# Working Paper: Using State Hospital Discharge Data to Compare Readmission Rates in Medicare Advantage and Medicare's Traditional Fee-for-Service Program

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## SUMMARY

This report is the fourth in a series of 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 expanded version of a preliminary report presented in September 2009,[1] which compared utilization rates among MA and FFS hospital patients in the states of California and Nevada in 2006 based on publicly available hospital discharge data compiled by the Agency for Healthcare Research and Quality (AHRQ).

This report extends AHIP's earlier comparisons of MA and FFS hospital patients in California and Nevada to an additional year and several other states, and it also attempts to refine the measures in several ways. In general, it appears that the wider range of states and measures presented in this report continue to verify the results of our earlier comparisons of MA and FFS utilization: lower risk-adjusted rates of inpatient days and readmissions, sometimes by quite large amounts.

Summary Table 1 shows basic differences in rates of hospital admissions, days, readmissions, and potentially avoidable admissions, adjusted using a person-based ratio of risk scores based on age, sex, and diagnostic information from inpatient hospitalizations. The comparisons are shown per-enrollee and per-patient with an admission. Readmission rates are computed for readmissions within the same diagnosis related group (DRG) or for "any DRG." Potentially avoidable admission rates are based on specifications published by AHRQ for 13 types of admissions ranging from dehydration to asthma to uncontrolled diabetes.

In this report, we focus primarily on the hospital readmissions measures. Although some readmissions are planned or unavoidable, there is broad agreement that lowering readmission rates through improved hospital and transitional care is a national health care priority.[2] In states where the underlying data seems most reliable, we estimate that risk-adjusted readmission rates were about 27-29 percent lower in MA than FFS per (estimated) enrollee, 16-18 percent lower per person with an admission, and14-17 percent lower measured per hospitalization.

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

| | Inpatient Admissions | Inpatient Days | Same-Quarter, Any DRG Readmissions* | Same-Quarter, Same DRG Readmissions* | 13 Potentially Avoidable Admissions |
|---|---|---|---|---|---|
| | MA Rate vs. FFS Rate (per Estimated Enrollee, with CMS-Style Risk Adjustment**) | | | | |
| California (2006) | -24% | -43% | -39% | -35% | -25% |
| California (2007) | -22% | -41% | -35% | -32% | -24% |
| Nevada (2006) | -11% | -31% | -30% | -36% | -17% |
| Nevada (2007) | -7% | -24% | -28% | -28% | -17% |
| Washington (2006) | -34% | -39% | -48% | -44% | -40% |
| Texas (2007) | -5% | -11% | -23% | -17% | -16% |
| North Carolina (2007) | -17% | -14% | -30% | -33% | -22% |
| Pennsylvania (2007) | 6% | 7% | 3% | 6% | 8% |
| Hawaii (2007) | 2% | -3% | 1% | -10% | 5% |
| Arkansas (2007) | -47% | -53% | -65% | -68% | -57% |
| Arizona (2007) | -24% | -26% | -22% | -19% | -21% |
| | MA Rate vs. FFS Rate (Patients with at Least One Admission, with CMS-Style Risk Adjustment**) | | | | |
| California (2006) | -6% | -30% | -25% | -20% | -8% |
| California (2007) | -6% | -29% | -21% | -18% | -8% |
| Nevada (2006) | -2% | -24% | -23% | -29% | -9% |
| Nevada (2007) | 2% | -17% | -21% | -21% | -8% |
| Washington (2006) | 0% | -7% | -20% | -15% | -9% |
| Texas (2007) | 2% | -5% | -17% | -11% | -10% |
| North Carolina (2007) | 1% | 4% | -16% | -20% | -6% |
| Pennsylvania (2007) | 3% | 4% | 0% | 3% | 4% |
| Hawaii (2007) | -1% | -7% | -3% | -13% | 1% |
| Arkansas (2007) | -1% | -12% | -34% | -40% | -19% |
| Arizona (2007) | 2% | -1% | 4% | 8% | 6% |

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, provided by AHRQ's HCUP project (CA, NV, WA, HI, NC, AR, AZ) and by states directly (PA, TX), and FFS 5 percent claims samples in those states.
Note: Excludes patients with an admission listing an out-of-state address. 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 highly reliable, and the data from Arizona, Arkansas, and Hawaii are not very reliable.
* Excludes transfer cases.
** 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.

There are many ways to measure readmission rates. Per-enrollee readmission rates include the impact of reducing initial admissions as well as subsequent readmissions and may be a particularly good measure for evaluating health plan performance. Readmission rates per hospitalization are commonly used for evaluating hospitals. In general, we compute "same-quarter" readmissions; only the Texas data are detailed enough to allow us to compute the more common 30-day and 90-day readmission rates. However, we find that 30-day readmission rates and same-quarter readmission rates tend to be very well correlated, and differences between MA and FFS rates for either measure are similar.

Summary Table 2 shows same-quarter, any DRG readmission rates per admission in the nine states, unadjusted and using an alternative risk adjuster (based on the distribution of admissions by DRG in MA and FFS and the probabilities of readmissions associated with each DRG).

The magnitude of the reductions in readmissions presented in this report is consistent with AHIP's prior study of 10 MA HMOs in 18 comparison areas[3] and with two other recent studies of MA and FFS readmission rates. On average, the AHIP report showed risk-adjusted per-enrollee MA readmissions were about 39 percent lower than FFS across 18 comparison areas. Since overall hospitalization rates were about 11 percent lower in the MA plans, estimated per-admission rehospitalization rates would be approximately 27-28 percent lower.

Summary Table 2. Same-Quarter, Any DRG Readmission Rates per Admission

| | Unadjusted | | With DRG-Based Risk Adjustment Based on Readmission Probability* | |
|---|---|---|---|---|
| | FFS | MA | FFS | MA |
| California (2006) | 20.2% | 16.3% | 19.8% | 16.7% |
| California (2007) | 20.4% | 17.0% | 20.0% | 17.4% |
| Nevada (2006) | 19.2% | 15.1% | 18.6% | 15.7% |
| Nevada (2007) | 18.1% | 14.1% | 17.4% | 14.6% |
| Washington (2006) | 15.4% | 12.2% | 15.2% | 12.5% |
| Texas (2007) | 20.5% | 16.7% | 20.1% | 17.1% |
| North Carolina (2007) | 16.3% | 13.6% | 16.2% | 13.8% |
| Pennsylvania (2007) | 20.1% | 19.5% | 19.9% | 19.7% |
| Hawaii (2007) | 14.9% | 14.6% | 14.8% | 14.7% |
| Arkansas (2007) | 24.3% | 16.1% | 23.4% | 16.7% |
| Arizona (2007) | 14.4% | 14.7% | 14.3% | 14.8% |

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 states of Texas and Pennsylvania.
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 highly reliable, and the data from Arizona, Arkansas, and Hawaii are not very reliable.
* Risk measured 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).

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<br>Year(s) Analyzed | CA<br>2006-7 | NV<br>2006-7 | WA<br>2006 | TX<br>2007 | NC<br>2007 | PA<br>2007 | HI<br>2007 | AR<br>2007 | AZ<br>2007 |
|---|---|---|---|---|---|---|---|---|---|
| A. Multiple Admissions Over-Identified | | | * | | | | | | |
| B. Multiple Admissions Under-Identified | | | | | | | | | X |
| C. Snowbirds and Out-of-State Residents/Patients | | X | | | | X | X | X | X |
| D. Possible Missing Data | | | | | X | X | | | |
| E. Identification of MA Enrollees | | X | X | | X | X | X | X | |
| F. Risk Scores Not Consistent with FFS 5 Percent Sample File | | | | | | | | | X |
| G. Sub-State Composition of Enrollment | | | | | | X | | | X |
| H. Relatively Small Number or Share of MA Enrollees | | | | X | X | | X | X | |
| I. Cannot Exclude Long-Term Hospitals (Psych., Rehab) | | | | | | | X | X | |
| Overall Confidence in the Statewide Comparisons | High | Medium | Medium | Medium | Some | Some | Not Much | Not Much | Not Much |

Source: AHIP Center for Policy and Research. Based on analysis of state hospital discharge restricted-access public use datasets with multiple admission tracking codes, provided by AHRQ's HCUP project (CA, NV, WA, HI, NC, AR, AZ) and by states directly (PA, TX), and FFS 5 percent claims samples in those states.
* 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.

In a September 2009 study of 30-day readmission rates in 13 MA HMO plans for the Association of Community Health Plans (ACHP), Dr. Gerard Anderson of Johns Hopkins University found average reductions in 30-day (any DRG) readmission rates of 27 percent in MA compared with national FFS (not risk-adjusted).[4]

In May 2010, Dr. Cary Sennett and his colleagues at MedAssurant, Inc. compared 30-day, 60-day, and 90-day readmission rates in 11 MA plans with national FFS data from 2004 computed by Dr. Stephen Jencks and his colleagues, and with 2006-2008 FFS data computed by Dr. Anderson (with and without risk adjustment).[5] The MedAssurant results are consistent with those found in the AHIP and Anderson reports. The Summary Figure below illustrates the main results from the four recent studies.

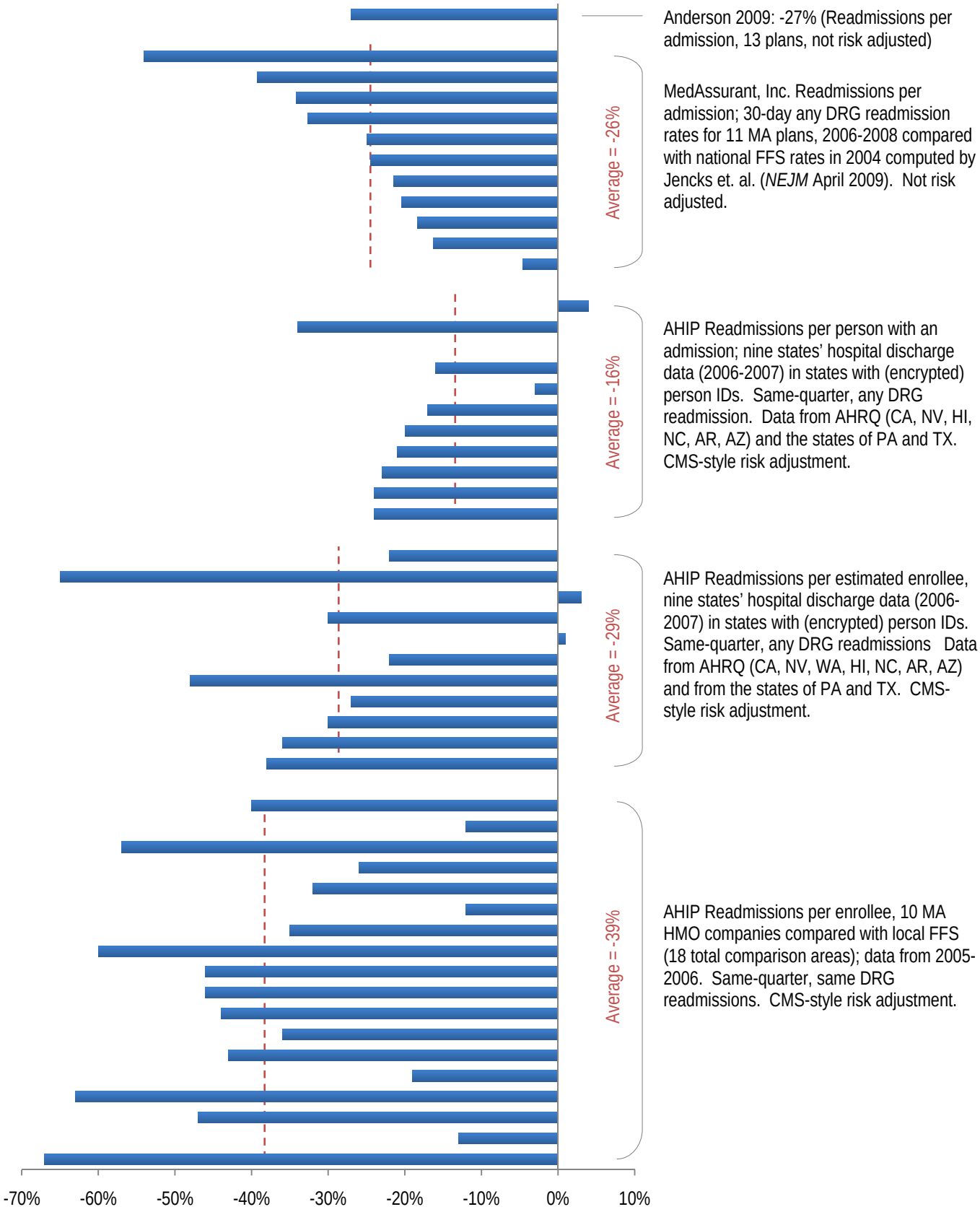
For several reasons, analyses based the study of the state hospital discharge data have several limitations. Hospital discharge data by definition represent a data universe of persons who had a hospitalization, and include utilization and diagnosis data only from inpatient hospital care, not from outpatient or office visits. In addition, in reviewing the hospital data used in this study, we identified issues related to:

- The validity of the codes used to link hospitalizations for patients with multiple admissions or readmissions, which we believe could distort the comparisons, particularly in Arizona;
- Out-of-state residents, part-year residents and "snowbird" retirees, and cross-border medical care, which also affect the comparisons;
- 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; and
- Identification of MA enrollees.

Summary Table 3 illustrates issues with each state's hospital discharge data that could affect the statewide MA vs. FFS comparisons. In Arizona, we identified a potential problem with the data codes in the hospital discharge dataset that allow tracking of multiple admissions and readmissions. In Arkansas, we can find no fault with the data, but there are simply too few MA enrollees in the state to have much confidence in the comparisons. In Hawaii, there are relatively few MA enrollees, and many are in "cost-based" private plans, not "risk-based" MA plans that have powerful incentives to reduce avoidable admissions and readmissions. In Pennsylvania, MA and FFS patients show similar statewide readmission rates, but when we looked at local regions within the state, the local MA readmission rates tended to be lower than local FFS. This is because MA enrollees are more concentrated in urban areas (Pittsburgh and the Philadelphia area), where readmission rates appear to be higher in general.

The intention of this nine-state study was to examine additional data from different sources and explore alternative measures in an attempt to verify the results of prior research. Much of the discussion is therefore methodological, and many uncertainties remain. However, the trends are increasingly clear: the results from these new data and the more varied set of measures continue to increase our confidence that MA plans are successfully reducing preventable readmissions. By contrast, readmission rates in Medicare FFS appear to be far higher than they could be. We hope that further examination of these and similar data will spark a sustained national effort to reduce readmission rates for all patients.

Summary Figure. Percent Difference in Readmission Rates, Medicare Advantage vs. FFS, Recent Studies




Sources: AHIP Center for Policy and Research (www.ahipresearch.org) and AHCP (www.ahcp.org).

# ENDNOTES

[1] 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.

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

[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, and 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.

[4] 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.

[5] Cary Sennett, Ray Wang, and Jeff Lemieux, 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).