

October 2010

Using AHRQ's 'Revisit' Data to Estimate 30-Day Readmission Rates in Medicare Advantage and the Traditional Fee-for-Service Program

TABLE OF CONTENTS

SUMMARY	1
PRIOR STUDIES	5
DATA AND METHODS	5
ACKNOWLEDGEMENTS	8
ENDNOTES	9
APPENDIX	A-1

LIST OF TABLES

Summary Table 1.	Percentage Difference in Risk-Adjusted Utilization Rates, Medicare Advantage vs. FFS, States with Multiple Admission Tracking Codes and Revisit Information	2
Summary Table 2.	Unadjusted Any-DRG Readmission Rates (Per Hospitalization), Revisit Data	3
Summary Table 3.	Preliminary Assessment of Issues and Concerns with State Hospital Discharge Datasets Analyzed in this Report for Statewide MA vs. FFS Comparisons	4
Table 1.	Readmission Counts – Revisit Data	6
Table 2.	Estimated Enrollees, Patients with an Admission, Total Admissions	6
Table 3.	Risk Adjustment Measures	6
Table 4.	Unadjusted Any-DRG Readmission Rates (Per Hospitalization) Medicare FFS from AHRQ/State Data vs. FFS From the Medicare 5 Percent Sample Claims Files	7
Table A-1.	Thirty-Day Readmission Rates in Medicare’s Traditional Fee-for-Service Program, 2006-2008	A-2

Using AHRQ's 'Revisit' Data to Estimate 30-Day Readmission Rates in Medicare Advantage and the Traditional Fee-for-Service Program

Originally published October 2010, this paper has been revised to reflect corrected data in Tables 4 and A-1.

SUMMARY

Although some hospital readmissions are planned or unavoidable, there is broad agreement that the number of preventable hospital readmissions is far too high, and that reducing readmission rates through improved hospital and transitional care is a national health care priority.^a Lowering readmission rates has the potential to dramatically improve the quality of patient care while also reducing health care costs.

This report is the sixth in a series of statistical studies comparing patterns of care among patients with Medicare Advantage (MA) coverage and in Medicare's traditional fee-for-service (FFS) program. It is an extension of a May 2010 report entitled *Using State Hospital Discharge Data to Compare Readmission Rates in Medicare Advantage and Medicare's Traditional Fee-for-Service Program*,^b which compared utilization rates among MA and FFS hospital patients in nine states based on publicly available hospital discharge data compiled by the Agency for Healthcare Research and Quality (AHRQ).

The new calculations use a supplemental dataset provided by AHRQ to more precisely measure the gaps in time between hospital admissions and discharges. The new AHRQ "revisit" data allow us to compare "same-quarter" and 30-day readmission rates in several of the states previously studied. In general, we continue to find much lower readmission rates in Medicare Advantage by either measure.

^a The Medicare program started publishing FFS hospital readmission rates relative to average for certain conditions in 2009, and the Affordable Care Act of 2010 requires CMS to establish a hospital readmissions reduction program beginning in 2013, which will reduce payments to specified hospitals for certain readmissions.

^b AHIP Center for Policy and Research, Working Paper: *Using State Hospital Discharge Data to Compare Readmission Rates in Medicare Advantage and Medicare's Traditional Fee-for-Service Program* (May 2010), <http://www.ahipresearch.org/pdfs/9State-Readmits.pdf>. For all studies in the series, see <http://www.ahipresearch.org/hospitalreadmissions.html>.

Summary Table 1. Percentage Difference in Risk-Adjusted Utilization Rates, Medicare Advantage vs. FFS, States with Multiple Admission Tracking Codes and Revisit Information

	Same Quarter, Any DRG (Original)	Same Quarter, Any DRG (Revisit Data)	30 Days, Any DRG (Revisit Data)
MA Rate vs. FFS Rate (per Hospitalization, with DRG-Based Risk Adjustment*)			
California (2006)	-15%	-15%	-18%
California (2007)	-13%	-12%	-18%
California (2008)	-14%	-14%	-17%
Nevada (2006)	-15%	-14%	-17%
Nevada (2007)	-15%	-15%	-18%
Washington (2006)	-17%	-17%	-17%
Texas (2007)***	-14%	-14%	-17%
North Carolina (2007)	-15%	-14%	-12%
(per Patient with at Least One Admission, with CMS-Style Risk Adjustment**)			
California (2006)	-24%	-24%	-26%
California (2007)	-21%	-20%	-26%
California (2008)	-25%	-25%	-27%
Nevada (2006)	-21%	-21%	-23%
Nevada (2007)	-19%	-19%	-22%
Washington (2006)	-18%	-18%	-18%
Texas (2007)	-15%	-15%	-17%
North Carolina (2007)	-14%	-13%	-12%
(per Estimated Enrollee, with CMS-Style Risk Adjustment**)			
California (2006)	-38%	-38%	-40%
California (2007)	-34%	-34%	-38%
California (2008)	-37%	-37%	-39%
Nevada (2006)	-27%	-27%	-29%
Nevada (2007)	-25%	-25%	-28%
Washington (2006)	-43%	-43%	-43%
Texas (2007)	-20%	-20%	-22%
North Carolina (2007)	-27%	-27%	-26%

Source: AHIP Center for Policy and Research. Based on analysis of state hospital discharge restricted-access public use datasets with multiple admission codes that allow tracking of readmissions and revisit indicators, provided by AHRQ's HCUP project (CA, NV, WA, NC). Texas data is provided by the State of Texas.

Notes: Excludes patients with an admission listing an out-of-state address; excludes transfer cases. The shadings represent our assessment of the reliability of the MA vs. FFS comparisons based on issues with the underlying datasets. In general, we believe the comparisons for California are most reliable.

* Risk measure based on an index of the likelihood of admissions for DRGs that are associated with higher or lower than average rates of readmissions (any DRG), using the 2006-2007 FFS 5 percent sample file as a benchmark (DRG version 24) and 2008 (DRG version 25).

** Risk scores for FFS and MA enrollees are based on age/sex and HCC relative cost values used in Medicare risk adjustment for beneficiaries living in the community, but do not include disease interactive factors, or factors related to disability or institutional status. Risk scores are based on inpatient hospital diagnoses for all inpatient admissions, but do not include diagnosis information from other health care services, such as hospital outpatient or physician office visits. Relative risk ratios for patients with an admission were used to adjust the estimated per-enrollee results.

In four states where the AHRQ revisit data is available, and using similar data from the state of Texas, we estimate that risk-adjusted 30-day readmission rates per hospitalization were about 12-18 percent lower in MA than FFS (see Summary Table 1). Risk-adjusted 30-day readmissions per patient with an admission ranged from 12-27 percent lower in MA among patients with at least one admission, and we estimate that 30-day readmissions per enrollee (including enrollees not hospitalized in a year) were 22-43 percent lower in MA than FFS in these states. Same-quarter, 60-day, and 90-day readmissions per hospitalization were also lower in MA by approximately the same magnitudes as 30-day readmissions.

Summary Table 2. Unadjusted Any-DRG Readmission Rates (Per Hospitalization), Revisit Data

	Same-Quarter		30-Day	
	FFS	MA	FFS	MA
California (2006)	20.1%	16.2%	19.8%	15.4%
California (2007)	20.3%	17.0%	19.2%	15.0%
California (2008)	20.3%	16.2%	20.2%	15.5%
Nevada (2006)	19.2%	15.1%	18.3%	14.0%
Nevada (2007)	18.1%	14.1%	17.1%	12.7%
Washington (2006)	15.4%	12.2%	14.2%	11.3%
Texas (2007)	20.5%	16.7%	19.0%	15.0%
North Carolina (2007)	16.0%	13.5%	15.0%	12.9%

Source: AHIP Center for Policy and Research. Based on state hospital discharge restricted-access public use datasets (HCUP) compiled by the Agency for Healthcare Research and Quality (AHRQ) and the State of Texas.

Note: Excludes transfer cases. Persons with out-of-state admissions were excluded. The shadings represent our subjective assessment of the reliability of the MA vs. FFS comparisons based on issues with the underlying datasets. In general, we believe the comparisons for California are most reliable.

Summary Table 2 shows the raw, unadjusted readmission rates for these states by each of the measures. In prior reports, we introduced the concept of the same-quarter readmission rate, which has the key advantage of being easy to compute from “limited” publicly available datasets. In general, we believe the same-quarter readmission measure is a reasonable substitute for the 30-day readmission rate when data are not available to measure readmission rates in terms of days.

For several reasons, analyses based on the study of the state hospital discharge data have inherent limitations. Hospital discharge data by definition represent a universe of persons who had a hospitalization, and include utilization and diagnosis data only from inpatient hospital care, not from outpatient or office visits. Furthermore, in reviewing the hospital data used in this study, we identified several additional issues that could affect the comparisons, including:

- Out-of-state residents, part-year residents and “snowbird” retirees, and cross-border medical care;
- Completeness of the state data and comparisons between the state datasets and the FFS data from the Medicare 5 percent sample file that appear to show gaps or anomalies in some state data;
- Identification of MA enrollees; and
- A relatively small share of MA enrollees in the state.

Summary Table 3. Preliminary Assessment of Issues and Concerns with State Hospital Discharge Datasets Analyzed in this Report for Statewide MA vs. FFS Comparisons

State Year(s) Analyzed	CA 2006-7-8	NV 2006-7	WA 2006*	TX 2007	NC 2007
Snowbirds and Out-of-State Residents/Patients		X			
Possible Missing Data					X
Identification of MA Enrollees		X	X		X
Relatively Small Share of MA Enrollees				X	X
Overall Confidence in the Statewide Comparisons	High	Medium	Medium	Medium	Some

Source: AHIP Center for Policy and Research. Based on state hospital discharge restricted-access public use datasets (HCUP) compiled by the Agency for Healthcare Research and Quality (AHRQ) and the state of Texas.

* 2007 data from Washington (not used) had incorrect multiple admission tracking codes and was returned to AHRQ. The 2007 data for Washington have since been corrected, but not in time for this study.

Summary Table 3 highlights data issues that could potentially affect the comparisons in this report. In the tables, we have indicated our assessment of the reliability of the data from each state. For example, we believe the data quality is highest in California, but that some issues with the North Carolina data imply that that state’s results would be more uncertain.

PRIOR STUDIES

In May 2010, AHIP presented comparisons of hospital readmissions among enrollees in traditional Medicare fee-for-service coverage and Medicare Advantage plans in nine states: California, Nevada, Washington, Texas, Hawaii, North Carolina, Pennsylvania, Arkansas, and Arizona. To our knowledge, these are the only nine states from which hospital discharge data suitable for comparisons of readmission rates among MA and FFS patients were available, either from AHRQ or from the states directly.¹

The nine-state report, as well as a previous report based on 2006 AHRQ data from California and Nevada,² were intended mostly as an initial check or verification for the more comprehensive comparisons of utilization rates between Medicare FFS and MA, which AHIP presented in a series of working papers in 2009. The first AHIP working paper compared results from eight smaller or regional MA plans with Medicare FFS in the same local service areas,³ and the second compared two larger, multi-state MA plans in a total of 10 local areas.⁴

Two other recent studies have compared hospital utilization in MA and FFS Medicare. In September 2009, Dr. Gerard Anderson of Johns Hopkins University conducted a study of hospital readmissions and avoidable admissions for the Alliance of Community Health Plans (ACHP). Among other things, the study found that the average 30-day readmission rate (likelihood of a readmission for any DRG within 30 days) for the 13 ACHP member plans reporting was 27 percent less than the national rate in Medicare FFS.⁵

In May 2010, Dr. Cary Sennett of MedAssurant, Inc. presented a detailed three-year (2006-2008) study of

30-day, 60-day, and 90-day readmission rates (any DRG) for 11 MA plans and compared those results with FFS readmission rates computed nationally by Stephen Jencks and his colleagues for 2004, and by Dr. Anderson of Johns Hopkins for 2006-2008.⁶ This preliminary report was the first in a series under a collaborative research agreement between MedAssurant and AHIP. The report used a risk adjustment technique based on indexes of DRGs associated with high readmission rates, which was suggested by Dr. Anderson and is also used in this report.

DATA AND METHODS

AHIP's nine-state report explained in considerable detail the basic methodology we have used comparing MA and FFS readmission rates based on the AHRQ and state hospital discharge data. Many specifics of data cleaning and definitions, methods of measuring readmission rates, estimates of overall enrollment, and methods of risk adjustment are available in full in that report. Likewise, the nine-state report contains a substantial discussion of special issues related to using state hospital discharge data to measure readmission rates.

The AHRQ revisit data provide a straightforward way of measuring the numbers of days between hospital discharge and readmission. The revisit data provide the number of days between hospital admissions – admission to admission. To calculate the length of time between discharge and readmission, such as for a 30-day readmission rate, we simply subtracted the length of stay in days of the prior admission from the admission-to-admission gap.

Table 1 shows the basic readmission counts computed from the revisit data, as well as the counts of same-quarter readmissions. Table 2 shows basic

Table 1. Readmission Counts – Revisit Data

	Same-Quarter		30-Day	
	FFS	MA	FFS	MA
California (2006)	120,947	42,472	119,496	40,439
California (2007)	117,756	42,547	111,728	37,658
California (2008)	125,489	45,017	124,624	43,058
Nevada (2006)	8,840	2,852	8,447	2,641
Nevada (2007)	7,553	2,343	7,132	2,118
Washington (2006)	21,416	2,517	19,712	2,321
Texas (2007)	115,109	13,975	106,677	12,548
North Carolina (2007)	33,127	3,692	31,011	3,526

Source: AHIP Center for Policy and Research. Based on state hospital discharge restricted-access public use datasets (HCUP) compiled by the Agency for Healthcare Research and Quality (AHRQ) and the State of Texas.

Table 2. Estimated Enrollees, Patients with an Admission, Total Admissions

	Estimated Enrollees		Patients with an Admission		Total Admissions	
	FFS	MA	FFS	MA	FFS	MA
California (2006)	2,128,292	1,248,927	370,825	176,650	602,345	261,818
California (2007)	2,209,594	1,258,183	363,404	170,947	581,257	250,453
California (2008)	2,211,320	1,325,002	374,381	185,422	617,246	277,296
Nevada (2006)	165,884	83,100	29,394	13,346	46,036	18,831
Nevada (2007)	176,976	84,865	27,501	12,023	41,718	16,630
Washington (2006)	542,337	134,656	94,350	15,454	138,851	20,575
Texas (2007)	1,840,860	331,392	339,393	57,069	561,459	83,656
North Carolina (2007)	883,530	153,542	136,687	19,618	207,423	27,255

Source: AHIP Center for Policy and Research. Based on state hospital discharge restricted-access public use datasets (HCUP) compiled by the Agency for Healthcare Research and Quality (AHRQ) and the State of Texas.

Table 3. Risk Adjustment Measures

	Risk Measure (MA vs. FFS)	
	CMS-Style*	Readmission Probability-Based**
California (2006)	-2.6%	-4.3%
California (2007)	-2.7%	-4.1%
California (2008)	-2.9%	-6.4%
Nevada (2006)	-8.2%	-6.8%
Nevada (2007)	-10.4%	-7.1%
Washington (2006)	-9.9%	-3.5%
Texas (2007)	-12.8%	-4.1%
North Carolina (2007)	-9.0%	-1.6%

Source: AHIP Center for Policy and Research.

* CMS-style risk scores for FFS and MA enrollees based on age/sex and HCC relative cost values used in Medicare risk adjustment for beneficiaries living in the community, but do not include disease interactive factors, or factors related to disability or institutional status. Person-based risk scores are based on inpatient hospital diagnoses for all admissions, but do not include diagnosis information from other health care services, such as hospital outpatient or physician office visits.

** Risk measure based on an index of the likelihood of admissions for DRGs that are associated with higher or lower than average rates of readmissions (any DRG). 2006 and 2007 based on DRG version 24; 2008 Based on DRG versions 25/26.

counts of admissions, patients with an admission, and estimated enrollment. Compared with the prior nine-state report, the counts of same-quarter readmissions and patients with an admission are slightly different in some states when using the new revisit data, because in conjunction with the revisit codes, AHRQ also slightly revised the codes that link hospitalizations to (de-identified) patients.

As in the nine-state report, this report uses two forms of risk adjustment. The CMS-style risk scores are designed to predict or control for risk of health care costs. We believe this is a good all-purpose risk adjuster for comparisons of FFS and MA enrollees. However, it is not necessarily an indicator of the risk of a specific element of utilization, such as risk of hospital readmission. An alternative risk indexing process based on observed likelihoods of readmissions for each DRG was also developed for the nine-state report, and used here for the readmission rates measured per hospitalization. The risk adjustments used in this report are shown in Table 3.

It is worth noting that all of the readmission rates in this and AHIP's prior reports are based on counts of the numbers of readmissions, which are then divided by counts of admissions, patients with an admission, or estimated total enrollees in the population to compute rates. Thus the readmission rates in this and earlier reports are computed somewhat differently than well-known readmission rates published for Medicare's fee-for-service program by other scholars.

For example, in April 2009, Dr. Stephen Jencks and his colleagues published benchmark readmission rates for Medicare FFS, which estimated Medicare's nationwide FFS 30-day readmission rate was 19.6 percent in the year 2004.⁷ The readmission rates in this report measured differently than those by Dr. Jencks in several ways. First, we exclude patients under the age of 65 and over age 89. Thus the rates in this report do not include Medicare enrollees eligible by reason of disability.⁸

Table 4. Unadjusted Any-DRG Readmission Rates (Per Hospitalization) Medicare FFS from AHRQ/State Data vs. FFS From the Medicare 5 Percent Sample Claims Files

	Same-Quarter	30-Day	Same-Quarter	30-Day
	AHRQ and State Data		Medicare 5 Percent Data	
California (2006)	20.1%	19.8%	19.3%	17.7%
California (2007)	20.3%	19.2%	19.5%	18.0%
California (2008)	20.3%	20.2%	21.2%	18.5%
Nevada (2006)	19.2%	18.3%	22.4%	15.9%
Nevada (2007)	18.1%	17.1%	24.2%	16.2%
Washington (2006)	15.4%	14.2%	17.2%	15.3%
Texas (2007)	20.5%	19.0%	22.8%	17.6%
North Carolina (2007)	16.0%	15.0%	19.1%	18.2%

Source: AHIP Center for Policy and Research. Based on state hospital discharge restricted-access public use datasets (HCUP) compiled by the Agency for Healthcare Research and Quality (AHRQ) and the State of Texas.

Note: Excludes transfer cases. Persons with out-of-state admissions were excluded. The shadings represent our assessment of the reliability of the MA vs. FFS comparisons based on characteristics of the underlying datasets. In general, we believe the comparisons for California are most reliable.

Second, Dr. Jencks' calculations are intended to give a precise answer to the question: "What is the probability of readmission within 30 days?" Thus, his calculations are based on tracking a specific set of designated "index" or initial admissions and they exclude patients who died or were otherwise not at risk for readmission.

This report and its predecessors ask a slightly different question: "How many readmissions were there within 30 days of the prior discharge in a year?" This count of readmissions is then divided by the total number of admissions (or number of patients with a hospitalization, or estimated number of enrollees) to create a readmission rate. However, the 30-day readmission rates calculated in this manner turn out to be in the same general range as those computed by Dr. Jencks.

Another interesting comparison is between readmission rates computed from the AHRQ and state discharge data for Medicare FFS with rates computed for FFS from Medicare's 5 percent sample claims files. Table 4 shows FFS readmission rates from both data sources. Some of the absolute differences in readmission rates between these two datasets are no doubt due to "snowbird" effects or the impact of people being hospitalized across state lines. For example, the AHRQ and state discharge datasets only measure hospitalizations and rehospitalizations that occur within a state. However, the FFS 5 percent sample data are based on the patient's official state of residence, regardless of where hospitalizations occur.

The Appendix to this report shows 30-day readmission rates for non-disabled Medicare FFS enrollees over age 65 in 2006-2008 for all 50 states and the District of Columbia, based on the state of residence, not the state where the hospitalization occurred.

ACKNOWLEDGEMENTS

The main data calculations in this report were performed by Christelle Chen and Lisa Carpenter of AHIP's Center for Policy and Research. Supporting calculations and preparations for publication were done by Teresa Mulligan and Kelly Buck.

For more information, please contact Jeff Lemieux, Senior Vice President, at 202.778.3200.

APPENDIX

Using one of the same methods of calculating readmission rates used in this report – total 30-day readmissions per admission in a year – Dr. Gerard Anderson of Johns Hopkins University calculated readmission rates for all 50 states and the District of Columbia using Medicare’s 5-percent sample claims and administrative data (see Table A-1). Unlike readmission rates computed from state hospital discharge data in this report, the readmission rates computed from the 5-percent sample data are broken down by state based on the residence of the enrollee, which may not always be the state where admissions and readmissions occurred.

Table A-1. Thirty-Day Readmission Rates in Medicare's Traditional Fee-for-Service Program, 2006-2008

	Total Discharges			Total Readmissions Any DRG 30 Days			Readmission Rate Any DRG 30 Days		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
National	337,505	313,235	308,735	62,259	57,270	56,822	18.4%	18.3%	18.4%
Alaska	377	326	302	79	55	37	21.0%	16.9%	12.3%
Alabama	6,965	7,051	6,831	1,201	1,287	1,224	17.2%	18.3%	17.9%
Arkansas	4,406	3,816	3,779	795	677	698	18.0%	17.7%	18.5%
Arizona	4,791	4,749	4,970	860	836	860	18.0%	17.6%	17.3%
California	21,849	21,317	21,997	3,872	3,835	4,075	17.7%	18.0%	18.5%
Colorado	3,146	2,976	2,812	490	450	460	15.6%	15.1%	16.4%
Connecticut	4,919	4,682	4,523	936	898	880	19.0%	19.2%	19.5%
District of Columbia	564	553	510	126	145	116	22.3%	26.2%	22.7%
Delaware	1,226	1,316	1,363	219	221	246	17.9%	16.8%	18.0%
Florida	24,057	23,012	23,081	4,391	4,122	4,253	18.3%	17.9%	18.4%
Georgia	8,895	8,007	8,551	1,515	1,341	1,461	17.0%	16.7%	17.1%
Hawaii	669	719	641	100	126	103	14.9%	17.5%	16.1%
Iowa	4,653	3,583	3,652	835	548	585	17.9%	15.3%	16.0%
Idaho	1,325	929	895	182	125	100	13.7%	13.5%	11.2%
Illinois	12,509	11,661	11,598	2,413	2,252	2,228	19.3%	19.3%	19.2%
Indiana	8,764	7,665	7,814	1,565	1,311	1,403	17.9%	17.1%	18.0%
Kansas	3,716	2,992	2,922	648	497	437	17.4%	16.6%	15.0%
Kentucky	7,116	5,999	6,062	1,420	1,139	1,153	20.0%	19.0%	19.0%
Louisiana	5,730	5,263	5,056	1,107	962	971	19.3%	18.3%	19.2%
Massachusetts	7,859	7,808	7,639	1,572	1,441	1,527	20.0%	18.5%	20.0%
Maryland	6,723	6,707	6,798	1,406	1,380	1,435	20.9%	20.6%	21.1%
Maine	1,998	1,825	1,780	328	315	301	16.4%	17.3%	16.9%
Michigan	15,698	13,937	13,246	3,024	2,708	2,589	19.3%	19.4%	19.5%
Minnesota	4,763	4,041	3,765	850	674	591	17.8%	16.7%	15.7%
Missouri	8,811	8,223	7,900	1,632	1,534	1,502	18.5%	18.7%	19.0%
Mississippi	4,214	3,856	4,540	848	697	890	20.1%	18.1%	19.6%

Continued on next page

Table A-1 (continued). Thirty-Day Readmission Rates in Medicare's Traditional Fee-for-Service Program, 2006-2008

	Total Discharges			Total Readmissions Any DRG 30 Days			Readmission Rate Any DRG 30 Days		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
Montana	1,514	1,040	1,081	242	143	171	16.0%	13.8%	15.8%
North Carolina	10,926	10,302	9,780	1,961	1,870	1,668	17.9%	18.2%	17.1%
North Dakota	949	732	772	139	101	122	14.6%	13.8%	15.8%
Nebraska	2,441	1,851	1,836	352	247	263	14.4%	13.3%	14.3%
New Hampshire	1,610	1,363	1,323	294	212	225	18.3%	15.6%	17.0%
New Jersey	12,310	12,236	12,255	2,641	2,644	2,669	21.5%	21.6%	21.8%
New Mexico	1,661	1,521	1,515	286	236	262	17.2%	15.5%	17.3%
Nevada	1,856	1,707	1,852	296	276	330	15.9%	16.2%	17.8%
New York	21,433	20,800	20,162	4,483	4,324	4,332	20.9%	20.8%	21.5%
Ohio	16,890	15,449	14,079	3,296	3,015	2,665	19.5%	19.5%	18.9%
Oklahoma	4,755	4,994	5,000	846	836	835	17.8%	16.7%	16.7%
Oregon	2,331	2,143	2,080	323	317	321	13.9%	14.8%	15.4%
Pennsylvania	16,509	15,587	14,679	3,055	2,866	2,730	18.5%	18.4%	18.6%
Rhode Island	1,128	1,004	963	246	211	169	21.8%	21.0%	17.5%
South Carolina	5,838	5,260	5,208	952	873	854	16.3%	16.6%	16.4%
South Dakota	1,165	892	844	166	126	100	14.2%	14.1%	11.8%
Tennessee	7,543	7,266	7,429	1,412	1,329	1,388	18.7%	18.3%	18.7%
Texas	23,333	22,127	21,345	4,110	3,891	3,602	17.6%	17.6%	16.9%
Utah	1,493	1,388	1,241	182	180	136	12.2%	13.0%	11.0%
Virginia	8,760	8,285	8,374	1,570	1,574	1,512	17.9%	19.0%	18.1%
Vermont	744	562	572	111	85	95	14.9%	15.1%	16.6%
Washington	5,153	4,686	4,655	787	770	724	15.3%	16.4%	15.6%
Wisconsin	7,331	5,956	5,647	1,243	994	966	17.0%	16.7%	17.1%
West Virginia	3,449	2,557	2,522	747	509	494	21.7%	19.9%	19.6%
Wyoming	640	514	494	105	65	64	16.4%	12.6%	13.0%

Source: AHIP Center for Policy and Research; Calculations by Dr. Gerard Anderson Johns Hopkins University.

Notes: Does not include Medicare beneficiaries eligible by reason of disability (under age 65) or end stage renal disease (ESRD). State is based on residence of beneficiary, not the location of admissions or readmissions.

ENDNOTES

¹ Data suitable for comparing readmission rates in MA and FFS may also be available from the state of Florida – however, these data do not seem to be available to the public for this sort of research. Because of its large Medicare population, Florida would be an important state for readmissions research.

² AHIP Center for Policy and Research, *Reductions in Hospital Days, Readmissions, and Potentially Avoidable Admissions Among Medicare Advantage Enrollees in California and Nevada, 2006* (revised October 2009), <http://www.ahipresearch.org/pdfs/CAvsNV.pdf>.

³ AHIP Center for Policy and Research, *A Preliminary Comparison of Utilization Measures Among Diabetes and Heart Disease Patients in Eight Regional Medicare Advantage Plans and Medicare Fee-for-Service in the Same Service Areas* (working paper, revised September 2009), <http://www.ahipresearch.org/pdfs/MAvsFFS.pdf>.

⁴ AHIP Center for Policy and Research, *Comparisons of Utilization in Two Large, Multi-State Medicare Advantage HMOs and Medicare Fee-for-Service in the Same Service Areas* (working paper, December 2009), <http://www.ahipresearch.org/pdfs/MAvsFFS-CO9and10.pdf>.

⁵ Gerard Anderson, *The Benefits of Care Coordination: A Comparison of Medicare Fee-for-Service and Medicare Advantage*, report prepared for the Alliance of Community Health Plans (September 1, 2009) http://www.achp.org/policy/health_care_reform/study_of_ma_plans_vs_ffs/index.1.html.

⁶ Cary Sennett, Ray Wang, Jeff Lemieux, and Teresa Mulligan, *Hospital Readmissions in Medicare Advantage and Medicare's Traditional Fee-for-service Program*, MedAssurant, Inc./AHIP Center for Policy and Research (discussion draft, May 2010). The MedAssurant results have been presented at several conferences, including the National Readmissions Summit (www.readmissionssummit.com), and are compared with FFS readmission rates in 2004 from Jencks, S., Williams, M., and Coleman, E., "Rehospitalizations in the Medicare Fee-for-Service Program," *New England Journal of Medicine* (April 2, 2009), available at <http://content.nejm.org/cgi/content/full/360/14/1418> and with contemporaneous data from 2006-2008 calculated by Dr. Anderson of Johns Hopkins.

⁷ Jencks, S., Williams, M., and Coleman, E., "Rehospitalizations in the Medicare Fee-for-Service Program," *New England Journal of Medicine* (April 2, 2009), available at <http://content.nejm.org/cgi/content/full/360/14/1418>.

ENDNOTES (continued)

⁸ Using an extensive and detailed database of MA claims and administrative records, the MedAssurant/AHIP report by Dr. Sennett et al. explicitly replicates the Jencks method when comparing MA readmission rates with FFS. Alternatively, that report calculates both MA and FFS readmission rates in the same manner used in this report, readmission counts per hospitalization. The resulting differences in readmission rates between MA and FFS are approximately the same, and are consistent with the magnitude of the unadjusted and risk adjusted differences found in this report from the AHRQ and state discharge data and with prior AHIP reports on the topic.