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# Implementation of the Medicare Managed Care CAHPS®

## Final Report: The Effects of Health Transitions on Subgroup Ratings

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## EXECUTIVE SUMMARY

The analysis presented in this paper examines the relationships between changes in health status and enrollees' ratings of their health plans. Specifically, we examined the following questions:

- How important are changes in health status in explaining ratings of plan performance?
- Are changes in health status more important influences on ratings for certain plan enrollee subpopulations than for the general enrolled population?
- Which types of ratings are most sensitive to changes in health status, both for the general enrolled population and certain subpopulations?

The primary data source for this study was the 1999 Medicare Managed Care Consumer Assessment of Health Plan Study (MMC-CAHPS®) Survey. This data set was augmented with information characterizing the health plan and the market within which it operated. These additional data were obtained from various public-use data files maintained by the Health Care Financing Administration (HCFA).

The Medicare Managed Care (MMC) enrollee subpopulations identified for examination in this analysis included:

- The Medicare under age 65 disabled;
- The Medicare aged with limited independence, reporting "fair" or "poor" self-assessed health status;
- African Americans;
- Enrollees of Hispanic/Latino ethnicity;
- Enrollees who completed 8$^{th}$ grade or less; and
- Enrollees receiving Medicaid assistance for Medicare Part B.

The analysis results indicate that change in health status is indeed an important factor in explaining variations in plan ratings. In fact, by controlling for changes in health status in multivariate analyses, other variables that are intended to proxy a variety of special needs/difficulties indicators, such as demographically defined population subgroups, were shown to be less important in explaining aggregate plan rating differences.

Finally, the results of this analysis suggest two possible areas for further research. The first concerns attempting to disentangle the effects of changes in health status on plan ratings from changes in plan ratings on health status. Individuals who are satisfied with their plan might be more likely to follow recommended courses of treatment or changes in lifestyle, and hence, improve their health status. Conversely, individuals with improved health status, regardless of the source of this improvement, might rate their plans higher.

The second area concerns whether those who experience declines in health status face additional barriers to obtaining needed health care in the Managed Care environment, whether these barriers in turn result in poorer health outcomes, and whether these barriers are more severe for certain population groups. Examination of the experiences and perceptions of fee-for-service Medicare beneficiaries compared to the results obtained here facilitate addressing these questions.

# I. INTRODUCTION

Considerable attention has been paid to examining the factors that influence consumers' ratings of health plan satisfaction. For the most part, however, these analyses have focused on relatively static relationships, such as how health status, demographic and socioeconomic attributes, and other factors have contributed to plan ratings.[1]

The analysis presented in this paper examines the relationships between changes in health status and enrollees' ratings of their health plans. In theory, plan ratings should be higher for those enrollees reporting improvement in health status. This would be reflective of a number of factors, including improvements in attitude and activities of the plan. In practice, this is an empirical question that has been examined relatively infrequently in the literature. The focus of this analysis is on three related questions:

1. How important are changes in health status in explaining ratings of plan performance?
2. Are changes in health status more important influences on ratings for certain plan enrollee subpopulations than for the general enrolled population?
3. Which types of ratings are most sensitive to changes in health status, both for the general enrolled population and certain subpopulations?

This paper is organized into five sections. The following section consists a brief review of the literature on factors affecting plan ratings, especially focusing on changes in health status. Section III contains an overview of the data and methods used for this analysis. This is followed by a presentation of the key findings of the analysis in Section IV. The final section contains a brief discussion of the findings and their implications.

[1] For example see Barents Group (2000a, 2000b).

# II. LITERATURE REVIEW

Since the late 1960s, researchers and health organizations have examined the independent variables that affect consumer ratings of health plans. Past studies have recognized satisfaction with health care and health plans as a multi-dimensional construct correlated with factors such as health status, race/ethnicity, age, and income. However, most research has focused on satisfaction and plan performance ratings at the time of study, rather than as a dynamic indicator that may change over time or with certain circumstances (such as health transitions). To preface this discussion on changes in health status (i.e., health transitions) and health plan ratings, we briefly review the factors that affect consumer health plan satisfaction. Of particular importance in this overview is the correlation between health status and satisfaction with managed care for subgroups of African American or Hispanic/Latino enrollees, Medicare disabled enrollees, and enrollees with possible exceptional health care needs (e.g., those in fair or poor health).

Numerous studies have attempted to isolate the effect of demographic factors on satisfaction with care with mixed results. Some analyses have concluded that there are weak and inconsistent relationships between satisfaction and patient sociodemographic factors such as race, income, education, and age (Cleary, 1992; Hall and Dornan, 1990). Disparities in health care access and health outcomes among racial minorities and populations of Hispanic origin (when compared with white persons of similar socioeconomic status) are well established in the literature. While research comparing satisfaction and experience with managed care for these groups has generally found little or no correlation between race/ethnicity and aggregate measures of plan performance, an association between race/ethnicity and dissatisfaction with process of and access to care is consistently evident (Cox et al., 2001).

In addition, the Patient Reports on System Performance (PROSPER) demonstration project involving enrollees in commercial HMOs found that persons less than 35 years of age, persons with higher education levels, and minority groups are significantly less satisfied than others (Zapka et. al, 1995). The findings related to education and minority status have been corroborated by the CAHPS study of MMC enrollees; however, the CAHPS findings have been tempered by an analysis of 1993 MCBS data, which indicated that satisfaction of care for African American and Hispanic/Latino beneficiaries was uniformly high compared with other beneficiaries (Barents Group, 2000a). One possible reason for this difference in results is that each study employed a different study design and used varying sample size.

A stronger correlation has been empirically shown between health status and satisfaction with care. Patients in poorer health (including seniors in HMOs, those with chronic conditions, and patients with disabilities) tend to rank their health plan lower than patients in better health (Hall et al., 1990; Linn and Greenfield, 1982; Patrick et al., 1983; Zapka et al., 1995; Barents Group, 2000a/2000b). Studies investigating the underlying causes of this relationship have found that sicker patients' dissatisfaction with health services may be a result of access barriers, unmet health needs, a negative view of health services, deteriorating social interaction with caregivers, and general dissatisfaction (i.e., as a rule, sicker patients are likely to be more dissatisfied than the general population) (Linn, 1975; Attkisson, Roberts, and Pascoe 1983; Hall et al., 1993, Hall et al., 1990). Together, these findings support the idea that access, physical, and psychosocial factors underpin the connection between health status and satisfaction with health services, but

that satisfaction with care may be more closely related to psychological state rather than changes in physical health (Barsky et al., 1991; Linn and Greenfield, 1982; Linn, 1975; and Robert, Pascoe, and Attkisson 1983, as cited in Marshall, Hays, and Mazel 1996).

With this in mind, it is important to note that the relationship between health status and satisfaction is not necessarily unidirectional. Rather, some studies have suggested that satisfaction and health status are reciprocally related (Sherbourne et al., 1992; Wartman, 1983). For instance, a patient who is satisfied with his/her physician and his/her care will adhere to the physician's recommendation more closely than someone who is dissatisfied and will presumably become healthier as a result of following the physician's guidance. This may be especially true in cases of chronic illness, where behavioral factors and lifestyle changes have significant effects on health outcomes.

Although a reciprocal paradigm acknowledges satisfaction with care as a dynamic construct, few studies have examined the influence of changes in health status on changes in satisfaction with care over time. These studies have identified that changes in health status contribute predominantly to changes in satisfaction, but beyond that their results have not been intuitively apparent. Rather, a small body of literature suggests that deteriorating health status is not highly correlated with decreasing satisfaction. This was the case in one longitudinal analysis of patient satisfaction among Medicare beneficiaries, which found that declining health status over the course of a year is actually correlated with higher levels of patient satisfaction. One explanation for this correlation could be the increase in provider contact that generally coincides with declines in health (Boles and Wan, 1992).[2]

A more recent study has suggested that changes in health status influence both increases and decreases in satisfaction with care (Newsome et al., 1999). The study found that enrollees in commercial health plans who report improved health status or declines in health over the course of a year are significantly more likely to report an *increase* in satisfaction compared with those who reported no change in health status. Through a separate multivariate specification, looking at the relationship between health changes and *decreases* in satisfaction, however, the study found the more expected result that patients who reported declines in health status were also more likely to report decreases in satisfaction with medical care. The authors have speculated that the unanticipated association between decreased health status and increased satisfaction with care could be attributed to the amount and nature of health care services consumed by the patient. This idea is supported by another finding that previous hospitalization is significant in determining an improvement in satisfaction with care. Because no such correlation was found with the number of visits to a doctor's office, the type of service (i.e., a more dramatic intervention) may be more important than the volume of services received. A second possibility is that a subset of people with declining health status have received appropriate care and attention and have attributed their health status to the unavoidable consequences of acute and chronic illness.

[2] Application of the findings is limited by the fact that study respondents changed care arrangements (from fee-for-service Medicare to Medicare managed care) between the time of the baseline assessment of satisfaction and the follow-up. The authors also acknowledged that their estimation model was not inclusive of all the variables that comprise a change in satisfaction with care.

Both of these studies complicate the notion that a beneficiaries' satisfaction depends on their expectations for improvement (Linn and Greenfield, 1983). An alternative view is that absolute outcome, or outcome at follow-up, is a more significant factor in satisfaction ratings than relative outcome, or outcome changes from baseline. This view, substantiated in at least one study, suggests that patient satisfaction is more closely related to how a patient is feeling at the moment than intertemporal expectations (Kane, Maciejewksi, and Finch, 1997).

The current study, while not longitudinal, is an additional step toward a more dynamic view of health plan ratings and toward a more coherent view of the relationship between changes in health status and changes in satisfaction with care. It stands to reason that ratings of health services are a dynamic construct, since interactions with the health plan and providers, health status, and plan performance are subject to change over time.

# III. DATA AND METHODS

## A. Data

The primary data source for this study was the 1999 MMC-CAHPS® Survey, which contained detailed information on Medicare beneficiaries who were enrolled in a Medicare managed care plan for at least six months prior to the survey.[3] Respondents were queried on both their general ratings of their health plan and specific measures of plan performance. In addition, demographic and health status information was collected from the respondents. Respondents were asked to assess their current health status and how it had changed from the previous year.

This primary data set was augmented with information characterizing the health plan and the market within which it operated. These additional data were obtained from various public-use data files maintained by HCFA.[4]

## B. Methods

One of the main focuses of this study was to examine the importance of health status transitions on plan ratings for selected subpopulations of plan enrollees. In several past analyses of subpopulation performance ratings, we identified two general subpopulations—those enrollees with exceptional health care needs and those enrollees that might have greater than average difficulties in accessing and negotiating their way around a managed care plan.[5] For this analysis, we examined several of these subpopulations. Specifically, we selected the following specific subpopulations:

[3] The 1999 survey contained a total of 214,730 respondents. However, 64,469 respondents were excluded from this analysis due to incomplete responses and other considerations.

[4] These public-use files included the managed care monthly reports, market penetration reports, and the plan service area file.

[5] See Barents (2000b) or Cox, D.F., K.M. Langwell, and B. Eckert (2001).

| Subgroup | Subgroup Sample Size |
|---|---|
| The Medicare disabled, under age 65 population | 10,188 |
| The Medicare aged population reporting both self-assessed health status as "fair" or "poor" and having "limited independence" | 16,524 |
| African Americans | 10,487 |
| Enrollees who are of Hispanic/Latino ethnicity | 7,363 |
| Enrollees who completed 8th grade or less | 17,997 |
| Enrollees receiving Medicaid assistance for Medicare Part B (i.e., "buy-ins") | 5,133 |
| **Total number of enrollees included in analysis data file** | **150,261** |

The empirical analysis consisted of two stages. During the first stage, we conducted a descriptive statistical analysis to examine the relationship between various plan performance ratings and changes in self-reported health status. This was done for all enrollees (to serve as a benchmark) and enrollees in the subpopulations of interest.

The second stage of the analysis involved estimating a set of multivariate regression models. In general, these models assumed the following form:

(1) $PR(i,j,k) = f(X(j), Y(k), CHS(j))$, where

PR(i,j,k) is the ith performance rating for individual j, enrolled in plan k. X(j) is a vector of attributes of individual j (including subgroup membership), Y(k) is a vector of plan and market characteristics, and CHS(j) is the reported change in health status. Within the CAHPS survey instrument, changes in health status is recorded on a five-point scale (i.e., 1=Health much better now than one year ago, 5= Health much worse now than one year ago). For the purpose of demonstrating a direct relationship with ratings, however, the change in health status scale was reversed (1= Much worse health, 5=Much better health). The specific variables contained in these vectors are defined in Table 1.

## Table 1. Variable Definitions

| Independent Variables | Variable Description |
|---|---|
| **Beneficiary Characteristics** | |
| **Subgroup** | |
| Under 65 Disabled | 1 = In subgroup, 0 = 65 and over |
| Over 65 in F/P Health with LI | 1 = In subgroup, 0 = over 65 in excl/good hlth, no LI |
| African American | 1 = In subgroup, 0 = Non-African American |
| Hispanic/Latino Origin | 1 = In subgroup, 0 = Non-Hispanic/Latino Origin |
| 8th Grade Education or Less | 1 = In subgroup, 0 = 65 Over 8th grade education |
| Medicare Part B Paid Through Medicaid | 1 = In subgroup, 0 = Non-Medicare part B |
| Other Minority* | 1 = In subgroup, 0 = Non-Other Minority |
| **Gender*** | 1=Male |
| **Age** | |
| 65-69* | Beneficiaries age 65-69 (default category) |
| 70-74* | Beneficiaries age 70-74: 1 = True |
| 75-79* | Beneficiaries age 75-79: 1 = True |
| 80+* | Beneficiaries age 80+ : 1 = True |
| **Time in Plan** | |
| 1-2 Years* | The beneficiary has been in present plan for 6-23 months(default category) |
| 2-5 Years* | The beneficiary has been in present plan for 2-5 years: 1 = True |
| 6-10 Years* | The beneficiary has been in present plan for 5-10 years: 1 = True |
| 10+Years* | The beneficiary has been in present plan for over 10 years: 1 = True |
| **Plan and Market Attributes** | |
| HMO Age* | Years in Medicare as of 12/31/99 |
| Profit Status | Whether the plan is for profit or non-profit: 1= For Profit |
| Rx Drug Benefit | Whether the plan offered a prescription drug benefit in 1999: 1=Yes |
| Supplemental Premium Offered | Whether the plan charged a supplemental premium in 1999: 1=Yes |
| **Model type** | |
| IPA Model | Plan is organized as an IPA model (default category) |
| Staff Model | Plan is organized as a Staff model: 1 = True |
| Group Model | Plan is organized as a Group model: 1 = True |
| **Market Attributes** | |
| Less than 5 competing plans in service area* | 1= True |
| Between 5 and 10 competing plans in service area* | 1= True |
| More than 10 competing plans in service area* | (default category) |
| **Health Status Change** | |
| Health compared to previous year | 1=Much worse…5=Much better |

*Variables included in the regression but not reported in Tables 12-19.

# IV. RESULTS

## A. Profiles of Health Transition

### 1. Health Transition Across Age Groups

Regardless of age, a substantive majority of MMC enrollees rate their health as unchanged compared to the previous year (Table 2). In all, about 63 percent of those surveyed reported that their health was about the same as it was one year prior. Furthermore, a higher percentage of individuals indicated that they were in somewhat or much better health than they had been a year ago (21 percent), compared with those who rated their health as being worse (17 percent). Only among the oldest beneficiaries, those over 80 years of age, do a higher percentage of individuals report their health to be deteriorating rather than improving.

**Table 2. Distribution of Enrollees by Changes in Health Status, Overall and for Selected Age Groups.**

| Health Status Compared to Previous Year | 65 to 69 | 70 to 74 | 75 to 79 | 80+ | Across Entire Sample (%) |
|---|---|---|---|---|---|
| Much better than one year ago | 10.2 | 10.3 | 9.1 | 7.9 | 9.4 |
| Somewhat better than one year ago | 12.7 | 11.6 | 11.4 | 9.3 | 11.5 |
| About the same as one year ago | 65.9 | 65.0 | 62.5 | 60.1 | 62.6 |
| Somewhat worse than one year ago | 9.7 | 11.2 | 14.2 | 18.4 | 13.7 |
| Much worse than one year ago | 1.5 | 1.9 | 2.8 | 4.4 | 2.8 |
| Total | 100 | 100 | 100 | 100 | 100 |

Source: Barents Group of KPMG Consulting analysis of 1999 Medicare Managed Care Consumer Assessment of Health Plan Study (MMC-CAHPS®) Survey

### 2. Health Transition Across Subgroups

A slightly different distribution exists for the specific exceptional needs subgroups (Table 3). The distribution of subgroup members across retrospective health status levels is more uniform than the distribution for all enrollees. For each of the subpopulations studied, a larger proportion of respondents reported changes in health status than did the MMC population as a whole. Further, the "under-65 disabled," the "eighth grade education or less," and the "Medicaid" subgroups had higher percentages of respondents reporting both positive and negative changes in health than did the other subgroups examined.

The two subgroups representing those with exceptional needs for health care include a much higher percentage of individuals reporting deteriorating health, compared to the overall population. Close to a third of the disabled population, and over half of those in the "65+ with fair or poor health and limited independence" subgroup felt that their health was worse than it had been a year before. It is therefore evident, that these populations are not only health impaired, but are also more likely to be experiencing continuing deterioration in health.

Conversely, for each of the non-health-related subgroups examined, a higher percentage of respondents reported *improved* health than for the overall population. This finding is particularly surprising because the same subgroups are more likely to report their current health status as fair or poor. A rationale for this apparent discrepancy is not evident.

**Table 3. Distribution of Enrollees by Changes in Health Status, Overall and for Selected Enrollee Subgroups.**

| Subgroup | | Not in Subgroup (%) | In Subgroup (%) | Across Entire Sample (%) |
|---|---|---|---|---|
| **Under 65 Disabled** | Much better than one year ago | 9.4 | 8.7 | 9.4 |
| | Somewhat better than one year ago | 11.3 | 13.3 | 11.4 |
| | About the same as one year ago | 63.6 | 47.4 | 62.7 |
| | Somewhat worse than one year ago | 13.1 | 23.7 | 13.7 |
| | Much worse than one year ago | 2.6 | 6.9 | 2.8 |
| **65+ in Fair or Poor Health With Limited Independence** | Much better than one year ago | 10.1 | 3.6 | 9.4 |
| | Somewhat better than one year ago | 11.7 | 9.7 | 11.4 |
| | About the same as one year ago | 66.5 | 33.8 | 62.7 |
| | Somewhat worse than one year ago | 10.6 | 37.5 | 13.7 |
| | Much worse than one year ago | 1.2 | 15.4 | 2.8 |
| **African American** | Much better than one year ago | 8.7 | 15.2 | 9.2 |
| | Somewhat better than one year ago | 11.0 | 16.0 | 11.3 |
| | About the same as one year ago | 63.6 | 53.6 | 62.9 |
| | Somewhat worse than one year ago | 13.9 | 12.1 | 13.8 |
| | Much worse than one year ago | 2.8 | 3.2 | 2.8 |
| **Hispanic / Latino** | Much better than one year ago | 8.7 | 15.1 | 9.2 |
| | Somewhat better than one year ago | 11.0 | 14.5 | 11.2 |
| | About the same as one year ago | 63.6 | 55.3 | 62.9 |
| | Somewhat worse than one year ago | 14.0 | 11.9 | 13.8 |
| | Much worse than one year ago | 2.8 | 3.3 | 2.8 |
| **Eighth Grade Education or Less** | Much better than one year ago | 9.1 | 11.9 | 9.4 |
| | Somewhat better than one year ago | 11.3 | 12.4 | 11.5 |
| | About the same as one year ago | 63.4 | 56.3 | 62.6 |
| | Somewhat worse than one year ago | 13.6 | 14.7 | 13.7 |
| | Much worse than one year ago | 2.6 | 4.7 | 2.8 |
| **Medicare Part B Paid Through Medicaid** | Much better than one year ago | 9.3 | 14.2 | 9.4 |
| | Somewhat better than one year ago | 11.3 | 15.1 | 11.5 |
| | About the same as one year ago | 63.1 | 46.6 | 62.6 |
| | Somewhat worse than one year ago | 13.6 | 18.2 | 13.7 |
| | Much worse than one year ago | 2.7 | 5.9 | 2.8 |

Source: Barents Group of KPMG Consulting analysis of 1999 Medicare Managed Care Consumer Assessment of Health Plan Study (MMC-CAHPS®) Survey

**B. Comparisons of Mean Plan and Provider Ratings Across Health Transition Levels, and Subgroups**

A health plan's success or failure in maintaining the health of its enrolled population is ultimately the most direct means of gauging its performance. In the absence of any quantifiable direct measures of health status, however, a meaningful assessment of plan performance based on the relative improvement or deterioration of its patients' self-reported health status is an indirect measure. In theory, a positive relationship should exist between movements in a patient's health and aggregate appraisals of his or her plan and providers. Further, to the degree that the efficacy of specific plan activities—specialist referrals, access to prescription drugs, therapy or equipment—impacts the health of plan enrollees (or more immediately, that changes in enrollee health impact the perceived efficacy of plan activities), the same positive relationship should exist between patient health and ratings of those activities.

Less clear is the question of whether changes in health have a marginally different effect on subgroup ratings of plans and providers than they do for the MMC population as a whole. We hypothesized that there would be a greater disparity in ratings between subgroup members indicating deteriorating versus stable health than there would be for the overall population. Lower ratings would result from two factors in particular:

1. The distribution of individuals reporting "worse health" is more heavily weighted toward those reporting the largest possible health decline within the subgroups than it is for the overall enrolled population; and
2. Existing barriers to health care affecting subgroup members in the MMC environment should become more tangible as they face a greater need for health services.

To investigate these questions, a series of mean ratings were produced for each subgroup and for the overall population. Within each group, we calculated two percentage differences (i.e., $Diff_{sub}^{BH\text{-}SH}$ and $Diff_{sub}^{WH\text{-}SH}$) per rating measure, where:

(2a) $Diff_{sub}^{BH\text{-}SH} = (BH_{sub} - SH_{sub})/SH_{sub}$ and

(2b) $Diff_{sub}^{WH\text{-}SH} = (WH_{sub} - SH_{sub})/SH_{sub}$.

In these equations, $BH_{sub}$ denotes mean plan rating for subgroup enrollees reporting an improvement in health status, $SH_{sub}$ is the mean rating for subgroup enrollees reporting no change in health status, and $WH_{sub}$ is the mean rating for subgroup enrollees reporting a deterioration in health status. Positive values for $Diff_{sub}^{BH\text{-}SH}$ and negative values for $Diff_{sub}^{WH\text{-}SH}$, therefore, are consistent with the positive relationship we would expect between changes in health and performance ratings. Tables 4 and 5 exhibit the results of these analyses.

1. Overall Measures of Plans and Providers.

For each of the aggregate measures of plan and provider performance, mean ratings follow expected patterns across health transition levels (Table 4). For both all enrollees and members of the selected subgroups, those indicating improvement in health compared to the previous year

gave higher average ratings than those whose health remained stable. Additionally, average ratings for individuals reporting stable health were higher than ratings for those reporting worse health.

More notable, however, is the magnitude of those ratings differences. Differences in mean ratings are generally larger (in absolute terms) between those individuals in stable health and those transitioning to levels of worse health than they are between those in stable health and those whose health is improving. For example, respondents reporting that their health improved rated their health plan 3.2 percent higher than those indicating stable health. In comparison, the difference in the mean plan rating between those reporting deteriorating versus stable health is -6.5 percent—over twice as great (Table 4).

These data illustrate that deterioration in health status has a disproportionately greater effect on ratings than does an improvement in health status. This is evident despite the fact that while almost half of those indicating positive health change reported the highest possible improvement in their health, only one fifth of those indicating health deterioration reported the highest possible health decline (Table 3). Enrollees simply appear to be more critical of their plan when they experience deteriorations in their health, than they are complimentary when their health improves—a likely reflection of how beneficiaries view the role of their health plans and health providers overall.

Finally, it should be noted that there are smaller ratings differences between those in stable versus deteriorating health for the "Over 65 in fair or poor health with limited independence" subgroup compared to respondents overall. There is no apparent explanation for this finding.

2. Measures of Beneficiary Access to Care

Examining ratings across specific measures of beneficiary access, we obtain a number of results that run counter to expected patterns (Table 5). Though we find no cases in which average access ratings for individuals reporting deteriorating health are higher than for those reporting stable health, there are several instances in which ratings for those in self-reported better health are lower than those in stable health. In many other cases, differences in ratings between individuals in stable versus improving health are effectively non-existent. A possible explanation for this apparently counterintuitive finding is that beneficiaries whose health has recently improved may be accustomed to more expeditious care from their plans and providers than is typical for beneficiaries in stable health. Alternatively, those reporting improved health may have improved independently of their access to and use of plan services.

In addition, we find considerably more variation when we evaluate the access to care ratings of subgroup members compared to other beneficiaries at similar health transition intervals. This is particularly evident for Hispanic/Latinos, and to an extent, low-education and low-income beneficiaries experiencing deteriorating health compared to others undergoing the same health transition. Hispanic/Latino beneficiaries reporting worse health, for example, rate their access to special therapy 20 percent lower than Hispanic/Latinos in stable health. For the general population, the difference is only about 6 percent. Clearly, then, there are instances where changes in health appear to have an amplifying effect on differences in subgroup ratings relative to the ratings of general population.

## Table 4. Percentage Differences in Plan and Provider Ratings by Changes in Health Status, Overall and for Selected Enrollee Subgroups

| Ratings By Health Transition and Subgroup | | Disabled Under Age 65 | 65+ in Fair/Poor Health with Limited Independence | African American | Hispanic/ Latino | 8th Grade Education or Less | Medicare Part B Premiums Covered By Medicaid | Overall Across Entire sample |
|---|---|---|---|---|---|---|---|---|
| Overall Rating of Health Plan | Better - Same Health | 1.1% | 5.1% ** | 2.8% ** | 5.3% ** | 3.8% ** | 5.1% ** | 3.2% ** |
| | Same - Worse Health | -8.2% ** | -2.0% * | -6.6% ** | -7.4% ** | -6.6% ** | -6.8% ** | -6.5% ** |
| Rating of personal doctor or nurse | Better - Same Health | 0.4% | 2.7% ** | 2.5% ** | 1.6% * | 2.1% * | 0.9% | 2.7% ** |
| | Same - Worse Health | -3.2% ** | -3.1% ** | -4.9% ** | -4.1% ** | -6.5% ** | -6.1% ** | -5.0% ** |
| Rating of specialist | Better - Same Health | 2.5% | 3.2% ** | 4.4% ** | 1.7% | 3.6% ** | 2.4% | 2.9% ** |
| | Same - Worse Health | -3.8% ** | -2.6% ** | -2.9% * | -5.3% ** | -5.1% ** | -5.7% | -4.3% ** |
| Rating of all doctors and other health professionals | Better - Same Health | 1.8% * | 4.1% ** | 0.7% | 2.6% ** | 3.0% ** | 4.2% ** | 2.6% ** |
| | Same - Worse Health | -6.1% ** | -3.3% ** | -6.9% ** | -6.4% ** | -6.7% ** | -6.7% ** | -6.8% ** |

Notes: 1. Percentages shown are the calculated percent differences between the ratings of beneficiaries indicating: 1) "Better health compared to one year ago" *minus* those indicating "Health about the same as one year ago;" or 2) "Worse health compared to one year ago" *minus* those indicating "Health about the same as one year ago." These calculated percent differences are shown for each subgroup and for the overall population.
2. **/* The difference in ratings between those in the indicated health transition levels are significant at the .01/.05 level.
3. Cell sizes for the subgroup "Other Minority," which includes Asians, Native Americans, Native Hawaiians, and Pacific Islanders, were too small to be included in this type of analysis.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 5. Percentage Differences in Access to Care Ratings by Changes in Health Status, Overall and for Selected Enrollee Subgroups

| Ratings By Health Transition and Subgroup | | Disabled Under Age 65 | 65+ in Fair/Poor Health with Limited Independence | African American | Hispanic/ Latino | 8th Grade Education or Less | Medicare Part B Premiums Covered By Medicaid | Overall Across Entire sample |
|---|---|---|---|---|---|---|---|---|
| Level of difficulty in getting referral to specialist | Better - Same Health | -2.6% * | -0.2% | -0.1% | -1.4% | -1.3% | -4.4% ** | 0.1% |
| | Same - Worse Health | -4.5% ** | -2.7% ** | -3.4% * | -8.9% ** | -3.5% ** | -5.0% * | -4.0% ** |
| Level of difficulty in getting equipment | Better - Same Health | 5.7% | 2.2% | 3.0% | 9.9% * | -1.3% | -1.7% | 2.1% ** |
| | Same - Worse Health | -2.1% | -1.6% | -1.5% | -2.3% | -5.8% ** | -5.5% | -3.0% ** |
| Level of difficulty in getting therapy | Better - Same Health | 5.1% | -0.6% | 2.0% | -5.0% | -5.1% | -6.9% | 0.6% |
| | Same - Worse Health | -11.4% ** | -3.7% * | -5.1% | -20.3% * | -9.1% ** | -6.6% | -6.3% ** |
| Level of difficulty in getting home health care | Better - Same Health | 4.2% | 0.5% | 3.9% | 4.9% | 0.2% | -7.4% | 2.6% |
| | Same - Worse Health | -2.8% | -5.3% * | -8.7% | -11.1% | -13.3% ** | -11.6% * | -7.7% ** |

Notes: 1. Percentages shown are the calculated percent differences between the ratings of beneficiaries indicating: 1) "Better health compared to one year ago" *minus* those indicating "Health about the same as one year ago;" or 2) "Worse health compared to one year ago" *minus* those indicating "Health about the same as one year ago." These calculated percent differences are shown for each subgroup and for the overall population.

2. **/* The difference in ratings between those in the indicated health transition levels are significant at the .01/.05 level.

3. Cell sizes for the subgroup "Other Minority," which includes Asians, Native Americans, Native Hawaiians, and Pacific Islanders, were too small to be included in this type of analysis.

Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

**C. Comparisons of Subgroup Related Ratings Differences vs. Health Transition Related Ratings Differences**

To more closely investigate ratings differences, we classified respondents into four categories for each subgroup based on subgroup affiliation and health transition level:

1. Not in subgroup, self-reported health improved or remained static.
2. In subgroup, self-reported health improved or remained static.
3. Not in subgroup, self-reported health worsened.
4. In subgroup, self-reported health worsened.

Creating the four groups allowed us to descriptively analyze ratings differences across subgroups and health transition levels with a certain degree of independence. For example, by holding reported health transition constant, we were able to look at ratings differences between subgroup members and other beneficiaries who had reported the same level of health change. By holding subgroup affiliation constant, on the other hand, we investigated ratings differences attributable to health transitions. Tables 6 to 11 exhibit results of the analysis and provide insight into several pertinent questions. In particular:

1. To what extent do differences in ratings between specific subgroups and the overall population exist in the absence of differences in health transitions?
2. How do differences in ratings attributable to subgroup affiliation compare with those attributable to changes in health?
3. To what extent do differences in health transition levels affect subgroup ratings differently than they do overall ratings?
4. Which measures of plan and provider performance, aggregate or access to care, are relatively more or less sensitive to subgroup specific effects, compared to health transition specific effects?

1. Differences in Ratings for Subgroup vs. Non-Subgroup Beneficiaries, Keeping Health Transition Level Constant (Tables 6-11, Columns 1&2)

Overall, comparing the ratings of subgroup members with non-subgroup members reporting comparable health transitions yields very similar results to previous analyses that looked at subgroup differences in the aggregate[6]. Specifically, the "Under 65 Disabled" and "65+ in Fair or Poor Health with Limited Independence" subgroups consistently rate plans, providers, and access to care lower than those outside the subgroups. For the non-health related subgroups, no consistent difference in aggregate ratings of plan and providers is evident, though the groups clearly have more difficulty with access to certain types of care such as specialists, special medical equipment, and special therapy. Generally, subgroup/non-subgroup rating differences for beneficiaries reporting same or better health are proportional with the subgroup/non-subgroup rating differences for beneficiaries reporting worse health. That is, whatever rating

[6] See Barents (2000b) or Cox, D.F., K.M. Langwell, and B. Eckert (2001).

differences exist between subgroup members and non-subgroup members are present and consistent regardless of health transition.

There are, however, two exceptions to that general finding. First, ratings differences between the "65+ in Fair or Poor Health with Limited Independence" subgroup and other beneficiaries are diminished greatly when the subset of those reporting worse health is examined independently. It is apparent, then, that deteriorating health is as strong a driver of lower ratings as are existent health conditions.

Second, Hispanic/Latino beneficiaries experiencing deteriorations in health appear to have disproportionately greater difficulty getting access to care, compared to other Hispanic/Latino beneficiaries. Due to language and other cultural barriers, Hispanic/Latino beneficiaries who are transitioning to levels of worse health may find it especially difficult to obtain the type of care they require.

2. Differences in Ratings Across Health Transition Levels, Keeping Group Affiliation Constant. (Tables 6-11, Columns 3&4)

The within-group (whether subgroup or non-subgroup) ratings differences observed between those in stable or improving health and those in deteriorating health, highlight the significance of health transitions upon plan and provider ratings. In fact, ratings differences between those in worse health and those in stable or improving health proved consistently larger overall than any in-subgroup/out-of-subgroup differences.

Health transitions have a marginally smaller, yet still significant, effect on the "65+ in Fair or Poor Health with Limited Independence" subgroup, and a relatively larger effect on the Hispanic/Latino subgroup, as noted previously.

## Table 6. Comparison of Ratings Differences for Specified Subgroups and Health Transition Levels

| Under 65 Disabled | Differences in ratings across group affiliation keeping retrospective health status constant | | | | Differences in ratings across retrospective health status keeping group affiliation constant | | | |
|---|---|---|---|---|---|---|---|---|
| | Not in subgroup with health same or better - In subgroup with health same or better | | Not in subgroup with health worse - In subgroup with health worse | | Not in subgroup with health same or better - Not in subgroup with health worse | | In subgroup with health same or better - In subgroup with health worse | |
| Overall Rating of Health Plan | 5.9% | ** | 7.8% | ** | 6.9% | ** | 8.9% | ** |
| Rating of personal doctor or nurse | 1.9% | ** | -0.7% | | 6.0% | ** | 3.4% | ** |
| Rating of specialist | 3.0% | ** | 2.7% | ** | 5.1% | ** | 4.8% | ** |
| Rating of all doctors and other health professionals | 3.5% | ** | 2.8% | ** | 7.6% | ** | 6.9% | ** |
| Level of difficulty in getting referral to specialist | 4.3% | ** | 4.1% | ** | 3.9% | ** | 3.7% | ** |
| Level of difficulty in getting equipment | 11.6% | ** | 12.6% | ** | 3.6% | ** | 4.6% | |
| Level of difficulty in getting therapy | 6.3% | ** | 14.9% | ** | 5.7% | ** | 14.3% | ** |
| Level of difficulty in getting home health care | 14.6% | ** | 9.4% | ** | 10.0% | ** | 4.8% | |

Notes: 1. Percentages shown are the calculated percent differences between the ratings of beneficiary groups as described in the column headings.
2. **/* The difference in ratings between those in the indicated beneficiary groups are significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 7. Comparison of Ratings Differences for Specified Subgroups and Health Transition Levels

| 65+ in Fair or Poor Health With Limited Independence | Differences in ratings across group affiliation keeping retrospective health status constant | | | | Differences in ratings across retrospective health status keeping group affiliation constant | | | |
|---|---|---|---|---|---|---|---|---|
| | Not in subgroup with health same or better - In subgroup with health same or better | | Not in subgroup with health worse - In subgroup with health worse | | Not in subgroup with health same or better - Not in subgroup with health worse | | In subgroup with health same or better - In subgroup with health worse | |
| Overall Rating of Health Plan | 5.0% | ** | 1.1% | | 7.4% | ** | 3.5% | ** |
| Rating of personal doctor or nurse | 2.7% | ** | 0.9% | | 5.7% | ** | 3.9% | ** |
| Rating of specialist | 2.3% | ** | 0.9% | | 5.0% | ** | 3.6% | ** |
| Rating of all doctors and other health professionals | 4.5% | ** | 1.8% | ** | 7.3% | ** | 4.6% | ** |
| Level of difficulty in getting referral to specialist | 2.3% | ** | 0.9% | | 4.0% | ** | 2.6% | ** |
| Level of difficulty in getting equipment | 0.5% | | -2.8% | * | 5.7% | ** | 2.4% | * |
| Level of difficulty in getting therapy | 4.5% | ** | 1.5% | | 6.6% | ** | 3.5% | * |
| Level of difficulty in getting home health care | 7.1% | ** | 3.9% | | 8.8% | ** | 5.7% | * |

Notes: 1. Percentages shown are the calculated percent differences between the ratings of beneficiary groups as described in the column headings.
2. **/* The difference in ratings between those in the indicated beneficiary groups are significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 8. Comparison of Ratings Differences for Specified Subgroups and Health Transition Levels

| African American | Differences in ratings across group affiliation keeping retrospective health status constant | | Differences in ratings across retrospective health status keeping group affiliation constant | |
|---|---|---|---|---|
| | Not in subgroup with health same or better - In subgroup with health same or better | Not in subgroup with health worse - In subgroup with health worse | Not in subgroup with health same or better - Not in subgroup with health worse | In subgroup with health same or better - In subgroup with health worse |
| Overall Rating of Health Plan | 0.1% | 0.6% | 7.4%** | 7.9%** |
| Rating of personal doctor or nurse | -1.8%** | -1.6% | 5.7%** | 5.9%** |
| Rating of specialist | 1.3% | 0.6% | 5.3%** | 4.7%** |
| Rating of all doctors and other health professionals | -0.7% | -1.0% | 7.7%** | 7.4%** |
| Level of difficulty in getting referral to specialist | 1.9%* | 1.3% | 4.0%** | 3.5%* |
| Level of difficulty in getting equipment | 5.8%** | 4.8% | 3.8%** | 2.8% |
| Level of difficulty in getting therapy | 0.8% | 0.8% | 6.3%** | 6.4%* |
| Level of difficulty in getting home health care | 4.0% | 6.3% | 9.0%** | 11.3%* |

Notes: 1. Percentages shown are the calculated percent differences between the ratings of beneficiary groups as described in the column headings.
2. **/* The difference in ratings between those in the indicated beneficiary groups are significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 9. Comparison of Ratings Differences for Specified Subgroups and Health Transition Levels

| Hispanic / Latino | Differences in ratings across group affiliation keeping retrospective health status constant | | Differences in ratings across retrospective health status keeping group affiliation constant | |
|---|---|---|---|---|
| | Not in subgroup with health same or better - In subgroup with health same or better | Not in subgroup with health worse - In subgroup with health worse | Not in subgroup with health same or better - Not in subgroup with health worse | In subgroup with health same or better - In subgroup with health worse |
| Overall Rating of Health Plan | -1.0% | 1.3% | 7.2%** | 9.6%** |
| Rating of personal doctor or nurse | -1.1% | -2.2%* | 5.9%** | 4.8%** |
| Rating of specialist | -0.1% | 0.8% | 5.2%** | 6.1%** |
| Rating of all doctors and other health professionals | 0.4% | 0.3% | 7.6%** | 7.5%** |
| Level of difficulty in getting referral to specialist | 2.5%** | 7.5%** | 3.8%** | 8.8%** |
| Level of difficulty in getting equipment | 4.6% | 7.8%* | 3.4%** | 6.6%* |
| Level of difficulty in getting therapy | -0.7% | 13.9% | 5.9%** | 20.5%* |
| Level of difficulty in getting home health care | 2.9% | 7.5% | 9.5%** | 14.1%** |

Notes: 1. Percentages shown are the calculated percent differences between the ratings of beneficiary groups as described in the column headings.
2. **/* The difference in ratings between those in the indicated beneficiary groups are significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 10. Comparison of Ratings Differences for Specified Subgroups and Health Transition Levels

| Eighth Grade Education or Less | Differences in ratings across group affiliation keeping retrospective health status constant | | Differences in ratings across retrospective health status keeping group affiliation constant | |
|---|---|---|---|---|
| | Not in subgroup with health same or better - In subgroup with health same or better | Not in subgroup with health worse - In subgroup with health worse | Not in subgroup with health same or better - Not in subgroup with health worse | In subgroup with health same or better - In subgroup with health worse |
| Overall Rating of Health Plan | -1.0%** | -0.5% | 7.4%** | 7.9%** |
| Rating of personal doctor or nurse | -1.8%** | -0.1% | 5.7%** | 7.3%** |
| Rating of specialist | -0.1% | 1.4% | 5.1%** | 6.5%** |
| Rating of all doctors and other health professionals | -0.1% | 0.1% | 7.7%** | 7.9%** |
| Level of difficulty in getting referral to specialist | 1.8%** | 0.8% | 4.2%** | 3.1%** |
| Level of difficulty in getting equipment | -1.0% | 0.9% | 3.5%** | 5.4%** |
| Level of difficulty in getting therapy | 1.2% | 1.8% | 6.6%** | 7.3%** |
| Level of difficulty in getting home health care | -1.3% | 4.9% | 8.1%** | 14.3%** |

Notes: 1. Percentages shown are the calculated percent differences between the ratings of beneficiary groups as described in the column headings.
2. **/* The difference in ratings between those in the indicated beneficiary groups are significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 11. Comparison of Ratings Differences for Specified Subgroups and Health Transition Levels

| Medicare Part B Paid Through Medicaid | Differences in ratings across group affiliation keeping retrospective health status constant | | Differences in ratings across retrospective health status keeping group affiliation constant | |
|---|---|---|---|---|
| | Not in subgroup with health same or better - In subgroup with health same or better | Not in subgroup with health worse - In subgroup with health worse | Not in subgroup with health same or better - Not in subgroup with health worse | In subgroup with health same or better - In subgroup with health worse |
| Overall Rating of Health Plan | 1.0% | 2.6% | 7.4%** | 9.0%** |
| Rating of personal doctor or nurse | -1.6%** | -0.7% | 5.8%** | 6.6%** |
| Rating of specialist | -0.2% | 1.6% | 5.2%** | 7.0%* |
| Rating of all doctors and other health professionals | -0.2% | 0.7% | 7.7%** | 8.6%** |
| Level of difficulty in getting referral to specialist | 4.3%** | 3.4% | 4.1%** | 3.2% |
| Level of difficulty in getting equipment | 5.8%** | 7.0%* | 3.6%** | 4.9% |
| Level of difficulty in getting therapy | 6.2%* | 2.8% | 6.8%** | 3.4% |
| Level of difficulty in getting home health care | 4.0% | 3.1% | 9.3%** | 8.4%* |

Notes: 1. Percentages shown are the calculated percent differences between the ratings of beneficiary groups as described in the column headings.
2. **/* The difference in ratings between those in the indicated beneficiary groups are significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

**D. Multivariate Regression Models**

We estimated two regression models, "Model A" and "Model B," that were developed for this analysis. The model specifications are identical but for the inclusion of the health transition measure as an additional explanatory variable in "Model B." The side-by-side presentation of the models allows for clear interpretation of observed differences between the regression results (Tables 12 to 19). Moreover, the estimated effects of additional control variables (e.g., market attributes and some enrollee and plan attributes) are not reported in these tables due to space limitations. These variables yielded estimates very similar to those obtained in prior analyses of the 1997 and 1998 MMC CAHPS® data (Barents 2000a, 2000b).

Multivariate results confirm the central findings of the descriptive analyses. Particularly, they highlight the significant relationship between changes in beneficiary self-reported health status and their ratings of plans and providers. This is evident in the size, stability, and significance of the health transition coefficient in each of the regressions, and in the overall explanatory power added to the regressions as a result of the inclusion of the health transition variable.

Secondly, the results suggest that rating differences for the health-related subgroups, particularly the "over 65 in fair or poor health with limited independence," are diminished somewhat when controlling for changes in health status. This finding is evidenced by significant decreases (in absolute terms) in the coefficients of both subgroups with the inclusion of the health transition variable. As expected, ratings differences for the other subgroups appear to be relatively more independent of changes in beneficiary health.

## Table 12. Multivariate Results—Overall Ratings of Plans

| Overall Rating of Health Plan | Without Health Transition Variable | With Health Transition Variable |
|---|---|---|
| Subgroup Variables | | |
| Disabled Under Age 65 | -0.58 ** | -0.49 ** |
| 65+ in Fair/Poor Health with Limited Independence | -0.60 ** | -0.41 ** |
| African American | 0.12 * | 0.06 |
| Hispanic/ Latino | 0.15 * | 0.13 * |
| 8th Grade Education or Less | 0.04 | 0.03 |
| Medicare Part B Premiums Covered By Medicaid | -0.05 | -0.08 |
| Plan Attributes | | |
| Profit Status | -0.05 | -0.05 |
| Rx Drug Benefit | -0.19 ** | -0.20 ** |
| Supplemental Premium | -0.22 ** | -0.22 ** |
| Group Model | 0.01 | 0.01 |
| Staff Model | -0.02 | -0.02 |
| Health vs. Previous Year | | 0.27 ** |
| Constant | 8.60 ** | 7.75 ** |
| R-Squared | 0.028 | 0.042 |

Notes: 1. Only subgroup, some plan attribute, and health transition coefficients are displayed in this table. Other independent variables included in this regression are not shown. Please refer to Table 1 for a full specification of this regression.
2. **/*: Significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 13. Multivariate Results—Rating of Personal Doctor or Nurse

| Rating of personal doctor or nurse | Without Health Transition Variable | With Health Transition Variable |
|---|---|---|
| Subgroup Variables | | |
| Disabled Under Age 65 | -0.10 ** | -0.02 |
| 65+ in Fair/Poor Health with Limited Independence | -0.40 ** | -0.24 ** |
| African American | 0.21 ** | 0.16 ** |
| Hispanic/ Latino | 0.20 ** | 0.16 * |
| 8th Grade Education or Less | 0.06 | 0.05 |
| Medicare Part B Premiums Covered By Medicaid | 0.11 | 0.08 |
| Plan Attributes | | |
| Profit Status | 0.05 | 0.05 |
| Rx Drug Benefit | -0.14 ** | -0.14 ** |
| Supplemental Premium | -0.10 * | -0.10 * |
| Group Model | -0.08 | -0.08 |
| Staff Model | -0.06 | -0.05 |
| Health vs. Previous Year | | 0.23 ** |
| Constant | 8.64 ** | 7.89 ** |
| R-Squared | 0.015 | 0.028 |

Notes: 1. Only subgroup, some plan attribute, and health transition coefficients are displayed in this table. Other independent variables included in this regression are not shown. Please refer to Table 1 for a full specification of this regression.
2. **/*: Significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 14. Multivariate Results—Rating of Specialist

| Rating of specialist | Without Health Transition Variable | With Health Transition Variable |
|---|---|---|
| Subgroup Variables | | |
| Disabled Under Age 65 | -0.31 ** | -0.22 ** |
| 65+ in Fair/Poor Health with Limited Independence | -0.35 ** | -0.18 ** |
| African American | 0.03 | -0.03 |
| Hispanic/ Latino | 0.11 | 0.07 |
| 8th Grade Education or Less | -0.08 | -0.08 |
| Medicare Part B Premiums Covered By Medicaid | 0.09 | 0.07 |
| Plan Attributes | | |
| Profit Status | 0.03 | 0.03 |
| Rx Drug Benefit | -0.08 | -0.08 |
| Supplemental Premium | -0.01 | -0.01 |
| Group Model | -0.03 | -0.03 |
| Staff Model | -0.18 * | -0.17 * |
| Health vs. Previous Year | | 0.22 ** |
| Constant | 8.71 ** | 8.00 ** |
| R-Squared | 0.014 | 0.024 |

Notes: 1. Only subgroup, some plan attribute, and health transition coefficients are displayed in this table. Other independent variables included in this regression are not shown. Please refer to Table 1 for a full specification of this regression.
2. **/*: Significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 15. Multivariate Results—Rating of All Doctors and Other Health Professionals

| Rating of all doctors and other health professionals | Without Health Transition Variable | With Health Transition Variable |
|---|---|---|
| Subgroup Variables | | |
| Disabled Under Age 65 | -0.37 ** | -0.27 ** |
| 65+ in Fair/Poor Health with Limited Independence | -0.57 ** | -0.38 ** |
| African American | 0.20 ** | 0.13 * |
| Hispanic/ Latino | 0.12 | 0.10 |
| 8th Grade Education or Less | -0.05 | -0.06 |
| Medicare Part B Premiums Covered By Medicaid | 0.06 | 0.02 |
| Plan Attributes | | |
| Profit Status | 0.02 | 0.01 |
| Rx Drug Benefit | -0.11 ** | -0.12 ** |
| Supplemental Premium | -0.05 | -0.05 |
| Group Model | 0.00 | 0.00 |
| Staff Model | -0.06 | -0.06 |
| Health vs. Previous Year | | 0.27 ** |
| Constant | 8.73 ** | 7.86 ** |
| R-Squared | 0.025 | 0.044 |

Notes: 1. Only subgroup, some plan attribute, and health transition coefficients are displayed in this Table. Other independent variables included in this regression are not shown. Please refer to Table 1 for a full specification of this regression.
2. **/*: Significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 16. Multivariate Results— Level of Difficulty in Getting Referral to Specialist

| Level of difficulty in getting referral to specialist | Without Health Transition Variable | With Health Transition Variable |
|---|---|---|
| Subgroup Variables | | |
| Disabled Under Age 65 | -0.12 ** | -0.11 ** |
| 65+ in Fair/Poor Health with Limited Independence | -0.08 ** | -0.06 ** |
| African American | -0.01 | -0.02 |
| Hispanic/ Latino | -0.04 | -0.04 |
| 8th Grade Education or Less | -0.03 | -0.03 |
| Medicare Part B Premiums Covered By Medicaid | -0.08 * | -0.08 * |
| Plan Attributes | | |
| Profit Status | 0.01 | 0.00 |
| Rx Drug Benefit | -0.04 ** | -0.04 ** |
| Supplemental Premium | 0.00 | 0.00 |
| Group Model | -0.01 | -0.01 |
| Staff Model | 0.00 | 0.00 |
| Health vs. Previous Year | | 0.03 ** |
| Constant | 2.83 ** | 2.72 ** |
| R-Squared | 0.014 | 0.017 |

Notes: 1. Only subgroup, some plan attribute, and health transition coefficients are displayed in this table. Other independent variables included in this regression are not shown. Please refer to Table 1 for a full specification of this regression.
2. **/*: Significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 17. Multivariate Results— Level of Difficulty in Getting Equipment

| Level of difficulty in getting equipment | Without Health Transition Variable | With Health Transition Variable |
|---|---|---|
| Subgroup Variables | | |
| Disabled Under Age 65 | -0.29 ** | -0.27 ** |
| 65+ in Fair/Poor Health with Limited Independence | -0.08 ** | -0.03 |
| African American | -0.08 | -0.10 |
| Hispanic/ Latino | -0.05 | -0.06 |
| 8th Grade Education or Less | 0.00 | 0.00 |
| Medicare Part B Premiums Covered By Medicaid | -0.14 ** | -0.15 ** |
| Plan Attributes | | |
| Profit Status | -0.01 | -0.01 |
| Rx Drug Benefit | -0.07 ** | -0.06 ** |
| Supplemental Premium | 0.03 | 0.03 |
| Group Model | 0.03 | 0.03 |
| Staff Model | -0.04 | -0.04 |
| Health vs. Previous Year | | 0.05 ** |
| Constant | 2.88 ** | 2.71 ** |
| R-Squared | 0.044 | 0.051 |

Notes: 1. Only subgroup, some plan attribute, and health transition coefficients are displayed in this table. Other independent variables included in this regression are not shown. Please refer to Table 1 for a full specification of this regression.
2. **/*: Significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 18. Multivariate Results— Level of Difficulty in Getting Therapy

| Level of difficulty in getting therapy | Without Health Transition Variable | With Health Transition Variable |
|---|---|---|
| Subgroup Variables | | |
| Disabled Under Age 65 | -0.29 ** | -0.26 ** |
| 65+ in Fair/Poor Health with Limited Independence | -0.17 ** | -0.12 ** |
| African American | 0.07 | 0.05 |
| Hispanic/ Latino | -0.06 | -0.07 |
| 8th Grade Education or Less | -0.03 | -0.02 |
| Medicare Part B Premiums Covered By Medicaid | -0.03 | -0.03 |
| Plan Attributes | | |
| Profit Status | -0.02 | -0.01 |
| Rx Drug Benefit | -0.04 * | -0.04 * |
| Supplemental Premium | -0.02 | -0.02 |
| Group Model | 0.02 | 0.03 |
| Staff Model | 0.08 | 0.09 |
| Health vs. Previous Year | | 0.06 ** |
| Constant | 2.73 ** | 2.53 ** |
| R-Squared | 0.040 | 0.047 |

Notes: 1. Only subgroup, some plan attribute, and health transition coefficients are displayed in this table. Other independent variables included in this regression are not shown. Please refer to Table 1 for a full specification of this regression.
2. **/*: Significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

## Table 19. Multivariate Results— Level of Difficulty in Getting Home Health Care

| Level of difficulty in getting home health care | Without Health Transition Variable | With Health Transition Variable |
|---|---|---|
| Subgroup Variables | | |
| Disabled Under Age 65 | -0.39 ** | -0.34 ** |
| 65+ in Fair/Poor Health with Limited Independence | -0.32 ** | -0.24 ** |
| African American | -0.01 | -0.04 |
| Hispanic/ Latino | -0.08 | -0.07 |
| 8th Grade Education or Less | -0.10 | -0.10 |
| Medicare Part B Premiums Covered By Medicaid | 0.04 | 0.02 |
| Plan Attributes | | |
| Profit Status | -0.03 | -0.03 |
| Rx Drug Benefit | -0.11 ** | -0.10 ** |
| Supplemental Premium | -0.05 | -0.06 |
| Group Model | -0.04 | -0.04 |
| Staff Model | 0.00 | 0.00 |
| Health vs. Previous Year | | 0.07 ** |
| Constant | 2.85 ** | 2.57 ** |
| R-Squared | 0.081 | 0.092 |

Notes: 1. Only subgroup, some plan attribute, and health transition coefficients are displayed in this table. Other independent variables included in this regression are not shown. Please refer to Table 1 for a full specification of this regression.
2. **/*: Significant at the .01/.05 level.
Source: Barents Group of KPMG Consulting analysis of 1999 MMC-CAHPS® Survey

# V. DISCUSSION

The objective of this analysis was to gain insight into how changes in self-reported health status might affect an enrollee's rating of his/her health plan. Past examinations of plan performance ratings have found that health status is positively correlated with plan ratings. The questions of interest in this study are whether changes in health status state play an additional role in ratings determination and, if so, whether this role is more or less significant for certain groups of MMC enrollees than for MMC population as a whole.

The results of both the descriptive and multivariate analyses conducted in this study tend to indicate that a change in health status is indeed an important factor in explaining variations in plan ratings. In fact, by controlling for changes in health status in multivariate analyses, other variables that are intended to proxy a variety of special needs/difficulties indicators, such as demographically defined population subgroups, were shown to be less important in explaining aggregate plan rating differences.

Analyses are less conclusive regarding whether or not the affects of changes in health status on plan ratings are more potent for certain beneficiary groups compared to the overall population. Results indicate, however, that Hispanic/Latino, low-education, and low-income beneficiaries who are experiencing declines in their health status, have disproportionately more difficulty attaining certain kinds of care than other beneficiaries experiencing similar health declines. Access to special medical therapy and home health care may be particularly difficult for these beneficiary groups.

**Suggestions for Further Research**

Two related areas of inquiry, beyond the scope of this analysis, might merit further investigation. First is the issue of causality, i.e., whether improvements in perceived health status affect plan ratings, or whether plan ratings affect health status. As noted previously, individuals who are satisfied with their plan might be more likely to follow recommended courses of treatment or changes in life style, and hence, improve their health status. Conversely, individuals with improved health status, regardless of the source of this improvement, might rate their plans higher. Disentangling these two possible relationships should be the subject of future examinations in this area.

The second, and perhaps more important issue is whether those who experience declines in health status face additional barriers to obtaining needed health care in the Managed Care environment, whether these barriers in turn result in poorer health outcomes, and whether these barriers are more severe for certain population groups. Previous research has found that chronically ill Medicare-aged and low-income patients had worse physical health outcomes in HMO plans than in FFS systems (Ware et al, 1996). Further, although the MMC CAHPS® data are an indirect measure of whether enrollees are receiving appropriate care, the results reported here indicated that those with deteriorating health status are more prone to report difficulties in accessing specific types of services. As such, a logical extension of this research would be to compare the results obtained here with similar measures of health status transitions and access difficulties using the Medicare Current Beneficiary Survey (MCBS) and/or the CAHPS® Fee-

for-Service data, comparing the relative experiences of subgroup members suffering health deteriorations in M+C plans versus traditional FFS.

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