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# New Risk-Adjustment System Was Associated With Reduced Favorable Selection In Medicare Advantage

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ABSTRACT **Health plans participating in the Medicare managed care program, called Medicare Advantage since 2003, have historically attracted healthier enrollees than has the traditional fee-for-service program. Medicare Advantage plans have gained financially from this favorable risk selection since their payments have traditionally been adjusted only minimally for clinical characteristics of enrollees, causing overpayment for healthier enrollees and underpayment for sicker ones. As a result, a new risk-adjustment system was phased in from 2004 to 2007, and a lock-in provision instituted to limit midyear disenrollment by enrollees experiencing health declines whose exodus could benefit plans financially. To determine whether these reforms were associated with intended reductions in risk selection, we compared differences in self-reported health care use and health between Medicare Advantage and traditional Medicare beneficiaries before versus after these reforms were implemented. We similarly compared differences between those who switched into or out of Medicare Advantage and nonswitchers. Most differences in 2001–03 were substantially narrowed by 2006–07, suggesting reduced selection. Similar risk-adjustment methods may help reduce incentives for plans competing in health insurance exchanges and accountable care organizations to select patients with favorable clinical risks.**

Managed care plans in the Medicare Advantage program receive prospective, or capitated, payments from Medicare that are determined from spending predictions for each enrollee. Medicare Advantage plans therefore have financial incentives to enroll and retain beneficiaries whose actual medical costs are lower than their predicted costs and avoid beneficiaries whose actual costs exceed predictions.

Before 2004, prediction models used by Medicare adjusted per enrollee payments for some demographic factors but only minimally for clinical diagnoses such as diabetes or ischemic heart disease. Consequently, incentives for plans to enroll healthy and avoid chronically ill beneficiaries were large.

With these incentives at work, new enrollees in Medicare managed care plans in the 1980s and 1990s were less costly prior to enrollment than demographically similar beneficiaries who remained in traditional fee-for-service Medicare.[1–8] Similarly, beneficiaries who disenrolled from managed care plans into traditional Medicare were often costlier after disenrollment than other traditional Medicare beneficiaries.[1,2,6–8]

Enrollment and retention of beneficiaries with favorable health risks (favorable risk selection) contributes to overpayments to Medicare Advan-

tage plans[9,10] and may weaken plan competition based on quality and costs of care. To address favorable selection, a new risk-adjustment system was mandated in the Balanced Budget Act of 1997 and phased in during 2004–07.

The model, known as the Centers for Medicare and Medicaid Services Hierarchical Condition Categories (CMS-HCC) model, adjusts payments to Medicare Advantage plans for clinical diagnoses determined from inpatient and outpatient encounters as well as for demographic factors.[11] Specifically, the model includes seventy HCC categories, with each defined by a single condition or combination of conditions and each condition defined by sets of diagnostic codes.

For each Medicare Advantage enrollee in a given year, the model uses diagnostic information from the prior year to calculate a summary risk score proportional to the spending predicted by the enrollee's conditions. This risk score is then applied to an administratively set benchmark payment rate to risk-adjust payment for the enrollee.

An enrollment lock-in was also instituted, prohibiting Medicare Advantage enrollees from disenrolling during the second half of 2006 and the last nine months of the year starting in 2007. Medicare Advantage enrollees had been previously free to disenroll on a monthly basis, allowing plans to benefit financially from midyear disenrollment by enrollees experiencing health declines.

The HCC model will be used to risk-adjust spending targets for accountable care organizations in the Medicare Shared Savings Program, and similar methods will be used to risk-adjust plan revenues in health insurance exchanges.[12,13] The potential benefits of exchanges and accountable care organizations could be undermined if plans and provider organizations avoid the chronically ill and costly patients for whom these reforms were intended to improve coverage and care.

The performance of the HCC risk-adjustment system is therefore an important determinant of success not only of the Medicare Advantage program but also of these key programs established by the Affordable Care Act. The effectiveness of risk adjustment in reducing favorable risk selection in Medicare Advantage, however, remains unclear.

## How Measures To Reduce Favorable Selection Might Work

Risk-adjusting Medicare Advantage payments for clinical conditions could reduce favorable selection in Medicare Advantage through a variety of mechanisms. In response to lower payments for patients with lower predicted costs (lower HCC risk scores), Medicare Advantage plans might devote fewer resources to marketing efforts to attract beneficiaries with favorable health risks. Higher payments for patients with higher predicted costs could lead plans to reconfigure provider networks and redesign benefits in ways that attract more chronically ill beneficiaries—for example, by increasing access to specialists, offering preferred provider organization options with greater choice of physicians, providing disease management services, and aligning cost sharing and drug formularies with the needs of patients with complex medical needs.

Recognizing these enhancements, chronically ill beneficiaries might become more willing to forgo unrestricted access to providers and unmanaged care in traditional Medicare in exchange for extra benefits offered by Medicare Advantage plans, such as lower premiums, less cost sharing, or additional covered services. The enrollment lock-in could additionally contribute to greater retention of Medicare Advantage enrollees in poor health, who might otherwise disenroll into traditional Medicare to have free choice of specialists and hospitals.

## Study Data And Methods

To determine whether the implementation of the HCC model and the enrollment lock-in were associated with reduced favorable selection in Medicare Advantage, we used nationally representative data from the Medicare Current Beneficiary Survey to conduct several "stock and flow" analyses of Medicare Advantage and traditional Medicare enrollees. We estimated changes from 2001–03 to 2006–07 in differences in health care use and health status between beneficiaries who enrolled in or disenrolled from Medicare Advantage (flow) and those who did not (stock). We similarly examined how differences in utilization and health between all Medicare Advantage and traditional Medicare enrollees changed during these years.

**STUDY POPULATION** We analyzed longitudinal survey and enrollment data for elderly community-dwelling Medicare beneficiaries from the 2001–07 Medicare Current Beneficiary Survey Cost and Use files, available for up to three years for each participant. We excluded certain groups of participants from our main analyses for reasons described in the online Appendix.[14]

In a sensitivity analysis, we also excluded beneficiaries who were dually eligible for Medicare and Medicaid, because they are exempt from the enrollment lock-in. Our study was approved by the Harvard Medical School Committee on

Human Studies and the CMS Privacy Board.

**ENROLLMENT SWITCHES** Using monthly Medicare enrollment information starting in 2000, for each year during 2001–07 we determined which participants switched from traditional Medicare to Medicare Advantage as of January or later in the year (new Medicare Advantage enrollees). Because enrollment information in December of the preceding year was required to determine whether Medicare Advantage enrollment in January constituted a switch, we restricted analyses focused on new Medicare Advantage enrollees to participants' second and third years in the survey. We similarly identified participants who switched from traditional Medicare to Medicare Advantage during the year or effective January of the subsequent year (Medicare Advantage disenrollees).

**SELF-REPORTED UTILIZATION AND HEALTH** In surveys, participants reported their use of medical care every four months, by type of service: hospitalizations, emergency department visits, outpatient department visits, medical provider events, and prescription drug fills. To improve the accuracy of these self-reports, survey participants were instructed to record service use on a calendar and retain statements, receipts, prescription drug containers, and other documentation related to their medical care.

We constructed a summary measure of total utilization equal to a weighted sum of annual utilization counts across service types. Service-specific weights were equal to the average additional traditional Medicare spending associated with an additional service event, as estimated by fitting a regression model predicting total traditional Medicare spending (assessed from claims) as a function of the set of self-reported utilization counts. All self-reported utilization counts significantly predicted traditional Medicare spending.

In addition to total utilization, we present analyses of annual hospitalization counts and prescription drug fills—components that reflect acute and chronic illness burden, respectively. We also analyzed annual self-reports of general health status and change in health, both as continuous variables and as indicators of fair/poor or somewhat/much worse health. In the Appendix we describe several methodological advantages of self-reported over administrative data for analyses of risk selection and why we would not expect reporting errors to bias our results.[14]

**STOCK AND FLOW COMPARISONS** We compared new Medicare Advantage enrollees with beneficiaries staying in traditional Medicare (traditional Medicare stayers) and with those already in Medicare Advantage (Medicare Advantage incumbents). Similarly, we compared Medicare Advantage disenrollees with traditional Medicare incumbents and with Medicare Advantage stayers. Finally, we compared all Medicare Advantage enrollees (including new enrollees) with all traditional Medicare enrollees (including Medicare Advantage disenrollees). Exhibit 1 summarizes these comparisons and comparison groups.

We compared differences in self-reported utilization and health between these groups over three time periods: 2001–03, 2004–05, and 2006–07. We divided the phase-in of the HCC system into two periods to assess gradual changes in risk selection, since HCC risk scores received steadily increasing weight in payment calculations, from 30 percent in 2004 to 50 percent in 2005, 75 percent in 2006, and 100 percent in 2007. To provide readily interpretable results, we present differences in utilization in relative terms (reported in exhibits as relative utilization, or RU).

We compared new Medicare Advantage enrollees with both traditional Medicare stayers and Medicare Advantage incumbents to bound estimates of risk selection. Comparisons with incumbent Medicare Advantage enrollees may have underestimated favorable risk selection, because incumbent enrollees may have remained less costly than traditional Medicare beneficiaries indefinitely, as a consequence of their initially favorable health risks.

Conversely, comparisons with traditional Medicare beneficiaries may have overestimated favorable risk selection because utilization in traditional Medicare was not influenced by care management strategies employed by Medicare Advantage plans to control utilization and improve quality of care.

**STATISTICAL ANALYSIS** To conduct stock and flow comparisons, we fitted regression models predicting utilization or health as a function of comparison groups, time periods, and interactions between the two. To control for geographic variation in utilization, we included survey primary sampling units in models (a set of Metropolitan Statistical Areas or clusters of nonmetropolitan counties consistently sampled over the study period). All analyses were adjusted for the complex survey design, as described in the online Appendix.[14]

**ASSESSING RISK SELECTION NOT EXPLAINED BY THE HCC MODEL** For each Medicare Advantage enrollee since 2006, the Medicare Current Beneficiary Survey has included the capitated payment to the enrollee's plan, adjusted for the enrollee's county of residence, demographic factors (age, sex, disability status, and Medicaid eligibility), and diagnostic information included in the HCC model. Enrollee-specific capitated

**EXHIBIT 1**

**Medicare Enrollment: Comparison-Group Definitions And Sample Sizes, By Type Of Comparison**

| Stock and flow comparison | Comparison-group definition for a given study year | *N* (person-years) |
|---|---|---|
| **FLOW INTO MA VERSUS STOCK** | | |
| New MA enrollees | Switched from TM to MA between December of previous year and January of study year or during study year | 799 |
| Versus MA incumbents | Already in MA as of December of previous year and remained in MA in study year | 5,875 |
| Versus TM stayers | Continuously enrolled in TM during study year | 32,746 |
| **FLOW OUT OF MA VERSUS STOCK** | | |
| Disenrollees from MA | Switched from MA to TM during study year or between December of study year and January of subsequent year | 664 |
| Versus MA stayers | Enrolled in MA in study year and remained in MA in January of subsequent year | 9,819 |
| Versus TM incumbents | Continuously enrolled in TM during study year | 51,970 |
| **ALL MA VERSUS ALL TM** | | |
| All MA enrollees (including new enrollees) | All beneficiaries continuously enrolled in MA or switched from TM to MA during study year | 10,046 |
| Versus all TM beneficiaries (including MA disenrollees) | All beneficiaries continuously enrolled in TM or switched from MA to TM during study year | 52,407 |

**SOURCE** Authors' analysis of Medicare enrollment data for participants in the Medicare Current Beneficiary Survey, selected years. **NOTES** As described in the methods, we restricted analyses of new Medicare Advantage (MA) enrollees to participants' second and third survey years, because enrollment information from December of the preceding year was required to determine if MA enrollment in January of a given study year constituted a switch. Therefore, fewer person-years of data were analyzed in comparisons focused on new MA enrollees. TM is traditional Medicare.

payments to Medicare Advantage plans are calculated by multiplying county-specific benchmark rates by enrollees' demographic factors and individual HCC risk scores, modified somewhat by plan bids relative to benchmark rates.[15]

Thus, to obtain individual risk scores for Medicare Advantage enrollees in 2006–07 that approximated payment adjustments for demographic and diagnostic information, we divided capitation payments by county benchmark rates available from CMS.[16]

For the years 2006–07, we adjusted comparisons between new and incumbent Medicare Advantage enrollees and between Medicare Advantage disenrollees and Medicare Advantage stayers for these individual risk scores. Although we could not calculate comparable risk scores for traditional Medicare enrollees, these adjusted comparisons nevertheless addressed two important questions.

First, we tested a previous study's conclusion that Medicare Advantage plans responded to the HCC risk-adjustment model by more intensively selecting favorable risks within HCC categories.[17] If this were the case, controlling for risk scores would lower estimates of relative utilization for new versus incumbent Medicare Advantage enrollees.

Second, the adjustment allowed us to quantify remaining differences in 2006–07 between new and incumbent enrollees and between disenrollees and stayers in Medicare Advantage that were not explained by the new risk-adjustment system.

**ASSESSING COMPETING EXPLANATIONS FOR CHANGES IN RISK SELECTION** As detailed in the Appendix,[14] several contemporaneous changes to the Medicare Advantage program from 2004 to 2007 also may have affected risk selection. Most notably, increases in benchmark payment rates during these years encouraged insurers to compete for enrollees by offering more generous benefits, lower premiums, less cost sharing, and broader provider networks. The Medicare Advantage program expanded as a result.

In particular, private fee-for-service plans grew rapidly after 2005, offering similar or better coverage at a lower out-of-pocket cost (including premiums) than the combination of traditional Medicare plus supplemental Medigap insurance, on average, and with little restriction of choice of providers.[18] These enhanced offerings may have attracted beneficiaries with greater medical needs or caused some skewing toward healthier beneficiaries if those with cognitive deficits were less able to recognize the advantages.[18]

To determine whether changes in risk selection were related to increases in benchmark rates, we compared results for study participants living in counties where the benchmark rate increase from 2004 to 2007 was higher versus lower than the median increase among all US

EXHIBIT 2

**Relative Utilization And Health Differences For New Medicare Advantage (MA) Enrollees Versus Traditional Medicare Stayers And Versus Incumbent MA Enrollees, 2001–07**

| Measure of utilization or health | 2001–03 | 2004–05 | 2006–07 |
|---|---|---|---|
| **TOTAL UTILIZATION** | | | |
| New MA enrollees versus TM stayers | | | |
| RU | 0.60*** | 0.77 | 0.93 |
| Change in RU | —[a] | 1.29 | 1.54** |
| New MA enrollees versus MA incumbents | | | |
| RU | 0.71* | 0.87 | 1.05 |
| Change in RU | —[a] | 1.24 | 1.49* |
| **HOSPITALIZATIONS** | | | |
| New MA enrollees versus TM stayers | | | |
| RU | 0.55** | 0.80 | 0.97 |
| Change in RU | —[a] | 1.45 | 1.77** |
| New MA enrollees versus MA incumbents | | | |
| RU | 0.63* | 0.86 | 1.10 |
| Change in RU | —[a] | 1.35 | 1.73* |
| **PRESCRIPTION DRUG FILLS** | | | |
| New MA enrollees versus TM stayers | | | |
| RU | 0.82** | 0.95 | 1.13*** |
| Change in RU | —[a] | 1.16 | 1.38*** |
| New MA enrollees versus MA incumbents | | | |
| RU | 0.82** | 0.97 | 1.03 |
| Change in RU | —[a] | 1.18 | 1.25** |
| **GENERAL HEALTH STATUS (1 EXCELLENT, 5 POOR)** | | | |
| New MA enrollees versus TM stayers | | | |
| Absolute difference | -0.19** | -0.14 | -0.01 |
| Change in difference | —[a] | 0.05 | 0.18* |
| New MA enrollees versus MA incumbents | | | |
| Absolute difference | -0.12 | -0.12 | 0.06 |
| Change in difference | —[a] | -0.01 | 0.18 |
| **HEALTH FAIR OR POOR** | | | |
| New MA enrollees versus TM stayers | | | |
| OR | 0.68 | 1.11 | 1.05 |
| Change in OR | —[a] | 1.62 | 1.54 |
| New MA enrollees versus MA incumbents | | | |
| OR | 0.86 | 1.17 | 1.22 |
| Change in OR | —[a] | 1.35 | 1.42 |
| **HEALTH WORSE OR MUCH WORSE** | | | |
| New MA enrollees versus TM stayers | | | |
| OR | 0.71 | 0.92 | 0.82* |
| Change in OR | —[a] | 1.29 | 1.16 |
| New MA enrollees versus MA incumbents | | | |
| OR | 0.84 | 1.14 | 0.97 |
| Change in OR | —[a] | 1.36 | 1.16 |

**SOURCE** Authors' analysis of survey and linked Medicare enrollment data from the Medicare Current Beneficiary Survey, selected years. **NOTES** Relative utilization (RU) equals utilization by new MA enrollees divided by utilization by comparison group. Change in relative utilization equals RU in 2004–05 or 2006–07 divided by RU in 2001–03. TM is traditional Medicare. CI is confidence interval. OR is odds ratio. [a]Not applicable. *$p < 0.10$ **$p < 0.05$ ***$p < 0.01$

counties.[16]

Because we could not observe Medicare Advantage plan choices made by participants, we could not perform a sensitivity analysis excluding private fee-for-service enrollees. Instead, we conducted a separate supplementary analysis using 20 percent Medicare claims files and information on Medicare Advantage plan type from the Enrollment Database to determine whether our results could be explained by growth of private fee-for-service plans.

Specifically, we compared HCC risk scores and total annual nondrug medical spending in 2005 and 2006 for traditional Medicare beneficiaries who switched into private fee-for-service Medicare Advantage plans in the subsequent year (2006 or 2007) versus those who switched into health maintenance organization or preferred provider organization plans. We adjusted these supplementary analyses for county fixed effects, and we applied the same inclusion criteria used in our main analyses of Medicare Current Beneficiary Survey data.

## Study Results

As described in the Appendix,[14] annual rates of new enrollment in Medicare Advantage progressively rose during the study period from 0.8 percent in 2001–03 to 6.3 percent in 2006–07, while rates of disenrollment from Medicare Advantage progressively fell from 9.8 percent to 3.1 percent in those years.

Exhibit 2 presents differences in self-reported utilization and health between new Medicare Advantage enrollees and traditional Medicare stayers, differences between new and incumbent Medicare Advantage enrollees, and changes in these differences over the study period. Compared with traditional Medicare stayers, new Medicare Advantage enrollees reported significantly lower total utilization and fewer hospitalizations and prescription drug fills in 2001–03 but not in 2006–07, as these differences were significantly and progressively narrowed or reversed.

New Medicare Advantage enrollees also reported significantly better general health than traditional Medicare stayers in 2001–03 but not in 2006–07. Differences between new and incumbent Medicare Advantage enrollees in these utilization and health measures in 2001–03 were similarly reduced, although some differences in 2001–03 and reductions by 2006–07 did not reach statistical significance.

Exhibit 3 presents differences in self-reported utilization and health between Medicare Advantage disenrollees and traditional Medicare incumbents, differences between disenrollees and Medicare Advantage stayers, and changes in these differences over the study period. Relative to both comparison groups, Medicare Advantage disenrollees reported higher total utilization and more hospitalizations and prescription drug fills in 2006–07 but not in 2001–03.

Disenrollees were also more likely to report that their health was fair or poor and somewhat

or much worse in 2006–07 but not in 2001–03. Most of these differences widened significantly over the study period. Results were similar after Medicaid recipients were excluded (data not shown).

Comparisons of all Medicare Advantage enrollees with all traditional Medicare enrollees quantified the net effects of increasing enrollment rates, decreasing disenrollment rates, and changes in the relative health risks of new Medicare Advantage enrollees and Medicare Advantage disenrollees. As displayed in Exhibit 4, Medicare Advantage enrollees reported significantly lower utilization and better health than traditional Medicare enrollees across all measures in 2001–03. Most of these differences were substantially reduced by 2006–07, consistent with net reductions in favorable selection.

Risk scores calculated from capitation payments for Medicare Advantage enrollees strongly predicted self-reported utilization and health. For example, mean total utilization for enrollees in the highest decile of risk scores was 330 percent greater than for those in the lowest decile. The percentage of Medicare Advantage enrollees reporting fair or poor health rose progressively from 6.6 percent in the lowest decile to 45.0 percent in the highest decile of risk scores (data not shown).

After adjustment for these risk scores, differences in utilization and health in 2006–07 between Medicare Advantage disenrollees and Medicare Advantage stayers were consistently but not completely reduced. Adjusted relative utilization in 2006–07 (data not shown) was 1.35 for total utilization ($p = 0.05$ for test of relative utilization = 1.0), 1.46 for hospitalizations ($p = 0.046$), and 1.16 for prescription drug fills ($p = 0.13$). The adjusted difference in general health scores was 0.17 ($p = 0.18$ for test of health score difference = 0).

Differences in utilization and health in 2006–07 between new and incumbent Medicare Advantage enrollees were not appreciably altered by adjustment for these risk scores (for example, adjusted relative utilization for total utilization: 1.03; $p = 0.81$).

Exhibit 5 provides stratified results for participants living in counties with 2004–07 payment increases above or below the median three-year increase of 23.2 percent. On average, monthly payments increased by $154 up to 128 percent of traditional Medicare spending, in high-increase counties over this period, and by $117 up to 110 percent of traditional Medicare spending in low-increase counties.

As expected, Medicare Advantage enrollment in the study sample grew more in counties with high payment rate increases (7.5 percentage points) than in counties with low increases (4.2 percentage points) over these years. Likewise, private fee-for-service enrollment increased more in high-increase counties (4.6 percentage points) than in low-increase counties (2.0 percentage points).

Key results from stock and flow comparisons, however, did not statistically differ by county payment rate increases. Unexpectedly, changes

**EXHIBIT 3**

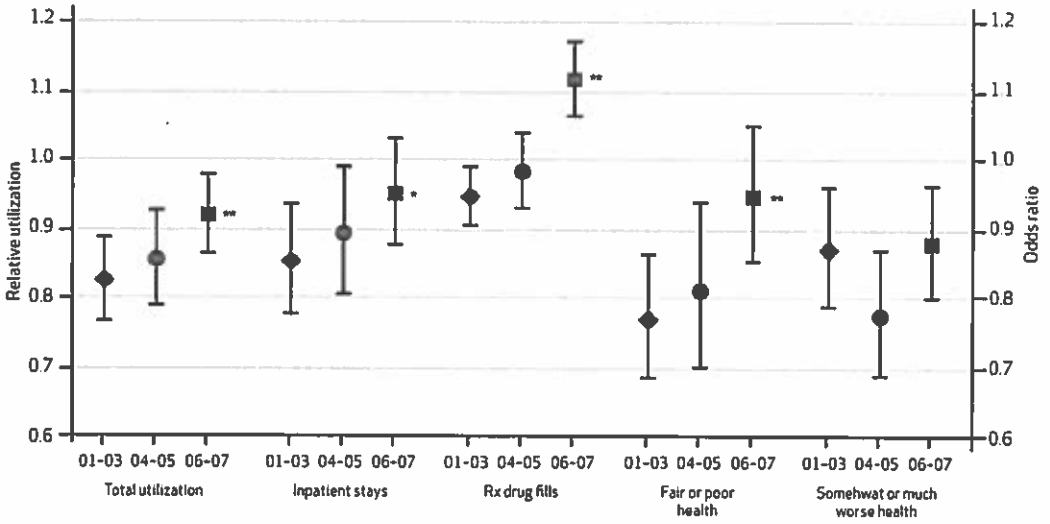
**Relative Utilization And Health Differences For Medicare Advantage (MA) Disenrollees Versus Incumbent Traditional Medicare Beneficiaries And Versus MA Stayers, 2001–07**

| Measure of utilization or health | 2001–03 | 2004–05 | 2006–07 |
|---|---|---|---|
| **TOTAL UTILIZATION** | | | |
| MA disenrollees versus TM incumbents | | | |
| RU | 0.94 | 1.07 | 1.33** |
| Change in RU | —[a] | 1.30 | 1.64*** |
| MA disenrollees versus MA stayers | | | |
| RU | 1.15 | 1.39** | 1.64*** |
| Change in RU | —[a] | 1.21 | 1.43** |
| **HOSPITALIZATIONS** | | | |
| MA disenrollees versus TM incumbents | | | |
| RU | 1.00 | 1.41** | 1.80*** |
| Change in RU | —[a] | 1.41* | 1.79*** |
| MA disenrollees versus MA stayers | | | |
| RU | 1.18 | 1.52** | 1.83*** |
| Change in RU | —[a] | 1.29 | 1.55** |
| **PRESCRIPTION DRUG FILLS** | | | |
| MA disenrollees versus TM incumbents | | | |
| RU | 0.99 | 1.07 | 1.42**** |
| Change in RU | —[a] | 1.08 | 1.43*** |
| MA disenrollees versus MA stayers | | | |
| RU | 1.06 | 1.09 | 1.26** |
| Change in RU | —[a] | 1.03 | 1.19 |
| **GENERAL HEALTH STATUS (1 EXCELLENT, 5 POOR)** | | | |
| MA disenrollees versus TM incumbents | | | |
| Absolute difference | -0.03 | 0.20* | 0.25* |
| Change in difference | —[a] | 0.23** | 0.28* |
| MA disenrollees versus MA stayers | | | |
| Absolute difference | 0.06 | 0.29** | 0.28** |
| Change in difference | —[a] | 0.23* | 0.22 |
| **HEALTH FAIR OR POOR** | | | |
| MA disenrollees versus TM incumbents | | | |
| OR | 0.87 | 1.43 | 1.63** |
| Change in OR | —[a] | 1.64** | 1.87** |
| MA disenrollees versus MA stayers | | | |
| OR | 1.09 | 1.75** | 1.80** |
| Change in OR | —[a] | 1.60* | 1.65* |
| **HEALTH WORSE OR MUCH WORSE** | | | |
| MA disenrollees versus TM incumbents | | | |
| OR | 0.95 | 1.49** | 1.57** |
| Change in OR | —[a] | 1.57** | 1.66** |
| MA disenrollees versus MA stayers | | | |
| OR | 1.14 | 1.96*** | 1.76** |
| Change in OR | —[a] | 1.73** | 1.55* |

**SOURCE** Authors' analysis of survey and linked Medicare enrollment data from the Medicare Current Beneficiary Survey. **NOTES** Relative utilization (RU) equals utilization by MA disenrollees divided by utilization by comparison group. Change in relative utilization equals RU in 2004–05 or 2006–07 divided by RU in 2001–03. TM is traditional Medicare. CI is confidence interval. OR is odds ratio. [a]Not applicable. *$p < 0.10$ **$p < 0.05$ ***$p < 0.01$ ****$p < 0.001$

**EXHIBIT 4**

**Differences In Utilization And Health Between All Medicare Advantage And Traditional Medicare Enrollees In 2001-03, 2004-05, And 2006-07**




**SOURCE** Authors' analysis of survey and linked Medicare enrollment data from the Medicare Current Beneficiary Survey. **NOTES** For each measure of utilization and health, differences between all participants enrolled in Medicare Advantage (MA) (continuously enrolled or switched into MA within calendar years) and all participants enrolled in traditional Medicare (continuously enrolled or switched into traditional Medicare within calendar years) are plotted by period (2001-03, 2004-05, and 2006-07) with 95 percent confidence intervals. Estimates of relative utilization (RU) and odds ratios (OR) are presented for comparisons of utilization and health indicators, respectively, with traditional Medicare beneficiaries serving as the reference group. RU findings are denoted by blue symbols and relate to the left-hand y axis. OR findings are denoted by red symbols and relate to the right-hand y axis. Significance denotes changes in group differences from 2001-03 to 2006-07. $^{*}p < 0.10$ $^{**}p < 0.05$.

suggestive of reduced favorable selection into Medicare Advantage were statistically significant for low-increase counties but not high-increase counties.

In supplementary analyses of Medicare claims, differences in HCC scores and spending in 2005–06 for traditional Medicare beneficiaries subsequently switching into private fee-for-service versus health maintenance organization or preferred provider organization plans were small and opposite in direction (mean risk score difference: −0.013, or 1.3 percent lower, for pri-

**EXHIBIT 5**

**Changes In Relative Utilization And Health Differences From 2001-03 To 2006-07, By County Payment Rate Increases**

| | Total utilization: change in RU from 2001-03 to 2006-07 | | Fair or poor health: change in OR from 2001-03 to 2006-07 | |
|---|---|---|---|---|
| Stock and flow comparison | High county payment rate increase from 2004 to 2007 | Low county payment rate increase from 2004 to 2007 | High county payment rate increase from 2004 to 2007 | Low county payment rate increase from 2004 to 2007 |
| All MA versus all TM | 1.04 | 1.18*** | 1.11 | 1.30** |
| New MA enrollees | | | | |
| Versus TM stayers | 1.07 | 2.01** | 0.96 | 2.24** |
| Versus incumbents | 0.94 | 1.95** | 0.60 | 1.91* |
| MA disenrollees | | | | |
| Versus TM incumbents | 1.59* | 1.72** | 2.71** | 1.81* |
| Versus MA stayers | 1.45 | 1.45* | 1.99* | 1.36 |

**SOURCE** Authors' analysis of survey and linked Medicare enrollment data from the Medicare Current Beneficiary Survey and county benchmark payment rates from the Medicare ratebooks. **NOTES** Differences between estimates for high-versus low-increase counties reached statistical significance for none of the comparisons. RU is relative utilization. OR is odds ratio. MA is Medicare Advantage. TM is traditional Medicare. $^{*}p < 0.10$ $^{**}p < 0.05$ $^{***}p < 0.01$

vate fee-for-service enrollees; mean annual spending difference: +$52, or 0.9 percent higher, for private fee-for-service enrollees).

Thus, health risks of new private fee-for-service enrollees were similar to health risks of other new Medicare Advantage enrollees during these years. This similarity implies that risk selection in private fee-for-service was similar to risk selection in other plans through 2007.

## Discussion

In this nationally representative study of elderly Medicare beneficiaries, differences in health care use and health status between new Medicare Advantage enrollees and other beneficiaries, and between all Medicare Advantage and traditional Medicare enrollees, were substantially narrowed from 2001–03 to 2006–07. Thus, improved risk adjustment of capitated payments and an enrollment lock-in were associated with reduced selection of beneficiaries with favorable health risks into Medicare Advantage.

**COMPARISON WITH OTHER STUDIES** One recent study, comparing Medicare spending for traditional Medicare beneficiaries who enrolled in Medicare Advantage in the following year with that of those who did not, found, like our study, that differences in HCC risk scores significantly narrowed between comparison groups after 2003. Surprisingly, however, differences in Medicare spending significantly widened when risk scores were held constant.[17]

This latter finding implies that Medicare Advantage plans responded to new risk-adjusted payments by selecting favorable clinical risks within subgroups of beneficiaries with similar HCC risk scores to an extent equal to or greater than was achievable before 2004 across groups with different risk scores.

Our findings also suggest that favorable risk selection present before 2004[1–8,19–21] was subsequently reduced. In contrast to this other study, however, our risk-adjusted comparisons of new versus incumbent Medicare Advantage enrollees did not reveal favorable selection in 2006–07 within subgroups with similar risk scores.

**FINDINGS FOR DISENROLLEES** We also found that the implementation of the HCC risk-adjustment model and enrollment lock-in were associated with lower rates of disenrollment from Medicare Advantage. However, in more recent years those disenrolling were much more likely than other beneficiaries to report health declines. The disenrollment of increasingly sick and costly enrollees was not explained by the exemption of Medicaid-eligible beneficiaries from the enrollment lock-in.

A potential explanation for this finding is that some Medicare Advantage enrollees experiencing sudden health declines continued to switch into traditional Medicare (outside the lock-in period in the concurrent or subsequent year) to have unrestricted access to medical services and providers to address their new health needs. As disenrollment rates fell, this group may have constituted an increasing fraction of disenrollees. Withdrawal of Medicare Advantage plans from markets in 2001–03—a period of program contraction—may have also contributed to this finding by causing involuntary disenrollment of healthier enrollees in the baseline period relative to later periods. We were not able to discern reasons for disenrollment.

Differences in utilization and health in 2006–07 between Medicare Advantage disenrollees and those who remained in Medicare Advantage were only partially explained by the HCC model. This suggests that HCC-adjusted payments for these disenrollees may have been lower than their costs had they remained enrolled. Thus, disenrollment by particularly costly beneficiaries may benefit Medicare Advantage plans financially.

Our findings for disenrollees suggest that more clinically detailed risk adjustment could strengthen incentives for plans to retain particularly sick enrollees. However, features of managed care in Medicare Advantage (for example, restricted provider networks and utilization management) may continue to prompt their disenrollment.

Nevertheless, changes in utilization and health differences between all Medicare Advantage and traditional Medicare enrollees indicated net reductions in favorable selection by 2006–07, despite the disenrollment of increasingly costly enrollees and their designation as traditional Medicare beneficiaries in these comparisons. Because of unmeasured differences in coverage and care management between Medicare Advantage and traditional Medicare and a lack of comparable risk scores for Medicare Advantage and traditional Medicare enrollees, we could not precisely quantify the net amount of remaining risk selection that was unexplained by the HCC model.

**LIMITATIONS** Our study had several other limitations. Because the implementation of the HCC risk-adjustment system and enrollment lock-in overlapped in 2006–07, we could not distinguish the effects of these two reforms on risk selection. Although the enrollment lock-in may have affected risk selection by limiting disenrollment, it probably did not attract less healthy beneficiaries into Medicare Advantage. Rather, the lock-in might have dissuaded chronically ill benefici-

aries from enrolling in Medicare Advantage if they valued the option of switching to traditional Medicare if their health should decline.

Moreover, we could not distinguish the effects of improved risk adjustment and the lock-in from potential effects of other contemporaneous changes in the Medicare Advantage program. Nonetheless, our supplementary analyses of Medicare claims described above and stratified analyses summarized in Exhibit 5 provide little empirical evidence that reductions in favorable selection into Medicare Advantage were explained by increases in benchmark payment rates, expansion of the Medicare Advantage program, or growth of private fee-for-service plans.

We could not, however, entirely reject these trends as contributing factors to our findings. In particular, although reductions in favorable selection were not larger (and may have been smaller) in counties with higher payment rate increases, we could not definitively attribute results to the effects of risk adjustment because payment rates were increased in all counties concurrently with the implementation of the HCC model.

## Conclusion

Overall, our findings are encouraging for the success of key provisions in the Affordable Care Act. They suggest that currently available risk-adjustment methods may help mitigate incentives for accountable care organizations in the Shared Savings Program and for plans competing in health insurance exchanges to select patients with favorable clinical risks.

Risk selection could be less problematic for exchanges and the Shared Savings Program than it has been for the Medicare Advantage program, because exchange plans and accountable care organizations will be less variable with respect to provider choice. In contrast to differences between Medicare Advantage and traditional Medicare, all exchange plans will have restricted provider networks. Traditional Medicare beneficiaries assigned to accountable care organizations will continue to have unrestricted access to providers, regardless of their assignment. Therefore, if favorable risk selection into Medicare Advantage has been driven in part by differences in provider choice between Medicare Advantage and traditional Medicare, it may be less pronounced in these other settings. Consequently, risk-adjustment methods similar to those used in Medicare Advantage may more fully address risk selection in exchanges and the Shared Savings Program.

On the other hand, inadequate risk adjustment would probably cause greater instability in exchange markets than in Medicare Advantage because there will be no option analogous to traditional Medicare that can withstand adverse risk selection without exiting the market. Under an individual mandate, the enrollment of healthy people by some exchange plans would mean the enrollment of less healthy people by others.

Inadequate risk adjustment could lead to competition among exchange plans to attract and retain healthy enrollees, and to the withdrawal of undercompensated plans. Although our findings are encouraging, it remains to be seen if a risk-adjustment system similar to the HCC model will be sufficient to prevent such wasteful competition in exchanges.

In summary, adjustment of capitated payments for clinical diagnoses and an enrollment lock-in have been associated with reduced selection of less costly and healthier beneficiaries into private plans in Medicare. Similar risk adjustment of prospective or global payments may help address risk selection arising from other payment and insurance market reforms. ■

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In this month's *Health Affairs*, Michael McWilliams and coauthors report on their examination of whether reforms to the Medicare Advantage program succeeded in reducing the plans' tendency to engage in favorable risk selection—that is, to enroll relatively healthy enrollees. They found that the reforms—a new risk-adjustment system that took into account clinical characteristics of enrollees, as well as a lock-in provision that prevented sicker enrollees from exiting plans at midyear—were in fact linked to the intended reductions in favorable selection within several years. The authors suggest that similar approaches may help mitigate incentives for accountable care organizations and health plans in forthcoming health insurance exchanges to select patients with favorable health risks.

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