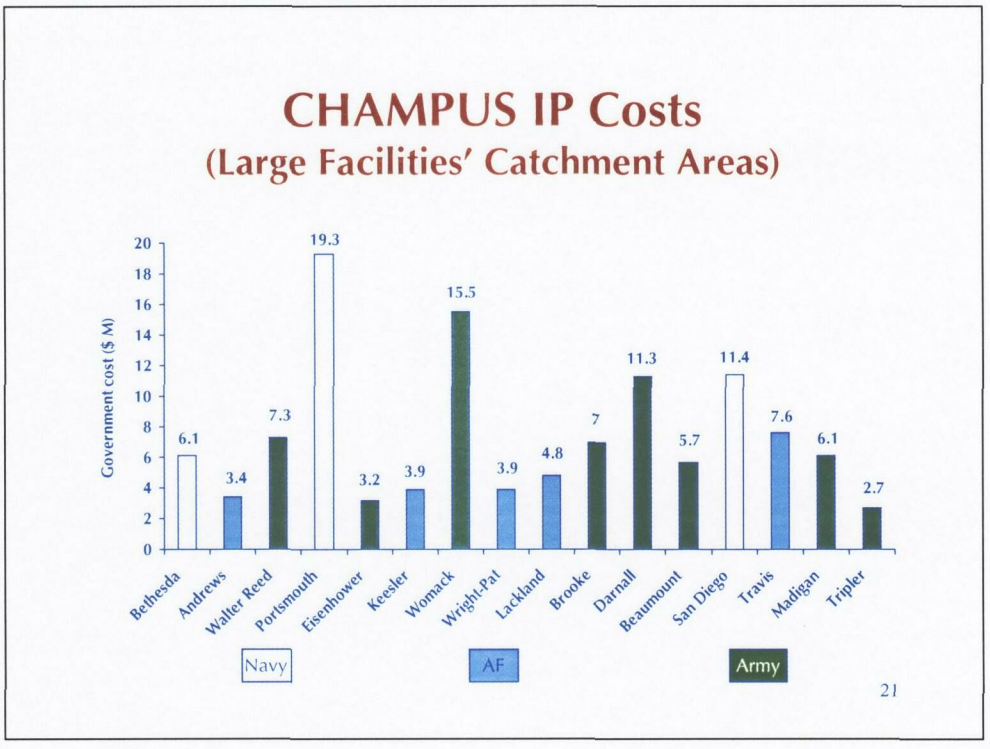
We've already discussed the three size categories for MTFs. Here, we provide a simple overview of how well each group did, in terms of the percentage seen in-house and the cost of care going outside. We also provide these numbers for noncatchment areas, which by definition had no MTF-provided care, and the total for the system.

Not surprisingly, the percentages of in-house care increase as the size of the facilities increases. In other words, larger facilities provided a larger percentage of the care for their beneficiaries in the catchment area. For example, large facilities provided 80 percent of all of the inpatient stays in their area, but small facilities provided only about 34 percent. The total for the system (for Regions 1 through 12) was almost 45 percent.

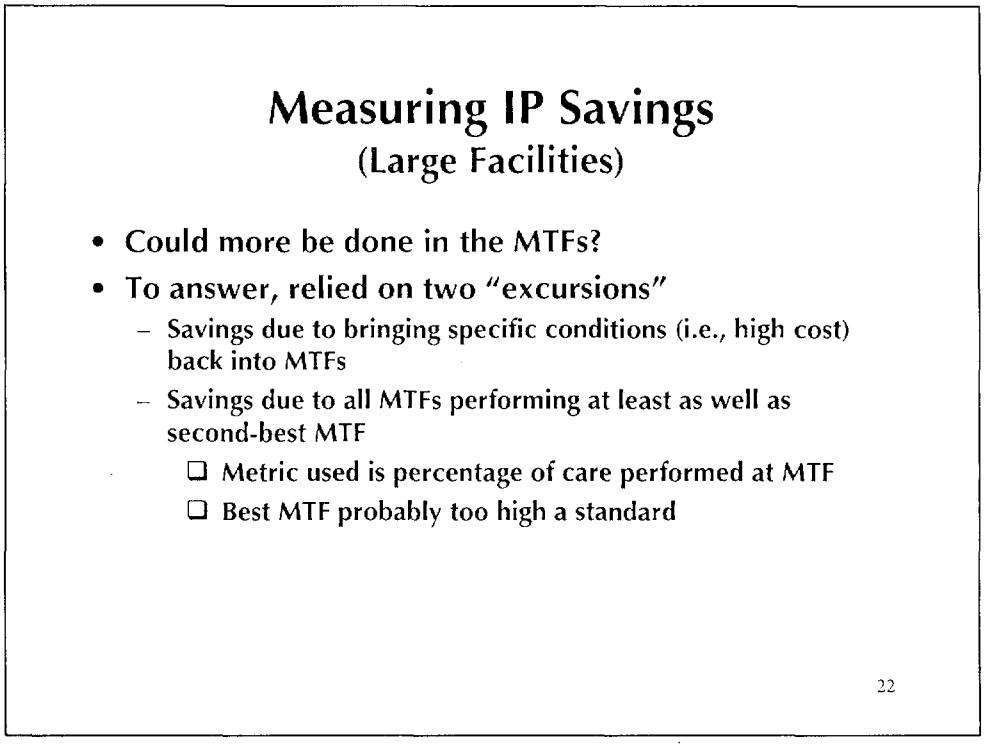
The cost of CHAMPUS IP care (again, only the institutional component, not the provider charges) came to about $826 million. More than half, about $428 million, was incurred by out-of-catchment beneficiaries, which means it can't be brought back to the MTFs. The largest amount of money was being spent on in-catchment beneficiaries near small facilities. That too will be hard, although not impossible, to recapture because they just don't perform as many services as the medium and large facilities. For these two groups, the potential cost that could be recaptured was about $238 million, almost split evenly between the two groups.



How much are the large facilities already providing? According to the figure above, Tripler provides the largest percentage, about 94 percent, and Portsmouth the least, about 62 percent. Only one other MTF was above 90 percent—Lackland, at 91 percent—but several were above 80 percent, the overall average for the group.

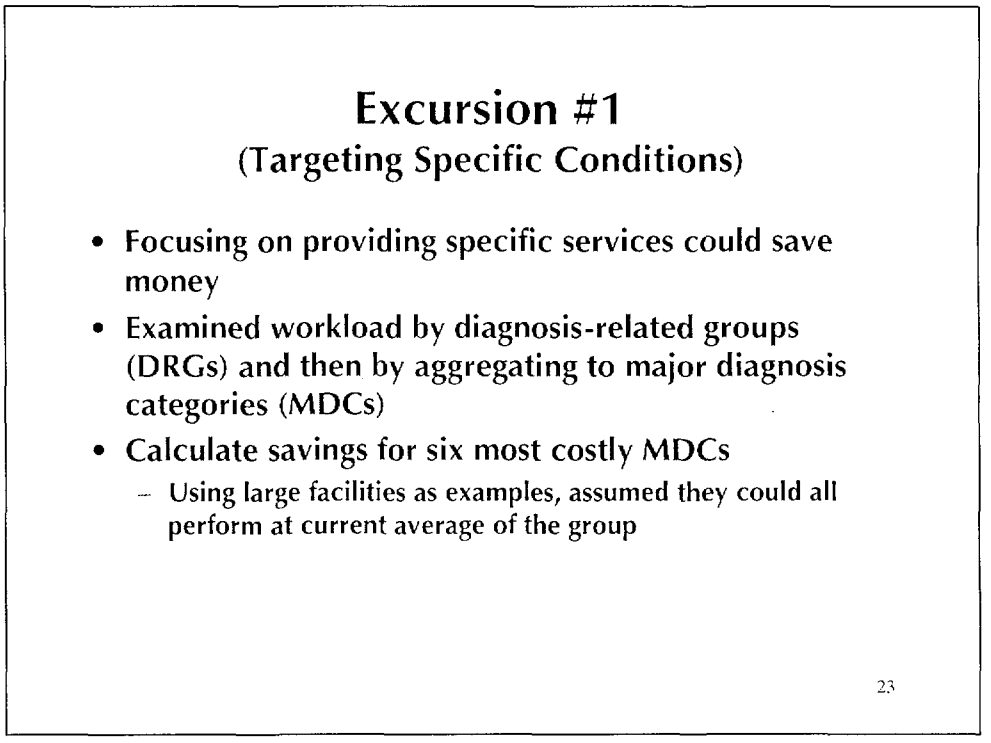


How much is being spent in each of these large facilities' catchment areas for civilian IP care? This figure shows that, in the Tripler catchment area, the cost of civilian-provided care was only $2.7 million, whereas at Portsmouth the care cost over $19 million. It's not surprising that MTFs that perform a higher percentage of care would have less to recapture. Of course, an area with a lot of beneficiaries could be performing at a fairly high level, say near 90 percent, but still have a lot of care go to civilian facilities. The San Diego catchment area is a good example of this. The last slide indicated that San Diego provided 88 percent of all catchment area inpatient care, but there's still more than $11 million that goes outside the MTF.



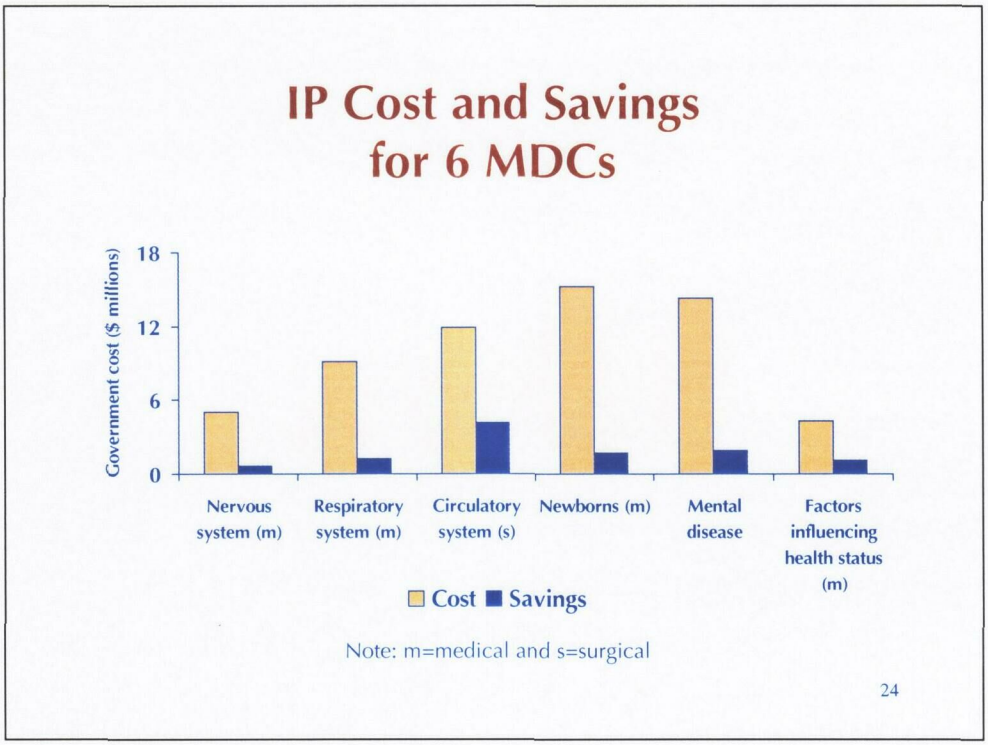
The question these two slides lead us to ask is, Could more be done by the MTFs? The way we answer this question is by what we call excursions, or simple examples of ways to calculate what might be saved. The first excursion examined the potential savings if specific conditions that were formerly treated at civilian facilities were brought back to the MTFs. Which conditions? Clearly, the focus should be on those that are costly, yet apparently can be done (at least to some degree) by the local MTFs.

The second excursion assumed that all MTFs within a size group performed up to an assumed standard. One standard is that they all have to achieve at the very highest level. Perhaps all should provide 94 percent of the IP stays, as Tripler did. A somewhat lower standard might be to use each service's best performing site. This is lower, but would still be a high standard for many MTFs to meet. For our example, we'll focus on the second-best site. In other words, each service's MTFs should provide the same percentage of care in their catchment area as the second-best MTF provided in its catchment area.



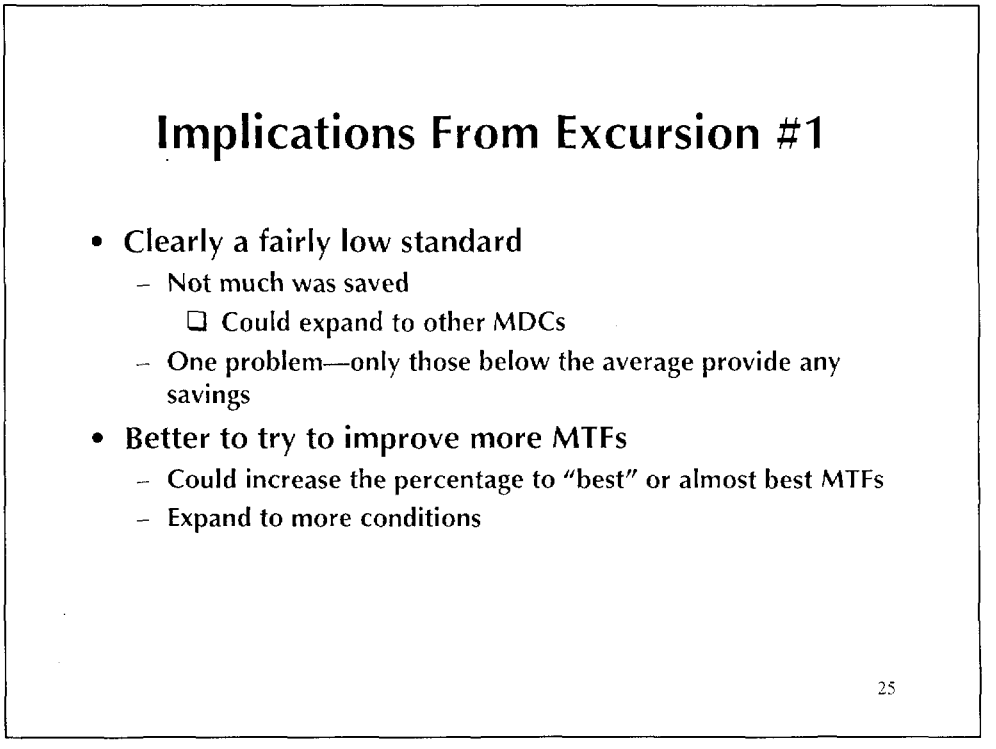
Beginning with excursion #1, we examined the workload by DRG; because of the large number of DRGs at many facilities, we then aggregated to the MDC. For the large facilities, we calculated how much was being spent in total across the 16 MTFs' catchment areas for care at civilian facilities. We chose the six MDCs with the highest cost and then assumed that all MTFs would provide the same percentage as the average for that specific MDC.

For example, suppose a specific MDC was costing the system $15 million across all of the large facilities and that the average for the large MTFs was to provide 70 percent of all such care in their respective catchment areas. We calculated each MTF's average MDC cost. Then any individual MTF providing less than 70 percent was set at the 70–percent level. The savings can be calculated from the number of additional MDCs they would do now (i.e., at the average) multiplied by the MTF's average MDC cost.



In this slide, we show the CHAMPUS cost across the large MTFs for six MDCs, with newborns the most costly, and the savings that would be found if every MTF in the group (i.e., all 16) provided at least the average percentage that the group was doing before the improvement.

Although there are some savings that would accrue, they clearly are not that large. The largest savings would result from performing more of the DRGs that fall under the MDC for the circulatory system, about $4 million. That's out of just under $12 million in cost for that MDC. This represents about a third of the total cost for this MDC, but that's the highest percentage of potential recapture out of the 6 MDCs we used as examples.



We think it's clear that getting all MTFs up to the average, even assuming it could be done, still represents a fairly modest goal—it's not a very high standard. Not much would be saved, although adding MDCs would obviously lead to additional savings. The problem is that many MTFs—specifically, those at or above the average—add nothing to the savings. Thus, only a relative few MTFs would have to perform any better than they do today.

More savings would accrue if more MTFs were forced to improve. One way to do this is to increase the percentage of care provided in-house to a higher level. As we indicated earlier, one way to force more MTFs to improve is to use a higher internal benchmark, one based on the "best" performing MTFs or those near the best.

Excursion #2
(Add Conditions and MTFs)

- MTFs with highest percentage of inpatient stays
  - Navy—San Diego
  - Army—Tripler
  - Air Force—Lackland
- Go to second-best MTF for each service
- Standard-setting MTFs, by service
  - Navy—Bethesda
  - Army—Walter Reed
  - Air Force—Andrews

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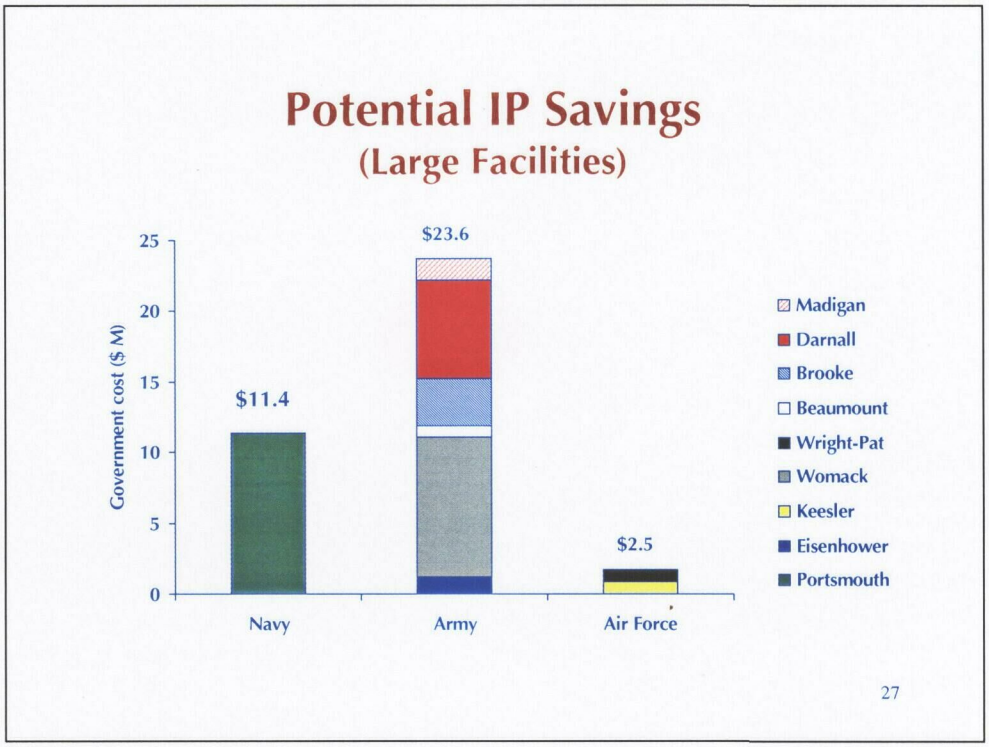
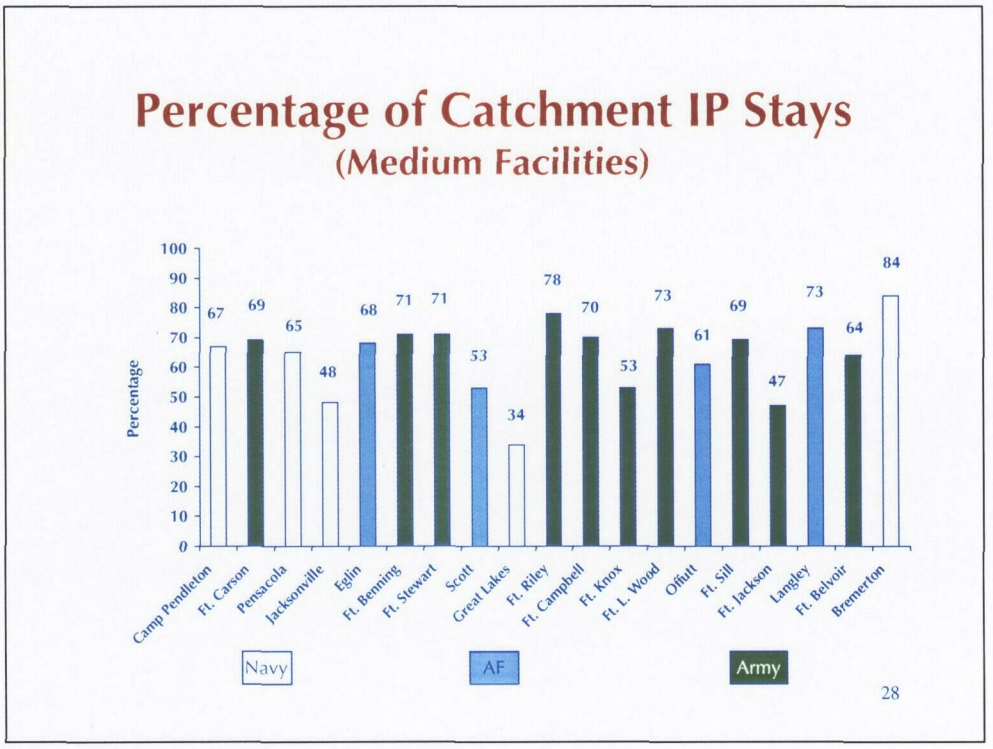
Our second excursion is to rely on the best or second-best MTFs. Here, we present the highest performing MTFs (at least under our proposed metric) in each service for all large facilities. The hospitals at San Diego (Navy), Tripler (Army), and Lackland (Air Force) are the respective leaders for their service. If we then went to the second-best facilities, we would find that all are located in the national capital region. These would be Bethesda (Navy), Walter Reed (Army), and Andrews (Air Force).

It might seem unrealistic to use these fairly large and important facilities for standards across the MHS (at least for the largest facilities). But, looking at slide 20, which gave the percentage of in-house care, shows that the third-best site (with the exception of the Navy, which only has three sites in this group) for the Army and Air Force would have percentages only about 2 points behind the second-best sites. To be consistent with our own benchmark, we therefore stick with the second-best sites in each service.

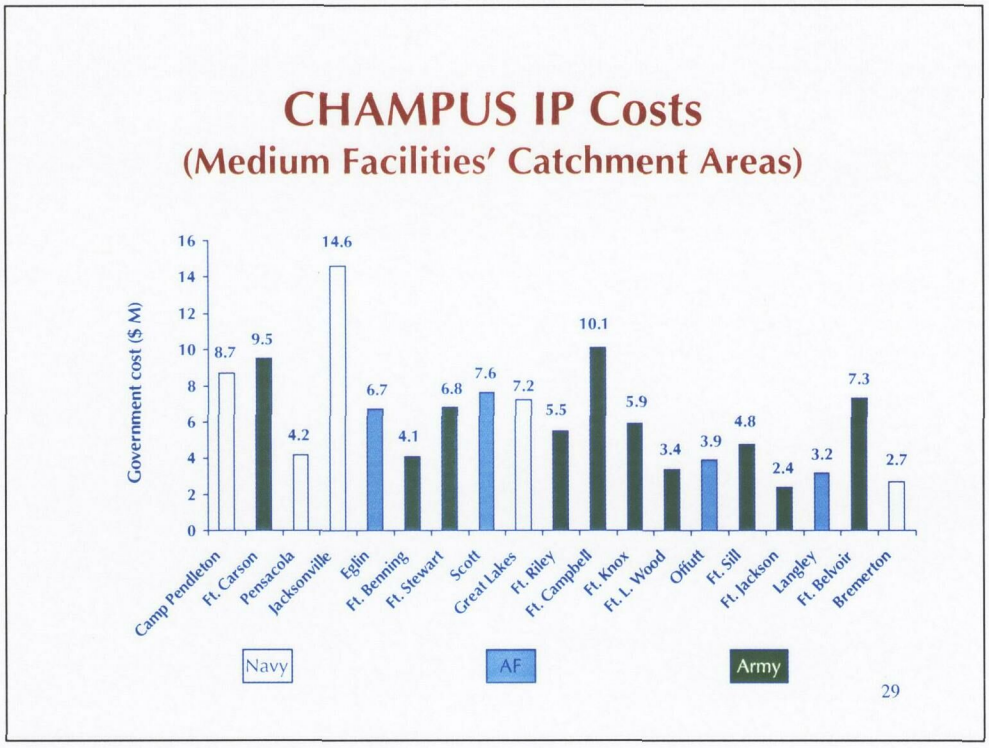


The savings from assuming this second-best benchmark are shown in this slide. Much more is saved than in our first excursion, a total of about $37.5 million. The single biggest savings result from getting Portsmouth up to the 84-percent level observed for Bethesda. For the Army, Womack is close behind. Could Portsmouth or any other MTF realistically improve that much? That's hard to say, without a much more intensive investigation of the facility and its resources and capabilities. We should point out that Portsmouth was getting ready to move into a new facility and may have been reducing new patients for long stays. Portsmouth has a larger beneficiary population and provides more procedures than Bethesda, although a lower percentage within its catchment area. All we can say for sure is that Portsmouth is much closer in size to San Diego—in terms of total physicians plus extenders—than it is to Bethesda. San Diego performs 88 percent of its catchment area IP stays. Thus, it seems feasible for Portsmouth to improve from the 62 percent observed in FY 1999.

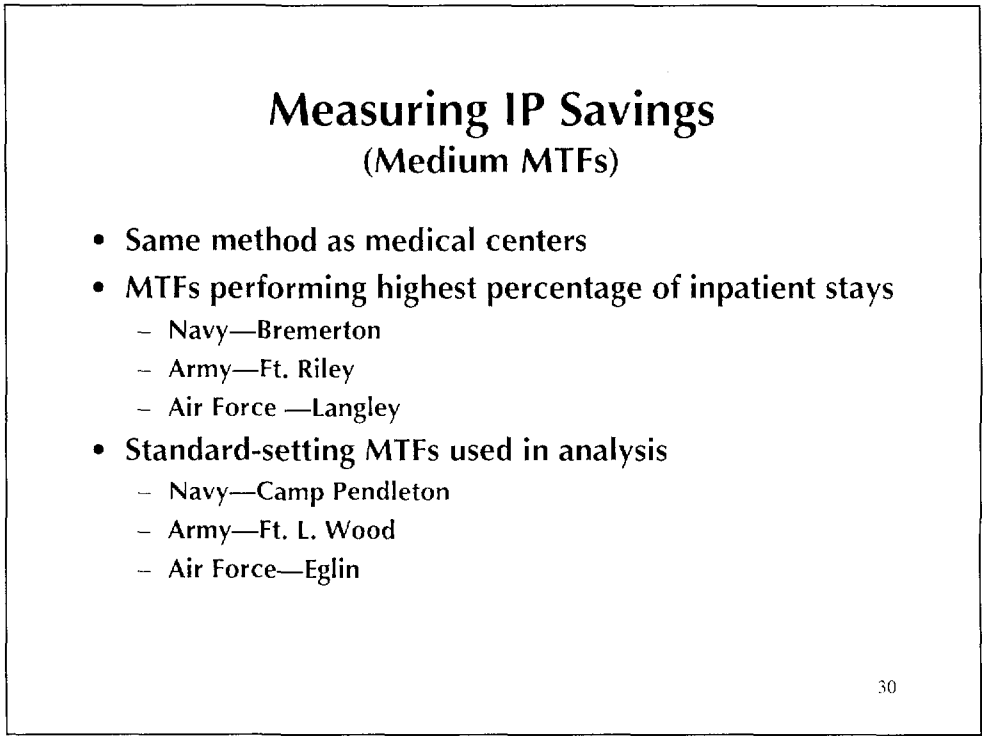
Finally, some may ask, Why not use the best sites as the benchmark? How much would have been saved if San Diego, Madigan, and Lackland, the MTFs with the highest percentages, were the benchmarks? Assuming that all large MTFs performed at these higher levels (depending on the service), we calculated savings of about $63.9 million, or more than half of the total IP CHAMPUS costs for the large facilities and about $26 million more than under the second-best benchmark.



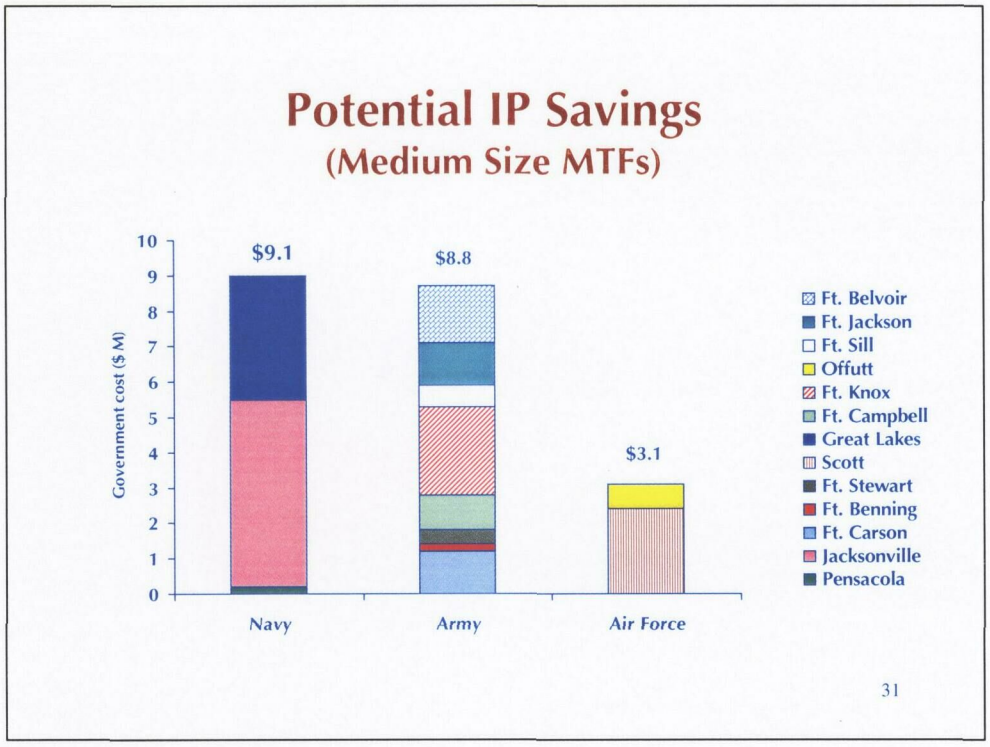
The medium-sized facilities are characterized in the same way as the large facilities. We show the percentage of IP stays performed by the MTF for those in their catchment area and we indicate by the color and shading the MTF's service. The percentages are lower, in general, as we indicated they would be, but several provide more than 60 percent of all IP stays. The range is between 34 percent at Great Lakes and 84 percent at Bremerton, both naval facilities.



As we did for the large facilities, we present the CHAMPUS costs for those beneficiaries who used civilian facilities for their IP stays. The highest costs were for those beneficiaries in the Jacksonville area, given that the MTF provided only 48 percent of all IP care. The lowest costs are seen at Bremerton, not surprisingly the facility that provided the most care on a percentage basis.



We rely on the second excursion for the medium-sized facilities, namely, assuming they all perform at the level of the second-best MTF in each service. The three best performing facilities, at least as measured by the highest percentage of in-catchment IP stays, were Bremerton for the Navy, Ft. Riley for the Army, and Langley for the Air Force. Their respective second-best MTFs were Camp Pendleton, Ft. Leonard Wood, and Eglin.



There are more medium-sized facilities, 19, than large facilities, but we felt it was useful to show all of the costs for the 13 MTFs affected by our simple simulation. Performing at the level of Camp Pendleton would save over $9 million, with the vast majority of the savings coming from Jacksonville and Great Lakes. The Army has no single site that saves a lot of money, with the possible exception of Ft. Knox, but in total can save almost $9 million. The Air Force has only two remaining medium-sized sites and almost $3 million of the savings would come from Scott.

Comparing Inpatient Workload

- **Have shown potential to save $37.5 million in large facility catchment areas**
  - **But is workload similar?**
- **Relative weighted product one measure of IP complexity**
- **Relied on DRG and DRG weight to calculate a modified RWP (i.e., excluded LOS inliers and outliers)**
  - **Averages can be compared for large facilities and CHAMPUS in their catchment areas**

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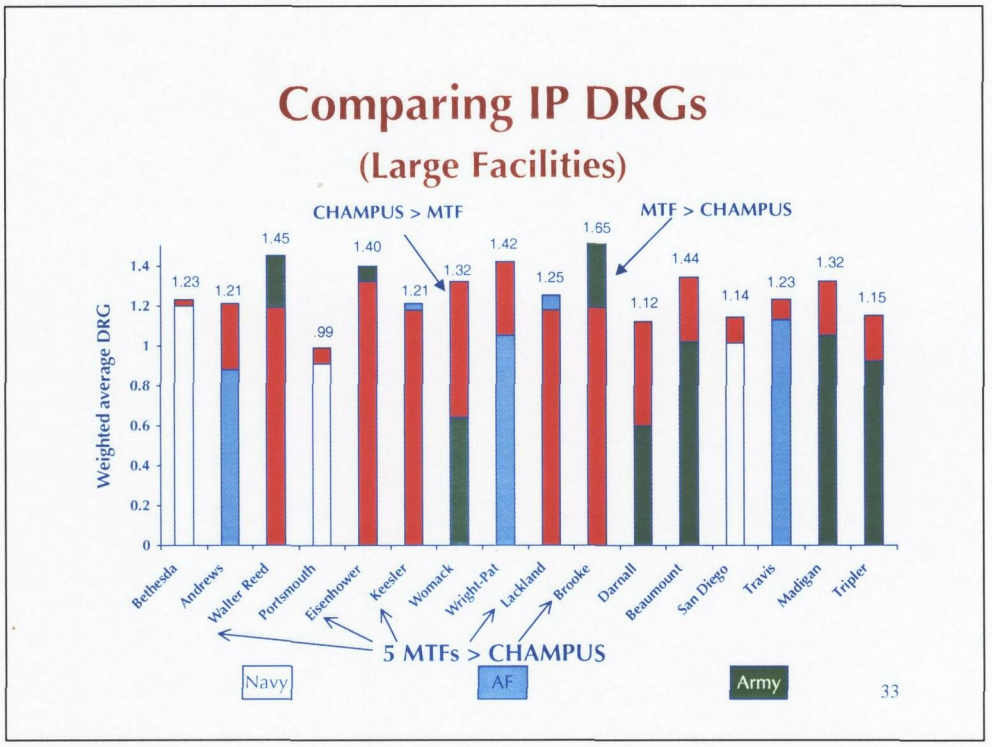
We've just shown how savings could be achieved if more of the workload going to CHAMPUS could be brought back to the MTF. There are two issues that the previous analysis didn't mention. The first issue is whether the potential patients would want to have their IP services performed by the MTFs. Even if the MTFs had the capability, those patients might prefer, or their civilian insurers might direct them, to go to civilian facilities. The second issue is the capability of the MTFs to perform the required services. It's beyond the scope of this analysis to check whether each MTF can perform every service being purchased or whether patients would indeed come back if the capacity were increased. But, we can create a measure of the relative complexity of the services being performed at each MTF as well as civilian facilities in the catchment area.

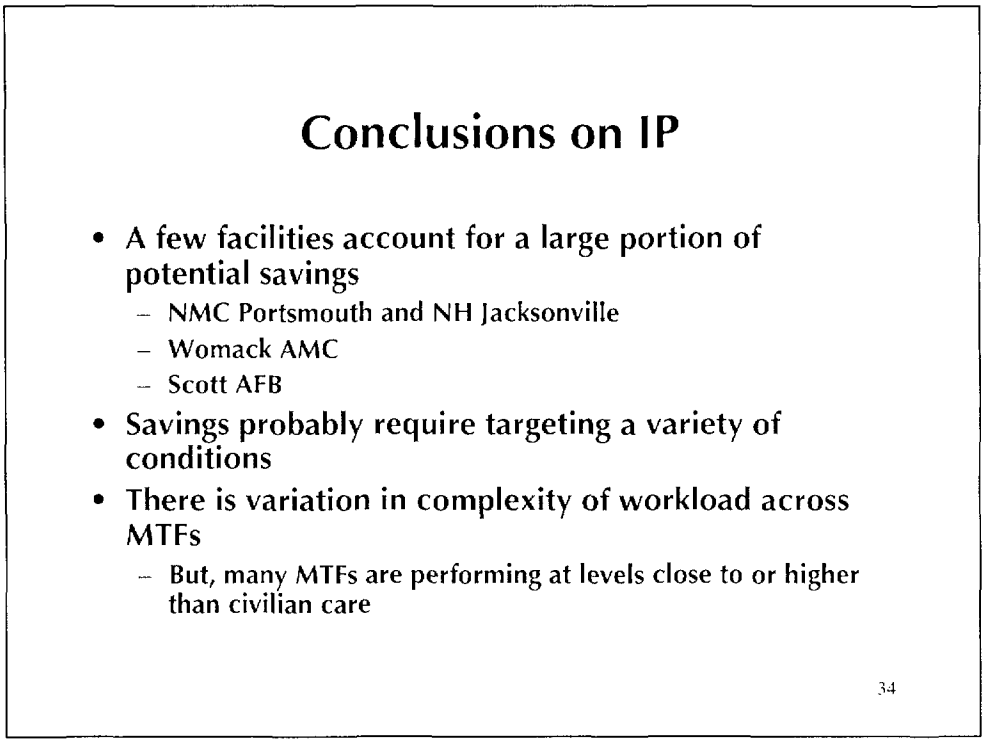
One measure is what is referred to as the relative weighted product (RWP). We relied on a similar, but easier measure to calculate, that is really a modified version of the RWP. It relies on the specific DRG and the DRG weight to create a weighted average DRG, but doesn't take account of length of stay (LOS) inliers and outliers, which we felt were relatively unimportant anyway. Once we calculate this measure for an MTF and the CHAMPUS workload in the same catchment area, we can provide at least one part of the answer to whether the workload performed is similar in complexity.



We show the calculated IP-weighted DRGs in the figure above. Because the "typical" IP stay has a weight of 1.0, above-average and below-average complexity are measured relative to 1.0. Of course, a particular catchment area—both the MTF and CHAMPUS—can be below or above 1.0.

We should explain how to read the bars shown in the figure. The number at the top of the bar shows the higher value weighted DRG for the catchment area, the comparison being MTF versus CHAMPUS. We use the same color scheme for the three services' MTFs as before—green for Army, blue for Air Force, white for Navy—and red represents CHAMPUS. Therefore, when the MTF's value is higher, its color will be on top of the bar, and red on the bottom. Alternatively, a higher CHAMPUS value would lead to red at the top.

As an example, the weighted DRG value for the Walter Reed AMC was 1.45, which was above the CHAMPUS value in the catchment area, about 1.2. The nearby MTFs at Andrews and Bethesda (in fact, the three catchment areas overlap) had slightly lower MTF values than their respective, but similar, CHAMPUS workload values of 1.2. To show that, we put the red portion of their bars at top. Note that the CHAMPUS workload values were very similar, as one might expect given their proximity. Overall, we found that 5 MTFs had values higher than CHAMPUS, but 11 did not. Thus, there are differences, but in most cases the differences are relatively small.



To sum up our conclusions on the IP workload, a few facilities account for much of the savings that could be achieved if the MTFs with lower proportions of catchment area workload performed at higher levels, as a few of their peers do. These savings would not amount to much unless many conditions were targeted. That may not be possible for some MTFs, but is certainly worth investigating. Finally, we did observe differences in complexity. For 11 of the MTFs, the CHAMPUS workload value was higher than the local MTF. But, for the other 5, the MTF value was the higher of the two. Therefore, we can't conclude that in all cases, more kinds of workload could be brought back to the MTF. But the evidence appears to be that, in many cases, the MTFs have the capability to provide many, if not all, of the services being provided by CHAMPUS.

Outpatient Analysis

- Two main questions
  - How much *potential* workload can be brought back to MTFs?
    - ❑ Did not consider the cost to recapture
  - Are the CHAMPUS visits more complex and, therefore, harder to recapture?
- Two caveats
  - Did not adjust for volume tradeoff factor (VTF)
  - Cost of visit measured by published averages
    - ❑ By site and SP

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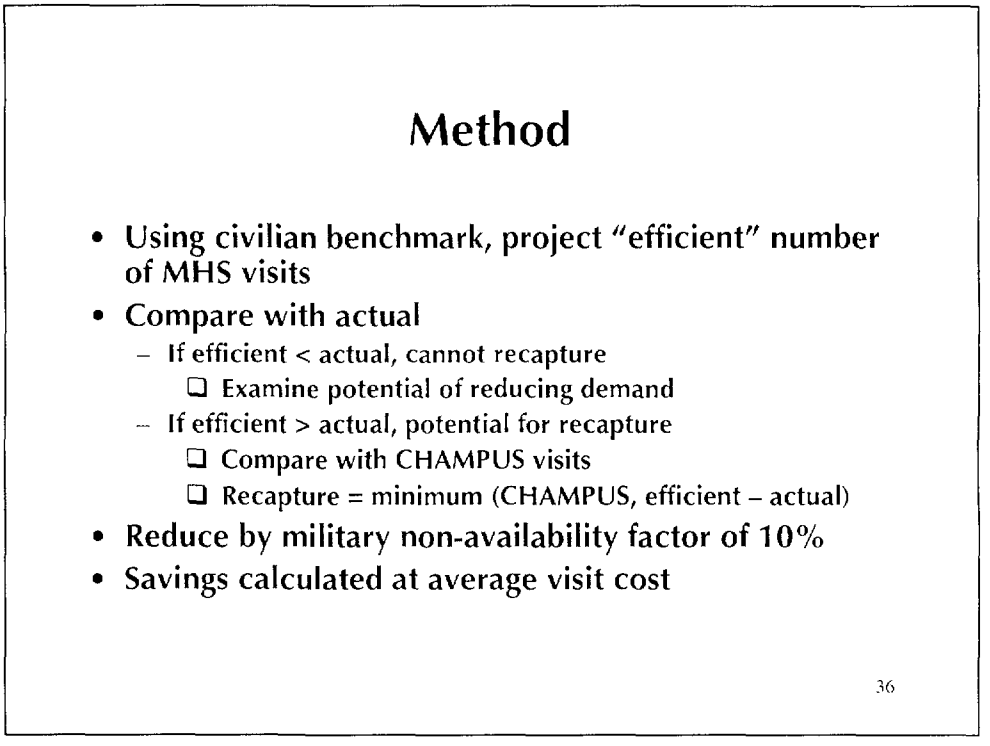
We turn next to the analysis of outpatient services. We've answered the two main questions shown in the slide: how much potential workload can be brought back to the MTFs, and are the CHAMPUS visits more complex? When we began the study, the first question was really the main focus of our analysis. It became clear, however, that unless all visits were very similar we couldn't simply assume that the MTFs have the capability of performing the same kind of services that people were going to civilian providers to receive. It's important to measure differences in complexity, not necessarily to adjust the estimates of any savings, but to provide more confidence that these savings could really be achieved.

Whether because of the lack of copays at the MTFs or because of the way care is delivered in the direct care system, we recognize that beneficiaries have a higher visit rate to the MTF than to civilian providers. This phenomenon is called the "volume tradeoff factor" (VTF). If the VTF is greater than 1, any savings from recapture would go down because of the additional resources that must be spent providing the additional care. We've assumed, however, that the MHS would strive to keep the VTF at 1.

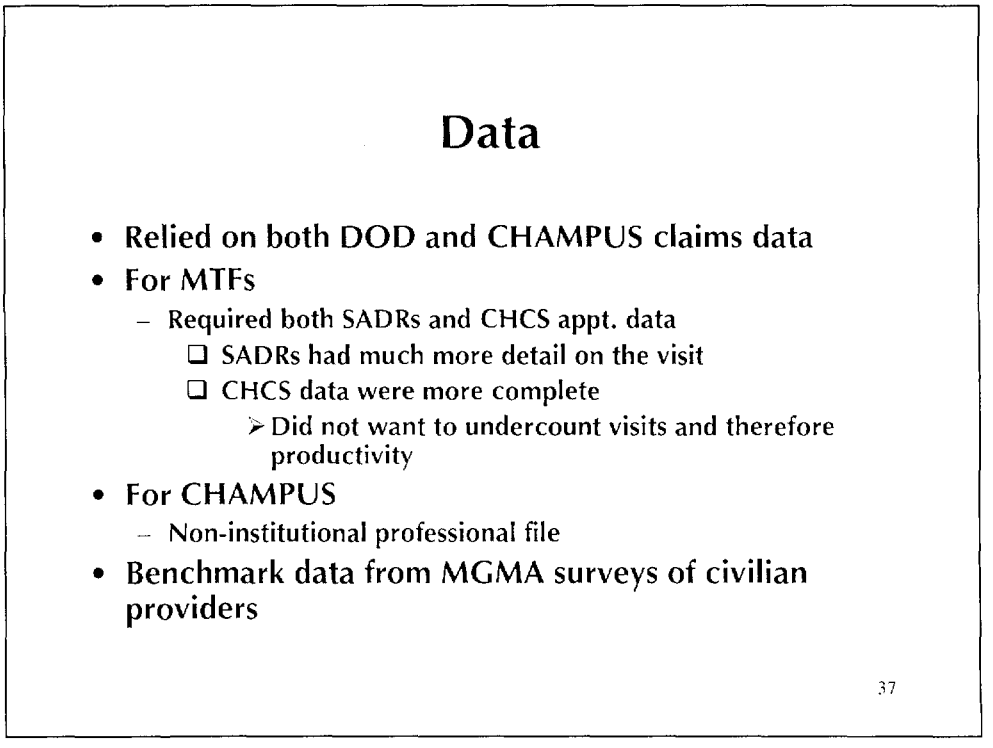
The second point we need to make is that we primarily used published sources from TMA for average visit costs. Given the scope and timing of the current project, we felt it would be sufficient to use the already published rates at least for now. Future analyses can focus on refining the cost data directly from the claims data.



Our method for calculating recapture begins with civilian benchmark data that provide a reasonable number of visits per provider per period (which in our case is one year). From this benchmark, we then project the number of efficient MHS visits, based on the number of providers at a given facility. We do recognize that military providers spend time in training or on assignment out of the hospital or clinic that's not quite analogous to any duties faced by civilian providers. Based on previous CNA analysis, we account for this non-availability by reducing the benchmark by 10 percent.

We then compared our slightly lower benchmark with the actual number of visits from the direct care claims data. We're essentially determining the "capacity" of the MTF to provide visits, by specialty. If MTF visits were higher than the benchmark, no recapture would be possible, without expanding capacity through other means (e.g., reducing demand). If, on the other hand, the actual number were less than the "efficient" value, there would be the potential for OP recapture back to the MTF. Next, we had to determine the number of CHAMPUS visits. In other words, the potential may be there to recapture 10,000 visits, but if the CHAMPUS workload were only 5,000 visits, the most that could be recaptured in the MTF catchment area would be 5,000 visits.

To determine savings, we then multiply our estimate of the number of visits that could be recaptured by the average cost of a visit.

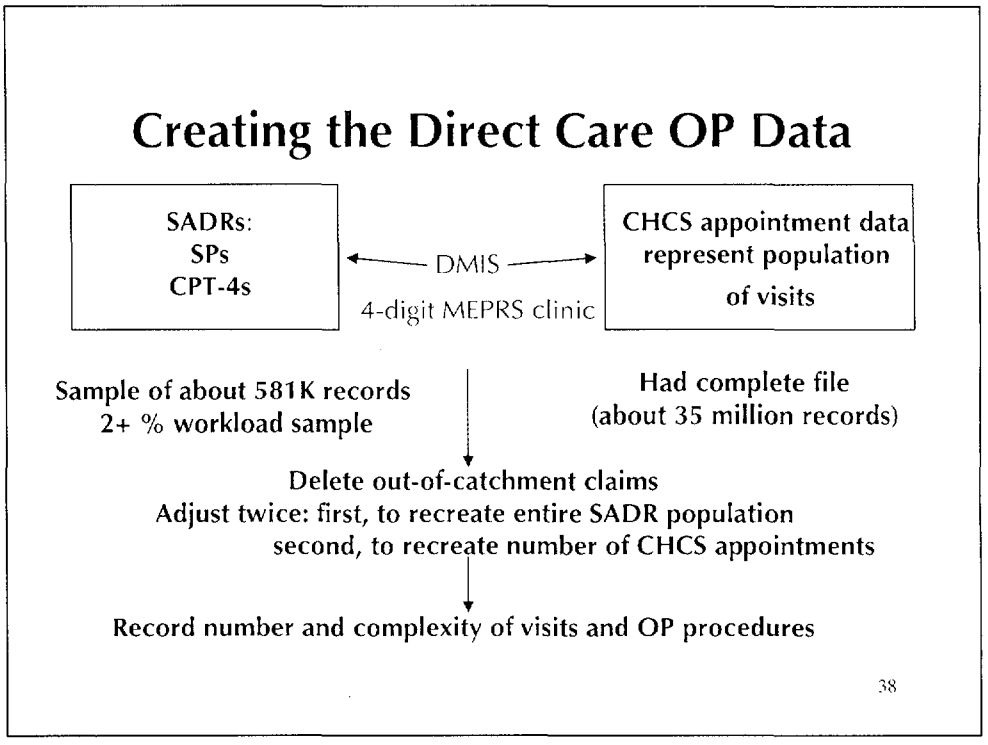


The analysis relied on three major sources: direct care claims data, CHAMPUS claims data, and benchmark data from civilian health care providers. For the direct care data, we had OP data from two sources. We would have preferred to rely only on the Standard Ambulatory Data Record (SADR), which has the most detail on the OP services provided, but these data, although improving over time, had too many missing records in 1999. By this we mean that the entire record was missing, not just certain fields within a record. We know this by comparing that dataset with the CHCS appointment records that detail all appointments, including those not kept and telephone consults. Because we are examining MTF productivity, we wanted to be especially careful and ensure that we did not undercount all of the visits and procedures undertaken by MTF providers. Therefore, we relied on the CHCS data to "correct" for the undercount.

The CHAMPUS data on providers came from the non-institutional professional file that records all professional services claims, both inpatient and outpatient.

Finally, we used benchmark data from the Medical Group Management Association (MGMA) that were collected from surveys of providers.

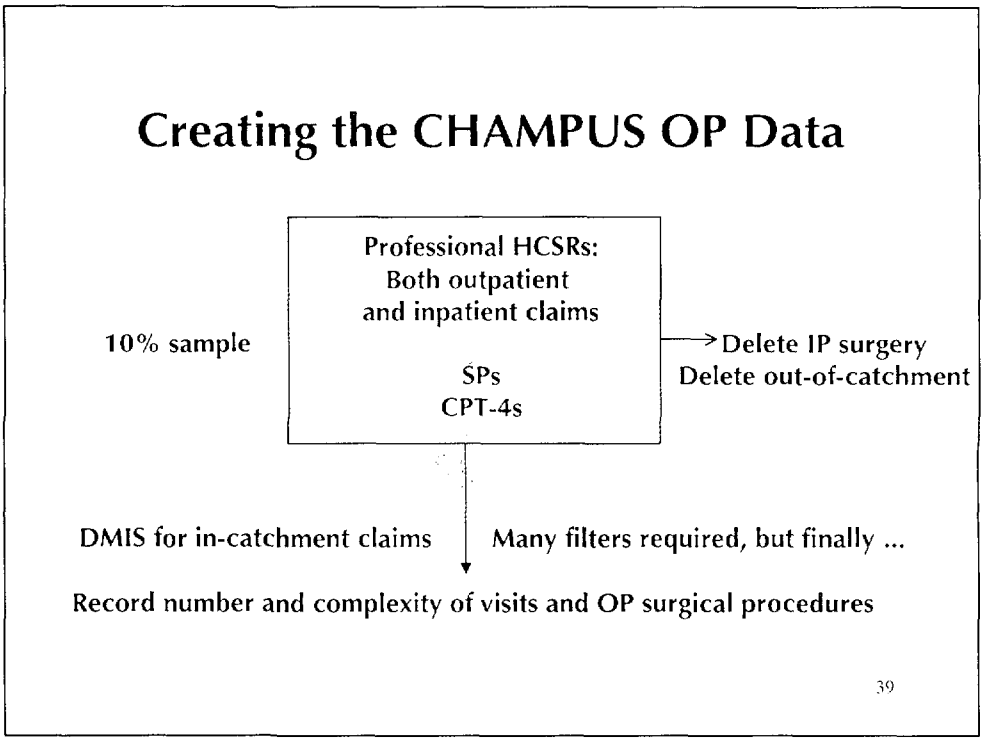
We'll explain all of these data in more detail in the next few slides.



As we just indicated, we created the direct care OP variable needed for our study from the SADRs and CHCS appointment data. The SADRs had the detail on the visit that we required. The record contains the provider specialty and the specific set of procedures that each patient required. The CHCS data did not have the same level of detail, but we used them to represent the population of all such visits, under the assumption that the missing SADRs were randomly "lost." In other words, those that we did have represented those that we didn't.

We had a sample of the SADR data, representing a little more than 2 percent of the SADR population. The sample was not entirely random: large clinics had a random 1 percent of all records drawn, but smaller clinics had at least 30 records drawn to ensure a representative sample. TMA provided us with the total population of records for all clinics, so we could recreate the population by weighting our sample. We had the entire CHCS appointment data file, and we linked the two through the combination of DMIS code and 4-digit MEPRS code.

We deleted all out-of-catchment claims and then adjusted twice, first to recreate the entire SADR data and second to recreate the number of CHCS appointments—kept, sick calls, or walk-ins. We wanted to create the number of appointments that were "face-to-face" with the provider. This meant excluding all telephone consults or missed appointments.



We followed similar procedures on data drawn from the non-institutional CHAMPUS data (i.e., the HCSR professional file), but we assumed no missing records (unfiled records don't get paid, so there's a real incentive for civilian providers to file for all services). We received a random 10-percent sample and as before deleted out-of-catchment data. We also deleted IP surgery, but kept visits at IP facilities if that meant the physician was performing rounds or seeing patients at local hospitals. As we'll see shortly, the benchmark data include hospital-based visits.

The HCSR professional file is complicated. A single record ofte n contains many visits and procedures. On the SADR, each record pertains to a specific encounter with the physician, but that's not necessarily the case on the HCSR. The record has many as 25 procedures (i.e., different CPT-4s), and the provider may put multiple visits by the patient on the same record. In more cases than we felt were reasonable, the visits even on the same day appeared ridiculously high. Therefore, we created filters that "scrubbed" the data to better count the number of visits and procedures on a given day, allowing better comparability with the MTF data. As an example, we inferred the number of visits and procedures based on the days between the begin and end date of service. Suppose there were 10 CPT-4s recorded on the record, but only 4 days between the begin- and end-date. We then assumed there were 4 visits, with each potentially associated with more than one procedure.

Comparing MTF and Civilian Providers

- Benchmarks are important for measuring MTFs against civilian health care
- Relied on 1999 data collected by MGMA based on sample (in 2000) of civilian providers
- Information on
  - Weeks worked per year/hours per week
  - Ambulatory encounters
  - Hospital encounters
  - All surgical procedures
  - Relative value units (RVUs) of work

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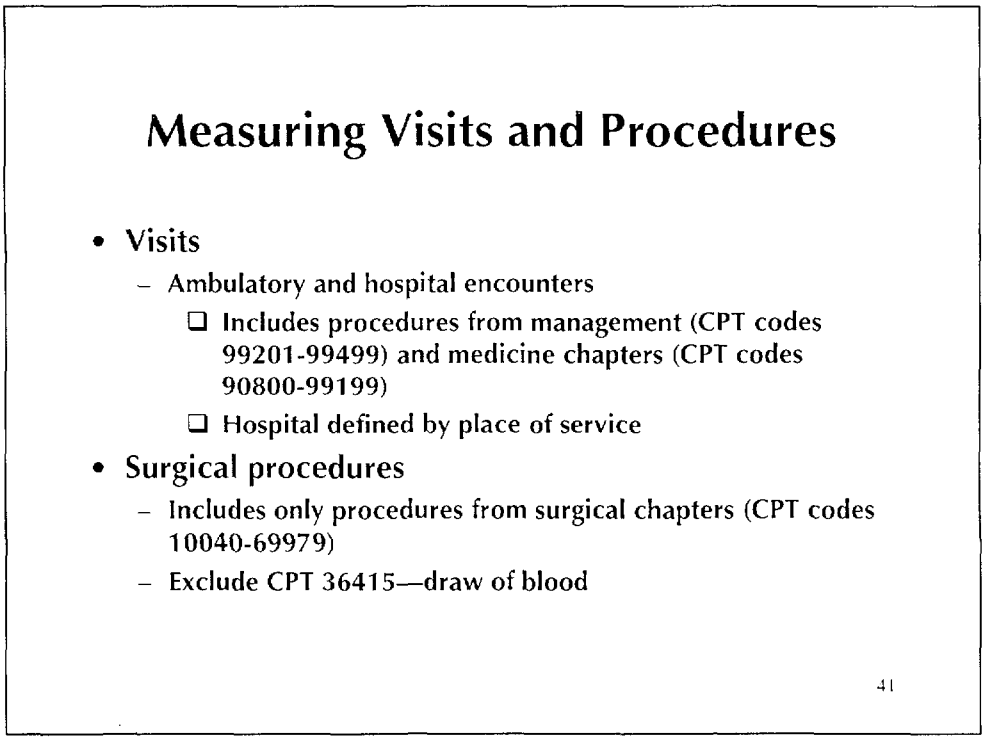
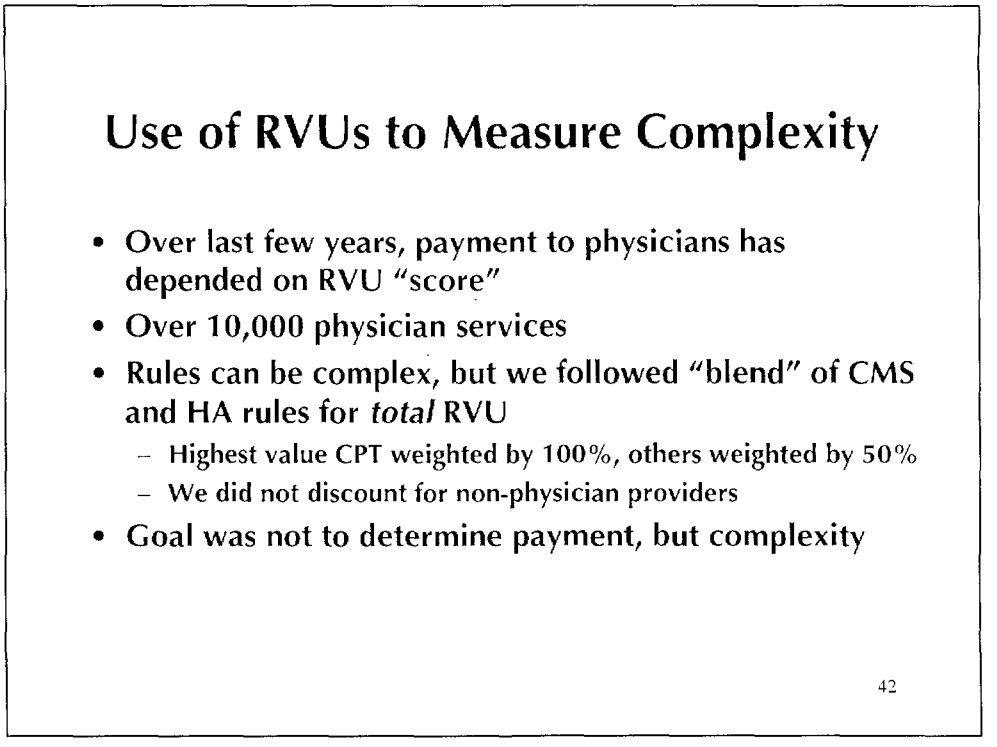
In this slide, we describe the civilian benchmark data. It was based on MGMA surveys in calendar year 2000 of work that civilian physicians performed in 1999, which corresponded most closely to FY 1999 of our claims data. We collected information on the five variables listed above. Note that the MGMA measures really included all of the work a physician performs, including IP surgery. Although we wanted to be as inclusive as possible, we will shortly describe our work to include both OP visits and surgery, but not IP surgery. Given the current coding schemes used by the MTFs, we felt that it would be beyond the scope of the current analysis to examine and compare the IP surgical workload of MTF and civilian providers.

We want to focus on one of the variables described above, the RVU. This measure is becoming much more common in civilian health care practices and is used by the Center for Medicare and Medicaid Studies (CMS, formerly HCFA) as part of its physician reimbursement scheme. The major benefit of the RVU is that in the civilian health care field, as well as more recently within DOD, organizations analyzing the work content of its providers have been turning to the RVU as a measure of workload intensity or complexity.



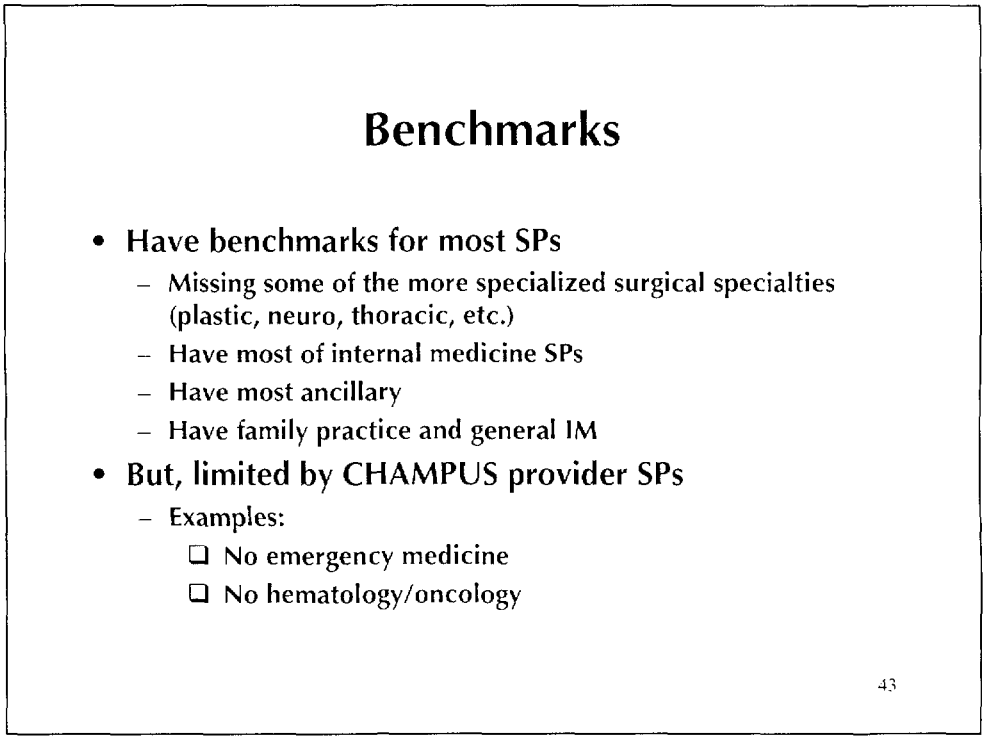
We followed the MGMA guidelines, or rules, in their calculation of annual physician visits and procedures. For both what they call ambulatory and hospital encounters, they counted those procedures that fell under the evaluation and management or medicine chapter of the CPT-4 manual (specifically, we relied on the 2000 edition of the *Physicians' Current Procedural Terminology*). Each CPT-4 has a 5-digit code and a specific description of the procedure performed. We used those specific CPT-4 codes listed above to define a visit, with the place of service defining whether it pertained to an office visit or a hospital visit.

Surgical procedures were also characterized by reference to the CPT-4 manual for those procedures in the surgical chapter, but here we limited our count to those considered ambulatory surgery. In other words, they shouldn't involve a stay in the hospital for more than one day. We also found it appropriate to exclude one specific procedure from the surgery chapter—namely, the simple draw of blood for an adolescent or adult (i.e., distinct from draws of blood from infants) for the purpose of performing laboratory tests.



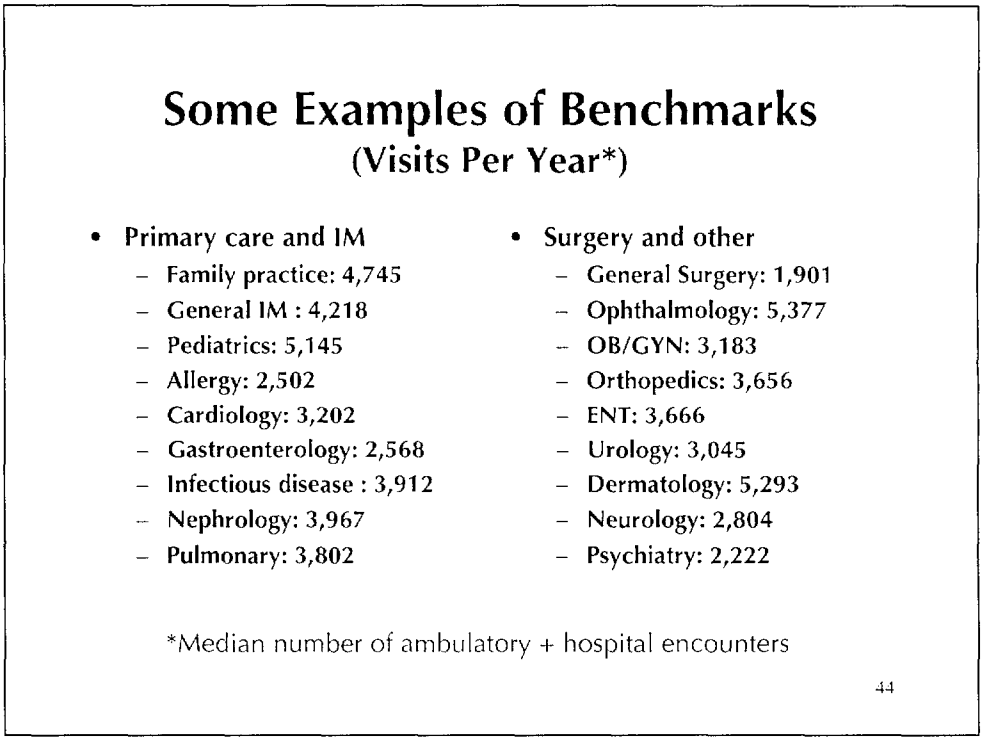
The RVU measures the resources used in the provision of more than 10,000 professional services and is based on the sum of work, practice expense, and malpractice. The payment for services performed takes the calculated value and adjusts for regional cost differences and then multiplies by a conversion factor. In the current case, we were most interested in the complexity of the service, not the prospective payment. Therefore, we calculated the components of the RVU, but we did not account for geographical differences or multiply by the conversion factor. This RVU "score" is what we calculated and use in this analysis.

The actual rules for calculating an RVU can be complicated. There are "modifiers" associated with specific codes that can change the value and subsequent payment, such as for multiple procedures (modifier 51). In general, we created a blend of CMS and HA/TMA rules in our calculations. For example, we keep track of all procedures on a given visit and weight the one with the highest RVU score by 100 percent and all others by 50 percent in calculating that encounter's RVU score. One difference from how we were told HA/TMA planned to calculate RVUs for the direct care system is that, unlike their method, we did not discount the score when the procedure was performed by an extender, such as a PA or NP. We gave them the same full credit as we did for physicians because we are not computing RVUs for provider payment, but for complexity.



One advantage to the MGMA values, besides their currentness, is that they covered many SPs. Some were missing, however, including some of the most specialized surgeons, such as neurosurgeons. We had almost all of the internal medicine SPs and most ancillary physicians, including anesthesiologists, radiologists, and pathologists. Of the primary care SPs, we had benchmarks for family practice and general internal medicine physicians.

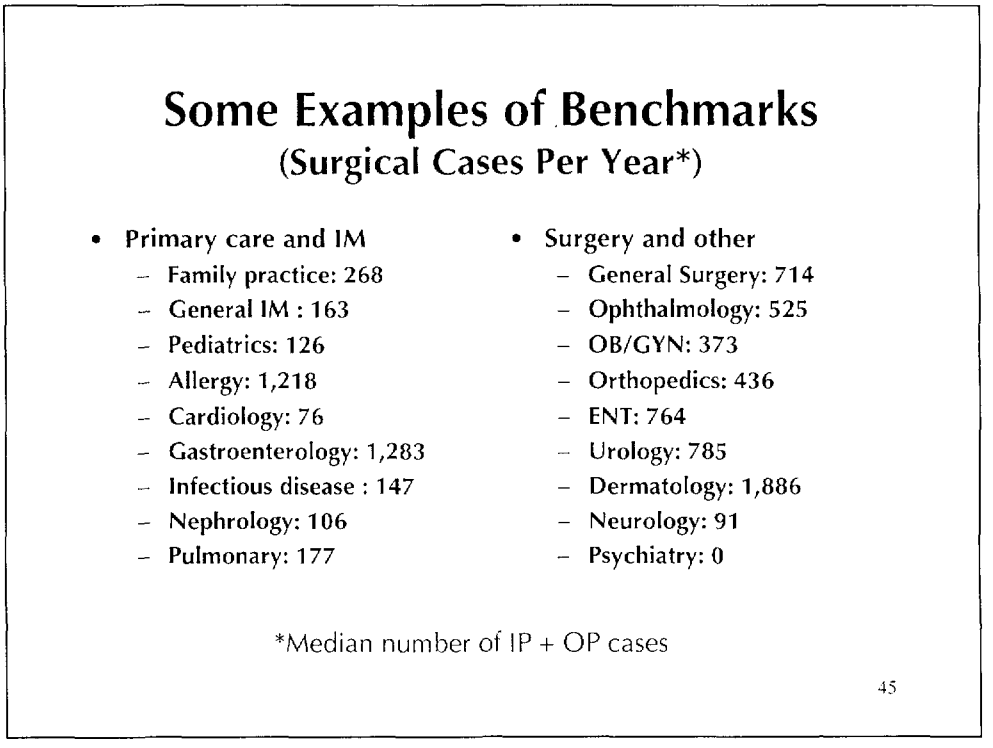
One problem is that the HCSR had a limited number of provider SPs on its records. It included no emergency medicine, or hematology/oncology, or infectious disease physicians. We had civilian benchmarks, but we couldn't measure the extent to which the services of these SPs could be recaptured.



On this slide, we present the median numbers of visits (both ambulatory plus hospital-based) for many of the specialties of interest.[1] On the left-hand-side, we show the primary care and internal medicine SPs; on the right, we show several surgical and other SPs, such as dermatology and neurology.

The numbers range from a low of 1,901 for general surgeons to a high of 5,377 for ophthalmologists, with dermatologists and pediatricians close behind. There is no number provided for primary care, but family practice physicians have a median value of 4,745 and general internal medicine physicians have a median value of 4,218, so we use something close to the average of those two, or 4,500, as our primary care benchmark.

[1]The benchmarks shown here were not reduced for physician non-availability.



We also present the median numbers of surgical procedures for each specialty. Note that the numbers include both IP and OP, which means that, on a per-provider basis, we would expect these numbers to be higher than numbers we create based only on OP procedures. Nonetheless, we show them to illustrate the benchmarks we've gathered.

Some Examples of Benchmarks
(Total RVUs Per Year*)

- Primary care and IM
  - Family practice: 6,934
  - General IM : 6,941
  - Pediatrics: 7,958
  - Allergy: 7,691
  - Cardiology: 15,068
  - Gastroenterology: 14,077
  - Infectious disease : 7,933
  - Nephrology: 10,905
  - Pulmonary: 8,936
- Surgery and other
  - General Surgery: 11,471
  - Ophthalmology: 17,922
  - OB/GYN: 12,004
  - Orthopedics: 14,626
  - ENT: 12,576
  - Urology: 11,884
  - Dermatology: 12,739
  - Neurology: 8,242
  - Psychiatry: 3,983

*Mean for SP

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This slide shows our last set of benchmarks, the average RVUs for each specialty. The lowest value appears to be in psychiatry, although the two previous slides indicated no procedures and a relatively small number of visits. Therefore, on a per-encounter basis, psychiatry would average almost 1.79, but family practice, with a higher total RVU but many more visits and procedures, would average only 1.38. High-valued SPs include cardiology, with an average RVU of 4.60, gastroenterology at 3.66, orthopedic surgery at 3.57, and general surgery at 4.38.

Caveats Related to Benchmark Analysis

- Several SPs could not be analyzed
  - Some were limited by lack of benchmarks
  - Some were limited by lack of CHAMPUS SP
  - Ancillary should be handled differently
    - ❑ Can be done, but not here
- RVUs shown previously were not used directly
  - Note: includes both IP and OP surgical cases
  - We created RVU measure for visits + OP surgical cases only
- We create average (total) RVU (per visit + procedure)

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In our recapture analysis, we will use the benchmarks we've just shown, but we need to state carefully what we will and will not use. First, for various reasons, we could not analyze all specialties. In some cases, we had no benchmark (e.g., neurosurgery and plastic surgery); for others there were no CHAMPUS codes for that SP. In addition, although we have benchmarks for anesthesiology, radiology, and pathology, and there is CHAMPUS workload for each, the analysis would have to be modified from the method we've been using. It really is beyond the scope of this study, although we believe it can be done.

As we just showed in the last slide, we could try to analyze the total RVU score across SPs, but CHAMPUS services are not purchased on a per-provider basis. In other words, CHAMPUS pays providers for their services, but TMA has no real way of measuring the number of FTEs for each specialty of care. Therefore, we calculate our own RVU score, again focused on OP services, and then divide by the sum of visits and OP surgical procedures, as outlined earlier.

Recapturing Visits

- Can examine visits to be recaptured in a variety of ways
  - Begin with total over all sites and SPs
  - Visits as defined by E&M and medicine-related encounters
- Can potentially recapture 1.38 million visits
  - Out of 3.5 million CHAMPUS visits for SPs studied
- Can potentially save $90.7 million
  - Out of about $225 million in costs

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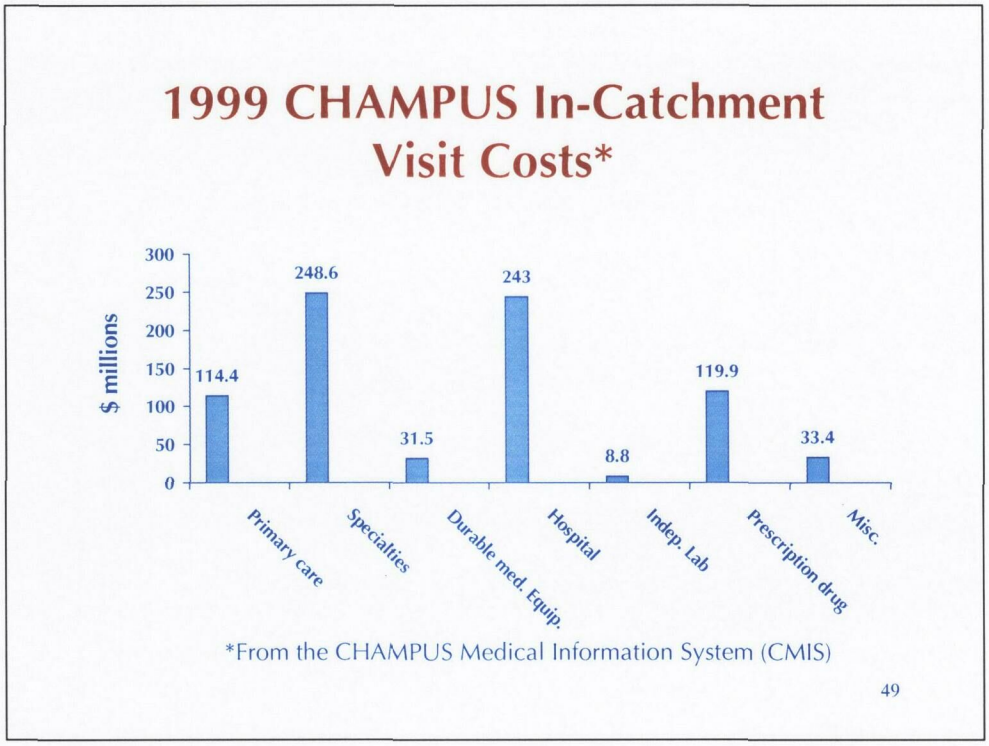
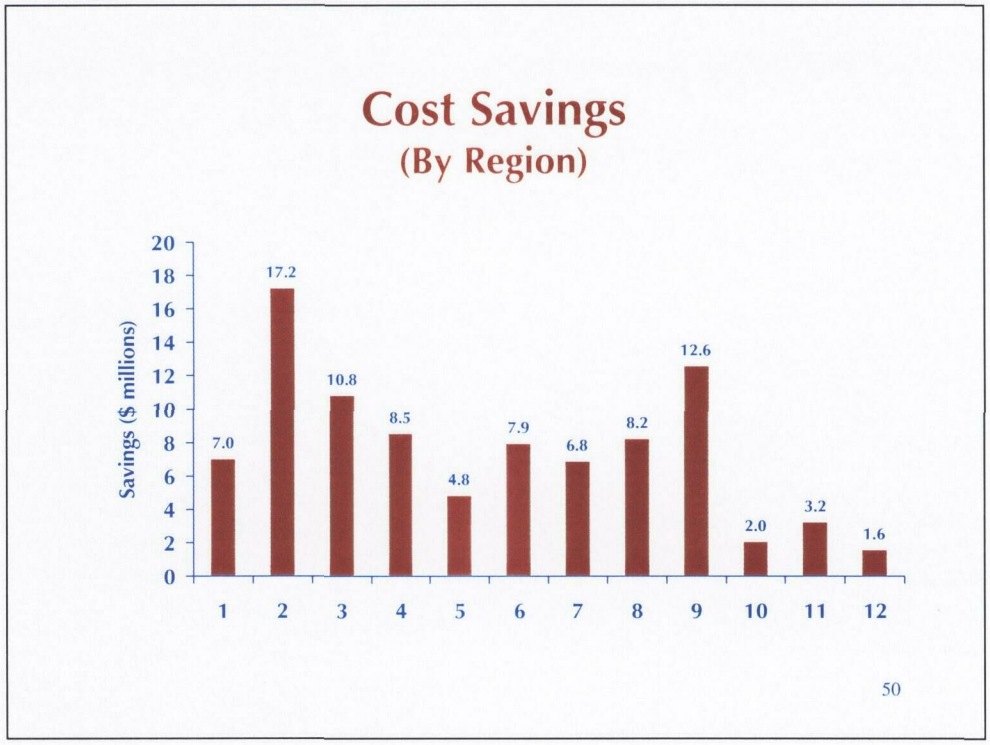
Before we present several different sets of results on the cost savings associated with recapturing care, we summarize what we found on recapturing OP visits. We've looked at the same 77 or so catchment areas discussed in the IP analysis over 15 or 20 SPs. A visit is defined by whether the CPT-4 meets the criteria discussed in slide 41. Using our benchmarks and average cost per visit, we calculate that the MTFs could potentially recapture about 1.38 million of almost 3.5 million visits (almost 40 percent) and save almost $91 million (about 40 percent of the cost). Note that we include the word *potentially* when describing the amount of savings. Many things would have to happen and undoubtedly it would not be costless to do so. But, we focused on what could be saved, not whether the system can make it happen.

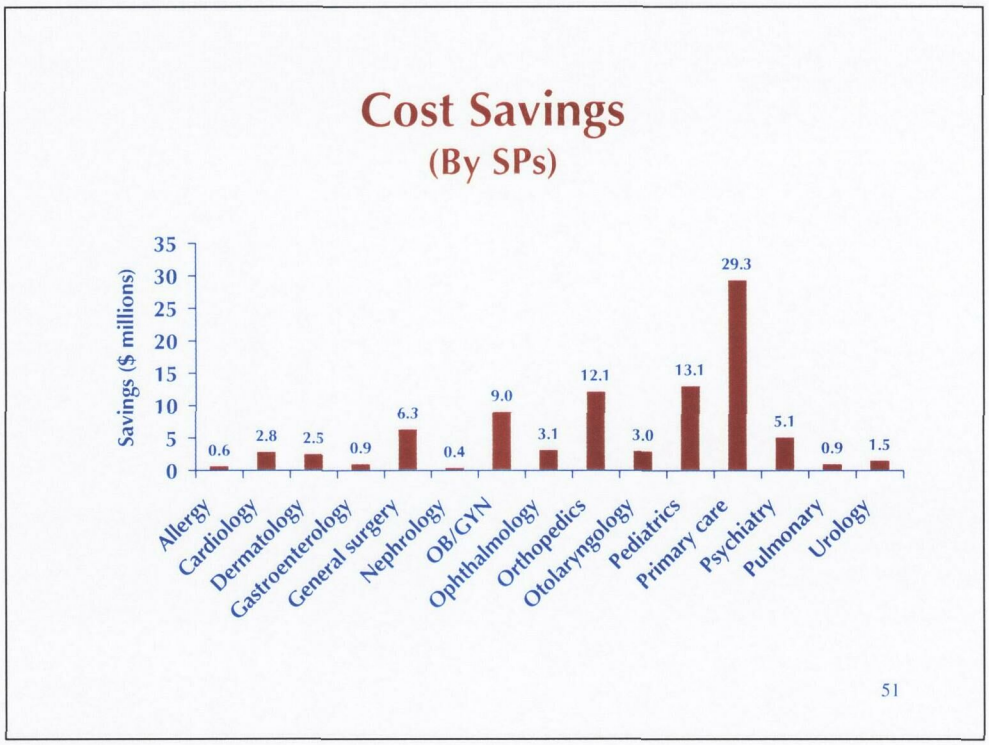


Although we found that a large proportion of visits and costs could be saved, the resulting number still appears small. We felt it would be useful to place what we found in context. Rather than attempt to derive our own aggregate numbers, we took some information from TMA's CMIS data. In FY 1999, CMIS indicated that there were about $800 million in total in-catchment OP costs. When we examined those numbers further, we found that, based on provider specialty, the numbers of visits to providers of interest are only a fraction of that number. First, we excluded all facility (or hospital, as shown above) charges. In other words, these are charges in which the provider specialty code is designated as facility, not an individual provider. In addition to facility charges, there are charges for pharmacy and for durable medical equipment.

Thus, we believe that only visits in one of the first two categories shown on the figure are probably those that can be recaptured. We've called these categories primary care and specialty care. Of the $800 million in total charges, visits to primary care providers—essentially internal medicine, family practice, and pediatrics—constitute about $114 million and visits to specialty providers constitute almost $250 million, for a total of $364 million, or less than half of the total. Of this amount, the set of SPs in our analysis that we examine for recapturable visits would imply only $225 million in total CHAMPUS costs, or about 62 percent of $364 million.

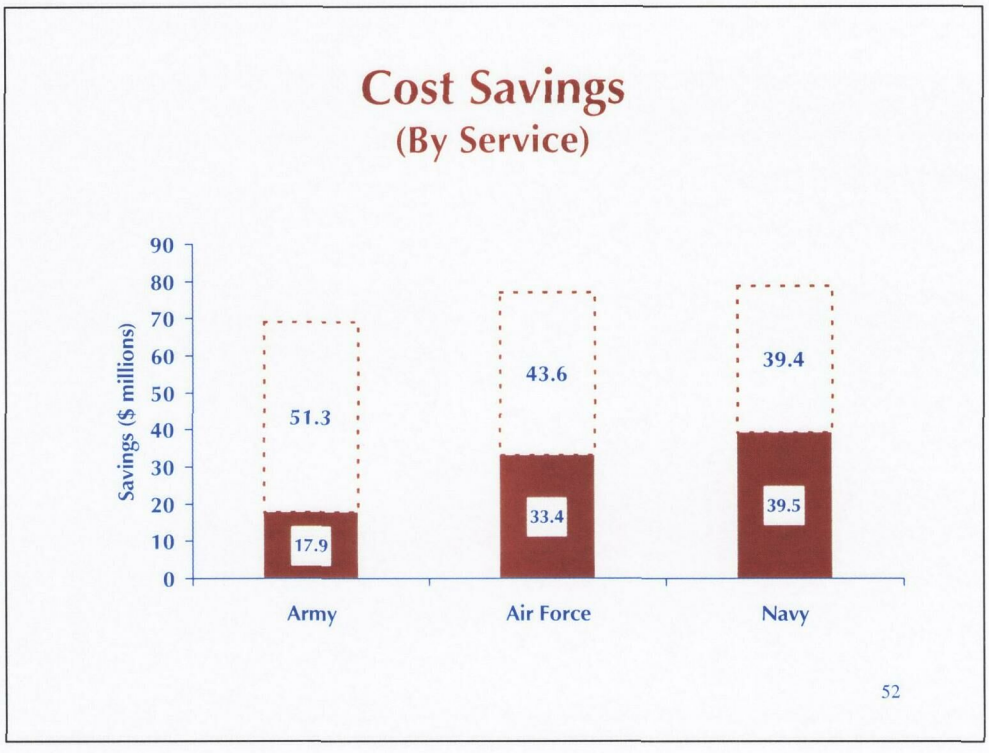


In the next few slides, we show some examples of how we calculated the cost savings—by region, specialty, or service. Here, we show regional savings. Regions 2 and 9, both regions with large numbers of DOD beneficiaries and the two largest MTFs in the MHS, have the highest potential savings from recapture, with more than $17 million and almost $13 million, respectively. Regions 3, 4, and 8 would be next, with combined implied savings of about $27.5 million.



We present our estimated savings for the 15 SPs studied. Note that we separated pediatrics from the rest of primary care (really adult PC). The three SPs with the largest amounts of potential savings are primary care, with more than $29 million; pediatrics, with savings of more than $13 million; and orthopedic surgery, with savings of more than $12 million. Therefore, out of the close to $91 million in potential savings, primary care (child and adult) accounts for 46 percent of the total.

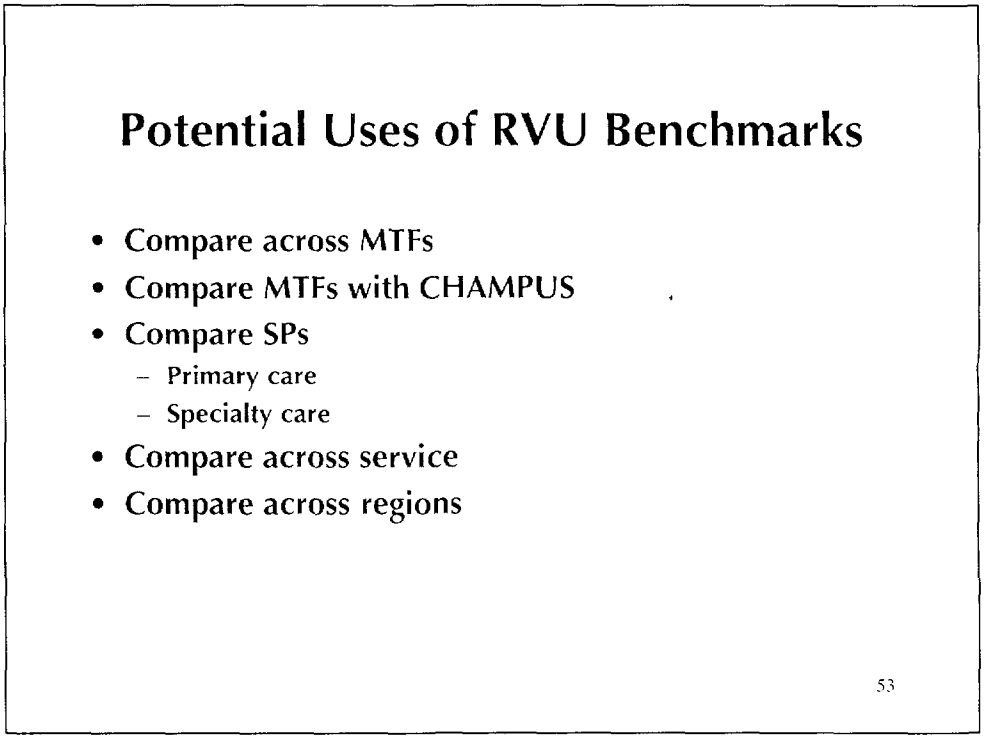
Because PC is not precisely defined, we need to clarify how we defined what constituted a PC visit within the direct care system. As we indicated when we described the PC specialties, we added 5 or 6 different provider SPs together (including FP physicians, GIM physicians, flight surgeons, GMOs, and certain categories of extenders). There is undoubtedly some imprecision in this definition. Not all GMOs, flight surgeons, or even FP physicians and GIM physicians spend all of their time providing PC services. Therefore, to determine whether they were providing primary care or some other service (such as cardiology or emergency medicine), we based our visit counts on the clinics within the MTF where the patient was seen. We classified certain clinics as providing primary care and everything else as "other."



As this slide indicates, there's a great disparity in savings across the three services. The solid red portion of each bar shows the cost savings. One possibility is that there is little CHAMPUS workload to be recaptured. We show each service's spending on purchased care as the total height of the bar, with the difference shown in the outlined part on top. In other words, these values represent what could not be recaptured because the providers were already performing at our civilian benchmarks.

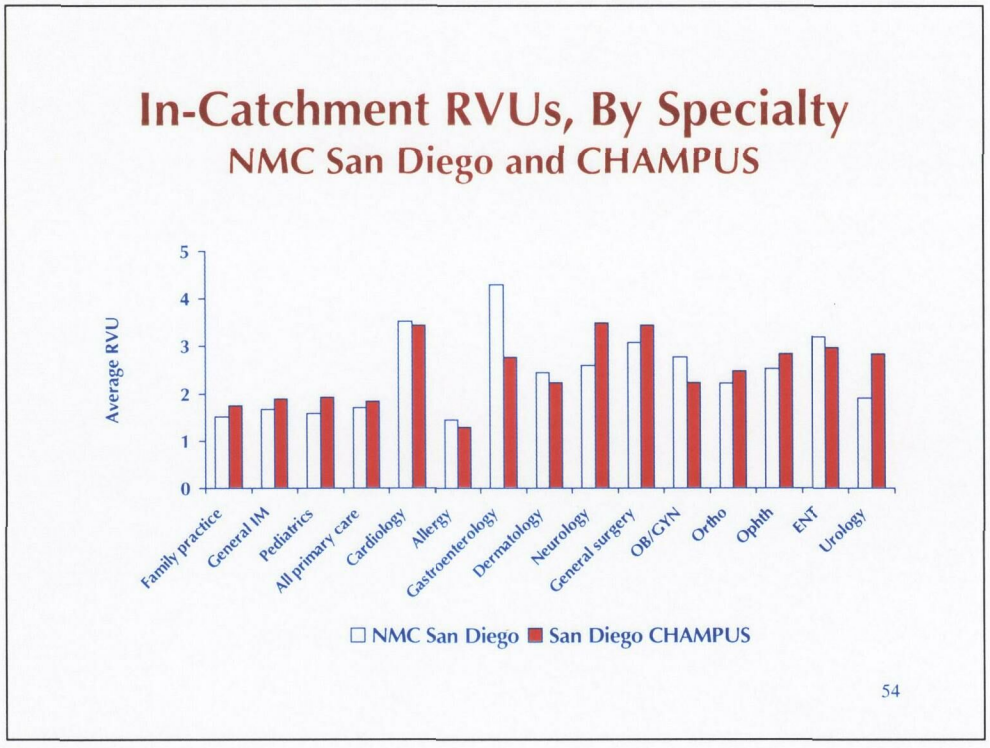
We found the disparity across the three services a bit surprising, but a closer look indicated small savings from the Army primary care specialty. Why? We noticed that each service had authorizations under the heading of other PAs and other NPs. The Navy had 20 of them, the Air Force had about 36, but the Army had about 200 other PAs and NPs, or almost 8 percent of its total number of authorized providers. Including these providers by assuming that most (i.e., 75 percent) performed primary care led to an additional $6 million in savings, but the Army share was still low. In other words, imposing the assumption didn't "fix" the problem.

Finally, instead of our original definition of PC, we tried using the two specialties of FP and GIM only. One advantage is that we had a benchmark for each of these SPs. We calculated smaller savings because we excluded the other PC providers and their services, but we did have a more equal split among the three services. Nonetheless, our estimates are based on the more inclusive PC definition.



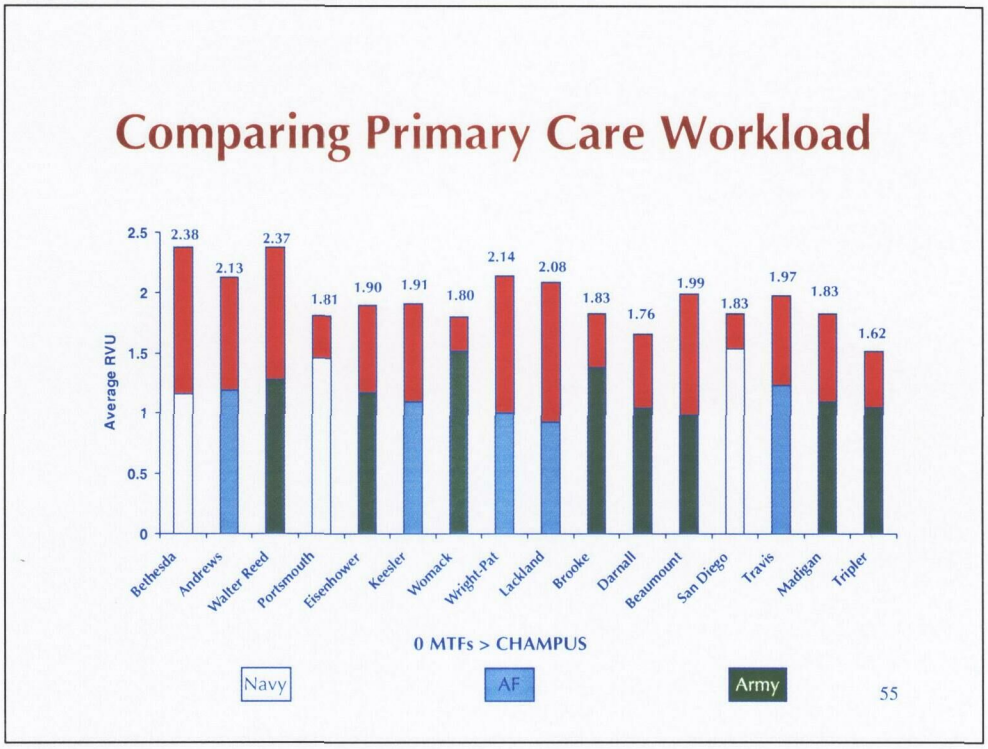
Just as there are many ways to examine the potential savings from recapturing visits, there are equivalent ways to examine the calculated RVUs. Here, we list several, but we don't claim that this list is exhaustive. One can compare across MTFs, the MTFs with civilian care in the MTF catchment area, across SPs, regions, and so on.

With so many MTFs and SPs, we present only some examples, but can create others relatively easily.

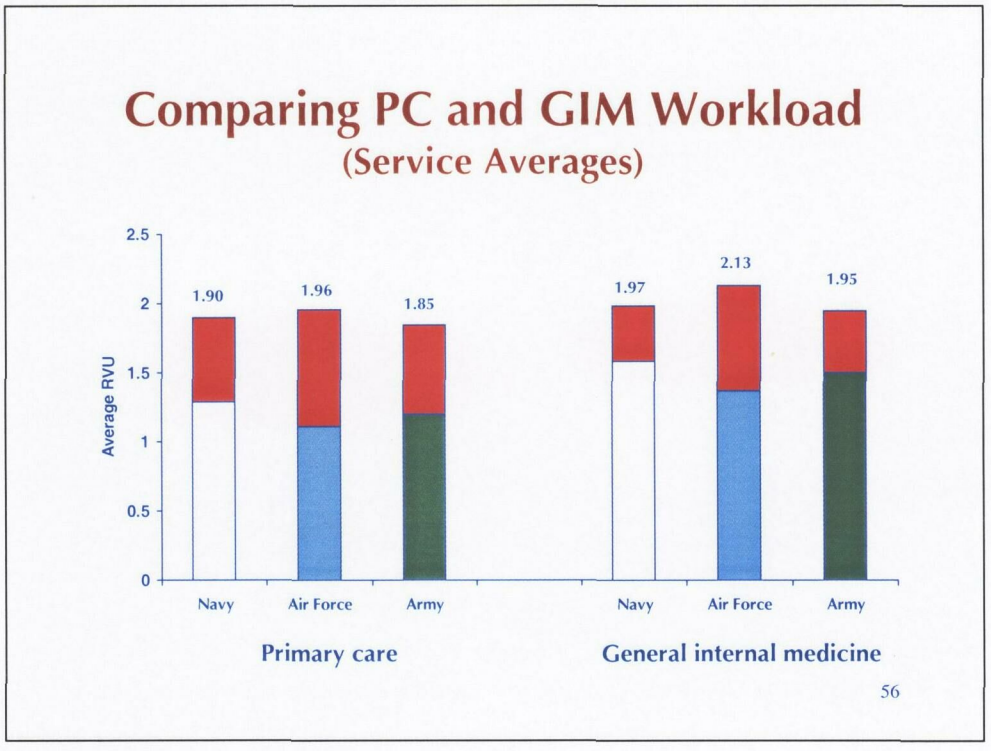


We compare our calculated outpatient RVUs for several SPs at NMC San Diego. Based on our provider staffing numbers, San Diego was seen to be the largest MTF in the MHS. One would expect that the complexity of services provided there would be similar to what was purchased at civilian facilities. If the calculated measures of intensity or complexity are not high at the very large direct care facilities, they are unlikely to be as high at most of the other MTFs.

As we show in the slide, the MTF and CHAMPUS values do appear to be reasonably close. There are many SPs for which the calculated values for CHAMPUS are higher—FP, GIM, and all PC, neurology, general surgery, and several other surgical SPs—but there are others in which the MTF values are higher, including cardiology, gastroenterology, dermatology, OB/GYN, and ENT. In general, the values are relatively close, with gastroenterology showing the greatest difference.

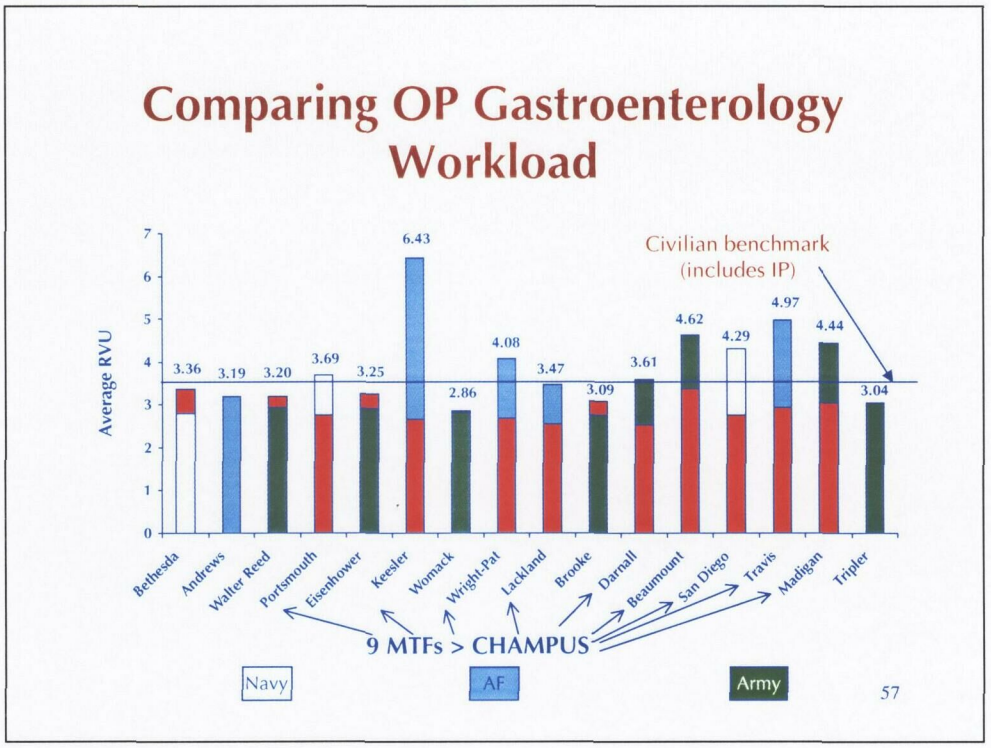


How do PC RVU values compare? They were fairly close for NMC San Diego, but we observe larger differences for most of the large MTFs. In fact, it appears that San Diego has the highest PC RVU value across all 16 of the MTFs. Somewhat surprisingly, Womack is fairly close as is (less surprisingly) Portsmouth and Brooke. Also we would have expected the Washington, DC, area MTFs—Bethesda, Walter Reed, and Andrews—to have somewhat higher values, but they are all only slightly larger than 1, compared to well over 2 for CHAMPUS workload in their catchment areas.

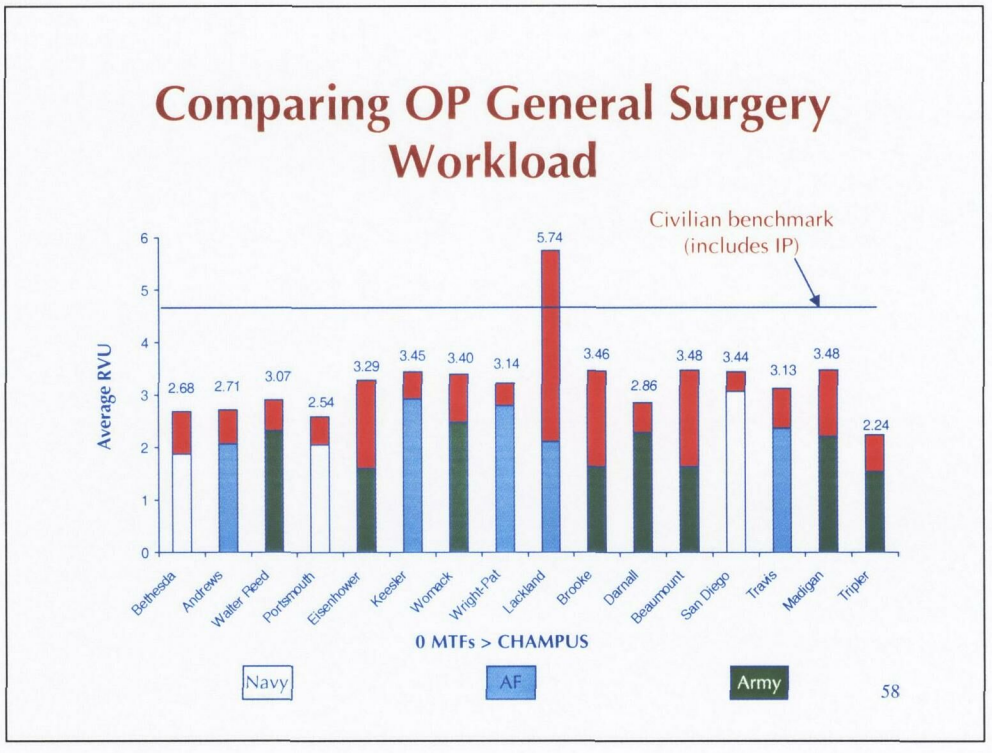


The last figure showed a fairly wide difference between the RVU values at MTFs and CHAMPUS for each catchment area. Here we compare the average RVUs for all MTFs averaged over the three services for both primary care and general internal medicine. We've discussed how we created measures of primary care. For counts of providers, we aggregated over several different SPs. For counts of PC visits, we relied on the clinic in which the visit occurred. For GIM, the definitions are a bit more precise; it really doesn't matter whether the service was for primary care or anything else, as long as the civilian benchmark also measures the same kinds of services.

We do see the same pattern for GIM. The values were generally higher and, similar to primary care, the average Navy value was highest, with the Army and Air Force MTFs somewhat lower. For both PC and GIM, all three bars indicate that the CHAMPUS values for all three services were similar, as one might expect.



We'll show RVU values for two other SPs. First, this slide shows the values for gastroenterology. As the line indicating the civilian benchmark shows, this is a specialty with a fairly high average RVU value (although we note again that the benchmark includes IP surgeries). The majority of MTFs, specifically 9 of the 16, had higher RVU values than did civilian care in their respective MTF catchment areas. The highest value for either an MTF or CHAMPUS is Keesler, but that may be due to a few specific and complicated procedures. Other than Keesler, Beaumount and San Diego had the highest RVU values.



We see a different pattern for general surgery. The civilian benchmark is significantly higher than all sites, MTF or CHAMPUS, with the CHAMPUS area around Lackland the sole exception. In all cases, just as for primary care, the values at the MTFs were lower than the CHAMPUS values. We have no explanation at this point. The MTF providers may be, indeed, performing less complicated procedures, or it may just mean that they are not as precise in filling in the datasheets that detail the specific procedures provided to their patients. If the latter were true, it's important nonetheless to use the information in this report so that they can see that what they write down is important and will be used.

Implications for Selected SPs

- For gastro, MTFs often had higher RVU than CHAMPUS
  - Higher than civilian benchmark for 6 of the 16 MTFs
- For PC and general surgery, MTFs were always lower
  - For general surgery, the benchmark includes IP
- For general surgery, larger facilities had slightly lower RVU scores (on average) than medium-sized ones
  - ❑ CHAMPUS had similar values in both cases
  - ❑ Perhaps finding shows the effect of having more surgical SPs at medical centers

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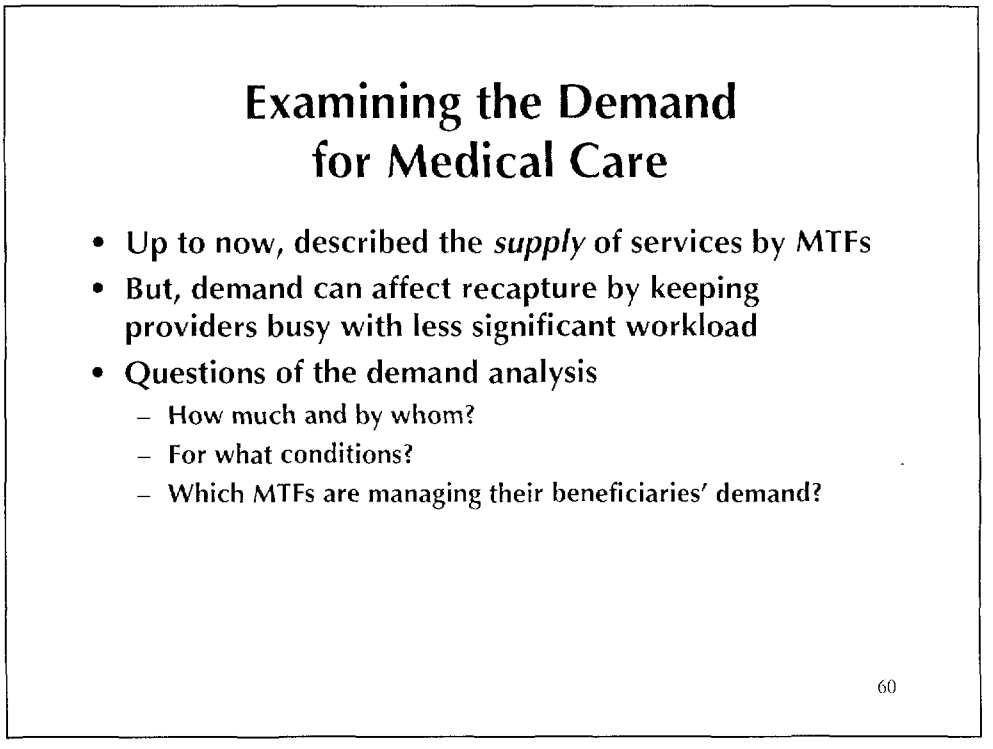
As we've seen, for many SPs, the RVU values seem "reasonable" and fairly close whether at the MTF or CHAMPUS. We saw many similar values for the various SPs at San Diego. For gastroenterology, the MTFs often had higher average RVUs than CHAMPUS. But, for others, such as primary care and general surgery, the CHAMPUS values are always higher. The reason may also be the demographics of the population seen at the MTFs or, as we said in the last slide, it may be poor record keeping, which we hope will improve over time.

Finally, although we don't show the specific values here, we did examine the differences in general surgery RVUs between large and medium facilities. The CHAMPUS values were similar regardless of the size of the MTFs. But, the larger MTFs' values were slightly lower than for the medium-sized facilities. This may seem counterintuitive, but one explanation may be that larger facilities have more surgeons with subspecialties, and the general surgeons don't have to take on the more complex procedures.



The first section of this brief principally focused on the supply of MTF services. Specifically, it considered the complexity of services and potential cost savings under the assumption that MTFs become more efficient and recapture workload from CHAMPUS.

This section of the annotated briefing focuses on the demand for services in the MHS. The examination of demand analyzed three main areas. First, we explored the number of visits and inpatient days and which groups are consuming these services. This allowed us to determine which groups used the system and how they used it—whether they were in-house users, network users, or some combination of the two.

Second, we considered the types of conditions for which DOD beneficiaries were being treated. Third, we "graded" the MTFs and the MCSCs against each other to see which ones were best at managing the demand of their enrollees. Using these grades, we estimate potential cost savings, assuming that the "poor" performers manage their demand as well as average performers.

Demand Analysis Data

- Many of the same files as described earlier
- But, different sample of claims
- 1 percent sample taken of all DOD beneficiaries
  - Then linked to workload files
    - Both direct care and CHAMPUS
  - About 83,000 beneficiaries in sample
    - Includes overseas beneficiaries
    - We include only beneficiaries in regions 1 to 12

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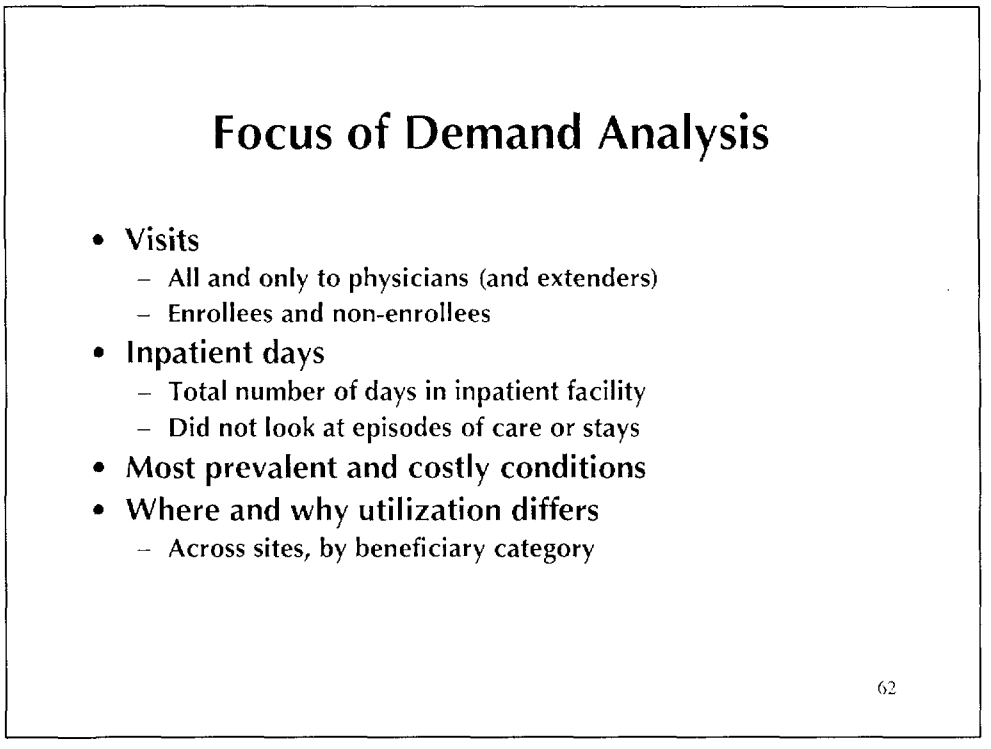
The data used in the demand analysis were the same as those used in the supply analysis—HCSR institutional, HCSR professional, SADR, and SIDR—but the sample was different. The supply analysis used a workload sample; the demand analysis used a population-based sample. The data were generated by taking a 1-percent sample from the DEERS file, which contains data on all DOD beneficiaries, and then linking it to the workload files by extracting all of the workload for the people in the 1-percent sample. This allowed us to examine the total demand for specific individuals and population groups.

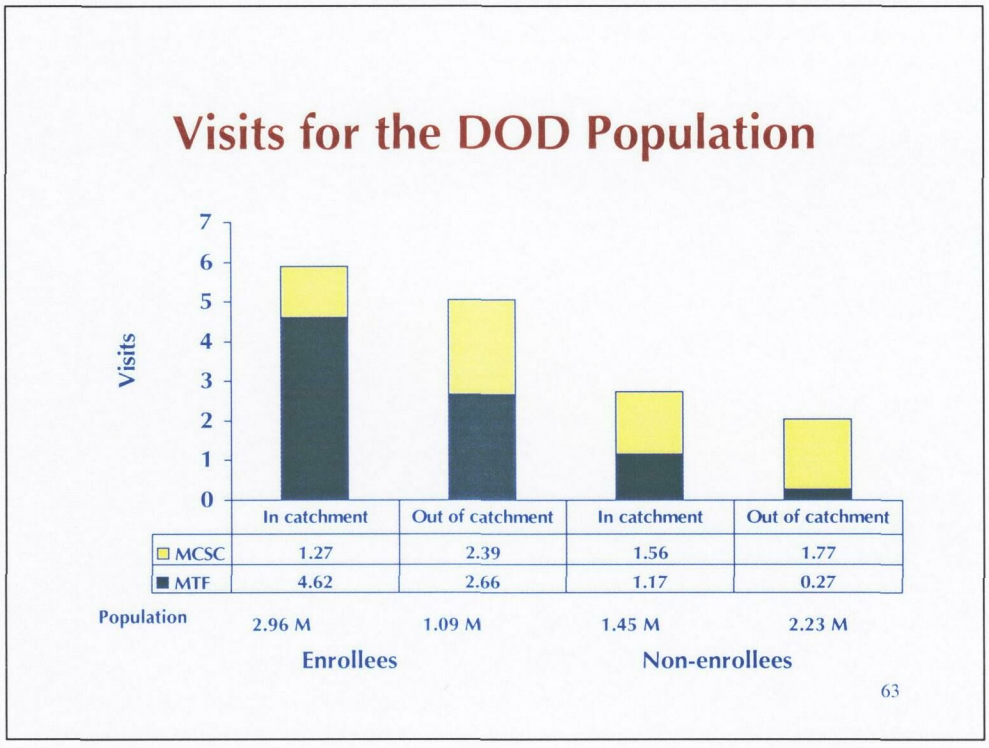
The 1-percent sample contained the workload information for just over 83,000 beneficiaries. In this analysis, we only considered beneficiaries residing in Regions 1 through 12. There are about 78,000 beneficiaries in these regions.



Given our population-based sample, we estimated visits using the same definition as in the supply analysis. This was done for consistency. In addition to calculating visits to all providers, we've also calculated visits to only physicians and physician extenders. We feel the latter is important because the MHS's focus on managing demand will likely focus on controlling visits to physicians and physician extenders.

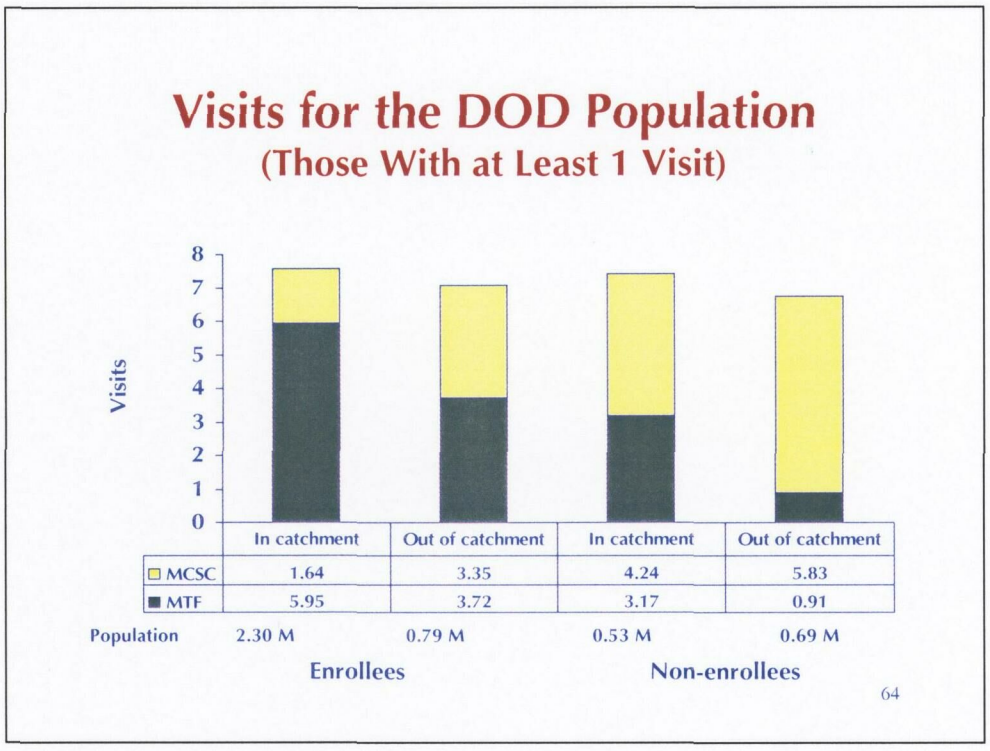
We have estimated inpatient days both in and out of the direct care system. This allowed us to show how many inpatient days each group generated and where they received care. Although knowing the number of visits and inpatient days the average beneficiary receives is important, it doesn't tell us anything about the type of care received. For this reason, we also looked at the most prevalent and costly conditions and where treatment for these conditions was received.

Given our estimates of visits, inpatient days, and conditions, we present only a sample of slides showing how demand varies by group. It's possible to display the demand variables differently and with more granularity, but we felt that the following slides illustrate the kind of information that can be obtained from the population-based sample.



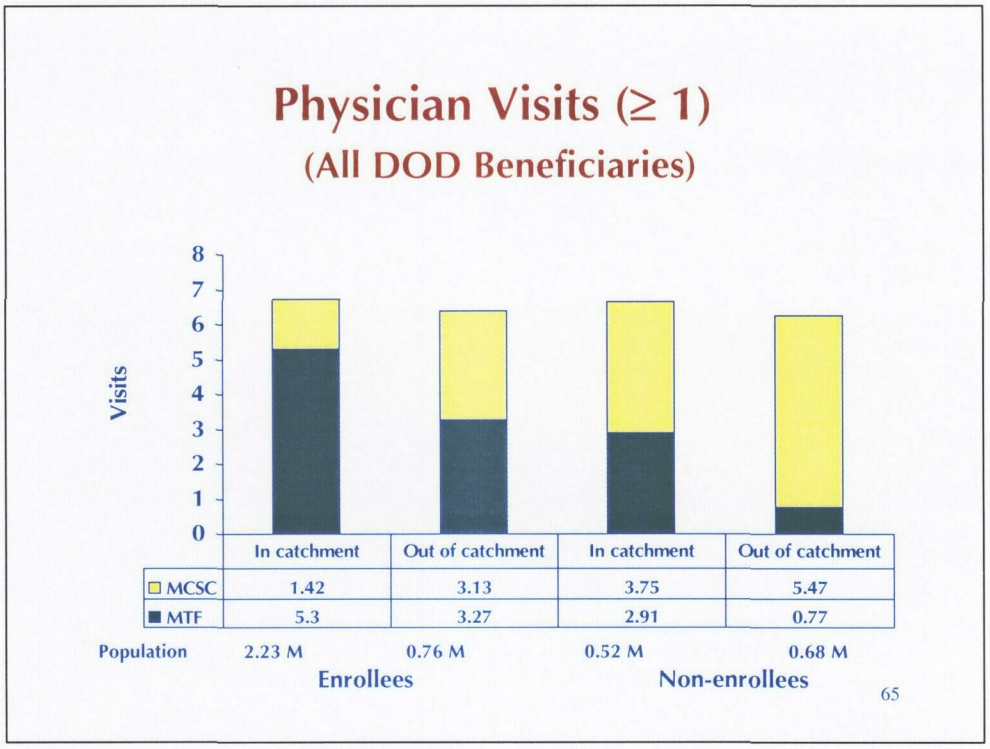
This figure shows the average visit rates for enrollees and non-enrollees. In this case, visits include visits to all providers, not just physicians and physician extenders. The figure also shows the average MTF and CHAMPUS visit rates. For example, enrollees living in catchment averaged 5.89 visits in FY 1999 with 78 percent, or 4.62, of these visits performed at the MTFs. That is not to say that each person had some MTF and some CHAMPUS visits, but only where they went on average.

As expected, the number of visits going to CHAMPUS is greater for those residing out of catchment than those residing in catchment. Also, it is no surprise that enrollees had, on average, many more visits than non-enrollees.



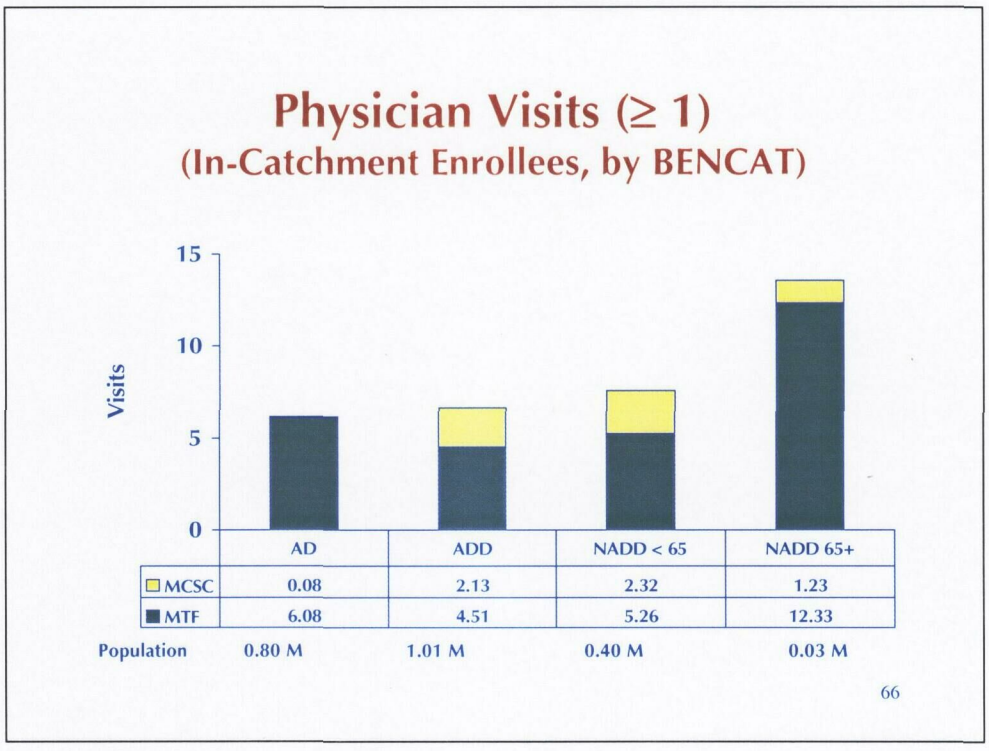
This figure is the same as the last except that here we excluded all beneficiaries who never used the MHS during FY 1999. These individuals may have had no visits during this period or they went outside the MHS for their health care. The latter may often be the case for retirees who have healthcare benefits provided by their or their spouse's current employer. In addition, many beneficiaries over 65 years of age rely on Medicare and never use space-available care. In FY 1999, the over-65 population was not eligible for most other TRICARE benefits.

As in the previous slide, those living out of catchment predictably had more CHAMPUS visits than those in catchment and non-enrollees had a higher percentage of CHAMPUS visits than enrollees. The real difference between this slide and the previous slide is that, of those who use the system, the average number of visits is approximately the same regardless of whether in or out of catchment or whether enrolled or not. On the previous slide, this was not the case when non-users were included in the sample.



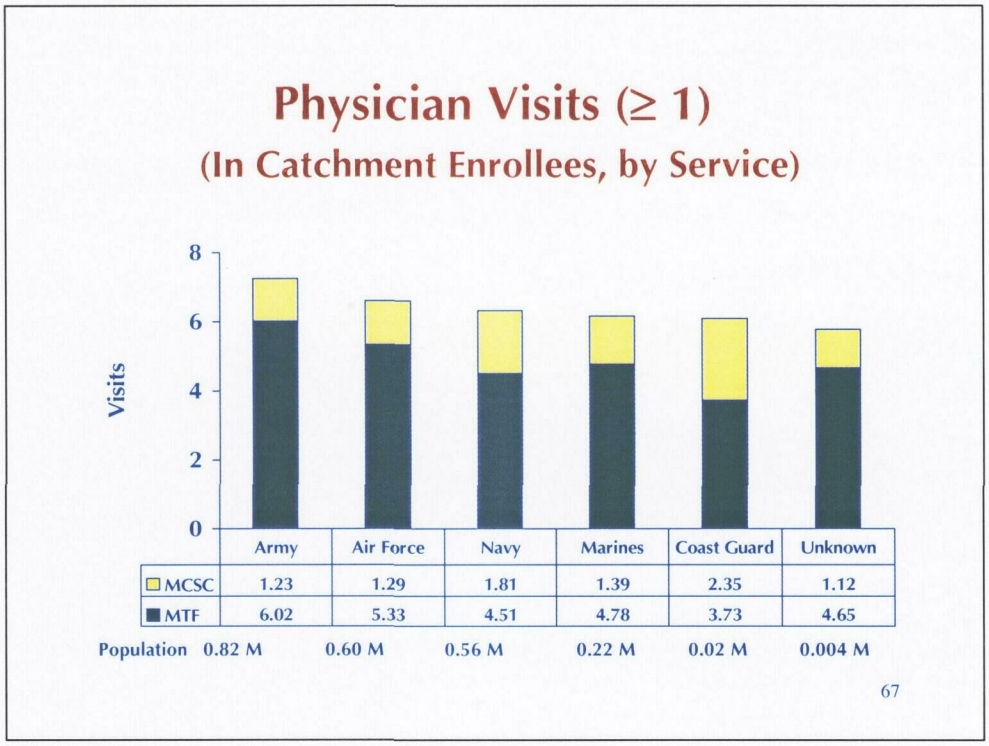
This figure shows the average visit rate for those that actually used the system. The difference between this slide and the last is that the visit rate in this slide includes only those visits to physicians and physician extenders; the previous slide included visits to all providers. This slide shows an average of 6.72 visits per in-catchment enrollee going to physicians and physicians extenders. The previous slide showed an average of 7.59 visits. The difference of 0.87 includes visits to providers such as counselors, therapists, laboratory workers, and optometrists. Again, the reason for the distinction between these visits and physician visits is that demand management practices are likely to focus on physicians and their extenders.

We see that enrollees have fewer CHAMPUS visits than non-enrollees and those living out of catchment have more CHAMPUS visits than those living in catchment. Overall, the implications of the two figures are similar, the difference being a slightly lower average visit rate when only visits to physicians or extenders are considered.

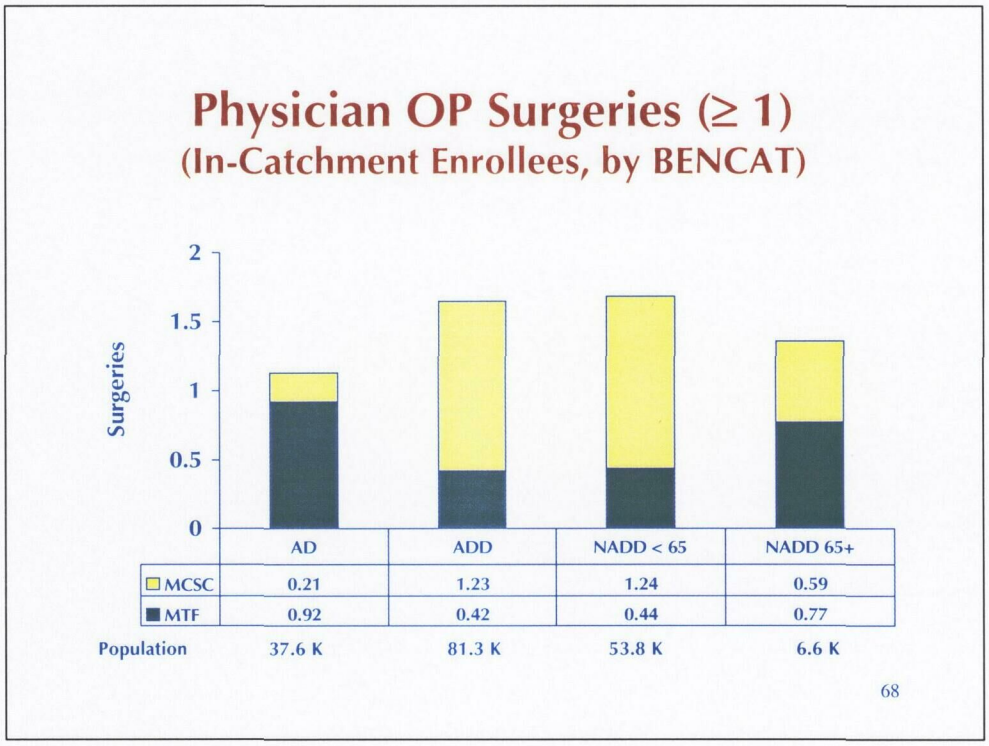


This figure compares the average number of visits to physicians and physician extenders by beneficiary category (BENCAT) for enrollees living in catchment. It is no surprise that the over-65 group (NADD 65+) has the highest average visit rate of any beneficiary group, whereas the active duty has the lowest visit rate.

All beneficiary groups receive a majority of their visits at the MTFs, but the active duty group gets almost all of its care at the MTFs. If the perception that the more complicated visits go to CHAMPUS is true, we might expect the NADD 65+ beneficiaries to have the highest percentage of CHAMPUS visits, but that is obviously not the case. The most likely explanation for this is that in FY 1999 the NADD 65+ beneficiaries were only allowed to enroll at a small number of test sites; all of these sites are large medical centers and, therefore, can handle more complex workload than most other MTFs.

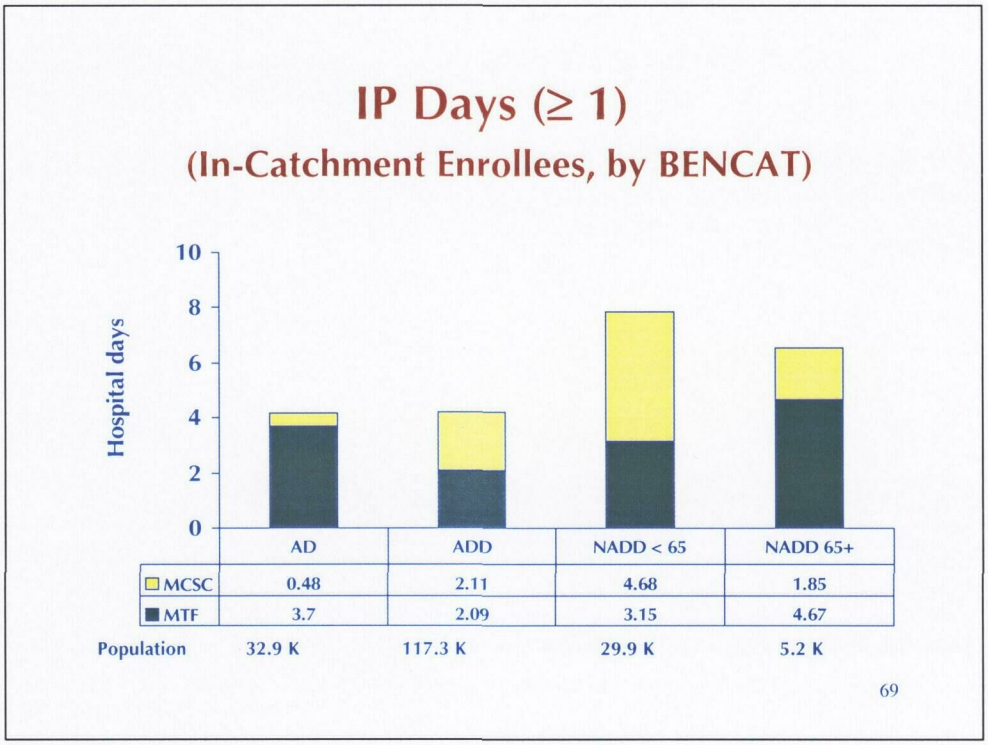


This figure shows the average visit rate to physicians and physician extenders by sponsor service for in-catchment enrollees. As in the previous slides, we see than enrollees get a majority of their care at the MTFs. Overall, Army-sponsored enrollees had the highest visit rate of any of the services at 7.25 per enrollee. For the Air Force, Navy, and Marines, the average visit rates were 6.62, 6.32, and 6.17, respectively.



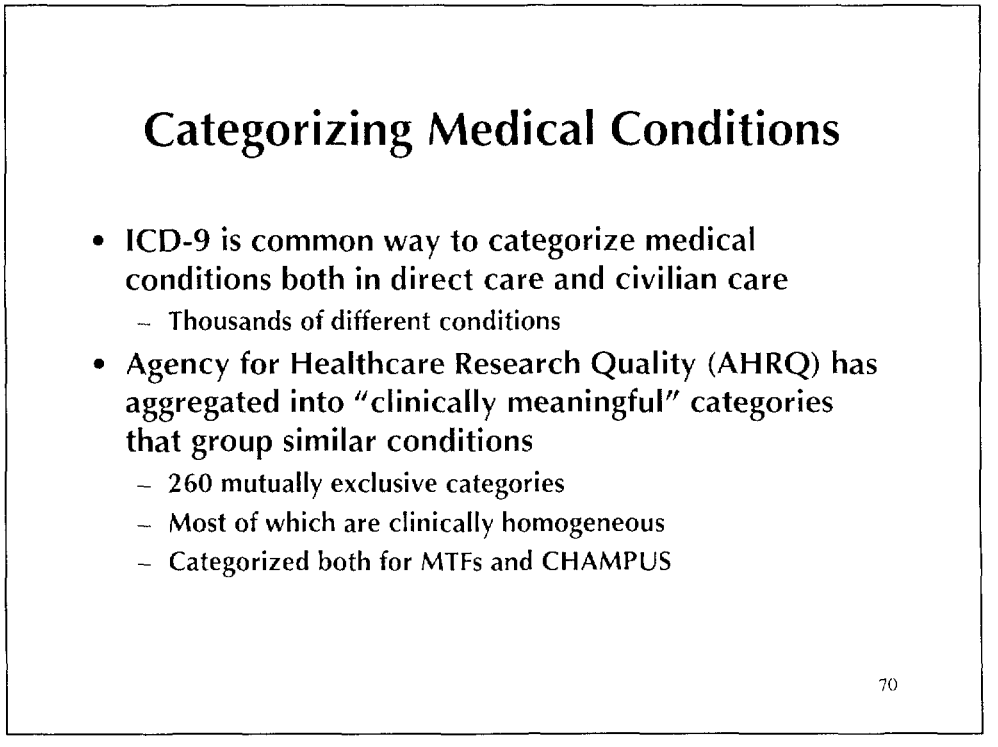
In addition to visits, we have estimated the average number of outpatient surgeries or procedures by beneficiary category for enrollees living in catchment and with at least one procedure. Our estimated number of procedures includes all CPT-4s in the surgical chapter except for the 36415 procedure, which is the the CPT-4 for drawing blood.

The active duty had the lowest average number of procedures, with a majority of those procedures performed in the MTFs. The data indicate that the active duty dependents and the retirees under 65 years of age (NADD <65) have the highest number of procedures and that a majority of these procedures were performed in the network. We do not know why the average number of procedures of the NADD 65+ beneficiaries was lower than for the NADD < 65 beneficiaries. But, the relatively smaller sample size of those in-catchment enrollees with a procedure is a possible explanation.

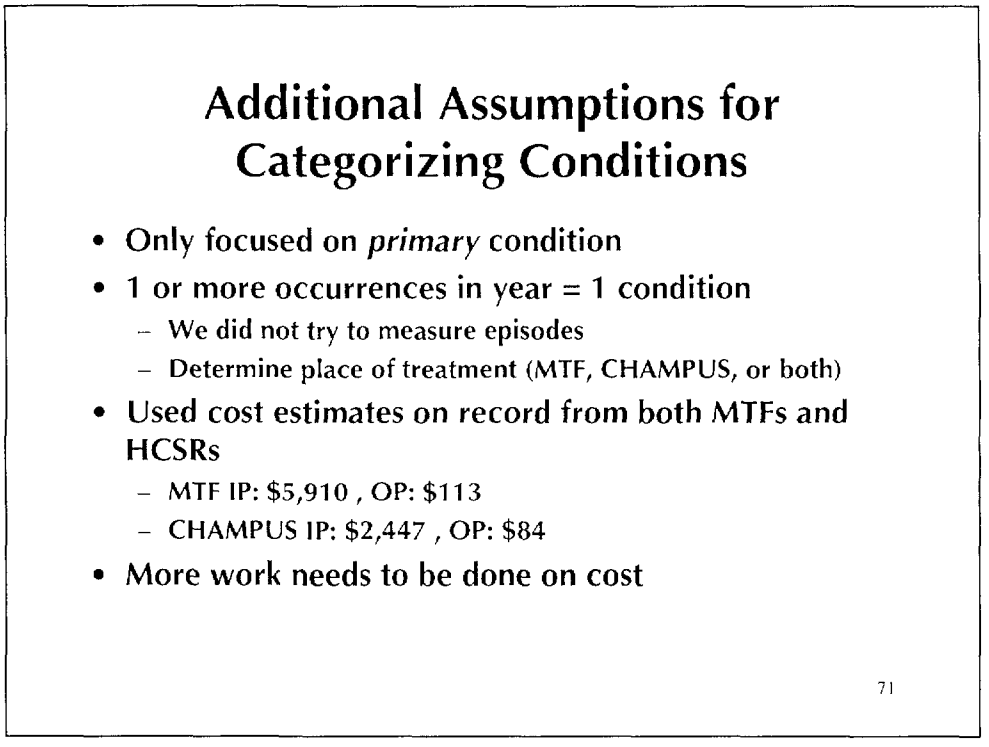


This figure shows the number of inpatient days per in-catchment enrollee if the enrollee had at least one inpatient day. The active duty averaged 4.18 days with the majority of those days at an MTF. The active duty dependents averaged 4.20 days, but about 50 percent of those days were in the network. The NADD <65 beneficiaries had a majority of their inpatient days in the network with an average of 7.83 days per enrollee. As with outpatient surgeries, we don't have an explanation for why the average number of days for the NADD 65+ beneficiaries is less than the average for those under 65, except for the small sample sizes that may yield a misleading picture of the true demand.

As with visits and outpatient surgeries, we do not wish to imply that, because on average a group receives 50 percent of inpatient days in the network and 50 percent in the direct care system, that would be the case for all beneficiaries. In reality, the majority of enrollees received care either in the network or at an MTF. Very few enrollees have inpatient stays in both the network and the direct care system during FY 1999.

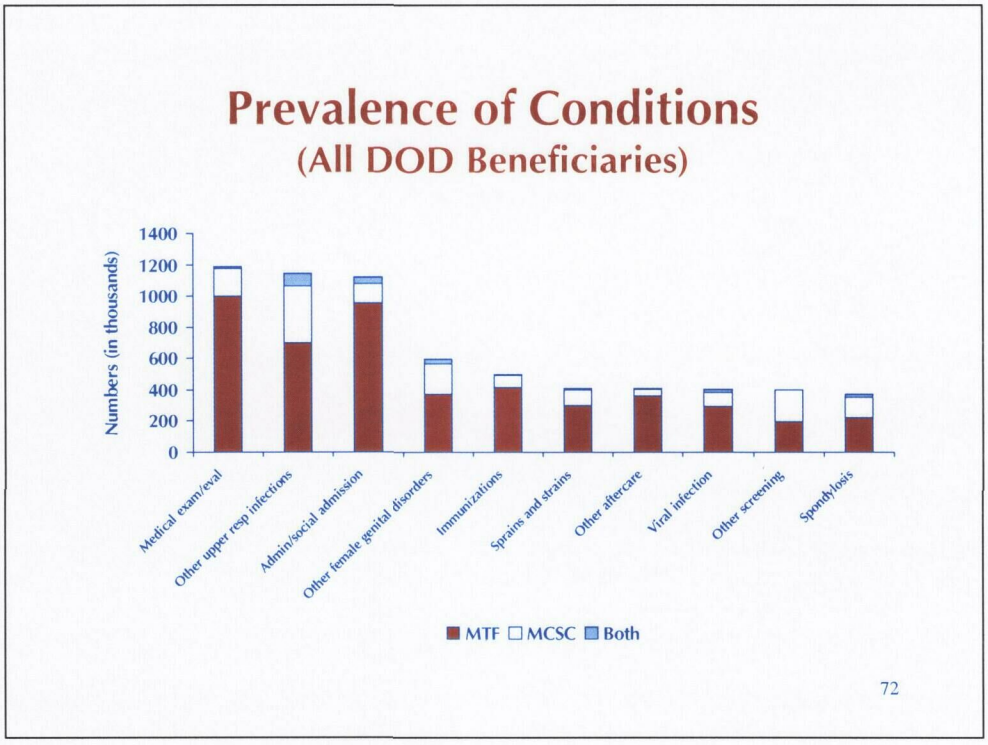


Now that we have examined the number of visits, procedures, and inpatient days per enrollee, we look at the specific conditions for which beneficiaries were treated. Specifically, we looked at the type and costs of the conditions of DOD beneficiaries most frequently treated within the MHS. We used the ICD-9 codes to obtain primary conditions treated, but there are nearly 12,000 ICD-9 codes. The AHRQ has aggregated the ICD-9 codes into 260 mutually exclusive categories of "clinically meaningful" conditions. We rely on these more aggregate categories as a way of describing beneficiary conditions.



Our analysis considered primary conditions only. Additionally, if a condition for a given beneficiary occurred more than once during the fiscal year, we treated that as one condition—we did not try to measure episodes of care. We also explored whether treatment occurred at the MTF or in the network so that the we could determine where the DOD beneficiaries received care for specific conditions.

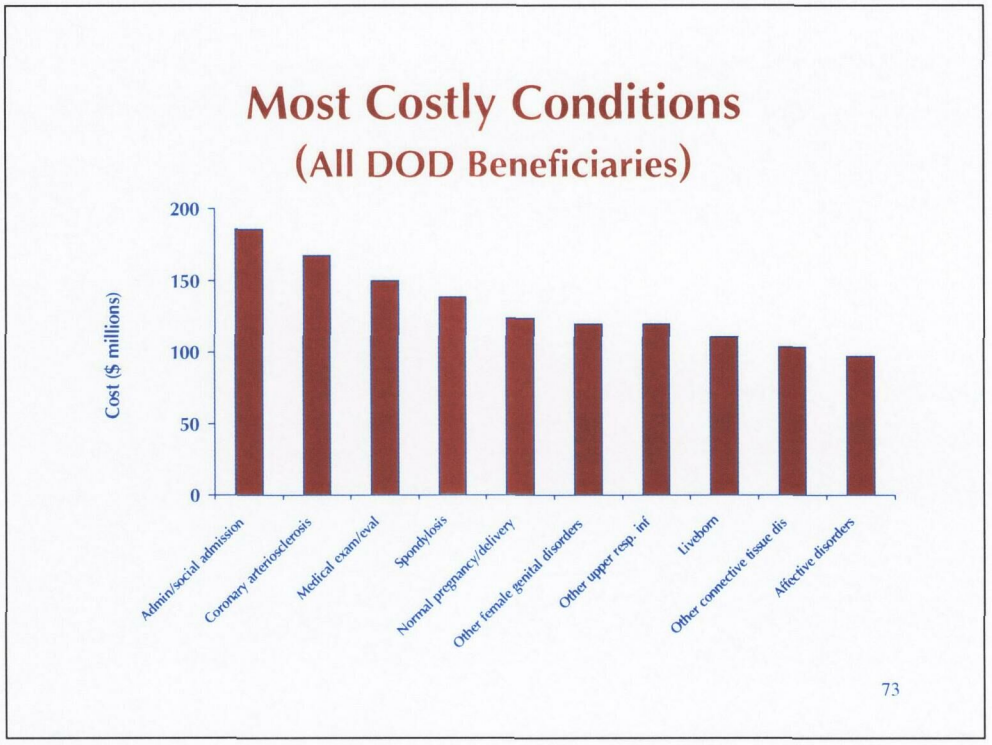
We estimated the cost of these conditions by using the costs associated with the conditions as listed in the workload databases. The costs used from the HCSR institutional and professional databases were the government paid costs. The government paid costs are not the total cost of treatment, but they are the costs that matter to the government as a payer. Similarly, we estimate cost in the direct care system based on the costs reported on the SADR and SIDR. It is important to note that, at this point, we have not verified the accuracy of the costs reported. But, they are a reasonable place to start. Clearly, more needs to be done to better understand and use the best cost estimates available.



This figure lists the ten most prevalent conditions. The red bar indicates the number of diagnoses that were treated in the MTFs, the white bar indicates those treated in the MCSCs, and the blue (top) bar indicates the number of diagnoses that were treated in both the MTFs and MCSCs. Recall that we are not looking at episodes of care—if the condition occurred more than once during the year, that condition was treated as only occurring once.

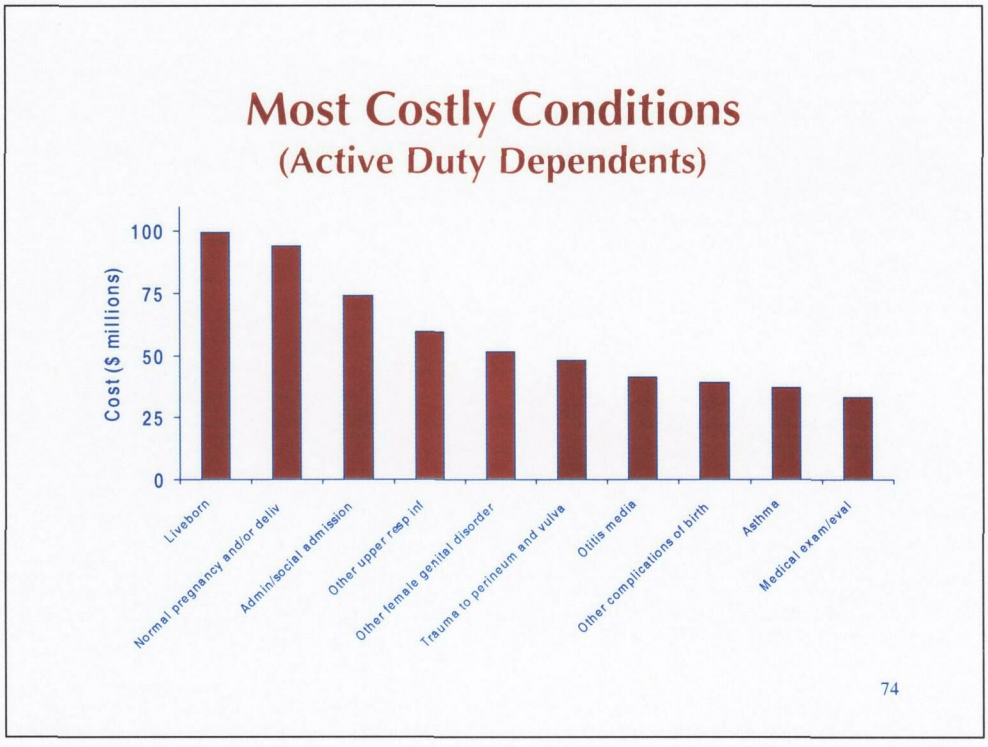
To better understand this figure, consider a beneficiary who had an ICD-9 that fell into the viral infection category. If this person received care for this diagnosis only at an MTF, this diagnosis would be part of the red bar. Being part of the red bar doesn't mean than a beneficiary never received care in network for other diagnosis, but that he/she only received MTF care for this specific diagnoses. Overall, this figure shows that for given conditions, beneficiaries typically received care in either the MTFs or MCSCs, but rarely did they receive care for a specific condition at both.

We realize that "medical exam/eval" and "admin/social admission" are not very descriptive titles. The medical exam/eval category includes several of the "V-coded" items (in the ICD-9 classification scheme) that are less often used in civilian health care.

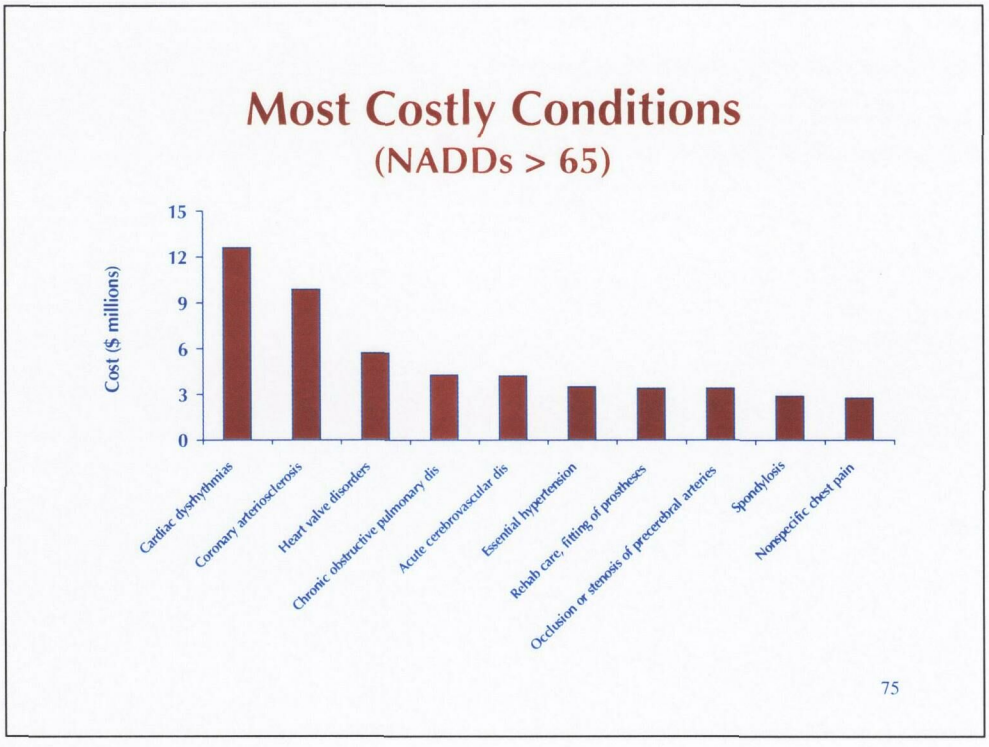


This figure is similar to the last, but it contains the most costly conditions rather than the most prevalent ones. Many of the same conditions appear in both figures—medical exam/eval, admin/social admission, other upper respiratory infections, other female genital disorders, and spondylosis—but the order is different. There are some conditions, such as coronary arteriosclerosis, liveborn, other connective tissue disease, affective disorders, and nonspecific chest pain, that occur in the ten most costly conditions but did not appear in the ten most prevalent ones.

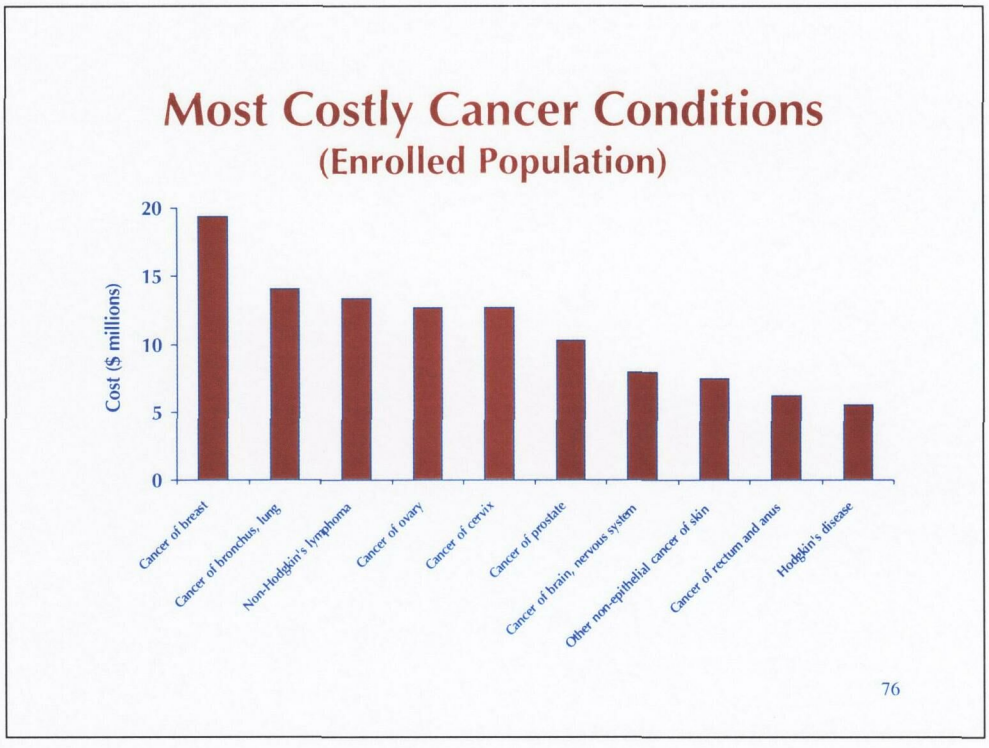
Note that many of these conditions are "other" conditions, such as other upper respiratory infections. This is largely a function of the fact that, although the most common upper respiratory infection occurred more frequently than all of the other types of upper respiratory infections, the most common form still occurred less often than all of the other types combined.



This figure differs from the last one in that it looks only at active duty dependents, whereas the previous one looked at all DOD beneficiaries. Again, we see many of the same conditions—admin/social admission, medical exam/eval, other female genital disorders, other upper respiratory infections, and liveborn—but the order of significance in terms of cost has changed. As expected, conditions related to pregnancy and childbirth are among the most costly for active duty dependents.

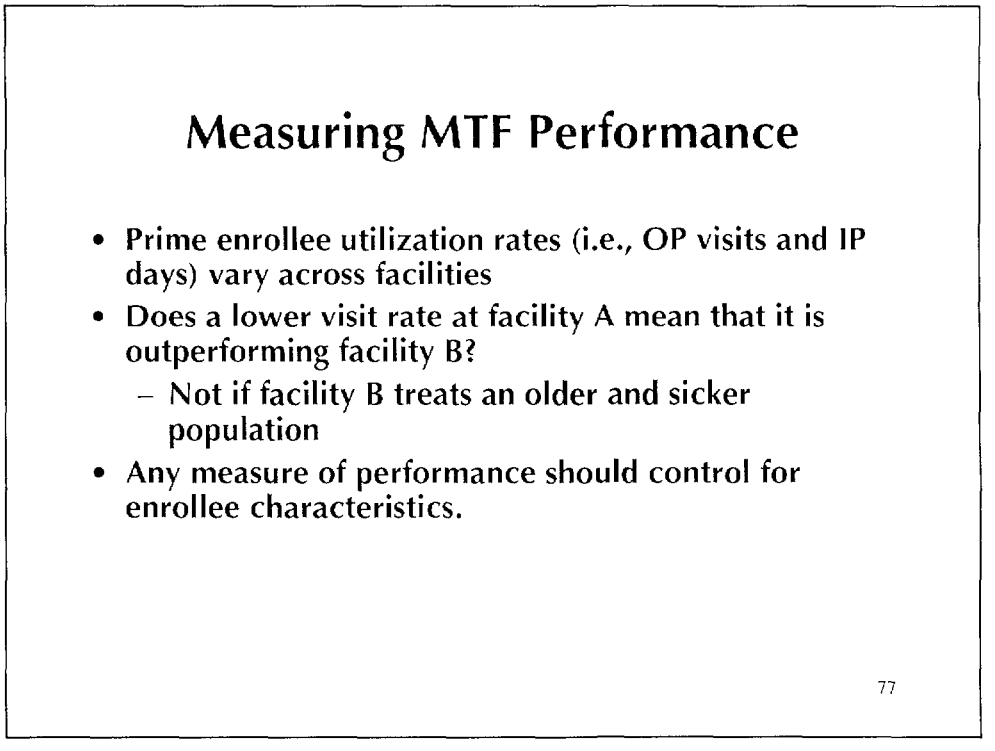


This figure shows the most costly conditions for the enrolled non-active-duty dependent population over 65 years of age. If you compare these conditions with the the most costly ones for the active duty dependents, you will not find any of the same conditions. The conditions for the over-65 group typically relate to various forms of heart disease. These conditions will potentially be an area of cost growth when the over-65 group's access to the MHS increases in the fall of 2001.



There are obviously any number of ways we can sort the data to provide information about costly conditions, and we certainly can't show them all in one briefing. But, on this slide, we do provide information about the most costly cancers faced by the enrolled population.

Breast cancer was by far the most costly at $19.4 million in FY 1999. Lung cancer, non-Hodgkin's lymphoma, ovarian cancer, and cancer of the cervix were the next most costly cancers with costs between $12.7 and $14.1 million each. Again, we wish to make clear that while the precision of the cost estimates of these conditions may be questionable, the rankings of these conditions is likely to be reliable.



Given the preceding review of visits, days, and conditions, we now turn to measuring the performance of the MTFs and the MCSC providers and comparing how they managed the demand of their enrollees. To do this, we considered Prime enrollee utilization rates for visits and inpatient days; we did not consider non-enrollees because of the inherent difficulty of managing non-enrollees or space-available users.

Obviously, there can be differences in utilization that are simply a function of demographics; hence, a lower visit rate at facility A than at facility B doesn't necessary mean that A is outperforming B. The answer to which facility is performing at a higher level depends on the demographics of the facility's enrollee population. To take account of these factors, we controlled for gender, age, beneficiary category, sponsor rank, and whether the enrollee resided in catchment.

Using the utilization patterns of all enrollees, we used regression analysis to predict average visits and inpatient days for each facility, given the average demographics of that facility's enrollees. (This analysis is performed for a sample of 58 MTFs and 9 MCSCs. We could have included enrollees in more MTFs, but the sample of enrollees at many MTFs was small.)

Example

- Simple comparison suggests MTF A is outperforming MTF B.
- But model shows that MTF B is doing well, given its enrolled population, and MTF A is performing poorly in managing demand.

- Actual Visit Rate
  - MTF A: 6.5
  - MTF B: 7
- Predicted Visit Rate
  - MTF A: 6
  - MTF B: 7.3
- Comparing actual to predicted
  - MTF A: actual > predicted
    - Poor performer
  - MTF B: actual < predicted
    - Good performer

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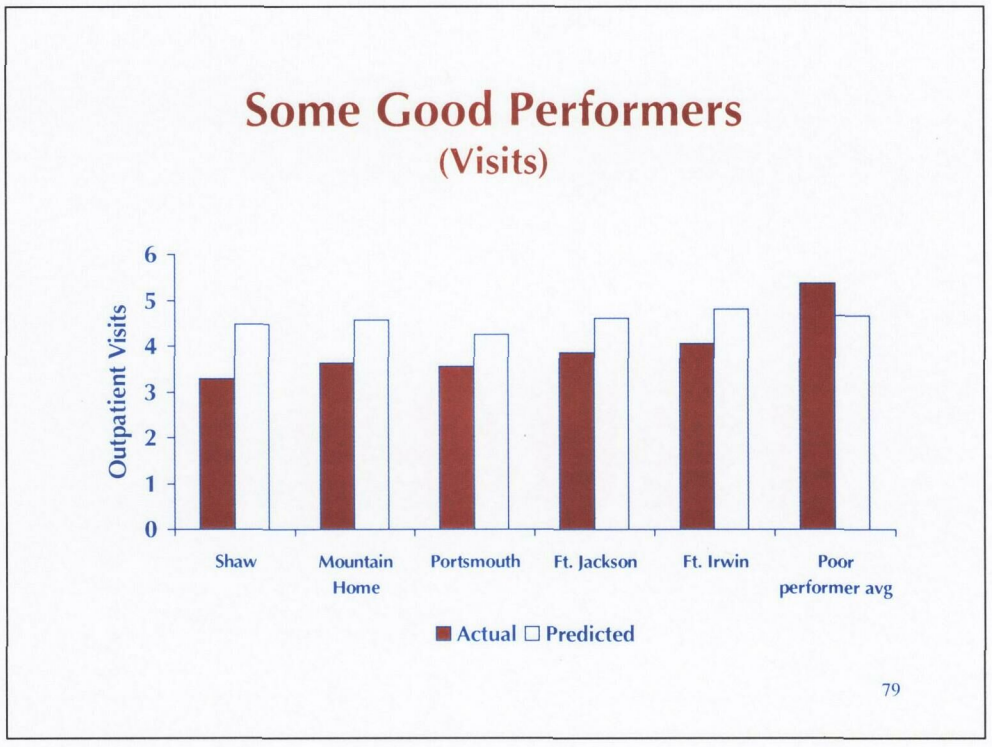
The regression analysis provides a predicted number of visits for each facility. We compared the predicted value to the actual value. If the predicted value was more than the actual value, the implication is that this facility is a "good" performer because it actually provided fewer visits than the average MTF or MCSC, given its demographics. Similarly we labeled "poor" performers as those facilities for which predicted visits were less than the actual visits.

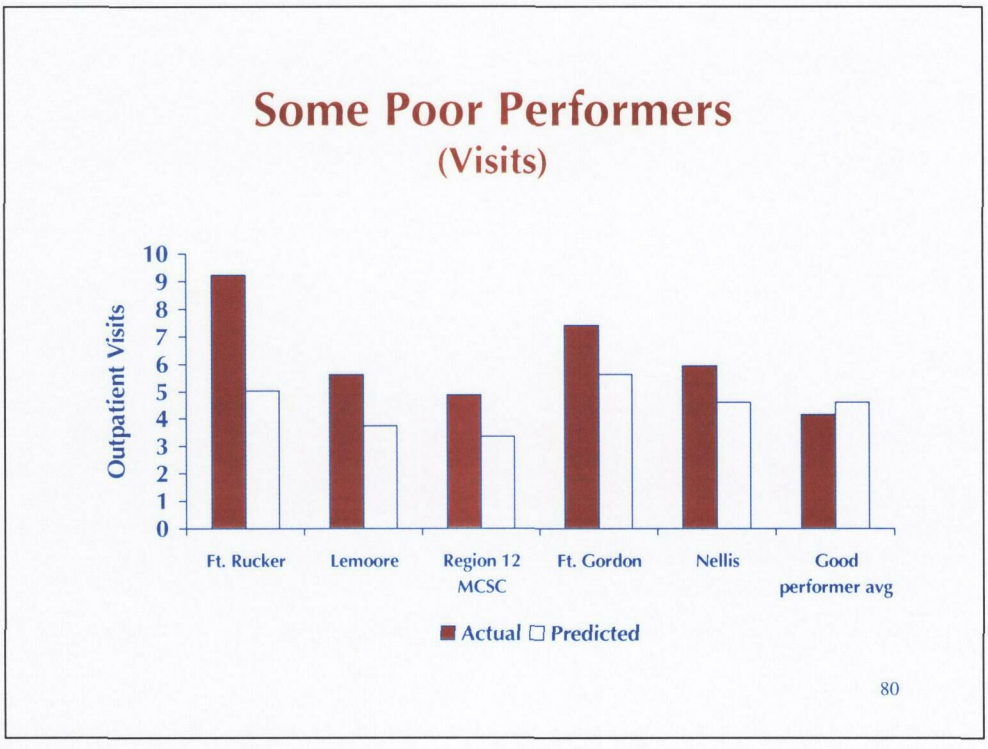
The assumption we have made is that the only reason a facility would have a different number of predicted than actual visits is the effectiveness of its demand management. We recognize the limitations of this assumption. It is certainly possible that these facilities are "under treating" their beneficiaries, not managing demand effectively. Similar facilities may have lower predicted visits than actual visits because of some facility's unique circumstances that we can't control for at the present time.

That said, we feel that this is a reasonable approach for identifying potential good and poor performers. Once these are identified, the MHS can then investigate the facilities more closely to see how well or how poorly they have been performing. For those that did well, the MHS can determine how this good performance was achieved so that it can be implemented in other MTFs.



Given the results of our regression analysis, this figure shows the top five performers for visits as well as the average of the poor performers. Recall that predicted values are what we would expect on average in the MHS based on visit rates throughout the system. These good performers all have actual visit rates between 3 and 4, with predicted visit rates between 4 and 5. Civilian benchmarks for visits per year are about 3.5; thus, these good performers seem to be in line with the private-sector benchmarks.

Note that the predicted values are very similar for all of these facilities. This indicates that demographics of the enrollee population are not wildly different across these facilities. Also, we have used visits to physicians and physician extenders and not visits to all providers in our estimates of which facilities are best managing demand. We used this measure because demand management is most likely to focus on physicians and extenders.



This figure is also based on our regression analysis of visits, but instead of showing the five best performers, it shows the five worst. Ft. Rucker has a predicted visit rate of about 5 and an actual visit rate of over 9. Whether the difference between actual and predicted values is the result of poor demand management or other circumstances should be investigated.

Comparison of this figure with the previous one shows that there is more variation in the predicted visit rate, indicating more demographic variation among these facilities than among the good performers. Also, the actual visit rates are substantially above the civilian benchmark of about 3.5 visits per enrollee.

Measuring IP Performance

- We performed the same kind of analysis for inpatient days
- Much more variation across facilities
  - Model fit not as "tight"
- Indicates other variables are probably important
  - Previous analysis using DOD survey of beneficiaries found self-reported health status was important
- But, administrative data more complete and accurate

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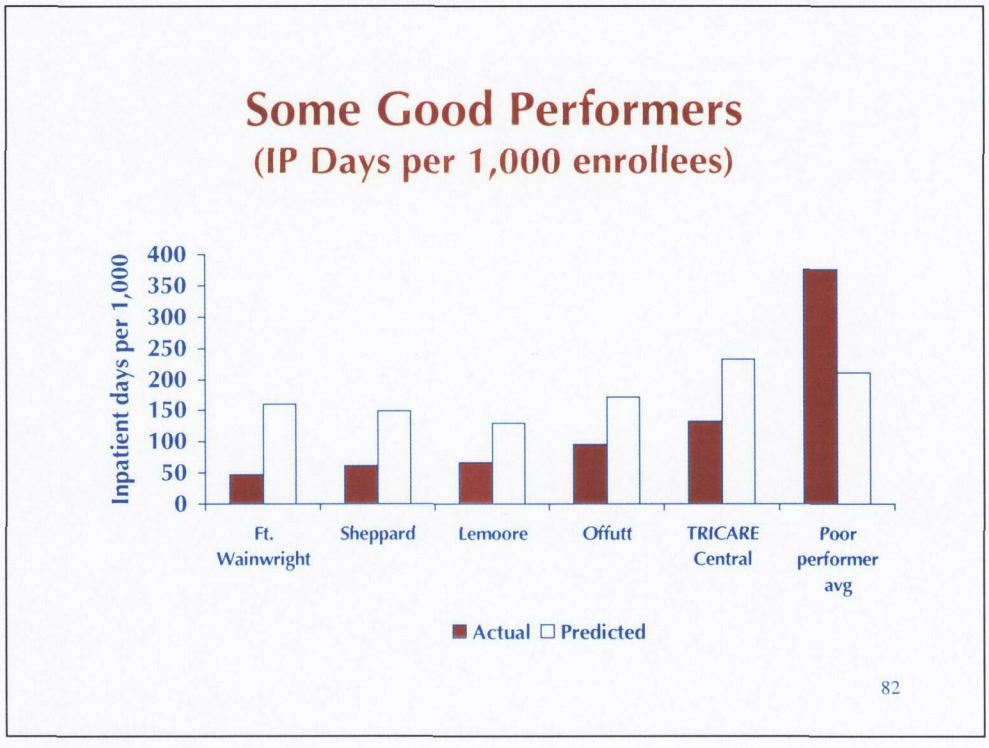
We now turn to inpatient days and perform the same kind of regression analysis as we did with visits to determine good and poor performers. We note that the fit of the model was not as "tight" as it was for visits.

This may be a result of the smaller sample sizes associated with inpatient days compared to visits or it may be a result of our inability to control for factors that are important in determining utilization—such as self-reported health status. Previous analysis using the DOD survey found that self-reported health status was an important predictor of utilization, but health status variables are neither available in the DEERS population file nor in any of the workload files. Despite this, we have used the administrative data rather than the survey data because they are more complete and more accurate than the DOD survey, which relies on self-reporting.

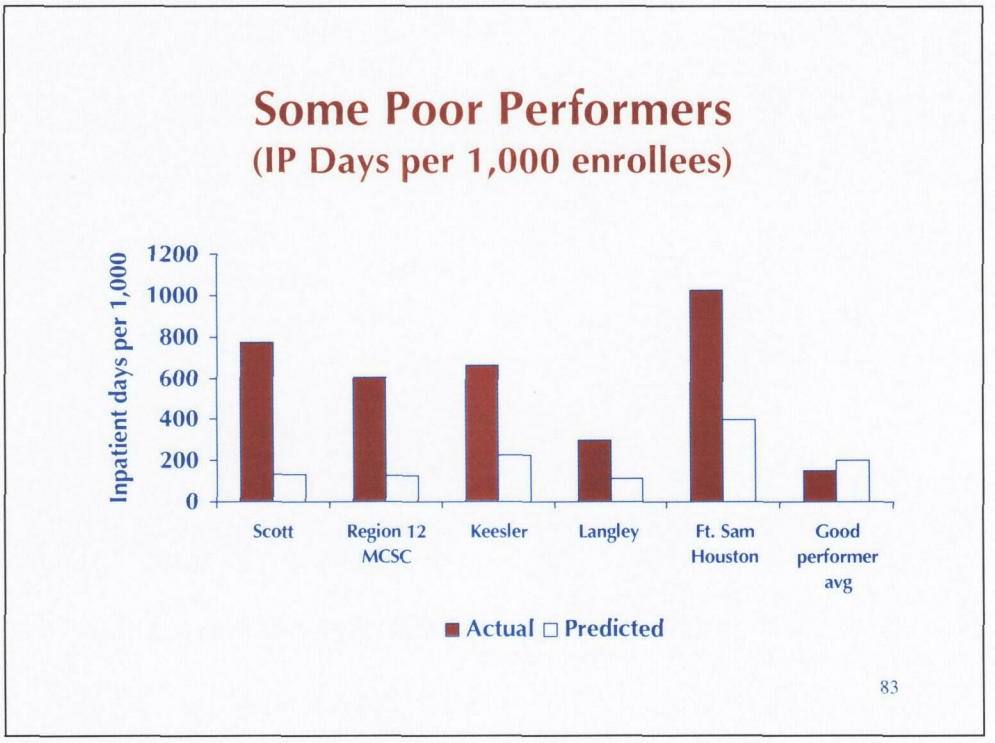
We now turn to the results of the inpatient regression analysis.



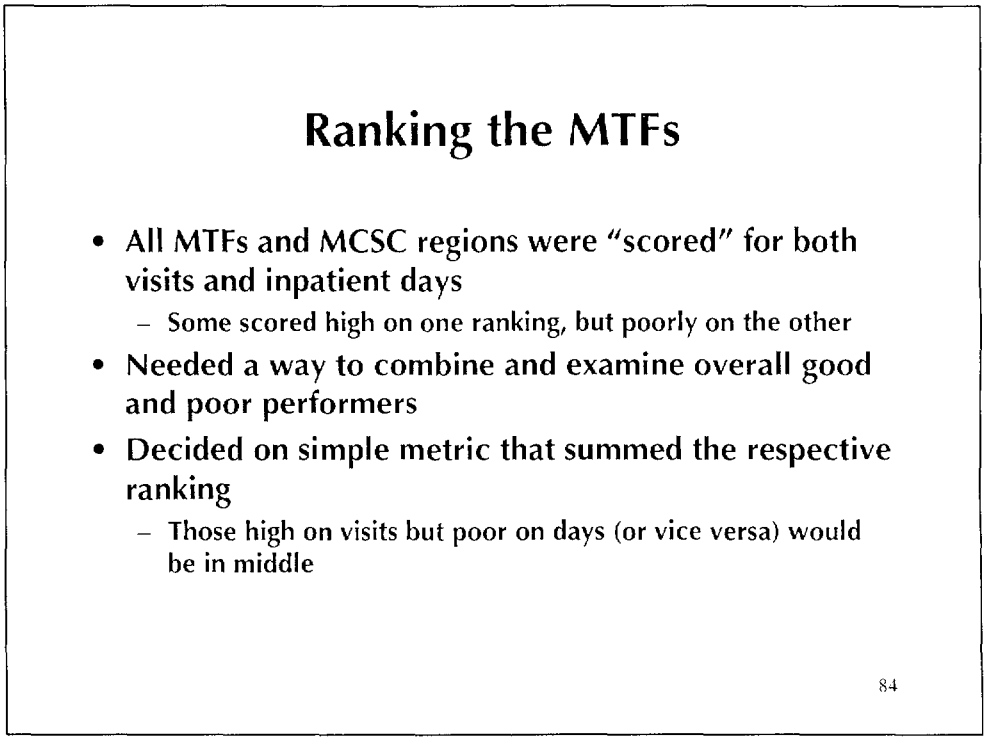
This figure shows the top five good performers in terms of predicted to actual inpatient days. All of these good performers are below civilian benchmarks of 185 to 380 days per 1,000 enrollees (255 days per 1,000 is typical).

As noted on the previous slide, the predicted IP estimates were subject to more variation than were the visit estimates, and some of the samples for inpatient care were small given our 1-percent sample. Nonetheless, the MHS should investigate the good performers and determine if the estimated performance was a result of effective demand management or other circumstances.

We should note that we included all types of inpatient facilities when calculating hospital days for those enrolled with the managed care support contractors (e.g., TRICARE Central in the figure above). But, across the 12 regions, 80 percent of the total stays were at general medical and surgical facilities and only about 3 percent were either at residential treatment centers or skilled nursing facilities, where the average length of stay is generally higher.

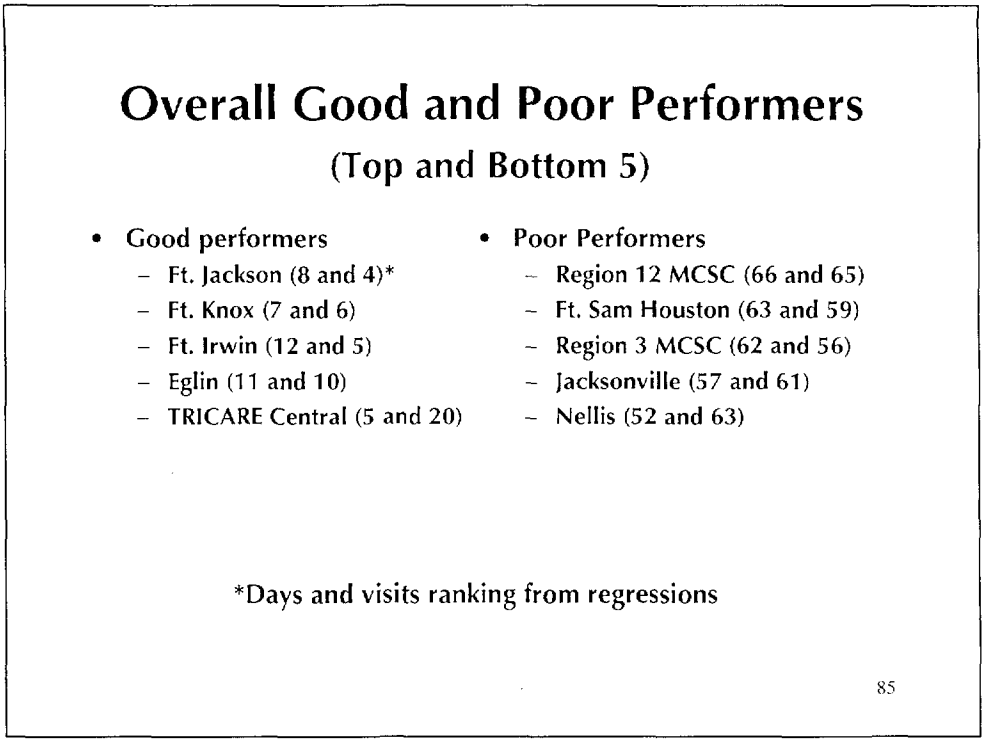


This figure shows the poor performers in terms of predicted to actual inpatient days. Except for Langley, all have actual inpatient days substantially above the high civilian benchmark of 380 days per 1,000 enrollees. Further, the number of actual days is substantially above the average of the good performers, which, as we indicated in the last slide, was lower than our civilian benchmarks.



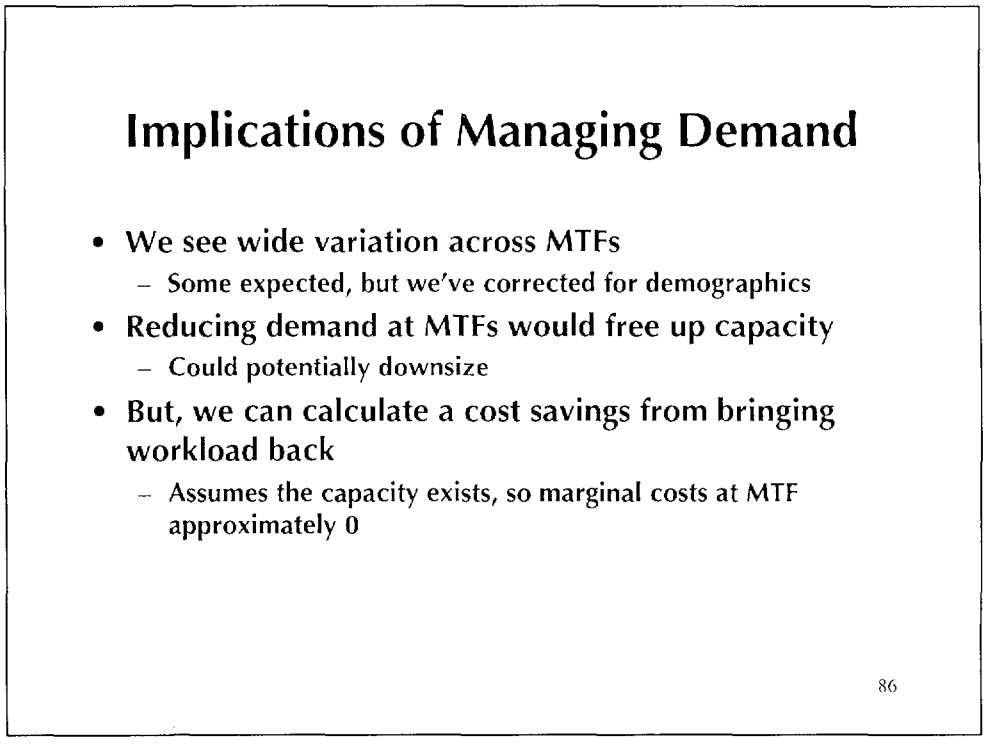
All of the MTFs and MCSCs were graded, or "scored," in relation to the other facilities or providers for both visits and inpatient days. Facilities that were good performers on visits were not necessarily good performers on hospital days. This may be a result of providers shifting demand between the various types of medical services.

Given this problem, we needed a way to combine the results of the visit and inpatient day analyses to determine overall good and poor performers. We decided on a very simple metric—summing up the respective rankings from the visit and inpatient day analyses. To be a good performer, a facility or provider needs to rank fairly high in both visits and hospital days. Those facilities that ranked well on visits but poorly on inpatient days (or vice versa) would be in the middle of all of the MTFs studied.



Our simple metric indicated that Ft. Jackson was the best performer, ranking 8th in inpatient days and 4th in visits, whereas the Region 12 MCSC was the poorest performer, ranking 66th in inpatient days and 65th in visits.

Again, we believe that the MHS should consider examining these facilities more carefully to determine whether these performances are truly a result of good or poor demand management or a result of other circumstances.



Even with our corrections for demographic differences across the MTFs and the MCSCs, there was still substantial variation in average visits and days per enrollee. This variation was greatest for inpatient days.

Reducing demand through demand management would decrease the workload in the network and it would free up capacity at the MTFs. The additional capacity could either be used to recapture workload from the network, or the MHS could save costs by downsizing.

On the next slide, we present the estimated cost savings using the HCSR institutional costs for days and the HCSR professional costs for visits. Calculating cost savings in this manner essentially assumes that MTF capacity exists to handle the workload; hence, the marginal cost at the MTF is zero.

Potential Cost Savings
(Managing Visits)

Services offered	Savings	Number of visits/days saved by reducing actual to x% of predicted			Savings at 100% of predicted
		110%	100%	90%	
Visits	$84/visit	343,066	825,944	1,531,917	$69.4 M
Inpatient days	$683/day	210,186	243,410	277,454	$166.2 M

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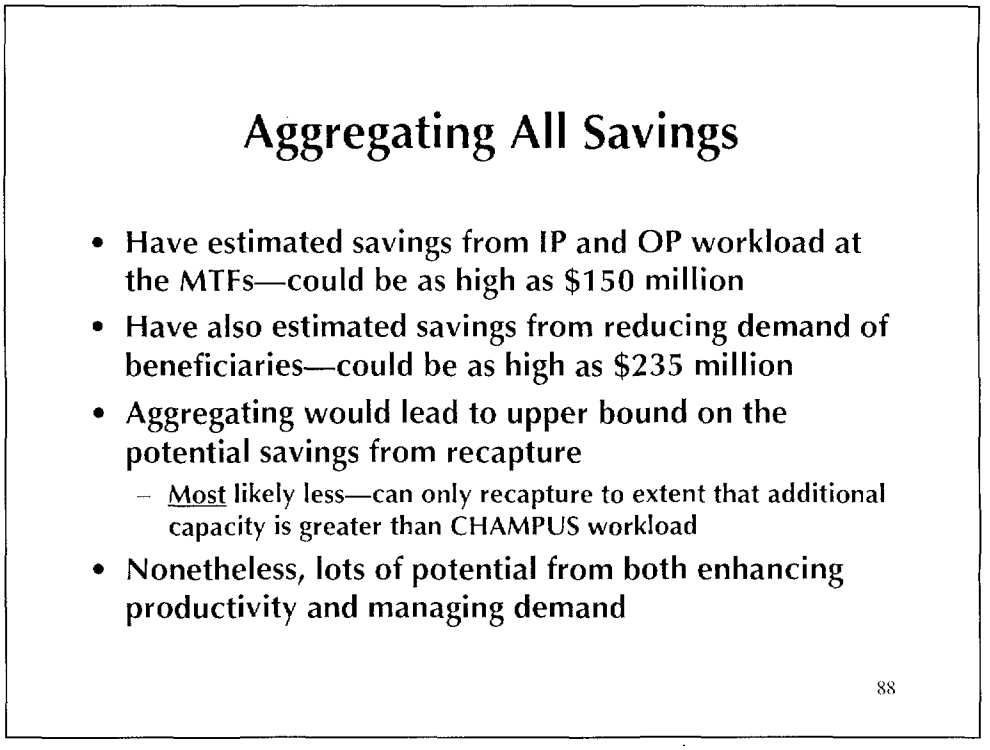
We've estimated cost savings by comparing the actual and predicted visits and inpatient days from regression analyses. Because the logic behind our method of estimating cost savings is the same for visits and days, we present it only for visits.

When the actual visits were higher than predicted visits, we assumed that the potential reduction in visits from demand management is equal to the amount by which actual visits exceed the predicted. Essentially, we assumed that demand management could reduce actual visits to the level we predict they should be at based on the facility's demographics. Cost savings have then been estimated by multiplying the reduction in the number of visits by the cost of a visit.

The previous discussion assumes that if a facility's predicted visit rate is greater than its actual visit rate, nothing can be saved. However, if we raise the standard and say that demand management should be able to reduce the actual visit rate to 90 percent of the predicted visit rate, more visits could be saved. Using this 90-percent standard, 1.53 million visits can be saved compared to using the 100-percent standard, which can save 0.83 million visits.

Note that potential cost savings would be higher if we considered more MTFs in our analysis. The cost savings shown above represent the potential savings from the 58 MTFs and the 9 MCSCs in the sample.



We've estimated the savings from IP and OP workload at the MTFs by improving efficiency and bringing back workload that is currently provided by civilian providers, but paid for by DOD. We've also examined savings from reducing the demand of DOD beneficiaries at MTFs.

We find that the savings from the enhancement in productivity could lead to as much as $150 million in savings and from reducing demand could lead to another $235 million. Yet, this is the potential; it is by no means guaranteed. It represents an upper bound that assumes that there is enough CHAMPUS workload to fill up the capacity when MTFs and their providers become more productive and DOD beneficiaries come in less often for health care services.

The numbers should also be placed in the context that any savings we estimate represent only a relatively small proportion of the costs that make the DOD health care system seem so expensive. Although there may be the perception that billions in CHAMPUS costs are the major problem confronting the DHP, the in-catchment health care portion of it is below $1.5 billion. Recognizing that if $1.5 billion is a real upper limit, the almost $400 million in potential CHAMPUS savings is not that small. However, even if all were saved, a highly unlikely situation, it would only go so far in "fixing" the problems of high health care costs faced by DOD in providing health care to its beneficiaries.

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