

Medicare HMOs: Who Joins and Who Leaves?

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Abstract

Medicare risk health maintenance organizations (HMOs) are an increasingly common alternative to fee-for-service Medicare. To date, there has been no examination of whether the HMO program is preferentially used by blacks or by persons living in lower-income areas or whether race and income are associated with reversing Medicare HMO selection. This question is important because evidence suggests that these beneficiaries receive poorer care under the fee-for-service-system than do whites and persons from wealthier areas. Medicare enrollment data from South Florida were examined for 1990 to 1993. Four overlapping groups of enrollees were examined: all age-eligible (age 65 and over) beneficiaries in 1990; all age-eligible beneficiaries in 1993; all age-eligible beneficiaries residing in South Florida during the period 1990 to 1993; and all beneficiaries who became age-eligible for Medicare benefits between 1990 and 1993. The associations between race or income and choice of Medicare option were examined by logistic regression. The association between the demographic characteristics and time staying with a particular option was examined with Kaplan-Meier methods and Cox Proportional Hazards modeling. Enrollment in Medicare risk HMOs steadily increased over the 4-year study period. In the overall Medicare population, the following statistically significant patterns of enrollment in Medicare HMOs were seen: enrollment of blacks was two times higher than that of non-blacks; enroll-

ment decreased with age; and enrollment decreased as income level increased. For the newly eligible population, initial selection of Medicare option was strongly linked to income; race effects were weak but statistically significant. The data for disenrollment from an HMO revealed a similar demographic pattern. At 6 months, higher percentages of blacks, older beneficiaries (older than 85), and individuals from the lowest income area (less than \$15,000 per year) had disenrolled. A small percentage of beneficiaries moved between HMOs and FFS plans multiple times. These data on Medicare HMO populations in South Florida, an area with a high concentration of elderly individuals and with one of the highest HMO enrollment rates in the country, indicate that enrollment into and disenrollment from Medicare risk HMOs are associated with certain demographic characteristics, specifically, black race or residence in a low-income area.

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National enrollment in Medicare managed care programs grew more than 108% between 1993 and 1997. As of January 1, 1997, 13% of Medicare beneficiaries (more than 4.9 million individuals) were enrolled in the 336 Medicare health maintenance organizations (HMOs).¹ HMO enrollment rates are quite variable across geographic regions, with heaviest concentration in California, South Florida, and areas around Phoenix, Arizona, and Seattle, Washington.²

Studies of the demographic characteristics of individuals who join Medicare HMOs have been somewhat incomplete and have yielded equivocal results. Several studies have documented that Medicare HMO enrollees tend to be younger than those remaining in the fee for service (FFS) system.^{3,4} However, the relationship between race or income level and the

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likelihood of enrolling in a Medicare HMO has not been established. Also, there is little information on whether race or income are associated with the timing of decisions to leave Medicare risk-HMOs.

Studies of care provided under the standard FFS Medicare option have shown inequalities associated with race and income of beneficiaries. Specifically, non-whites and persons from poorer areas receive a poorer quality of healthcare compared with whites and persons from wealthier areas. These differences have been documented both for overall healthcare^{5,6} and for specific treatments including thrombolytic therapy after acute myocardial infarction,⁷ breast-conserving surgery,⁸ and eye care for elderly diabetics.⁹

The enrollment and disenrollment patterns of Medicare beneficiaries are governed by factors such as satisfaction with the coverage offered,¹⁰ ability to access needed care,¹¹ ability to see the provider of choice,^{10,12,13} and costs of care.¹⁰

In this study we have used population-based Medicare data to examine the association between demographic characteristics and choice of Medicare options (HMO versus FFS), Medicare HMO enrollment (ie, selection), and disenrollment (ie, deselection). We have also sought to determine whether HMOs are differentially used by different subsets of the Medicare population. Our results suggest that demographic differences influence use of a benefit program that is assumed to be neutral with respect to income and race.

... METHODS ...

Data

The data sources for the analyses were the complete Medicare enrollment files for South Florida (Dade, Broward, Palm Beach, and Monroe counties) for the years 1990 to 1993. Four overlapping groups of beneficiaries were examined:

- All age-eligible (age 65 and over) beneficiaries residing in the four counties of South Florida in 1990.
- All age-eligible beneficiaries residing in South Florida in 1993. These two populations provided information about HMO use in the entire age-eligible Medicare population. The patterns reported for the years 1990 and 1993 were similar to those for 1991 and 1992. Thus, for ease of presentation, data for only 1990 and 1993 are presented (data for 1991 and 1992 are available on request).
- Beneficiaries who were age-eligible for Medicare benefits and resided in South Florida for the

entire 4-year study period (continuously eligible). This population (continuously eligible) allowed us to track patterns of HMO use across a fixed population group over a 4-year period. Because persons who became eligible, moved from the area, or died during the 4-year period were excluded from this population, this group was younger than the overall population for any given year. However, this group allowed examination of individual behavior with respect to HMO use over an extended period of time (4 years).

- Beneficiaries who turned 65 and became age-eligible for Medicare benefits during the 4-year period and who were not eligible for Medicare benefits prior to turning 65. This newly eligible population allowed for examination of individual behavior when initially joining the Medicare system. Since it is likely that decisions with respect to Medicare HMOs were influenced by past experiences with Medicare HMOs (ie, prior to the study period), this population allowed for examination of Medicare HMO use in patients with no personal past experience with the Medicare program.

Monthly status indicators contained in the Medicare enrollment files were used to identify beneficiaries' Medicare options (HMO or FFS—ie, "HMO status") and movement between Medicare options. These status indicators did not allow for tracking of movement from one Medicare HMO plan to another, but rather, movement from HMO-provided care to FFS-provided care.

Demographic Information

Information on age, sex, and race are also taken from enrollment files. Income was an indirect measure based on the average disposable household income by zip code for households with persons aged 65 and older as reported for the 1990 US Census.^{5,14} Average disposable income was assigned by zip code using the Census Bureau definition of average household income after taxes for households that included an individual over age 65. Zip codes for which average disposable income estimates were not available were assigned the county-level income estimate. Income categories were (1) less than \$15,000 per year, (2) \$15,000 to \$24,999 per year, (3) \$25,000 to \$34,999 per year, and (4) \$35,000 per year or higher.

Age groupings were in 5-year increments: 65 to 69, 70 to 74, 75 to 79, 80 to 84, and 85 and over. The race categories were black and non-black; persons whose

race was identified as white, other, or unknown were placed in the non-black group. This grouping combines the three racial classifications with similar HMO enrollment and disenrollment patterns. Although South Florida has a substantial Hispanic population, this group is not clearly identified by the Medicare racial classification codes. Thus, this group could not be accurately isolated for examination in these analyses.

Statistical Tests

All analyses were conducted with the SAS statistical package (SAS Institute Inc., Cary, NC). Logistic regression was used to examine the simultaneous impact of multiple predictors on the likelihood of HMO enrollment. Odds ratios reflect the likelihood of joining a Medicare HMO compared with the reference group (indicated by an odds ratio of 1.0). Kaplan-Meier survival curves¹⁵ were generated to examine time to disenrollment from a Medicare option while taking into account individuals who did not disenroll during the study period (ie, censoring). Cox Proportional Hazards Modeling was used for simultaneous examination of multiple factors predicting time to disenrollment from the Medicare HMO option. In all cases, confirmatory analyses were conducted to verify that model assumptions were not violated.

years. The populations were similar in their gender and income distributions. The continuously enrolled population was slightly younger than either of the 1990 or 1993 overall populations, with a mean age of 73.2 years compared with 74.3 years in 1990 and 74.6 years in 1993. Age was not examined for the newly eligible population because all persons in that analysis were the same age—newly turned 65.

Patterns of HMO Enrollment

Enrollment in Medicare HMOs in South Florida steadily increased from 22% in 1990 to 28% in 1993. Similarly, there was an increase in the percentage of newly eligible beneficiaries who chose HMOs for their initial Medicare option, from 11.4% in 1990 to 15.9% in 1993.

Overall Medicare Population. In the overall Medicare population, demographic patterns of HMO enrollment were similar from 1990 through 1993. In all years, blacks enrolled in HMOs at about two times the rate of non-blacks (42% blacks versus 20% non-blacks in 1990). Women were as likely to enroll in HMOs as were men (24% versus 20%). Enrollment in HMOs decreased steadily with age. The following rates of HMO enrollment were seen in 1990 according to the

... RESULTS ...

In 1990, there were more than 750,000 age-eligible Medicare beneficiaries residing in South Florida; this number increased slightly to more than 800,000 beneficiaries by 1993. More than 500,000 of the beneficiaries were age-eligible for Medicare benefits during the entire 4-year period (continuously eligible population). Additionally, 146,917 beneficiaries became age-eligible for Medicare benefits during the study period (newly eligible population). Table 1 provides a comparison of the demographic characteristics of the study populations for these 2

Table 1. Characteristics of Study Population

	Overall Population (1990)	Overall Population (1993)	Continuously Eligible Population	Newly Eligible Population
No. of enrollees	756,553	816,478	505,748	146,917
Men (%)	42.1	42.5	39.4	44.3
Age (%)*				
65-69 yr	27.5	26.6	31.3	
70-74 yr	25.2	25.1	27.5	
75-79 yr	21.9	20.9	22.0	
80-84 yr	14.8	15.4	12.7	
85+ yr	10.6	12.1	6.5	
Race (%)				
White	89.4	86.7	90.5	82.0
Black	6.0	6.7	5.0	7.2
Other	2.4	4.0	2.3	6.2
Unknown	2.2	2.7	2.2	4.6
Income (%)				
<15K	4.3	4.3	10.1	8.6
15-24K	33.4	32.6	29.3	27.9
25-34K	42.5	43.3	43.6	46.6
35K+	19.8	19.9	17.1	16.9

*Age is not reported for the newly eligible population because all subjects are 65 years old.

Table 2. Predictors of Enrollment in Medicare HMOs

	Overall Population (1990)	Overall Population (1993)	Newly Eligible Population
Age (%)*			
65-69 yr	1.65	1.91	(see note)
70-74 yr	1.75	1.85	
75-79 yr	1.49	1.65	
80-84 yr	1.27	1.39	
85+ yr	1.0	1.0	
Gender			
Men	1.29	1.25	1.1 [†]
Women	1.0	1.0	1.0
Yearly Income (%)			
<15K	1.83	1.87	0.91
15-24K	2.24	2.37	1.53
25-34K	1.54	1.53	1.23
35K+	1.0	1.0	1.0
Race (%)			
Black	2.91	2.59	1.28
Non-black	1.0	1.0	1.0

Results are expressed as odds ratio, ie, odds of enrolling in an HMO compared to a reference group (indicated by an odds ratio of 1.0). All values are statistically significant ($P < 0.001$) except as noted.

*Age is not included in newly-eligible models because all subjects are 65 years old
[†]Not significant

age groupings: 65 to 69 years, 24%; 70 to 74 years, 25%; 75 to 79 years, 22%; 80 to 84 years, 19%; and 85 years and older, 15%.

The rate of HMO enrollment was inversely proportional to income. The rate was 28% when the yearly income was less than \$15,000; 27% for income between \$15,000 and \$24,999; 20% for income between \$25,000 and \$34,999; and 14% for income over \$35,000.

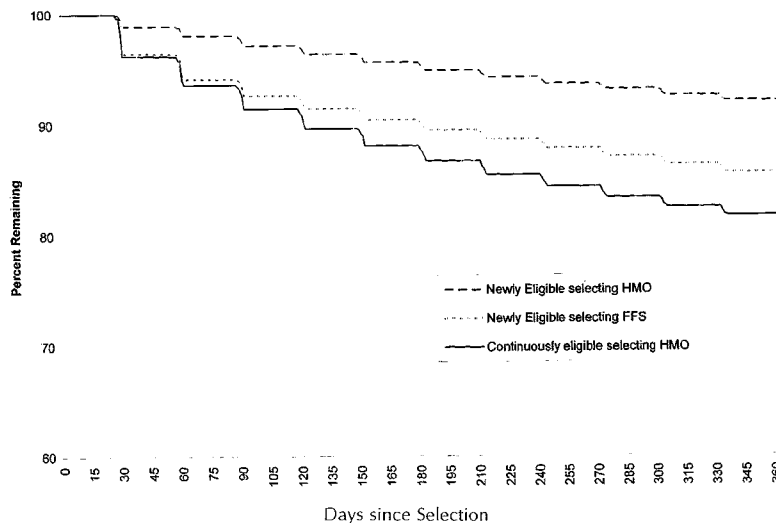
Newly Eligible Medicare Population. Among the newly eligible Medicare beneficiaries, patterns of HMO enrollment were slightly different. The most striking pattern seen in initial selection of Medicare option was associated with yearly income. Enrollment in Medicare HMOs was highest for those individuals whose incomes were between \$15,000 and \$24,999 (16%), followed by the group with income between \$25,000 and \$34,999 (13%). HMO selection was approximately equal for those whose income was less than \$15,000 and more than \$35,000 (10% and 11%, respectively).

Unlike the situation in the overall populations, minimal racial differences in HMO

selection were present in the newly eligible population; 13.3% of non-blacks and 16.6% of blacks initially selected a Medicare HMO. Gender differences in initial Medicare option were also small with 14.1% of men and 12.9% of women choosing to join a Medicare HMO. Table 2 contains results of multiple logistic regression analyses that simultaneously control for age, gender, race, and income.

In the overall populations for 1990 and 1993, age, gender, race, and income were all sig-

Figure 1. Time Remaining with Medicare Option after Selection: Newly Eligible and Continuously Eligible Populations, 1990-1993



nificantly associated with choice of Medicare option. For the newly eligible population, effects were substantially weaker. There were no significant gender differences, whereas race effects were weak but statistically significant ($P < 0.001$). Income effects were strongest and similarly significant ($P < 0.0001$). Age was not examined in the newly eligible population because, by definition, all subjects were the same age (ie, the analysis examined decisions made when beneficiaries reached 65).

Patterns of Disenrollment from Medicare HMOs

Continuously Eligible Population. In the continuously eligible population, 75,683 of the 505,748 beneficiaries (15%) began the 4-year study period enrolled in Medicare FFS and then switched from FFS to an HMO at some point after January 1990 and before January 1, 1994 (only the first incidence of switching was examined for those individuals who switched from the FFS system to an HMO more than once). For this group, disenrollment from Medicare HMOs began almost immediately after this switch and continued at a steady rate during the entire follow-up period (Figure 1). The numbers for disenrollment from the HMO system were 12% by 6 months, 19% at 1 year, and 28.5% by 3 years. Figure 1 shows Kaplan-Meier curves reflecting the percentage remaining in Medicare HMOs after enrollment. The curve illustrates the continued switching that began immediately upon enrollment, with the y-axis reflecting the percentage of the population remaining in the HMO option at each time point (see curve for continuously eligible group in Figure 1).

Table 3 shows that disenrollment was not equal across demographic groups. After 6 months, more blacks than non-blacks had disenrolled from an HMO. Similarly, after 6 months, disenrollment among beneficiaries aged 85 and older was almost double that in the youngest age group (65 to 69 years). Disenrollment rates in the other age groups were between those for the oldest and youngest groups. Gender differences were minimal, with 10.4% of men and 12% of women disenrolling within 6 months. Income effects were strong, but dif-

ferences were limited to the poorest group, in which 16% of enrollees disenrolled within 6 months compared with disenrollments of 11.1%, 10.7%, and 10.5% in the three higher income groups.

Cox proportional hazards modeling used an extended time period (up to 4 years) to examine the likelihood of disenrolling while simultaneously adjusting for all other demographic factors. Age, race, and income were all significantly associated with disenrolling from an HMO ($P < 0.001$), which was consistent with patterns observed at 6 months postenrollment.

Newly Eligible Population. For the newly eligible population, analyses were expanded to examine predictors of switching from HMOs as well as predictors of switching from FFS Medicare. This expansion allowed us to examine whether switching occurred for both FFS and HMO enrollees or was different depending on initial selection. Members of both groups began changing Medicare options immediately after initial selection. Within 6 months, 10% of the beneficiaries initially selecting

Table 3. Percent Disenrolling from Medicare Option in First 6 Months after Selection

	Continuously Eligible Population Leaving HMO	Newly Eligible Population Leaving HMO	Newly Eligible Population Leaving FFS
Total number selecting option	75,683	19,946	126,968
Switch of selection within 6 months (%)	12	4.3	10
Gender (%)			
Men	10.4	4.2	10.7
Women	12	4.25	9.3
Age (%)*			
65-69 yr	9.8		
70-74 yr	11.7		
75-79 yr	13.5		
80-84 yr	16.2		
85+ yr	16.5		
Race (%)			
Black	18.2	6.34	18.3
Non-black	11.2	4.05	9.3
Yearly Income (%)			
<15K	16	6.4	11.2
15-24K	11.1	3.9	11.7
25-34K	10.7	4.2	10.2
35K+	10.5	4.25	5.82

*Age is not reported for the newly-eligible population because all subjects are 65 years old. HMO = health maintenance organization; FFS = fee for service.

FFS Medicare and 4.3% of the beneficiaries initially selecting HMOs changed options. Figure 1 shows the percentage of newly eligible enrollees who remained with their initial Medicare option over a 1-year period. For both groups, switching began immediately after enrollment and continued at a steady rate.

For both Medicare HMOs and Medicare FFS, blacks were more likely to change Medicare options than were non-blacks, and persons with lower incomes were more likely to change than persons with higher incomes. However, for the HMO enrollees, the only observed effects were between the lowest income group compared with the other income groups, whereas with FFS, the lower three income groups were more likely to change options than the highest income group.

Medicare regulations allow beneficiaries to move between FFS and HMO options on a monthly basis without limit. The continuously eligible population provided information on how beneficiaries move between options during an extended (4 year) period of time. A majority of beneficiaries (85.2% of those starting in FFS and 76.3% of those starting in a Medicare HMO) stayed with a single option during the study period. Among those starting the study period in a Medicare HMO, 15.7% made two or more switches between the FFS and HMO options, with 3.5% making four or more switches. There was less switching among beneficiaries starting the study period in the FFS program, with 3.4% switching two or more times and only 0.4% switching four or more times. Thus, while switching was not limited to persons starting the study period in a particular option, multiple switches (two or more) were more frequent among beneficiaries starting in a Medicare HMO than in Medicare FFS plan ($P < 0.0001$).

... DISCUSSION ...

Enrollment in Medicare HMOs increased continuously in South Florida between 1990 and 1993. This study shows that although enrollment steadily increased across racial, income, age, and gender groups, HMO enrollment was by no means equal across these groups. Younger individuals, blacks, and persons in lower income groups were more likely to enroll in HMOs than persons who were older, non-black, or in higher income groups. Among newly eligible individuals, enrollment patterns were slightly different, with highest enrollment in the middle income groups compared with the lowest and highest income groups.

The demographic characteristics associated with choosing an HMO were different from those for staying

with the HMO. Choices among men and women or among blacks and non-blacks were not different. However, we did see signs that groups were not equally likely to stay with their selections: women disenrolled at a slightly higher rate than men, and blacks disenrolled at a higher rate than non-blacks. It is possible that different factors are driving the two behaviors. Economic incentives such as reduced or eliminated copayments and deductibles and coverage of medications and consumable devices (eg, walkers and eye-glasses) that encourage beneficiaries to enroll in HMOs would be particularly appealing to those with limited incomes or to those who do not anticipate having to rely extensively on their medical benefits.

It has also been suggested that groups that disenroll from HMOs at higher rates do so because they do not adequately understand the limitations and care philosophy of HMOs and therefore are more likely to leave the HMO when their expectations are not met. Thus, the earlier a person's needs are unmet, the earlier that person will disenroll. This may explain why younger beneficiaries enroll at higher rates and disenroll at lower rates than do their older counterparts, possibly reflecting differences in healthcare needs that arise with increasing age. This interpretation is consistent with our recent study that demonstrated differences in healthcare utilization before HMO enrollment and after HMO disenrollment relative to individuals who remain in the FFS program.¹⁶

Disenrollment is continuous and begins immediately after enrollment. However, disenrollment also follows slightly different patterns compared to enrollment. Older persons, blacks, and persons in the lowest income group are more likely to disenroll from HMOs. Among newly eligible beneficiaries, we see some of these patterns reversed. For example, whereas blacks are more likely to change their option than non-blacks, they are more likely to change from FFS plans to HMOs than the reverse.

Finally, there is a small percentage of beneficiaries who appear to move between FFS and HMO options multiple times. It is possible that this movement reflects efforts to maximize the different benefits and incentives associated with each option depending on immediate healthcare needs or financial pressures. Alternatively, this movement could reflect underlying dissatisfaction with both options and attempts to identify an option that meets beneficiaries' needs.

The switching had no monthly pattern but rather, was constant across the calendar year. This suggests that although some elderly persons may migrate to Florida on a seasonal basis, they are not driving HMO enrollment and disenrollment patterns. It is possible,

however, that the lower rates of HMO enrollment among persons from wealthier areas may be due, in part, to seasonal migration.

This paper does not address patterns of switching among HMOs but focuses on switching between HMO and FFS options. As a result, "disenrollment," as we define it, refers not to changing plans but rather to making a fundamental switch in the management of Medicare benefits. An examination of switching among plans as well as of whether switching to FFS is more common for enrollees in particular HMOs would provide important insight into issues of how beneficiaries manage their Medicare options.

Further study is needed to address specific questions of why beneficiaries change options and whether beneficiaries who stay with a particular Medicare option are satisfied with that option. Understanding the underlying causes of these enrollment and disenrollment patterns will take careful study and will probably require collecting information directly from the beneficiaries themselves. It is likely that a complex mix of economic incentives associated with each option, beneficiary's health and healthcare needs,^{16 17} and beneficiary's experiences, values, and expectations combine to explain these patterns. For example, if information about prior experience with non-Medicare HMOs were available, it might help account for variability in enrollment patterns as well as timing of disenrollment. If certain demographic groups are more likely to have experience of this sort, such data would provide insight into the observed demographic patterns.

Additional analyses linking enrollment and disenrollment patterns to specific HMO behavior such as marketing and additional services offered would further understanding of these patterns. Although beneficiaries are ultimately the ones making changes to the management of their Medicare coverage, their actions are probably affected by HMO-level practices.¹⁷

This paper demonstrates that enrollment in Medicare HMOs varies considerably among subsets of the elderly populations. As a result, we believe that evaluation of Medicare HMOs must account for both the disenrollment per se and the demographic variabilities in enrollment and disenrollment.

This study is limited to South Florida, an area with one of the highest concentrations of elderly individuals in the United States and with one of the highest HMO enrollment rates. Thus, the population provides an opportunity to examine patterns in HMO enrollment and disenrollment, and because of the large number of subjects, statistical validity can be attained. The ramifications of such studies extend

beyond the local area because the high HMO enrollment rates coupled with the large elderly population means that this geographic area has a significant impact on national statistics on Medicare HMOs and their use.

Our measure of income was indirect. We used zip-code level data for households with individuals over age 65. Although these data are approximate, they are widely used in studies relying on Medicare data (eg, references 5 and 16). Krieger,¹⁴ examining census-based income measures for linking with medical record data, concluded that it was a valid approach for overcoming the absence of direct measures of income.

Our inability to link individuals to specific HMOs does not allow us to attribute any enrollment or disenrollment decisions to market forces such as advertising campaigns, changes in copayments or other services, or HMO reputation. However, changes in HMO disenrollment rates across the 4-year period increased consistently as might be predicted from the consistent increases in HMO enrollment rates.

Our definition of race was incomplete. South Florida has a sizable Hispanic population, and the 1990 census estimated that more than 27% of the area's elderly were Hispanic. Examination of racial coding by Lauderdale and Goldberg¹⁸ suggested that Hispanics were unlikely to code themselves as black but were likely to select racial codes of "white" or "other". Thus, our classification should successfully separate blacks from non-blacks. However, Lauderdale and Goldberg's conclusions support our own experience that separating white non-Hispanics and white Hispanics on the basis of information contained in Medicare files is impossible.

Despite the limitations of this analysis, and the obvious need for further study, the implications of these findings are disturbing. The evidence suggests that the Medicare risk-HMO program is differentially used by blacks and persons from poorer areas. Considering the ongoing concerns about access and quality of care under this program,^{16,19} the HMO program may be at risk of providing poorer healthcare to those individuals who are historically less likely to have their needs met under Medicare. Such a conclusion is disappointing because HMOs were seen as a tool to promote equal access.³

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