

Technical Report #10

**A Comparison for Inpatient Costs from the
HERC
and DSS National Data Extract Datasets**

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January 26, 2004



*Dedicated to improving the quality
of health economics research*

Acknowledgements:

We appreciated the comments of Paul Barnett, Ciaran Phibbs, Matt Yeh, and Wei Yu. The HERC expert panel, Ann Hendricks, Doug Bradham, and Anne Sales, provided comments on an earlier draft.

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Chapter 1: Introduction

Until recently, researchers had no VA inpatient cost data to use in patient-level economic analyses. Now cost data from the Decision Support System (DSS) National Data Extracts and the Health Economics Resource Center (HERC) exist, creating questions about (1) which dataset should be used, and (2) whether the datasets can be used together to identify problems or outliers.

This study had two objectives: to assess the financial information from which the DSS and HERC data are created, and to compare using bivariate and multivariate techniques encounter-level inpatient costs from DSS and HERC for FY01 (fiscal year; October 1, 2000 – September 30, 2001).

This report is organized as follows. Chapter 2 describes the HERC and DSS datasets in more detail, including the financial data from which these two datasets are built. We then conduct a statistical analysis of the HERC and DSS inpatient costs using 617,503 records. In chapter 3, we describe the methods for comparing the HERC and DSS inpatient data. Results are presented in chapter 4. Chapter 5 concludes.

We find some important differences between the HERC and DSS inpatient costs. Thus, we have created recommendations for researchers conducting economic analyses with VA cost data. The recommendations are:

Recommendation #1: HERC and DSS rely on different financial information. The CDR, upon which the HERC data rely, reports more inpatient costs per discharge than DSS; DSS medical/surgical costs averaged 84% (-\$1549) of the HERC costs per discharge. Accordingly, researchers should not mix these databases, with the exception of outpatient pharmacy data that are not included in the HERC data. Instead, they should use either DSS or HERC for their analysis. Researchers can conduct sensitivity analysis, if desired, using the other dataset.

Recommendation #2: In choosing between HERC and DSS data, researchers should consider their audience. HERC medical/surgical data were created with non-VA relative value weights, whereas DSS uses both VA and non-VA relative value weights.

Recommendation #3: The cost of financing capital and malpractice is not included in DSS or HERC. Capital financing costs are particularly important for researchers who are evaluating new programs, some of which might have required new space or capital investments. Methods for capturing these costs could be researched further.

Recommendation #4: Researchers interested in psychiatry, substance use and psychosocial residential rehabilitation programs, including compensated work therapy, should choose the database carefully. DSS and the PTF have different definitions of care, and DSS considers some PR RTP care as outpatient.

Recommendations #5: There was less agreement between HERC and DSS medical/surgical costs for cases with very large DRG weight (DRG weight > 5). Researchers should identify

whether any such cases exist in their data. Sensitivity analyses should be conducted if cases exist; plausible values for a sensitivity analysis range from 0 to the larger of the HERC or DSS value. In general, the HERC estimates are greater and would provide the upper bound.

Recommendations #6: There is poorer agreement between HERC and DSS for cases with very short lengths of stay (one or two days). One plausible explanation is that ancillary tests and procedures represent a larger percentage of the costs of a short stay. It is unclear how well DSS and HERC capture this workload. More research is needed to understand which cost estimate, if either, is more accurate.

Recommendation #7: For rehabilitation, mental health and long-term care, both datasets predominantly use daily rates to estimate patient costs. Outliers exist, and researchers should calculate a case's daily rate, which can then be used to identify outliers. These cases can be excluded in a sensitivity analysis or their costs can be replaced with suitable alternatives, such as national averages.

Recommendation #8: Both HERC and DSS are relatively new datasets. It is generally believed that DSS data inaccuracies were more common at the beginning (FY98 and FY99), but that DSS data quality has steadily improved over time. Given the changes in the DSS data over time, we recommend researchers use HERC data for time-series analyses that start in FY98.

Chapter 2: Cost Estimation and VA Financial Data

The HERC and DSS databases rely on different financial information to create their encounter-level cost estimates. In addition, HERC and DSS use different costing methods to calculate costs. We first discuss the financial data underlying the HERC and DSS estimates. We then discuss the costing methods used by HERC and DSS.

2.1 Cost estimation

There are many approaches to estimate patient-level costs. The gold standard is the production-line method, which is what DSS uses. This method is also known as micro-costing. This approach involves enumerating the quantities and prices of each input involved in the care of a patient.

DSS is a production-line accounting system. Each VA health care system (HCS) provides data to DSS, and then DSS tracks how much care the HCS provides. DSS was designed to be a local system, and each VA HCS use different methods for calculating costs. Most of this variation is expected, although there are some instances, as in any system, where errors occur. In addition to tracking the services provided, DSS estimate costs for the care. Costs are often difficult to estimate as they vary by locality due to differences in wages, the supply of technology, and demand.

The production-line cost determination method is typically not feasible for researchers because the production-level data are not available and, even if they were, creating the cost estimates would be a monumental task. Accordingly, researchers have created alternative approaches, known as average-costing or gross-costing (Gold, Siegel, Russell, & Weinstein, 1996).

In the 1990s, VA researchers began developing average cost methods (see Barnett (1999)). This eventually gave rise to the HERC average cost data. In the HERC average cost data, a daily cost was estimated by dividing total costs by the number of days of care. The daily cost was used to estimate patient costs for rehabilitation, mental health, and long-term care (Yu, Wagner, Chen, & Barnett, 2003). For medicine and surgery, information from non-VA sources was used to estimate the relative cost of each VA healthcare encounter. A cost regression with Medicare data was used to estimate the VA-relative value weights (Wagner, Chen, & Barnett, 2003). The VA-relative value weights were then adjusted with data from the Cost Distribution Report to estimate the actual cost of each encounter.

2.2 VA Financial data underlying HERC and DSS

VA expenditures are recorded in its general ledger, the Financial Management System (FMS). Not all costs associated with VA medical care are captured in FMS. Excluded are capital financing¹ and malpractice legal costs and settlements.

¹ VA tracks the purchase price for capital expenditures, but it does not track the cost of capital financing. No exact estimates exist on the relative cost of capital financing in the VA. Capital payments, including depreciation and

FMS tracks expenditures by cost center, a budget entity that corresponds to a VA service. Examples include Medical Service, Nursing Service, and Plant Operations. Cost centers do not correspond to patient care departments. Having costs associated with inpatient care departments is necessary to develop encounter-level cost estimates. The Cost Distribution Report (CDR) uses input from service chiefs to allocate costs from cost centers to patient-care departments. DSS uses an Account Level Budgeter (ALB) to allocate costs to patient care departments; this yields the Account Level Budgeter Cost Center (ALBCC) report.

HERC cost data rely on the CDR, whereas the DSS cost data rely on the ALBCC. The CDR and DSS allocate different costs to patient care departments. Table 2.1 shows the dollar differences for FY01 and FY02. As shown in the table, the CDR allocates more costs to patient care than does the ALBCC. The ALBCC reports more indirect costs, but the major cost category for indirect costs is administration. The research and teaching categories are considerably lower in the ALBCC than in the CDR.

Table 2.1: Financial information in the CDR (HERC) and ALBCC (DSS) for FY01 and FY02

	CDR 01	CDR 02	ALBCC 01	ALBCC 02
Total VA costs	22,083,172,352	23,861,491,712	22,083,172,352	23,861,491,712
Costs excluded from database ¹	772,049,892	1,020,948,320	0	0
Costs listed in Database	21,311,122,460	22,840,543,392	22,083,172,352	23,861,491,712
Exempt costs	212,826,352	254,220,832	1,581,454,336	1,598,272,000
Allocated to patient care				
Total non-exempt costs	21,098,295,296	22,586,322,944	20,501,719,040	22,263,220,224
Direct costs	15,951,764,480	17,250,703,360	13,083,152,384	14,296,421,376
Indirect costs	5,146,531,328	5,335,620,096	7,418,566,144	7,966,798,848
Admin	3,900,152,928	4,035,066,464	7,075,814,912	7,613,041,664
Research	355,557,920	388,160,480	157,403,552	169,848,032
Teaching	890,820,480	912,393,152	185,347,392	183,908,750

Source: CDR and ALBCC.

1. Cost excluded during the creation of the CDR include some of the national programs and unfunded pensions

The ABLCC reports considerably more exempt costs than the CDR. The exempt costs for the ABLCC are listed in Appendix A. For the HERC data, the exempt costs are: Central Office (medical center 101), ChampVA (medical center 741), Leavenworth CMOP (medical center 741), WEST LA CMOP (medical center 761), and DALLAS CMOP (medical center 763). CMOP is a consolidated mail order pharmacy.

financing, comprised 11.7% of Medicare's hospital payments in 1997 (Medicare Prospective Payment Commission ProPAC, 1997). The cost of financing capital could be particularly important when comparing the efficiency of alternative programs. These short-term fixed costs are not currently included in VA encounter level cost databases (e.g., HERC average cost datasets or DSS). Future research should attempt to address this limitation so that decision makers can properly take these costs into account.

The CDR reported \$596 thousand more in patient care than the ALBCC in FY01. HERC used the CDR to calculate patient costs with a few additional caveats. Due to data limitations, HERC did not estimate the costs for contract care, community nursing homes, or prosthetics.

Although the CDR allocated more money to patient care than DSS, this discrepancy was exacerbated because the CDR allocated more of the dollars to inpatient care than DSS. In total, the CDR, and thus HERC, reports \$8.775 billion in inpatient medicine compared to the \$8.109 billion reported by DSS (see Table 2.2). It is worthwhile to note that the days of care also do not match because DSS and PTF have slightly different definitions for stays. This is discussed elsewhere (Yu & Barnett, 2002). One particularly large difference is the number of days in PR RTP care; DSS treats some of this as outpatient care.

Table 2.2 HERC and DSS NDE Inpatient Costs for FY01

	HERC		DSS		Average cost per day	
	Costs	Days of care	Costs	Days of care	HERC	DSS
Medicine	2,856,562,311	2,081,515	2,672,692,272	2,073,540	1,372	1,289
Rehabilitation	115,039,622	86,540	96,534,666	105,768	1,329	913
Blind Rehabilitation	61,631,550	68,172	53,737,774	66,344	904	810
Spinal Cord Rehabilitation	249,389,112	281,180	239,242,790	280,504	887	853
Surgery	2,103,533,737	793,584	1,616,549,360	791,691	2,651	2,042
Psychiatry	1,103,743,702	1,558,574	917,642,245	1,516,357	708	605
Substance use treatment	83,937,038	142,734	87,695,137	162,280	588	540
Intermediate Medicine	369,726,608	598,845	386,342,864	600,734	617	643
Domiciliary	280,497,864	1,912,889	273,129,885	1,640,415	147	167
Nursing Home	1,478,842,048	4,348,024	1,674,934,556	4,266,586	340	393
PR RTP	72,675,295	420,614	86,324,698	268,620	173	321
Missing bedsection	--	--	4,785,001	13,339	--	339
Total inpatient costs and days	8,775,578,887	12,292,671	8,109,611,250	11,772,839		

Source: Our reconciliation of HERC bedsection records and DSS treatment specialty file.

Note: missing bedsection was associated with “unknown” treating specialty name.

PR RTP is psychosocial residential rehabilitation program

2.3 Implications

The CDR reports more inpatient costs than the ALBCC. As one would expect, the opposite is true for outpatient care; the ALBCC reports more outpatient costs than the CDR.

Recommendation #1: Researchers should use either DSS or HERC inpatient data for their analysis. Researchers should not mix these datasets because there are major differences in the financial data underlying the HERC and DSS costs. For example, researchers should not use DSS for rehabilitation and HERC for medical surgical.

Recommendation #2: In choosing between HERC and DSS data, researchers should consider their audience. HERC medical/surgical data were created with non-VA relative value weights, whereas the DSS uses both VA and non-VA relative value weights. Some

researchers may be interested in comparing VA and non-VA care, in which case the HERC might be a more reasonable alternative.

Recommendation #3: Unlike capital expenditures, the cost of financing capital is not included in DSS or HERC. This is particularly important for researchers who are evaluating new programs, some of which might have required new space or capital investments. There are no solutions at this time, and this merits further research.

Recommendation #4: Researchers interested in psychiatry, substance use and psychosocial residential rehabilitation programs, including compensated work therapy, should choose the database carefully. DSS and the PTF have different definitions of care, DSS considers some PR RTP care to be outpatient, whereas the PTF considers it to be inpatient.

Chapter 3: Medical-Surgical Care

3.1 Methods

We created a “finder file” that included individuals with only an inpatient medical/surgical discharge. Figure 3.1 shows the creation of the analytical dataset. We included all discharged from a VA hospital in 2001 with a medical/ surgical bedsection code.² We excluded discharges that were not entirely medical or surgical and those that crossed fiscal years (n=36,282), resulting in a total of 409,292 cases (Figure 3.1).

We merged our finder file with the HERC average cost discharge file and with the DSS discharge file. A total of 1799 (0.4%) cases from the DSS file could not be matched. This is consistent with other comparisons of the National Patient Care Database (NPCD) and DSS (Yu & Barnett, 2002). The final analytical file included 407,493 cases.

The HERC database includes two cost estimates, a local and a national estimate. We use the national HERC estimate because we believe it is a more accurate estimate of costs than the local cost estimate. DSS is only a local system. Therefore the DSS database only includes a local cost. Our comparison involved assessing the HERC national cost data with the DSS local cost data. Some differences might exist because of different definitions.

3.1.a Costs by DRGs and MDCs

A number of bivariate analyses compared the DSS local cost data to the HERC national cost data. First, we assessed agreement between the HERC and DSS datasets on the top 30 most commonly used diagnostic related groups (DRGs). Second, we assessed agreement by ranking the HERC and DSS data on medical and surgical major diagnostic categories (MDCs). Both of these analyses were conducted to provide evidence of the validity of the cost estimates.

3.1.b Medical center outliers

We created two 50% random samples of the matched HERC / DSS data for FY01. Using split samples, we determined whether there were medical center outliers and whether these outliers were present in both samples, providing evidence on whether they were due to chance alone. The analysis involved stacking the HERC and DSS data and interacting medical center (site) with a HERC dummy variable to HERC-specific medical center outliers. We used Huber-White standard errors to compensate for the lack of independence between observations. We estimated

$$Cost_i = \beta_1 Site + \beta_2 HERC + \beta_3 HERC * Site + \varepsilon_i \quad (1)$$

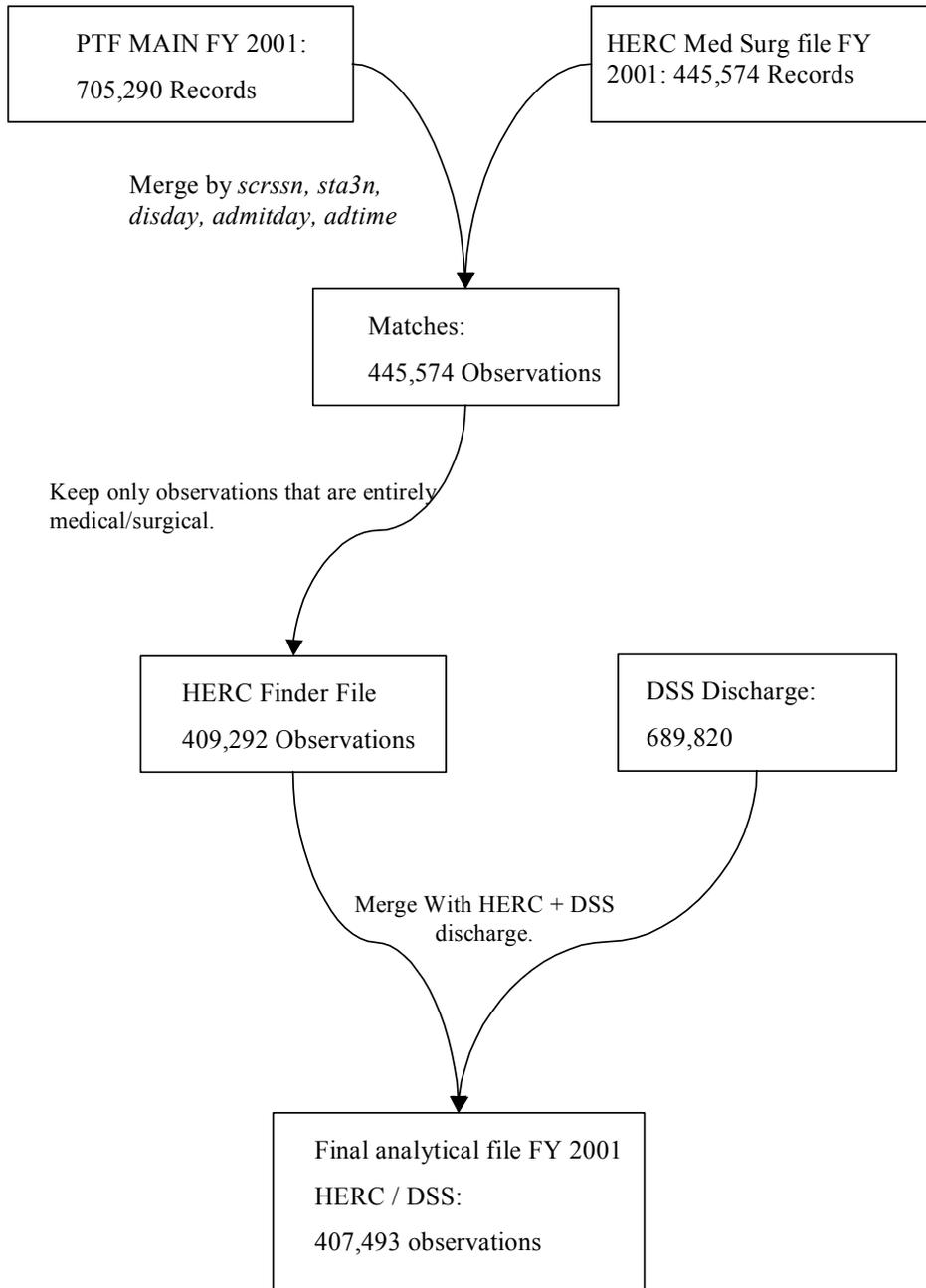
² The bedsection codes from the VA patient treatment file (PTF) were: <12, 14, 15, 16, 17, 18, 19, 24, 31, 34, 35, 50-63, 65, 75, and 83.

where B_2 represents the overall difference between HERC and DSS, and B_3 represents the difference between HERC and DSS at each medical center, after controlling for the overall difference between HERC and DSS.

3.1.c Costs by DRG weights and LOS

DRG weights are critical for estimating the HERC costs. We conducted an analysis to determine whether the HERC costs and DSS costs differed by DRG weights and LOS. This involved both a statistical and a graphical analysis.

Figure 3.1: FY01 Analytical File for the HERC and DSS Medical Surgical Comparison



3.2 Results

3.2.a Costs by DRGs and MDCs

Table 3.1 presents the bivariate association between the HERC and DSS costs for the 30 most frequently used DRGs. On average, the DSS costs were 84% (-\$1549) of the HERC costs (median 85%). In 29 of the 30 comparisons, the HERC average costs were larger than the DSS costs. The one exception was “Major joint & limb reattachment procedures of lower extremity,” where DSS costs were 103% of the HERC costs (approximately \$500 greater for an \$18000 discharge). An outlier in the other direction was “other permanent cardiac pacemaker implant” where DSS costs were 58% of the HERC costs (\$11,165 vs. \$19,138).

Since the HERC costs were larger on average, we created two rankings. The first was a rank of the HERC average cost by DRG and the second rank was the DSS average cost by DRG. We then compared the rankings. The rankings were generally consistent and this was highly significant as measured with a Kappa statistic ($p < 0.001$).

Table 3.2 shows the HERC national costs and the DSS local costs by medical and surgical MDC. Again, the data indicated that the HERC costs were larger than the DSS costs. In 39 of the 40 comparisons, the HERC costs were greater. The one exception was the surgical MDC 3 “ear, nose, mouth & throat” where the DSS costs were 110% of the HERC costs (\$10,294 vs. \$11,396). The relative rankings between the HERC and DSS costs were highly significant as measured by the Kappa statistic ($p < 0.001$).

3.2.b Medical center outliers

Using a regression analysis, we found no medical center outliers. There was variation in HERC and DSS costs across medical centers, but no individual medical center significantly deviated from the average.

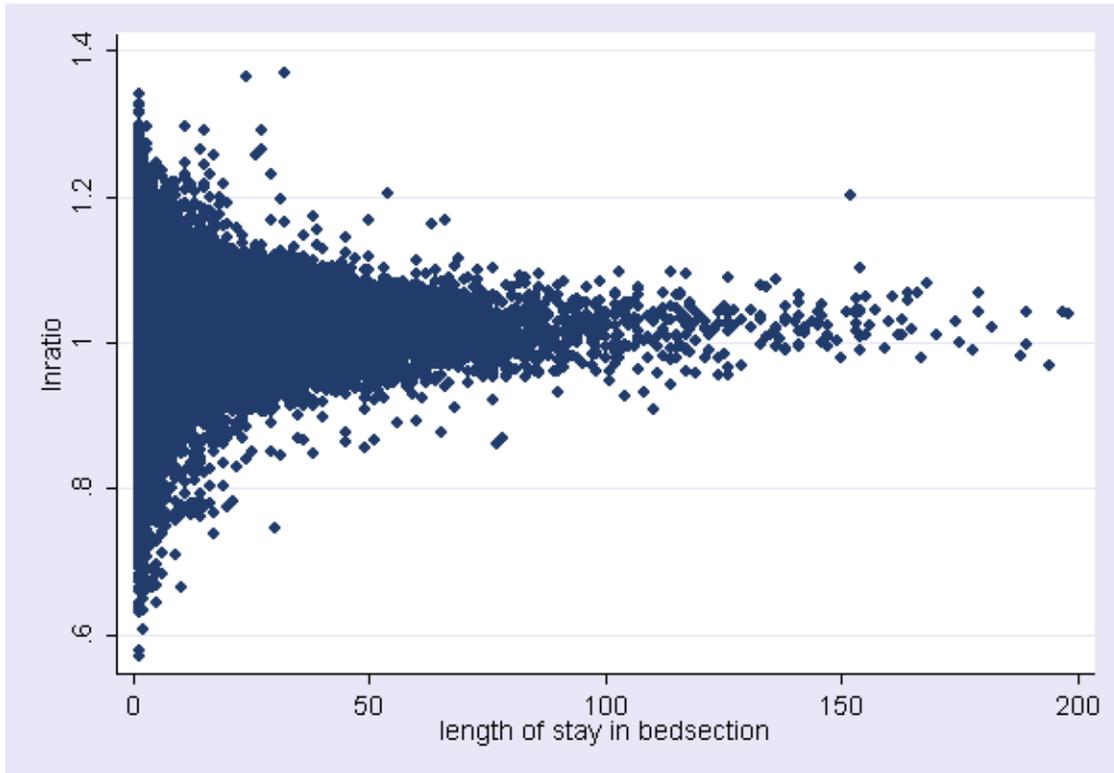
3.2.c Costs by DRG weights and LOS

The regression analysis indicated that HERC and DSS diverged for cases with very short lengths of stay and very high DRG weights. A fixed-effect regression model confirmed that HERC costs are larger than DSS costs for larger DRG weights (regression not shown). HERC costs also significantly differed by LOS, such that shorter LOS were more expensive in the HERC database. Figure 3.2 shows this, where the Y-axis is the ratio of logged HERC costs to logged DSS costs; a 1 represents perfect agreement between the HERC and DSS costs. We believe this partly reflects the underlying costing methods, in which HERC and DSS use different relative value weights. The DRG weights have more leverage, hence the greater divergence, for very large DRG weights.

The poor agreement between HERC and DSS costs for very short lengths of stay is not entirely unexpected. During the creation of the HERC average cost data, we found that the average cost

method generated estimates that had greater agreement with larger Medicare charges than with smaller Medicare charges (Wagner et al., 2003).

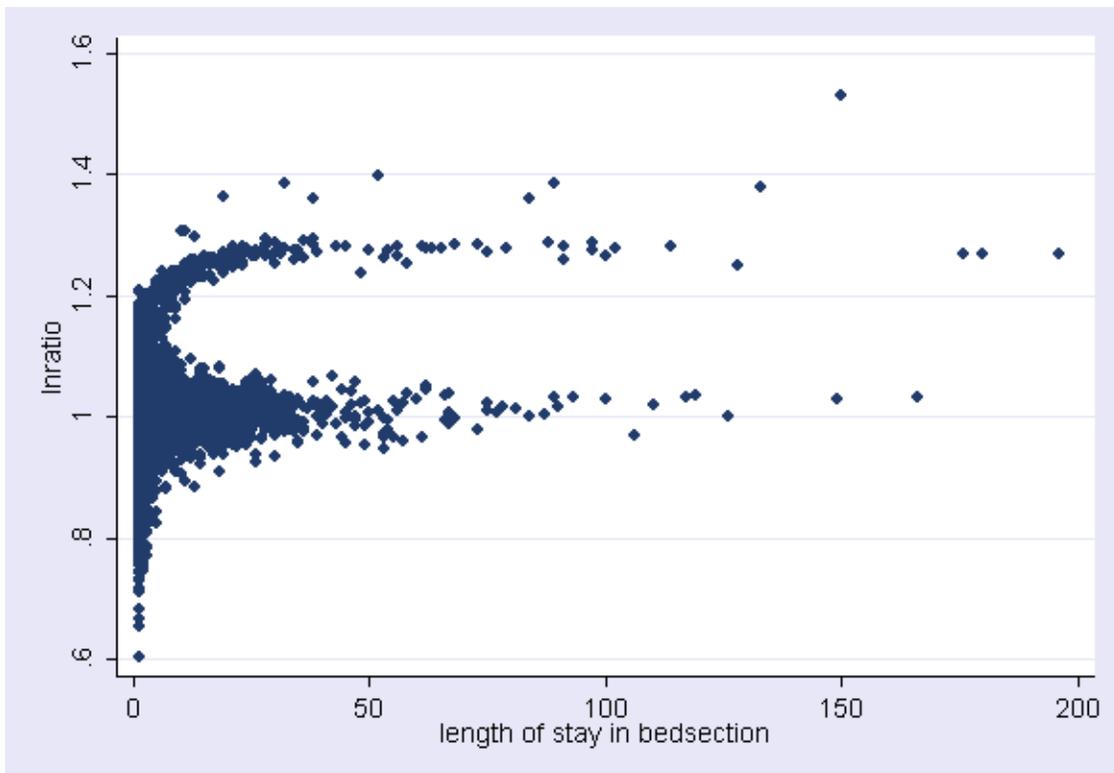
Figure 3.2: The Logged Ratio of HERC and DSS Costs and Variation by Length of Stay



Note: Excluded 32 cases with a LOS >200 days & Little Rock (STA3N=598)

Using regression analyses, we found possible candidates for major outliers. With a stratified analysis at each medical center, residual analysis detected cases where DSS –or more accurately a DSS component-- is using a per-diem rate for that particular bedsection within medical center. The two stations that stood out were Little Rock (598) and West Los Angeles (691). Additional analysis indicated that Little Rock used different DSS relative value weights for bedsection 83 (respite care)—where the “*all other costs*” of the DSS estimate being the main factor of deviation. The data suggest that Little Rock is using a per-diem rate (see Figure 3.3). The same was determined for West Los Angeles, except for bedsection 11 (epilepsy center) and the per-diem rate associated with *nursing costs* of the DSS estimate.

Figure 3.3: The Logged Ratio of HERC and DSS Costs and Variation by Length of Stay: Little Rock VAHCS Only



3.2.d Recommendations for Medical/Surgical Inpatient Care

Recommendations #5: The HERC and DSS medical/surgical costs deviated for cases with very large DRG weight (DRG weight > 5), all else being equal. Researchers should identify whether any such cases exist in their data. Sensitivity analyses should be conducted if cases exist; plausible values for a sensitivity analysis range from 0 to the larger of the HERC or DSS value. In general, the HERC estimates are greater and would provide the upper bound.

Recommendations #6: There is poorer agreement between HERC and DSS for cases with very short lengths of stay (one or two days). On plausible explanation is that ancillary tests and procedures represent a larger percentage of the costs of a short stay. It is unclear how well DSS and HERC capture this workload. More research is needed to understand which cost estimate, if either, is more accurate.

Table 3.1: Ranks of top 30 most frequently used DRGs by HERC cost from least to most expensive (FY01)

DRG	DRG TITLE	N	AVERAGE COST			MEDIAN			RANK		
			HERC	DSS	% DIFF ¹	HERC	DSS	HERC	DSS	HERC	DSS
183	Esophagitis, gastroent & misc digest disorders age > 17 w/o cc	4,173	3,706	3,003	81%	2,996	2,159	1	2	2	
139	Cardiac arrhythmia & conduction disorders w/o cc	4,520	3,770	3,617	96%	2,929	2,496	2	3	3	
143	Chest pain	12,679	3,914	2,807	72%	3,257	2,110	3	1	3	
140	Angina pectoris	5,323	4,461	3,769	84%	3,769	2,749	4	4	4	
15	Transient ischemic attack & precerebral occlusions	3,388	5,284	4,735	90%	4,083	3,361	5	7	5	
395	Red blood cell disorders age >17	4,365	5,293	4,546	86%	3,907	2,925	6	6	6	
132	Atherosclerosis w cc	8,478	5,528	4,348	79%	4,500	3,058	7	5	7	
434	Alcohol/drug abuse/dependency, detox or other treatment w/cc	3,664	5,865	5,099	87%	4,244	3,204	8	9	8	
294	Diabetes age >35	5,958	6,045	5,163	85%	4,494	3,378	9	10	9	
182	Esophagitis, gastroent & misc digest disorders age > 17 w cc	8,009	6,166	4,902	79%	4,668	3,165	10	8	10	
277	Cellulitis age >17 w cc	4,857	6,366	5,649	89%	4,893	4,055	11	12	11	
88	Chronic obstructive pulmonary disease	14,523	6,516	5,437	83%	5,108	3,789	12	11	12	
130	Peripheral vascular disorders w cc	3,763	6,888	6,631	96%	5,234	4,464	13	16	13	
296	Nutritional & misc metabolic disorders age >17 w cc	6,954	6,996	6,017	86%	5,090	3,755	14	13	14	
138	Cardiac arrhythmia & conduction disorders w cc	7,656	7,059	6,067	86%	5,530	4,034	15	14	15	
320	Kidney & urinary tract infections age > 17 w cc	5,218	7,919	6,838	86%	5,987	4,619	16	19	16	
127	Heart failure & shock	16,958	8,170	6,650	81%	6,260	4,351	17	17	17	
89	Simple pneumonia & pleurisy age >17 w cc	12,201	8,335	6,915	83%	6,915	4,715	18	20	18	
125	Circulatory disorders except ami, w card cath w/o complex diag	4,798	8,435	6,658	79%	7,301	5,177	19	18	19	
174	G.i. hemorrhage w cc	7,246	8,500	7,106	84%	6,777	4,922	20	21	20	
204	Disorders of pancreas except malignancy	4,623	8,821	6,150	70%	6,739	3,665	21	15	21	
122	Circulatory disorders w ami w/o major comp, discharged alive	4,291	8,932	7,649	86%	8,136	5,970	22	22	22	
82	Respiratory neoplasms	4,757	10,493	8,526	81%	8,089	5,441	23	23	23	
14	Specific cerebrovascular disorders except tia	5,789	10,519	9,197	87%	7,908	5,985	24	26	24	
316	Renal failure	5,469	10,662	9,070	85%	8,090	5,307	25	24	25	
124	Circulatory disorders except ami, w card cath & complex diag	5,711	11,442	9,124	80%	9,912	7,053	26	25	26	
121	Circulatory disorders w ami & major comp, discharged alive	3,435	14,492	12,229	84%	12,164	8,829	27	28	27	
79	Respiratory infections & inflammations age >17 w cc	3,576	14,751	12,518	85%	7,936	11,261	28	29	28	

209 Major joint & limb reattachment procedures of lower extremity	5,236	17,619	18,113	103%	14,705	16,047	29	30
116 Other permanent cardiac pacemaker implant	7,456	19,138	11,165	58%	16,629	8,276	30	27

T. Difference as a percentage of the HERC costs

Table 3.2: Ranks of MDCs by HERC cost from least to most expensive (FY01)

MDC	MDC Title	N	AVERAGE COST MEDIAN				RANK	
			HERC	DSS	DIFF ¹	HERC	DSS	HERC
Medical								
20	Alcohol/drug use & alcohol/drug induced organic mental disorders	7,446	4,364	4,020	92%	3,065	2,642	1
2	Eye	943	6,572	6,387	97%	3,994	5,233	2
13	Female reproductive system	955	7,164	7,074	99%	6,264	6,004	3
12	Male reproductive system	4,483	8,550	8,417	98%	6,791	6,805	4
22	Burns	233	9,915	7,602	77%	7,082	4,232	5
3	Ear, nose, mouth & throat	1,999	10,294	11,356	110%	6,732	8,074	6
23	Factors influencing hlth stat & othr contacts with hlth serves	210	12,662	11,108	88%	6,153	5,627	7
11	Kidney & urinary tract	5,578	13,254	12,020	91%	8,811	7,977	8
9	Skin, subcutaneous tissue & breast	2,445	14,731	12,869	87%	8,361	8,230	9
8	Musculoskeletal system & conn tissue	16,115	15,294	15,130	99%	12,445	12,395	10
1	Diseases & disorders of the nervous system	5,092	15,310	13,866	91%	9,751	9,813	11
10	Endocrine, nutritional & metabolic diseases & disorders	1,917	15,544	13,849	89%	10,484	9,926	12
16	Blood, blood forming organs, immunolog disord	207	17,421	13,530	78%	12,920	9,996	13
7	Hepatobiliary system & pancreas	3,379	19,760	16,864	85%	13,537	10,528	14
21	Injuries, poisonings & toxic effects of drugs	1,058	20,429	16,688	82%	12,801	10,002	15
6	Digestive system	10,981	21,067	18,722	89%	14,530	12,609	16
17	Myeloproliferative diseases & disorders, poorly differentiated neoplasm	1,297	22,473	20,654	92%	15,419	12,800	17
4	Respiratory system	3,594	24,291	20,623	85%	19,361	16,126	18
5	Circulatory system	25,644	26,260	20,208	77%	21,195	15,202	19
18	Infectious & parasitic diseases, systemic or unspecified sites	798	30,769	27,420	89%	21,957	16,216	20
Surgical								
23	Factors influencing hlth stat & othr contacts with hlth serves	6,462	4,625	4,670	101%	2,566	2,612	1
2	Eye	934	4,697	4,421	94%	3,428	3,092	2
13	Female reproductive system	143	5,130	4,187	82%	3,215	1,960	3
3	Ear, nose, mouth & throat	4,130	5,641	5,062	90%	3,712	3,002	4
9	Skin, subcutaneous tissue & breast	10,620	5,687	5,204	92%	4,126	3,574	5
16	Blood, blood forming organs, immunolog disord	6,100	6,171	5,301	86%	4,688	3,242	6
21	Injuries, poisonings & toxic effects of drugs	4,454	6,197	4,898	79%	4,603	2,804	7

19	Mental diseases & disorders	2,908	6,204	5,711	92%	3,965	3,787	8	10
10	Endocrine, nutritional & metabolic diseases & disorders	15,631	6,259	5,444	87%	4,516	3,401	9	8
12	Male reproductive system	2,155	6,390	5,818	91%	4,238	3,609	10	12
8	Musculoskeletal system & conn tissue	9,596	6,492	6,133	94%	4,210	3,700	11	13
6	Digestive system	31,819	6,686	5,611	84%	4,973	3,543	12	9
5	Circulatory system	94,984	6,950	5,760	83%	5,307	3,689	13	11
11	Kidney & urinary tract	18,403	7,812	6,842	88%	5,659	4,188	14	14
1	Nervous system	21,706	8,070	7,300	90%	5,785	4,377	15	16
7	Hepatobiliary system & pancreas	14,125	9,161	6,896	75%	6,933	4,123	16	15
17	Myeloproliferative d&d, poorly differentiated neoplasm	6,693	9,206	8,293	90%	6,723	4,716	17	18
4	Respiratory system	49,760	9,632	8,034	83%	6,422	4,579	18	17
18	Infectious & parasitic diseases, systemic or unspecified sites	5,251	11,046	9,584	87%	7,994	5,191	19	19
25	Human immunodeficiency virus infections	2,205	12,354	10,446	85%	9,027	5,947	20	20

1. Difference as a percentage of the HERC costs

4 Rehabilitation, Mental Health and Long-Term Care Results

4.1 Methods

We created a “finder file” that included individuals who received inpatient rehabilitation, mental health and long-term care. Figure 4.1 traces the development of the analytical dataset. We included all discharges from a VA hospital in 2001 with a rehabilitation, mental health or long-term care bedsection code.

1. Rehabilitation if bedsection is 20, 41
2. Blind rehab if bedsection is 21, 36
3. Spinal cord if bedsection is 22, 23
4. Psychiatry if bedsection is 25, 26, 28, 33, 38, 39, 70, 71, 76, 77, 79, 89, 91, 92, 93, 94
5. Substance Abuse if bedsection is 27, 29, 72, 73, 74, 84, 90
6. Intermediate Medicine if bedsection is 32, 40
7. Domiciliary if bedsection is 37, 85, 86, 87, 88
8. Nursing home if bedsection is 80, 81
9. Psychosocial residential rehabilitation program if bedsection is 25, 26, 27, 28, 29, 37, 38, 39 and the medical center has approval.³

We focused on these 9 categories of care provided in FY01. Our analytical dataset included discharges; some cases were admitted in prior years.

4.1.a Costs per category of care

We tabulated the HERC and DSS average local costs for each category of care. We also tabulated the HERC national costs and calculated DSS national costs. We calculated the cost per discharge and the average cost per day.

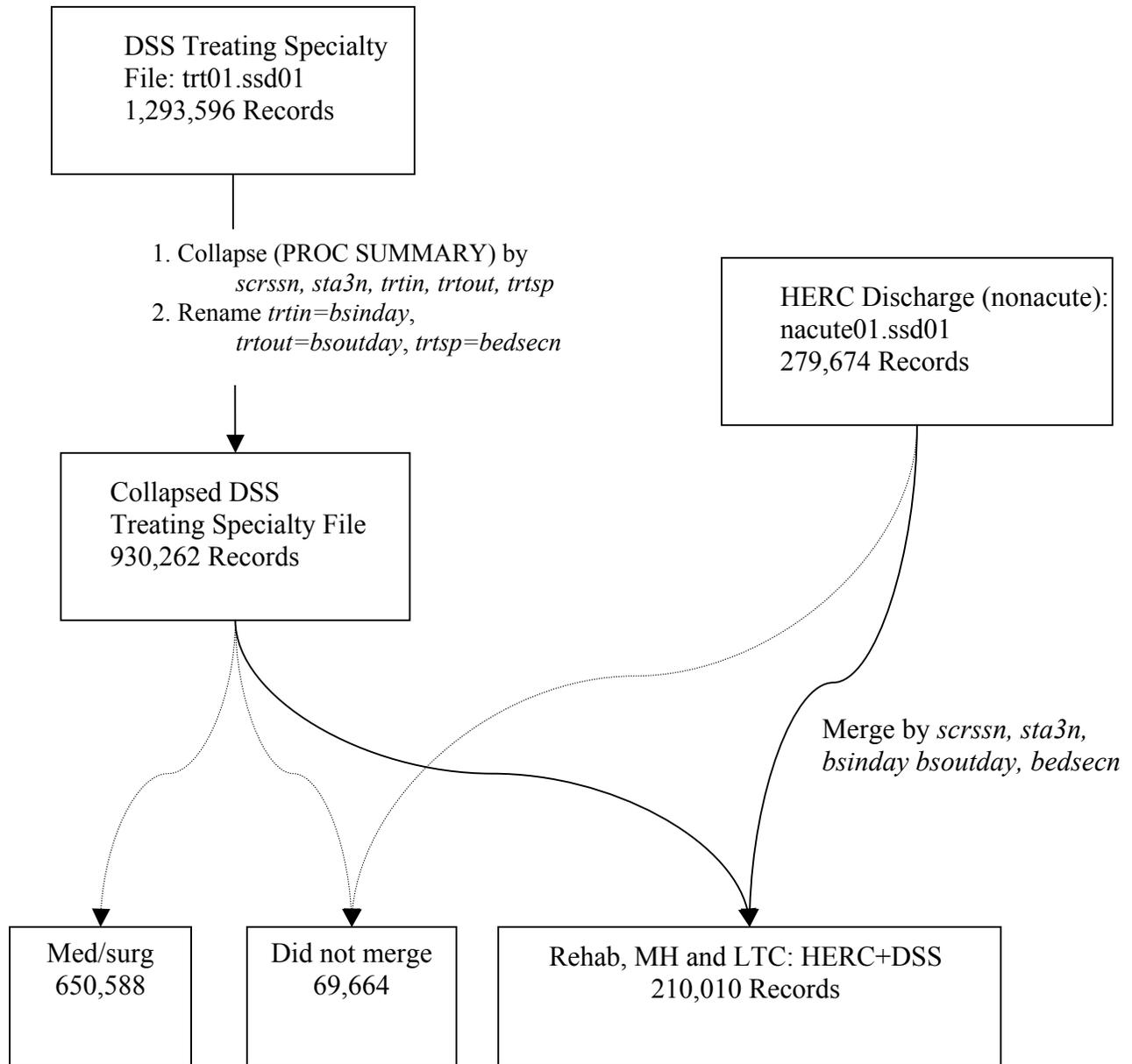
4.1.b Outliers by medical center

We created two 50% random samples of the matched HERC / DSS data for FY01. Using split samples, we determined whether there were medical center outliers and whether these outliers were present in both samples, providing evidence on whether they were due to chance alone. The analysis involved stacking the HERC and DSS data and interacting medical center (STA3N) with a HERC dummy variable to HERC-specific medical center outliers. We used Huber-White standard errors to compensate for the lack of independence between observations.

$$Cost_i = \beta_1 Site + \beta_2 HERC + \beta_3 HERC * Site + \varepsilon_i \quad (2)$$

³ Stations with approval for PR RTP programs are 459, 463, 501, 504, 515, 516, 518, 523, 528, 541, 546, 549, 554, 555, 556, 561, 568, 573, 586, 589, 590, 595, 598, 620, 622, 631, 632, 635, 637, 640, 645, 653, 656, 658, 662, 663, 666, 676, 678, 687, 689.

Figure 4.1: Development of the Analytical File for the Rehabilitation, Mental Health and Long-Term Care



Because the data were matched, we created a difference score (subtracting DSS from HERC). We then used this difference score in regression models. We then estimated this model with OLS.

$$Diff_{HERC-DSS} = \alpha + \beta_1 Site + \beta_2 Bedsection + \varepsilon_i \quad (3)$$

Finally, we regressed the logged ratio of HERC and DSS on the sites and bedsection. The logged ratio is equivalent to a difference score in logs. We then re-ran model 3, conditioning on the medical center (site in equation 4). This was equivalent to a stratified analysis, where a regression was run for each medical center.

$$Ln\left(\frac{HERC}{DSS}\right) = \alpha + \beta_1 Bedsection + \varepsilon_i \mid site \quad (4)$$

4.1.c Association between LOS and Cost

The HERC average cost dataset assumes that costs are directly proportional to length of stay (LOS). One question is how the DSS costs vary by LOS. To do this, we developed a discharge dataset that included people who were admitted and discharged in FY01 (n=155,001). We then regressed logged costs on logged length of stay, noting the elasticity and the overall R². To account for variation of bedsections within medical center as HERC cost estimates, we regressed the logged costs on the logged length of stay with binary indicators for bedsections nested in stations.

4.2 Results

4.2.a Costs by Category

Table 4.1 shows the encounter and per diem cost for nine categories of rehabilitation, mental health and long-term care. Rehabilitation and substance use are the categories of care for which the HERC and DSS costs differ the most. On averages the encounter and per diem costs are similar for HERC and DSS. Consistent with our earlier results and our expectations, HERC costs are greater than DSS costs for rehabilitation and mental health. However, for PR RTP and long-term care (intermediate medicine, domiciliary and nursing home) DSS costs are greater than HERC.

Table 4.1: Encounter and Per-diem costs for HERC and DSS Rehabilitation, Mental Health and Long-Term Care

	Encounter costs			Per diem costs		
	HERC local	HERC national	DSS	HERC local	HERC national	DSS
Rehabilitation	19,069	19,502	13,752	1,330	1,329	976
Blind rehab	30,446	30,473	26,515	897	904	795
Spinal cord	21,421	20,105	20,626	992	887	1,062
Psychiatry	7,920	7,515	6,918	796	708	751
Substance Abuse	6,764	6,664	5,713	730	588	614
Intermediate Medicine	7,100	7,031	7,598	602	617	827
Domiciliary	8,641	8,085	8,955	168	147	196
Nursing home	18,060	17,474	21,611	373	340	477
PRRTP	7,053	6,565	8,583	210	173	264

PRRTP is psychosocial residential rehabilitation program

Data are from FY01

4.2.b Medical center outliers

We tested for medical center outliers and the Table 4.2 shows the number and percent of medical center outliers by category of care. Outliers were defined empirically—those sites where HERC and DSS costs statistically differed with p value of equal to or less than 0.05. There were no medical center outliers for rehabilitation, spinal cord injury, or nursing home care. Except for psychiatry, the other centers had relatively few outliers (in absolute numbers).

The exception was psychiatry, where HERC and DSS significantly differed at 66 (61%) of the medical centers. These outliers existed even after controlling for length of stay in the fiscal year. Analyses exploring the outliers and large variation in psychiatry and substance use suggest that there is some truth to the large variation in the costs of psychiatry and substance use. However, there appears to be variation added by the use of PRRTP bedsections. Use of these bedsections can result in a case with lower costs. In some cases, medical centers use the PRRTP bedsections when they do not have an approved PRRTP program.

We also found two interesting anomalies in the cost estimates for substance use (see Appendix B). The first figure in Appendix B also suggests that people in residential programs have costs that are assigned to outpatient care; these cases, despite long lengths of stay report zero DSS inpatient costs. The second figure in Appendix B suggests that despite being high intensity substance use treatment (single bedsection), there are two different treatment costs, resulting in a mixture. In both cases, these unusual DSS stations had very poor agreement with the HERC costs.

Table 4.2: Outliers by Medical Center

Category of care	Number of stations providing care	Number (%) of Outliers
Rehabilitation	30	0 (0%)
Blind rehab	10	4 (40%)
Spinal cord	23	0 (0%)
Psychiatry	108	66 (61%)
Substance Abuse	31	2 (6%)
Intermediate Medicine	78	2 (2.5%)
Domiciliary	40	4 (10%)
Nursing home	110	0 (0%)
PRRTP	35	2 (5.7%)

PRRTP is psychosocial residential rehabilitation program
 Medical Center is defined by STA3N

One way researchers can identify potential outliers is to calculate the cost per day. Table 4.3 shows the average cost per day along with the cost at four percentiles (5th, 95th, 25th, and 75th). Researchers can use Table 4.3 to identify potential outliers. If an outlier is encountered, the researcher can use values from the Table to determine if his/her results are robust to the outlier.

Table 4.3: Average DSS costs with 5th, 95th, 25th and 75th Percentiles

	National Average	Cost at Percentile			
		5 th	95 th	25 th	75 th
Rehabilitation					
General	976	516	1558	747	1132
Blind rehab	795	290	1477	638	907
Spinal cord	1062	560	1939	739	1213
Mental health					
Psychiatry	751	298	1339	525	899
Substance Abuse	614	169	1030	421	756
PRRTP	264	60	536	167	321
Long term care					
Intermediate Medicine	827	332	1643	527	937
Domiciliary	196	49	464	98	248
Nursing home	477	205	855	330	573

Data are from FY01

4.2.c Association between LOS and Cost

Table 4.4 shows the relationship between DSS costs and LOS. Shown are the elasticities (1% increase in cost for an 1% increase in LOS) and the R². The relationship was notably different for substance use and psychosocial residential rehabilitation when not accounting for bedsection within medical center. After accounting for possible variation due to bedsection and medical center, the elasticities increased toward unity—plausibly reflecting a per-diem rate. For both substance use and PR RTP care, further regressions indicated that there was either a non-linear relationship between costs and length of stay or that we were analyzing a mixture. HERC costs are not included in Table 4.4 because the HERC cost are estimated using LOS.

Table 4.4: Relationship between costs and LOS

Category of care	DSS-unadjusted		DSS-adjusted	
	Elasticity	R ²	Elasticity	R ²
Rehabilitation	0.921	0.824	0.943	0.901
Blind rehab	0.955	0.726	0.974	0.922
Spinal cord	0.911	0.902	0.911	0.926
Psychiatry	0.939	0.780	0.940	0.910
Substance Abuse	0.783	0.726	0.881	0.898
Intermediate Medicine	0.874	0.815	0.911	0.866
Domiciliary	0.849	0.670	0.906	0.897
Nursing home	0.926	0.861	0.958	0.958
PR RTP	0.784	0.570	0.928	0.913

PR RTP is psychosocial residential rehabilitation program

The R² is from a model in which logged DSS costs were regressed on logged length of stay.

* HERC local costs are a function of length of stay and bedsection nested in medical center, by design.

Source: HERC and DSS data for stays that began and ended in FY01.

4.2.d Recommendations for Rehabilitation, Mental Health and Long-Term Care

Recommendation #7: For non-medical/surgical inpatient care (rehabilitation, mental and long term care), both HERC and DSS predominantly use daily rates to estimate patient costs. There is considerable medical center variation in DSS costs by bedsection within medical center. Researchers should calculate an average daily rate to identify outliers. Researchers analyzing DSS data can use the values in Table 4.5 data to determine if their results are robust to any outliers.

Chapter 5: Conclusions and Recommendations

5.1 Average costs

HERC and DSS inpatient cost data are comprehensive national VA datasets. Although both provide cost estimates, they use different methods of cost determination and different financial data. This leads to systematic differences and a recurring theme that HERC inpatient costs are larger, on average, than DSS costs. As one would expect, the reverse is true for the outpatient costs. Therefore, with the exception of DSS outpatient pharmacy costs, which are not included in the HERC data, these datasets are not necessarily complementary. In other words, researchers should not use DSS costs for some research subjects and HERC costs for others.

Once we take into account these systematic differences, the HERC and DSS cost estimates are similar in many respects. The average medical surgical costs reported by HERC and DSS are consistent for most DRGs and MDCs. The average rehabilitation, mental health and long-term care costs are also quite similar.

We found notable differences in average costs for medical-surgical cases that had very short stays (<1 or 2 days) and large DRG weights (>5). We believe these differences reflect HERC and DSS's use of different relative value weights. HERC uses relative value weights from Medicare, while DSS uses VA and non-VA relative value weights. The two most powerful weights are DRG weight and length of stay. Therefore, given that DSS and HERC use different relative value weights, it is not surprising that there are discrepancies between HERC and DSS costs for cases with large relative value weights.

Researchers should identify if any of the inpatient care in their study has very large DRG weights. Sensitivity analyses should be conducted if cases exist; plausible values for a sensitivity analysis range from 0 to the larger of the HERC or DSS value. In general, the HERC estimates are greater and would provide the upper bound.

5.2 Variation in costs

DSS is a local system, and the DSS National Data Extract represents information from each medical center's DSS system. As expected, there is more variation with the DSS data than the HERC data. This generalization holds true for both medical-surgical and inpatient rehabilitation, mental health and long-term care.

Researchers need to be more concerned with outliers when they are using the DSS data. Identifying outliers is easy with the rehabilitation, mental health and long-term care data. Researchers can quickly estimate the patient's cost per day and then compare that to other daily costs for the same category or bedsection. Researchers can also use Table 4.5 as a benchmark. It is possible for researcher to associate whether the DSS estimate is unduly influenced by a particular costing component--once an outlier is determined.

5.3 Longitudinal analysis

Both HERC and DSS are relatively new datasets. HERC data only estimate a discharge costs for people who were admitted after September 1997 (i.e., FY98 and after). DSS national cost data also date back to 1998, but it is generally believed that data inaccuracies were more common at the beginning and that data quality has steadily improved over time.

It should also be noted that people who were admitted to the hospital prior to FY98 do not have a cost in the HERC or DSS datasets. There are a handful of cases that were admitted in the many years or decades ago. Costs for these cases are missing.

Recommendation #8: Both HERC and DSS are relatively new datasets. It is generally believed that DSS data inaccuracies were more common at the beginning and that DSS data quality has steadily improved over time. Given the changes in the DSS data over time, we recommend researchers use HERC data for time-series analyses that start in FY98.

References

- Barnett, P. (1999). Research without billing data. Econometric estimation of patient-specific costs. *Medical Care*, 35, 553-563.
- Gold, M. R., Siegel, J. E., Russell, L. B., & Weinstein, M. C. (Eds.). (1996). *Cost-Effectiveness in Health and Medicine*. Oxford: Oxford University Press.
- Medicare Prospective Payment Commission ProPAC. (1997). Medicare and the American health care system: report to Congress.
- Wagner, T. H., Chen, S., & Barnett, P. G. (2003). Using average cost methods to estimate encounter-level costs for medical-surgical stays in the VA. *Med Care Res Rev*, 60(3), 15S-36S.
- Yu, W., & Barnett, P. G. (2002). *Research guide to Decision Support System national cost extracts: 1998-2000*. Menlo Park, CA: VA Health Economics Resource Center.
- Yu, W., Wagner, T. H., Chen, S., & Barnett, P. G. (2003). Average cost of VA rehabilitation, mental health, and long-term hospital stays. *Medical Care Research and Review*, 60(3), 40S-53S.

Appendix A: DSS Exempt Categories and Costs in FY01

Cost Center (CC) Name	CC	All costs in CC (exempt and non- exempt)	Percent of CC is exempt	Exempt cost in CC
Veterans Health Administration - Central Office Staff	0	238,823,232	0	855,646
Medical Service	201	1,485,274,240	1	10,520,374
Surgical Service	202	753,719,168	1	5,323,298
Psychiatry Service	203	555,513,216	1	3,337,558
Clinical Ambulatory Care	204	706,001,536	0	2,606,479
Domiciliary Care	205	54,823,620	0	170,804
Dialysis	211	41,055,444	3	1,179,447
Anesthesiology	212	193,161,264	0	133,818
Clinical Programs	215	2,012,039	100	2,012,039
Social Service	221	238,052,032	1	1,440,974
Diagnostic Radiology	222	451,420,992	1	2,992,850
Pathology and Laboratory Medicine Service	223	644,646,528	0	2,794,566
Pharmacy	224	3,170,614,016	0	1,630,529
Medical Media Production	225	23,533,918	0	13,960
Libraries	226	39,003,192	0	59,991
Psychology	227	166,444,352	1	1,032,799
Audiology and Speech Pathology	228	61,763,240	0	74,541
Nuclear Medicine	229	82,237,272	1	824,560
Podiatry	231	24,076,186	0	7,474
Optometry Service	232	31,374,732	0	106,160
Spinal Cord Injury Service	233	45,261,364	0	110,950
Geriatric Research Education and Clinical Center	234	33,023,232	0	-27,702
Neurology	235	71,761,984	1	384,582
Dermatology	236	19,179,004	1	186,081
Radiation Therapy	237	54,356,192	9	5,151,484
Nursing Service	241	3,045,967,104	0	5,555,388
Physical, Medicine & Rehabilitation Service	242	276,791,072	0	414,315
Nutrition and Food Service	243	432,482,176	0	65,882
Chaplains	244	40,275,436	0	21,218
Blind Rehabilitation	245	25,166,716	0	1,037
Recreation Service	246	45,032,260	0	109,533
Readjustment Counseling	247	76,067,160	90	68,793,798
Dental Service	248	199,764,656	0	-192,261
Central Dental Laboratory	252	6,132,227	100	6,102,252
Orthopedic Shoe Service	266	733,231	49	360,426
General Reference Laboratory	269	1,690,859	81	1,366,932
Prosthetic Activity	272	427,517,376	0	667,653
Orthotics Laboratories	273	16,856,780	0	30,709
Supply Processing and Distribution Section	281	344,804,064	0	513,330
Ward Administration Section	285	98,845,976	0	85,135
Ambulatory Care Administration	286	233,842,208	0	113,967
Civil Hospitals	311	262,912,816	91	238,919,806

Municipal and State Hospitals	313	38,497,216	73	28,283,952
Civilian Health and Medical Program, VA	317	468,399	100	468,399
US Army	321	13,583,318	100	13,583,318
US Air Force	322	4,510,711	53	2,406,780
US Navy	323	996,949	100	996,949
All Other - Federal Hospitals	329	96,156	100	96,227
Domiciliary Care - State Homes	331	31,144,190	27	8,562,754
Hospital Care State Homes	332	4,031,742	-7	-262,341
Contract Adult Day Health Care	333	12,335,969	23	2,837,806
Nursing Home Care - State Homes	341	292,556,160	14	41,521,007
Nursing Home Care - Community Homes	342	229,467,264	9	20,302,526
Homemaker Home Health Aid Services - Patient Homes	343	49,764,728	16	8,149,328
Homeless Veterans Comprehensive Service Program Act 1992	344	7,782,375	39	3,019,011
Contract Home Skilled Care	347	20,149,044	1	284,306
Post-Hospital Care-Non VA Federal	351	493,332	86	426,595
Alcohol and Drug Treatment and Rehabilitation	361	6,468,364	73	4,733,924
Contract Homeless, Chronically Mentally Ill	362	21,380,034	80	17,045,213
Outpatient Fee Medical, Dental, and Pharmaceutical Services	363	207,415,376	94	195,284,766
Contract Dialysis	364	33,398,542	95	31,894,086
Office of Director	401	291,683,360	3	7,519,568
VISTA (Veterans Health Information Systems and Technology Architecture)	402	281,498,272	0	1,397,671
Direction and Coordination of VA Training Programs and Continuing Education Supp	403	57,806,160	0	78,041
Security Service	407	139,011,520	0	229,306
Chief of Staff	409	132,400,640	1	1,750,254
Office of the Chief Medical Administration	411	69,059,704	0	327,840
Contractual and Fee Services Section	413	34,190,872	4	1,453,596
Medical Information and Records Section	414	193,108,480	0	167,232
Office Operations Section	416	184,858,800	0	34,237
Quality Assurance and Case Mix Activity	419	99,619,760	1	763,874
Fiscal	421	150,455,536	1	1,451,087
Human Resources Management	431	143,781,952	0	654,062
Compliance Program Office	432	1,902,437	0	-6,966
Acquisition & Materiel Management	441	205,795,888	1	1,758,609
Contract Service Centers	445	9,531,170	64	6,105,610
Information Resources Management (Excludes costs chargeable to cost centers 402 and 610)	470	155,058,576	1	2,135,873
Office of the Chief, Field Residential Engineering Service	501	88,713,096	1	453,507
Facility Safety Occupational Health, and Fire Protection Engineering	503	38,214,436	2	622,321
Project Management Engineering	504	38,660,560	0	21,322
Plant Operations	511	485,722,432	0	1,700,206
Transportation	521	70,492,648	0	31,306

Grounds Maintenance and Other Miscellaneous Operations	533	39,500,008	0	86,590
Recurring Maintenance and Repair for Station Approved Projects	541	290,557,632	0	304,226
Non-recurring Maintenance and Repair	542	72,025,928	0	10,537
Operating Equipment - M&R	551	97,865,288	0	37,197
Biomedical Engineering	555	163,155,728	0	5,240
Environmental Management Service	561	31,690,940	6	1,833,066
Integrated Pest Management	562	3,913,915	0	512
Environmental Sanitation	564	325,289,632	0	537,341
Bed Service and Patients Assistance Programs	565	14,669,595	0	8,561
Waste Management Operations	567	14,353,773	0	67,668
Textile Care Processing	570	50,568,360	1	447,421
Textile Management	571	41,820,280	1	246,067
Design Management	575	63,844,060	0	79
Home Improvement and Structural Alterations	601	5,626,670	88	4,926,046
Care of Dead	603	395,323	1	5,030
Administrative Programs	615	158,265,104	1	1,011,150
Operation of Housekeeping Quarters	621	554,531	73	405,679
Operation of Non-housekeeping Quarters	622	105,799	94	99,298
Operation and Maintenance of Garages and Parking Facilities	623	46,247	96	44,275
Insurance Claims and Indemnities	631	1,364,538	0	2,115
Canteen	632	24,759	39	9,538
Federal Employee Health Program	649	0		0
Regional Directors Office	651	676,654	95	644,313
Veterans Integrated Service Network (VISN) Directors Office	652	111,986,088	0	224,781
VA/DOD Sharing Personnel	660	1,532,583	93	1,425,181
Building Depreciation - CDR	682	490,547,968	1	3,913,761
Non-VHA	700	809,572,032	98	789,364,797
MCCF Field Stations	957	105,245,936	2	1,658,259
Total Exempt Costs				1,581,454,336

Appendix B: Unusual DSS cost patterns for psychiatry in two stations.

Figure B1: Medical center 578-Bedsection 27

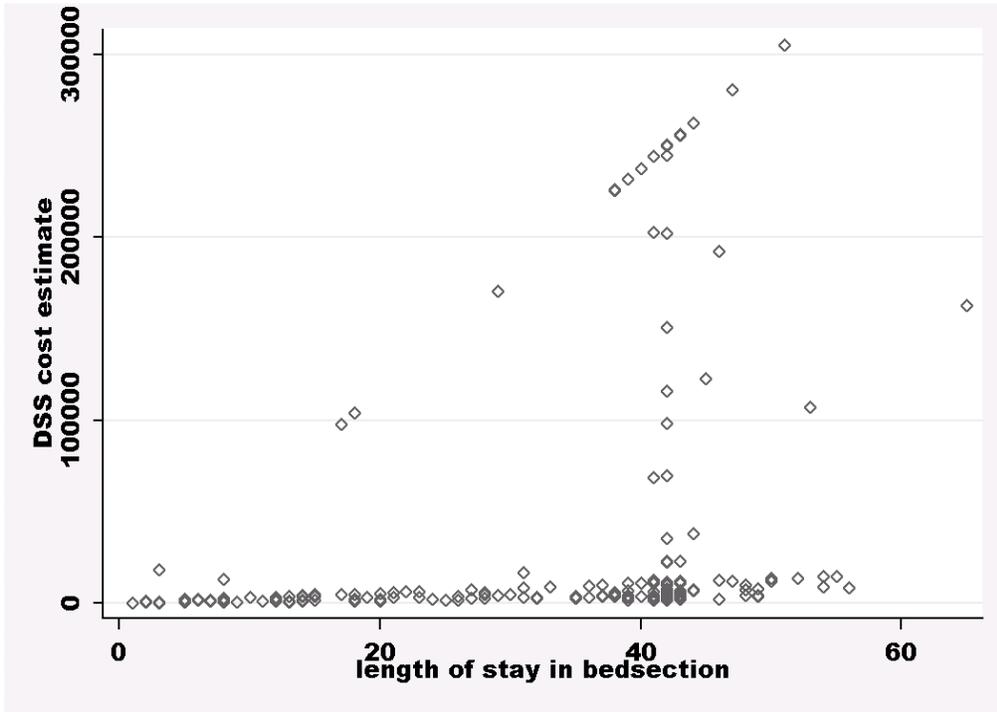


Figure B2: Medical center 523-Bedsection 74

